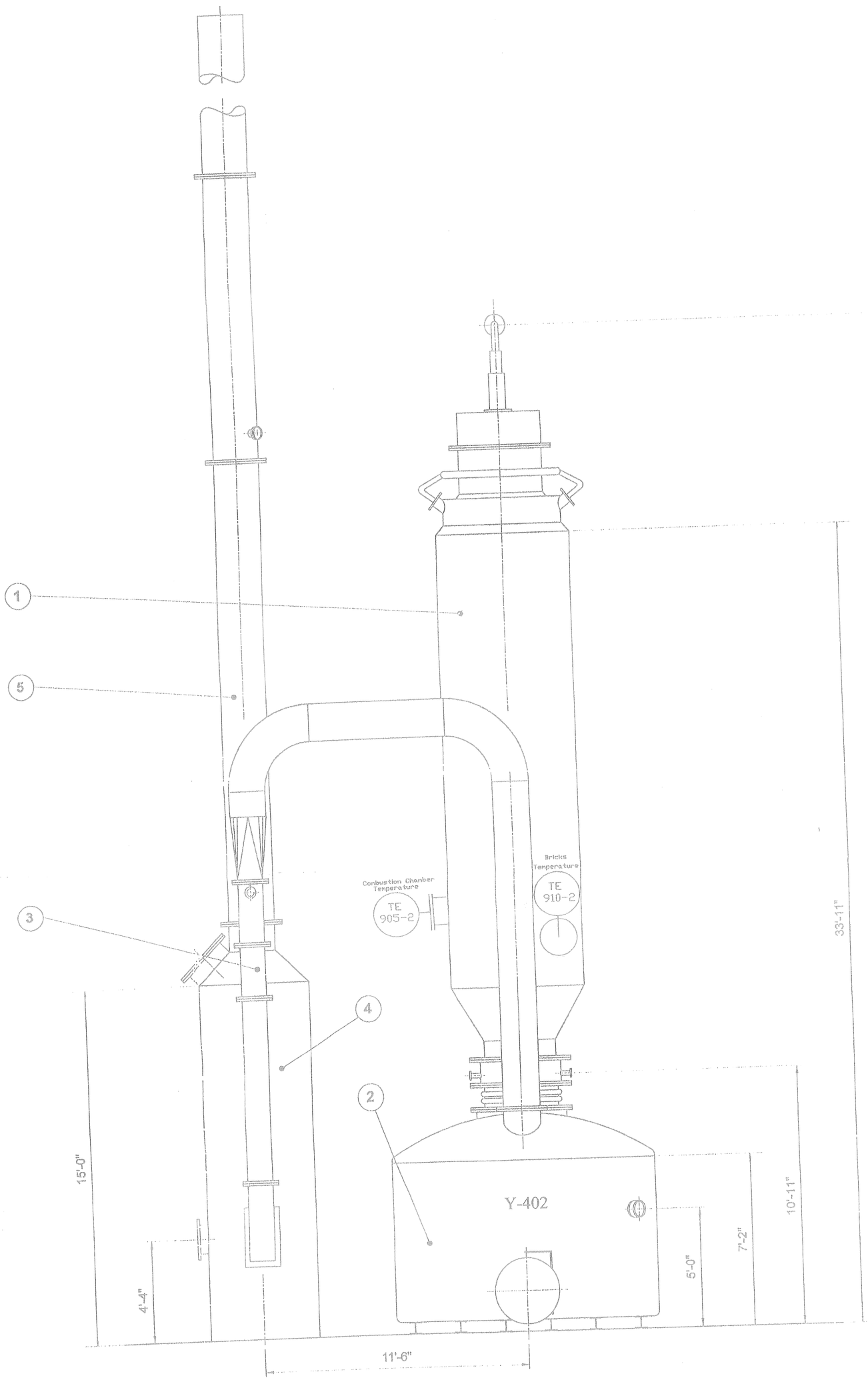
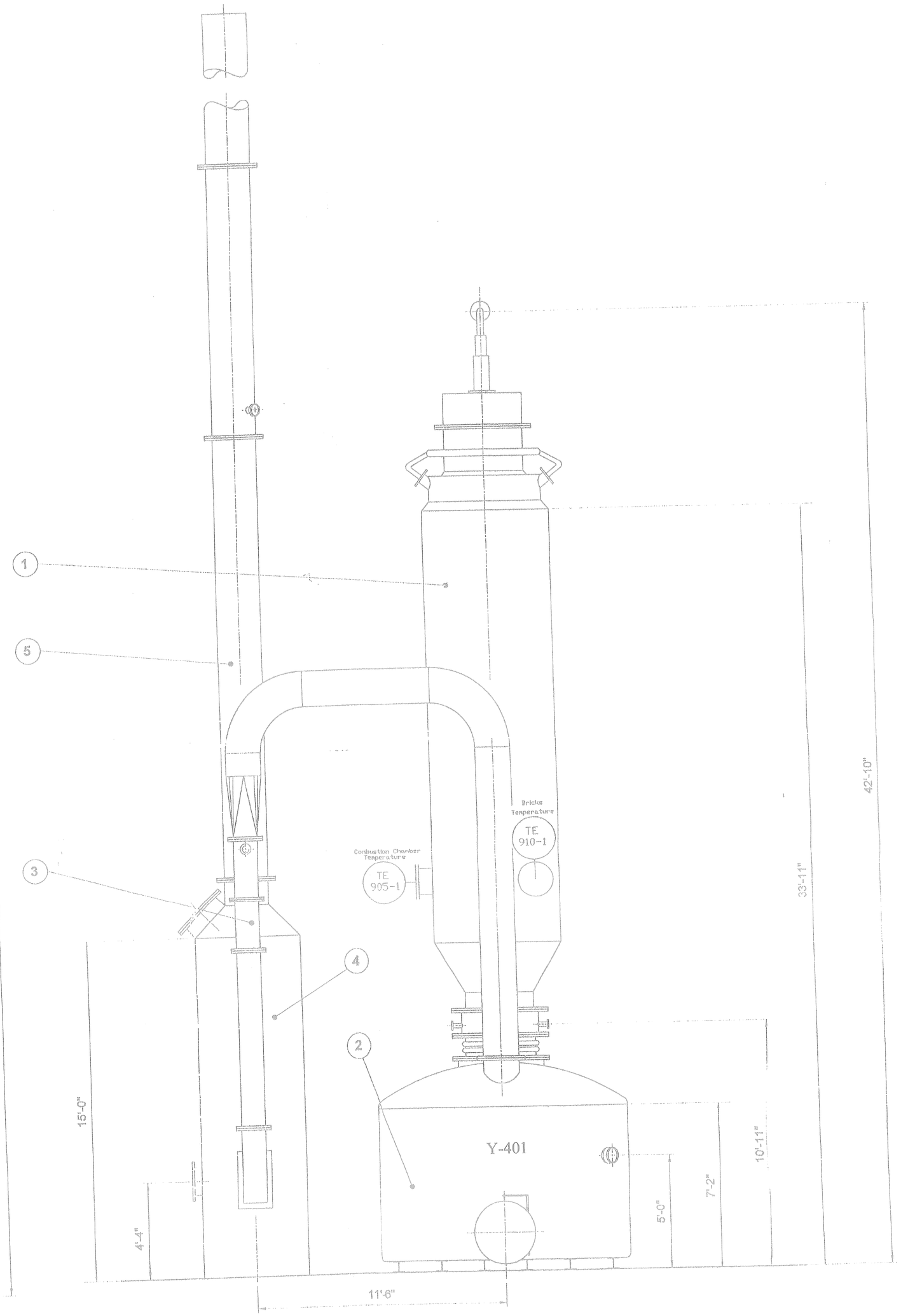
APPENDIX B
INCINERATOR ENGINEERING INFORMATION





Item	Description
1	Combustion Chamber
2	Quench Tank
3	Venturi Scrubber
4	Separator
5	Stack
6	Blower

Scale	Date
1/36	Dec 2003

ANDERSON - MULHOLLAND & ASSOCIATES, INC.
WHITE PLAINS, NEW YORK
SAN JUAN, PUERTO RICO

Attachment D-20

Trane Incinerator
General Arrangement - Elevations

API Industries, Inc.
Guayama, Puerto Rico

Computerized Distributed Control System For The Incinerator

Incinerators Operation [1]

A PROVOX computerized control and supervision system manages the operation of the Incinerators and its auxiliary equipment. The system is considered "semi-automatic" because it requires the assistance of an operator. The operator communicates with the control system via a 4 bay PROVUE OPCON console, which allows the operator to monitor and control the operation of the hazardous waste combustion (HWC) process area. Through this supervision system the operator initializes, monitors, and controls the startup and shutdown procedures. This interface keeps the operator informed of the Incinerators component states as well as alarms due to malfunction events or operative limit exceed. The supervision system allows the operator to take actions or initiate/modify operative parameters or set points in order to maintain the Incinerator's performance. In addition, the system provides the operator with the ability to place selected equipment and systems into Manual operation, if so desired. However, the start-up, normal operation, and shutdown operations must be done through the supervision interface.

The system is supported by a NEXUS DAS Server, which does all the required regulatory data computations, data storage, report generation, and verification of the RCRA and MACT operation limits. This server is connected to an EMERSON PAS Server and SICK MAll-IAK control emission monitoring system (CEMS). The EMERSON PAS Server receives measurements from all CMS through the PROVOX data highway that is connecting all the devices used to operate and control the Incinerators. The EMERSON PAS Server sends this information to the NEXUS DAS Server. The CEMS measures concentrations of CO and 02 in the stack and sends this information as well as instrument status to the NEXUS DAS Server.

Reports of the NEXUS DAS Server are continuously monitored in two NEXUS DAS Client PCs with monitor, keyboard and mouse. One of them is located in the computer room and the other one in the control room. Results of the NEXUS DAS Server computations generate "Waste Cut off' or "Shutdown" decisions in case of exceeding regulatory limits. Those actions are executed through the EMERSON PAS Server, which interfaces with the PROVOX OPCON console control system.

1 Reference: API *"Operation and Maintenance Manuals"* September 2004.

Continuous Emissions Monitoring System (CEMS) [2]

The stack exhaust gases are continuously monitored for oxygen and carbon monoxide by a CO and O_2 Continuous Emission Monitoring Systems (CEMS). The CEMS is used to demonstrate compliance with the HWC MACT CO emission limit (dry) of 100 ppmv, corrected to 7% oxygen (dry). The CO monitor is a non-dispersive infrared (NDIR) analyzer which is capable of meeting performance requirements of 40 CFR 60, Appendix B, Specification 4B. The O_2 monitor is a paramagnetic analyzer that is capable of meeting the requirements of 40 CFR 60, Appendix B, Specification 4B. The CO concentration is automatically corrected to 7% O_2 on a dry gas basis by the DAS except when extremely high 02 concentration is above 19.85 since this data will induce erroneous and exaggerated high values.

The CEMS consists of three subsystems: 1) an extractive sample conditioning system, 2) CO and O_2 analyzers, and 3) *data acquisition system (DAS).* The CO analyzer has a dual range of 0-200 ppmv and 0-3,000 ppmv. The O_2 analyzer has a range of 0-25% vol. The gas analyzers produce an electronic signal proportional to the analyzer range. The analyzer signals are forwarded to the DAS, which performs required calculations to convert the electronic signals into numerical values calculating the one minute average, the one hour rolling average etc. These values are forwarded to the DCS. The DAS also notified to the DCS if an A WFCO is required.

The CEMS are operated as recommended by the manufacturer. Maintenance and calibration/audits are performed on the CEMS as specified by the manufacturer and as required by performance specifications promulgated by EP A. Specific details pertaining to the CEMS operation and maintenance procedures can be found in the Continuous Monitoring System Performance Evaluation Plan which is located in the Environmental File Room and is readily available upon inspector request..

Continuous Parameter Monitoring Systems (CPMSs) [2]

Continuous parameter monitoring systems (CPMSs) consist of a combination of instruments that continuously monitor and record parameter data from the operations of the incineration systems. The CPMSs are used to show compliance with the specified HWC MACT operating limits. The instruments consist of flowmeters, pressure transducers, pH meters, level transmitters, and thermocouples that collect process

[2] Reference: API *"SSM Plan"* September 2004
[2] Reference: API *"SSM Plan"* September 2004

information on key HWC MACT regulatory parameters. Each monitoring instrument produces an electronic signal proportional to the instrument range. The signals are outputs to the system's DCS which provides analog inputs to the DAS. The DAS conduct required data manipulations and calculations and com[ares the calculated value to the alarms and A WFCO preset limit

The CPMs are operated as specified by the manufacturers. The instruments are calibrated and preventive maintenance performed as specified by the manufacturer. Specific details pertaining to the CPMs operation and maintenance procedures can be found in the Continuous Monitoring System Operating and Maintenance manual located in the Environmental File Room and is readily available upon inspector request

Automatic Waste feed Cutoff (AWFCO) System 2

The function of the automatic waste feed cutoff (A WFCO) system interlocks is to prevent the feeding of hazardous waste if either Trane operating conditions are outside the regulatory limits and to prevent unsafe operation of the systems. The continuously monitored parameters listed in the attached Table 3-1 will be monitored by the control system to ensure the incinerators operate within their regulatory limits. When any of these HWC MACT regulatory continuously monitored parameter deviates from its established A WFCO setpoint, an electronic signal from the control system will activate the waste feed cutoff valves. A DAS send a signal to the DCS and activate an A WFCO interlock whenever a preset limit is executed and closes the waste liquid block valves in the event of an A WFCO condition. An A WFCO usually will not result in auxiliary fuel being discontinued. The pre A WFCO and A WFCO preset limits are below the MACT permit limits to avoid exceedances. Auxiliary fuel is continued to maintain minimum operating temperature until the problem causing the waste feed cutoff is resolved. If the problem is still not resolved, the system may be shut down.

The CEMS and CPMs described in this plan and listed in attached Table 3-1 are integrated with the A WFCO system. The A WFCO system also incorporates safety related parameters not regulated by the HWC MACT. An A WFCO will yield closure of all hazardous wastes control and block valves. An A WFCO will occur following any of the below conditions:

- When a regulated emission setpoint is reached or exceeded
- When an operating limit setpoint below permit limit is reached or exceeded
- When a span value of any CPMS is met or exceeded
- When a CPMS or CEMS malfunctions
- When a component of the A WFCO fails

• Loss of communication between the instrumentation, analyzer, DAS and DCS

Continuously monitored parameters that have permitted limits have two set point limits: 1) an alarm value and 2) an A WFCO value. The control system compares calculated rolling average values to the corresponding parameter trip set point. Alarm set points are above or below the respective minimum or maximum permitted limits and are established by API based on operating experience. When an alarm value is reached, the control system initiates an audible alarm and a visual warning on the operator's control screen. There is no stoppage of waste feed when an alarm set point is reached. An alarm set point is intended to provide the operator with sufficient warning to acknowledge the alarm and to make operational adjustments to avoid a shutdown or an A WFCO.

A WFCO set points are also set slightly above or below regulatory limits established by EP A to avoid reportable exceedances. When an A WFCO setpoint is reached, the control system initiates an audible alarm, a visual warning on the operator's control screen and an A WFCO. Upon exceedance of the interlock set point DAS send a signal to the DCS to activate a waste shut off, command is activated to stop the hazardous waste feed. The operator must acknowledge the A WFCO and make operational adjustments to bring the monitored parameter within the shutdown set point limit before waste feed can be resumed.

Table 3-1

TRANE 1 INCINERATOR
AUTOMATIC WASTE FEED CUTOFF

API Industries, Inc.
Guayama, Puerto Rico

Interlock Condition
Maximum organic waste flow rate
Maximum aqueous waste flow rate
Minimum aqueous waste atomization pressure
Minimum organic waste atomization pressure
Minimum combustion chamber temperature
Maximum total combustion air flow rate (a)
Maximum carbon monoxide in the stack gas (Corrected to 7% 02)
Minimum quench tank blowdown pH
Minimum quench tank blowdown flowrate
Minimum quench tank water level
Minimum venturi scrubber pressure drop
Minimum venturi scrubber recycle water flow
Minimum venturi scrubber recycle water pH
Minimum venturi scrubber blowdown flow rate
WESP secondary power input
Minimum Heat Input
Maximum ash feed rate
Maximun total chlorine feed rate
Maximum mercury feed rate
Maximum total cadmium feed rate
Maximum total lead feed rate

Table 3-1 (Contd.)

Interlock Condition
Maximum total beryllium feed rate
Maximum total arsenic feed rate
Maximum total chromium feed rate

Notes:
(a) combustion air, secondary air, atomization air

CEMView Configuration Report

Customer: **API INDUSTRIES, Inc**
System: **Guayama, Puerto Rico**
Date: **April 1, 2009**

Incinerator 1 analog and calculated values

Name	Units	Min	Max	Source / Formula	Averages
Stream Feed Rates					
Aqueous Rate	lpm	0	27.5	[FIC923-1/PV.1]	OMA, HRA
Organic Rate	lpm	0	12	[FIC908-1/PV.1]	OMA, HRA
Kerosene Rate	lpm	0	6	[FIC904-1/PV.1]	OMA, HRA
Calculated Rates					
Chlorine Rate	lbs/hr	0	300	Fr[1] * 60 / 4.54	OMA, 12HRA
Org. Chlorine Rate	lbs/hr	0	80	Fr * 1e4 / 1e6 * 60	OMA, 12HRA
Ash Rate	lbs/hr	0	400	Fr * 1e4 / 1e6 * 60	OMA, HRA, 12HRA
Arsenic Rate	lbs/hr * 1e-5	0	200	Fr * 60 / 4.54 * 1e-3	OMA, 12HRA
Mercury Rate	lbs/hr * 1e-5	0	100	Fr * 60 / 4.54 * 1e-3	OMA, 12HRA
Beryllium Rate	lbs/hr * 1e-5	0	100	Fr * 60 / 4.54 * 1e-3	OMA, 12HRA
Lead Rate	lbs/hr * 1e-5	0	100	Fr * 60 / 4.54 * 1e-3	OMA, 12HRA
Cadmium Rate	lbs/hr * 1e-5	0	100	Fr * 60 / 4.54 * 1e-3	OMA, 12HRA
Chromium Rate	lbs/hr * 1e-5	0	600	Fr * 60 / 4.54 * 1e-3	OMA, 12HRA
Combustion Chamber					
Combustion Air Flow	scfm	0	2026	[FIC907-1/PV.1]	OMA
Secondary AT Air Flow	scfm	0	634	[FIC906-1/PV.1]	OMA
Organic Air Flow	scfm	0	125	[FI975C-1/PV.1]	OMA
Aqueous AT Air Flow	scfm	0	198	[FI975D-1/PV.1]	OMA
Total Combustion Air	scfm	0	3000	Sum of All Air Flows	OMA, HRA
Aqueous AT Pressure	psi	0	75	[PI975B-1/PV.1]	OMA, HRA
Organic AT Pressure	psi	0	75	[PI975A-1/PV.1]	OMA, HRA
Heat Input	MMBTU/hr	0	20	Fh[2] * 0.264 * 8.34 * 60 / 1e-6	OMA, HRA
Incinerator Temp	°C	0	1200	[TIC905-1/PV.1]	OMA, HRA
Quench					
QT Blowdown pH	pH	0	14	[AIC901-1/PV.1]	OMA, HRA
QT Blowdown Fl	lpm	0	200	[FIC903-1/PV.1]	OMA, HRA
QT Exhaust Temp	°C	0	150	[TI911-1/PV.1]	OMA
QT Tank Level	inches	0	100	[LIC910-1/PV.1]	OMA, HRA
Venturi					
VT Blowdown Fl	gpm	0	12	[FI944-1/PV.1]	OMA, HRA
VT Pressure Drop	Inches H20	0	100	[PDIC945-1/PV.1]	OMA, HRA
VT Water pH	NTU	0	14	[AIC902-1/PV.1]	OMA, HRA
VT RC Water Flow	Lpm	0	492	[FI901A-1/PV.1]	OMA, HRA
VT Sep.Tank Level	%	0	100	[LIC907-1/PV.1]	OMA,HRA

[1] Fr = (A*xa + B*xb + C*xc), where:
A = Organic Rate, xa = organic waste content
B = Aqueous Rate, xb = aqueous waste content
C = Kerosene Rate, xc = kerosene content.

[2] Fh = (A* HVa* SGa + B* HVb* SGb + C* HVc* SGc), where:
A = Organic Rate, HVa = organic waste heating value, SGa = hazardous organic waste specific gravity,
B = Aqueous Rate, HVb = aqueous waste heating value, Hvc = kerosene heating value,
C = Kerosene Rate, SGb = aqueous waste specific gravity, SGc = kerosene specific gravity.

Incinerator 2 analog and calculated values

Name	Units	Min	Max	Source / Formula	Averages
Stream Feed Rates					
Aqueous Rate	lpm	0	27.5	[FIC923-2/PV.1]	OMA, HRA
Organic Rate	lpm	0	12	[FIC908-2/PV.1]	OMA, HRA
Kerosene Rate	lpm	0	6	[FIC904-2/PV.1]	OMA, HRA
Calculated Rates					
Chlorine Rate	lbs/hr	0	300	Fr[3] * 60 / 4.54	OMA, 12HRA
Org. Chlorine Rate	lbs/hr	0	80	Fr * 1e4 / 1e6 * 60	OMA, 12HRA
Ash Rate	lbs/hr	0	400	Fr * 1e4 / 1e6 * 60	OMA, HRA, 12HRA
Arsenic Rate	lbs/hr * 1e-5	0	200	Fr * 60 / 4.54 * 1e-3	OMA, 12HRA
Mercury Rate	lbs/hr * 1e-5	0	100	Fr * 60 / 4.54 * 1e-3	OMA, 12HRA
Beryllium Rate	lbs/hr * 1e-5	0	100	Fr * 60 / 4.54 * 1e-3	OMA, 12HRA
Lead Rate	lbs/hr * 1e-5	0	100	Fr * 60 / 4.54 * 1e-3	OMA, 12HRA
Cadmium Rate	lbs/hr * 1e-5	0	100	Fr * 60 / 4.54 * 1e-3	OMA, 12HRA
Chromium Rate	lbs/hr * 1e-5	0	600	Fr * 60 / 4.54 * 1e-3	OMA, 12HRA
Combustion Chamber					
Combustion Air Flow	scfm	0	2026	[FIC907-2/PV.1]	OMA
Secondary Air Flow	scfm	0	634	[FIC906-2/PV.1]	OMA
Organic AT Air Flow	scfm	0	125	[FI975C-2/PV.1]	OMA
Aqueous AT Air Flow	scfm	0	198	[FI975D-2/PV.1]	OMA
Total Combustion Air	scfm	0	3000	Sum of All Air Flows	OMA, HRA
Aqueous AT Pressure	psi	0	75	[PI975B-2/PV.1]	OMA, HRA
Organic AT Pressure	psi	0	75	[PI975A-2/PV.1]	OMA, HRA
Heat Input	MMBTU/hr	0	20	Fh[4] * 0.264 * 8.34 * 60 / 1e6	OMA, HRA
Quench					
QT Blowdown pH	pH	0	14	[AIC901-2/PV.1]	OMA, HRA
QT Blowdown Fl	lpm	0	200	[FIC903-2/PV.1]	OMA, HRA
QT Exhaust Temp	°C	0	150	[TI911-2/PV.1]	OMA
QT Tank Level	inches	0	100	[LIC910-2/PV.1]	OMA, HRA
Venturi Scrubber					
VT Blowdown Fl	gpm	0	12	[FI944-2/PV.1]	OMA, HRA
VT Pressure Drop	Inches H20	0	100	[PDIC945-2/PV.1]	OMA, HRA
VT Water pH	NTU	0	14	[AIC902-2/PV.1]	OMA, HRA
VT RC Water Flow	lpm	0	492	[FI901A-2/PV.1]	OMA, HRA
VT Sep. tank Level	%	0	100	[LIC907-2/PV.2]	OMA, HRA

[3] Fr = (A*xa + B*xb + C*xc), where:
A = Organic Rate, xa = organic waste content
B = Aqueous Rate, xb = aqueous waste content
C = Kerosene Rate, xc = kerosene content.

[4] Fh = (A* HVa* SGa + B* HVb* SGb + C* HVc* SGc), where:
A = Organic Rate, HVa = organic waste heating value, SGa = hazardous organic waste specific gravity,
B = Aqueous Rate, HVb = aqueous waste heating value, Hvc = kerosene heating value,
C = Kerosene Rate, SGb = aqueous waste specific gravity, SGc = kerosene specific gravity.

WESP analog and calculated values

Name	Units	Min	Max	Source / Formula	Averages
Caustic Flow	lpm	0	100	[FI-903-W/PV.1]	OMA
Cooling Water	lps	0	20	[FI-904-W/PV.1]	OMA
Flow Bleed WW	gpm	0	25	[FI-901-W/PV.1]	OMA
Gases Pressure	Inches H20	0	15	[PI-901-W/PV.1]	OMA
GasesTemp	°C	0	100	[TI-901-W/PV.1]	OMA
Lower Spray	lpm	0	350	[FI-902-W/PV.1]	OMA
Tank Level	%	0	100	[LI-901-W/PV.1]	OMA
Water pH	pH	0	14	[AI-901-W/PV.1]	OMA
Sec Current	mA	0	1200	[WCI-901-W/PV.1]	OMA
Sec Power	kW	0	80	Sec Current / 1000 * Sec Voltage	OMA, HRA
Sec Voltage	kvdc	0	40	[WVI-901-W/PV.1]	OMA
Temp Bleed WW	°C	0	100	[TI-902-W/PV.1]	OMA

S700 analog and calculated values

Name	Units	Min	Max	Source / Formula	Averages
CO_lo	ppm	0	200	S700, K01	-
CO_hi	ppm	0	3000	S700, K01	-
O2_lo	%	0	10	S700, K02	-
O2_hi	%	0	25	S700, K02	-
CO	ppm	0	3000	IF(F033, CO_lo, CO_hi)	OMA, HRA
O2	%	0	25	IF(F034, O2_lo, O2_hi)	OMA, HRA
COCorr (7 %)[5]	ppm	0	3000	CO * (20.9 – 7) / (20.9 – O2)	OMA, 10MRA, HRA

S700 alarm set points and RCRA / HWC MACT limits

Name	EE	LOLO	LOW	HIGH	HIHI	T- (%)	T+ (%)	RCRA	MACT
CO						-1	1		3000[6]
CO 1-Min Avg	3000			2400	3000				
O2						-5	5		
COCorr 10-Min Avg				400	500			500	
COCorr HRA	100			80	100			100	85
COInst									30

WESP alarm set points and RCRA / HWC MACT limits

Name	EE	LOLO	LOW	HIGH	HIHI	T- (%)	T+ (%)	RCRA	MACT
Sec Current						0	10		
Sec Power									
Sec Power HRA	5.6	5.8	6.0						5.8
Sec Voltage						0	25		

[5] Correction factor will be applied only if $0 < O2 < 19.5$. If not, COCorr value will be equal to CO uncorrected value.

[6] HWC MACT CO (uncorrected) is > 3000 for 30 sec.

Incinerator 1 alarm set points and RCRA / HWC MACT limits

Name	EE	LOLO	LOW	HIGH	HIHI	T- (%)	T+ (%)	RCRA	MACT
Stream Feed Rates									
Aqueous Rate					22	-0.25	0.25	22	
Aqueous Rate HRA	12.8			12.3	12.5				12.5
Organic Rate					6.5	-0.15	0.15	6.5	
Organic Rate HRA	4.7			4.3	4.5				4.5
Kerosene Rate						-0.20	0.20		
Calculated Rates									
Chlorine Rate 12-HRA	241			230	235				235
Org. Chlorine Rate HRA				50	60			57	
Ash Rate HRA	226			215	220			317	
Ash Rate 12-HRA	226			215	220				220
Arsenic Rate 12-HRA	89.1			75	80				80
Mercury Rate 12-HRA	35.6			25	30				30
Beryllium Rate 12-HRA	13.9			10	12				12
Lead Rate 12-HRA	348.1			308	313				313
Cadmium Rate 12-HRA	48.7			38	43				43
Chromium Rate 12-HRA	417.8			366	376				376
Combustion Chamber									
Total Combustion Air				1880	2000	-0.20	0.20	2000	
Total Combustion Air HRA	1050-1627	1070	1090	1580	1590				1070-1590
Aqueous AT Pressure		17	18			-0.20	0.20	17	
Aqueous AT Pressure HRA	19.1	20	22						20
Organic AT Pressure		14	14.84			-0.20	0.20	14	
Organic AT Pressure HRA	20.8	22	24						22
Heat Input				10.9	11				
Heat Input HRA	4.5	4.6	5	10.85	11			10.5	4.6
Incinerator Temp		1020	1025	1125	1150	-0.20	0.20	L:914, H:1150	
Incinerator Temp HRA	1016	1020	1022						1020
Quench									
QT Blowdown pH		7.25	7.69			-7.14	7.14	7.25	
QT Blowdown pH HRA	7.4	7.5	7.6						7.5
QT Blowdown Fl		28	32			-0.25	0.25		
QT Blowdown Fl HRA	26.7	30	32						30
QT Exhaust Temp				103.4	110	-0.20	0.20	110	
QT Tank Level		33	35			-0.20	0.20	33	
QT Tank Level HRA	38.7	42	44						42
Venturi									
VT Blowdown Fl		2	2.5			-0.1	0.1	2	
VT Blowdown Fl HRA	2.4	2.8	3						2.8
VT Pressure Drop		54	57.24			-0.20	0.20	54	
VT Pressure Drop HRA	61.9	63	65						63
VT Water pH		6.2	6.6			-7.14	7.14	6.2	
VT Water pH HRA	6.7	6.8	7						6.8
VT RC Water Flow		254	269.24			-0.20	0.20	254	
VT RC Water Flow HRA	263	268	272						268
VT Sep. Tank Level		42	44			-0.25	0.25	33	
VT Sep. Tank Level HRA	40.1	42	44						42

Incinerator 2 alarm set points and RCRA / HWC MACT limits[7]

Name	EE	LOLO	LOW	HIGH	HIHI	T- (%)	T+ (%)	RCRA	MACT
Stream Feed Rates									
Aqueous Rate				21.6	22	-0.25	0.25	22	
Aqueous Rate HRA	12.8			12.3	12.5				12.5
Organic Rate					6.5	-0.15	0.15	6.5	
Organic Rate HRA	4.7			4.3	4.5				4.5
Kerosene Rate			0.6			-0.20	0.20		
Calculated Rates									
Chlorine Rate 12-HRA	241			230	235				235
Org. Chlorine Rate HRA				50	60			57	
Ash Rate HRA	226			215	220			317	
Ash Rate 12-HRA	226			215	220				220
Arsenic Rate 12-HRA	89.1			75	80				80
Mercury Rate 12-HRA	35.6			25	30				30
Beryllium Rate 12-HRA	13.9			10	12				12
Lead Rate 12-HRA	348.1			308	313				313
Cadmium Rate 12-HRA	48.7			38	43				43
Chromium Rate 12-HRA	417.8			366	376				376
Combustion Chamber									
Total Combustion Air				1880	2000	-0.20	0.20	2000	
Total Combustion Air HRA	1050-1627	1070	1090	1580	1590				1070-1590
Aqueous AT Pressure		17	18			-0.20	0.20	17	
Aqueous AT Pressure HRA	19.1	20	22						20
Organic AT Pressure		14	14.84			-0.20	0.20	14	
Organic AT Pressure HRA	20.8	22	24						22
Heat Input				10.9	11				
Heat Input HRA	4.5	4.6	5	10.85	11			10.5	4.6
Incinerator Temp		1020	1025	1125	1150	-0.20	0.20	Lo:914, Hi:1150	
Incinerator Temp HRA	1016	1020	1022						1020
Quench									
QT Blowdown pH		7.25	7.69			-7.14	7.14	7.25	
QT Blowdown pH HRA	7.4	7.5	7.6						7.5
QT Blowdown Fl		28	32			-0.25	0.25		
QT Blowdown Fl HRA	26.7	30	32						30
QT Exhaust Temp				103.4	110	-0.20	0.20	110	
QT Tank Level		33	35			-0.20	0.20	33	
QT Tank Level HRA	38.7	42	44						42
Venturi									
VT Blowdown Fl		2	2.5			-0.1	0.1	2	
VT Blowdown Fl HRA	2.4	2.8	3						2.8
VT Pressure Drop		54	57.24			-0.20	0.20	54	
VT Pressure Drop HRA	61.9	63	65						63
VT Water pH		6.2	6.6			-7.14	7.14	6.2	
VT Water pH HRA	6.7	6.8	7						6.8
VT RC Water Flow		254	269.24			-0.20	0.20	254	
VT RC Water Flow HRA	263	268	272						268
VT Sep. Tank Level		42	44			-0.25	0.25	33	
VT Sep. Tank Level HRA	40.1	42	44						42

[7] All RCRA and MACT alarms and all Exceedances will be reported only if the system is in 'Normal Operation' or in 'Secondary Startup'. Exception: For WESP Sec Power during 'Secondary Startup' all alarms and exceedance reporting will be suppressed.

