TELEDYNE
MONITOR LABS
A Teledyne Technologies Company

Teledyne Monitor Labs is a leading supplier of environmental monitoring instrumentation, systems and software.

INSTALLATION CHECKLIST *ULTRAFLOW 150*
(MS Word MACROS must be enabled. Additional instructions available)

* Your order <u>cannot be scheduled for production</u> until accurate information is provided for <u>all</u> fields marked with an asterisk.

1.   CUSTOMER CONTACT INFORMATION

*Name:		
Title:		
*Company:		
*Phone:		
FAX:		
*Email:		
*Stack Identification:		Limited to 10 characters
*Upgrade or Replacement of a UF100	○ Yes ○ No	If yes, UF100 Serial#

2.   APPLICATION INFORMATION

Monitor will be used for	○ Compliance ○ Process Control		
*Process Type			
*Measurement Location Elevation (above mean sea level)		○ Feet	○ Meters
*Wet Scrubber	○ Yes	○ No	
*Selective Catalytic Reduction (SCR)	○ Yes	○ No	
*Redundancy, two separate TIEs on the same stack	○ Yes	○ No	
*X-Pattern, two measurement paths with one TIE	○ Yes	○ No	

3.   PROCESS VARIABLES

*Typical Temperature		○ Degrees F	○ Degrees C
*Maximum Velocity for Certification		○ Feet/sec	○ Meters/sec
*Minimum Velocity for Certification			
*Typical %H2O by volume			
*Typical %O2 by volume			
*Typical %CO2 by volume			
Typical SO2 ppm			
Typical NOx ppm			
Typical HCL ppm			
Other Gases			

*MAXIMUM TEMPERATURE

○ -40 to 250 F (-40 to121 C)	○ 451 to 500 F (233 to 260 C)
○ 251 to 300 F (122 to 149 C)	○ 501 to 550 F (261 to 287 C)
○ 301 to 350 F (150 to 176 C)	○ 551 to 600 F (288 to 315 C)
○ 351 to 400 F (177 to 204 C)	○ 601 to 650 F (316 to 343 C)
○ 401 to 450 F (205 to 232 C)	○ > 650 F (> 343 C) Consult Factory

*PROCESS PRESSURE

○ -30 to -15 in. H2O (-7.47 to -3.745 kPa)	○ +10 to +15 in. H20 (+2.49 to + 3.745 kPa)
○ -15 to -5 in. H2O (-3.745 to -1.245 kPa)	○ +15 to +20 in. H2O (+3.745 to + 4.98 kPa)
○ -5 to +5 in. H2O (-1.245 to +1.245 kPa)	○ Other, Consult Factory
○ +5 to +10 in. H2O (+1.245 to +2.49 kPa)	

*PARTICULATE

○ <= 3000 mg/m3
○ > 3000 mg/m3

4. GEOMETRY OF STACK OR DUCT *(SEE ATTACHMENT B)*

*Orientation	○ Vertical	○ Horizontal
*Shape	○ Round	○ Rectangular

*INSIDE DIAMETER OF STACK OR DUCT *(SEE ATTACHMENTS B & C)*

	If Round	If Rectangular Depth	If Rectangular Width[1]	
*Upstream				○ Feet ○ Meters
*Downstream				

> [1]All geometry calculations will be preformed assuming the transducers will be mounted across the "Width" dimension. See Attachment B.

*OFFSET   *(SEE ATTACHMENT C)*

This is the upstream vs. downstream displacement between the two transducers. The OFFSET will provide the information necessary to calculate the mounting angle. After reviewing the information in this checklist, TML will recommend the optimum OFFSET distance.

	○ Feet	○ Meters

*THICKNESS OF STACK WALLS   *(SEE ATTACHMENT C)*

	Upstream	Downstream	
*Inner liner wall thickness			○ inches
*Annular space thickness			○ Feet
*Outer shell wall thickness			○ Meter

Please note below any Mounting Tube Installation or other known stack or duct characteristics that may be important for installation or factory calibration.
Examples:
- Structural bracing.
- Existing sampling probes located near or between the proposed locations of the transducers.
- Reuse of existing ports, etc.

