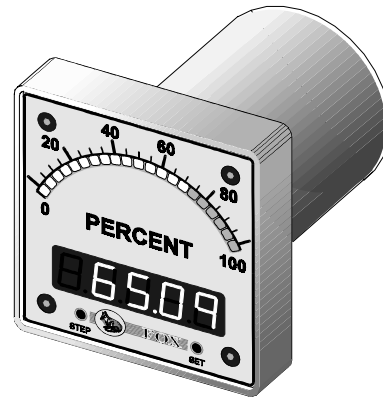
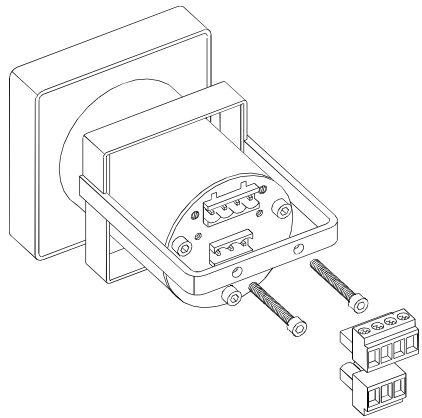




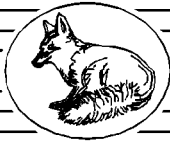
FS12X - XXX INSTALLATION - SETUP - OPERATION INSTRUCTIONS

FS12X-XXX DESCRIPTION / SPECIFICATIONS

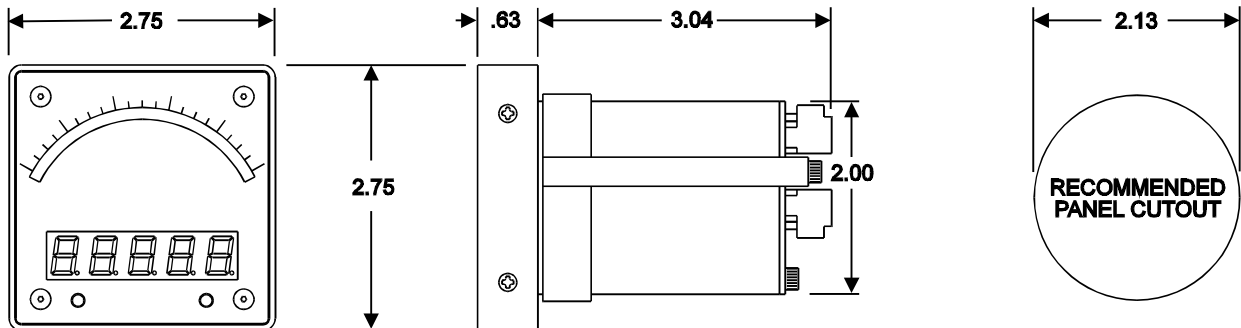


- DIGITAL DISPLAY - 4 Digit, 0.4" Tall Red LED; -1999 to 9999 display range
- BARGRAPH DISPLAY - 21 Element Red T1 LED's arranged in an arc above the digital display.
- ENCLOSURE - Painted steel, Aluminum and Stainless Steel
- MOUNTING - A separate stainless steel mounting bracket attaches to the rear of the meter and physically clamps the meter to the panel through a 2 1/8" round opening.
- OVERALL ACCURACY - Better than .05% F.S. over operating temperature range. Accuracy at fixed temperature better than .02% F.S.
- OPERATING TEMPERATURE RANGE - -25 Degrees C to +80 Degrees C
- STORAGE TEMPERATURE RANGE - -55 Degrees C to +80 Degrees C
- A/D CONVERTER RESOLUTION - 16 Bits (65536 counts)
- A/D CONVERSION RATE - 4000 Conversions / second
- DISPLAY UPDATE RATE - From 16 to 1 updates per second user selectable
- RESPONSE TIME - 0.5 seconds for full scale step
- OVER / UNDER RANGE INDICATION - Meter displays '-or-' or '-ur-' when input exceeds min/max displayable range or min/max input range
- BAR DISPLAY MODES - Left and center zero, moving dot and fill modes, menu selectable
- CALIBRATION / DISPLAY SCALING - Two menu steps allow entry of any 2 known display points; a known input is necessary for scaling
- DECIMAL POINT - Selectable for 0, 0.0, 0.00, 0.000, display precision
- OPTIONAL ISOLATED EXCITATION - An internal isolated 24 VDC @ 30 mA or 10 VDC @ 50 mA unregulated power supply is available for powering loop powered sensors or transducers.