CEM Quality Flags

Flag Name	Letter	Invalidate data	Count to availability	Suppress value alarms
User Data	U	N/A	N/A	N/A
Calibration	C	+	-	+
Blowback	B	+	-	+
Premeasure	P	+	-	+
Maintenance	M	+	-	-
Warning	W	-	+	-
Error	E	+	-	-
Process Down	D	+	+	+
Out-of-Control	O	+	-	-
Out-Of-Range	R	+	-	-
Detection Threshold	L	+	-	-
Excess Emission	X	N/A	N/A	N/A
Startup	S	-	+	+
Secondary Startup	Y	-	+	-
Shutdown	H	-	+	+
AWFCO Testing	T	-	+	+
Not Calibrated	N	-	+	-
Normal Operation	G	-	+	-

Provox Relay formulas

Name	Incinerator 1	Incinerator 2	Flag
Process Down	[INC-STATES-L/MVPCV5.0] = 0	[INC-STATES-L/MVPCV6.0] = 0	D
Startup	[INC-STATES-L/MVPCV5.0] = 1	[INC-STATES-L/MVPCV6.0] = 1	S
Secondary Startup	[INC-STATES-L/MVPCV5.0] = 2	[INC-STATES-L/MVPCV5.0] = 2	Y
Normal Operation	[INC-STATES-L/MVPCV5.0] = 3	[INC-STATES-L/MVPCV6.0] = 3	G
Shutdown	[INC-STATES-L/MVPCV5.0] = 4	[INC-STATES-L/MVPCV6.0] = 4	H
AWFCO Testing	[AWFCO TEST/SP.1] = 2	[AWFCO TEST/SP.1] = 3	T
Maintenance	[AWFCO TEST/SP.1] = 4	[AWFCO TEST/SP.1] = 5	M
Calibration	[AWFCO TEST/SP.1] = 6	[AWFCO TEST/SP.1] = 7	C

Average calculation and validation

Average	Based on	Readings Required	Comment
OMA	CV	1	Fixed block average
HRA	OMA	60	FIFO rolling average
10MRA	OMA	10	FIFO rolling average
12HRA	OMA	720	FIFO rolling average

Rolling average 'freeze' conditions[8]

Device	Average	Freeze Flags	Applies To
Device	10MRA / HRA	-	All components
Incinerators 1/2	12HRA	T	All components
Incinerators 1/2	HRA	T, H	Incinerator Temp. and VT Pressure Drop
Incinerators 1/2	HRA	T	All other components
WESP	HRA	S, H	WESP Secondary Power

[8] All averages will automatically 'freeze' if data is marked with one of the CEM Quality Flags that Invalidate Data (ex: Process Down, Error, Maintenance)

S700 Calibration

Comp.	Zero Actual	Span Actual	Zero Exp.	Span Expected	OOC[i]	Zero Drift Limit (%)	Span Drift Limit (%)
CO LO	Manual Tracking	Manual Tracking	0	User Input	2[ii]	2[iii]	3[iv]
CO HI	Manual Tracking	Manual Tracking	0	User Input	2	2	3
O2 LO	Manual Tracking	Manual Tracking	0	User Input	2	2	2[v]
O2 HI	Manual Tracking	Manual Tracking	0	User Input	2	2	2

Device Connection

Device	Serial Port	Interface	Baud Rate	Parity	Data Bits	Stop Bits	Flow Control
S700	COM4 (NPort 5230, P1)	RS232	9600	None	8	1	None
PLC	COM5 (NPort 5230, P2)	RS422	9600	None	8	1	None

Network and Remote Access Software

RAS	pcAnywhere 10.5
Login/Password	nexus / nexus
Phone number	(787) 8646762
Primary CEMView Login / Password	cvuser1 / cvuser
Backup CEMView Login / Password	cvuser / cvuser

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[i] **US EPA 40 CFR Part 63, § 63.8**

(7)(i) A CMS is out of control if—

(A) The zero (low-level), mid-level (if applicable), or high-level calibration drift (CD) exceeds two times the applicable CD specification in the applicable performance specification or in the relevant standard; or

(B) The CMS fails a performance test audit (e.g., cylinder gas audit), relative accuracy audit, relative accuracy test audit, or linearity test audit; or

(C) The COMS CD exceeds two times the limit in the applicable performance specification in the relevant standard.

(ii) When the CMS is out of control, the owner or operator of the affected source shall take the necessary corrective action and shall repeat all necessary tests which indicate that the system is out of control. The owner or operator shall take corrective action and conduct retesting until the performance requirements are below the applicable limits. The beginning of the **out-of-control** period is the hour the owner or operator conducts a performance check (e.g., calibration drift) that indicates an exceedance of the performance requirements established under this part. The end of the **out-of-control** period is the hour following the completion of corrective action and successful demonstration that the system is within the allowable limits. During the period the CMS is out of control, recorded data shall not be used in data averages and calculations, or to meet any data availability requirement established under this part.

[ii] Component will be “Out-of-Control” if the drift is greater then 2 times the allowable limit for any single calibration.

[iii] **US EPA 40 CFR Part 63, Appendix to Subpart EEE**.

4. CD and ZD Assessment and Daily System Audit

4.1. *CD and ZD Requirement.* Owners and operators must check, record, and quantify the ZD and the CD at least once daily (approximately 24 hours) in accordance with the method prescribed by the manufacturer. The CEMS calibration must, at a minimum, be adjusted whenever the daily ZD or CD exceeds the limits in the Performance Specifications. If, on any given ZD and/or CD check the ZD and/or CD exceed(s) two times the limits in the Performance Specifications, or if the cumulative adjustment to the ZD and/or CD (see Section 4.2) exceed(s) three times the limits in the Performance Specifications, hazardous waste burning must immediately cease and the CEMS must be serviced and recalibrated. Hazardous waste burning cannot resume until the owner or operator documents that the CEMS is in compliance with the Performance Specifications by carrying out an ACA.

[iv] **US EPA 40 CFR Part 60 PS 4 4.2.** Calibration Drift. For O_2, same as specified in PS 3. For CO, the same as specified in PS 4A except that the CEMS calibration must not drift from the reference value of the calibration standard by more than 3 percent of the span value on either the high or low range..

[v] **US EPA 40 CFR Part 60 PS 3 13.1**. Calibration Drift Performance Specification. The CEMS calibration must not drift by more than 0.5 percent O_2 or CO_2 from the reference value of the gas, gas cell, or optical filter.

CEMVIEW SERVER CALCULATED CHANNELS OPC SERVER CONFIGURATION

INCINERATOR #1

CUT-OFF

Data Channels.opcProvox.CutoffTr1
Description: Incinerator 1 AWFCO
Channel status: Digital, Active
Calc. Formula: [<opcProvox.CutoffTr1MACT>] = 1 OR [<opcProvox.CutoffTr1RCRA>] = 1

MACT

Data Channels.opcProvox.CutoffTr1MACT
Description: AWFCO HWC MACT Incinerator 1
Channel status: Analog, Active, Always solve
Calc. Formula: IF([<Trane1.AWFCO HWC MACT.ChlorineRate>] OR [<Trane1.AWFCO HWC MACT.OrganicRate>] OR [<Trane1.AWFCO HWC MACT.AqueousRate>] OR [<Trane1.AWFCO HWC MACT.AshRate>] OR [<Trane1.AWFCO HWC MACT.MercuryRate>] OR [<Trane1.AWFCO HWC MACT.LeadRate>] OR [<Trane1.AWFCO HWC MACT.CadmiumRate>] OR [<Trane1.AWFCO HWC MACT.BerylliumRate>] OR [<Trane1.AWFCO HWC MACT.ArsenicRate>] OR [<Trane1.AWFCO HWC MACT.ChromiumRate>] OR [<Trane1.AWFCO HWC MACT.IncTemp>] OR [<Trane1.AWFCO HWC MACT.AFTotalRate>] OR [<Trane1.AWFCO HWC MACT.AqueousPrs>] OR [<Trane1.AWFCO HWC MACT.OrganicPrs>] OR [<Trane1.AWFCO HWC MACT.QTBlowdown_pH>] OR [<Trane1.AWFCO HWC MACT.HeatInput>] OR [<Trane1.AWFCO HWC MACT.QTBlowdownFlow>] OR [<Trane1.AWFCO HWC MACT.QTLevel>] OR [<Trane1.AWFCO HWC MACT.VTPressureDrop>] OR [<Trane1.AWFCO HWC MACT.VTWaterFlow>] OR [<Trane1.AWFCO HWC MACT.VTBlowdownFlow>] OR [<WESP.AWFCO HWC MACT.SecondaryPower>] OR [<S700.AWFCO HWC MACT.COCorr>] OR [<S700.AWFCO HWC MACT.COInst>], 1, 0)
Processing: Value range: 0, 100
High alarm: Value: 1, Severity: 0
Alarm settings: User must acknowledge
Write Through: PROVOX_OPC.RCRA-SSOFF-1/MVPCV6.0

RCRA

Data Channels.opcProvox.CutoffTr1RCRA
Description: AWFCO RCRA Incinerator 1
Channel status: Analog, Active, Always solve
Calc. Formula: IF([<Trane1.AWFCO RCRA.OChlorineRate>] OR [<Trane1.AWFCO RCRA.OrganicRate>] OR [<Trane1.AWFCO RCRA.AqueousRate>] OR [<Trane1.AWFCO RCRA.KeroseneRate>] OR [<Trane1.AWFCO RCRA.AshRate>] OR [<Trane1.AWFCO RCRA.IncTemp>] OR [<Trane1.AWFCO RCRA.AFTotalRate>] OR [<Trane1.AWFCO RCRA.AqueousPrs>] OR [<Trane1.AWFCO RCRA.OrganicPrs>] OR [<Trane1.AWFCO RCRA.HeatInput>] OR [<Trane1.AWFCO RCRA.QTBlowdown_pH>] OR [<Trane1.AWFCO RCRA.QTLevel>] OR [<Trane1.AWFCO RCRA.QTBlowdownFlow>] OR [<Trane1.AWFCO RCRA.QTExitTemp>] OR [<Trane1.AWFCO RCRA.VTPressureDrop>] OR [<Trane1.AWFCO RCRA.VTWaterFlow>] OR [<Trane1.AWFCO RCRA.VTWater_pH>] OR [<Trane1.AWFCO RCRA.VTBlowdownFlow>] OR [<WESP.AWFCO RCRA.SecondaryPower>] OR [<WESP.AWFCO RCRA.SecondaryVoltage>]OR [<WESP.AWFCO RCRA.SecondaryCurrent>] OR

[<S700.AWFCO RCRA.CO_cq>] OR [<S700.AWFCO RCRA.COCorr_cq>] OR [<S700.AWFCO RCRA.COCorrAvg10>] OR [<S700.AWFCO RCRA.COCorrAvg60>] OR [<opcProvox.ProvoxDown>], 1, 0)

Processing: Value range: 0, 100
High alarm: Value: 1, Severity: 0
Alarm settings: User must acknowledge
Write Through: PROVOX_OPC.RCRA-SSOFF-1/MVPCV5.0

LIMITS

Data Channels.opcProvox.LimitsTr1ok
Description: All AWFCO limits ok for incinerator 1
Channel status: Digital, Active
Calc. Formula: IF([<Trane1.AWFCO HWC MACT LIMITS.ChlorineRate>] OR [<Trane1.AWFCO HWC MACT LIMITS.OrganicRate>] OR [<Trane1.AWFCO HWC MACT LIMITS.AqueousRate>] OR [<Trane1.AWFCO HWC MACT LIMITS.AshRate>] OR [<Trane1.AWFCO HWC MACT LIMITS.MercuryRate>] OR [<Trane1.AWFCO HWC MACT LIMITS.LeadRate>] OR [<Trane1.AWFCO HWC MACT LIMITS.CadmiumRate>] OR [<Trane1.AWFCO HWC MACT.BeryilliumRate>] OR [<Trane1.AWFCO HWC MACT LIMITS.ArsenicRate>] OR [<Trane1.AWFCO HWC MACT LIMITS.ChromiumRate>] OR [<Trane1.AWFCO HWC MACT LIMITS.IncTemp>] OR [<Trane1.AWFCO HWC MACT LIMITS.AFTotalRate>] OR [<Trane1.AWFCO HWC MACT LIMITS.AqueousPrs>] OR [<Trane1.AWFCO HWC MACT LIMITS.OrganicPrs>] OR [<Trane1.AWFCO HWC MACT LIMITS.QTBlowdown_pH>] OR [<Trane1.AWFCO HWC MACT LIMITS.HeatInput>] OR [<Trane1.AWFCO HWC MACT LIMITS.QTBlowdownFlow>] OR [<Trane1.AWFCO HWC MACT LIMITS.QTLevel>] OR [<Trane1.AWFCO HWC MACT LIMITS.VTPressureDrop>] OR [<Trane1.AWFCO HWC MACT LIMITS.VTWaterFlow>] OR [<Trane1.AWFCO HWC MACT LIMITS.VTBlowdownFlow>] OR [<WESP.AWFCO HWC MACT LIMITS.SecondaryPower>] OR [<S700.AWFCO HWC MACT LIMITS.COCorr>] OR [<S700.AWFCO HWC MACT LIMITS.COInst>] OR [<Trane1.AWFCO RCRA LIMITS.OChlorineRate>] OR [<Trane1.AWFCO RCRA LIMITS.OrganicRate>] OR [<Trane1.AWFCO RCRA LIMITS.AqueousRate>] OR [<Trane1.AWFCO RCRA LIMITS.KeroseneRate>] OR [<Trane1.AWFCO RCRA LIMITS.AshRate>] OR [<Trane1.AWFCO RCRA LIMITS.IncTemp>] OR [<Trane1.AWFCO RCRA LIMITS.AFTotalRate>] OR [<Trane1.AWFCO RCRA LIMITS.AqueousPrs>] OR [<Trane1.AWFCO RCRA LIMITS.OrganicPrs>] OR [<Trane1.AWFCO RCRA LIMITS.HeatInput>] OR [<Trane1.AWFCO RCRA LIMITS.QTBlowdown_pH>] OR [<Trane1.AWFCO RCRA LIMITS.QTLevel>] OR [<Trane1.AWFCO RCRA LIMITS.QTBlowdownFlow>] OR [<Trane1.AWFCO RCRA LIMITS.QTExitTemp>] OR [<Trane1.AWFCO RCRA LIMITS.VTPressureDrop>] OR [<Trane1.AWFCO RCRA LIMITS.VTWaterFlow>] OR [<Trane1.AWFCO RCRA LIMITS.VTWater_pH>] OR [<Trane1.AWFCO RCRA LIMITS.VTBlowdownFlow>] OR [<WESP.AWFCO RCRA LIMITS.SecondaryPower>] OR [<WESP.AWFCO RCRA LIMITS.SecondaryVoltage>]OR [<WESP.AWFCO RCRA LIMITS.SecondaryCurrent>] OR [<S700.AWFCO RCRA LIMITS.CO_cq>] OR [<S700.AWFCO RCRA LIMITS.COCorr_cq>] OR [<S700.AWFCO RCRA LIMITS.COCorrAvg10>] OR [<S700.AWFCO RCRA LIMITS.COCorrAvg60>] OR [<opcProvox.ProvoxDown>], 0, 1)

INCINERATOR #2

CUT-OFF

Data Channels.opcProvox.CutoffTr2
Description: Incinerator 2 AWFCO
Channel status: Digital, Active
Calc. Formula: [<opcProvox.CutoffTr2MACT>] = 1 OR [<opcProvox.CutoffTr2RCRA>] = 1

MACT

Data Channels.opcProvox.CutoffTr2MACT
Description: AWFCO HWC MACT Incinerator 2
Channel status: Analog, Active, Always solve
Calc. Formula: IF([<Trane2.AWFCO HWC MACT.ChlorineRate>] OR [<Trane2.AWFCO HWC MACT.OrganicRate>] OR [<Trane2.AWFCO HWC MACT.AqueousRate>] OR [<Trane2.AWFCO HWC MACT.AshRate>] OR [<Trane2.AWFCO HWC MACT.MercuryRate>] OR [<Trane2.AWFCO HWC MACT.LeadRate>] OR [<Trane2.AWFCO HWC MACT.CadmiumRate>] OR [<Trane2.AWFCO HWC MACT.BerylliumRate>] OR [<Trane2.AWFCO HWC MACT.ArsenicRate>] OR [<Trane2.AWFCO HWC MACT.ChromiumRate>] OR [<Trane2.AWFCO HWC MACT.IncTemp>] OR [<Trane2.AWFCO HWC MACT.AFTotalRate>] OR [<Trane2.AWFCO HWC MACT.AqueousPrs>] OR [<Trane2.AWFCO HWC MACT.OrganicPrs>] OR [<Trane2.AWFCO HWC MACT.QTBlowdown_pH>] OR [<Trane2.AWFCO HWC MACT.HeatInput>] OR [<Trane2.AWFCO HWC MACT.QTBlowdownFlow>] OR [<Trane2.AWFCO HWC MACT.QTLevel>] OR [<Trane2.AWFCO HWC MACT.VTPressureDrop>] OR [<Trane2.AWFCO HWC MACT.VTWaterFlow>] OR [<Trane2.AWFCO HWC MACT.VTBlowdownFlow>] OR [<WESP.AWFCO HWC MACT.SecondaryPower>] OR [<S700.AWFCO HWC MACT.COCorr>] OR [<S700.AWFCO HWC MACT.COInst>], 1, 0)
Processing: Value range: 0, 100
High alarm: Value: 1, Severity: 0
Alarm settings: User must acknowledge
Write Through: PROVOX_OPC.RCRA-SSOFF-2/MVPCV6.0

RCRA

Data Channels.opcProvox.CutoffTr2RCRA
Description: AWFCO RCRA Incinerator 2
Channel status: Analog, Active, Always solve
Calc. Formula: IF([<Trane2.AWFCO RCRA.OChlorineRate>] OR [<Trane2.AWFCO RCRA.OrganicRate>] OR [<Trane2.AWFCO RCRA.AqueousRate>] OR [<Trane2.AWFCO RCRA.KeroseneRate>] OR [<Trane2.AWFCO RCRA.AshRate>] OR [<Trane2.AWFCO RCRA.IncTemp>] OR [<Trane2.AWFCO RCRA.AFTotalRate>] OR [<Trane2.AWFCO RCRA.AqueousPrs>] OR [<Trane2.AWFCO RCRA.OrganicPrs>] OR [<Trane2.AWFCO RCRA.HeatInput>] OR [<Trane2.AWFCO RCRA.QTBlowdown_pH>] OR [<Trane2.AWFCO RCRA.QTLevel>] OR [<Trane2.AWFCO RCRA.QTBlowdownFlow>] OR [<Trane2.AWFCO RCRA.QTExitTemp>] OR [<Trane2.AWFCO RCRA.VTPressureDrop>] OR [<Trane2.AWFCO RCRA.VTWaterFlow>] OR [<Trane2.AWFCO RCRA.VTWater_pH>] OR [<Trane2.AWFCO RCRA.VTBlowdownFlow>] OR [<WESP.AWFCO RCRA.SecondaryPower>] OR [<WESP.AWFCO RCRA.SecondaryVoltage>] OR [<WESP.AWFCO RCRA.SecondaryCurrent>] OR [<S700.AWFCO RCRA.CO_cq>] OR [<S700.AWFCO RCRA.COCorr_cq>] OR [<S700.AWFCO RCRA.COCorrAvg10>] OR [<S700.AWFCO RCRA.COCorrAvg60>] OR [<opcProvox.ProvoxDown>], 1, 0)
Processing: Value range: 0, 100
High alarm: Value: 1, Severity: 0
Alarm settings: User must acknowledge
Write Through: PROVOX_OPC.RCRA-SSOFF-2/MVPCV5.0

LIMITS

Data Channels.opcProvox.LimitsTr2ok

Description: All AWFCO limits ok for Incinerator 2

Channel status: Digital, Active

Calc. Formula: IF([<Trane2.AWFCO HWC MACT LIMITS.ChlorineRate>] OR [<Trane2.AWFCO HWC MACT LIMITS.OrganicRate>] OR [<Trane2.AWFCO HWC MACT LIMITS.AqueousRate>] OR [<Trane2.AWFCO HWC MACT LIMITS.AshRate>] OR [<Trane2.AWFCO HWC MACT LIMITS.MercuryRate>] OR [<Trane2.AWFCO HWC MACT LIMITS.LeadRate>] OR [<Trane2.AWFCO HWC MACT LIMITS.CadmiumRate>] OR [<Trane2.AWFCO HWC MACT.BeryllliumRate>] OR [<Trane2.AWFCO HWC MACT LIMITS.ArsenicRate>] OR [<Trane2.AWFCO HWC MACT LIMITS.ChromiumRate>] OR [<Trane2.AWFCO HWC MACT LIMITS.IncTemp>] OR [<Trane2.AWFCO HWC MACT LIMITS.AFTotalRate>] OR [<Trane2.AWFCO HWC MACT LIMITS.AqueousPrs>] OR [<Trane2.AWFCO HWC MACT LIMITS.OrganicPrs>] OR [<Trane2.AWFCO HWC MACT LIMITS.QTBlowdown_pH>] OR [<Trane2.AWFCO HWC MACT LIMITS.HeatInput>] OR [<Trane2.AWFCO HWC MACT LIMITS.QTBlowdownFlow>] OR [<Trane2.AWFCO HWC MACT LIMITS.QTLevel>] OR [<Trane2.AWFCO HWC MACT LIMITS.VTPressureDrop>] OR [<Trane2.AWFCO HWC MACT LIMITS.VTWaterFlow>] OR [<Trane2.AWFCO HWC MACT LIMITS.VTBlowdownFlow>] OR [<WESP.AWFCO HWC MACT LIMITS.SecondaryPower>] OR [<S700.AWFCO HWC MACT LIMITS.COCorr>] OR [<S700.AWFCO HWC MACT LIMITS.COInst>] OR [<Trane2.AWFCO RCRA LIMITS.OChlorineRate>] OR [<Trane2.AWFCO RCRA LIMITS.OrganicRate>] OR [<Trane2.AWFCO RCRA LIMITS.AqueousRate>] OR [<Trane2.AWFCO RCRA LIMITS.KeroseneRate>] OR [<Trane2.AWFCO RCRA LIMITS.AshRate>] OR [<Trane2.AWFCO RCRA LIMITS.IncTemp>] OR [<Trane2.AWFCO RCRA LIMITS.AFTotalRate>] OR [<Trane2.AWFCO RCRA LIMITS.AqueousPrs>] OR [<Trane2.AWFCO RCRA LIMITS.OrganicPrs>] OR [<Trane2.AWFCO RCRA LIMITS.HeatInput>] OR [<Trane2.AWFCO RCRA LIMITS.QTBlowdown_pH>] OR [<Trane2.AWFCO RCRA LIMITS.QTLevel>] OR [<Trane2.AWFCO RCRA LIMITS.QTBlowdownFlow>] OR [<Trane2.AWFCO RCRA LIMITS.QTExitTemp>] OR [<Trane2.AWFCO RCRA LIMITS.VTPressureDrop>] OR [<Trane2.AWFCO RCRA LIMITS.VTWaterFlow>] OR [<Trane2.AWFCO RCRA LIMITS.VTWater_pH>] OR [<Trane2.AWFCO RCRA LIMITS.VTBlowdownFlow>] OR [<WESP.AWFCO RCRA LIMITS.SecondaryPower>] OR [<WESP.AWFCO RCRA LIMITS.SecondaryVoltage>]OR [<WESP.AWFCO RCRA LIMITS.SecondaryCurrent>] OR [<S700.AWFCO RCRA LIMITS.CO_cq>] OR [<S700.AWFCO RCRA LIMITS.COCorr_cq>] OR [<S700.AWFCO RCRA LIMITS.COCorrAvg10>] OR [<S700.AWFCO RCRA LIMITS.COCorrAvg60>] OR [<opcProvox.ProvoxDown>], 0, 1)

DAS

Data Channels.opcProvox.DASFeedback
Channel status: Analog, Active
Initial Value: 0
Calc. Formula: [PROVOX_OPC.DASHEARTBT-L/MVPCV6.0]
Processing: Value range: 0, 100

Data Channels.opcProvox.DASHeartbeat
Channel status: Analog, Active, Always solve
Calc. Formula: [PROVOX_OPC.DASHEARTBT-L/MVPCV5.0]
Processing: Value range: 0, 100

Data Channels.opcProvox.HeartbeatAbort
Description: Abort Provox Heartbeat Script
Channel status: Digital, Active, Writable, Memory only, Always solve, Persistent memory
Initial Value: On

PASS SERVER DOWN

Data Channels.opcProvox.PASServerDown
Description: PASServer Communication
Channel status: Digital, Active
Calc. Formula: NOT(QUALITY_GOOD([<opcProvox.DASHeartbeat>]))
Alarm on High: Message: No comm. between Provox OPC Server and PASServer, Severity: 0
Alarm settings: User must acknowledge

PROVOX DOWN

Data Channels.opcProvox.ProvoxDown
Description: Communication loss with Provox OPC Server
Channel status: Digital, Active
Calc. Formula: [<opcProvox.DASFeedback>] >= 10
Alarm on High: Severity: 0
Alarm settings: User must acknowledge

PROVOX OK

Data Channels.opcProvox.ProvoxOK
Description: Provox OPC Server Communication
Channel status: Digital, Active
Calc. Formula: NOT([<opcProvox.ProvoxDown>]) AND NOT([<opcProvox.PASServerDown>])
Alarm on Low: Message: Communication Failure, Severity: 0
Alarm settings: Acknowledgement not required

CEMVIEW SERVER CALCULATED CHANNELS PLC CONFIGURATION

ANALOG INPUTS

Data Channels.PLC.Analog Inputs.AI01
Channel status: Analog, Active
Calc. Formula: [Analog Inputs.AI01]
Processing: Value range: 0, 100

Data Channels.PLC.Analog Inputs.AI02
Channel status: Analog, Active
Calc. Formula: [Analog Inputs.AI02]
Processing: Value range: 0, 100

Data Channels.PLC.Analog Inputs.AI03
Channel status: Analog, Active
Calc. Formula: [Analog Inputs.AI03]
Processing: Value range: 0, 100

Data Channels.PLC.Analog Inputs.AI04
Channel status: Analog, Active
Calc. Formula: [Analog Inputs.AI04]
Processing: Value range: 0, 100

Data Channels.PLC.Analog Inputs.AI05
Channel status: Analog, Active
Calc. Formula: [Analog Inputs.AI05]
Processing: Value range: 0, 100

Data Channels.PLC.Analog Inputs.AI06
Channel status: Analog, Active
Calc. Formula: [Analog Inputs.AI06]
Processing: Value range: 0, 100

Data Channels.PLC.Analog Inputs.AI07
Channel status: Analog, Active
Calc. Formula: [Analog Inputs.AI07]
Processing: Value range: 0, 100

Data Channels.PLC.Analog Inputs.AI08
Channel status: Analog, Active
Calc. Formula: [Analog Inputs.AI08]
Processing: Value range: 0, 100

ANALOG OUTPUTS

Data Channels.PLC.Analog Outputs.AO01
Channel status: Analog, Active
Calc. Formula: [Analog Outputs.AO01]
Processing: Value range: 0, 100

Data Channels.PLC.Analog Outputs.AO02
Channel status: Analog, Active
Calc. Formula: [Analog Outputs.AO02]
Processing: Value range: 0, 100

Data Channels.PLC.Analog Outputs.AO03
Channel status: Analog, Active
Calc. Formula: [Analog Outputs.AO03]
Processing: Value range: 0, 100

Data Channels.PLC.Analog Outputs.AO04
Channel status: Analog, Active
Calc. Formula: [Analog Outputs.AO04]
Processing: Value range: 0, 100

CONTROL

Data Channels.PLC.Control.ContV_ON
Description: Turn ON Control Valve
Channel status: Digital, Active, Writable
Initial Value: On
Calc. Formula: TUP(LAST_VALUE())

Data Channels.PLC.Control.ContV_OFF
Description: Turn OFF Control Valve
Channel status: Digital, Active, Writable
Initial Value: On
Calc. Formula: TUP(LAST_VALUE())

Data Channels.PLC.Control.MaxONTimeV
Description: Maximum ON Time for Gas Valves
Eng. Units: sec
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 300
Processing: Value range: 0, 100

Data Channels.PLC.Control.MaxONTimeC
Description: Maximum ON time for Control Valve
Eng. Units: sec
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 420
Processing: Value range: 0, 100

Data Channels.PLC.Control.ContV_Timeout
Description: Control Valve Timeout
Channel status: Digital, Active
Calc. Formula: TON([Digital Outputs.DO01], [<PLC.Control.MaxONTimeC>])

Data Channels.PLC.Control.ZeroV_ON
Description: Turn ON Zero Gas Valve
Channel status: Digital, Active, Writable
Initial Value: On
Calc. Formula: TUP(LAST_VALUE())

Data Channels.PLC.Control.ZeroV_OFF
Description: Turn OFF Zero Gas Valve
Channel status: Digital, Active, Writable
Initial Value: On
Calc. Formula: TUP(LAST_VALUE())

Data Channels.PLC.Control.ZeroV_Timeout
Description: Zero Gas Valve Timeout
Channel status: Digital, Active
Calc. Formula: TON([Digital Outputs.DO02], [<PLC.Control.MaxONTimeV>])

Data Channels.PLC.Control.WD
Description: Watchdog Feedback
Channel status: Analog, Active, Always solve
Calc. Formula: [Control.WDNew]
Processing: Value range: 0, 100
Write Through: SMB_OPC.PLC.Control.WDFeedback

Data Channels.PLC.Control.HiRange_ON
Description: Turn ON Hi Range Span Valve
Channel status: Digital, Active, Writable
Initial Value: On
Calc. Formula: TUP(LAST_VALUE())

Data Channels.PLC.Control.HiRange_OFF
Description: Turn OFF Hi Range Span Valve
Channel status: Digital, Active, Writable
Initial Value: On
Calc. Formula: TUP(LAST_VALUE())

Data Channels.PLC.Control.HiRange_Timeout
Description: Hi Range Span Valve Timeout
Channel status: Digital, Active
Calc. Formula: TON([Digital Outputs.DO04], [<PLC.Control.MaxONTimeV>])

Data Channels.PLC.Control.LoRange_ON
Description: Turn ON Lo Range Span Valve
Channel status: Digital, Active, Writable
Initial Value: On
Calc. Formula: TUP(LAST_VALUE())

Data Channels.PLC.Control.LoRange_OFF
Description: Turn OFF Lo Range Span Valve
Channel status: Digital, Active, Writable
Initial Value: On
Calc. Formula: TUP(LAST_VALUE())

Data Channels.PLC.Control.LoRange_Timeout
Description: Lo Range Span Valve Timeout

Channel status: Digital, Active
Calc. Formula: TON([Digital Outputs.DO03], [<PLC.Control.MaxONTimeV>])

DIGITAL INPUTS

Data Channels.PLC.Digital Inputs.DI01
Description: Blowback
Channel status: Digital, Active
Calc. Formula: [Digital Inputs.DI01]

Data Channels.PLC.Digital Inputs.DI02
Description: Sample Cooler Error
Channel status: Digital, Active
Calc. Formula: [Digital Inputs.DI02]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.PLC.Digital Inputs.DI03
Channel status: Digital, Active
Calc. Formula: [Digital Inputs.DI03]

Data Channels.PLC.Digital Inputs.DI04
Channel status: Digital, Active
Calc. Formula: [Digital Inputs.DI04]

Data Channels.PLC.Digital Inputs.DI05
Channel status: Digital, Active
Calc. Formula: [Digital Inputs.DI05]

Data Channels.PLC.Digital Inputs.DI06
Channel status: Digital, Active
Calc. Formula: [Digital Inputs.DI06]

Data Channels.PLC.Digital Inputs.DI07
Channel status: Digital, Active
Calc. Formula: [Digital Inputs.DI07]

Data Channels.PLC.Digital Inputs.DI08
Channel status: Digital, Active
Calc. Formula: [Digital Inputs.DI08]