5. *DISTANCE FROM DISTURBANCES   *(SEE ATTACHMENT C)*
This is imperative to judge potential flow pattern issues in the stack or duct.

*Downstream		○ Feet	○ Meters
*Upstream			
*Multiple inlets to the stack or duct		○ Yes	○ No
Comments			

6. INPUTS AND OUTPUTS

*BAROMETRIC PRESSURE TRANSDUCER OPTIONS

○ I do NOT want to use any Barometric Pressure Transducer.

○ I do want to use a Barometric Pressure Transducer, and I wish to purchase the Pressure Sensor from TML.

○ I do want to use a Barometric Pressure Transducer, and I will supply my own. Please indicate scaling below.

Type	Scaling	
	Value @ 1V or 4mA	Value @ 5V or 20mA
○ Voltage		
○ Current		

*EXTERNAL TEMPERATURE OPTIONS

○ I do NOT want to use the External Temperature Option. I prefer to use the temperature calculated by the Ultraflow 150.

○ I do want to use the External Temperature Option, and I wish to purchase the Temperature Sensor from TML.

○ I do want to use the External Temperature Option, and I will supply my own. Please indicate scaling below.

Type	Scaling	
	Value @ 1V or 4mA	Value @ 5V or 20mA
○ Voltage		
○ Current		
○ 1000 ohm RTD		
○ 100 ohm RTD		

7. SYSTEM CONFIGURATION

○ **Direct Interface**   ○ **Enhanced Remote Panel**

IF YOU SELECTED THE DIRECT INTERFACE CONFIGURATION, COMPLETE THIS PAGE.

A detailed list of the available Analog and Digital Outputs is included in Attachment A. Please list your selections in the tables below.

Analog Output Channel Number	Value at 4 mA	Value at 20 mA	Description	Units	Display calibration data (Y/N)
1					
2					

Digital Output Number	Description
1	
2	

THIS IS THE END OF THE DIRECT INTERFACE CONFIGURATION.

IF YOU SELECTED THE ENHANCED REMOTE PANEL CONFIGURATION, COMPLETE THIS PAGE.

A detailed list of the available Analog and Digital Outputs is included in Attachment A. Please list your selections in the tables below.

Analog Output Channel Number	Value at 4 mA	Value at 20 mA	Description	Units	Display calibration data (Y/N)
1					
2					
3					
4					

Digital Output Number	Description
1	
2	
3	
4	
5	
6	
7	
8	

ETHERNET MODULE SETUP

⚪ Use a Dynamic IP address	
⚪ Use a Static IP address. If yes, please supply the information below:	
Static IP address	
Subnet Mask	
Default Gateway	

THIS IS THE END OF THE ENHANCED REMOTE PANEL CONFIGURATION.

