www.fine-tek.com

Safety Barrier

FineTek

Innovation · Quality · Sharing

TXX1 ISOLATED SAFETY BARRIER

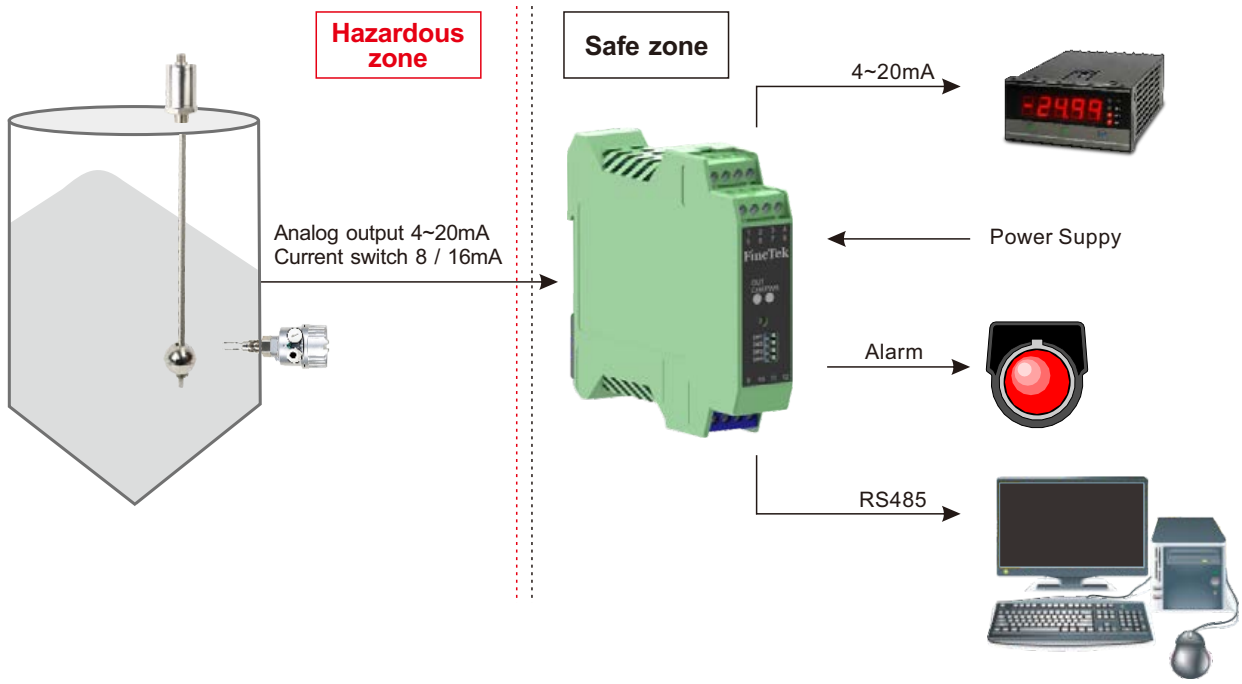
OPERATING PRINCIPLE

Isolated safety barrier provides power supply to transmitters located in hazardous zone and transmit isolated supply current signal to safe zone. Max. input 0~20mA which can be transformed to different analog outputs, such as 0~20mA / 4~20mA / 0~5V / 0~10V.

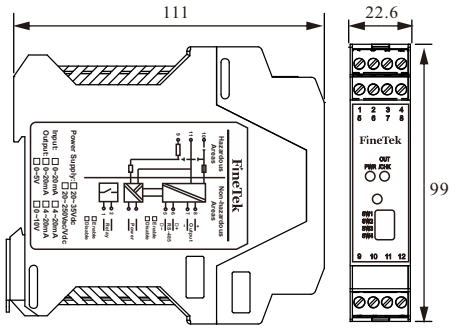
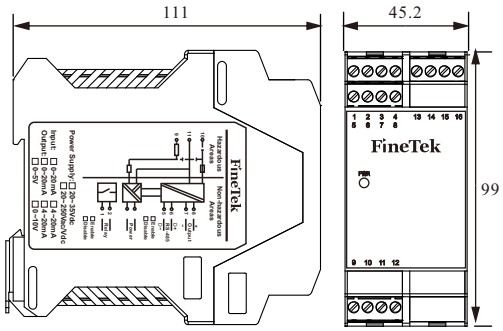
FEATURES