Data Channels.PLC.Digital Inputs.DI09
Description: Probe Temperature Alarm
Channel status: Digital, Active
Calc. Formula: [Digital Inputs.DI09]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.PLC.Digital Inputs.DI10
Channel status: Digital, Active
Calc. Formula: [Digital Inputs.DI10]

Data Channels.PLC.Digital Inputs.DI11
Channel status: Digital, Active

Calc. Formula: [Digital Inputs.DI11]

Data Channels.PLC.Digital Inputs.DI12
Channel status: Digital, Active
Calc. Formula: [Digital Inputs.DI12]

Data Channels.PLC.Digital Inputs.DI13
Channel status: Digital, Active
Calc. Formula: [Digital Inputs.DI13]

Data Channels.PLC.Digital Inputs.DI14
Channel status: Digital, Active
Calc. Formula: [Digital Inputs.DI14]

Data Channels.PLC.Digital Inputs.DI15
Channel status: Digital, Active
Calc. Formula: [Digital Inputs.DI15]

Data Channels.PLC.Digital Inputs.DI16
Channel status: Digital, Active
Calc. Formula: [Digital Inputs.DI16]

Data Channels.PLC.Digital Inputs.DI17
Channel status: Digital, Active
Calc. Formula: [Digital Inputs.DI17]

Data Channels.PLC.Digital Inputs.DI18
Channel status: Digital, Active
Calc. Formula: [Digital Inputs.DI18]

Data Channels.PLC.Digital Inputs.DI19
Channel status: Digital, Active
Calc. Formula: [Digital Inputs.DI19]

DIGITAL OUTPUTS

Data Channels.PLC.Digital Outputs.DO01
Channel status: Digital, Active, Always solve
Calc. Formula: RS([<PLC.Control.ContV_ON>] OR [<S700.Relays.Calibration>], [<PLC.Control.ContV_OFF>] OR [<PLC.Control.ContV_Timeout>] OR TDOWN([<S700.Relays.Calibration>]))
Write Through: [<S700.Calibration.Control.ControlValve>]

Data Channels.PLC.Digital Outputs.DO02
Description: Zero Gas Valve
Channel status: Digital, Active, Always solve
Calc. Formula: RS([<PLC.Control.ZeroV_ON>] OR [<S700.Calibration.Control.ZeroValve>], [<PLC.Control.ZeroV_OFF>] OR [<PLC.Control.ZeroV_Timeout>] OR TDOWN([<S700.Calibration.Control.ZeroValve>]))
Write Through: Digital Outputs.DO02

Data Channels.PLC.Digital Outputs.DO03
Description: Lo Range Span Gas Vavle
Channel status: Digital, Active, Always solve

Calc. Formula: RS([<PLC.Control.LoRange_ON>] OR [<S700.Calibration.Control.SpanValveLoRange>], [<PLC.Control.LoRange_OFF>] OR [<PLC.Control.LoRange_Timeout>] OR TDOWN([<S700.Calibration.Control.SpanValveLoRange>]))
Write Through: Digital Outputs.DO03

Data Channels.PLC.Digital Outputs.DO04
Description: Hi Range Span Gas Valve
Channel status: Digital, Active, Always solve
Calc. Formula: RS([<PLC.Control.HiRange_ON>] OR [<S700.Calibration.Control.SpanValveHiRange>], [<PLC.Control.HiRange_OFF>] OR [<PLC.Control.HiRange_Timeout>] OR TDOWN([<S700.Calibration.Control.SpanValveHiRange>]))
Write Through: Digital Outputs.DO04

Data Channels.PLC.Digital Outputs.DO05
Description: Sample Gas Valve
Channel status: Digital, Active, Always solve
Calc. Formula: [Digital Outputs.DO05]
Write Through: Digital Outputs.DO05

Data Channels.PLC.Digital Outputs.DO06
Description: Pump on/off
Channel status: Digital, Active, Always solve
Calc. Formula: [Digital Outputs.DO06]
Write Through: Digital Outputs.DO06

Data Channels.PLC.Digital Outputs.DO07
Description: External Sample Cooler Control
Channel status: Digital, Active
Calc. Formula: [Digital Outputs.DO07]

Data Channels.PLC.Digital Outputs.DO08
Channel status: Digital, Active
Calc. Formula: [Digital Outputs.DO08]

Data Channels.PLC.Digital Outputs.DO09
Channel status: Digital, Active
Calc. Formula: [Digital Outputs.DO09]

Data Channels.PLC.Digital Outputs.DO10
Channel status: Digital, Active
Calc. Formula: [Digital Outputs.DO10]

Data Channels.PLC.Digital Outputs.DO11
Channel status: Digital, Active
Calc. Formula: [Digital Outputs.DO11]

Data Channels.PLC.Digital Outputs.DO12
Channel status: Digital, Active
Calc. Formula: [Digital Outputs.DO12]

Data Channels.PLC.Digital Outputs.DO13
Description: S700 Control Valve
Channel status: Digital, Active
Calc. Formula: [Digital Outputs.DO13]

Data Channels.PLC.Digital Outputs.DO14

Channel status: Digital, Active
Calc. Formula: [Digital Outputs.DO14]

Data Channels.PLC.Digital Outputs.DO15
Channel status: Digital, Active
Calc. Formula: [Digital Outputs.DO15]

RELAYS

Data Channels.PLC.Relays.Error
Description: PLC Error/Malfunction
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: User must acknowledge

Data Channels.PLC.Relays.Process Down
Description: PLC Process Down
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.PLC.Relays.Communication
Description: PLC Communication loss
Channel status: Digital, Active
Calc. Formula: [Comm.Status]
Alarm on Low: Message: Communication Loss, Severity: 0
Alarm settings: User must acknowledge

Data Channels.PLC.Relays.AWFCO Testing
Description: PLC
Channel status: Digital, Active
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

CEM QUALITY

Data Channels.PLC.CEMQuality
Description: PLC CEM Data Quality
Channel status: Analog, Active, Memory only
Processing: Value range: 0, 100

CEMVIEW SERVER CALCULATED CHANNELS S700 CONFIGURATION

AWFCO HWC MACT

CO Corrected
Data Channels.S700.AWFCO HWC MACT.COCorr
Description: HWC MACT CO (corrected) maximum cutoff limit
Channel status: Digital, Active
Calc. Formula: [<S700.Relays.ReportMACT>] AND [<S700.AWFCO HWC MACT LIMITS.COCorr>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

CO Instantaneous > 3000
Data Channels.S700.AWFCO HWC MACT.COInst
Description: HWC MACT CO (uncorrected) is > 3000 for 30 sec.
Channel status: Digital, Active
Calc. Formula: [<S700.Relays.ReportMACT>] AND [<S700.AWFCO HWC MACT LIMITS.COInst>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

AWFCO HWC MACT LIMITS

CO Corrected
Data Channels.S700.AWFCO HWC MACT LIMITS.COCorr
Description: HWC MACT CO (corrected) cutoff limit
Channel status: Digital, Active
Calc. Formula: [<S700.Calculated Values.COCorr.Avg60>] >= 85

CO Instantaneous
Data Channels.S700.AWFCO HWC MACT LIMITS.COInst
Description: HWC MACT CO (uncorrected) is > 3000 for 30 sec.
Channel status: Digital, Active
Calc. Formula: TON([<S700.Calculated Values.COAbove3000>], 30)

AWFCO RCRA LIMITS

CO Corrected – 10 min averages
Data Channels.S700.AWFCO RCRA.COCorrAvg10
Description: AWFCO COCorr cutoff limit (10minRA)
Channel status: Digital, Active
Calc. Formula: [<S700.Relays.ReportRCRA>] AND [<S700.AWFCO RCRA LIMITS.COCorrAvg10>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

CO Corrected – 60 min Average
Data Channels.S700.AWFCO RCRA.COCorrAvg60
Description: AWFCO COCorr cutoff limit (HRA)
Channel status: Digital, Active
Calc. Formula: [<S700.Relays.ReportRCRA>] AND [<S700.AWFCO RCRA LIMITS.COCorrAvg60>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

CO (UNCORRECTED) bad data cut-off

Data Channels.S700.AWFCO RCRA.CO_cq
Description: AWFCO CO (uncorrected) bad data cutoff
Channel status: Digital, Active
Calc. Formula: [<S700.Relays.ReportRCRA>] AND [<S700.AWFCO RCRA LIMITS.CO_cq>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

CO (CORRECTED) bad data cut-off

Data Channels.S700.AWFCO RCRA.COCorr_cq
Description: AWFCO CO (corrected) bad data cutoff
Channel status: Digital, Active
Calc. Formula: [<S700.Relays.ReportRCRA>] AND [<S700.AWFCO RCRA LIMITS.COCorr_cq>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

AWFCO RCRA LIMITS

CO

Data Channels.S700.AWFCO RCRA LIMITS.CO_cq
Description: AWFCO CO (uncorrected) bad data cutoff
Channel status: Digital, Active
Calc. Formula: NOT(IF_CQSET([*S700.Calculated Values.CO*], 'BPC')) AND (IF_CQSET([*S700.Calculated Values.CO*], 'RLOE') OR NOT(QUALITY_GOOD([*S700.Calculated Values.CO*])))

CO Corrected

Data Channels.S700.AWFCO RCRA LIMITS.COCorr_cq
Description: AWFCO CO (corrected) bad data cutoff
Channel status: Digital, Active
Calc. Formula: NOT(IF_CQSET([*S700.Calculated Values.COCorr*], 'BPC')) AND (IF_CQSET([*S700.Calculated Values.COCorr*], 'RLOE') OR NOT(QUALITY_GOOD([*S700.Calculated Values.COCorr*])))

CO Corrected Average – 10 minutes

Data Channels.S700.AWFCO RCRA LIMITS.COCorrAvg10
Description: AWFCO COCorr cutoff limit (10minRA)
Channel status: Digital, Active
Calc. Formula: [<S700.Calculated Values.COCorr.Avg10>] >= 500

CO Corrected Average – 60 minutes

Data Channels.S700.AWFCO RCRA LIMITS.COCorrAvg60
Description: AWFCO COCorr cutoff limit (HRA)
Channel status: Digital, Active
Calc. Formula: [<S700.Calculated Values.COCorr.Avg60>] >= 100

CALCULATED VALUES CO

CO Uncorrected

Data Channels.S700.Calculated Values.CO
Description: CO uncorrected
Eng. Units: ppm
Channel status: Analog, Active, Logged temporary
Calc. Formula: IF([Flags.F033], [*S700.CO_lo*], [*S700.CO_hi*])
Processing: Value range: 0, 3000

CO – 1 min average

Data Channels.S700.Calculated Values.CO.Avg01
Description: CO uncorrected (OMA)
Eng. Units: ppm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.S700.Calculated Values.CO
Processing: Value range: 0, 3000
High alarm: Value: 2400, Severity: 0
High High alarm: Value: 3000, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 3000, Low - 0, Severity: 0

CO – 60 min average

Data Channels.S700.Calculated Values.CO.Avg60
Description: CO uncorrected (HRA)
Eng. Units: ppm
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.S700.Calculated Values.CO.Avg01
Processing: Value range: 0, 3000

CO – 3000

Data Channels.S700.Calculated Values.COAbove3000
Description: Uncorrected CO is above 3000 ppm
Channel status: Digital, Active
Calc. Formula: [*S700.Calculated Values.CO*] >= 3000

CO Uncorrected

CO – 1 min average

Data Channels.S700.Calculated Values.CO Corrected.Avg01
Display Name: CO Corrected.Avg01
Description: CO corrected (7%) (OMA)
Eng. Units: ppm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.S700.Calculated Values.COCorr
Processing: Value range: 0, 3000

CO –10 min average

Data Channels.S700.Calculated Values.CO Corrected.Avg10

Display Name: CO Corrected.Avg10
Description: CO corrected (7%) (10minRA)
Eng. Units: ppm
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 10
Shortcut: Data Channels.S700.Calculated Values.COCorr.Avg01
Processing: Value range: 0, 3000
High alarm: Value: 400, Severity: 0
High High alarm: Value: 500, Severity: 0
Alarm settings: Acknowledgement not required
Write Through: PROVOX_OPC.CO-AVG-1/MVPCV1.0

CO – 60 min average

Data Channels.S700.Calculated Values.CO Corrected.Avg60
Display Name: CO Corrected.Avg60
Description: CO corrected (7%) (HRA)
Eng. Units: ppm
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.S700.Calculated Values.COCorr.Avg01
Processing: Value range: 0, 3000
High alarm: Value: 80, Severity: 0
High High alarm: Value: 100, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 100, Low - 0, Severity: 0
Write Through: PROVOX_OPC.CO-AVG-1/MVPCV2.0

O2

Data Channels.S700.Calculated Values.O2
Description: Oxygen
Eng. Units: %
Channel status: Analog, Active, Logged temporary
Calc. Formula: IF([Flags.F034], [*S700.O2_lo*], [*S700.O2_hi*])
Processing: Value range: 0, 25

O2 – 1 min average

Data Channels.S700.Calculated Values.O2.Avg01
Eng. Units: %
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.S700.Calculated Values.O2
Processing: Value range: 0, 25

O2 – 60 min average

Data Channels.S700.Calculated Values.O2.Avg60
Description: Oxygen (HRA)
Eng. Units: %
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.S700.Calculated Values.O2.Avg01
Processing: Value range: 0, 25

CALIBRATION CONTROL

Data Channels.S700.Calibration.Control.DoCal
Description: Calibration Start Trigger
Channel status: Digital, Active, Writable, Memory only
Initial Value: On

Data Channels.S700.Calibration.Control.ZGPurgeDone
Description: Zero Gas Purge Done
Channel status: Digital, Active
Calc. Formula: TON(([<S700.Calibration.Control.ZeroValve>]), [<S700.Calibration.Control.TimeZeroPurge>])
OR [<S700.Calibration.Control.AbortCal>]

Data Channels.S700.Calibration.Control.AbortCal
Description: User Abort Cal
Channel status: Digital, Active, Writable
Initial Value: On
Calc. Formula: TUP(LAST_VALUE())

Data Channels.S700.Calibration.Control.ZGAvgDone
Description: Zero Gas Averaging Done
Channel status: Digital, Active
Calc. Formula: TON((([<S700.Calibration.Control.ZeroValve>]) AND
[<S700.Calibration.Control.ZGPurgeDone>]), [<S700.Calibration.Control.TimeZeroCycle>])
AND NOT([<S700.Calibration.Control.AbortCal>])

Data Channels.S700.Calibration.Control.SGPurgeDone
Description: Span Gas Purge Done
Channel status: Digital, Active
Calc. Formula: TON(([<S700.Calibration.Control.SpanValveHiRange>] OR
[<S700.Calibration.Control.SpanValveLoRange>]),
[<S700.Calibration.Control.TimeSpanPurge>]) OR [<S700.Calibration.Control.AbortCal>]

Data Channels.S700.Calibration.Control.SGAvgDone
Description: Span Gas Averaging Done
Channel status: Digital, Active
Calc. Formula: TON((([<S700.Calibration.Control.SpanValveHiRange>] OR
[<S700.Calibration.Control.SpanValveLoRange>]) AND
[<S700.Calibration.Control.SGPurgeDone>]), [<S700.Calibration.Control.TimeSpanCycle>])
AND NOT([<S700.Calibration.Control.AbortCal>])

Data Channels.S700.Calibration.Control.CycleDone
Description: Cycle Done
Channel status: Digital, Active, Always solve
Calc. Formula: [<S700.Calibration.Control.AbortCal>] OR [<S700.Calibration.Control.ZGAvgDone>] OR
[<S700.Calibration.Control.SGAvgDone>] OR [<S700.Calibration.Control.PremeasureDone>]

Data Channels.S700.Calibration.Control.PremeasureDone
Description: Premasure Done
Channel status: Digital, Active, Always solve
Calc. Formula: TON([<S700.Relays.Premeasure>], [<S700.Calibration.Control.TimePremeasure>])

Data Channels.S700.Calibration.Control.TimeZeroPurge
Description: Zero Purge Time
Eng. Units: sec

Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 60
Processing: Value range: 0, 100

Data Channels.S700.Calibration.Control.TimeZeroCycle
Description: Zero Cycle Time
Eng. Units: sec
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 60
Processing: Value range: 0, 100

Data Channels.S700.Calibration.Control.TimeSpanPurge
Description: Span Purge Time
Eng. Units: sec
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 60
Processing: Value range: 0, 100

Data Channels.S700.Calibration.Control.TimeSpanCycle
Description: Span Cycle Time
Eng. Units: sec
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 60
Processing: Value range: 0, 100

Data Channels.S700.Calibration.Control.TimePremeasure
Description: Premeasure Time
Eng. Units: sec
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 60
Processing: Value range: 0, 100

Data Channels.S700.Calibration.Control.SpanValveHiRange
Description: Open Span Valve Hi Range
Channel status: Digital, Active
Calc. Formula: [<S700.Relays.Calibration>] AND [<S700.Calibration.Control.DoSpanHiRange>] AND NOT([<S700.Calibration.Control.AbortCal>])

Data Channels.S700.Calibration.Control.SpanValveLoRange
Description: Open Span Valve Lo Range
Channel status: Digital, Active
Calc. Formula: [<S700.Relays.Calibration>] AND [<S700.Calibration.Control.DoSpanLoRange>] AND NOT([<S700.Calibration.Control.AbortCal>])

Data Channels.S700.Calibration.Control.DoSpanHiRange
Description: Start Span Hi Range
Channel status: Digital, Active, Writable, Memory only
Initial Value: On

Data Channels.S700.Calibration.Control.DoSpanLoRange
Description: Start Span Lo Range
Channel status: Digital, Active, Writable, Memory only
Initial Value: On

Data Channels.S700.Calibration.Control.ZeroValve
Description: Open Zero Valve

Channel status: Digital, Active
Calc. Formula: [<S700.Relays.Calibration>] AND [<S700.Calibration.Control.DoZero>] AND NOT([<S700.Calibration.Control.AbortCal>])

Data Channels.S700.Calibration.Control.ControlValve
Description: Control Valve Open/Close
Channel status: Digital, Active, Writable, Memory only
Initial Value: On
Write Through: SMB_OPC.PLC.Digital Outputs.DO13

Data Channels.S700.Calibration.Control.DoZero
Description: Open Zero Valve
Channel status: Digital, Active, Writable, Memory only
Initial Value: On

DIGITAL FLAGS

Data Channels.S700.Digital Flags.F001
Description: S700 Maintenance active
Channel status: Digital, Active
Calc. Formula: [Flags.F001]

Data Channels.S700.Digital Flags.F002
Description: Temperature controller 1 is heating up
Channel status: Digital, Active
Calc. Formula: [Flags.F002]

Data Channels.S700.Digital Flags.F003
Description: Temperature controller 1 is out of the nominal range
Channel status: Digital, Active
Calc. Formula: [Flags.F003]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F005
Description: Temperature controller 2 is out of the nominal range
Channel status: Digital, Active
Calc. Formula: [Flags.F005]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F006
Description: Temperature controller 3 is heating up
Channel status: Digital, Active
Calc. Formula: [Flags.F006]

Data Channels.S700.Digital Flags.F007
Description: Temperature controller 3 is out of the nominal range
Channel status: Digital, Active
Calc. Formula: [Flags.F007]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F008
Description: Controller 4 is out of the nominal range

Channel status: Digital, Active
Calc. Formula: [Flags.F008]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F009
Description: Controller Out Of Window
Channel status: Digital, Active
Calc. Formula: [Flags.F009]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F010
Description: MULTOR filter wheel: index mark not found
Channel status: Digital, Active
Calc. Formula: [Flags.F010]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F011
Description: Alarm limit 1 indication is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F011]

Data Channels.S700.Digital Flags.F012
Description: Alarm limit 2 indication is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F012]

Data Channels.S700.Digital Flags.F013
Description: Alarm limit 3 indication is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F013]

Data Channels.S700.Digital Flags.F014
Description: Alarm limit 4 indication is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F014]

Data Channels.S700.Digital Flags.F015
Description: Signal for component 1 too high (ADC overflow)
Channel status: Digital, Active
Calc. Formula: [Flags.F015]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F016
Description: Signal for component 2 too high (ADC overflow)
Channel status: Digital, Active
Calc. Formula: [Flags.F016]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F020
Description: A/D converter (ADC) is not ready
Channel status: Digital, Active

Calc. Formula: [Flags.F020]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F021
Description: Measuring value compon. 1 > 120 % of end val.
Channel status: Digital, Active
Calc. Formula: [Flags.F021]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F022
Description: Meas.value compon. 2 > 120 % of end val.
Channel status: Digital, Active
Calc. Formula: [Flags.F022]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F028
Description: Control output zero gas 1 is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F028]
Write Through: SMB_OPC.PLC.Digital Outputs.DO02

Data Channels.S700.Digital Flags.F029
Description: Control output sample gas is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F029]

Data Channels.S700.Digital Flags.F030
Description: Control output test gas 3 is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F030]
Write Through: SMB_OPC.PLC.Digital Outputs.DO03

Data Channels.S700.Digital Flags.F031
Description: Control output test gas 4 is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F031]
Write Through: SMB_OPC.PLC.Digital Outputs.DO04

Data Channels.S700.Digital Flags.F032
Description: Control output test gas 5 is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F032]

Data Channels.S700.Digital Flags.F033
Description: CO low range is active
Channel status: Digital, Active
Calc. Formula: [Flags.F033]

Data Channels.S700.Digital Flags.F034
Description: O2 low range is active
Channel status: Digital, Active
Calc. Formula: [Flags.F034]

Data Channels.S700.Digital Flags.F037
Description: Control output external pump is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F037]

Data Channels.S700.Digital Flags.F058
Description: Pressure signal too great (ADC overflow)
Channel status: Digital, Active
Calc. Formula: [Flags.F058]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F059
Description: Condensate in sample gas path (int. sensor)
Channel status: Digital, Active
Calc. Formula: [Flags.F059]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F060
Description: Flow signal too great (ADC overflow)
Channel status: Digital, Active
Calc. Formula: [Flags.F060]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F061
Description: Flow < flow limit value (failure)
Channel status: Digital, Active
Calc. Formula: [Flags.F061]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F062
Description: Flow < flow limit value (fault)
Channel status: Digital, Active
Calc. Formula: [Flags.F062]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F063
Description: Control input test gas 3 fault is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F063]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F064
Description: Control input test gas 4 fault is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F064]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F065
Description: Control input test gas 5 fault is activated

Channel status: Digital, Active
Calc. Formula: [Flags.F065]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F066
Description: Control input zero gas 1 fault is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F066]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F067
Description: IR source malfunction
Channel status: Digital, Active
Calc. Formula: [Flags.F067]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F068
Description: Chopper wheel malfunction
Channel status: Digital, Active
Calc. Formula: [Flags.F068]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F074
Description: Internal power supply failure
Channel status: Digital, Active
Calc. Formula: [Flags.F074]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F075
Description: Control input failure 1 is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F075]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F076
Description: Control input failure 2 is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F076]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F077
Description: Control input fault 1 is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F077]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F078
Description: Control input fault 2 is activated

Channel status: Digital, Active
Calc. Formula: [Flags.F078]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F079
Description: Control input service 1 is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F079]

Data Channels.S700.Digital Flags.F080
Description: Control input service 1 is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F080]

Data Channels.S700.Digital Flags.F081
Description: FAULT status is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F081]

Data Channels.S700.Digital Flags.F082
Description: SERVICE status is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F082]

Data Channels.S700.Digital Flags.F083
Description: Control output zero gas 2 is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F083]

Data Channels.S700.Digital Flags.F084
Description: Control output test gas 4 is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F084]

Data Channels.S700.Digital Flags.F085
Description: Control input zero gas 2 fault is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F085]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F086
Description: Control input test gas 6 fault is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F086]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F089
Description: Sample point 1 is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F089]

Data Channels.S700.Digital Flags.F090
Description: Sample point 2 is activated

Channel status: Digital, Active
Calc. Formula: [Flags.F090]

Data Channels.S700.Digital Flags.F091
Description: Sample point 3 is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F091]

Data Channels.S700.Digital Flags.F092
Description: Sample point 4 is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F092]

Data Channels.S700.Digital Flags.F093
Description: Sample point 5 is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F093]

Data Channels.S700.Digital Flags.F094
Description: Sample point 6 is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F094]

Data Channels.S700.Digital Flags.F095
Description: Sample point 7 is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F095]

Data Channels.S700.Digital Flags.F096
Description: Sample point 8 is activated
Channel status: Digital, Active
Calc. Formula: [Flags.F096]

Data Channels.S700.Digital Flags.F097
Description: Measuring values belong to sample point 1
Channel status: Digital, Active
Calc. Formula: [Flags.F097]

Data Channels.S700.Digital Flags.F098
Description: Measuring values belong to sample point 2
Channel status: Digital, Active
Calc. Formula: [Flags.F098]

Data Channels.S700.Digital Flags.F099
Description: Measuring values belong to sample point 3
Channel status: Digital, Active
Calc. Formula: [Flags.F099]

Data Channels.S700.Digital Flags.F100
Description: Measuring values belong to sample point 4
Channel status: Digital, Active
Calc. Formula: [Flags.F100]

Data Channels.S700.Digital Flags.F101
Description: Measuring values belong to sample point 5
Channel status: Digital, Active

Calc. Formula: [Flags.F101]

Data Channels.S700.Digital Flags.F102
Description: Measuring values belong to sample point 6
Channel status: Digital, Active
Calc. Formula: [Flags.F102]

Data Channels.S700.Digital Flags.F103
Description: Measuring values belong to sample point 7
Channel status: Digital, Active
Calc. Formula: [Flags.F103]

Data Channels.S700.Digital Flags.F104
Description: Measuring values belong to sample point 8
Channel status: Digital, Active
Calc. Formula: [Flags.F104]

Data Channels.S700.Digital Flags.F105
Description: Analyser module 1 is out of order
Channel status: Digital, Active
Calc. Formula: [Flags.F105]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F106
Description: Analyser module 2 is out of order
Channel status: Digital, Active
Calc. Formula: [Flags.F106]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F107
Description: Analyser module 3 is out of order
Channel status: Digital, Active
Calc. Formula: [Flags.F107]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F108
Description: Analog input 1 is out of order
Channel status: Digital, Active
Calc. Formula: [Flags.F108]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F109
Description: Analog input 2 is out of order
Channel status: Digital, Active
Calc. Formula: [Flags.F109]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F110
Description: Analyser module 1 malfunction
Channel status: Digital, Active
Calc. Formula: [Flags.F110]

Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F111
Description: Analyser module 2 malfunction
Channel status: Digital, Active
Calc. Formula: [Flags.F111]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F112
Description: Analyser module 3 malfunction
Channel status: Digital, Active
Calc. Formula: [Flags.F112]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F113
Description: Analog input 1 malfunction
Channel status: Digital, Active
Calc. Formula: [Flags.F113]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F114
Description: Analog input 2 malfunction
Channel status: Digital, Active
Calc. Formula: [Flags.F114]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F120
Description: Signal of an. module 1 is to great (ADC overflow)
Channel status: Digital, Active
Calc. Formula: [Flags.F120]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F121
Description: Signal of an. module 2 is to great (ADC overflow)
Channel status: Digital, Active
Calc. Formula: [Flags.F121]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F122
Description: Signal of an. module 3 is to great (ADC overflow)
Channel status: Digital, Active
Calc. Formula: [Flags.F122]
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Digital Flags.F123
Description: Signal of an. module 4 is to great (ADC overflow)
Channel status: Digital, Active
Calc. Formula: [Flags.F123]

Description: S700 Span Cal Cycle
Channel status: Digital, Active
Calc. Formula: [<S700.Relays.Calibration>] AND [<S700.Calibration.Control.SGPurgeDone>] AND NOT([<S700.Calibration.Control.SGAvgDone>])

Data Channels.S700.Relays.OOC CO_lo
Description: CO Low Range Out-of-Control
Channel status: Digital, Active, Memory only
Alarm on High: Severity: 0
Alarm settings: User must acknowledge

Data Channels.S700.Relays.OOC O2_lo
Description: O2 Low Range Out-of-Control
Channel status: Digital, Active, Memory only
Alarm on High: Severity: 0
Alarm settings: User must acknowledge

Data Channels.S700.Relays.Communication
Description: S700 Communication Status
Channel status: Digital, Active
Calc. Formula: [Comm.Status]
Alarm on Low: Message: Communication Loss, Severity: 0
Alarm settings: User must acknowledge

Data Channels.S700.Relays.Blowback
Description: S700 Blowback
Channel status: Digital, Active
Calc. Formula: TOFF([*PLC.Digital Inputs.DI01*], 60)
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Relays.Premeasure
Description: S700 Premeasure
Channel status: Digital, Active, Writable, Memory only
Initial Value: On

Data Channels.S700.Relays.Calibration
Description: Calibration Check
Channel status: Digital, Active
Calc. Formula: RS(TUP([<S700.Calibration.Control.DoCal>]) AND NOT([SMB_OPC.PLC.Digital Outputs.DO13]), TUP([<S700.Relays.Premeasure>]) OR [<S700.Calibration.Control.AbortCal>] OR [<PLC.Control.ContV_Timeout>] OR TDOWN([<S700.Calibration.Control.DoCal>]))
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Relays.OOC CO_hi
Description: CO High Range Out-of-Control
Channel status: Digital, Active, Memory only
Alarm on High: Severity: 0
Alarm settings: User must acknowledge

Data Channels.S700.Relays.OOC O2_hi
Description: O2 High Range Out-of-Control
Channel status: Digital, Active, Memory only
Alarm on High: Severity: 0
Alarm settings: User must acknowledge

Data Channels.S700.Relays.Measure
Description: S700 Measuring
Channel status: Digital, Active, Always solve
Calc. Formula: NOT([*S700.Relays.Calibration*]) AND NOT([*S700.Relays.Maintenance*]) AND NOT([*S700.Relays.Premeasure*])

Data Channels.S700.Relays.LoRangeO2
Description: Use O2 low range
Channel status: Digital, Active
Calc. Formula: TON([Flags.F034], 20) AND NOT([*S700.Calibration.Control.DoSpanHiRange*])

Data Channels.S700.Relays.LoRangeCO
Description: Use CO low range
Channel status: Digital, Active
Calc. Formula: TON([Flags.F033], 20) AND NOT([*S700.Calibration.Control.DoSpanHiRange*])

Data Channels.S700.Relays.Startup
Description: S700
Channel status: Digital, Active
Calc. Formula: ([PROVOX_OPC.INC-STATES-L/MVPCV5.0] = 1 OR [PROVOX_OPC.INC-STATES-L/MVPCV6.0] = 1) AND NOT([PROVOX_OPC.INC-STATES-L/MVPCV5.0] = 2 OR [PROVOX_OPC.INC-STATES-L/MVPCV5.0] = 3 OR [PROVOX_OPC.INC-STATES-L/MVPCV6.0] = 2 OR [PROVOX_OPC.INC-STATES-L/MVPCV6.0] = 3)

Data Channels.S700.Relays.Shutdown
Description: S700
Channel status: Digital, Active
Calc. Formula: ([PROVOX_OPC.INC-STATES-L/MVPCV5.0] = 4 OR [PROVOX_OPC.INC-STATES-L/MVPCV6.0] = 4) AND NOT([PROVOX_OPC.INC-STATES-L/MVPCV5.0] = 3 OR [PROVOX_OPC.INC-STATES-L/MVPCV6.0] = 3)

Data Channels.S700.Relays.ReportEE
Description: Report Excess Emission
Channel status: Digital, Active
Calc. Formula: [*S700.Relays.Normal Operation*]

Data Channels.S700.Relays.ReportMACT
Description: Initiate HWC MACT AWFCO
Channel status: Digital, Active
Calc. Formula: [*S700.Relays.Normal Operation*]

Data Channels.S700.Relays.Normal Operation
Description: Normal Operation
Channel status: Digital, Active
Calc. Formula: [*Trane1.Relays.Normal Operation*] OR [*Trane2.Relays.Normal Operation*]

Data Channels.S700.Relays.Secondary Startup
Description: S700
Channel status: Digital, Active
Calc. Formula: ([PROVOX_OPC.INC-STATES-L/MVPCV5.0] = 2 OR [PROVOX_OPC.INC-STATES-L/MVPCV6.0] = 2) AND NOT([PROVOX_OPC.INC-STATES-L/MVPCV5.0] = 3 OR [PROVOX_OPC.INC-STATES-L/MVPCV6.0] = 3)
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.S700.Relays.ReportRCRA
Description: Initiate RCRA AWFCO
Channel status: Digital, Active
Calc. Formula: [*S700.Relays.Normal Operation*] OR [*S700.Relays.Secondary Startup*]