Attachment A

The following tables list the commonly used analog outputs, units and digital output selections.
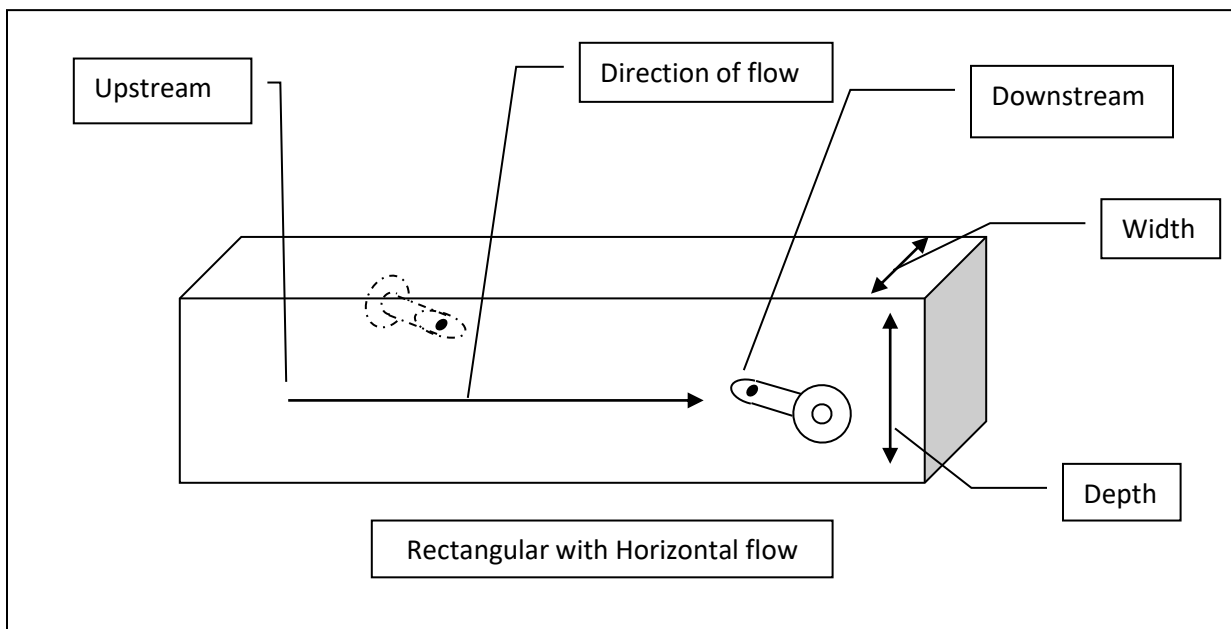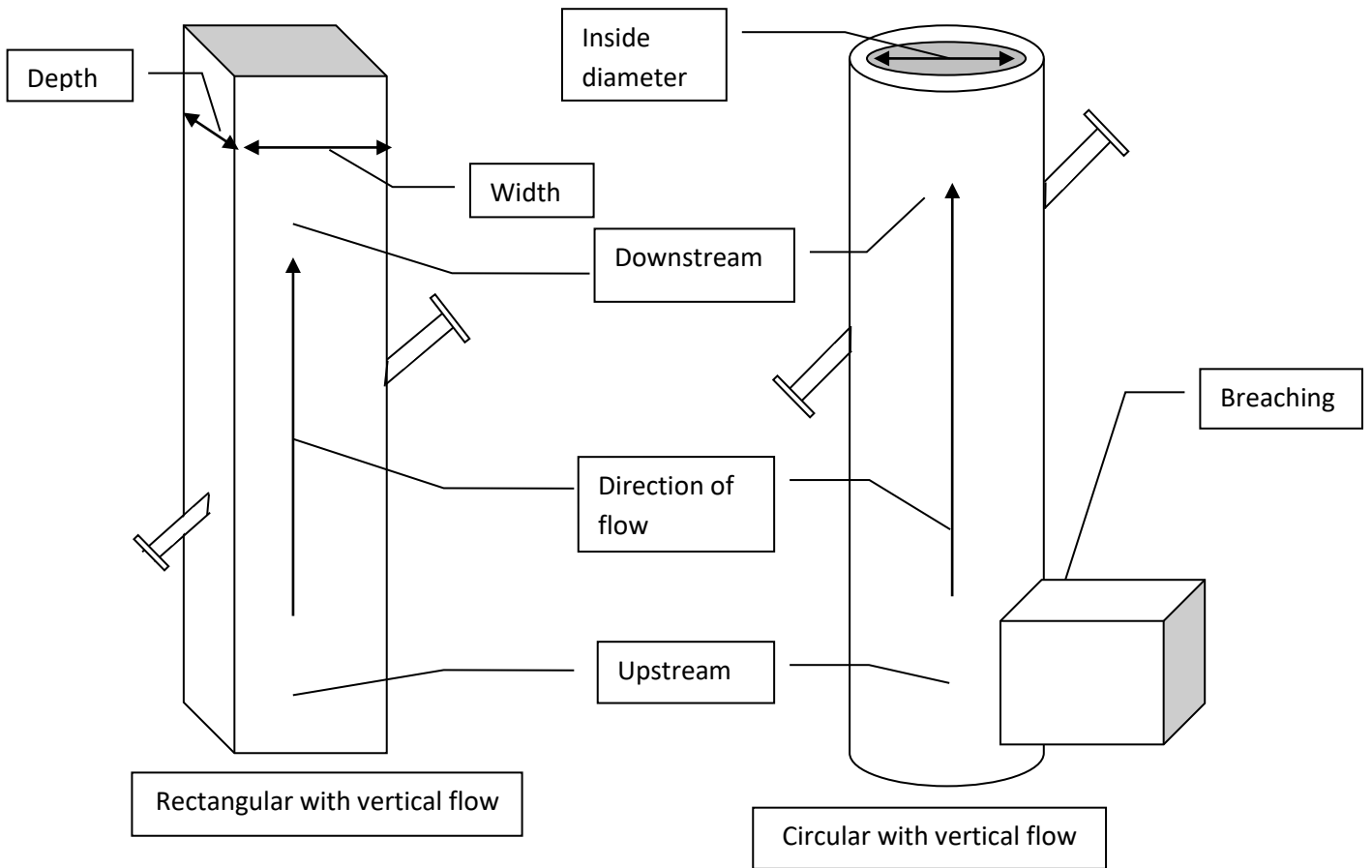
Parameters for Analog Outputs
Average Standard Flow Volume
Average Actual Flow Volume
Average Medium Internal Temperature
Average Medium External Temperature
Average Barometric Pressure
Instantaneous Standard Flow Volume
Instantaneous Actual Flow Volume
Instantaneous Actual Velocity
Average Actual Velocity

