



FOX

OPERATION AND INSTALLATION GUIDE FOR FP31X-653 SERIES 0.8" 4-DIGIT LED SERIAL REMOTE DISPLAY with MODBUS RTU PROTOCOL

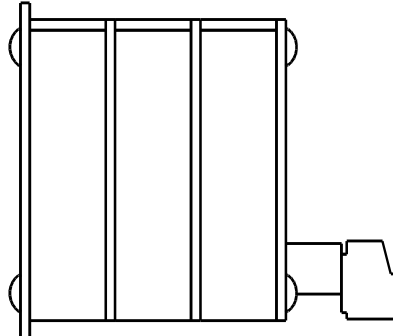
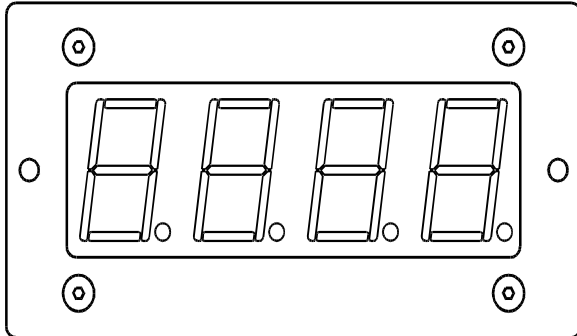
Model No: FP317-653
Serial NO: _____
Input / Output: RS-485 / Modbus RTU
Special No: _____

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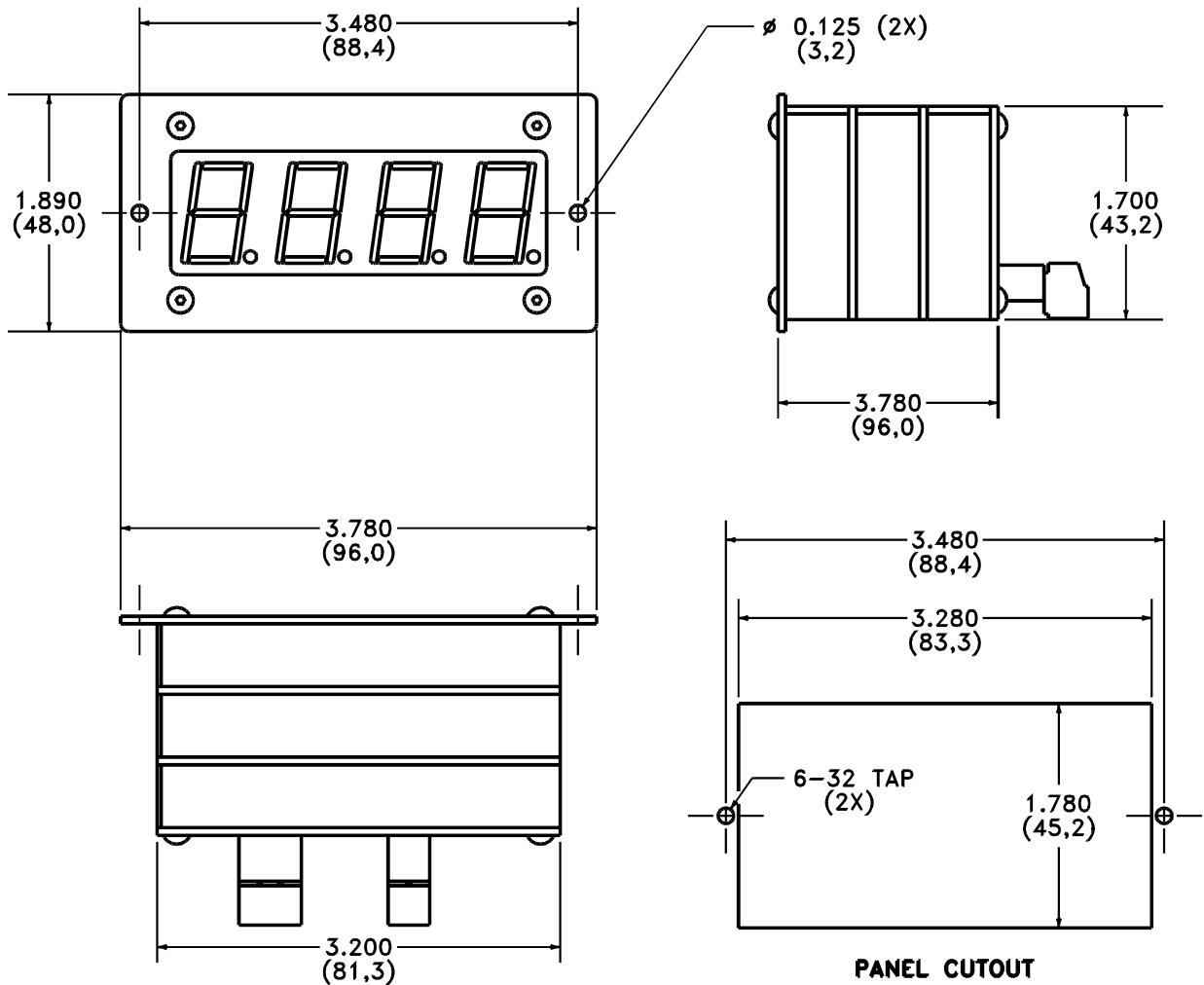
FP31X DESCRIPTION / SPECIFICATIONS