STATUS

Data Channels.S700.Status.IR Source Voltage
Display Name: IR Source Voltage
Description: IR source voltage
Eng. Units: Volt
Channel status: Analog, Active
Calc. Formula: [System.IRVolt]
Processing: Value range: 0, 100

Data Channels.S700.Status.Pressure
Display Name: Pressure
Description: Pressure (measuring value of internal sensor)
Eng. Units: hPa
Channel status: Analog, Active
Calc. Formula: [System.IsPressure]
Processing: Value range: 0, 2000

Data Channels.S700.Status.TCTemp
Description: Temperature for internal temp. compensation
Eng. Units: °C
Channel status: Analog, Active
Calc. Formula: [System.TCTemp]
Processing: Value range: 0, 100

Data Channels.S700.Status.IR Source Voltage.Avg01
Display Name: IR Source Voltage.Avg01
Eng. Units: Volt
Channel status: Analog, Active, Logged temporary, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.S700.Status.IRVolt
Processing: Value range: 0, 100

Data Channels.S700.Status.Pressure.Avg01
Display Name: Pressure.Avg01
Eng. Units: hPa
Channel status: Analog, Active, Logged temporary, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.S700.Status.IsPressure
Processing: Value range: 0, 2000

Data Channels.S700.Status.TCTemp.Avg01
Eng. Units: °C
Channel status: Analog, Active, Logged temporary, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.S700.Status.TCTemp
Processing: Value range: 0, 100

TRANE 1

AWFCO HWC MACT

Data Channels.Trane1.AWFCO HWC MACT.ChlorineRate
Description: HWC MACT chlorine feed rate cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportMACT>] AND [<Trane1.AWFCO HWC MACT LIMITS.ChlorineRate>]
Alarm on High: Message: AWFCO active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO HWC MACT.OrganicRate
Description: HWC MACT organic feed rate cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportMACT>] AND [<Trane1.AWFCO HWC MACT LIMITS.OrganicRate>]
Alarm on High: Message: AWFCO active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO HWC MACT.AqueousRate
Description: HWC MACT aqueous flow rate cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportMACT>] AND [<Trane1.AWFCO HWC MACT LIMITS.AqueousRate>]
Alarm on High: Message: AWFCO active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO HWC MACT.AshRate
Description: HWC MACT ash rate cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportMACT>] AND [<Trane1.AWFCO HWC MACT LIMITS.AshRate>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO HWC MACT.MercuryRate
Description: HWC MACT total mercury rate cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportMACT>] AND [<Trane1.AWFCO HWC MACT LIMITS.MercuryRate>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO HWC MACT.LeadRate
Description: HWC MACT total lead rate cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportMACT>] AND [<Trane1.AWFCO HWC MACT LIMITS.LeadRate>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO HWC MACT.CadmiumRate
Description: HWC MACT total cadmium feed rate cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportMACT>] AND [<Trane1.AWFCO HWC MACT LIMITS.CadmiumRate>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO HWC MACT.ArsenicRate

Description: HWC MACT total arsenic feed rate cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportMACT>] AND [<Trane1.AWFCO HWC MACT LIMITS.ArsenicRate>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO HWC MACT.ChromiumRate
Description: HWC MACT total chromium feed rate cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportMACT>] AND [<Trane1.AWFCO HWC MACT LIMITS.ChromiumRate>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO HWC MACT.IncTemp
Description: HWC MACT incinerator temp cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportMACT>] AND [<Trane1.AWFCO HWC MACT LIMITS.IncTemp>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO HWC MACT.AFTotalRate
Description: HWC MACT air flow total cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportMACT>] AND [<Trane1.AWFCO HWC MACT LIMITS.AFTotalRate>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO HWC MACT.AqueousPrs
Description: HWC MACT aqueous pressure cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportMACT>] AND [<Trane1.AWFCO HWC MACT LIMITS.AqueousPrs>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO HWC MACT.OrganicPrs
Description: HWC MACT organic pressure cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportMACT>] AND [<Trane1.AWFCO HWC MACT LIMITS.OrganicPrs>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO HWC MACT.QTBlowdown_pH
Description: HWC MACT QT Blowdown pH cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportMACT>] AND [<Trane1.AWFCO HWC MACT LIMITS.QTBlowdown_pH>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO HWC MACT.HeatInput
Description: HWC MACT heat input cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportMACT>] AND [<Trane1.AWFCO HWC MACT LIMITS.HeatInput>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO HWC MACT.QTBlowdownFlow
Description: HWC MACT QT Blowdown Flow cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportMACT>] AND [<Trane1.AWFCO HWC MACT LIMITS.QTBlowdownFlow>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO HWC MACT.QTLevel
Description: HWC MACT QT Level cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportMACT>] AND [<Trane1.AWFCO HWC MACT LIMITS.QTLevel>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO HWC MACT.VTPressureDrop
Description: HWC MACT VT Pressure Drop cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportMACT>] AND [<Trane1.AWFCO HWC MACT LIMITS.VTPressureDrop>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO HWC MACT.VTWaterFlow
Description: HWC MACT VT Water Flow cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportMACT>] AND [<Trane1.AWFCO HWC MACT LIMITS.VTWaterFlow>]

Data Channels.Trane1.AWFCO HWC MACT.VTBlowdownFlow
Description: HWC MACT VT Blowdown Flow cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportMACT>] AND [<Trane1.AWFCO HWC MACT LIMITS.VTBlowdownFlow>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO HWC MACT.BerylliumRate
Description: HWC MACT total beryllium feed rate cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportMACT>] AND [<Trane1.AWFCO HWC MACT LIMITS.BerylliumRate>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

AWFCO HWC MACT LIMITS

Data Channels.Trane1.AWFCO HWC MACT LIMITS.ChlorineRate
Description: HWC MACT chlorine feed rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Calculated Rates.ChlorineRate.Avg12H>] >= 265

Data Channels.Trane1.AWFCO HWC MACT LIMITS.OrganicRate
Description: HWC MACT organic feed rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Flow Rates.OrganicRate.Avg60>] >= 6.5

Data Channels.Trane1.AWFCO HWC MACT LIMITS.AqueousRate
Description: HWC MACT aqueous flow rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Flow Rates.AqueousRate.Avg60>] >= 22

Data Channels.Trane1.AWFCO HWC MACT LIMITS.AshRate
Description: HWC MACT ash rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Calculated Rates.AshRate.Avg12H>] >= 317

Data Channels.Trane1.AWFCO HWC MACT LIMITS.MercuryRate
Description: HWC MACT total mercury rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Calculated Rates.MercuryRate.Avg12H>] >= 45.6

Data Channels.Trane1.AWFCO HWC MACT LIMITS.LeadRate
Description: HWC MACT total lead rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Calculated Rates.LeadRate.Avg12H>] >= 44.745

Data Channels.Trane1.AWFCO HWC MACT LIMITS.CadmiumRate
Description: HWC MACT total cadmium feed rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Calculated Rates.CadmiumRate.Avg12H>] >= 62.7

Data Channels.Trane1.AWFCO HWC MACT LIMITS.ArsenicRate
Description: HWC MACT total arsenic feed rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Calculated Rates.ArsenicRate.Avg12H>] >= 114.95

Data Channels.Trane1.AWFCO HWC MACT LIMITS.ChromiumRate
Description: HWC MACT total chromium feed rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Calculated Rates.ChromiumRate.Avg12H>] >= 536.75

Data Channels.Trane1.AWFCO HWC MACT LIMITS.IncTemp
Description: HWC MACT incinerator temp cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Combustion Chamber.IncTemp.Avg60>] <= 920

Data Channels.Trane1.AWFCO HWC MACT LIMITS.AFTotalRate
Description: HWC MACT air flow total cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Combustion Chamber.AFTotal.Avg60>] >= 1995

Data Channels.Trane1.AWFCO HWC MACT LIMITS.AqueousPrs
Description: HWC MACT aqueous pressure cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Combustion Chamber.AqueousPrs.Avg60>] <= 18

Data Channels.Trane1.AWFCO HWC MACT LIMITS.OrganicPrs
Description: HWC MACT organic pressure cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Combustion Chamber.OrganicPrs.Avg60>] <= 15

Data Channels.Trane1.AWFCO HWC MACT LIMITS.QTBlowdown_pH
Description: HWC MACT QT Blowdown pH cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Quench.QTBlowdown_pH.Avg60>] <= 7.4

Data Channels.Trane1.AWFCO HWC MACT LIMITS.HeatInput
Description: HWC MACT heat input cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Combustion Chamber.HeatInput.Avg60>] <= 4.6 AND VALID([*Trane1.Combustion Chamber.HeatInput.Avg60*])

Data Channels.Trane1.AWFCO HWC MACT LIMITS.QTBlowdownFlow
Description: HWC MACT QT Blowdown Flow cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Quench.QTBlowdownFlow.Avg60>] <= 27

Data Channels.Trane1.AWFCO HWC MACT LIMITS.QTLevel
Description: HWC MACT QT Level cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Quench.QTLevel.Avg60>] <= 36

Data Channels.Trane1.AWFCO HWC MACT LIMITS.VTPressureDrop
Description: HWC MACT VT Pressure Drop cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Venturi.VTPressureDrop.Avg60>] <= 56

Data Channels.Trane1.AWFCO HWC MACT LIMITS.VTWaterFlow
Description: HWC MACT VT Water Flow cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Venturi.VTWaterFlow.Avg60>] <= 267

Data Channels.Trane1.AWFCO HWC MACT LIMITS.VTBlowdownFlow
Description: HWC MACT VT Blowdown Flow cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Venturi.VTWaterFlow.Avg60>] <= 2.3

Data Channels.Trane1.AWFCO HWC MACT LIMITS.BerylliumRate
Description: HWC MACT total beryllium feed rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Calculated Rates.BeryllumRate.Avg12H>] >= 17.86

AWFCO RCRA

Data Channels.Trane1.AWFCO RCRA.OChlorineRate
Description: AWFCO organic chlorine feed rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportRCRA>] AND [<Trane1.AWFCO RCRA LIMITS.OChlorineRate>]
Alarm on High: Message: AWFCO active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO RCRA.OrganicRate
Description: AWFCO organic rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportRCRA>] AND [<Trane1.AWFCO RCRA LIMITS.OrganicRate>]
Alarm on High: Message: AWFCO active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO RCRA.AqueousRate
Description: AWFCO Aqueous flow rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportRCRA>] AND [<Trane1.AWFCO RCRA LIMITS.AqueousRate>]
Alarm on High: Message: AWFCO active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO RCRA.AshRate
Description: AWFCO ash rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportRCRA>] AND [<Trane1.AWFCO RCRA LIMITS.AshRate>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO RCRA.IncTemp
Description: AWFCO incinerator temp cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportRCRA>] AND [<Trane1.AWFCO RCRA LIMITS.IncTemp>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO RCRA.AFTotalRate
Description: AWFCO AFTotal rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportRCRA>] AND [<Trane1.AWFCO RCRA LIMITS.AFTotalRate>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO RCRA.AqueousPrs
Description: AWFCO Aqueous pressure cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportRCRA>] AND [<Trane1.AWFCO RCRA LIMITS.AqueousPrs>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO RCRA.OrganicPrs
Description: AWCFO Organic Pressure cutoff rate
Channel status: Digital, Active

Calc. Formula: [<Trane1.Relays.ReportRCRA>] AND [<Trane1.AWFCO RCRA LIMITS.OrganicPrs>]

Data Channels.Trane1.AWFCO RCRA.QTBlowdown_pH
Description: AWFCO QT Blowdown pH cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportRCRA>] AND [<Trane1.AWFCO RCRA LIMITS.QTBlowdown_pH>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO RCRA.HeatInput
Description: AWFCO HeatInput cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportRCRA>] AND [<Trane1.AWFCO RCRA LIMITS.HeatInput>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO RCRA.QTLevel
Description: AWFCO QT Level minimum cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportRCRA>] AND [<Trane1.AWFCO RCRA LIMITS.QTLevel>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO RCRA.QTExitTemp
Description: AWFCO QT Exit Temperature cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportRCRA>] AND [<Trane1.AWFCO RCRA LIMITS.QTExitTemp>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: Auto acknowledge on normal

Data Channels.Trane1.AWFCO RCRA.VTPressureDrop
Description: AWFCO VT Pressure Drop cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportRCRA>] AND [<Trane1.AWFCO RCRA LIMITS.VTPressureDrop>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO RCRA.VTWaterFlow
Description: AWFCO VT Water Flow cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportRCRA>] AND [<Trane1.AWFCO RCRA LIMITS.VTWaterFlow>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO RCRA.VTWater_pH
Description: AWFCO VT Water pH cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportRCRA>] AND [<Trane1.AWFCO RCRA LIMITS.VTWater_pH>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO RCRA.VTBlowdownFlow
Description: AWFCO VT Blowdown Flow cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportRCRA>] AND [<Trane1.AWFCO RCRA LIMITS.VTBlowdownFlow>]

Data Channels.Trane1.AWFCO RCRA.KeroseneRate
Description: AWFCO Kerosene flow rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportRCRA>] AND [<Trane1.AWFCO RCRA LIMITS.KeroseneRate>]
Alarm on High: Message: AWFCO active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.AWFCO RCRA.QTBlowdownFlow
Description: AWFCO QT Blowdown Flow cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Relays.ReportRCRA>] AND [<Trane1.AWFCO RCRA LIMITS.QTBlowdownFlow>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

AWFCO RCRA LIMITS

Data Channels.Trane1.AWFCO RCRA LIMITS.OChlorineRate
Description: AWFCO Organic chlorine feed rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Calculated Rates.OChlorineRate.Avg60>] >= 57

Data Channels.Trane1.AWFCO RCRA LIMITS.OrganicRate
Description: AWFCO Organic rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Flow Rates.OrganicRate>] >= 6.5 OR IF_CQSET([*Trane1.Flow Rates.OrganicRate*], 'LR')

Data Channels.Trane1.AWFCO RCRA LIMITS.AqueousRate
Description: AWFCO Aqueous flow rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Flow Rates.AqueousRate>] >= 22 OR IF_CQSET([*Trane1.Flow Rates.AqueousRate*], 'LR')

Data Channels.Trane1.AWFCO RCRA LIMITS.AshRate
Description: AWFCO Ash rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Calculated Rates.AshRate.Avg60>] >= 317

Data Channels.Trane1.AWFCO RCRA LIMITS.IncTemp
Description: AWFCO Incinerator Temp. cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Combustion Chamber.IncTemp>] >= 1150 OR [*Trane1.Combustion Chamber.IncTemp*] <= 920

Data Channels.Trane1.AWFCO RCRA LIMITS.AFTotalRate
Description: AWFCO AFTotal rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Combustion Chamber.AFTotal>] >= 2000 OR IF_CQSET([*Trane1.Combustion Chamber.AFTotal*], 'LR')

Data Channels.Trane1.AWFCO RCRA LIMITS.AqueousPrs
Description: AWFCO Aqueous pressure cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Combustion Chamber.AqueousPrs>] <= 17 OR IF_CQSET([*Trane1.Combustion Chamber.AqueousPrs*], 'LR')

Data Channels.Trane1.AWFCO RCRA LIMITS.OrganicPrs
Description: AWCFO Organic pressure cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Combustion Chamber.OrganicPrs>] <= 14 OR IF_CQSET([*Trane1.Combustion Chamber.OrganicPrs*], 'LR')

Data Channels.Trane1.AWFCO RCRA LIMITS.QTBlowdown_pH
Description: AWFCO QT Blowdown pH cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Quench.QTBlowdown_pH>] <= 7.25 OR IF_CQSET([*Trane1.Quench.QTBlowdown_pH*], 'LR')

Data Channels.Trane1.AWFCO RCRA LIMITS.HeatInput
Description: AWFCO Heat Input cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Combustion Chamber.HeatInput.Avg60>] >= 10.9

Data Channels.Trane1.AWFCO RCRA LIMITS.QTLevel
Description: AWFCO QT Level cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Quench.QTLevel>] <= 33 OR IF_CQSET([*Trane1.Quench.QTLevel*], 'LR')

Data Channels.Trane1.AWFCO RCRA LIMITS.QTExitTemp
Description: AWFCO QT Exit Temperature cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Quench.QTExitTemp>] >= 110 OR IF_CQSET([*Trane1.Quench.QTExitTemp*], 'LR')

Data Channels.Trane1.AWFCO RCRA LIMITS.VTPressureDrop
Description: AWFCO VT Pressure Drop cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Venturi.VTPressureDrop>] <= 54 OR IF_CQSET([*Trane1.Venturi.VTPressureDrop*], 'LR')

Data Channels.Trane1.AWFCO RCRA LIMITS.VTWaterFlow
Description: AWFCO VT Water Flow cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Venturi.VTWaterFlow>] <= 254 OR IF_CQSET([*Trane1.Venturi.VTWaterFlow*], 'LR')

Data Channels.Trane1.AWFCO RCRA LIMITS.VTWater_pH
Description: AWFCO VT Water pH cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Venturi.VTWater_pH>] <= 6.2 OR IF_CQSET([*Trane1.Venturi.VTWater_pH*], 'LR')

Data Channels.Trane1.AWFCO RCRA LIMITS.VTBlowdownFlow
Description: AWFCO VT Blowdown Flow cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane1.Venturi.VTBlowdownFlow>] <= 2 OR IF_CQSET([*Trane1.Venturi.VTBlowdownFlow*], 'LR')

Data Channels.Trane1.AWFCO RCRA LIMITS.KeroseneRate
Description: AWFCO Kerosene flow rate cutoff limit
Channel status: Digital, Active
Calc. Formula: IF_CQSET([*Trane1.Flow Rates.KeroseneRate*], 'LR')

Data Channels.Trane1.AWFCO RCRA LIMITS.QTBlowdownFlow

Description: AWFCO QT Blowdown Flowrate cutoff limit
Channel status: Digital, Active
Calc. Formula: IF_CQSET([*Trane1.Quench.QTBlowdownFlow>], 'LR')

CALCULATED RATES

Data Channels.Trane1.Calculated Rates.Lead Rate
Display Name: Lead Rate
Description: Total lead feed rate
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged temporary
Calc. Formula: ([*Trane1.Waste Content.LeadOC*] * [*Trane1.Flow Rates.OrganicRate*] + [*Trane1.Waste Content.LeadAC*] * [*Trane1.Flow Rates.AqueousRate*] + [*Trane1.Waste Content.LeadKC*] * [*Trane1.Flow Rates.KeroseneRate*]) * 60 / 4.54 * 1e-3
Processing: Value range: 0, 100

Data Channels.Trane1.Calculated Rates.Chromium Rate
Display Name: Chromium Rate
Description: Total chromium feed rate
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged temporary
Calc. Formula: ([*Trane1.Waste Content.ChromiumOC*] * [*Trane1.Flow Rates.OrganicRate*] + [*Trane1.Waste Content.ChromiumAC*] * [*Trane1.Flow Rates.AqueousRate*] + [*Trane1.Waste Content.ChromiumKC*] * [*Trane1.Flow Rates.KeroseneRate*]) * 60 / 4.54 * 1e-3
Processing: Value range: 0, 600

Data Channels.Trane1.Calculated Rates.Mercury Rate
Display Name: Mercury Rate
Description: Total mercury feed rate
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged temporary
Calc. Formula: ([*Trane1.Waste Content.MercuryOC*] * [*Trane1.Flow Rates.OrganicRate*] + [*Trane1.Waste Content.MercuryAC*] * [*Trane1.Flow Rates.AqueousRate*] + [*Trane1.Waste Content.MercuryKC*] * [*Trane1.Flow Rates.KeroseneRate*]) * 60 / 4.54 * 1e-3
Processing: Value range: 0, 100

Data Channels.Trane1.Calculated Rates.Chlorine Rate
Display Name: Chlorine Rate
Description: Total chlorine feed rate
Eng. Units: lbs/hr
Channel status: Analog, Active, Logged temporary
Calc. Formula: ([*Trane1.Waste Content.ChlorineOC*] * [*Trane1.Flow Rates.OrganicRate*] + [*Trane1.Waste Content.ChlorineAC*] * [*Trane1.Flow Rates.AqueousRate*] + [*Trane1.Waste Content.ChlorineKC*] * [*Trane1.Flow Rates.KeroseneRate*]) * 1e4 / 1e6 * 60*2.2
Processing: Value range: 0, 300

Data Channels.Trane1.Calculated Rates.Ash Rate
Display Name: Ash Rate
Description: Total ash feed rate
Eng. Units: lbs/hr
Channel status: Analog, Active, Logged temporary

Calc. Formula: ([*Trane1.Waste Content.AshOC*] * [*Trane1.Flow Rates.OrganicRate*] + [*Trane1.Waste Content.AshAC*] * [*Trane1.Flow Rates.AqueousRate*] + [*Trane1.Waste Content.AshKC*] * [*Trane1.Flow Rates.KeroseneRate*]) * 1e4 / 1e6 * 60
Processing: Value range: 0, 400

Data Channels.Trane1.Calculated Rates.Ash Rate.Avg01
Display Name: Ash Rate.Avg01
Eng. Units: lbs/hr
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Calculated Rates.AshRate
Processing: Value range: 0, 400

Data Channels.Trane1.Calculated Rates.Ash Rate.Avg12H
Display Name: Ash Rate.Avg12H
Description: Total ash feed rate (12-HRA)
Eng. Units: lbs/hr
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 720
Shortcut: Data Channels.Trane1.Calculated Rates.AshRate.Avg01
Processing: Value range: 0, 400
High alarm: Value: 301, Severity: 0
High High alarm: Value: 317, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 334, Low - 0, Severity: 0

Data Channels.Trane1.Calculated Rates.Chlorine Rate.Avg01
Display Name: Chlorine Rate.Avg01
Eng. Units: lbs/hr
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Calculated Rates.ChlorineRate
Processing: Value range: 0, 300

Data Channels.Trane1.Calculated Rates.Chlorine Rate.Avg12H
Display Name: Chlorine Rate.Avg12H
Description: Total chlorine feed rate (12-HRA)
Eng. Units: lbs/hr
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 720
Shortcut: Data Channels.Trane1.Calculated Rates.ChlorineRate.Avg01
Processing: Value range: 0, 300
High alarm: Value: 251, Severity: 0
High High alarm: Value: 265, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 279, Low - 0, Severity: 0

Data Channels.Trane1.Calculated Rates.Chromium Rate.Avg01
Display Name: Chromium Rate.Avg01
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Calculated Rates.ChromiumRate
Processing: Value range: 0, 600

Data Channels.Trane1.Calculated Rates.Chromium Rate.Avg12H

Display Name: Chromium Rate.Avg12H
Description: Total chromium feed rate (12-HRA)
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 720
Shortcut: Data Channels.Trane1.Calculated Rates.ChromiumRate.Avg01
Processing: Value range: 0, 600
High alarm: Value: 508.5, Severity: 0
High High alarm: Value: 536.75, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 565, Low - 0, Severity: 0

Data Channels.Trane1.Calculated Rates.Mercury Rate.Avg01
Display Name: Mercury Rate.Avg01
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Calculated Rates.MercuryRate
Processing: Value range: 0, 100

Data Channels.Trane1.Calculated Rates.Mercury Rate.Avg12H
Display Name: Mercury Rate.Avg12H
Description: Total mercury feed rate (12-HRA)
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 720
Shortcut: Data Channels.Trane1.Calculated Rates.MercuryRate.Avg01
Processing: Value range: 0, 100
High alarm: Value: 43.2, Severity: 0
High High alarm: Value: 45.6, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 48, Low - 0, Severity: 0

Data Channels.Trane1.Calculated Rates.Lead Rate.Avg01
Display Name: Lead Rate.Avg01
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Calculated Rates.LeadRate
Processing: Value range: 0, 100

Data Channels.Trane1.Calculated Rates.Lead Rate.Avg12H
Display Name: Lead Rate.Avg12H
Description: Total lead feed rate (12-HRA)
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 720
Shortcut: Data Channels.Trane1.Calculated Rates.LeadRate.Avg01
Processing: Value range: 0, 100
High alarm: Value: 42.39, Severity: 0
High High alarm: Value: 44.745, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 47.1, Low - 0, Severity: 0

Data Channels.Trane1.Calculated Rates.Arsenic Rate
Display Name: Arsenic Rate

Description: Total arsenic feed rate
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged temporary
Calc. Formula: ([*Trane1.Waste Content.ArsenicOC*] * [*Trane1.Flow Rates.OrganicRate*] + [*Trane1.Waste Content.ArsenicAC*] * [*Trane1.Flow Rates.AqueousRate*] + [*Trane1.Waste Content.ArsenicKC*] * [*Trane1.Flow Rates.KeroseneRate*]) * 60 / 4.54 * 1e-3
Processing: Value range: 0, 200

Data Channels.Trane1.Calculated Rates.Arsenic Rate.Avg01
Display Name: Arsenic Rate.Avg01
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Calculated Rates.ArsenicRate
Processing: Value range: 0, 200

Data Channels.Trane1.Calculated Rates.Arsenic Rate.Avg12H
Display Name: Arsenic Rate.Avg12H
Description: Total arsenic feed rate (12-HRA)
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 720
Shortcut: Data Channels.Trane1.Calculated Rates.ArsenicRate.Avg01
Processing: Value range: 0, 200
High alarm: Value: 108.9, Severity: 0
High High alarm: Value: 114.95, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 121, Low - 0, Severity: 0

Data Channels.Trane1.Calculated Rates.Cadmium Rate
Display Name: Cadmium Rate
Description: Total cadmium feed rate
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged temporary
Calc. Formula: ([*Trane1.Waste Content.CadmiumOC*] * [*Trane1.Flow Rates.OrganicRate*] + [*Trane1.Waste Content.CadmiumAC*] * [*Trane1.Flow Rates.AqueousRate*] + [*Trane1.Waste Content.CadmiumKC*] * [*Trane1.Flow Rates.KeroseneRate*]) * 60 / 4.54 * 1e-3
Processing: Value range: 0, 100

Data Channels.Trane1.Calculated Rates.Cadmium Rate.Avg01
Display Name: Cadmium Rate.Avg01
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Calculated Rates.CadmiumRate
Processing: Value range: 0, 100

Data Channels.Trane1.Calculated Rates.Cadmium Rate.Avg12H
Display Name: Cadmium Rate.Avg12H
Description: Total cadmium feed rate (12-HRA)
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 720
Shortcut: Data Channels.Trane1.Calculated Rates.CadmiumRate.Avg01
Processing: Value range: 0, 100

High alarm: Value: 59.4, Severity: 0
High High alarm: Value: 62.7, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 66, Low - 0, Severity: 0

Data Channels.Trane1.Calculated Rates.Beryllium Rate
Display Name: Beryllium Rate
Description: Total beryllium feed rate
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged temporary
Calc. Formula: ([*Trane1.Waste Content.BerylliumOC*] * [*Trane1.Flow Rates.OrganicRate*] + [*Trane1.Waste Content.BerylliumAC*] * [*Trane1.Flow Rates.AqueousRate*] + [*Trane1.Waste Content.BerylliumKC*] * [*Trane1.Flow Rates.KeroseneRate*]) * 60 / 4.54 * 1e-3
Processing: Value range: 0, 100

Data Channels.Trane1.Calculated Rates.Beryllium Rate.Avg01
Display Name: Beryllium Rate.Avg01
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Calculated Rates.BerylliumRate
Processing: Value range: 0, 100

Data Channels.Trane1.Calculated Rates.Beryllium Rate.Avg12H
Display Name: Beryllium Rate.Avg12H
Description: Total beryllium feed rate (12-HRA)
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 720
Shortcut: Data Channels.Trane1.Calculated Rates.BerylliumRate.Avg01
Processing: Value range: 0, 100
High alarm: Value: 16.92, Severity: 0
High High alarm: Value: 17.86, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 18.8, Low - 0, Severity: 0

Data Channels.Trane1.Calculated Rates.Org Chlorine Rate
Display Name: Org Chlorine Rate
Description: Total organic chlorine feed rate
Eng. Units: lbs/hr
Channel status: Analog, Active, Logged temporary
Calc. Formula: ([*Trane1.Waste Content.OChlorineOC*] * [*Trane1.Flow Rates.OrganicRate*] + [*Trane1.Waste Content.OChlorineAC*] * [*Trane1.Flow Rates.AqueousRate*] + [*Trane1.Waste Content.OChlorineKC*] * [*Trane1.Flow Rates.KeroseneRate*]) * 1e4 / 1e6 * 60*2.2
Processing: Value range: 0, 80

Data Channels.Trane1.Calculated Rates.Org Chlorine Rate.Avg01
Display Name: Org Chlorine Rate.Avg01
Eng. Units: lbs/hr
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Calculated Rates.OChlorineRate
Processing: Value range: 0, 80

Data Channels.Trane1.Calculated Rates.Org Chlorine Rate.Avg60

Display Name: Org Chlorine Rate.Avg60
Description: Total organic chlorine feed rate (HRA)
Eng. Units: lbs/hr
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane1.Calculated Rates.OChlorineRate.Avg01
Processing: Value range: 0, 80
High alarm: Value: 50, Severity: 0
High High alarm: Value: 60, Severity: 0
Alarm settings: Acknowledgement not required
Excess Emission: User must acknowledge, Any condition: High - 50, Low - 0, Severity: 0

Data Channels.Trane1.Calculated Rates.Ash Rate.Avg60
Display Name: Ash Rate.Avg60
Description: Total ash feed rate (HRA)
Eng. Units: lbs/hr
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane1.Calculated Rates.AshRate.Avg01
Processing: Value range: 0, 400
High alarm: Value: 317, Severity: 0
High High alarm: Value: 334, Severity: 0
Alarm settings: User must acknowledge

COMBUSTION CHAMBER

Data Channels.Trane1.Combustion Chamber.Aqueous AT Air Flow
Display Name: Aqueous AT Air Flow
Description: Aqueous Air Flow
Eng. Units: scfm
Channel status: Analog, Active
Calc. Formula: [FI975D-1/PV.1]
Processing: Value range: 0, 198

Data Channels.Trane1.Combustion Chamber.Organic AT Air Flow
Display Name: Organic AT Air Flow
Description: Organic Air Flow
Eng. Units: scfm
Channel status: Analog, Active
Calc. Formula: [FI975C-1/PV.1]
Processing: Value range: 0, 125

Data Channels.Trane1.Combustion Chamber.Secondary Air Flow
Display Name: Secondary Air Flow
Description: Secondary Air Flow
Eng. Units: scfm
Channel status: Analog, Active
Calc. Formula: [FIC906-1/PV.1]
Processing: Value range: 0, 634

Data Channels.Trane1.Combustion Chamber.Combustion Air Flow
Display Name: Combustion Air Flow
Description: Combustion Air Flow
Eng. Units: scfm

Channel status: Analog, Active
Calc. Formula: [FIC907-1/PV.1]
Processing: Value range: 0, 2026

Data Channels.Trane1.Combustion Chamber.Total Air Flow
Display Name: Total Air Flow
Description: Total Combustion Air
Eng. Units: scfm
Channel status: Analog, Active, Logged temporary
Calc. Formula: [*Trane1.Combustion Chamber.AFAqueous*] + [*Trane1.Combustion Chamber.AFCombustion*] + [*Trane1.Combustion Chamber.AFOrganic*] + [*Trane1.Combustion Chamber.AFSecondary*]
Processing: Value range: 0, 3000
High alarm: Value: 1880, Severity: 0
High High alarm: Value: 2000, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.Combustion Chamber.Total Air Flow.Avg01
Display Name: Total Air Flow.Avg01
Eng. Units: scfm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Combustion Chamber.AFTotal
Processing: Value range: 0, 3000

Data Channels.Trane1.Combustion Chamber.Total Air Flow.Avg60
Display Name: Total Air Flow.Avg60
Description: Total Combustion Air (HRA)
Eng. Units: scfm
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane1.Combustion Chamber.AFTotal.Avg01
Processing: Value range: 0, 3000
High alarm: Value: 1900, Severity: 0
High High alarm: Value: 1995, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 2000, Low - 0, Severity: 0

Data Channels.Trane1.Combustion Chamber.Incinerator Temp
Display Name: Incinerator Temp
Description: Incinerator Temperature
Eng. Units: °C
Channel status: Analog, Active, Logged temporary
Calc. Formula: [TIC905-1/PV.1]
Processing: Value range: 0, 1200
Low Low alarm: Value: 914, Severity: 0
Low alarm: Value: 968.84, Severity: 0
High alarm: Value: 1081, Severity: 0
High High alarm: Value: 1150, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.Combustion Chamber.Organic AT Prs
Display Name: Organic AT Prs
Description: Organic Atomizing Pressure
Eng. Units: psi
Channel status: Analog, Active, Logged temporary