Model	Signal Input	Model	Signal Input	Model	Signal Input
FS12X-100	DC Process, 4 - 20mA	FS12X-620	DC Voltmeter, ± 2 VDC	FS12X-820	AC Voltmeter, 2VAC
FS12X-110	DC Process, 1-5VDC	FS12X-630	DC Voltmeter, ± 20 VDC	FS12X-830	AC Voltmeter, 20VAC
FS12X-120	DC Process, 0-10VDC	FS12X-640	DC Voltmeter, ± 200 VDC	FS12X-840	AC Voltmeter, 200VAC
FS12X-200	Thermometer, 100 Ohm RTD	FS12X-650	DC Voltmeter, ± 600 VDC	FS12X-850	AC Voltmeter, 600VAC
FS12X-300	Resistance, 20 Ohm	FS12X-700	DC Ammeter 50uADC, internal shunt	FS12X-910	AC Ammeter , 200mA
FS12X-310	Resistance, 200 Ohm	FS12X-710	DC Ammeter 200mADC, internal shunt	FS12X-920	AC Ammeter , 2A
FS12X-320	Resistance, 2K Ohm	FS12X-720	DC Ammeter 2ADC, external shunt	FS12X-930	AC Ammeter , 20A
FS12X-330	Resistance, 20K Ohm	FS12X-730	DC Ammeter 20ADC, external shunt	FS12X-940	AC Ammeter , 200A
FS12X-400	Straingauge, 30mV w/10VDC Excitation	FS12X-740	DC Ammeter 200ADC, external shunt		
FS12X-610	DC Voltmeter ± 200 mVDC	FS12X-810	AC Voltmeter, 200mVAC		



FS12X-XXX SERIES MOUNTING



FS12X-XXX SERIES POWER SUPPLY SPECIFICATIONS

FS121 - XXX 120 VAC UNITS

- INPUT VOLTAGE RANGE - 85 to 140 VAC
- INPUT FREQUENCY RANGE - 47 to 63 Hz
- POWER DISSIPATION - Less than 3 VA typical

- P2 WIRING**
- P2 - 1 : Neutral Line
 - P2 - 2 : 120 VAC Hot Line
 - P2 - 3 : Chassis ground - Read cautions

FS123 - XXX 240 VAC UNITS

- INPUT VOLTAGE RANGE - 190 to 260 VAC
- INPUT FREQUENCY RANGE - 47 to 63 Hz
- POWER DISSIPATION - Less than 3 VA typical

- P2 WIRING**
- P2 - 1 : 240 VAC Hot Line
 - P2 - 2 : 240 VAC Hot Line
 - P2 - 3 : Chassis ground - Read cautions

FS125 - XXX 5 TO 12 VDC UNITS

- INPUT VOLTAGE RANGE - 5 TO 12 VDC
- PERMISSABLE RIPPLE - 200 mV Max
- INPUT CURRENT - Less than 200 mA typical

- P2 WIRING**
- P2 - 1 : GROUND
 - P2 - 2 : + DC
 - P2 - 3 : Chassis ground - Read cautions

FS126 - XXX 5 TO 12 VDC ISOLATED UNITS

- INPUT VOLTAGE RANGE - 5 TO 12 VDC
- PERMISSABLE RIPPLE - 200 mV Max
- INPUT CURRENT - Less than 200 mA typical
- POWER SUPPLY ISOLATION - 750 Volts isolation between power supply and signal input

- P2 WIRING**
- P2 - 1 : GROUND
 - P2 - 2 : + DC
 - P2 - 3 : Chassis ground - Read cautions

FS127 - XXX 10 TO 30 VDC UNITS

- INPUT VOLTAGE RANGE - 10 TO 30 VDC
- PERMISSABLE RIPPLE - 500 mV Max
- INPUT CURRENT - Less than 150 mA typical

- P2 WIRING**
- P2 - 1 : GROUND
 - P2 - 2 : + DC
 - P2 - 3 : Chassis ground - Read cautions

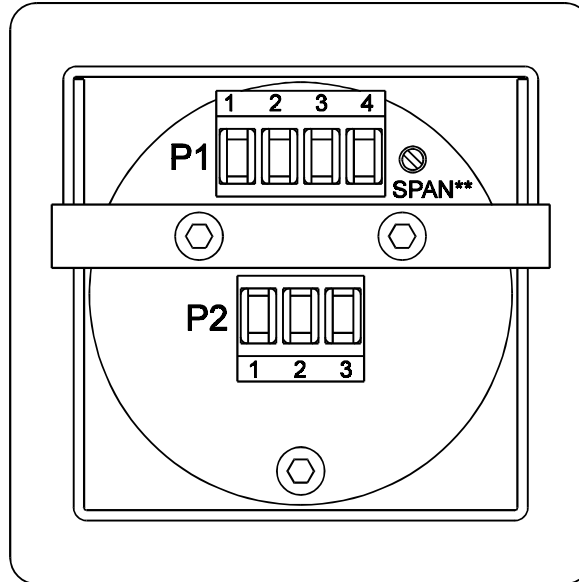
FS128 - XXX 10 TO 30 VDC ISOLATED UNITS

- INPUT VOLTAGE RANGE - 10 TO 30 VDC
- PERMISSABLE RIPPLE - 500 mV Max
- INPUT CURRENT - Less than 150 mA typical
- POWER SUPPLY ISOLATION - 750 Volts isolation between power supply and signal input