- DISPLAY - 4 Digit, 0.8" Tall red LED standard, green LED available (Sp012).
- BEZEL MATERIAL - Steel with black textured two part epoxy enamel finish.
- WINDOW - Non - glare neutral density filter.
- OPERATING TEMPERATURE RANGE - -25 Degrees C to +85 Degrees C.
- STORAGE TEMPERATURE RANGE - -55 Degrees C to +85 Degrees C.
- RS-485 - Meets EIA Standards and CCITT recommendations V.11 and V.27
- BAUD RATE - Menu selection for 300, 1200, 2400, 4800, 9600 and 19,200 baud.
- PARITY - Menu selection for odd, even or none.
- ID NUMBER - Menu selection for meter identification from 0x00 to 0xFF (0 to 255 decimal).
- CONNECTIONS - All connections are via socketed screw terminals.
- DECIMAL POINT - Selectable for 0000, 0000., 000.0, 00.00, 0.000 display precision.
- PROGRAMMING CONTROLS - 2 Pushbuttons are provided for accessing setup menu.
- VIEWING DISTANCE - Up to 25 feet.



FP31X SERIES PHYSICAL / MECHANICAL SPECIFICATIONS AND MOUNTING

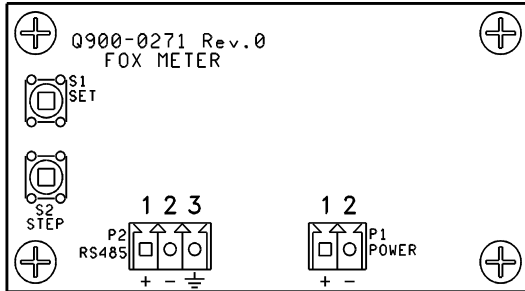


- BEZEL MATERIAL - Steel with black textured two part epoxy enamel finish.
- WINDOW - Non - glare neutral density filter.
- MOUNTING - Two 6-32 tapped holes in panel.



FP31X SERIES POWER SUPPLY SPECIFICATIONS

REAR VIEW OF SANDWICH BOARD STACK



*** CAUTIONS PLEASE READ ***

Wiring - When using stranded wire, inspect the junctions to ensure that all of the strands are fully inserted into the terminal block and that the terminal screw has been tightened, before applying power to the meter

F315 - 5 TO 12 VDC POWERED UNITS

- INPUT VOLTAGE RANGE - 5 to 12 VDC
- PERMISSIBLE RIPPLE - 200 mV max.
- INPUT CURRENT - Less than 200 mA max.

P1 WIRING:

- P1-1: +DC
- P1-2: Ground

F317 - 10 TO 30 VDC POWERED UNITS

- INPUT VOLTAGE RANGE - 10 to 30 VDC
- PERMISSIBLE RIPPLE - 500 mV max.
- INPUT CURRENT - Less than 150 mA max.

P1 WIRING:

- P1-1: +DC
- P1-2: Ground

P2 (SERIAL CONNECTOR) WIRING

- P2-1: Transmit / Receive +
- P2-2: Transmit / Receive -
- P2-3: Signal ground

OPERATING INSTRUCTIONS

The FP31X series displays are designed to respond to ModBus RTU messages delivered via a bidirectional RS-485 serial bus. The display responds only to Function 06 (preset single register) messages. The message must contain the correct slave address (I.D. address, see setup menu page 5). The register address field in the message can be set to any value, as it is ignored. CRC checking is implemented, but can be disabled via the setup menu if desired. The display will echo back valid messages. Echo back can be disabled to allow use of the display as a monitor.

Upon reception of a valid message, the 16-bit data field will be displayed as 4 hex characters. The decimal point is user settable via the setup menu.