Description: Organic Atomizing Pressure (HRA)
Eng. Units: psi
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MiN, Points: 60
Shortcut: Data Channels.Trane1.Combustion Chamber.OrganicPrs.Avg01
Processing: Value range: 0, 75
Low Low alarm: Value: 15, Severity: 0
Low alarm: Value: 18, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 0, Low - 14, Severity: 0

Data Channels.Trane1.Combustion Chamber.Incinerator Temp.Avg60
Display Name: Incinerator Temp.Avg60
Description: Incinerator Temperature (HRA)
Eng. Units: °C
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane1.Combustion Chamber.IncTemp.Avg01
Processing: Value range: 0, 1200
Low Low alarm: Value: 914, Severity: 0
Low alarm: Value: 940, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 0, Low - 914, Severity: 0

Data Channels.Trane1.Combustion Chamber.Heat Input
Display Name: Heat Input
Description: Heat Input
Eng. Units: MMBTU/hr
Channel status: Analog, Active, Logged temporary
Calc. Formula: ([*Trane1.Flow Rates.OrganicRate*] * [*Trane1.Heat Input.HVb*] * [*Trane1.Heat Input.SGb*]+ [*Trane1.Flow Rates.AqueousRate*] * [*Trane1.Heat Input.HVa*] * [*Trane1.Heat Input.SGa*] + [*Trane1.Flow Rates.KeroseneRate*] * [*Trane1.Heat Input.HVc*] * [*Trane1.Heat Input.SGc*]) * 0.264 * 8.34 * 60 / 1e6
Processing: Value range: 0, 20

Data Channels.Trane1.Combustion Chamber.Heat Input.Avg01
Display Name: Heat Input.Avg01
Eng. Units: MMBTU/hr
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Combustion Chamber.HeatInput
Processing: Value range: 0, 20

Data Channels.Trane1.Combustion Chamber.Heat Input.Avg60
Display Name: Heat Input.Avg60
Description: Heat Input (HRA)
Eng. Units: MMBTU/hr
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane1.Combustion Chamber.HeatInput.Avg01
Processing: Value range: 0, 20
Low Low alarm: Value: 4.6, Severity: 0
Low alarm: Value: 5, Severity: 0
High alarm: Value: 10.85, Severity: 0
High High alarm: Value: 11, Severity: 0
Alarm settings: User must acknowledge

Excess Emission: Acknowledgement not required, Any condition: High - 11, Low - 4.5, Severity: 0

Data Channels.Trane1.Combustion Chamber.Aqueous AT Air Flow.Avg01
Display Name: Aqueous AT Air Flow.Avg01
Eng. Units: scfm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Combustion Chamber.AFAqueous
Processing: Value range: 0, 198

Data Channels.Trane1.Combustion Chamber.Combustion Air Flow.Avg01
Display Name: Combustion Air Flow.Avg01
Eng. Units: scfm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Combustion Chamber.AFCombustion
Processing: Value range: 0, 2026

Data Channels.Trane1.Combustion Chamber.Organic AT Air Flow.Avg01
Display Name: Organic AT Air Flow.Avg01
Eng. Units: scfm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Combustion Chamber.AFOrganic
Processing: Value range: 0, 125

Data Channels.Trane1.Combustion Chamber.Secondary Air Flow.Avg01
Display Name: Secondary Air Flow.Avg01
Eng. Units: scfm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Combustion Chamber.AFSecondary
Processing: Value range: 0, 634

FLOWRATES

Data Channels.Trane1.Flow Rates.Organic Rate
Display Name: Organic Rate
Description: Organic waste feed rate
Eng. Units: lpm
Channel status: Analog, Active, Logged temporary
Calc. Formula: [FIC908-1/PV.1]
Processing: Value range: 0, 12
High High alarm: Value: 6.5, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.Flow Rates.Aqueous Rate
Display Name: Aqueous Rate
Description: Aqueous waste feed rate
Eng. Units: lpm
Channel status: Analog, Active, Logged temporary
Calc. Formula: [FIC923-1/PV.1]
Processing: Value range: 0, 27.5
High High alarm: Value: 22, Severity: 0

Alarm settings: User must acknowledge

Data Channels.Trane1.Flow Rates.Kerosene Rate
Display Name: Kerosene Rate
Description: Kerosene feed rate
Eng. Units: lpm
Channel status: Analog, Active, Logged temporary
Calc. Formula: [FIC904-1/PV.1]
Processing: Value range: 0, 6

Data Channels.Trane1.Flow Rates.Organic Rate.Avg01
Display Name: Organic Rate.Avg01
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Flow Rates.OrganicRate
Processing: Value range: 0, 12

Data Channels.Trane1.Flow Rates.Organic Rate.Avg60
Display Name: Organic Rate.Avg60
Description: Organic waste feed rate (HRA)
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane1.Flow Rates.OrganicRate.Avg01
Processing: Value range: 0, 12
High alarm: Value: 6.2, Severity: 0
High High alarm: Value: 6.5, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 6.5, Low - 0, Severity: 0

Data Channels.Trane1.Flow Rates.Kerosene Rate.Avg01
Display Name: Kerosene Rate.Avg01
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Flow Rates.KeroseneRate
Processing: Value range: 0, 6

Data Channels.Trane1.Flow Rates.Kerosene Rate.Avg60
Display Name: Kerosene Rate.Avg60
Description: Kerosene feed rate (HRA)
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane1.Flow Rates.KeroseneRate.Avg01
Processing: Value range: 0, 6

Data Channels.Trane1.Flow Rates.Aqueous Rate.Avg01
Display Name: Aqueous Rate.Avg01
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Flow Rates.AqueousRate
Processing: Value range: 0, 27.5

Data Channels.Trane1.Flow Rates.Aqueous Rate.Avg60
Display Name: Aqueous Rate.Avg60
Description: Aqueous waste feed rate (HRA)
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane1.Flow Rates.AqueousRate.Avg01
Processing: Value range: 0, 27.5
High alarm: Value: 20, Severity: 0
High High alarm: Value: 22, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: Acknowledgement not required, Any condition: High - 22, Low - 0, Severity: 0

Data Channels.Trane1.Flow Rates.Aqueous Rate (min)
Display Name: Aqueous Rate (min)
Description: Aqueous waste feed rate (minimum)
Eng. Units: lpm
Channel status: Analog, Active
Calc. Formula: [*Trane1.Flow Rates.AqueousRate*]
Processing: Value range: 0, 27.5
High High alarm: Value: 22, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.Flow Rates.Aqueous Rate (min).Avg1D
Display Name: Aqueous Rate (min).Avg1D
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Minimum value average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Flow Rates.AqRateMin
Processing: Value range: 0, 27.5

Data Channels.Trane1.Flow Rates.Aqueous Rate (max)
Display Name: Aqueous Rate (max)
Description: Aqueous waste feed rate (minimum)
Eng. Units: lpm
Channel status: Analog, Active
Calc. Formula: [*Trane1.Flow Rates.AqueousRate*]
Processing: Value range: 0, 27.5
High High alarm: Value: 22, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.Flow Rates.Aqueous Rate (max).Avg1D
Display Name: Aqueous Rate (max).Avg1D
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Maximum value average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Flow Rates.AqRateMax
Processing: Value range: 0, 27.5

Data Channels.Trane1.Flow Rates.Organic Rate (min)
Display Name: Organic Rate (min)
Description: Organic waste feed rate (minimum)
Eng. Units: lpm
Channel status: Analog, Active
Calc. Formula: [*Trane1.Flow Rates.OrganicRate*]
Processing: Value range: 0, 100

Data Channels.Trane1.Flow Rates.Organic Rate (min).Avg1D
Display Name: Organic Rate (min).Avg1D
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Minimum value average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Flow Rates.OrRateMin
Processing: Value range: 0, 100

Data Channels.Trane1.Flow Rates.Organic Rate (max)
Display Name: Organic Rate (max)
Description: Organic waste feed rate (maximum)
Eng. Units: lpm
Channel status: Analog, Active
Calc. Formula: [*Trane1.Flow Rates.OrganicRate*]
Processing: Value range: 0, 100

Data Channels.Trane1.Flow Rates.Organic Rate (max).Avg1D
Display Name: Organic Rate (max).Avg1D
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Maximum value average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Flow Rates.OrRateMax
Processing: Value range: 0, 100

Data Channels.Trane1.Flow Rates.Kerosene Rate (min)
Display Name: Kerosene Rate (min)
Description: Kerosene feed rate (maximum)
Eng. Units: lpm
Channel status: Analog, Active
Calc. Formula: [*Trane1.Flow Rates.KeroseneRate*]
Processing: Value range: 0, 100

Data Channels.Trane1.Flow Rates.Kerosene Rate (min).Avg1D
Display Name: Kerosene Rate (min).Avg1D
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Minimum value average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Flow Rates.KrRateMin
Processing: Value range: 0, 100

Data Channels.Trane1.Flow Rates.Kerosene Rate (max)
Display Name: Kerosene Rate (max)
Description: Kerosene feed rate (maximum)
Eng. Units: lpm
Channel status: Analog, Active
Calc. Formula: [*Trane1.Flow Rates.KeroseneRate*]
Processing: Value range: 0, 100

Data Channels.Trane1.Flow Rates.Kerosene Rate (max).Avg1D
Display Name: Kerosene Rate (max).Avg1D
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Maximum value average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Flow Rates.KrRateMax
Processing: Value range: 0, 100

Data Channels.Trane1.Flow Rates.Aqueous Rate (total)
Display Name: Aqueous Rate (total)
Description: Aqueous waste feed rate (total)
Eng. Units: lpm
Channel status: Analog, Active
Calc. Formula: [*Trane1.Flow Rates.AqueousRate*]
Processing: Value range: 0, 27.5
High High alarm: Value: 22, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.Flow Rates.Aqueous Rate (total).Avg1D
Display Name: Aqueous Rate (total).Avg1D
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Summation average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Flow Rates.AqRateTotal
Processing: Value range: 0, 27.5

Data Channels.Trane1.Flow Rates.Kerosene Rate (total)
Display Name: Kerosene Rate (total)
Description: Kerosene feed rate
Eng. Units: lpm
Channel status: Analog, Active
Calc. Formula: [*Trane1.Flow Rates.KeroseneRate*]
Processing: Value range: 0, 6

Data Channels.Trane1.Flow Rates.Organic Rate (total)
Display Name: Organic Rate (total)
Description: Organic waste feed rate
Eng. Units: lpm
Channel status: Analog, Active
Calc. Formula: [*Trane1.Flow Rates.OrganicRate*]
Processing: Value range: 0, 12
High High alarm: Value: 6.5, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.Flow Rates.Organic Rate (total).Avg1D
Display Name: Organic Rate (total).Avg1D
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Summation average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Flow Rates.OrRateTotal
Processing: Value range: 0, 12

Data Channels.Trane1.Flow Rates.Kerosene Rate (total).Avg1D
Display Name: Kerosene Rate (total).Avg1D
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Summation average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Flow Rates.KrRateTotal
Processing: Value range: 0, 6

HEAT INPUT

Data Channels.Trane1.Heat Input.HVa
Description: Hazardous aqueous waste heating value
Eng. Units: BTU/lb
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Heat Input.HVb
Description: Hazardous organic waste heating value
Eng. Units: BTU/lb
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Heat Input.HVc
Description: Kerosene heating value
Eng. Units: BTU/lb
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Heat Input.SGa
Description: Hazardous organic waste specific gravity
Eng. Units: BTU/lb
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Heat Input.SGb
Description: Hazardous aqueous waste specific gravity
Eng. Units: BTU/lb
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Heat Input.SGc
Description: Kerosene specific gravity
Eng. Units: BTU/lb
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

PROVOX SHUTDOWN

Data Channels.Trane1.Provox Shutdown.ps01
Description: Limits Sequence Requested Shutdown
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane1.Provox Shutdown.ps02

Description: No Flame and Ignition Valves Not Closed
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane1.Provox Shutdown.ps03
Description: No Flame And Propane Valves Not Closed
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane1.Provox Shutdown.ps04
Description: No Flame And Kero Valves Not Closed
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane1.Provox Shutdown.ps05
Description: No Flame And Aqueous/Water Valves Not Closed
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane1.Provox Shutdown.ps06
Description: No Flame And Organic Valves Not Closed
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane1.Provox Shutdown.ps07
Description: No Flame And G-1 GAs Valves Not Closed
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane1.Provox Shutdown.ps08
Description: No Flame And G-2 Cet/5 Gas Valves Not Closed
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane1.Provox Shutdown.ps09
Description: No Flame And G-2 Cet/6 Gas Valves Not Closed
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane1.Provox Shutdown.ps10

Description: Operator Requested Shut Down
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane1.Provox Shutdown.ps11
Description: Lightoff Timer Timed Out
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane1.Provox Shutdown.ps12
Description: Propane Low Air Flow
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane1.Provox Shutdown.ps13
Description: Field 'Stop Burner' Activated
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane1.Provox Shutdown.ps14
Description: Main Flame Trial Failed During Lightoff
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

QUENCH

Data Channels.Trane1.Quench.QT Blowdown pH
Display Name: QT Blowdown pH
Description: Quench Blowdown pH
Eng. Units: pH
Channel status: Analog, Active, Logged temporary
Calc. Formula: [AIC901-1/PV.1]
Processing: Value range: 0, 14
Low Low alarm: Value: 7.25, Severity: 0
Low alarm: Value: 7.69, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.Quench.QT Exhaust Temp
Display Name: QT Exhaust Temp
Description: Quench Exhaust Temp
Eng. Units: °C
Channel status: Analog, Active, Logged temporary
Calc. Formula: [TI911-1/PV.1]
Processing: Value range: 0, 150
High alarm: Value: 103.4, Severity: 0

High High alarm: Value: 110, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.Quench.QT Tank Level
Display Name: QT Tank Level
Description: Quench Tank Level
Eng. Units: %
Channel status: Analog, Active, Logged temporary
Calc. Formula: [LIC910-1/PV.1]
Processing: Value range: 0, 100
Low Low alarm: Value: 33, Severity: 0
Low alarm: Value: 34.98, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.Quench.QT Blowdown FI
Display Name: QT Blowdown FI
Description: Quench Blowdown Flow
Eng. Units: lpm
Channel status: Analog, Active, Logged temporary
Calc. Formula: [FI903-1/PV.1]
Processing: Value range: 0, 200
Low Low alarm: Value: 26.5, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.Quench.QT Blowdown FI.Avg01
Display Name: QT Blowdown FI.Avg01
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Quench.QTBlowdownFlow
Processing: Value range: 0, 200

Data Channels.Trane1.Quench.QT Blowdown pH.Avg01
Display Name: QT Blowdown pH.Avg01
Eng. Units: pH
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Quench.QTBlowdown_pH
Processing: Value range: 0, 14

Data Channels.Trane1.Quench.QT Blowdown pH.Avg60
Display Name: QT Blowdown pH.Avg60
Description: Qench Blowdown pH (HRA)
Eng. Units: pH
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane1.Quench.QTBlowdown_pH.Avg01
Processing: Value range: 0, 14
Low Low alarm: Value: 7.4, Severity: 0
Low alarm: Value: 7.8, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 0, Low - 7.25, Severity: 0

Data Channels.Trane1.Quench.QT Exhaust Temp.Avg01
Display Name: QT Exhaust Temp.Avg01
Eng. Units: °C

Channel status: Analog, Active, Logged temporary, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Quench.QTExitTemp
Processing: Value range: 0, 150

Data Channels.Trane1.Quench.QT Tank Level.Avg01
Display Name: QT Tank Level.Avg01
Eng. Units: %
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Quench.QTLevel
Processing: Value range: 0, 100

Data Channels.Trane1.Quench.QT Tank Level.Avg60
Display Name: QT Tank Level.Avg60
Description: Quench Tank Level (HRA)
Eng. Units: %
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane1.Quench.QTLevel.Avg01
Processing: Value range: 0, 100
Low Low alarm: Value: 36, Severity: 0
Low alarm: Value: 40, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 0, Low - 33, Severity: 0

Data Channels.Trane1.Quench.QT Blowdown Fl.Avg60
Display Name: QT Blowdown Fl.Avg60
Description: Quench Blowdown Flow (HRA)
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane1.Quench.QTBlowdownFlow.Avg01
Processing: Value range: 0, 200
Low Low alarm: Value: 27, Severity: 0
Low alarm: Value: 28, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 0, Low - 7.25, Severity: 0

Data Channels.Trane1.Quench.QT Exhaust Temp.Avg60
Display Name: QT Exhaust Temp.Avg60
Description: Quench Exhaust Temp (HRA)
Eng. Units: °C
Channel status: Analog, Active, Logged temporary, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane1.Quench.QTExitTemp.Avg01
Processing: Value range: 0, 150

RELAYS

Data Channels.Trane1.Relays.Maintenance
Description: Trane1 Maintenance
Channel status: Digital, Active
Calc. Formula: false

Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane1.Relays.Caution
Description: Trane1 Warning
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Auto acknowledge on normal

Data Channels.Trane1.Relays.Error
Description: Trane1 Malfunction
Channel status: Digital, Active
Calc. Formula: [*opcProvox.ProvoxDown*] OR [*opcProvox.PASServerDown*]
Alarm on High: Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.Relays.Process Down
Description: Trane1 Process Down
Channel status: Digital, Active
Calc. Formula: [INC-STATES-L/MVPCV5.0] = 0
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane1.Relays.Startup
Description: Trane1 Startup
Channel status: Digital, Active
Calc. Formula: [INC-STATES-L/MVPCV5.0] = 1
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane1.Relays.Shutdown
Description: Trane1 Shutdown
Channel status: Digital, Active
Calc. Formula: [INC-STATES-L/MVPCV5.0] = 4
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane1.Relays.ReportEE
Description: Report Excess Emission
Channel status: Digital, Active
Calc. Formula: [*Trane1.Relays.Normal Operation*]

Data Channels.Trane1.Relays.ReportMACT
Description: Initiate HWC MACT AWFCO
Channel status: Digital, Active
Calc. Formula: [*Trane1.Relays.Normal Operation*]

Data Channels.Trane1.Relays.AWFCO Testing
Description: Trane1
Channel status: Digital, Active
Calc. Formula: [AWFCO TEST/SP.1] = 2
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane1.Relays.Normal Operation

Description: Normal Operation
Channel status: Digital, Active
Calc. Formula: [INC-STATES-L/MVPCV5.0] = 3
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane1.Relays.Secondary Startup
Description: Secondary Startup
Channel status: Digital, Active
Calc. Formula: [INC-STATES-L/MVPCV5.0] = 2
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane1.Relays.ReportRCRA
Description: Initiate RCRA AWFCO
Channel status: Digital, Active
Calc. Formula: [*Trane1.Relays.Normal Operation*] OR [*Trane1.Relays.Secondary Startup*]

VENTURY

Data Channels.Trane1.Venturi.VT Pressure Drop
Display Name: VT Pressure Drop
Description: Venturi Pressure Drop
Eng. Units: Inches H2O
Channel status: Analog, Active, Logged temporary
Calc. Formula: [PDIC945-1/PV.1]
Processing: Value range: 0, 100
Low Low alarm: Value: 54, Severity: 0
Low alarm: Value: 57.24, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.Venturi.VT RC Water Flow
Display Name: VT RC Water Flow
Description: Venturi Water Flow
Eng. Units: lpm
Channel status: Analog, Active, Logged temporary
Calc. Formula: [FI901A-1/PV.1]
Processing: Value range: 0, 492
Low Low alarm: Value: 254, Severity: 0
Low alarm: Value: 269.24, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.Venturi.VT Water pH
Display Name: VT Water pH
Description: Venturi Water pH
Eng. Units: pH
Channel status: Analog, Active, Logged temporary
Calc. Formula: [AI902-1/PV.1]
Processing: Value range: 0, 14
Low Low alarm: Value: 6.2, Severity: 0
Low alarm: Value: 6.57, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.Venturi.VT Blowdown FI
Display Name: VT Blowdown FI

Description: Venturi Blowdown Flowrate
Eng. Units: gpm
Channel status: Analog, Active, Logged temporary
Calc. Formula: [FI944-1/PV.1]
Processing: Value range: 0, 12
Low Low alarm: Value: 2, Severity: 0
Low alarm: Value: 2.12, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane1.Venturi.VT Blowdown FI.Avg01
Display Name: VT Blowdown FI.Avg01
Eng. Units: gpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Venturi.VTBlowdownFlow
Processing: Value range: 0, 12

Data Channels.Trane1.Venturi.VT Blowdown FI.Avg60
Display Name: VT Blowdown FI.Avg60
Description: Venturi Blowdown Flowrate (HRA)
Eng. Units: gpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane1.Venturi.VTBlowdownFlow.Avg01
Processing: Value range: 0, 12
Low Low alarm: Value: 2.3, Severity: 0
Low alarm: Value: 2.5, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 0, Low - 2, Severity: 0

Data Channels.Trane1.Venturi.VT Pressure Drop.Avg01
Display Name: VT Pressure Drop.Avg01
Eng. Units: Inches H2O
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Venturi.VTPressureDrop
Processing: Value range: 0, 100

Data Channels.Trane1.Venturi.VT Pressure Drop.Avg60
Display Name: VT Pressure Drop.Avg60
Description: Venturi Pressure Drop (HRA)
Eng. Units: Inches H2O
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane1.Venturi.VTPressureDrop.Avg01
Processing: Value range: 0, 100
Low Low alarm: Value: 56, Severity: 0
Low alarm: Value: 58, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 0, Low - 54, Severity: 0

Data Channels.Trane1.Venturi.VT Water pH.Avg01
Display Name: VT Water pH.Avg01
Eng. Units: pH
Channel status: Analog, Active, Logged temporary, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1

Shortcut: Data Channels.Trane1.Venturi.VTWater_pH
Processing: Value range: 0, 14

Data Channels.Trane1.Venturi.VT RC Water Flow.Avg01
Display Name: VT RC Water Flow.Avg01
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane1.Venturi.VTWaterFlow
Processing: Value range: 0, 492

Data Channels.Trane1.Venturi.VT RC Water Flow.Avg60
Display Name: VT RC Water Flow.Avg60
Description: Venturi Water Flow (HRA)
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane1.Venturi.VTWaterFlow.Avg01
Processing: Value range: 0, 492
Low Low alarm: Value: 267, Severity: 0
Low alarm: Value: 279, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 0, Low - 254, Severity: 0

Data Channels.Trane1.Venturi.VT Water pH.Avg60
Display Name: VT Water pH.Avg60
Description: Venturi Water pH (HRA)
Eng. Units: pH
Channel status: Analog, Active, Logged temporary, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane1.Venturi.VTWater_pH.Avg01
Processing: Value range: 0, 14

WASTE CONTENT

Data Channels.Trane1.Waste Content.LeadOC
Description: Organic waste Lead content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.LeadAC
Description: Aqueous waste Lead content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.LeadKC
Description: Kerosene Lead content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.BerylliumOC
Description: Organic waste Beryllium content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.BerylliumAC
Description: Aqueous waste Beryllium content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.BerylliumKC
Description: Kerosene Beryllium content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.ArsenicOC
Description: Organic waste Arsenic content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.ArsenicAC
Description: Aqueous waste Arsenic content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.ArsenicKC
Description: Kerosene Arsenic content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.CadmiumOC
Description: Organic waste Cadmium content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.CadmiumAC
Description: Aqueous waste Cadmium content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.CadmiumKC
Description: Kerosene Cadmium content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.ChromiumOC
Description: Organic waste Chromium content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.ChromiumAC
Description: Aqueous waste Chromium content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.ChromiumKC
Description: Kerosene Chromium content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.MercuryOC
Description: Organic waste Mercury content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.MercuryAC
Description: Aqueous waste Mercury content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.MercuryKC
Description: Kerosene Mercury content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.ChlorineOC
Description: Organic waste Chlorine content
Eng. Units: mg/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.ChlorineAC
Description: Aqueous waste Chlorine content
Eng. Units: mg/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.ChlorineKC
Description: Kerosene Chlorine content
Eng. Units: mg/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.AshOC
Description: Organic waste ash content
Eng. Units: mg/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.AshAC
Description: Aqueous waste Ash content
Eng. Units: mg/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.AshKC
Description: Kerosene Ash content
Eng. Units: mg/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.OChlorineAC
Description: Aqueous waste organic chlorine content
Eng. Units: mg/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.OChlorineOC
Description: Organic waste organic chlorine content
Eng. Units: mg/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane1.Waste Content.OChlorineKC
Description: Kerosene organic chlorine content
Eng. Units: mg/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

CEM QUALITY

Data Channels.Trane1.CEMQuality
Description: Trane1 CEM Data Quality
Channel status: Analog, Active, Memory only
Processing: Value range: 0, 100

TRANE #2

CEMQUALITY

Data Channels.Trane2.CEMQuality
Description: Trane2 CEM Data Quality
Channel status: Analog, Active, Memory only
Processing: Value range: 0, 100

RELAYS

Data Channels.Trane2.Relays.Maintenance
Description: Trane2 Maintenance
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane2.Relays.Caution
Description: Trane2 Warning
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Auto acknowledge on normal

Data Channels.Trane2.Relays.Error
Description: Trane2 Malfunction
Channel status: Digital, Active
Calc. Formula: [*opcProvox.ProvoxDown*] OR [*opcProvox.PASServerDown*]
Alarm on High: Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.Relays.Process Down
Description: Trane2 Process Down
Channel status: Digital, Active
Calc. Formula: [INC-STATES-L/MVPCV6.0] = 0
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane2.Relays.Startup
Description: Trane2 Startup
Channel status: Digital, Active
Calc. Formula: [INC-STATES-L/MVPCV6.0] = 1
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane2.Relays.Shutdown
Description: Trane2 Shutdown
Channel status: Digital, Active
Calc. Formula: [INC-STATES-L/MVPCV6.0] = 4
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane2.Relays.ReportEE
Description: Report Excess Emission

Channel status: Digital, Active
Calc. Formula: [*Trane2.Relays.Normal Operation*]

Data Channels.Trane2.Relays.ReportMACT
Description: Initiate HWC MACT AWFCO
Channel status: Digital, Active
Calc. Formula: [*Trane2.Relays.Normal Operation*]

Data Channels.Trane2.Relays.AWFCO Testing
Description: Trane2
Channel status: Digital, Active
Calc. Formula: [AWFCO TEST/SP.1] = 3
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane2.Relays.Normal Operation
Description: Normal Operation
Channel status: Digital, Active
Calc. Formula: [INC-STATES-L/MVPCV6.0] = 3
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane2.Relays.Secondary Startup
Description: Secondary Startup
Channel status: Digital, Active
Calc. Formula: [INC-STATES-L/MVPCV6.0] = 2
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane2.Relays.ReportRCRA
Description: Initiate RCRA AWFCO
Channel status: Digital, Active
Calc. Formula: [*Trane2.Relays.Normal Operation*] OR [*Trane2.Relays.Secondary Startup*]

Data Channels.Trane2.Flow Rates.Organic Rate
Display Name: Organic Rate
Description: Organic waste feed rate
Eng. Units: lpm
Channel status: Analog, Active, Logged temporary
Calc. Formula: [FIC908-2/PV.1]
Processing: Value range: 0, 12
High High alarm: Value: 6.5, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.Flow Rates.Aqueous Rate
Display Name: Aqueous Rate
Description: Aqueous waste feed rate
Eng. Units: lpm
Channel status: Analog, Active, Logged temporary
Calc. Formula: [FIC923-2/PV.1]
Processing: Value range: 0, 27.5
High High alarm: Value: 22, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.Flow Rates.Kerosene Rate
Display Name: Kerosene Rate

Description: Kerosene feed rate
Eng. Units: lpm
Channel status: Analog, Active, Logged temporary
Calc. Formula: [FIC904-2/PV.1]
Processing: Value range: 0, 6

Data Channels.Trane2.Flow Rates.Organic Rate.Avg01
Display Name: Organic Rate.Avg01
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Flow Rates.OrganicRate
Processing: Value range: 0, 12

Data Channels.Trane2.Flow Rates.Organic Rate.Avg60
Display Name: Organic Rate.Avg60
Description: Organic waste feed rate (HRA)
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane2.Flow Rates.OrganicRate.Avg01
Processing: Value range: 0, 12
High alarm: Value: 6.2, Severity: 0
High High alarm: Value: 6.5, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 6.5, Low - 0, Severity: 0

Data Channels.Trane2.Flow Rates.Kerosene Rate.Avg01
Display Name: Kerosene Rate.Avg01
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Flow Rates.KeroseneRate
Processing: Value range: 0, 6

Data Channels.Trane2.Flow Rates.Kerosene Rate.Avg60
Display Name: Kerosene Rate.Avg60
Description: Kerosene feed rate (HRA)
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane2.Flow Rates.KeroseneRate.Avg01
Processing: Value range: 0, 6

Data Channels.Trane2.Flow Rates.Aqueous Rate.Avg01
Display Name: Aqueous Rate.Avg01
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Flow Rates.AqueousRate
Processing: Value range: 0, 27.5

Data Channels.Trane2.Flow Rates.Aqueous Rate.Avg60
Display Name: Aqueous Rate.Avg60
Description: Aqueous waste feed rate (HRA)
Eng. Units: lpm

Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane2.Flow Rates.AqueousRate.Avg01
Processing: Value range: 0, 27.5
High alarm: Value: 20, Severity: 0
High High alarm: Value: 22, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: Acknowledgement not required, Any condition: High - 22, Low - 0, Severity: 0

Data Channels.Trane2.Flow Rates.Aqueous Rate (min)
Display Name: Aqueous Rate (min)
Description: Aqueous waste feed rate (minimum)
Eng. Units: lpm
Channel status: Analog, Active
Calc. Formula: [*Trane2.Flow Rates.AqueousRate*]
Processing: Value range: 0, 27.5
High High alarm: Value: 22, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.Flow Rates.Aqueous Rate (min).Avg1D
Display Name: Aqueous Rate (min).Avg1D
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Minimum value average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Flow Rates.AqRateMin
Processing: Value range: 0, 27.5

Data Channels.Trane2.Flow Rates.Aqueous Rate (max)
Display Name: Aqueous Rate (max)
Description: Aqueous waste feed rate (minimum)
Eng. Units: lpm
Channel status: Analog, Active
Calc. Formula: [*Trane2.Flow Rates.AqueousRate*]
Processing: Value range: 0, 27.5
High High alarm: Value: 22, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.Flow Rates.Aqueous Rate (max).Avg1D
Display Name: Aqueous Rate (max).Avg1D
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Maximum value average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Flow Rates.AqRateMax
Processing: Value range: 0, 27.5

Data Channels.Trane2.Flow Rates.Organic Rate (min)
Display Name: Organic Rate (min)
Description: Organic waste feed rate (minimum)
Eng. Units: lpm
Channel status: Analog, Active
Calc. Formula: [*Trane2.Flow Rates.OrganicRate*]
Processing: Value range: 0, 100

Data Channels.Trane2.Flow Rates.Organic Rate (min).Avg1D
Display Name: Organic Rate (min).Avg1D
Eng. Units: lpm

Channel status: Analog, Active, Logged permanently, Minimum value average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Flow Rates.OrRateMin
Processing: Value range: 0, 100

Data Channels.Trane2.Flow Rates.Organic Rate (max)
Display Name: Organic Rate (max)
Description: Organic waste feed rate (maximum)
Eng. Units: lpm
Channel status: Analog, Active
Calc. Formula: [*Trane2.Flow Rates.OrganicRate*]
Processing: Value range: 0, 100

Data Channels.Trane2.Flow Rates.Organic Rate (max).Avg1D
Display Name: Organic Rate (max).Avg1D
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Maximum value average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Flow Rates.OrRateMax
Processing: Value range: 0, 100

Data Channels.Trane2.Flow Rates.Kerosene Rate (min)
Display Name: Kerosene Rate (min)
Description: Kerosene feed rate (maximum)
Eng. Units: lpm
Channel status: Analog, Active
Calc. Formula: [*Trane2.Flow Rates.KeroseneRate*]
Processing: Value range: 0, 100

Data Channels.Trane2.Flow Rates.Kerosene Rate (min).Avg1D
Display Name: Kerosene Rate (min).Avg1D
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Minimum value average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Flow Rates.KrRateMin
Processing: Value range: 0, 100

Data Channels.Trane2.Flow Rates.Kerosene Rate (max)
Display Name: Kerosene Rate (max)
Description: Kerosene feed rate (maximum)
Eng. Units: lpm
Channel status: Analog, Active
Calc. Formula: [*Trane2.Flow Rates.KeroseneRate*]
Processing: Value range: 0, 100