- 1 current input port to connect with continuous current or current output products. Applicable for use in hazardous zone.
- 3 output ports - relay output, current output, and RS-485.
- LED indicator, user friendly.
- DIP switch for function selection.
- In house programming per customers' criteria.
- Self-test function for system function monitoring.
- Setting relay output as alarm for optional external sensing unit connection.
- Optional RS-485 interface enables easy system configuration & supply current data retrieve.
  ＊RS485(only for host communication) when multiple TX1 safety barriers operating parallelly, the max. quantity for parallel connection is 20 units.
- Product design complies with explosion proof standard.
- 2 dual-color LEDs
  - PWR LED: Green - Normal
    Red - Abnormal
  - OUT/CHK LED: Yellow - Relay activated
    Red (Flash) - Input current abnormal

SCHEMATIC DIAGRAM



TXX1 SPECIFICATION

Dimensions (Unit: mm)		
Certification	NEPSI Ex-proof [Ex ia Ga] IIC	
Model No.	**TX100R**	**TX101F**
Intrinsically safe end (to hazardous zone)		
Input	0~20/4~20mA	
Open loop supply voltage	< 28 Vdc	
Distribution supply voltage	> 15 Vdc (Load 20 mA)	
Non-intrinsically safe end (to safe zone)		
Supply voltage	20~35 Vdc	20~250 Vdc/Vac, 50/60 Hz
Power supply protection	Power supply reverse protection	Non-directionality input
Current consumption	< 100 mA @24 V, Load 20mA	< 200 mA @24 V, Load 20mA
Output	Current mode: 0~20/4~20 mA, Load resistance < 550 Ω Voltage mode: 0~5/0~10V, Load resistance < 20k Ω	
Technical parameters		
Response time	< 5 ms	
Accuracy	0.1 % F.S.,0.5%@<0.3V (20˚C)	
Temp. coefficien	< 2.0μA/˚C (25˚C~60˚C), < 3.0μA/˚C (-20˚C~25˚C)	
Isolation	2500Vac : Current leakage < 1mA : 1min. 1. Intrinsic end & Non-Intrinsic end 2. Non-Intrinsic end power supply & output	
Ambient temp.	-20~60 ˚C	
Applicable zone	Zone 0、Zone 1、Zone 2, IIA、IIB/IIIC、IIC	
Externa equipments	1. 2-Wire transmitter 2. 3-Wire transmitter 3. Current output transmitter	

INTRINSICALLY SAFETY PARAMETERS

2 wire type transmitter (terminal no. 10-11)

Max. Voltage input Ui(V)	Max. Current input Ii (mA)	Max.Power input Pi (mW)	Max. internal equivalent parameter	
			Ci (μF)	Li (mH)
20	120	—	0	0

Max. Voltage output Uo (V)	Max. Current output Io (mA)	Max.Power output Po (mW)	Max. external parameter	
			Co (μF)	Lo (mH)
5.355	—	—	See below table	

Gas group	Max. External parameter	
	Co (μF)	Lo (mH)
II C	65	—
II B	1000	—
II A	1000	—

3 wire type transmitter (terminal no. 9-10-11, 9-10)

Max. Voltage output Uo (V)	Max. Current output Io (mA)	Max.Power output Po (mW)	Max. internal equivalent parameter	
			Ci (nF)	Li (μH)
28	93	651	0	0

Gas group	Max. External parameter	
	Co (μF)	Lo (mH)
II C	0.083	4.2
II B	0.65	12.6
II A	2.15	33.6

Note:
Please pay attention to the requirements below when using the maximum external capacitance (Co) and Inductance (Lo) values as listed in the table above:

- For the circuit only containing the distributed inductance and capacitance, such as the districted inductance and capacitance of cable, the allowed maximum external capacitance and inductance value are those specified in the table.
- For the circuit composed of cables, when the intrinsically-safe circuit contains the capacitance or inductance lower than 1% of the value specified in the table, the allowed maximum external capacitance and inductance are those specified in the table.
- For the circuit composed of capacitance and inductance, when the capacitance and inductance are both larger than 1% of the value specified in the table (not including the cable), the allowed maximum external capacitance and inductance are 50% of those specified in the table.

