

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT

SPECIFICATION NUMBER: I-101

DEVICE: Magnetic Flow Meter/Transmitter

TAG: Refer to Instrument Index, Section 17700

SERVICE: Primary Effluent, Primary Sludge, Fermenter Supernatant, Mixed Liquor, Return Activated Sludge, Polymer, Waste Activated Sludge, DAF Subnatant

SIZE AND MATERIAL: Refer to Process Drawings for flow meter size and piping materials

END CONNECTIONS: Flanged

LINING MATERIAL: Neoprene

ELECTRODES 316L SST Bullethead

GROUNDING: 2 – 316L SST Grounding Rings

RANGE: Refer to Process Drawings and/or Instrument Lists

INACCURACY: $\pm 0.5\%$ of span

OUTPUT: 4 to 20 mA DC into 500 OHM load,
HART Protocol

POWER SUPPLY: 120 VAC, 60 HZ

ENCLOSURE: EEMAC 4X Transmitter Housing
EEMAC 4X Sensor

TRANSMITTER MOUNTING: Wall Mount

SENSOR MOUNTING: Flange Mount

APPROVALS REQUIRED: CSA

MANUFACTURER AND MODEL: Rosemount 8700 Series
ABB Magmaster

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT

SPECIFICATION NUMBER:

I-102

DEVICE:

Level Switch

TAG:

Refer to Instrument Index, Section 17700

TYPE:

Float Switch

SERVICE:

Ferric Chloride, Polymer, Flushing Water, Fermenter
Supernatant

ENCLOSURE:

Polypropylene float casing with preterminated signal cable

SIGNAL CABLE LENGTH:

20m

OUTPUT:

Relay contact resistive – 10A, 250V

MOUNTING:

Provide strain relief-type connectors to suspend float at
desired location. Fabricate mounting brackets from 316 SS.
Provide anti-sway rings to prevent sway in turbulent tanks.

MANUFACTURER AND MODEL:

Flygt ENM-10
Consolidated Electric
Warwick
Magnetrol

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT

SPECIFICATION NUMBER:

I-103

DEVICE:

Liquid Level Transmitter

TAG:

Refer to Instrument Index, Section 17700

TYPE:

Ultrasonic

SERVICE:

Ferric Chloride
DAF Subnatant, TWAS

RANGE:

See Process Drawings, to be confirmed during construction

INACCURACY:

±0.5% of span

OUTPUT:

4 to 20 mA DC into 500 OHM load
3 configurable alarm relays

POWER SUPPLY:

120 VAC, 60 HZ

ENCLOSURE:

EEMAC 4X Transmitter Housing
EEMAC 4X Sensor

MOUNTING:

(TRANSMITTER)
(SENSOR)

Wall Mount
Provide PVC pipe stilling well where shown on the drawings and in accordance with manufacturer's recommendations to ensure stable readings in turbulent locations. Mount sensor on stilling well. Install sensors at least 300 mm above maximum liquid level. Provide PVC blind flange for mounting sensor.

ACCESSORIES:

1 - hand-held programmer

MANUFACTURER AND MODEL:

Milltronics MultiRanger 100/200 transmitter and Echomax XPS sensor
or approved equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT

SPECIFICATION NUMBER:

I-104

DEVICE:

Dissolved Oxygen Transmitter

TAG:

Refer to Instrument Index, Section 17700

TYPE:

Optical

SERVICE:

Bioreactors – Aerobic Cells – Mixed Liquor

SELF CLEANING/CALIBRATION:

Air Jet Cleaner

RANGE:

0-10 mg/L

INACCURACY:

±0.5% of span

OUTPUT:

Isolated 4 to 20 mA Analog Output(s)
2 configurable Form C Alarm Contacts
N/O jet clean relay contact(s)

POWER SUPPLY:

120 VAC, 60 HZ

ENCLOSURE:

EEMAC 4X Transmitter Housing

MOUNTING:

(SENSOR)

Flange mounted Pole through Bioreactor roof, cable to be connected to local JB with manufacturer approved quick connector. Sensor to be submerged 600mm below surface.

(TRANSMITTER)

Surface/wall Mount

ACCESSORIES:

Sensor Mounting Kit with jet cleaning attachment

MANUFACTURER AND MODEL:

Royce Single/Dual Channel 9800, Model 98 Sensor
Aysix 1000/2000
or approved equal

SPECIAL INSTALLATION NOTES: Sensors will be Jet Cleaned with plant Instrument Air.