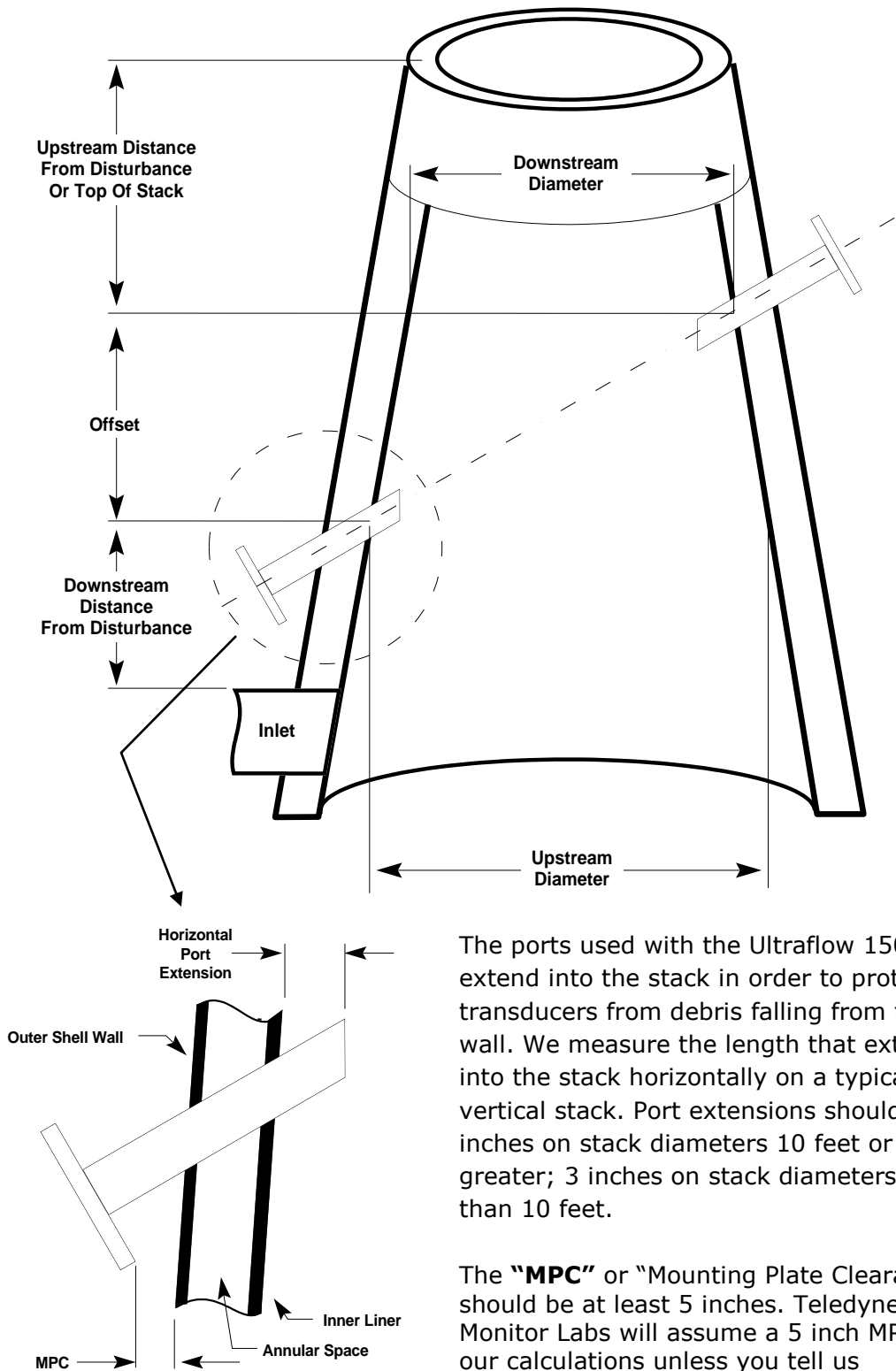| Units	Type
CFS	Volume (cubic feet per sec)
CFM	Volume (cubic feet per minute)
CFH	Volume (cubic feet per hour)
KCFS	Volume (1000 cubic feet per sec)
KCFM	Volume (1000 cubic feet per minute)
KCFH	Volume (1000 cubic feet per hour)
CMS	Volume (cubic meters per sec)
CMM	Volume (cubic meters per minute)
CMH	Volume (cubic meters per hour)
KCMS	Volume (1000 cubic meters per sec)
KCMM	Volume (1000 cubic meters per min)
KCMH	Volume (1000 cubic meters per hr)
F	Temperature (degrees Fahrenheit)
C	Temperature (degrees Celsius)
In Hg	Barometric Pressure (inches of mercury)
mm Hg	Barometric Pressure (millimeters of mercury)
Ft/sec	Velocity (feet per second)
M/sec	Velocity (meters per second)