FUNCTION SETTING

Current Mode

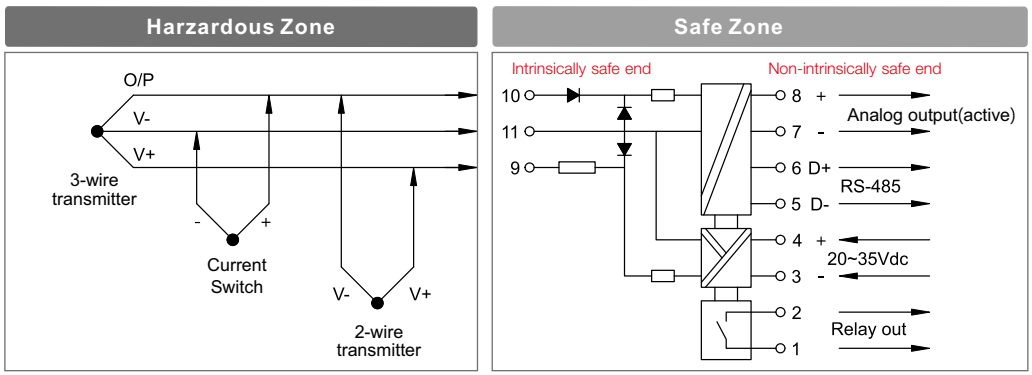
DIP	Action mode	Description	DIP switch position
SW1	Working mode	Continous current output	
SW2	Analog output mode	Increment: 0~20mA/4~20mA/0~5V/0~10V	
		Decrement: 20~0mA/20~4mA/5~0V/10~0V	
SW3	Relay action	ON, as≤value setted	
		ON, as≥value setted	
SW4	Relay output mode	Boot mode	
		Alarm mode	

Switch Mode

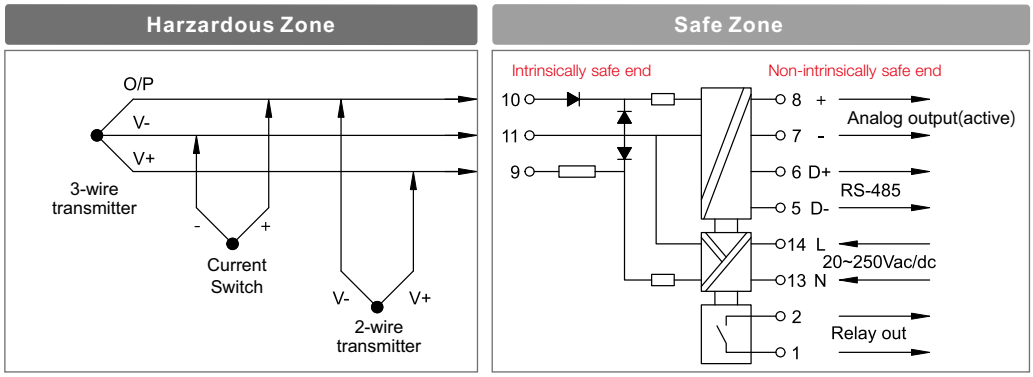
DIP	Action mode	Description	DIP switch position
SW1	Working mode	Current output for switch	
SW2	Relay action	ON, as≥value setted	
		ON, as≤value setted	
SW3	Delay time setting	NO time delay	
		5 second delay	
SW4	Relay output mode	Boot mode	
		Alarm mode	