- P2 WIRING**
- P2 - 1 : GROUND
 - P2 - 2 : + DC
 - P2 - 3 : Chassis ground - Read cautions



FS12X - XXX SERIES WIRING GUIDE



REAR VIEW OF FS12X-XXX SERIES UNITS

P1 - SIGNAL INPUT

- P1 - 1: + EXCITATION OUTPUT*
- P1 - 2: - EXCITATION OUTPUT*
- P1 - 3: + SIGNAL INPUT
- P1 - 4: - SIGNAL INPUT***

* EXCITATION IS OPTIONAL. IT WILL ONLY BE PRESENT IF THE FS12X SERIES IS ORDERED WITH THAT OPTION.

*** THE - SIGNAL INPUT IS COMMON TO THE POWER SUPPLY GROUND ON FS12X SERIES METERS. WHEN USING DC POWERED FS12X SERIES METERS, CARE SHOULD BE TAKEN TO NOT CREATE GROUND LOOPS WITH SIGNAL WIRING. IF GROUND LOOPS ARE A CONSIDERATION, USE AC POWER OR ISOLATED DC POWERED UNITS.

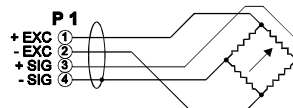
P2 - POWER INPUT

SEE POWER SUPPLY SPECIFICATIONS FOR CONNECTION INFORMATION

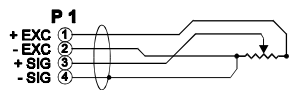
**SPAN POT

THIS SPAN POT IS ONLY PRESENT ON THERMOCOUPLE AND RTD INPUT METERS. ALL OTHER FS12X SERIES METERS ARE CALIBRATED VIA THE SETUP MENU ACCESSED BY THE FRONT PANEL PUSHBUTTONS.

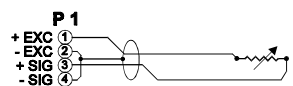
VOLTAGE EXCITATION WIRING EXAMPLES



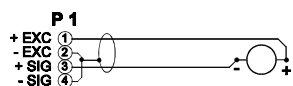
4 WIRE TRANSDUCCERS
ie. LOAD CELL
VOLTAGE INPUT METERS



3 WIRE TRANSDUCCERS
ie. LINEAR POT
VOLTAGE INPUT METERS



TRANSCONDUCTANCE SENSORS
ie. PH PROBE
CURRENT INPUT METERS



2 WIRE LOOP POWERED PROBES
ie. 4 - 20 mA TEMPERATURE TRANSMITTER
CURRENT INPUT METERS



FS12X - XXX SERIES FRONT PANEL CONTROLS



STEP

- PRESS TO ENTER THE SETUP MENU
- WHILE IN THE MENU MODE, PRESS THIS BUTTON TO ADVANCE TO THE NEXT PARAMETER OR TO THE NEXT DIGIT