Data Channels.Trane2.Flow Rates.Kerosene Rate (max).Avg1D
Display Name: Kerosene Rate (max).Avg1D
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Maximum value average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Flow Rates.KrRateMax
Processing: Value range: 0, 100

Data Channels.Trane2.Flow Rates.Aqueous Rate (total)
Display Name: Aqueous Rate (total)
Description: Aqueous waste feed rate (total)

Eng. Units: lpm
Channel status: Analog, Active
Calc. Formula: [*Trane2.Flow Rates.AqueousRate*]
Processing: Value range: 0, 27.5
High High alarm: Value: 22, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.Flow Rates.Aqueous Rate (total).Avg1D
Display Name: Aqueous Rate (total).Avg1D
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Summation average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Flow Rates.AqRateTotal
Processing: Value range: 0, 27.5

Data Channels.Trane2.Flow Rates.Kerosene Rate (total)
Display Name: Kerosene Rate (total)
Description: Kerosene feed rate
Eng. Units: lpm
Channel status: Analog, Active
Calc. Formula: [*Trane2.Flow Rates.KeroseneRate*]
Processing: Value range: 0, 6

Data Channels.Trane2.Flow Rates.Organic Rate (total)
Display Name: Organic Rate (total)
Description: Organic waste feed rate
Eng. Units: lpm
Channel status: Analog, Active
Calc. Formula: [*Trane2.Flow Rates.OrganicRate*]
Processing: Value range: 0, 12
High High alarm: Value: 6.5, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.Flow Rates.Organic Rate (total).Avg1D
Display Name: Organic Rate (total).Avg1D
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Summation average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Flow Rates.OrRateTotal
Processing: Value range: 0, 12

Data Channels.Trane2.Flow Rates.Kerosene Rate (total).Avg1D
Display Name: Kerosene Rate (total).Avg1D
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Summation average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Flow Rates.KrRateTotal
Processing: Value range: 0, 6

Data Channels.Trane2.Calculated Rates.Lead Rate
Display Name: Lead Rate
Description: Total lead feed rate
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged temporary

Calc. Formula: ([*Trane2.Waste Content.LeadOC*] * [*Trane2.Flow Rates.OrganicRate*] + [*Trane2.Waste Content.LeadAC*] * [*Trane2.Flow Rates.AqueousRate*] + [*Trane2.Waste Content.LeadKC*] * [*Trane2.Flow Rates.KeroseneRate*]) * 60 / 4.54 * 1e-3
Processing: Value range: 0, 100

Data Channels.Trane2.Calculated Rates.Chromium Rate
Display Name: Chromium Rate
Description: Total chromium feed rate
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged temporary
Calc. Formula: ([*Trane2.Waste Content.ChromiumOC*] * [*Trane2.Flow Rates.OrganicRate*] + [*Trane2.Waste Content.ChromiumAC*] * [*Trane2.Flow Rates.AqueousRate*] + [*Trane2.Waste Content.ChromiumKC*] * [*Trane2.Flow Rates.KeroseneRate*]) * 60 / 4.54 * 1e-3
Processing: Value range: 0, 600

Data Channels.Trane2.Calculated Rates.Mercury Rate
Display Name: Mercury Rate
Description: Total mercury feed rate
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged temporary
Calc. Formula: ([*Trane2.Waste Content.MercuryOC*] * [*Trane2.Flow Rates.OrganicRate*] + [*Trane2.Waste Content.MercuryAC*] * [*Trane2.Flow Rates.AqueousRate*] + [*Trane2.Waste Content.MercuryKC*] * [*Trane2.Flow Rates.KeroseneRate*]) * 60 / 4.54 * 1e-3
Processing: Value range: 0, 100

Data Channels.Trane2.Calculated Rates.Chlorine Rate
Display Name: Chlorine Rate
Description: Total chlorine feed rate
Eng. Units: lbs/hr
Channel status: Analog, Active, Logged temporary
Calc. Formula: ([*Trane2.Waste Content.ChlorineOC*] * [*Trane2.Flow Rates.OrganicRate*] + [*Trane2.Waste Content.ChlorineAC*] * [*Trane2.Flow Rates.AqueousRate*] + [*Trane2.Waste Content.ChlorineKC*] * [*Trane2.Flow Rates.KeroseneRate*]) * 1e4 / 1e6 * 60*2.2
Processing: Value range: 0, 300

Data Channels.Trane2.Calculated Rates.Ash Rate
Display Name: Ash Rate
Description: Total ash feed rate
Eng. Units: lbs/hr
Channel status: Analog, Active, Logged temporary
Calc. Formula: ([*Trane2.Waste Content.AshOC*] * [*Trane2.Flow Rates.OrganicRate*] + [*Trane2.Waste Content.AshAC*] * [*Trane2.Flow Rates.AqueousRate*] + [*Trane2.Waste Content.AshKC*] * [*Trane2.Flow Rates.KeroseneRate*]) * 1e4 / 1e6 * 60
Processing: Value range: 0, 400

Data Channels.Trane2.Calculated Rates.Ash Rate.Avg01
Display Name: Ash Rate.Avg01
Eng. Units: lbs/hr
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Calculated Rates.AshRate
Processing: Value range: 0, 400

Data Channels.Trane2.Calculated Rates.Ash Rate.Avg12H
Display Name: Ash Rate.Avg12H

Description: Total ash feed rate (12-HRA)
Eng. Units: lbs/hr
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 720
Shortcut: Data Channels.Trane2.Calculated Rates.AshRate.Avg01
Processing: Value range: 0, 400
High alarm: Value: 301, Severity: 0
High High alarm: Value: 317, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 334, Low - 0, Severity: 0

Data Channels.Trane2.Calculated Rates.Chlorine Rate.Avg01
Display Name: Chlorine Rate.Avg01
Eng. Units: lbs/hr
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Calculated Rates.ChlorineRate
Processing: Value range: 0, 300

Data Channels.Trane2.Calculated Rates.Chlorine Rate.Avg12H
Display Name: Chlorine Rate.Avg12H
Description: Total chlorine feed rate (12-HRA)
Eng. Units: lbs/hr
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 720
Shortcut: Data Channels.Trane2.Calculated Rates.ChlorineRate.Avg01
Processing: Value range: 0, 300
High alarm: Value: 251, Severity: 0
High High alarm: Value: 265, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 279, Low - 0, Severity: 0

Data Channels.Trane2.Calculated Rates.Chromium Rate.Avg01
Display Name: Chromium Rate.Avg01
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Calculated Rates.ChromiumRate
Processing: Value range: 0, 600

Data Channels.Trane2.Calculated Rates.Chromium Rate.Avg12H
Display Name: Chromium Rate.Avg12H
Description: Total chromium feed rate (12-HRA)
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 720
Shortcut: Data Channels.Trane2.Calculated Rates.ChromiumRate.Avg01
Processing: Value range: 0, 600
High alarm: Value: 508.5, Severity: 0
High High alarm: Value: 536.75, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 565, Low - 0, Severity: 0

Data Channels.Trane2.Calculated Rates.Mercury Rate.Avg01
Display Name: Mercury Rate.Avg01
Eng. Units: lbs/hr * 1e5

Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Calculated Rates.MercuryRate
Processing: Value range: 0, 100

Data Channels.Trane2.Calculated Rates.Mercury Rate.Avg12H
Display Name: Mercury Rate.Avg12H
Description: Total mercury feed rate (12-HRA)
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 720
Shortcut: Data Channels.Trane2.Calculated Rates.MercuryRate.Avg01
Processing: Value range: 0, 100
High alarm: Value: 43.2, Severity: 0
High High alarm: Value: 45.6, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 48, Low - 0, Severity: 0

Data Channels.Trane2.Calculated Rates.Lead Rate.Avg01
Display Name: Lead Rate.Avg01
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Calculated Rates.LeadRate
Processing: Value range: 0, 100

Data Channels.Trane2.Calculated Rates.Lead Rate.Avg12H
Display Name: Lead Rate.Avg12H
Description: Total lead feed rate (12-HRA)
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 720
Shortcut: Data Channels.Trane2.Calculated Rates.LeadRate.Avg01
Processing: Value range: 0, 100
High alarm: Value: 42.39, Severity: 0
High High alarm: Value: 44.745, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 47.1, Low - 0, Severity: 0

Data Channels.Trane2.Calculated Rates.Arsenic Rate
Display Name: Arsenic Rate
Description: Total arsenic feed rate
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged temporary
Calc. Formula: ([*Trane2.Waste Content.ArsenicOC*] * [*Trane2.Flow Rates.OrganicRate*] + [*Trane2.Waste Content.ArsenicAC*] * [*Trane2.Flow Rates.AqueousRate*] + [*Trane2.Waste Content.ArsenicKC*] * [*Trane2.Flow Rates.KeroseneRate*]) * 60 / 4.54 * 1e-3
Processing: Value range: 0, 200

Data Channels.Trane2.Calculated Rates.Arsenic Rate.Avg01
Display Name: Arsenic Rate.Avg01
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Calculated Rates.ArsenicRate
Processing: Value range: 0, 200

Data Channels.Trane2.Calculated Rates.Beryllium Rate.Avg01
Display Name: Beryllium Rate.Avg01
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Calculated Rates.BeryliumRate
Processing: Value range: 0, 100

Data Channels.Trane2.Calculated Rates.Beryllium Rate.Avg12H
Display Name: Beryllium Rate.Avg12H
Description: Total beryllium feed rate (12-HRA)
Eng. Units: lbs/hr * 1e5
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 720
Shortcut: Data Channels.Trane2.Calculated Rates.BeryliumRate.Avg01
Processing: Value range: 0, 100
High alarm: Value: 16.92, Severity: 0
High High alarm: Value: 17.86, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 18.8, Low - 0, Severity: 0

Data Channels.Trane2.Calculated Rates.Org Chlorine Rate
Display Name: Org Chlorine Rate
Description: Total organic chlorine feed rate
Eng. Units: lbs/hr
Channel status: Analog, Active, Logged temporary
Calc. Formula: ([*Trane2.Waste Content.OChlorineOC*] * [*Trane2.Flow Rates.OrganicRate*] + [*Trane2.Waste Content.OChlorineAC*] * [*Trane2.Flow Rates.AqueousRate*] + [*Trane2.Waste Content.OChlorineKC*] * [*Trane2.Flow Rates.KeroseneRate*]) * 1e4 / 1e6 * 60*2.2
Processing: Value range: 0, 80

Data Channels.Trane2.Calculated Rates.Org Chlorine Rate.Avg01
Display Name: Org Chlorine Rate.Avg01
Eng. Units: lbs/hr
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Calculated Rates.OChlorineRate
Processing: Value range: 0, 80

Data Channels.Trane2.Calculated Rates.Org Chlorine Rate.Avg60
Display Name: Org Chlorine Rate.Avg60
Description: Total organic chlorine feed rate (HRA)
Eng. Units: lbs/hr
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane2.Calculated Rates.OChlorineRate.Avg01
Processing: Value range: 0, 80
High alarm: Value: 50, Severity: 0
High High alarm: Value: 60, Severity: 0
Alarm settings: Acknowledgement not required
Excess Emission: User must acknowledge, Any condition: High - 50, Low - 0, Severity: 0

Data Channels.Trane2.Calculated Rates.Ash Rate.Avg60
Display Name: Ash Rate.Avg60
Description: Total ash feed rate (HRA)

Eng. Units: lbs/hr
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane2.Calculated Rates.AshRate.Avg01
Processing: Value range: 0, 400
High alarm: Value: 317, Severity: 0
High High alarm: Value: 334, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.Waste Content.LeadOC
Description: Organic waste Lead content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.LeadAC
Description: Aqueous waste Lead content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.LeadKC
Description: Kerosene Lead content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.BerylliumOC
Description: Organic waste Beryllium content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.BerylliumAC
Description: Aqueous waste Beryllium content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.BerylliumKC
Description: Kerosene Beryllium content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.ArsenicOC
Description: Organic waste Arsenic content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0

Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.ArsenicAC
Description: Aqueous waste Arsenic content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.ArsenicKC
Description: Kerosene Arsenic content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.CadmiumOC
Description: Organic waste Cadmium content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.CadmiumAC
Description: Aqueous waste Cadmium content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.CadmiumKC
Description: Kerosene Cadmium content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.ChromiumOC
Description: Organic waste Chromium content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.ChromiumAC
Description: Aqueous waste Chromium content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.ChromiumKC
Description: Kerosene Chromium content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0

Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.MercuryOC
Description: Organic waste Mercury content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.MercuryAC
Description: Aqueous waste Mercury content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.MercuryKC
Description: Kerosene Mercury content
Eng. Units: ug/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.ChlorineOC
Description: Organic waste Chlorine content
Eng. Units: mg/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.ChlorineAC
Description: Aqueous waste Chlorine content
Eng. Units: mg/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.ChlorineKC
Description: Kerosene Chlorine content
Eng. Units: mg/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.AshOC
Description: Organic waste ash content
Eng. Units: mg/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.AshAC
Description: Aqueous waste Ash content
Eng. Units: mg/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0

Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.AshKC
Description: Kerosene Ash content
Eng. Units: mg/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.OChlorineAC
Description: Aqueous waste organic chlorine content
Eng. Units: mg/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.OChlorineOC
Description: Organic waste organic chlorine content
Eng. Units: mg/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane2.Waste Content.OChlorineKC
Description: Kerosene organic chlorine content
Eng. Units: mg/liter
Channel status: Analog, Active, Writable, Memory only, Persistent memory
Initial Value: 0
Processing: Value range: 0, 100

Data Channels.Trane2.Combustion Chamber.Aqueous AT Air Flow
Display Name: Aqueous AT Air Flow
Description: Aqueous Air Flow
Eng. Units: scfm
Channel status: Analog, Active
Calc. Formula: [FI975D-2/PV.1]
Processing: Value range: 0, 198

Data Channels.Trane2.Combustion Chamber.Organic AT Air Flow
Display Name: Organic AT Air Flow
Description: Organic Air Flow
Eng. Units: scfm
Channel status: Analog, Active
Calc. Formula: [FI975C-2/PV.1]
Processing: Value range: 0, 125

Data Channels.Trane2.Combustion Chamber.Secondary Air Flow
Display Name: Secondary Air Flow
Description: Secondary Air Flow
Eng. Units: scfm
Channel status: Analog, Active
Calc. Formula: [FIC906-2/PV.1]
Processing: Value range: 0, 634

Data Channels.Trane2.Combustion Chamber.Combustion Air Flow
Display Name: Combustion Air Flow

Description: Combustion Air Flow
Eng. Units: scfm
Channel status: Analog, Active
Calc. Formula: [FIC907-2/PV.1]
Processing: Value range: 0, 2026

Data Channels.Trane2.Combustion Chamber.Total Air Flow
Display Name: Total Air Flow
Description: Total Combustion Air
Eng. Units: scfm
Channel status: Analog, Active, Logged temporary
Calc. Formula: [*Trane2.Combustion Chamber.AFAqueous*] + [*Trane2.Combustion Chamber.AFCombustion*] + [*Trane2.Combustion Chamber.AFOrganic*] + [*Trane2.Combustion Chamber.AFSecondary*]
Processing: Value range: 0, 3000
High alarm: Value: 1880, Severity: 0
High High alarm: Value: 2000, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.Combustion Chamber.Total Air Flow.Avg01
Display Name: Total Air Flow.Avg01
Eng. Units: scfm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Combustion Chamber.AFTotal
Processing: Value range: 0, 3000

Data Channels.Trane2.Combustion Chamber.Total Air Flow.Avg60
Display Name: Total Air Flow.Avg60
Description: Total Combustion Air (HRA)
Eng. Units: scfm
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane2.Combustion Chamber.AFTotal.Avg01
Processing: Value range: 0, 3000
High alarm: Value: 1900, Severity: 0
High High alarm: Value: 1995, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 2000, Low - 0, Severity: 0

Data Channels.Trane2.Combustion Chamber.Incinerator Temp
Display Name: Incinerator Temp
Description: Incinerator Temperature
Eng. Units: °C
Channel status: Analog, Active, Logged temporary
Calc. Formula: [TIC905-2/PV.1]
Processing: Value range: 0, 1200
Low Low alarm: Value: 914, Severity: 0
Low alarm: Value: 968.84, Severity: 0
High alarm: Value: 1125, Severity: 0
High High alarm: Value: 1150, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.Combustion Chamber.Organic AT Prs
Display Name: Organic AT Prs
Description: Organic Atomizing Pressure

Eng. Units: psi
Channel status: Analog, Active, Logged temporary
Calc. Formula: [PI975A-2/PV.1]
Processing: Value range: 0, 75
Low Low alarm: Value: 14, Severity: 0
Low alarm: Value: 14.84, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.Combustion Chamber.Aqueous AT Prs
Display Name: Aqueous AT Prs
Description: Aqueous Atomizing Pressure
Eng. Units: psi
Channel status: Analog, Active, Logged temporary
Calc. Formula: [PI975B-2/PV.1]
Processing: Value range: 0, 75
Low Low alarm: Value: 17, Severity: 0
Low alarm: Value: 18.02, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.Combustion Chamber.Aqueous AT Prs.Avg01
Display Name: Aqueous AT Prs.Avg01
Eng. Units: psi
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Combustion Chamber.AqueousPrs
Processing: Value range: 0, 75

Data Channels.Trane2.Combustion Chamber.Organic AT Prs.Avg01
Display Name: Organic AT Prs.Avg01
Eng. Units: psi
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Combustion Chamber.OrganicPrs
Processing: Value range: 0, 75

Data Channels.Trane2.Combustion Chamber.Incinerator Temp.Avg01
Display Name: Incinerator Temp.Avg01
Eng. Units: °C
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Combustion Chamber.IncTemp
Processing: Value range: 0, 1200

Data Channels.Trane2.Combustion Chamber.Aqueous AT Prs.Avg60
Display Name: Aqueous AT Prs.Avg60
Description: Aqueous Atomizing Pressure (HRA)
Eng. Units: psi
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane2.Combustion Chamber.AqueousPrs.Avg01
Processing: Value range: 0, 75
Low Low alarm: Value: 18, Severity: 0
Low alarm: Value: 20, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 0, Low - 17, Severity: 0

Data Channels.Trane2.Combustion Chamber.Organic AT Prs.Avg60
Display Name: Organic AT Prs.Avg60
Description: Organic Atomizing Pressure (HRA)
Eng. Units: psi
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane2.Combustion Chamber.OrganicPrs.Avg01
Processing: Value range: 0, 75
Low Low alarm: Value: 15, Severity: 0
Low alarm: Value: 18, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 0, Low - 14, Severity: 0

Data Channels.Trane2.Combustion Chamber.Incinerator Temp.Avg60
Display Name: Incinerator Temp.Avg60
Description: Incinerator Temperature (HRA)
Eng. Units: °C
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane2.Combustion Chamber.IncTemp.Avg01
Processing: Value range: 0, 1200
Low Low alarm: Value: 914, Severity: 0
Low alarm: Value: 940, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 0, Low - 914, Severity: 0

Data Channels.Trane2.Combustion Chamber.Heat Input
Display Name: Heat Input
Description: Heat Input
Eng. Units: MMBTU/hr
Channel status: Analog, Active, Logged temporary
Calc. Formula: ([*Trane2.Flow Rates.OrganicRate*] * [*Trane2.Heat Input.HVb*] * [*Trane2.Heat Input.SGb*]+ [*Trane2.Flow Rates.AqueousRate*] * [*Trane2.Heat Input.HVa*] * [*Trane2.Heat Input.SGa*] + [*Trane2.Flow Rates.KeroseneRate*] * [*Trane2.Heat Input.HVc*] * [*Trane2.Heat Input.SGc*]) * 0.264 * 8.34 * 60 / 1e6
Processing: Value range: 0, 20

Data Channels.Trane2.Combustion Chamber.Heat Input.Avg01
Display Name: Heat Input.Avg01
Eng. Units: MMBTU/hr
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Combustion Chamber.HeatInput
Processing: Value range: 0, 20

Data Channels.Trane2.Combustion Chamber.Heat Input.Avg60
Display Name: Heat Input.Avg60
Description: Heat Input (HRA)
Eng. Units: MMBTU/hr
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane2.Combustion Chamber.HeatInput.Avg01
Processing: Value range: 0, 20
Low Low alarm: Value: 4.6, Severity: 0
Low alarm: Value: 5, Severity: 0
High alarm: Value: 10.85, Severity: 0

High High alarm: Value: 11, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: Acknowledgement not required, Any condition: High - 11, Low - 4.5, Severity: 0

Data Channels.Trane2.Combustion Chamber.Aqueous AT Air Flow.Avg01
Display Name: Aqueous AT Air Flow.Avg01
Eng. Units: scfm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Combustion Chamber.AFAqueous
Processing: Value range: 0, 198

Data Channels.Trane2.Combustion Chamber.Combustion Air Flow.Avg01
Display Name: Combustion Air Flow.Avg01
Eng. Units: scfm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Combustion Chamber.AFCombustion
Processing: Value range: 0, 2026

Data Channels.Trane2.Combustion Chamber.Organic AT Air Flow.Avg01
Display Name: Organic AT Air Flow.Avg01
Eng. Units: scfm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Combustion Chamber.AFOrganic
Processing: Value range: 0, 125

Data Channels.Trane2.Combustion Chamber.Secondary Air Flow.Avg01
Display Name: Secondary Air Flow.Avg01
Eng. Units: scfm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Combustion Chamber.AFSecondary
Processing: Value range: 0, 634

Data Channels.Trane2.Quench.QT Blowdown pH
Display Name: QT Blowdown pH
Description: Quench Blowdown pH
Eng. Units: pH
Channel status: Analog, Active, Logged temporary
Calc. Formula: [AIC901-2/PV.1]
Processing: Value range: 0, 14
Low Low alarm: Value: 7.25, Severity: 0
Low alarm: Value: 7.69, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.Quench.QT Exhaust Temp
Display Name: QT Exhaust Temp
Description: Quench Exhaust Temp
Eng. Units: °C
Channel status: Analog, Active, Logged temporary
Calc. Formula: [TI911-2/PV.1]
Processing: Value range: 0, 150
High alarm: Value: 103.4, Severity: 0
High High alarm: Value: 110, Severity: 0

Alarm settings: User must acknowledge

Data Channels.Trane2.Quench.QT Tank Level
Display Name: QT Tank Level
Description: Quench Tank Level
Eng. Units: %
Channel status: Analog, Active, Logged temporary
Calc. Formula: [LIC910-2/PV.1]
Processing: Value range: 0, 100
Low Low alarm: Value: 33, Severity: 0
Low alarm: Value: 34.98, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.Quench.QT Blowdown FI
Display Name: QT Blowdown FI
Description: Quench Blowdown Flow
Eng. Units: lpm
Channel status: Analog, Active, Logged temporary
Calc. Formula: [FI903-2/PV.1]
Processing: Value range: 0, 200
Low Low alarm: Value: 26.5, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.Quench.QT Blowdown FI.Avg01
Display Name: QT Blowdown FI.Avg01
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Quench.QTBlowdownFlow
Processing: Value range: 0, 200

Data Channels.Trane2.Quench.QT Blowdown pH.Avg01
Display Name: QT Blowdown pH.Avg01
Eng. Units: pH
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Quench.QTBlowdown_pH
Processing: Value range: 0, 14

Data Channels.Trane2.Quench.QT Blowdown pH.Avg60
Display Name: QT Blowdown pH.Avg60
Description: Qench Blowdown pH (HRA)
Eng. Units: pH
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane2.Quench.QTBlowdown_pH.Avg01
Processing: Value range: 0, 14
Low Low alarm: Value: 7.4, Severity: 0
Low alarm: Value: 7.8, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 0, Low - 7.25, Severity: 0

Data Channels.Trane2.Quench.QT Exhaust Temp.Avg01
Display Name: QT Exhaust Temp.Avg01
Eng. Units: °C
Channel status: Analog, Active, Logged temporary, Arithmetic mean average

Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Quench.QTExitTemp
Processing: Value range: 0, 150

Data Channels.Trane2.Quench.QT Tank Level.Avg01
Display Name: QT Tank Level.Avg01
Eng. Units: %
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Quench.QTLevel
Processing: Value range: 0, 100

Data Channels.Trane2.Quench.QT Tank Level.Avg60
Display Name: QT Tank Level.Avg60
Description: Quench Tank Level (HRA)
Eng. Units: %
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane2.Quench.QTLevel.Avg01
Processing: Value range: 0, 100
Low Low alarm: Value: 36, Severity: 0
Low alarm: Value: 40, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 0, Low - 33, Severity: 0

Data Channels.Trane2.Quench.QT Blowdown Fl.Avg60
Display Name: QT Blowdown Fl.Avg60
Description: Quench Blowdown Flow (HRA)
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane2.Quench.QTBlowdownFlow.Avg01
Processing: Value range: 0, 200
Low Low alarm: Value: 27, Severity: 0
Low alarm: Value: 28, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 0, Low - 7.25, Severity: 0

Data Channels.Trane2.Quench.QT Exhaust Temp.Avg60
Display Name: QT Exhaust Temp.Avg60
Description: Quench Exhaust Temp (HRA)
Eng. Units: °C
Channel status: Analog, Active, Logged temporary, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane2.Quench.QTExitTemp.Avg01
Processing: Value range: 0, 150

Data Channels.Trane2.Venturi.VT Pressure Drop
Display Name: VT Pressure Drop
Description: Venturi Pressure Drop
Eng. Units: Inches H2O
Channel status: Analog, Active, Logged temporary
Calc. Formula: [PDIC945-2/PV.1]
Processing: Value range: 0, 100
Low Low alarm: Value: 54, Severity: 0
Low alarm: Value: 57.24, Severity: 0

Alarm settings: User must acknowledge

Data Channels.Trane2.Venturi.VT RC Water Flow
Display Name: VT RC Water Flow
Description: Venturi Water Flow
Eng. Units: lpm
Channel status: Analog, Active, Logged temporary
Calc. Formula: [FI901A-2/PV.1]
Processing: Value range: 0, 492
Low Low alarm: Value: 254, Severity: 0
Low alarm: Value: 269.24, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.Venturi.VT Water pH
Display Name: VT Water pH
Description: Venturi Water pH
Eng. Units: pH
Channel status: Analog, Active, Logged temporary
Calc. Formula: [AI902-2/PV.1]
Processing: Value range: 0, 14
Low Low alarm: Value: 6.2, Severity: 0
Low alarm: Value: 6.57, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.Venturi.VT Blowdown FI
Display Name: VT Blowdown FI
Description: Venturi Blowdown Flowrate
Eng. Units: gpm
Channel status: Analog, Active, Logged temporary
Calc. Formula: [FI944-2/PV.1]
Processing: Value range: 0, 12
Low Low alarm: Value: 2, Severity: 0
Low alarm: Value: 2.12, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.Venturi.VT Blowdown FI.Avg01
Display Name: VT Blowdown FI.Avg01
Eng. Units: gpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Venturi.VTBlowdownFlow
Processing: Value range: 0, 12

Data Channels.Trane2.Venturi.VT Blowdown FI.Avg60
Display Name: VT Blowdown FI.Avg60
Description: Venturi Blowdown Flowrate (HRA)
Eng. Units: gpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane2.Venturi.VTBlowdownFlow.Avg01
Processing: Value range: 0, 12
Low Low alarm: Value: 2.3, Severity: 0
Low alarm: Value: 2.5, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 0, Low - 2, Severity: 0

Data Channels.Trane2.Venturi.VT Pressure Drop.Avg01
Display Name: VT Pressure Drop.Avg01
Eng. Units: Inches H2O
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Venturi.VTPressureDrop
Processing: Value range: 0, 100

Data Channels.Trane2.Venturi.VT Pressure Drop.Avg60
Display Name: VT Pressure Drop.Avg60
Description: Venturi Pressure Drop (HRA)
Eng. Units: Inches H2O
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane2.Venturi.VTPressureDrop.Avg01
Processing: Value range: 0, 100
Low Low alarm: Value: 56, Severity: 0
Low alarm: Value: 58, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 0, Low - 54, Severity: 0

Data Channels.Trane2.Venturi.VT Water pH.Avg01
Display Name: VT Water pH.Avg01
Eng. Units: pH
Channel status: Analog, Active, Logged temporary, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Venturi.VTWater_pH
Processing: Value range: 0, 14

Data Channels.Trane2.Venturi.VT RC Water Flow.Avg01
Display Name: VT RC Water Flow.Avg01
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.Trane2.Venturi.VTWaterFlow
Processing: Value range: 0, 492

Data Channels.Trane2.Venturi.VT RC Water Flow.Avg60
Display Name: VT RC Water Flow.Avg60
Description: Venturi Water Flow (HRA)
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.Trane2.Venturi.VTWaterFlow.Avg01
Processing: Value range: 0, 492
Low Low alarm: Value: 267, Severity: 0
Low alarm: Value: 279, Severity: 0
Alarm settings: User must acknowledge
Excess Emission: User must acknowledge, Any condition: High - 0, Low - 254, Severity: 0

Data Channels.Trane2.Venturi.VT Water pH.Avg60
Display Name: VT Water pH.Avg60
Description: Venturi Water pH (HRA)
Eng. Units: pH
Channel status: Analog, Active, Logged temporary, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60

Shortcut: Data Channels.Trane2.Venturi.VTWater_pH.Avg01
Processing: Value range: 0, 14

Data Channels.Trane2.Provox Shutdown.ps01
Description: Limits Sequence Requested Shutdown
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane2.Provox Shutdown.ps02
Description: No Flame and Ignition Valves Not Closed
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane2.Provox Shutdown.ps03
Description: No Flame And Propane Valves Not Closed
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane2.Provox Shutdown.ps04
Description: No Flame And Kero Valves Not Closed
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane2.Provox Shutdown.ps05
Description: No Flame And Aqueous/Water Valves Not Closed
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane2.Provox Shutdown.ps06
Description: No Flame And Organic Valves Not Closed
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane2.Provox Shutdown.ps07
Description: No Flame And G-1 GAs Valves Not Closed
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane2.Provox Shutdown.ps08
Description: No Flame And G-2 Cet/5 Gas Valves Not Closed
Channel status: Digital, Active
Calc. Formula: false

Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane2.Provox Shutdown.ps09
Description: No Flame And G-2 Cet/6 Gas Valves Not Closed
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane2.Provox Shutdown.ps10
Description: Operator Requested Shut Down
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane2.Provox Shutdown.ps11
Description: Lightoff Timer Timed Out
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane2.Provox Shutdown.ps12
Description: Propane Low Air Flow
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane2.Provox Shutdown.ps13
Description: Field 'Stop Burner' Activated
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane2.Provox Shutdown.ps14
Description: Main Flame Trial Failed During Lightoff
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.Trane2.AWFCO RCRA.OChlorineRate
Description: AWFCO organic chlorine feed rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportRCRA>] AND [<Trane2.AWFCO RCRA LIMITS.OChlorineRate>]
Alarm on High: Message: AWFCO active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO RCRA.OrganicRate
Description: AWFCO organic rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportRCRA>] AND [<Trane2.AWFCO RCRA LIMITS.OrganicRate>]

Alarm on High: Message: AWFCO active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO RCRA.AqueousRate
Description: AWFCO Aqueous flow rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportRCRA>] AND [<Trane2.AWFCO RCRA LIMITS.AqueousRate>]
Alarm on High: Message: AWFCO active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO RCRA.AshRate
Description: AWFCO ash rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportRCRA>] AND [<Trane2.AWFCO RCRA LIMITS.AshRate>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO RCRA.IncTemp
Description: AWFCO incinerator temp cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportRCRA>] AND [<Trane2.AWFCO RCRA LIMITS.IncTemp>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO RCRA.AFTotalRate
Description: AWFCO AFTotal rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportRCRA>] AND [<Trane2.AWFCO RCRA LIMITS.AFTotalRate>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO RCRA.AqueousPrs
Description: AWFCO Aqueous pressure cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportRCRA>] AND [<Trane2.AWFCO RCRA LIMITS.AqueousPrs>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO RCRA.OrganicPrs
Description: AWCFO Organic Pressure cutoff rate
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportRCRA>] AND [<Trane2.AWFCO RCRA LIMITS.OrganicPrs>]