WIRING

TX100R



TX101F

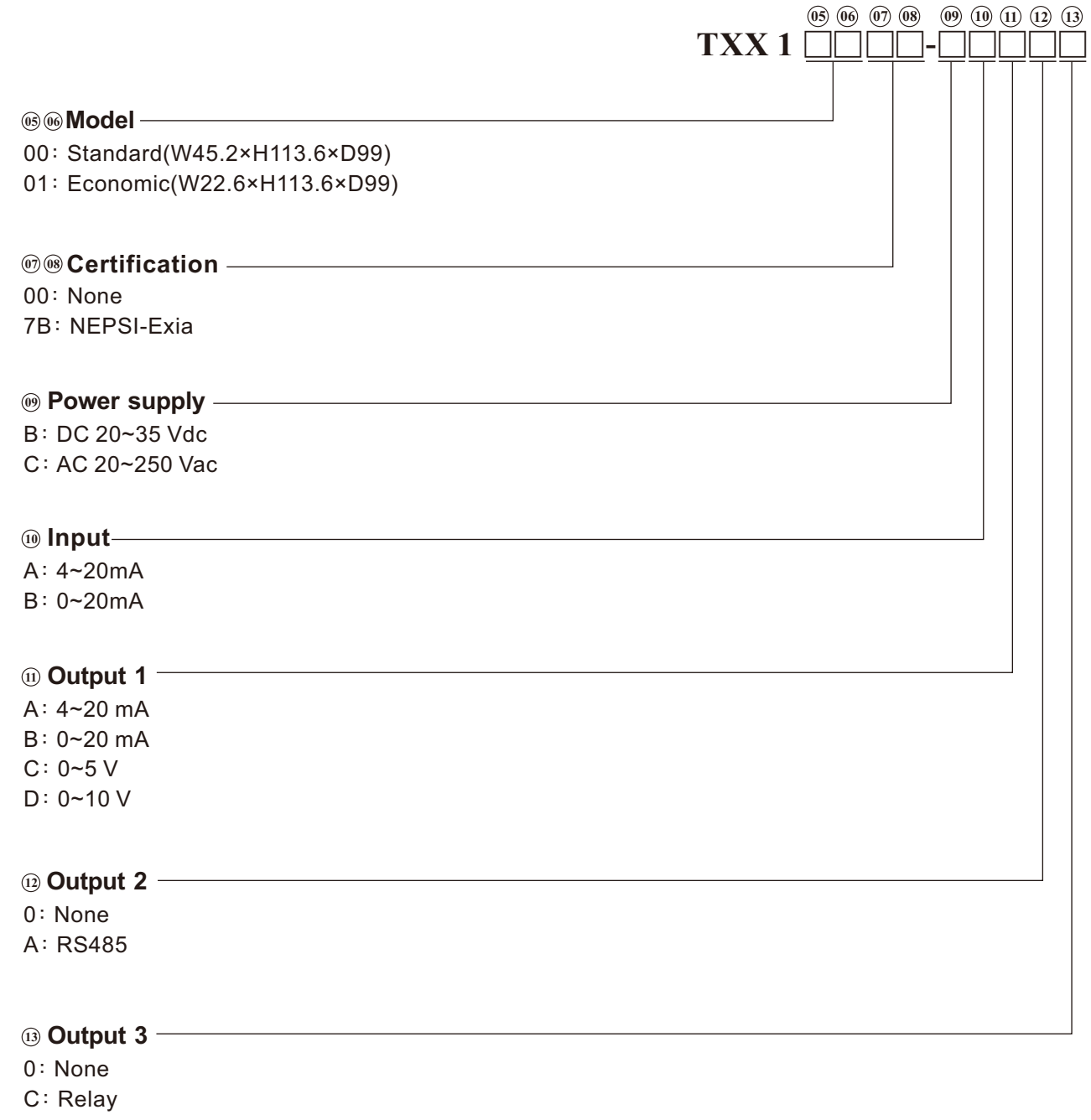


FineTek

ORDERING INFORMATION

Model Number / Order Code Comparison Table

Model Number	Order Code
TX100R	TXX1017BB
TX101F	TXX1007BC



TXX2 ISOLATED SAFETY BARRIER

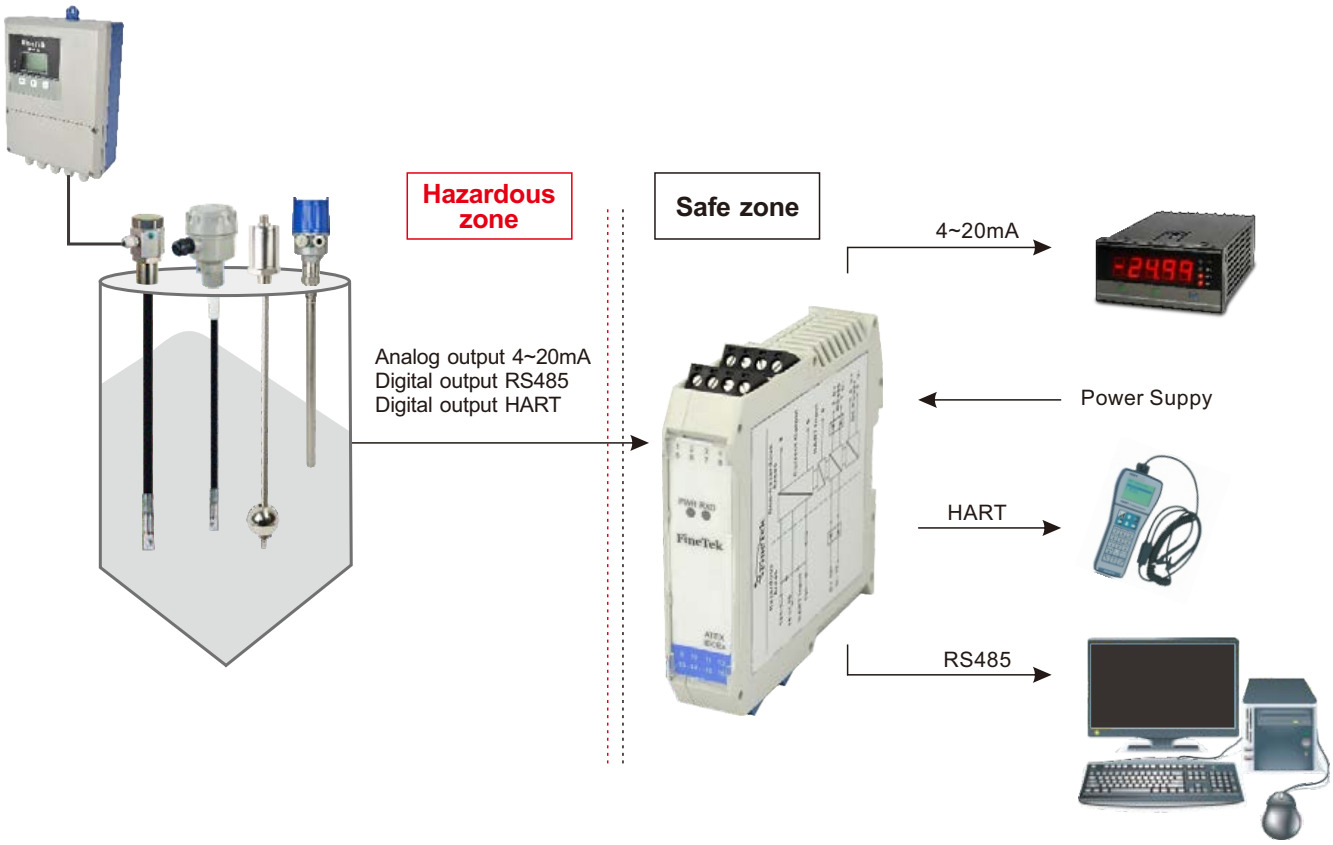
OPERATING PRINCIPLE

This isolated barrier is composed of a circuit energy restriction unit, current isolation unit and signal processing unit. The isolated barrier isolates the power supply of the transmitter in the hazardous area, and transmits the analog signal and digital signal generated by the transmitter to the safe side. The analog 4~20mA output signal can be converted into an isolated 4~20mA type. Moreover, it can read the HART digital signal or RS485 signal in the hazardous side, and isolates the digital output signal to the safe side.