Parameters for Digital Outputs
ZERO Data on Analog Output
SPAN LOW Data on Analog Output
SPAN HIGH Data on Analog Output
NORMAL Data on Analog Output
Calibration Data on Analog Output
Interference Test
Fatal Fault
Non-Fatal Fault
Purge Failure
Calibration Failure
Data Valid
Average Flow Volume Alarm
Average Medium Temperature Alarm

Attachment B

Depth

Inside diameter

Width

Downstream

Direction of flow

Breaching

Upstream

Rectangular with vertical flow

Circular with vertical flow

Upstream

Direction of flow

Downstream

Width

Depth

Rectangular with Horizontal flow

Attachment C

Upstream Distance From Disturbance Or Top Of Stack

Downstream Diameter

Offset

Downstream Distance From Disturbance

Inlet

Upstream Diameter

Horizontal Port Extension

Outer Shell Wall

Inner Liner

Annular Space

MPC

The ports used with the Ultraflow 150 must extend into the stack in order to protect the transducers from debris falling from the wall. We measure the length that extends into the stack horizontally on a typical, vertical stack. Port extensions should be 6 inches on stack diameters 10 feet or greater; 3 inches on stack diameters less than 10 feet.

The **"MPC"** or "Mounting Plate Clearance should be at least 5 inches. Teledyne Monitor Labs will assume a 5 inch MPC in our calculations unless you tell us otherwise.