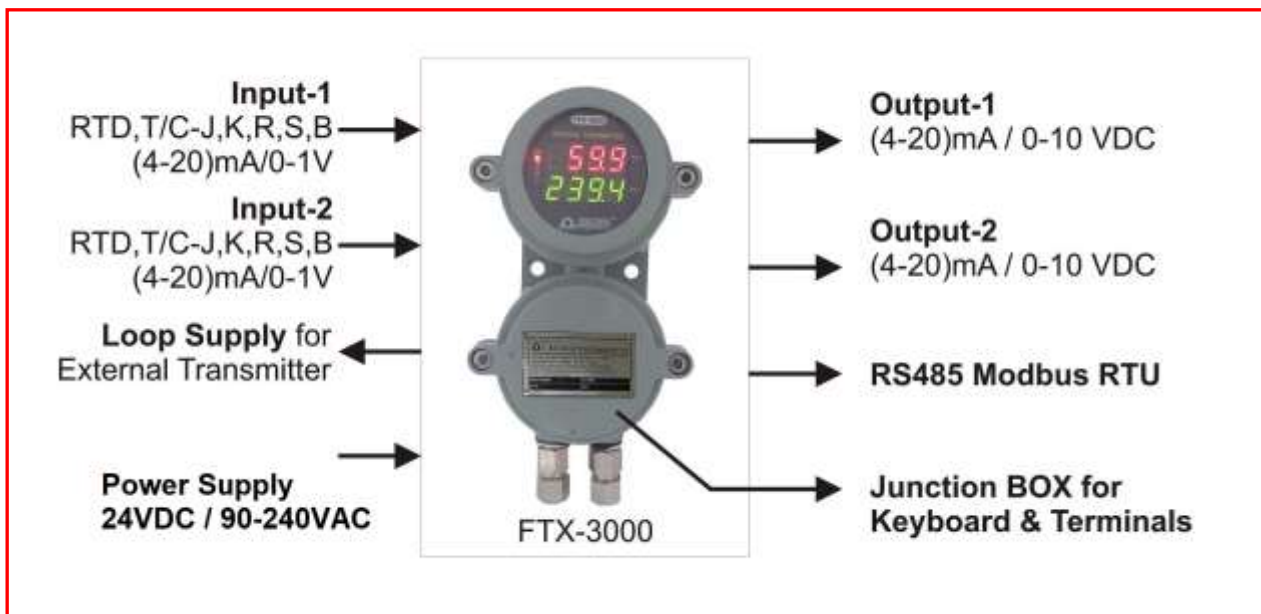


Temperature / Process Indicator cum Transmitter in FLP enclosure (Model FTX-3000)



Model Wise Description:

MODEL	PRODUCT DESCRIPTION	CONFIGURATION	PART NO.
FTX-3000-U-1	Single Input Process Transmitter with 4-20mA / 0-10V retransmission output and RS-485 interface in FLP enclosure	(1 AI + 1 AO + 1 SO)	1601
FTX-3000-U-2	Dual Input Process Transmitter – with 4-20mA/ 0-10V retransmission output and RS-485 interface in FLP enclosure	(2 AI + 2 AO + 1 SO)	1602

Description:

Libratherm offers micro-controller based Process Transmitter model **FTX-3000** in flame proof field mount enclosure, for measuring and indicating process parameters such as temperature, pressure, humidity, level etc.. and converting to the equivalent analogue and digital values proportional to the Process Input for long distance transmission and interface to the PLC or DCS or any other field device. FTX-3000 is a very useful device to capture the low level signal from the hazardous area and bringing back the signal to the main control room.

For process input type selection, four options are available as given in the above table. Temperature or Process values corresponding to the input is indicated on the digital display and the corresponding display range is converted to the 2 wire current output of 4-20mA/0-10VDC proportional and linearized to the selected process input. This linearized signal can be used for remote measurement and indication. For the dual input model **FTX-3000-U-2**, two independent 4-20mA/0-10V signals are available. The analog outputs are isolated from the DC power supply. Single FTX-3000 can be used to capture two process inputs, thereby saves on size and price.

To interface low level field signals with PLC or DCS or with any other process controller – the measured and displayed analog values are converted for digital serial communication on isolated RS485 bus with MODBUS RTU protocol in slave mode.

Advantage of RS-485 Interface:

Providing the feature of RS 485 digital serial interface is advantageous, since the number of wires coming from the various sensors / transmitters can be avoided and instead, only two wires can be used to interface multiple such FTX-3000 on serial port. The digital communication has the greatest advantage of exactly replicating the process value, that is what is measured at the plant and what is displayed in the control room always matches one to one as compared to transmitting the analogue values. In today's technology, most of the PLCs and DCS accepts RS485 digital interface.

Features:

- ❖ Microcontroller based design.
- ❖ Universal single or dual industrial process input (user selectable).
- ❖ Isolated dual 4-20mA output, proportional and linearized to the selected input.
- ❖ RS-485 MODBUS RTU serial interface.
- ❖ Bright red LED display.
- ❖ IP 65 Flameproof Enclosure – suitable for Gas group I, IIA and IIB.