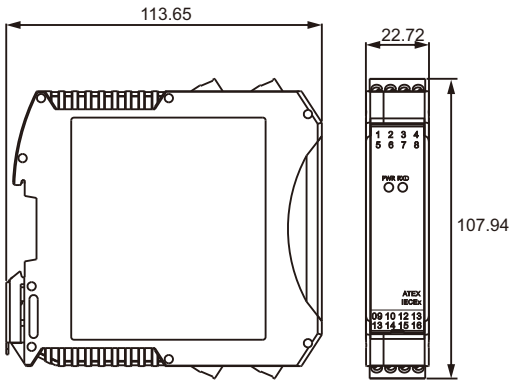
FEATURES

- Wide input voltage range.
- Integrated power supply safety barrier and digital communication safety barrier.
- Insulation withstand voltage of up to 2500Vac in hazardous and safe sides.
- Safety digital communication RS485 relay mode.
- Communication HART relay mode.
- Internal 250 Ohm for HART communication.
- Power supply indicator and digital communication indicator.
- Intrinsically safe explosion-proof IECEx/ATEX.

SCHEMATIC DIAGRAM



TXX2 SPECIFICATION

Dimensions (Unit: mm)	
Certification (optional)	IECEx [Ex ia Ga] IIC [Ex ia Da] IIIC ATEX II (1) G [Ex ia Ga] IIC II (1) D [Ex ia Da] IIIC
Intrinsically safe end (to hazardous zone)	
Current input	4~20mA
Load resistance	＜500Ω
Open-circuit volta	＜35Vdc
Digital input	HART / Rs485
Non-intrinsically safe end (to safe zone)	
Supply voltage	20~35 Vdc
Power consumption	4W max.
Analog output	4~20 mA (active), Load impedance ě 500Ω
Digital output	HART 7.3 (Internal 250Ω communication resistance) / RS485
Technical parameters	
Transmission precision	0.1 % F.S. (20˚C)
Temp. coefficien	< 2.0μA/˚C (25˚C~60˚C) ‧ < 3.0μA/˚C (-20˚C~25˚C)
Insulation strength	2500Vac; Leakage current < 1mA ； 1 min, Hazardous side and safe side
IP grade	IP20
Ambient temp.	-20~60 ˚C
Application environment	Zone 0、Zone 1、Zone 2, IIA、IIB/IIIC、IIC

INTRINSICALLY SAFETY PARAMETERS

Terminal no. 4-3/5 (Supply voltage) : Un=20~35Vdc
Terminal no. 2-1 (RS485 power) :

Maximum input voltage Ui(V)	Maximum input current Ii (mA)	Maximum input power Pi (mW)	Max. internal equivalent parameter	
			Ci (μF)	Li (mH)
8.5	90	192	0	0

Terminal no. 10-12 (RS485 signal) :

Maximum output voltage Uo (V)	Maximum output current Io (mA)	Maximum output power Po (mW)	Maximum external parameter	
			Co (μF)	Lo (mH)
5.88	19.8	29.11	20	10

Terminal no. 13(HART Signal input) : Ii=4~20mA
Terminal no. 15-14/16 (Sensor signal) :

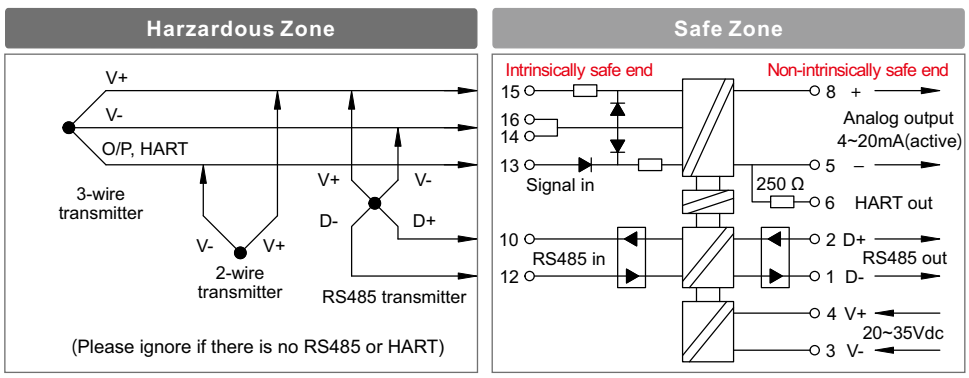
Maximum output voltage Uo (V)	Maximum output current Io (mA)	Maximum output power Po (mW)	Maximum external parameter	
			Co (μF)	Lo (mH)
28	93	651	IIC = 0.83 IIB/IIIC = 0.65 IIA = 2.15	IIC = 4.1 IIB/IIIC = 16.3 IIA = 32.6

The parameters of power supply apply when one of the two conditions below is given:
- The total Li of the external circuit(excluding the cable)is <1% of the Lo value or
- The total Ci of the external circuit(excluding the cable)is <1% of the Co value.