Instrument Air to be supplied to sensor by solenoid valve mounted near transmitter. D.O. Transmitter relay to control solenoid valve on operator configured schedule.

Air from Solenoid Valve to sensor to be transmitted through 12 mm insulated, copper piping, terminated near local JB with standard air quick coupler (Parker or equal). Air from Quick Coupler to sensor to be flexible ¼" UV resistant HDPE tubing.

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I-105
DEVICE:	Pressure Switch
TAG:	Refer to Instrument Index, Section 17700
SERVICE:	Fermenter Supernatant Wetwell Level. Pump discharges
PROCESS CONNECTION:	½" NPT
MOUNTING:	Bottom, Stem Mounted
DIAPHRAGM:	SS316
SWITCH TYPE:	SPDT
RATING:	120 VAC, 60 HZ, 5A
ENCLOSURE:	EEMAC 4X
ACCESSORIES:	Include supplier pre assembled filled isolation Diaphragm
MANUFACTURER AND MODEL:	Ashcroft Type 400, B Series, United Electric, H100 Series or approved equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I-106
DEVICE:	Pressure Transmitter (Gage and Absolute)
TAG:	Refer to Instrument Index, Section 17700
SERVICE:	Fermenter Supernatant, Foul Air
PROCESS CONNECTIONS:	½" NPTF
RANGE:	See Process Drawings
INACCURACY:	±1% of span or lower
OUTPUT:	4 to 20 mA DC into 500 OHM
POWER SUPPLY:	Loop powered 24 VDC
CONSTRUCTION:	Stainless steel wetted parts
ELECTRONIC ENCLOSURE:	EEMAC 4X
ACCESSORIES:	Stainless steel block and bleed manifold
MANUFACTURER AND MODEL:	Rosemount Type 3051C, ABB 2600T Series or approved equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I-107
DEVICE:	Solenoid Valve (Water Service)
TAG:	Refer to Instrument Index, Section 17700
SERVICE:	Secondary Effluent, Flushing Water
PROCESS CONNECTIONS:	1" NPT
MATERIALS:	304 SS
OPERATION:	Normally Closed unless shown otherwise on the PID's
DIFFERENTIAL PRESSURE:	Min: 0 kPa, Max: 800 kPa
ENCLOSURE:	EEMAC 4X
POWER SUPPLY:	120VAC/60Hz
MANUFACTURER AND MODEL:	ASCO 8210 or approved equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I-108
DEVICE:	Solenoid Valve (Air Service)
TAG:	Refer to Instrument Index, Section 17700
SERVICE:	Instrument air
PROCESS CONNECTIONS:	1/2" NPT
MATERIALS:	Brass
OPERATION:	Normally Closed unless shown otherwise on the PID's
DIFFERENTIAL PRESSURE:	Min: 0 kPa, Max: 800 kPa
ENCLOSURE:	EEMAC 4X
POWER SUPPLY:	120VAC/60Hz
MANUFACTURER AND MODEL:	ASCO 8210 or approved equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I-109
DEVICE:	Motion Detector
TAG:	Refer to Instrument Index, Section 17700
TYPE:	Combination Infra-red and microwave
CALIBRATION:	User adjustable detection patterns
OUTPUT:	Form C Reed Relay rated 500 mA at 300 VDC
POWER SUPPLY:	9 to 30 VDC
MOUNTING:	Surface Mount
MANUFACTURER AND MODEL:	C&K Systems DT-450C

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I-110
DEVICE:	Door Switch
TAG:	Refer to Instrument Index, Section 17700
TYPE:	Electronic
DISPLAY:	LED Status Indicator
OUTPUT:	SPDT Contact Suitable for 120 VAC pilot duty
POWER SUPPLY:	120 VAC, 60 Hz
ENCLOSURE:	Surface Mount NEMA 4X

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I-111
DEVICE:	Space Temperature Transmitter
TAG:	Refer to Instrument Index, Section 17700
SERVICE:	Ambient Air Temperature Transmitter
RANGE:	0°C to 50°C Temperature
DISPLAY:	Three digit LED display with one decimal point
OUTPUT:	4 to 20 mA DC Temperature – Loop Powered
ENCLOSURE:	NEMA 4X
MOUNTING:	Wall Bracket
MANUFACTURER AND MODEL:	Rosemount or approved equal