Technical Specification:

Process Input	Thermocouple or RTD (Pt-100) or (4-20)mA signal (Input type not listed in the table below can also be provided on request)
Range	Full range of the selected input – desired measuring range can be chosen from range selection table.
Accuracy	Software linearized for +/-1 °C indicating accuracy for thermocouple input and +/-0.1°C for Pt-100 input. For Voltage and Current – the accuracy is absolute to the process input.
Display	Dual row of 4 digit 0.5" red seven segment LED.
Power Supply	24VDC +/- 10% @ 150mA (Standard) OR 90-240VAC 50/60Hz (Any one to be specified) using built in SMPS card. (Optional feature)
Current Output 1	4-20mA / (0-10)V proportional and software linearized to the specified range of the user selected input. (12 bit resolution) - 2 wire
Current Output 2	4-20mA / (0-10)V proportional and software linearized to the specified range of the user selected input. (12 bit resolution) - 2 wire
Digital Serial Output	Isolated 2 wire RS485 on MODBUS RTU protocol in SLAVE mode
Isolation	Input, 4-20mA and RS485 outputs are isolated from the Power supply. Isolation voltage > 1.5KV DC (3 way isolation technique).
Loop Supply	18-24VDC to power external loop transmitter.
Loop Resistance	RLmax = 600 Ohms - for each output.
Connection	On lower half of the FLP enclosure – screw on type terminals.
Cable Entry	Through suitable size ¾" 3 individual glands for supply and input/output.
Enclosure	(IP-65) Aluminum Die cast housing – Flame proof Enclosure (refer enclosure data sheet given below)
Dimensions	250 h x 150 w x 70 d mm. (refer enclosure drawing given below)

Input and Range Selection Table:

Code	Input	Range
A1	J type : Fe/Con thermocouple	0 to 760 °C
A2	K type : Cr/Al thermocouple	0 to 1372 °C
A3	R type : Pt/PtRh13% thermocouple	0 to 1768 °C
A4	S type : Pt/PtRh10% - thermocouple	0 to 1768 °C
A5	B type : Pt/PtRh10% - thermocouple	200 to 1820 °C
A6	Pt-100 (Alpha = 0.00385) DIN 43760	-200.0 to 400.0°C
A7	4-20mA (programmable Decimal point)	-1999 to 9999 count
A8	0-1VDC (programmable Decimal point)	-1999 to 9999 count
Any other input – not specified above can also be provided.		

Ordering Information for Model FTX-3000-U-1 and FTX-3000-U-2

Sr. No.	Model	Specifications	Part no.
1.1	FTX-3000-U-1	Single Input: J, K, Pt-100,4-20mA, 0-1VDC without Analog / Digital interface	1601-1-1
1.2	FTX-3000-U-1	Single Input: J, K, Pt-100,4-20mA, 0-1VDC with (4-20)mA retransmission	1601-1-2
1.3	FTX-3000-U-1	Single Input: J, K, Pt-100,4-20mA, 0-1VDC with (0-10)V retransmission	1601-1-3
1.4	FTX-3000-U-1	Single Input:J,K,Pt-100,4-20m with RS-485 interface	1601-1-4
1.5	FTX-3000-U-1	Single Input: R, S, B t/c, 0-1VDC, without Analog / Digital interface	1601-1-5
1.6	FTX-3000-U-1	Single Input: R, S,B t/c, 0-1VDC, with (4-20)mA retransmission	1601-1-6
1.7	FTX-3000-U-1	Single Input: R, S,,B t/c, 0-1VDC, with (0-10)V retransmission	1601-1-7
1.8	FTX-3000-U-1	Single Input: R, S t/c, 0-1VDC, with RS-485 interface	1601-1-8
1.9	FTX-3000-U-2	Dual Input: J, K, Pt-100,4-20mA, 0-1VDC without Analog / Digital Interface	1602-2-1
1.10	FTX-3000-U-2	Dual Input: J, K, Pt-100,4-20mA, 0-1VDC with (4-20)mA retransmission	1602-2-2
1.11	FTX-3000-U-2	Dual Input: J, K, Pt-100,4-20mA, 0-1VDC with (0-10)V retransmission	1602-2-3
1.12	FTX-3000-U-2	Dual Input: J, K, Pt-100, 4-20mA, 0-1VDC with RS-485 interface	1602-2-4
1.13	FTX-3000-U-2	Dual Input: R, S, B t/c, 0-1VDC, without Analog/ Digital interface	1602-2-5
1.14	FTX-3000-U-2	Dual Input: R, S, B t/c, 0-1VDC, with (4-20)mA retransmission	1602-2-6
1.15	FTX-3000-U-2	Dual Input: R, S, B t/c, 0-1VDC, with (0-10)V retransmission	1602-2-7
1.16	FTX-3000-U-2	Dual Input: R, S,B t/c, 0-1VDC with RS-485 interface	1602-2-8

Dimensions of Flame proof Enclosure:

