Remote Mounted Electronic Display

INTRODUCTION

This specification covers the design and manufacture of a Remote Mounted Flow Rate / Totalizer Electronic Display.

PART 1 - GENERAL

1. Standard products - use the same manufacturer for multiple units of same type.

2. "Tying" of equipment into packages for the purpose of thwarting competition shall be considered to be in non-compliance with these specifications.

3. Manufacturers shall price items under different subsections or sections separately.

PART 2 - PRODUCTS

A. FUNCTION

The remote electronic display is a field mounted, loop-powered rate/totalizer with a backlit LCD display, display for applications in the harshest environmental conditions. The display can be programmed to automatically or manually toggle between rate and totalizing functions. The general-purpose loop-powered rate/totalizer is designed to provide remote visual meter reading capability. The remote electronic display shall be used in installations where the metering device is not easily accessible or in difficult to read locations. Remote electronic display shall be capable of displaying flow rate up to five digits and totaling up to seven digits. The electronic display derives all of its power from the 4-20 mA loop. Display shall be field programmed using the four through-window buttons, without removing the cover, and can be scaled with or without a calibration signal. The alphanumeric display shall also be capable of being programmed to show any combination of numbers and letters up to seven characters long for use as engineering units and/or the process identification tag. The backlight shall allow for viewing the display under any lighting condition and shall be capable of being powered from either the 4-20 mA loop or from a separate DC power supply.

Electronic display shall be housed in a grey NEMA 4X, IP65 plastic field enclosure. Setup and programming of the E-Display™ shall be done with four infrared through-window easily accessible panel buttons. Panel buttons menu keys shall allow toggling between flow rate and total flow with resettable totalizing. Once powered, flow rate will automatically be displayed. The display shall include five digits, engineering units, and rate & total indication to provide a clear and attractive presentation of the process. The square root and programmable exponent functions allow for conditioning of signals from non-linear transmitters without adding external components to the system.

The electronic display shall be powered by 9-36VDC and shall include one optional pulse output connection for SCADA, PLC and data logging applications.

Installation of the remote electronic display can be mounted directly to conduit. Display shall have two slotted flanges for wall mounting or onto pipe (NPS 1½" (DN40 mm) to 2½" (DN65 mm). Installation shall be performed in accordance with the manufacturers IOM Manual and Wiring Instructions which must be shipped with the unit. The display enclosure shall have three ¾” NPT threaded conduit holes.

B. MATERIALS

1. Material Specification for the Electronic Display as follows:

Component	Material
Enclosure	NEMA 4X, IP65 plastic field enclosure. Grey color. Three ¾" NPT threaded conduit openings

	One ¾" NPT plastic conduit plug, with 1.29" wrenching flats and a screwdriver slot, is included
Seal	Buna-N® Rubber
Display	Five digits (-9999 to 99999): 0.70" (17.8 mm) high, 7-segment, automatic lead zero blanking. Seven characters (Total and/or Tag): 0.4" (10.2 mm) high, 14 segment. 7-digit Totalizer (9,999,999) Symbols: High, Low, & Set Alarm, Password Lock
Backlight	White
Programing Method	Four through-window buttons when cover is installed. Four internal pushbuttons when cover is removed
Noise Filter	Programmable LO, med, HI, or OFF
Recalibration	Recalibration is recommended at least every 12 months
Maximum/Minimum Display	Max/Min readings reached by the process are stored until reset by the user or until power to the meter is turned off
Password	Programmable password restricts modification of programmed settings
Environmental	Operating temperature range: -40 to 75°C
Storage temperature range	40 to 75°C Relative humidity: 0 to 90% non-condensing
Connections	Screw terminals accept 12 to 22 AWG wire
Overall Dimensions	5.67" x 5.25" x 4.18" (W x H x D) (144 mm x 133 mm x 106 mm)
Weight	1.65 lbs (26.4 oz, 0.75 kg)

Inputs

Accuracy	±0.03% of calibrated span ±1 count, square root & programmable exponent accuracy range:10-100% of calibrated span
Advanced Function	Linear, square root, or programmable exponent
Multi-Point Linearization	2 to 32 points
Programmable Exponent	1.0001 to 2.9999
Low Flow Cut-Off	0-99999 (0 disables cutoff function)
Temperature Drift	50 PPM/°C from -40 to 75°C ambient
Decimal Point	User selectable decimal point
Totalizer	Calculates total based on rate, time base of second, minute,

	hour, or day, and field programmable multiplier; stored in non-volatile memory upon power loss
Totalizer Reset	User selectable via through-window buttons, time delay, external contact closure, or protected
Calibration Range	An *Error* message will appear if input 1 and input 2 signals are too close together 4-20mA Input Range 0.10mA Minimum Span Input 1 & Input 2
Maximum Voltage Drop	Without Backlight or with Externally-Powered (DC Powered) Backlight (3.0 VDC @ 20 mA) With Loop-Powered Backlight (6.0 VDC @ 20 mA)
Equivalent Resistance	150 Ω @ 20 mA 300 Ω @ 20 mA
Externally Powered Backlight	Voltage Range: 9-36 VDC Maximum Power: **9 VDC** 0.2 W **12 VDC** 0.25 W **24 VDC** 0.5 W **36 VDC** 0.75 W
Input Overload	Over current protection to 2 A max.
<u>Open Collector Output</u> Rating	Isolated open collector, 30 VDC @ 150 mA max.
Alarm Output	Assign to rate for high or low alarm trip point. Assign to total for total alarm trip point
Deadband	0-100% FS, user selectable
Acknowledge	Front panel ACK button resets output and screen indication
Pulse Output	K-factor programmable from 0.0001 to 99999. One pulse is generated for very total increment selected (e.g. K-factor value of 100 will generate one pulse every time the total is incremented by 100 units)

C. MANUFACTURE

1. Each Remote Electronic Display shall be provided with an identifying nameplate.
2. Each Remote Electronic Display shall undergo full factory functional and operational testing.
3. Factory Settings and Field Adjustment

   The Remote Electronic Display shall be factory configured and field adjustable.

D. PRODUCT DATA

1. The following information shall be provided:
   a. Electronic Display manufacturer’s technical product data.
   b. Electronic Display manufacturer’s Installation, Operation and Maintenance manual (IOM).

PART 3 - EXECUTION

A. PACKAGING AND SHIPPING

1. Electronic Display shall be packaged, tagged and shipped in a manner that will protect the equipment from damage and facilitate the final installation in the field.

B. FIELD TESTING

1. A direct factory representative shall be made available by the equipment supplier for start-up service and inspection.

The manufacturer shall warrant the Electronic Display to be free of defects in material and workmanship for a period of one year from date of shipment provided the electronic display is installed and used in accordance with all applicable instructions.

The Electronic Display shall be **CLA-VAL Company Model No. X145,** as manufactured by Cla-Val Co., Costa Mesa, CA 92627-4416

END OF SECTION