Data Channels.Trane2.AWFCO RCRA.QTBlowdown_pH
Description: AWFCO QT Blowdown pH cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportRCRA>] AND [<Trane2.AWFCO RCRA LIMITS.QTBlowdown_pH>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO RCRA.HeatInput
Description: AWFCO HeatInput cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportRCRA>] AND [<Trane2.AWFCO RCRA LIMITS.HeatInput>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO RCRA.QTLevel
Description: AWFCO QT Level minimum cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportRCRA>] AND [<Trane2.AWFCO RCRA LIMITS.QTLevel>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO RCRA.QTExitTemp
Description: AWFCO QT Exit Temperature cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportRCRA>] AND [<Trane2.AWFCO RCRA LIMITS.QTExitTemp>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: Auto acknowledge on normal

Data Channels.Trane2.AWFCO RCRA.VTPressureDrop
Description: AWFCO VT Pressure Drop cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportRCRA>] AND [<Trane2.AWFCO RCRA LIMITS.VTPressureDrop>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO RCRA.VTWaterFlow
Description: AWFCO VT Water Flow cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportRCRA>] AND [<Trane2.AWFCO RCRA LIMITS.VTWaterFlow>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO RCRA.VTWater_pH
Description: AWFCO VT Water pH cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportRCRA>] AND [<Trane2.AWFCO RCRA LIMITS.VTWater_pH>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO RCRA.VTBlowdownFlow
Description: AWFCO VT Blowdown Flow cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportRCRA>] AND [<Trane2.AWFCO RCRA LIMITS.VTBlowdownFlow>]

Data Channels.Trane2.AWFCO RCRA.KeroseneRate
Description: AWFCO Kerosene flow rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportRCRA>] AND [<Trane2.AWFCO RCRA LIMITS.KeroseneRate>]
Alarm on High: Message: AWFCO active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO RCRA.QTBlowdownFlow
Description: AWFCO QT Blowdown Flow cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportRCRA>] AND [<Trane2.AWFCO RCRA LIMITS.QTBlowdownFlow>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO RCRA LIMITS.OChlorineRate

Description: AWFCO Organic chlorine feed rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Calculated Rates.OChlorineRate.Avg60>] >= 57

Data Channels.Trane2.AWFCO RCRA LIMITS.OrganicRate
Description: AWFCO Organic rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Flow Rates.OrganicRate>] >= 6.5 OR IF_CQSET([*Trane2.Flow Rates.OrganicRate*], 'LR')

Data Channels.Trane2.AWFCO RCRA LIMITS.AqueousRate
Description: AWFCO Aqueous flow rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Flow Rates.AqueousRate>] >= 22 OR IF_CQSET([*Trane2.Flow Rates.AqueousRate*], 'LR')

Data Channels.Trane2.AWFCO RCRA LIMITS.AshRate
Description: AWFCO Ash rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Calculated Rates.AshRate.Avg60>] >= 317

Data Channels.Trane2.AWFCO RCRA LIMITS.IncTemp
Description: AWFCO Incinerator Temp. cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Combustion Chamber.IncTemp>] >= 1150 OR [*Trane2.Combustion Chamber.IncTemp*] <= 920

Data Channels.Trane2.AWFCO RCRA LIMITS.AFTotalRate
Description: AWFCO AFTotal rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Combustion Chamber.AFTotal>] >= 2000 OR IF_CQSET([*Trane2.Combustion Chamber.AFTotal*], 'LR')

Data Channels.Trane2.AWFCO RCRA LIMITS.AqueousPrs
Description: AWFCO Aqueous pressure cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Combustion Chamber.AqueousPrs>] <= 17 OR IF_CQSET([*Trane2.Combustion Chamber.AqueousPrs*], 'LR')

Data Channels.Trane2.AWFCO RCRA LIMITS.OrganicPrs
Description: AWCFO Organic pressure cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Combustion Chamber.OrganicPrs>] <= 14 OR IF_CQSET([*Trane2.Combustion Chamber.OrganicPrs*], 'LR')

Data Channels.Trane2.AWFCO RCRA LIMITS.QTBlowdown_pH
Description: AWFCO QT Blowdown pH cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Quench.QTBlowdown_pH>] <= 7.25 OR IF_CQSET([*Trane2.Quench.QTBlowdown_pH*], 'LR')

Data Channels.Trane2.AWFCO RCRA LIMITS.HeatInput
Description: AWFCO Heat Input cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Combustion Chamber.HeatInput.Avg60>] >= 10.9

Data Channels.Trane2.AWFCO RCRA LIMITS.QTLevel
Description: AWFCO QT Level cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Quench.QTLevel>] <= 33 OR IF_CQSET([*Trane2.Quench.QTLevel*], 'LR')

Data Channels.Trane2.AWFCO RCRA LIMITS.QTExitTemp
Description: AWFCO QT Exit Temperature cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Quench.QTExitTemp>] >= 110 OR IF_CQSET([*Trane2.Quench.QTExitTemp*], 'LR')

Data Channels.Trane2.AWFCO RCRA LIMITS.VTPressureDrop
Description: AWFCO VT Pressure Drop cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Venturi.VTPressureDrop>] <= 54 OR IF_CQSET([*Trane2.Venturi.VTPressureDrop*], 'LR')

Data Channels.Trane2.AWFCO RCRA LIMITS.VTWaterFlow
Description: AWFCO VT Water Flow cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Venturi.VTWaterFlow>] <= 254 OR IF_CQSET([*Trane2.Venturi.VTWaterFlow*], 'LR')

Data Channels.Trane2.AWFCO RCRA LIMITS.VTWater_pH
Description: AWFCO VT Water pH cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Venturi.VTWater_pH>] <= 6.2 OR IF_CQSET([*Trane2.Venturi.VTWater_pH*], 'LR')

Data Channels.Trane2.AWFCO RCRA LIMITS.VTBlowdownFlow
Description: AWFCO VT Blowdown Flow cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Venturi.VTBlowdownFlow>] <= 2 OR
IF_CQSET([*Trane2.Venturi.VTBlowdownFlow*], 'LR')

Data Channels.Trane2.AWFCO RCRA LIMITS.KeroseneRate
Description: AWFCO Kerosene flow rate cutoff limit
Channel status: Digital, Active
Calc. Formula: IF_CQSET([*Trane2.Flow Rates.KeroseneRate*], 'LR')

Data Channels.Trane2.AWFCO RCRA LIMITS.QTBlowdownFlow
Description: AWFCO QT Blowdown Flowrate cutoff limit
Channel status: Digital, Active
Calc. Formula: IF_CQSET([*Trane2.Quench.QTBlowdownFlow>], 'LR')

Data Channels.Trane2.AWFCO HWC MACT.ChlorineRate
Description: HWC MACT chlorine feed rate cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportMACT>] AND [<Trane2.AWFCO HWC MACT LIMITS.ChlorineRate>]
Alarm on High: Message: AWFCO active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO HWC MACT.OrganicRate
Description: HWC MACT organic feed rate cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportMACT>] AND [<Trane2.AWFCO HWC MACT LIMITS.OrganicRate>]
Alarm on High: Message: AWFCO active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO HWC MACT.AqueousRate
Description: HWC MACT aqueous flow rate cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportMACT>] AND [<Trane2.AWFCO HWC MACT LIMITS.AqueousRate>]
Alarm on High: Message: AWFCO active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO HWC MACT.AshRate
Description: HWC MACT ash rate cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportMACT>] AND [<Trane2.AWFCO HWC MACT LIMITS.AshRate>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO HWC MACT.MercuryRate
Description: HWC MACT total mercury rate cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportMACT>] AND [<Trane2.AWFCO HWC MACT LIMITS.MercuryRate>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO HWC MACT.LeadRate
Description: HWC MACT total lead rate cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportMACT>] AND [<Trane2.AWFCO HWC MACT LIMITS.LeadRate>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO HWC MACT.CadmiumRate
Description: HWC MACT total cadmium feed rate cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportMACT>] AND [<Trane2.AWFCO HWC MACT LIMITS.CadmiumRate>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO HWC MACT.ArsenicRate
Description: HWC MACT total arsenic feed rate cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportMACT>] AND [<Trane2.AWFCO HWC MACT LIMITS.ArsenicRate>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO HWC MACT.ChromiumRate
Description: HWC MACT total chromium feed rate cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportMACT>] AND [<Trane2.AWFCO HWC MACT LIMITS.ChromiumRate>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO HWC MACT.IncTemp
Description: HWC MACT incinerator temp cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportMACT>] AND [<Trane2.AWFCO HWC MACT LIMITS.IncTemp>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO HWC MACT.AFTotalRate
Description: HWC MACT air flow total cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportMACT>] AND [<Trane2.AWFCO HWC MACT LIMITS.AFTotalRate>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO HWC MACT.AqueousPrs
Description: HWC MACT aqueous pressure cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportMACT>] AND [<Trane2.AWFCO HWC MACT LIMITS.AqueousPrs>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO HWC MACT.OrganicPrs
Description: HWC MACT organic pressure cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportMACT>] AND [<Trane2.AWFCO HWC MACT LIMITS.OrganicPrs>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO HWC MACT.QTBlowdown_pH
Description: HWC MACT QT Blowdown pH cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportMACT>] AND [<Trane2.AWFCO HWC MACT LIMITS.QTBlowdown_pH>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO HWC MACT.HeatInput
Description: HWC MACT heat input cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportMACT>] AND [<Trane2.AWFCO HWC MACT LIMITS.HeatInput>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO HWC MACT.QTBlowdownFlow
Description: HWC MACT QT Blowdown Flow cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportMACT>] AND [<Trane2.AWFCO HWC MACT LIMITS.QTBlowdownFlow>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO HWC MACT.QTLevel
Description: HWC MACT QT Level cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportMACT>] AND [<Trane2.AWFCO HWC MACT LIMITS.QTLevel>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO HWC MACT.VTPressureDrop
Description: HWC MACT VT Pressure Drop cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportMACT>] AND [<Trane2.AWFCO HWC MACT LIMITS.VTPressureDrop>]

Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO HWC MACT.VTWaterFlow
Description: HWC MACT VT Water Flow cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportMACT>] AND [<Trane2.AWFCO HWC MACT LIMITS.VTWaterFlow>]

Data Channels.Trane2.AWFCO HWC MACT.VTBlowdownFlow
Description: HWC MACT VT Blowdown Flow cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportMACT>] AND [<Trane2.AWFCO HWC MACT LIMITS.VTBlowdownFlow>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO HWC MACT.BerylliumRate
Description: HWC MACT total beryllium feed rate cutoff
Channel status: Digital, Active
Calc. Formula: [<Trane2.Relays.ReportMACT>] AND [<Trane2.AWFCO HWC MACT LIMITS.BerylliumRate>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.Trane2.AWFCO HWC MACT LIMITS.ChlorineRate
Description: HWC MACT chlorine feed rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Calculated Rates.ChlorineRate.Avg12H>] >= 265

Data Channels.Trane2.AWFCO HWC MACT LIMITS.OrganicRate
Description: HWC MACT organic feed rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Flow Rates.OrganicRate.Avg60>] >= 6.5

Data Channels.Trane2.AWFCO HWC MACT LIMITS.AqueousRate
Description: HWC MACT aqueous flow rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Flow Rates.AqueousRate.Avg60>] >= 22

Data Channels.Trane2.AWFCO HWC MACT LIMITS.AshRate
Description: HWC MACT ash rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Calculated Rates.AshRate.Avg12H>] >= 317

Data Channels.Trane2.AWFCO HWC MACT LIMITS.MercuryRate
Description: HWC MACT total mercury rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Calculated Rates.MercuryRate.Avg12H>] >= 45.6

Data Channels.Trane2.AWFCO HWC MACT LIMITS.LeadRate
Description: HWC MACT total lead rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Calculated Rates.LeadRate.Avg12H>] >= 44.745

Data Channels.Trane2.AWFCO HWC MACT LIMITS.CadmiumRate
Description: HWC MACT total cadmium feed rate cutoff limit
Channel status: Digital, Active

Calc. Formula: [<Trane2.Calculated Rates.CadmiumRate.Avg12H>] >= 62.7

Data Channels.Trane2.AWFCO HWC MACT LIMITS.ArsenicRate
Description: HWC MACT total arsenic feed rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Calculated Rates.ArsenicRate.Avg12H>] >= 114.95

Data Channels.Trane2.AWFCO HWC MACT LIMITS.ChromiumRate
Description: HWC MACT total chromium feed rate cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Calculated Rates.ChromiumRate.Avg12H>] >= 536.75

Data Channels.Trane2.AWFCO HWC MACT LIMITS.IncTemp
Description: HWC MACT incinerator temp cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Combustion Chamber.IncTemp.Avg60>] <= 920

Data Channels.Trane2.AWFCO HWC MACT LIMITS.AFTotalRate
Description: HWC MACT air flow total cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Combustion Chamber.AFTotal.Avg60>] >= 1995

Data Channels.Trane2.AWFCO HWC MACT LIMITS.AqueousPrs
Description: HWC MACT aqueous pressure cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Combustion Chamber.AqueousPrs.Avg60>] <= 18

Data Channels.Trane2.AWFCO HWC MACT LIMITS.OrganicPrs
Description: HWC MACT organic pressure cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Combustion Chamber.OrganicPrs.Avg60>] <= 15

Data Channels.Trane2.AWFCO HWC MACT LIMITS.QTBlowdown_pH
Description: HWC MACT QT Blowdown pH cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Quench.QTBlowdown_pH.Avg60>] <= 7.4

Data Channels.Trane2.AWFCO HWC MACT LIMITS.HeatInput
Description: HWC MACT heat input cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Combustion Chamber.HeatInput.Avg60>] <= 4.6

Data Channels.Trane2.AWFCO HWC MACT LIMITS.QTBlowdownFlow
Description: HWC MACT QT Blowdown Flow cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Quench.QTBlowdownFlow.Avg60>] <= 27

Data Channels.Trane2.AWFCO HWC MACT LIMITS.QTLevel
Description: HWC MACT QT Level cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Quench.QTLevel.Avg60>] <= 36

Data Channels.Trane2.AWFCO HWC MACT LIMITS.VTPressureDrop
Description: HWC MACT VT Pressure Drop cutoff limit
Channel status: Digital, Active
Calc. Formula: [<Trane2.Venturi.VTPressureDrop.Avg60>] <= 56

Processing: Value range: 0, 100

WESP

Data Channels.WESP.CEMQuality
Description: WESP CEM Data Quality
Channel status: Analog, Active, Memory only
Processing: Value range: 0, 100

Data Channels.WESP.Relays.Error
Description: WESP Malfunction
Channel status: Digital, Active
Calc. Formula: [*opcProvox.ProvoxDown*] OR [*opcProvox.PASServerDown*] OR [*WESP.Digital Values.dv08*]
Alarm on High: Severity: 0
Alarm settings: User must acknowledge

Data Channels.WESP.Relays.Process Down
Description: Process Down
Channel status: Digital, Active
Calc. Formula: [INC-STATES-L/MVPCV5.0] = 0 AND [INC-STATES-L/MVPCV6.0] = 0
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.WESP.Relays.Maintenance
Description: WESP Maintenance
Channel status: Digital, Active
Calc. Formula: false
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.WESP.Relays.Startup
Description: Startup
Channel status: Digital, Active
Calc. Formula: ([INC-STATES-L/MVPCV5.0] = 1 OR [INC-STATES-L/MVPCV6.0] = 1) AND NOT([INC-STATES-L/MVPCV5.0] = 2 OR [INC-STATES-L/MVPCV5.0] = 3 OR [INC-STATES-L/MVPCV6.0] = 2 OR [INC-STATES-L/MVPCV6.0] = 3)

Data Channels.WESP.Relays.Shutdown
Description: WESP
Channel status: Digital, Active
Calc. Formula: ([INC-STATES-L/MVPCV5.0] = 4 OR [INC-STATES-L/MVPCV6.0] = 4) AND NOT([INC-STATES-L/MVPCV5.0] = 3 OR [INC-STATES-L/MVPCV6.0] = 3)

Data Channels.WESP.Relays.ReportMACT
Description: Initiate HWC MACT AWFCO
Channel status: Digital, Active
Calc. Formula: [*WESP.Relays.Normal Operation*]

Data Channels.WESP.Relays.ReportEE
Description: Report Excess Emission
Channel status: Digital, Active
Calc. Formula: [*WESP.Relays.Normal Operation*]

Data Channels.WESP.Relays.Secondary Startup
Description: Secondary Startup
Channel status: Digital, Active
Calc. Formula: ([INC-STATES-L/MVPCV6.0] = 2 OR [INC-STATES-L/MVPCV5.0] = 2) AND NOT([*WESP.Relays.Normal Operation*])

Data Channels.WESP.Relays.Normal Operation
Description: Normal Operation
Channel status: Digital, Active
Calc. Formula: [*Trane1.Relays.Normal Operation*] OR [*Trane2.Relays.Normal Operation*]

Data Channels.WESP.Relays.ReportRCRA
Description: Initiate RCRA AWFCO
Channel status: Digital, Active
Calc. Formula: [*WESP.Relays.Normal Operation*]

Data Channels.WESP.Analog Values.Tank Level
Display Name: Tank Level
Description: WESP Recycle Tank Level
Eng. Units: %
Channel status: Analog, Active
Calc. Formula: [LI-901-W/PV.1]
Processing: Value range: 0, 100

Data Channels.WESP.Analog Values.Lower Spray
Display Name: Lower Spray
Description: Recycle Water To Precipitator Lower Spray
Eng. Units: lpm
Channel status: Analog, Active
Calc. Formula: [FI-902-W/PV.1]
Processing: Value range: 0, 350

Data Channels.WESP.Analog Values.Water pH
Display Name: Water pH
Description: WESP Recycle Water pH
Eng. Units: pH
Channel status: Analog, Active
Calc. Formula: [AI-901-W/PV.1]
Processing: Value range: 0, 14

Data Channels.WESP.Analog Values.Flow Bleed WW
Display Name: Flow Bleed WW
Description: WESP Bleed To Waste Water 1 [Magmeter]
Eng. Units: gpm
Channel status: Analog, Active
Calc. Formula: [FI-901-W/PV.1]
Processing: Value range: 0, 25

Data Channels.WESP.Analog Values.Temp Bleed WW
Display Name: Temp Bleed WW
Description: WESP Bleed To Waste Water 2 [Temp Transmitter]
Eng. Units: °C
Channel status: Analog, Active
Calc. Formula: [TI-902-W/PV.1]
Processing: Value range: 0, 100

Data Channels.WESP.Analog Values.GasesTemp
Description: Precipitator Gas Inlet From Incinerators 1 [Temp Transmitter]
Eng. Units: °C
Channel status: Analog, Active
Calc. Formula: [TI-901-W/PV.1]
Processing: Value range: 0, 100

Data Channels.WESP.Analog Values.Gases Pressure
Display Name: Gases Pressure
Description: Precipitator Gas Inlet From Incinerators 2 [Diff Press Transm]
Eng. Units: Inch H2O
Channel status: Analog, Active
Calc. Formula: [PI-901-W/PV.1]
Processing: Value range: 0, 15

Data Channels.WESP.Analog Values.Caustic Flow
Display Name: Caustic Flow
Description: WESP Caustic Solution Feed
Eng. Units: lpm
Channel status: Analog, Active
Calc. Formula: [FI-903-W/PV.1]
Processing: Value range: 0, 100

Data Channels.WESP.Analog Values.Sec Voltage
Display Name: Sec Voltage
Description: WESP Secondary Voltage
Eng. Units: kvdc
Channel status: Analog, Active, Logged temporary
Calc. Formula: [WVI-901-W/PV.1]
Processing: Value range: 0, 40

Data Channels.WESP.Analog Values.Sec Current
Display Name: Sec Current
Description: WESP Secondary Current
Eng. Units: mA
Channel status: Analog, Active
Calc. Formula: [WCI-901-W/PV.1]
Processing: Value range: 0, 1200

Data Channels.WESP.Analog Values.Flow Bleed WW.Avg01
Display Name: Flow Bleed WW.Avg01
Eng. Units: gpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.WESP.Analog Values.FlowBleedWW
Processing: Value range: 0, 25

Data Channels.WESP.Analog Values.Temp Bleed WW.Avg01
Display Name: Temp Bleed WW.Avg01
Eng. Units: °C
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.WESP.Analog Values.TempBleedWW
Processing: Value range: 0, 100

Data Channels.WESP.Analog Values.Caustic Flow.Avg01

Display Name: Caustic Flow.Avg01
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.WESP.Analog Values.CausticFlow
Processing: Value range: 0, 100

Data Channels.WESP.Analog Values.GasesTemp.Avg01
Eng. Units: °C
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.WESP.Analog Values.GasesTemp
Processing: Value range: 0, 100

Data Channels.WESP.Analog Values.Gases Pressure.Avg01
Display Name: Gases Pressure.Avg01
Eng. Units: Inch H2O
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.WESP.Analog Values.GasesPres
Processing: Value range: 0, 15

Data Channels.WESP.Analog Values.Tank Level.Avg01
Display Name: Tank Level.Avg01
Eng. Units: %
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.WESP.Analog Values.RecTankLevel
Processing: Value range: 0, 100

Data Channels.WESP.Analog Values.Water pH.Avg01
Display Name: Water pH.Avg01
Eng. Units: pH
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.WESP.Analog Values.RecWaterPH
Processing: Value range: 0, 14

Data Channels.WESP.Analog Values.Lower Spray.Avg01
Display Name: Lower Spray.Avg01
Eng. Units: lpm
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.WESP.Analog Values.RecLowerSpray
Processing: Value range: 0, 350

Data Channels.WESP.Analog Values.Sec Current.Avg01
Display Name: Sec Current.Avg01
Eng. Units: mA
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.WESP.Analog Values.SecCurrent
Processing: Value range: 0, 1200

Data Channels.WESP.Analog Values.Sec Voltage.Avg01
Display Name: Sec Voltage.Avg01

Eng. Units: kvdc
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.WESP.Analog Values.SecVoltage
Processing: Value range: 0, 40

Data Channels.WESP.Analog Values.Sec Power
Display Name: Sec Power
Description: WESP Secondary Power
Eng. Units: kW
Channel status: Analog, Active, Logged temporary
Calc. Formula: [*WESP.Analog Values.SecCurrent*] / 1000 * [*WESP.Analog Values.SecVoltage*]
Processing: Value range: 0, 80

Data Channels.WESP.Analog Values.Sec Power.Avg01
Display Name: Sec Power.Avg01
Eng. Units: kW
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.WESP.Analog Values.SecondaryPower
Processing: Value range: 0, 80

Data Channels.WESP.Analog Values.Sec Power.Avg60
Display Name: Sec Power.Avg60
Description: WESP Secondary Power (HRA)
Eng. Units: kW
Channel status: Analog, Active, Logged permanently, Arithmetic mean rolling average
Average rule: <Default> Source: 1MIN, Points: 60
Shortcut: Data Channels.WESP.Analog Values.SecondaryPower.Avg01
Processing: Value range: 0, 80
Low Low alarm: Value: 3.5, Severity: 0
Low alarm: Value: 4.5, Severity: 0
Alarm settings: User must acknowledge

Data Channels.WESP.Analog Values.CoolingWater
Description: Cooling water inlet flow to precipitator
Eng. Units: lps
Channel status: Analog, Active
Calc. Formula: [FI-904-W/PV.1]
Processing: Value range: 0, 20

Data Channels.WESP.Analog Values.CoolingWater.Avg01
Eng. Units: lps
Channel status: Analog, Active, Logged permanently, Arithmetic mean average
Average rule: <Default> Source: CV, Points: 1
Shortcut: Data Channels.WESP.Analog Values.CoolingWater
Processing: Value range: 0, 20

Data Channels.WESP.Digital Values.dv03
Description: Cooling Water Inlet Flow To Precipitator
Channel status: Digital, Active
Calc. Formula: [FSL-906-W/PV.1] = 1

Data Channels.WESP.Digital Values.dv04
Description: WESP Recycle Pump
Channel status: Digital, Active

Calc. Formula: [P-901-W/PV.1] = 1

Data Channels.WESP.Digital Values.dv05
Description: WESP P-1 Overload
Channel status: Digital, Active
Calc. Formula: [MF-901-W/PV.1] = 1

Data Channels.WESP.Digital Values.dv06
Description: WESP Control Power
Channel status: Digital, Active
Calc. Formula: [XS-901-W/PV.1] = 1

Data Channels.WESP.Digital Values.dv07
Description: WESP High Voltage On
Channel status: Digital, Active
Calc. Formula: [XS-902-W/PV.1] = 1

Data Channels.WESP.Digital Values.dv08
Description: WESP Fail
Channel status: Digital, Active
Calc. Formula: [XS-903-W/PV.1] = 1
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Data Channels.WESP.Digital Values.dv09
Description: WESP Purge Blower
Channel status: Digital, Active
Calc. Formula: [XS-904-W/PV.1] = 1

Data Channels.WESP.Digital Values.dv10
Description: WESP Purge Heater
Channel status: Digital, Active
Calc. Formula: [XS-905-W/PV.1] = 1

Data Channels.WESP.Digital Values.dv11
Description: WESP Tank Fresh Water Make-up
Channel status: Digital, Active
Calc. Formula: [FV-905-W/SP.1] = 1

Data Channels.WESP.Digital Values.dv12
Description: WESP High Voltage Enable (STOP)
Channel status: Digital, Active
Calc. Formula: [XC-906-W/PV.1] = 1

Data Channels.WESP.AWFCO HWC MACT.SecondaryPower
Description: HWC MACT Secondary Power Input cutoff limit
Channel status: Digital, Active
Calc. Formula: [<WESP.Relays.ReportMACT>] AND [<WESP.AWFCO HWC MACT LIMITS.SecondaryPower>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: Auto acknowledge on normal

Data Channels.WESP.AWFCO RCRA.SecondaryPower
Description: AWFCO Secondary Power Input cutoff limit
Channel status: Digital, Active
Calc. Formula: [<WESP.Relays.ReportRCRA>] AND [<WESP.AWFCO RCRA LIMITS.SecondaryPower>]

Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.WESP.AWFCO RCRA.SecondaryCurrent
Description: AWFCO Secondary Current Input cutoff limit
Channel status: Digital, Active
Calc. Formula: [<WESP.Relays.ReportRCRA>] AND [<WESP.AWFCO RCRA LIMITS.SecondaryCurrent>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.WESP.AWFCO RCRA.SecondaryVoltage
Description: AWFCO Secondary Voltage Input cutoff limit
Channel status: Digital, Active
Calc. Formula: [<WESP.Relays.ReportRCRA>] AND [<WESP.AWFCO RCRA LIMITS.SecondaryVoltage>]
Alarm on High: Message: AWFCO Active, Severity: 0
Alarm settings: User must acknowledge

Data Channels.WESP.AWFCO HWC MACT LIMITS.SecondaryPower
Description: HWC MACT Secondary Power Input cutoff limit
Channel status: Digital, Active
Calc. Formula: [<WESP.Analog Values.SecondaryPower.Avg60>] <= 3.5

Data Channels.WESP.AWFCO RCRA LIMITS.SecondaryPower
Description: AWFCO Secondary Power Input cutoff limit
Channel status: Digital, Active
Calc. Formula: [<WESP.Analog Values.SecondaryPower.Avg60>] <= 3.5

Data Channels.WESP.AWFCO RCRA LIMITS.SecondaryCurrent
Description: AWFCO Secondary current cutoff limit
Channel status: Digital, Active
Calc. Formula: IF_CQSET([*WESP.Analog Values.SecCurrent*], 'R')

Data Channels.WESP.AWFCO RCRA LIMITS.SecondaryVoltage
Description: AWFCO Secondary voltage cutoff limit
Channel status: Digital, Active
Calc. Formula: IF_CQSET([*WESP.Analog Values.SecVoltage*], 'R')

STATUS

Status.Latest Calcs
Description: Latest data update
Channel status: Analog, Active, Memory only
Processing: Value range: 0, 100

Status.System Run
Description: General Communication Status
Channel status: Digital, Active
Initial Value: Off
Calc. Formula: [SMB_OPC.S700.Comm.Status] AND [SMB_OPC.PLC.Comm.Status] AND [*opcProvox.ProvoxOK*]

Status.Database Queue Size
Description: Database Queue Size
Channel status: Analog, Active, Memory only
Initial Value: 0
Processing: Value range: 0, 100
High alarm: Value: 300, Severity: 0
Alarm settings: User must acknowledge

Status.Database Error
Description: Database Failure
Channel status: Digital, Active, Memory only
Initial Value: On
Alarm on High: Severity: 0
Alarm settings: User must acknowledge

Status.AutoArchive Fail
Description: Latest AutoArchive Operation Fail
Channel status: Digital, Active, Memory only
Initial Value: On
Alarm on High: Severity: 0
Alarm settings: User must acknowledge

Status.Unacknowledged Alarms
Description: Unacknowledged Alarms Exist
Channel status: Digital, Active, Always solve

Status.Active Alarms
Description: Active Alarms Exist
Channel status: Digital, Active

Status.Acknowledge All Alarms
Description: Acknowledge All Alarms Tag
Channel status: Digital, Active

Status.CEMView Offline
Description: CEMView Offline
Channel status: Digital, Active, Memory only
Alarm on High: Severity: 0
Alarm settings: Acknowledgement not required

Status.Avg60

Channel status: Digital, Active, Memory only

Status.Avg15
Channel status: Digital, Active, Memory only

Status.Avg05
Channel status: Digital, Active, Memory only

Status.Avg01
Channel status: Digital, Active, Memory only

Status.Avg1D
Channel status: Digital, Active, Memory only

Status.DemoHoursLeft
Description: DemoHoursLeft
Channel status: Analog, Active, Memory only
Processing: Value range: 0, 100

Status.Avg12H
Channel status: Digital, Active, Memory only

Status.TempLicense
Description: Using Temporary License. Please, obtain permanent one!
Channel status: Digital, Active, Memory only
Alarm on High: Severity: 0
Alarm settings: User must acknowledge

Status.NoLicense
Description: License invalid or expired. Please, obtain a new one!
Channel status: Digital, Active, Memory only
Alarm on High: Severity: 0
Alarm settings: User must acknowledge

Status.Avg10
Channel status: Digital, Active, Memory only

API INDUSTRIES INC.
GUAYAMA, PUERTO RICO

PROVOX DCS / NEXUS DAS INTERFACE

DETAIL DESIGN SPECIFICATION

Revision 1

Prepared by

Emerson Process Management
PROCONEX

Project Number 3008494

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0	08-Sep-04	Carlos Moreno	Issued for Approval.
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1. Design Overview Description

The purpose of the Provox DCS / Nexus DAS Interface Detailed Design Specification is to clarify and document ***Emerson's*** interpretation of the data required to be communicated between the Provox DCS and the Nexus DAS. Clarification and documentation must be made where the requirements are not absolutely clear.

2. Modification and Assumptions

The following is a list of modifications and assumptions. These modifications and assumptions are incorporated in the Provox DCS / Nexus DAS Detailed Design Specification.

Description None

3. Provox DCS / Nexus DAS Data Exchange

The Provox DCS and the Nexus DAS will communicate through a Provox Applications Server (PAS). The Provox DCS and the Nexus DAS will exchange data in two directions: data sourced in the Nexus DAS will be communicated to the Provox DCS and data sourced in the Provox DCS will be communicated to the Nexus DAS. Targeting the required Provox points to the Provox Applications Server (PAS), will allow both systems to exchange the required information.