FP31X SERIES PROGRAMMING INSTRUCTIONS

- To enter the setup menu, press the set pushbutton.
- To change the value of the displayed parameter, press the step pushbutton.
- To advance to the next parameter, press the set pushbutton.
- If a parameter involves setting multiple digits, such as I.D. number, begin by pressing the step pushbutton. This will cause the least significant digit to flash. Continue to press and release the step pushbutton until the flashing digit is incremented to the desired value. Press the set pushbutton to advance to the next digit. Continue this procedure until all digits are set. **NOTE:** When entering multi-digit values, all blank digits must be set to 0.
- To save changes and return to normal operation, use the set pushbutton to step through the menu. Display will return to normal operating mode after final menu step.

FP31X SERIES SETUP MENU STEPS

PARAMETER	DISPLAY	CHOICES	DESCRIPTION
I.D. ADDRESS	I.d.		ENTER 2-DIGIT HEX (00 - FF) I.D. ADDRESS NOTE: STANDARD MODBUS ADDRESSES ARE IN THE RANGE 1 - 247(01 - F7 HEX). IF THE DISPLAY I.D. IS SET TO 00, THE ADDRESS FIELD IS IGNORED AND DATA FROM ANY VALID 'PRESET SINGLE REGISTER' MESSAGE IS DISPLAYED.
BAUD RATE	b.r.	3	300 BAUD
		12	1200 BAUD
		24	2400 BAUD
		48	4800 BAUD
		96	9600 BAUD
		19.	19,200 BAUD
PARITY	Pr.	n	NO PARITY
		O	ODD PARITY
		E	EVEN PARITY
DECIMAL POINT	d.P.	NONE	ANNOUNCES NEXT STEP
SET DECIMAL POINT		0000	NO DECIMAL POINT
		0000.	DECIMAL POINT AFTER 1'S DIGIT
		000.0	DECIMAL POINT AFTER 10'S DIGIT
		00.00	DECIMAL POINT AFTER 100'S DIGIT
		0.000	DECIMAL POINT AFTER 1000'S DIGIT
ECHO ENABLE	Ec.	Y	ECHO ENABLED UPON RECEIPT OF VALID MESSAGE PACKET
		n	ECHO DISABLED
CRC ERROR CHECKING ENABLE	C.E.	Y	USE CRC TO VERIFY MESSAGE PACKET INTEGRITY
		n	IGNORE CRC



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TERMS AND CONDITIONS

- Invoices are due **NET 30 DAYS** from the date of the invoice, pending credit approval. All shipments are F.O.B. Cortland, Illinois, U.S.A. Returns are allowed on standard product within 90 days of invoice date. Returns must pass factory inspection before being accepted and are subject to a 25% restocking charge.
- **FOX METER INC.** reserves the right to discontinue models, change specifications, price, or design of any of its products at any time without notice and without incurring any obligation whatsoever.
- Any costs incurred in the process of collecting past due invoices including, but not limited to, collection fee percentages and any legal fees will be added to the amount collected.

WARRANTY

- **FOX METER INC.** warrants its products to be free from defective material or workmanship for a period of two years from date of purchase.
- **FOX METER INC.**, under this warranty, is limited to repairing the defective device when returned to the factory, shipping charges prepaid, within two full years from date of purchase.
- This warranty is transferrable to second and third parties and will remain in force for the two year term from date of original purchase from **FOX METER INC.**
- Units returned to **FOX METER INC.** that have been subject to abuse, misuse, damage or accident, or have been connected, installed or adjusted contrary to the instructions furnished by **FOX METER INC.**, or that have been repaired by unauthorized persons will not be covered by this warranty.
- The purchaser agrees to assume all liabilities for any damages and/or bodily injury which may result from the use or misuse of the product(s) manufactured by and/or purchased from **FOX METER INC.** by the purchaser, his employees, or agents.
- This warranty is in lieu of all other representations or warranties, expressed or implied and no agent or representative of **FOX METER INC.**, is authorized to assume any other obligation in connection with the sale and purchase of **FOX METER INC.**, products.
- The terms of this warranty will only be honored if the products or equipment for which warranty service have been requested have been paid for in full by the original purchaser within the agreed upon terms and conditions of sale.

* NOTE *

- While **FOX METER INC.** provides application assistance on its products, personally and through our literature, it is the responsibility of the customer to determine the compatibility of the product in the application.

FACTORY SERVICE AND REPAIR

- **FOX METER INC.** will service and repair its products free of charge for the period of two years, subject to the warranty conditions above.
- When returning any defective product to **FOX METER INC.**, please include any information that may pertain to the problem and please include the name of the individual for us to contact, along with your company name, address and phone number.

RETURN REPAIRS TO:

FOX METER INC.
302 W. Lincoln Hwy. Suite 2
Cortland, IL 60112
ATTN: Service Department