SET

- WHILE IN THE MENU MODE, THIS BUTTON CHANGES THE SETTING FOR A PARAMETER OR INCREMENTS THE FLASHING DIGIT

FS12X - XXX SERIES SET-UP MENU

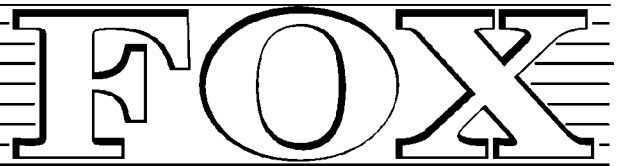
PARAMETER	SETTING	DESCRIPTION
DECIMAL POINT:	d .	NO DECIMAL POINT
DISPLAY DECIMAL POINT POSITION	d .	0.0
	d .	0.00
	d .	0.000
	d .	0.0000
AVERAGING:	Av.16	4096 CONVERSIONS AVERAGED; 1 UPDATE / SECOND
NUMBER OF SETS OF 256 CONVERSIONS AVERAGED TOGETHER FOR DISPLAY UPDATE	Av. 8	2048 CONVERSIONS AVERAGED; 2 UPDATES / SECOND
	Av. 4	1024 CONVERSIONS AVERAGED; 4 UPDATES / SECOND
	Av. 2	512 CONVERSIONS AVERAGED; 8 UPDATES / SECOND
	Av. 1	256 CONVERSIONS AVERAGED; 16 UPDATES / SECOND
BAR MODE:	FILL	LEFT DOT ON BAR LIGHTS FOR LEFT ZERO MODE
LEFT OR CENTER ZERO / FILL OR DOT MODE	dot	LEFT DOT ON BAR LIGHTS FOR LEFT ZERO MODE
	FILL	CENTER DOT ON BAR LIGHTS FOR CENTER ZERO MODE
	dot	CENTER DOT ON BAR LIGHTS FOR CENTER ZERO MODE
BAR SENSITIVITY:	100	100 DISPLAY COUNTS FULL SCALE
THE NUMBER OF DISPLAY COUNTS THAT THE 0 TO FULL SCALE SPAN OF THE BAR REPRESENTS	200	200 DISPLAY COUNTS FULL SCALE
	500	500 DISPLAY COUNTS FULL SCALE
	1000	1000 DISPLAY COUNTS FULL SCALE
	1500	1500 DISPLAY COUNTS FULL SCALE
	2000	2000 DISPLAY COUNTS FULL SCALE
	3000	3000 DISPLAY COUNTS FULL SCALE
	5000	5000 DISPLAY COUNTS FULL SCALE
	10.0t (10000)	10000 DISPLAY COUNTS FULL SCALE
CAL POINT 1	CAL1	ANNOUNCES CAL 1 STEP *
	1234	ADJUST DISPLAY TO DESIRED VALUE FOR CAL 1 INPUT *
CAL POINT 2	CAL2	ANNOUNCES CAL 2 STEP *
	1234	ADJUST DISPLAY TO DESIRED VALUE FOR CAL 2 INPUT *

TO SET A CALIBRATION / SCALING VALUE:

- PRESS AND RELEASE THE 'SET' BUTTON UNTIL THE FLASHING DIGIT REACHES THE DESIRED VALUE
- PRESS THE 'STEP' BUTTON TO ADVANCE TO THE NEXT DIGIT
- REPEAT UNTIL ALL DIGITS ARE SET
- NOTE: THIS METER IS EQUIPPED WITH LEADING ZERO SUPPRESSION - BLANK DIGITS ARE ASSUMED TO BE 0'S (THEY WILL NOT FLASH)
- NOTE: TO ALLOW THE ENTRY OF NEGATIVE VALUES, THE MSD (LEFT MOST DIGIT) WILL INCREMENT 0 THRU 9, -1, -(0)

* CALIBRATION / SCALING INSTRUCTIONS:

- THE FS12X - XXX SERIES REQUIRES 2 KNOWN INPUTS FOR CALIBRATION / SCALING. THESE INPUTS CAN BE OF ANY POLARITY WITH RESPECT TO EACH OTHER AND SHOULD BE AS FAR APART AS POSSIBLE IN MAGNITUDE.
- APPLY THE FIRST KNOWN INPUT SIGNAL TO THE METER INPUT.
- USING THE 'STEP' BUTTON, SCROLL THROUGH THE SETUP MENU UNTIL THE BAR SENSITIVITY STEP APPEARS. PRESS AND HOLD THE 'STEP' BUTTON ONCE MORE UNTIL THE CAL1 MESSAGE IS REPLACED BY A NUMBER WITH THE MSD (LEFT) DIGIT FLASHING.
- ADJUST THE VALUE ON THE DISPLAY UNTIL IT IS AT THE DESIRED VALUE FOR THE KNOWN INPUT - SEE ABOVE INSTRUCTIONS TO SET A CALIBRATION / SCALING VALUE
- SIMULTANEOUSLY PRESS BOTH THE 'SETPT / RESET' AND 'TARE' BUTTONS TO ENTER THE CAL POINT
- PRESS THE 'STEP' BUTTON, THE 'ENT 1' MESSAGE WILL APPEAR MOMENTARILY AND THEN BE REPLACED WITH THE CAL2 MESSAGE- PRESS 'STEP' ONCE MORE- A NUMBER WILL APPEAR WITH THE MSD (LEFT) DIGIT FLASHING.
- APPLY THE SECOND KNOWN INPUT SIGNAL TO THE METER INPUT
- ADJUST THE VALUE ON THE DISPLAY UNTIL IT IS AT THE DESIRED VALUE FOR THE KNOWN INPUT - SEE ABOVE INSTRUCTIONS TO SET A CALIBRATION / SCALING VALUE
- PRESS 'STEP' BUTTON TO ENTER THE CAL POINT, CALIBRATION / SCALING IS COMPLETE - THE METER WILL RETURN TO NORMAL OPERATION



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 device 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 has 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 this instrument 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.
5403 Patton Dr. Unit 218
Lisle, IL 60532
ATTN: Service Department**