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I-112
DEVICE:	Duct Averaging Temperature Transmitter
TAG:	Refer to Instrument Index, Section 17700
TYPE:	Duct Averaging Platinum RTD Sensor with Transmitter
SERVICE:	Air handling units
RANGE:	-40°C to 50°C
INACCURACY:	±0.5% of span or better
OUTPUT:	4 to 20 mA DC
POWER SUPPLY:	Loop powered 8.5 to 35 VDC
ENCLOSURE:	NEMA 4X
ACCESSORIES:	Duct mounting kit with sensor element holder

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I-113
DEVICE:	Water Temperature Transmitter
TAG:	Refer to Instrument Index, Section 17700
SERVICE:	Heating/Cooling Loop Temperature
RANGE:	0°C to 100°C
PROCESS CONNECTION:	¾" NPT Thermowell with 75 mm insertion
INACCURACY:	±0.5% of span or better
OUTPUT:	4 to 20 mA DC
POWER SUPPLY:	Loop powered
ENCLOSURE:	NEMA 4X
MOUNTING:	Direct to process, locate at tee or elbow in system

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I-114
DEVICE:	Differential Pressure Transmitter
TAG:	Refer to Instrument Index, Section 17700
SERVICE:	Filter differential pressure
RANGE:	TBA
PROCESS CONNECTION:	Barbed tube fitting
INACCURACY:	±0.5% of span or better
OUTPUT:	4 to 20 mA DC
POWER SUPPLY:	Loop powered
DISPLAY:	4 digit LCD
ENCLOSURE:	NEMA 4X
ACCESSORIES:	Wall mount bracket. 5 mm copper sensing lines.

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I-115
DEVICE:	Differential Pressure Switch
TAG:	Refer to Instrument Index, Section 17700
SERVICE:	Clogged filter detection
RANGE:	TBA, with adjustable trip point
PROCESS CONNECTION:	Barbed tube fitting on switch and static pressure probes
INACCURACY:	±1.0% of span or better
OUTPUT:	Form C dry contact rated for pilot duty
POWER SUPPLY:	N/A
ENCLOSURE:	NEMA 4X
MOUNTING:	Direct mount static pressure probes to the duct. Wall mount bracket for the switch body.
ACCESSORIES:	Wall mount bracket. 5 mm copper sensing lines.

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I-116
DEVICE:	Heating Coil Freezestat
TAG:	Refer to Instrument Index, Section 17700
TYPE:	Duct Averaging Vapor-Charged Capillary
SERVICE:	Air handling units
RANGE:	-9.4°C to 12.8°C
SETPOINTS:	1.6°C trip with manual reset
OUTPUT:	1 N.O. and 1 N.C. contacts with pilot duty rating
POWER SUPPLY:	N/A
ENCLOSURE:	NEMA 4X
ACCESSORIES:	Duct mounting kit with sensor element holder

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER: I-117

DEVICE: Pressure Transmitter with preterminated cable

TAG: Refer to Instrument Index, Section 17700

SERVICE: Make-up Water Supply

PROCESS CONNECTIONS: 0.50" NPTF

RANGE: 0-700 kPa Gauge

INACCURACY: $\pm 1\%$ of span or lower

OUTPUT: 4 to 20 mA DC into 500 OHM or more

POWER SUPPLY: Looper powered 24 VDC

CONSTRUCTION: Stainless Steel

ELECTRONIC ENCLOSURE: NEMA 4X

ACCESSORIES:

MANUFACTURER AND MODEL: Ametek
Druck

INSTRUMENT SPECIFICATION SHEETS (R1)

INSTRUMENT SPECIFICATION NUMBER:	I-118
DEVICE:	Stack Temperature Transmitter
TAG:	Refer to Instrument Index, Section 17700
SERVICE:	Thermal Oxidizer Exhaust Stack
RANGE:	0°C to 1000°C
DISPLAY:	Four digit LED display with one decimal point
OUTPUT:	4 to 20 mA DC into 500 OHM load
RTD PROBE:	Provide a ¾” NPT stainless steel Thermowell with 150 mm insertion, spring loaded platinum RTD sensor, and NEMA 4X termination head.
ELECTRONIC ENCLOSURE:	NEMA 4X
ELECTRONICS MOUNTING:	Remote wall mount
MANUFACTURER AND MODEL:	Rosemount