3.1 Data Sourced in the Nexus DAS

Parameter	Source Device	Destination (Provox DCS)
Incinerator # 1 Waste Cut Off for RCRA	Nexus DAS	MVPCV[5]:RCRA-SSOFF-1
Incinerator # 1 Waste Cut Off for MACT	Nexus DAS	MVPCV[6]:RCRA-SSOFF-1
Incinerator # 2 Waste Cut Off for RCRA	Nexus DAS	MVPCV[5]:RCRA-SSOFF-2
Incinerator # 2 Waste Cut Off for MACT	Nexus DAS	MVPCV[6]:RCRA-SSOFF-2
DAS Heartbeat	Nexus DAS	MVPCV[5]:DASHEARTBT-L
CO 10 Minutes Rolling Average	Nexus DAS	MVPCV[1]:CO-AVG-1
CO 1 hour Rolling Average	Nexus DAS	MVPCV[2]:CO-AVG-1
Instantaneous CO (compensated)	Nexus DAS	MVPCV[4]:CO-AVG-1
WESP Secondary Power 1 Hr. Rolling Average	Nexus DAS	MVPCV[2]:WESP-L

3.2 Data Sourced in the Provox DCS

Parameter	Source Device	Data Source
FIC904-1 - Kero Flow	IFC216	PV:FIC904-1
FIC908-1 - Organic Flow Rate	IFC216	PV:FIC908-1
FIC923-1 - Aqueous Flow Rate	IFC216	PV:PI975B-1
PI975B-1 - Aqueous Atomizing Pressure	IFC216	PV:PI975B-1
PI975A-1 - Organic Atomizing Pressure	IFC216	PV:PI975A-1
TIC905-1 - Incinerator Temperature	IFC216	PV:TIC905-1
FIC907-1 - Combustion Air Flow	IFC216	PV:FIC907-1
FIC906-1 - Secondary Air Flow	IFC216	PV:FIC906-1
FI975C-1 - Organic Atomizing Air Flow	IFC216	PV:FI975C-1
FI975D-1 - Aqueous Atomizing Air Flow	IFC216	PV:FI975D-1
FR975-1 - Total Air	IFC216	SP:FR975-1
AIC901-1 - Quench Tank Blowdown pH	IFC216	PV:AIC901-1
PDIC945-1 - Venturi Differential Pressure	IFC216	PV:PDIC945-1
FI901A-1 - Venturi Recycle Water Flow	IFC216	PV:FI901A-1
AI902-1 - Venturi Recycle Water pH	IFC216	PV:AI902-1
FI944-1 - Venturi Blowdown Flow	IFC216	PV:FI944-1

Parameter	Source Device	Data Source
TI911-1 - Quench Tank Exit Temperature	IFC216	PV:TI911-1
LIC910-1 - Quench Tank Level	IFC216	PV:LIC910-1
FI903-1 Quench Tank Blowdown Flowrate	IFC216	PV:FI903-1
Incinerator #1 Operational States	IFC216	MVPCV[5]:INC-STATES-L
FIC904-2 - Kero Flow	IFC216	PV:FIC904-2
FIC908-2 - Organic Flow Rate	IFC216	PV:FIC908-2
FIC923-2 - Aqueous Flow Rate	IFC216	PV:PI975B-2
PI975B-2 - Aqueous Atomizing Pressure	IFC216	PV:PI975B-2
PI975A-2 - Organic Atomizing Pressure	IFC216	PV:PI975A-2
TIC905-2 - Incinerator Temperature	IFC216	PV:TIC905-2
FIC907-2 - Combustion Air Flow	IFC216	PV:FIC907-2
FIC906-2 - Secondary Air Flow	IFC216	PV:FIC906-2
FI975C-2 - Organic Atomizing Air Flow	IFC216	PV:FI975C-2
FI975D-2 - Aqueous Atomizing Air Flow	IFC216	PV:FI975D-2
FR975-2 - Total Air	IFC216	SP:FR975-2
AIC901-2 - Quench Tank Blowdown pH	IFC216	PV:AIC901-2
PDIC945-2 - Venturi Differential Pressure	IFC216	PV:PDIC945-2
FI901A-2 - Venturi Recycle Water Flow	IFC216	PV:FI901A-2
AI902-2 - Venturi Recycle Water pH	IFC216	PV:AI902-2
FI944-2 - Venturi Blowdown Flow	IFC216	PV:FI944-2
TI911-2 - Quench Tank Exit Temperature	IFC216	PV:TI911-2
LIC910-2 - Quench Tank Level	IFC216	PV:LIC910-2
FI903-2 - Quench Tank Blowdown Flowrate	IFC216	PV:FI903-2
Incinerator #2 Operational States	IFC216	MVPCV[6]:INC-STATES-L
WESP Secondary Power	IFC216	MVPCV[3]:WESP-L
FI-904-W - Cooling Water Inlet Flow to Precipitator	IFC216	PV:FI-301
LI-901-W - WESP Recycle Tank Level	IFC216	PV:LI-201
FI-902-W - Recycle Water to Precipitator Lower Spray	IFC216	PV:FI-201
AI-901-W - WESP Recycle Water pH	IFC216	PV:AI-201
FI-901-W - WESP Bleed to Waste Water	IFC216	PV:FI-501
TI-902-W - WESP Bleed to Waste Water	IFC216	PV:TI-501
TI-901-W - Precipitator Gas Inlet from Incinerators	IFC216	PV:TI-101
PI-901-W - Precipitator Gas Inlet from Incinerators	IFC216	PV:PI-101
FI-903-W - WESP Caustic Solution Feed	IFC216	PV:FI-101
WVI-901-W - WESP Secondary Voltage	IFC216	PV:WVI-701
WCI-901-W - WESP Secondary Current	IFC216	PV:WCI-701
FSL-906-W - Cooling Water Inlet Flow to Precipitator	IFC216	PV:FSL-301
P-901-W - WESP Recycle Pump	IFC216	PV:P-201

Parameter	Source Device	Data Source
MF-901-W - WESP P-201 Overload	IFC216	PV:MF-201
XS-901-W - WESP Control Power On	IFC216	PV:XS-701
XS-902-W - WESP High Volt On	IFC216	PV:XS-702
XS-903-W - WESP Fail	IFC216	PV:XS-703
XS-904-W - WESP Purge Blower	IFC216	PV:XS-704
XS-905-W - WESP Purge Heater	IFC216	PV:XS-705
FV-905-W - WESP Tank Fresh Water Make-Up	IFC216	SP:FV-401
XC-906-W - WESP High Voltage Enable(Stop)	IFC216	SP:XC-706

4. Provox DCS / Nexus DAS Heartbeat

The LCP DASHEARTBT-L and its associated FST DASHEARTBT-F will be used to monitor the communication status between the Nexus DAS and the Provox DCS.

4.1 DASHEARTBT-L LCP Definition

DCS Tag	Point Type	IST	Point Definition
DASHEARTBT-L DASHEARTBT-F	LCP FST		Descriptor: HEARTBEAT Type: Continuous Scan Rate: 5S Alarm A: DOWN Alarm B: Alarm C: Alarm D: IREG[01] - DAS Heartbeat Register IREG[02] - DAS Register IRGE[03] - Maximum Scans BREG[05] - Bypass Flag

4.2 DASHEARTBT-F FST Logic

The Nexus DAS will write a zero value to the Heartbeat Register (IREG[01]) every five seconds. The DASHEARTBT-F FST will increment that same register every five seconds. If the Nexus DAS ceases to reset the register, after 4 scans (20 seconds), the DASHEARTBT-F FST will set the LCP A alarm bit. If needed, this module's functionality can be bypassed by setting BREG[05] = TRUE. The Incinerator # 1 shutdown FST (TRIP1) and the Incinerator #2 shutdown FST (TRIP2) will be modified to shutdown the incinerators when the DASHEARTBT-L LCP A alarm bit is active.

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October 22, 2004

API Industries, Inc.
PO Box 10010
Guayama, P.R. 00785
Attn: Ana Tirado
(787) 864-4545

Dear Ana,

With regard to the Wet Electrostatic Precipitator System (WESP) system located at the API Industries, Inc. Guayama Plant in Puerto Rico I would like to note two items now that the system is operational.

First item is the origin of the designed secondary operating power of the WESP. The value of 10.8kw was derived from the "WET ESP Design Information Section D. High Voltage System" which stated:

4. Minimum Secondary Operating Voltage is to be 27kvdc
5. Minimum Secondary Operating Current is to be 400madc

The product of 27kvdc and 400madc equals 10.8kw (kilowatts). This value was picked based on our initial design of the system. The design is based upon a proprietary performance curve and computer program used to size our systems for a given efficiency. The design for a 99+% efficiency is approximately 1000 watt per 1000 acfm. The total airflow in the system was designed for 10,000 ACFM and a 99.9% efficiency so the design called for 10,000 watts or 10kw which we then derived into a kvdc value and a madc value.

After startup and under process conditions with one incinerator operating the airflow is 1600 acfm therefore a value of 2000 watts (2kw) at this air flow rate through the WESP collector section or higher would produce a 99+% efficiency. According to the operational limits of the plant each of the two incinerators has a range of 1200 acfm to 3000 acfm so the secondary operating power would have to be in a range of 2 to 6KW to achieve a 99+% efficiency for both systems operating.

Second item is to clarify the sequence of startup of the WESP high voltage system during the incinerator startup. During the HAZOP meeting on August 21, 2004 it was agreed that the WESP would not have the high voltage energized until 15 minutes after the hazardous waste was being burned. The reason for the delay was to allow the incinerator system to come online and up to full operating temperature to ensure complete combustion and that no combustible startup gases were present in the WESP housing upon start up of the high voltage system. This change will address the safety concern we had upon startup of the incinerator system. If you require further information please contact me by telephone or email.

Regards,
CR Clean Air Technologies

Patrick Doonan
Project Director
pdoonan@cr-cat.com
Tel. (908) 389-1220 ext. 111

Wet Electrostatic Precipitator (WESP)
Design and Specifications

CROLL-REYNOLDS COMPANY INC.
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Chemical & Mechanical Engineers Since 1917
Tel: (908) 232-4200 Fax: (908) 232-2146

WET ESP Design Information
Project No. 100620
Chemsource Guayama, Puerto Rico

Design Information on the WESP @ ChemSource

A. Operating and Performance Data

1.	WESP Outlet Flowrate at Operating Conditions	10,180 acfm
2.	WESP Outlet Temperature at Operating Conditions	182 deg.F
3.	Particulate Inlet Concentration	0.037 gr/dscf
4.	Particulate Outlet Concentration	< 0.015 gr/dscf
5.	Pressure Drop Across Wet Precipitator	4.5 in. wg.
6.	Treatment Time	1.25 sec.
7.	Scrubbing Liquid Recycle Rate	100 gpm
8.	Cooling Liquid Rate	150 gpm
9.	Cooling Liquid Inlet Temperature	80 deg.F

B. Precipitator Arrangement

1.	Number of H.V. Sections/Field	1
2.	Length of Fields	72 in.
3.	Casing material and thickness	316SS 1/8 in.
4.	Casing Design Pressure	20 in. wg.
5.	Sump Material and Thickness	316SS 1/8 in.
6.	Insulator Compartment Material and Thickness	316SS 1/8 in.

C. Collection System per Precipitator

1.	Number of Gas Passages	188
2.	Spacing of Gas Passages	6 in.
3.	Collecting Electrode Material and Thickness	316SS, 1/16"
4.	Collecting Electrode Effective Height	72 in.
5.	Total Collecting Electrode Surface Area	1735 ft.2

D. High Voltage System

1.	Type of Electrode System	Rigid, Self Supporting
2.	Discharge Electrode Type Material & Thickness	316L, 1/16" in.
3.	Total Eff Lgth of Discharge Electrodes	1128 ft.
4.	Minimum Secondary Operating Voltage	27 KV
5.	Minimum Secondary Operating Current	400mA

E. High Voltage Electrical Set

1.	Type Transformer Rectifier	Full-Wave T/R
2.	Number Transformer Rectifiers per Precipitator	1
3.	Type of Control	Power Guard SQ-300
4.	Transformer Rectifier Rating:	
	KV-	40
	mA -	1200
	mA/ft.2 of Collecting Electrode	0.692
5.	Key Interlocks	By others
6.	Weatherproofed Transformer Rectifiers	Yes

1. GENERAL

1.1 The purpose of the WET ELECTROSTATIC PRECIPITATOR (WESP) is to remove submicron solid particulate, liquid mist and condensed organic matter.

1.2 The WESP shall be designed to operate continuously with a liquid film minimum of 25 microns thick on the surface of collecting tubes.

1.3 The WESP shall be capable to operate for at least 48 hrs. with air purge system down, to allow maintenance personnel to restart the purge system.

1.4 The WESP minimum Specific Collection Area (SCA) shall be 200 sq.ft./ 1000 acfm

1.5 The WESP corona discharge power with ambient air load at standard conditions shall be 2500 Watt/1000 ACFM, minimum.

1.6 The WESP shall be configured for UP flow of gas.

1.7 The WESP shall be weatherproof for outdoor installations, if required.

1.8 The WESP shall be factory assembled and comprise of the following:
1. Wet Electrostatic Precipitator with integral Multi-Channel Bed Pre-scrubber;
2. Transformer Rectifier Set and associated type 304 stainless steel high voltage bus duct;
3. Current Limiting Reactor.
4. Automatic Voltage Control (AVC) panel.

1.9 Not included in Croll-Reynolds scope of supply:
1. Foundations
2. Unloading, Erection and Installation
3. Single point electrical (480 VAC/3Ph/60Hz) power feed to control panel.
4. Process control and power wiring.
5. External Piping.
6. Ductwork.

1.10 The WESP and all components shall have nameplates permanently attached with the following information:
1. Manufacturer's Name and Address
2. Unit Tag No.
3. Manufacturer's Model Number and Manufacturing Date.
4. Manufacturer's Serial Number.

2. MECHANICAL

1.1 The housing of the WESP shall be water and gas tight with the minimum internal pressure of 20 inch w.c.

1.2 The WESP shall be of modular construction, base-mounted and self-supporting. The design shell be such as to minimize the requirement for on-site installation (i.e. it shall be shipped in two pre-assembled and tested parts).

1.3 The WESP shall be capable to work for at least 48 hrs. with air purge system down to allow maintenance personnel to restart purge system.

1.4 Except as otherwise specified herein, all gas exposed surfaces and liquor exposed piping shall be constructed of 316 stainless steel. Surfaces that are not exposed to the gas or the flush / blow down liquor may be constructed of stainless steel type 304.

1.5 The WESP shall be equipped with access doors at the top and bottom collector level and the below pre-scrubber section. The doors shall be 24 inches x 24 inches and shall be gas and liquid tight at the design pressure. Each door shall be locked with a safety key interlock system (Supplied by others).

1.6 The WESP shall consist of 3 major sections:
- Lower Section
- Upper Section
- High Voltage Power Package (see 3. ELECTRICAL)

1.7 LOWER SECTION

1.7.1 The Lower Section shall be a pre-scrubber for gas flow distribution and direct cooling below saturation, if required, as well as coarse particulate removal.

1.8 UPPER SECTION

The Upper Section shall be comprised of water jacketed collection tubes, ionizing electrodes, high voltage support frame, air purge and flushing systems.

1.9 COLLECTING ELECTRODES

1.9.1 The Collecting Electrodes shall be vertical round tubular type with indirect cooling capability.

1.9.2 The Collecting Electrodes Shall be constructed of 16 Ga. Material. Internal weld beads shall be smooth on the inside. On the outside surface collector tubes to be cooled in order to provide minimum of 25 micron thick liquid film.

1.10 HIGH VOLTAGE SUPPORT FRAME

1.10.1 The High Voltage Support Frame shall be suspended from porcelain insulators mounted above the frame within the boundaries of housing.

1.10.2 The insulators shall have a design flashover voltage of at least 75 kV. The support insulators shall be porcelain with a glazed finish. Each insulator shall be housed in an appropriately sized compartment. Each compartment shall be provided with purge air injection.

1.11 IONIZING ELECTRODES

1.11.1 The Ionizing (discharge) electrodes shall be rigid type with discharge points as a part of solid metal mast (no welded or assembled sharp points are allowed). A minimum of 120 sharp points per mast is required. The mast shall be fabricated of ¾" dia. Pipe and 22 GA sheet metal.

1.11.2 Each electrode must be hung from the top and the bottom with the provisions for adjustment to allow for alignment within the collecting tube.

1.11.3 The assembly of electrode masts shall be supported by a structure or rigid steel plates. This overhead structure shall be of sturdy, welded construction, suffice to provide a stable electrode network in the presence of high-voltage arcs, gas velocity and typical plant vibration. The electrode support structure shall allow a vertical deflection of no more than 0.1 inch at the center when connected to all electrodes and loaded with an additional 250 pounds at the center of upper support frame.

1.12 AIR PURGE SYSTEM

1.12.1 The minimum of 100 ACFM of purge air is required for each insulator.

1.12.2 The Air Purge System shall be complete with an air purge fan, heater, filter and required ducting. The entire air purge assembly shall be within the boundaries of the WESP housing.

1.12.3 The air purge filter shall be able to remove coarse and fine dust from the ambient air.

1.12.4 The air purge filter shall be accessible for maintenance.

1.12.5 The air purge ducting shall be of stainless steel construction.

1.12.6 The fan shall be sized to provide the required flow with enough positive pressure to overcome normal friction losses of the ducting and the positive pressure within the precipitator.

1.12.7 The air purge heater shall be of the electric resistance type.

1.13 FLUSHING SYSTEM

1.13.1 The Flushing system shall consist of an array of overhead hydraulic spray nozzles.

1.13.2 The Flushing system shall be capable of delivering a minimum of one (1) gallon per minute of flushing spray per collecting tube.

3. ELECTRICAL

1.14 The Wet Electrostatic Precipitator shall be complete with a high voltage Power Supply Package.

1.15 The Power Supply Package shall allow automatic, unattended operation and shall provide all functions to insure personnel safety and equipment protection for upsets and abnormal operation, including open circuit, short, and combined resistive capacitive loading.

1.16 The Power Supply Package shall provide a minimum installed corona discharge power of 2500 W/ 1000 ACFM, high voltage field intensity of 15 kV/in., and a minimum of 4 mA corona discharge current per collecting tube.

1.17 The input of Power Supply Package shall be 480 Volts, 3 Phase, 60 Hz.

1.18 The High Voltage Power Supply package shall be comprised of:
1. High Voltage Transformer Rectifier set (T/R- set)
2. Current Limiting Reactor (CLR)
3. Automatic Voltage Controller (AVC).

3.6 The WESP and Power Supply Package shall be connected to common ground network with total resistance no more than 4 ohms (by others).

3.7 The WESP and Power Supply Package shall have ½ inch – 13 UNC ground loss with thread protective plug.

3.8 HIGH VOLTAGE TRANSFORMER – RECTIFIER SET

3.8.1 The High Voltage Transformer – Rectifier set (T/R – set) shall consist of a single phase high voltage transformer, high voltage rectifier bridge, air core reactor, and voltage divider. These components are all contained in a tank filled with dielectric coolant fluid. The tank is sealed and suitable for outdoor use. The high voltage bushing must be enclosed by a bus duct. The low voltage junction box on the tank contains the input power terminals, feedback and metering terminals and contacts.

3.8.2 The High Voltage Transformer shall step up the incoming primary voltage to the high level required for WESP. The transformer coil shall be solidly braced to withstand the forces created during arcing of the load. The transformer shall be located in the bottom of the tank.

3.8.3 The Rectifier Bridge shall be a full wave, single phase high voltage rectifier bridge, installed across secondary winding of the transformer. It shall be mounted on a plug – in T/R module. The low potential end of the rectifier bridge shall be

connected to a metering feedback terminal and appropriate current metering resistor with a surge suppressor in the low voltage junction box to provide a load current signal to monitor.

3.8.4 The Air Core Reactor (ACR) shall be in series with the high voltage DC output to limit high frequency current surges to the rectifier generated during sparking in the WESP high voltage field. The ACR shall not limit 60 Hz load current. It shall be also mounted on a plug – in T/R module.

3.8.5 The High Voltage Divider shall be a high resistance series network connected between the high voltage DC output and high voltage metering terminal in the low voltage junction box. A surge suppressor connected in parallel with an appropriate resistor will provide an output voltage signal for monitoring.

3.8.6 The Rectifier, ACR, and Voltage Divider all shall be mounted on a preform board. All connections to this module shall be plug type. Access to this module shall be through the handhold cover.

3.8.7 The surge suppressors shall be mounted in the junction box and are connected between ground, the low potential terminal of the rectifier bridge, and the kV metering terminal from exceeding a safe value if the metering circuits were to open.

3.8.8 The T/R – set tank shall be equipped with the following accessories:

- The dual type temperature gauge with independent well for easy field replacement.
- A magnetic dial type liquid level gauge indicates coolant level;
- A dial type pressure gauge monitor internal pressure;
- Alarm contacts with any of the above gages should be located in the low voltage junction box;
- Pressure relief valve should be located on the handhold cover;
- A coolant drain valve with plug should be provided;
- A ground 0.5 inch – 13 threaded boss with thread protecting plug is provided on the side of the tank for grounding purposes.

3.8.9 The T/R – set shall be equipped with two positions, a non load high voltage switch which performs the following functions:

- grounds the high voltage bushing in series with the ACR
- provides a full wave output at the high voltage bushing.

3.8.10 Two mechanical interlock shells are provided to prevent energization of T/R – set unless the proper locks are installed.

3.9 CURRENT LIMITING REACTOR (CLR)

3.9.1 The CLR shall be connected in series with the primary of the transformer to limit the short circuit current during sparking.

3.10 AUTOMATIC VOLTAGE CONTROLLER

3.10.1 The AUTOMATIC VOLTAGE CONTROLLER (AVC) shall be based on BHA Power Guard SQ-300.

3.10.2 The AVC shall optimize the average kilovolt output that T/R – set delivers to the WESP. This shall give both lower overall energy consumption and high removal efficiency.

3.10.3 The AVC shall be installed in NEMA 12 rated enclosure.

3.10.4 The AVC shall include the following major components

- A three pole, 600V class thermal magnetic circuit breaker for switching as well as short circuit protection.
- The handle mechanism of the circuit breaker should be mechanically interlocked with the door. An interlock system must be installed to lock the circuit breaker in the "OFF" position before performing any service on the T/R set or precipitator.
- Auxiliary System which consists of motor starter for the purge blower and a heater contactor with hand switches and run position indicator lights.
- Customer Interlocks and Connection terminal blocks.
- Microprocessor WESP Power Optimizer to monitor and control the power being supplied to WESP.
- The Power Optimizer Display/Keypad module.
- Thyristor type single phase AC switch.
- Primary current and voltage panel meters.
- Secondary current and voltage panel meters.

3.10.5 The WESP Power Optimizer shall have operational reporting functions:

- spark and arc detection;
- alarm provisions
- high – voltage control;
- setback offset;
- current and voltage limiting;
- automatic ramp rate adjustment for non-sparking conditions.

API INDUSTRIES INC.
GUAYAMA, PUERTO RICO

WET ELECTROSTATIC PRECIPITATOR

DCS DETAIL DESIGN SPECIFICATION

Revision 1

Prepared by

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PROCONEX

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DCS Software Design

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1. Design Overview Description

The purpose of the Wet Electrostatic Precipitator Detail Design Specification is to clarify and document the ***Emerson*** interpretation of the Croll-Reynolds Preliminary Sequence of Operations document. Clarification and documentation must be made where the Croll-Reynolds Preliminary Sequence of Operations document is not absolutely clear. Design items contained in this detailed design specification which are not contained in the Croll-Reynolds Preliminary Sequence of Operations document include:

- Additional High Voltage Enable Permissives and Interlocks
- Provox resident purge timer
- WESP Secondary Power Calculations

2. Modification and Assumptions

The following is a list of modifications and assumptions. These modifications and assumptions are incorporated in the Wet Electrostatic Precipitator Detailed Design Specification.

Description The active incinerator(s) temperature, flame and the instantaneous CO are permissives required to enable the high voltage.

Description The active incinerator(s) temperature, flame, an incinerator shutdown request, the instantaneous CO, the RCRA/MACT cutoff requests from the DAS server, the WESP fault alarm and the inactive incinerator's flame ON are immediate shutdown interlocks that will disable the high voltage.

Description After the high voltage is enabled, if any of the cooling tower system, scrubber liquid loop system or the purge system permissives is not met, the Provue console will activate the following alarm message: Orderly Shutdown Recommended.

Description The instantaneous CO value monitored for the High Voltage permissives and immediate shutdown is 100.

3. Wet Electrostatic Precipitator Database Points

This table defines the DCS database points that will be used to control the Wet Electrostatic Precipitator.

DCS Tag	Point Type	IST	Point Definition
FI-904-W	AI	11-1-1	Descriptor: COOL WTR INL Engineering Units: LPM High Scale: 600 Low Scale: 0 High Alarm Value: 480 Low Alarm Value: 120
FI-902-W	AI	11-1-2	Descriptor: LOWER SPRAY Engineering Units: LPM High Scale: 600 Low Scale: 0 High Alarm Value: n/a Low Alarm Value: 120
AI-901-W	AI	11-1-3	Descriptor: REC TK Ph Engineering Units: pH High Scale: 14 Low Scale: 0 High Alarm Value: 8 Low Alarm Value: 6
FI-901-W	AI	11-1-4	Descriptor: BLEED TO WW Engineering Units: LPM High Scale: 100 Low Scale: 0 High Alarm Value: n/a Low Alarm Value: n/a
FI-903-W	AI	11-2-1	Descriptor: CAUSTIC FLOW Engineering Units: LPM High Scale: 100 Low Scale: 0 High Alarm Value: 80 Low Alarm Value: 20
LI-901-W	AI	11-3-1	Descriptor: REC TK LVL Engineering Units: % High Scale: 100 Low Scale: 0 High/High Alarm Value: 95 High Alarm Value: 80 Low Alarm Value: 20 Low/Low Alarm Value: 5

DCS Tag	Point Type	IST	Point Definition
TI-902-W	AI	11-3-2	Descriptor: BLEED TO WW Engineering Units: DEG C High Scale: 100 Low Scale: 0 High Alarm Value: n/a Low Alarm Value: n/a
TI-901-W	AI	11-3-3	Descriptor: GASES TEMP Engineering Units: DEG C High Scale: 200 Low Scale: 0 High Alarm Value: 160 Low Alarm Value: n/a
PI-901-W	AI	11-3-4	Descriptor: GASES PRESS Engineering Units: IN H2O High Scale: 15 Low Scale: 0 High Alarm Value: 12 Low Alarm Value: n/a
WVI-901-W	AI	11-2-2	Descriptor: SEC VOLTAGE Engineering Units: KVDC High Scale: 80 Low Scale: 0 High Alarm Value: 90 Low Alarm Value: 10
WCI-901-W	AI	11-2-3	Descriptor: SEC CURRENT Engineering Units: mA High Scale: 2000 Low Scale: 0 High Alarm Value: 1500 Low Alarm Value: n/a
FV-905-W	DO	11-5-1	Descriptor: MAKE-UP WTR OFF: CLOSE ON: OPEN
XC-906-W	DO	11-5-3	Descriptor: HV ENABLE OFF: DISABLED ON: ENABLED
FSL-906-W	DI	11-6-1	Descriptor: WTR LOW FLOW Off Word: LOW FLOW On Word: NORMAL
MF-901-W	DI	11-6-3	Descriptor: P-901 OVRLD Off Word: NORMAL On Word: OVRLOAD
XS-901-W	DI	11-6-4	Descriptor: CTRL PWR ON Off Word: OFF On Word: ON
XS-902-W	DI	11-6-5	Descriptor: HIGH VOLT ON Off Word: OFF On Word: ON

DCS Tag	Point Type	IST	Point Definition
XS-903-W	DI	11-6-6	Descriptor: WESP FAIL Off Word: NORMAL On Word: FAILURE
XS-904-W	DI	11-6-7	Descriptor: PURGE BLOWER On Word: ON Off Word: OFF
XS-905-W	DI	11-6-8	Descriptor: PURGE HEATER On Word: ON Off Word: OFF
P-901-W	DCD	Output:11-5-2 Pseudo Output: 9-2-1 Input:11-6-2	Descriptor: WESP P-1 DCD Type: NORMAL DCD Template: STOP/START

4. Wet Electrostatic Precipitator Control Logic

The LCP WESP-L and its associated FST WESP-F will be used to perform all the interlocks and permissives for the Wet Electrostatic Precipitator.

4.1 WESP-L LCP Definition

DCS Tag	Point Type	IST	Point Definition
WESP-L WESP-F	LCP FST		Descriptor: WESP Type: Continuous Scan Rate: 1S Alarm A: IMM_SD Alarm B: REC_SD Alarm C: Alarm D: FPREG[03] – Calculated Secondary Power FPREG[04] – Power 1HR RA from DAS FPREG[05] - WESP Minimum Liquid Flow IREG[01] - Remaining Purge Time IREG[02] - Active Incinerators IREG[03] - LCP Status Word IREG[04] – Incinerators Ready (0 = None, 1 = Inc #1, 2 = Inc # 2, 3 = Inc # 1 and Inc # 2) BREG[01] - Purge Completed BREG[05] - Cooling Water Minimum Flow Achieved (TRUE = Minimum Not Achieved) BREG[06] - Recycle Tank Low/Low Level (TRUE = Low/Low Level) BREG[07] - Recycle Tank Low Level (TRUE = Low Level) BREG[08] - Recycle Tank High Level (TRUE = High Level) BREG[09] - Recycle Tank High/High Level (TRUE = High/High Level) BREG[10] - WESP Minimum Liquid Flow Achieved (TRUE = Minimum Liquid Flow Not Achieved) BREG[11] - Low/Low pH (TRUE = Low/Low pH) BREG[12] - High/High pH (TRUE = High/High pH) BREG[13] - High Inlet Temperature (TRUE = High Temperature) BREG[14] - High Inlet Pressure (TRUE = High Pressure) BREG[16] - Inc #1 Temperature > 914 BREG[17] - Inc #1 Flame is ON BREG[18] - Inc #2 Temperature > 914 BREG[19] - Inc #2 Flame is ON

DCS Tag	Point Type	IST	Point Definition
			BREG[20] - Instantaneous CO < Maximum

4.2 WESP-F FST Control Logic

The WESP-F will perform the permissive and interlock logic associated with the WESP precipitator. The FST will determine which incinerator(s) is active in order to evaluate the appropriate High Voltage Enable Permissives and Immediate Shutdown Interlocks. Also the FST will start / reset the WESP system purge timer and will perform logic calculate the WESP secondary power.

4.2.1 WESP High Voltage Enable Permissive

The FST will energize XC-906-W (High Voltage Enabled) when all of the following conditions are met:

1. Cooling Tower System - Minimum liquid Flow (FSL-906-W) is achieved

2. Scrubber Liquid Loop System - WESP Recycle Tank Level (LI-901-W) Low/Low and High/High alarms are cleared, WESP Minimum Liquid Flow (FI-902-W) is achieved, Recycle Tank pH (AI-901-W) Low/Low and High/High alarms are cleared, Inlet Gas Temperature (TI-901-W) high alarm is cleared, and Inlet Gas Pressure (PI-901-W) high alarm is cleared.

3. Purge System - A 30 minute system purge is completed.

4. Incinerators are Ready – The active incinerator(s) temperature (TIC905-n) is greater than 914 deg C and the Flame (K9005-n) is ON and the Trip Request Bit from SHUT-DOWN-n = FALSE. Since one or two incinerators can be active, the FST will determine the active incinerator(s) by checking the status of the Flame Detector K9005-1 and K9005-2.

5. CO - Instantaneous CO (FPREG[04]:CO-AVG-1) is less than 100.

6. Active Incinerator(s) waste burn time is greater than 15 minutes.

Once the High Voltage is enabled, the operator can turn on the high voltage from the WESP local panel. Once the WESP is in operation, the FST will activate a console message if any of the Cooling Tower System, the Scrubber Liquid Loop System or the Purge System conditions are not met. The message text will be: **Orderly Shutdown Recommended**.

4.2.2 WESP Immediate Shutdown Interlocks

The FST will de-energize XC-906-W (High Voltage Enabled) if any of the following interlocks is active:

1. Active Incinerator(s) temperature (TIC905-n) is less than 914 deg C.

2. Active Incinerator(s) Flame (K9005-n) is OFF.
3. Active Incinerator(s) Trip Request Bit from SHUT-DOWN-n = TRUE
4. Inactive Incinerator Flame (K9005-n) is ON.
5. Instantaneous CO (FPREG[04]:CO-AVG-1) is greater than 100.
6. Active Incinerator(s) RCRA AWFCO.
7. Active Incinerator(s) MACT AWFCO.
8. Active Incinerator(s) waste valves closed.
9. WESP Fault.

4.2.3 WESP Process Permissives / Interlocks

The FST will perform process permissive and interlock logic associated with the Make-up Water Solenoid (FV-905-W) and the Recycle Pump (P-901-W)

1. FV-905-W - The Recycle Tank level (LI-901-W) low alarm will open FV-905-W. The Recycle Tank level high alarm will close FV-905-W.

2. P-901-W - The Recycle Tank Level (LI-901-W) low alarm will prevent the operator to start P-901-W. The Recycle Tank (LI-901-W) low/low alarm will stop P-901-W.

4.2.4 WESP System Purge Timer

The FST will start the system purge timer when the Purge Air Blower (XS-904-W) is ON and the Purge Air Heater (XS-905-W) is ON. The FST will reset the system purge timer when the Purge Air Blower (XS-904-W) is OFF or the Purge Air Heater (XS-905-W) is OFF.

4.2.5 WESP Secondary Power Calculation

The FST will calculate the WESP Secondary Power using the Secondary Voltage (WVI-901-W) and the secondary Current (WCI-901-W). The calculated value will be stored in the floating point register FPREG[1]. This value will be sent to the DAS system for the one hour rolling average calculations. The DAS system will then send the one hour rolling average value to the floating point register FPREG[2].