The parameters are reduced to 50% when both of the two conditions below are given:
- The total Li of the external circuit(excluding the cable)is ≥1% of the Lo value or
- The total Ci of the external circuit(excluding the cable)is ≥1% of the Co value.

Note: The reduced capacitance of the external circuit (including cable) shall not be greater than 1 μF for IIA & IIB/IIIC and 600nF for IIC.

WIRING
TXX200

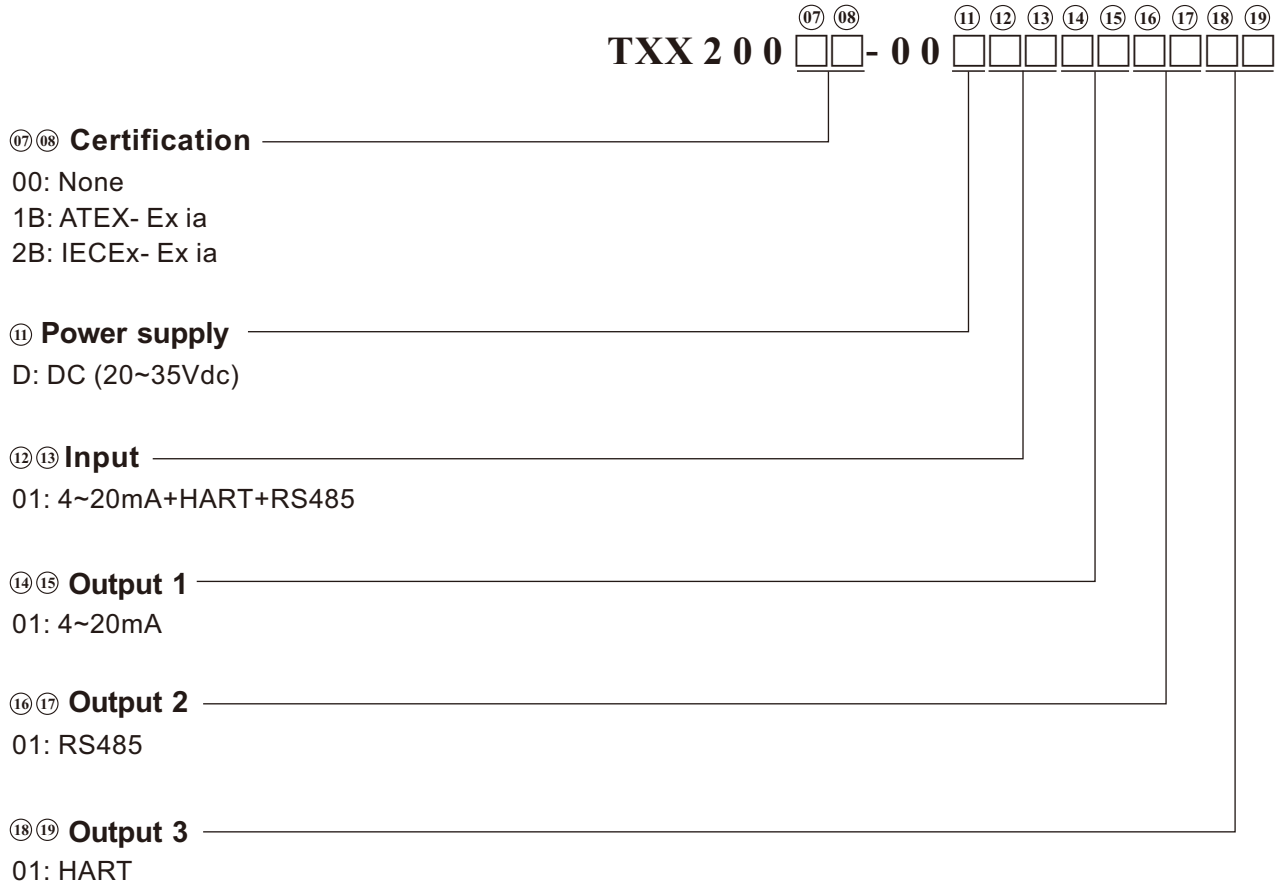


FineTek

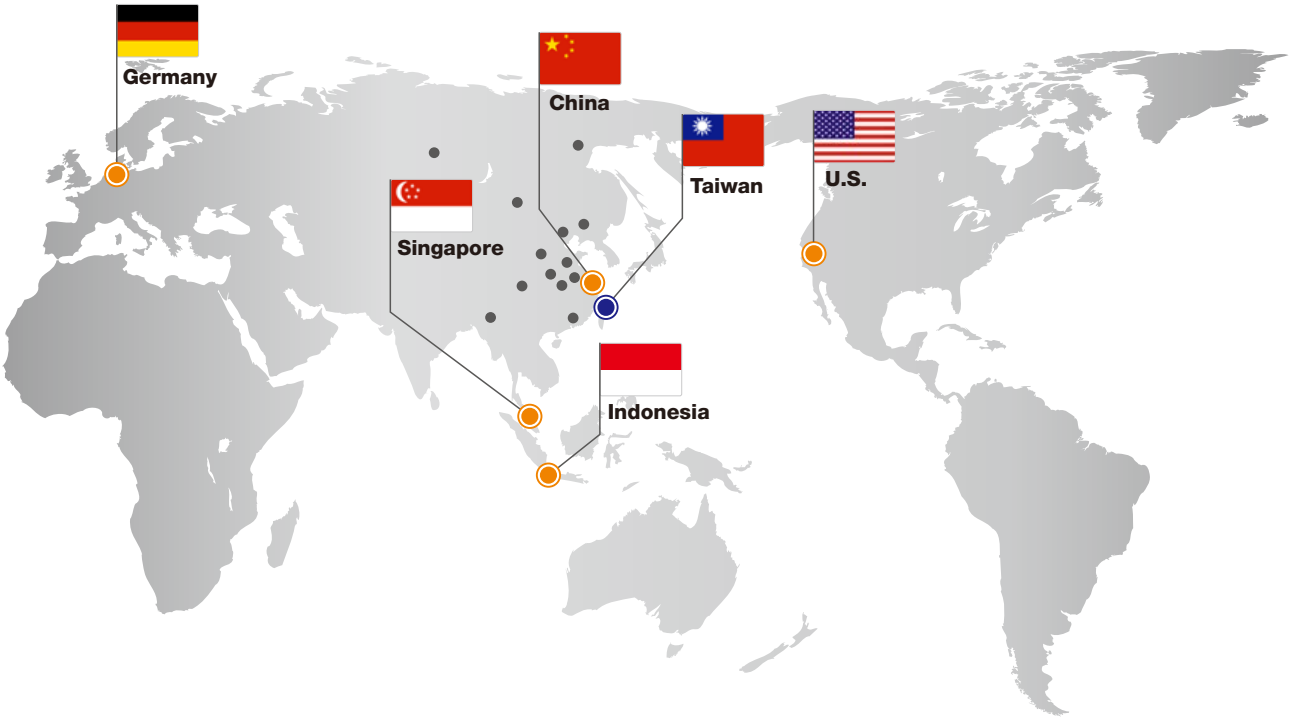
TERMINAL DESCRIPTION

Non-intrinsically safe end (toward the safe zone)		
Code	Description	Description
1	RS485,D-	Differential Line for Comm.(-) of RS485 Wiring
2	RS485,D+	Differential Line for Data(+) of RS485 Wiring
3	Power supply GND	Ground wiring(-) for 20-35 VDC
4	Power supply V+	Voltage wiring(+) for 20-35 VDC
6	HART output	External load resistance 250 Ohm for HART Communication
5	HART · GND	
	Current output-	4~20mA (active)
8	Current output+	
Intrinsically safe end (toward the hazardous zone)		
15	2-wire sensor power supply V+	Maximum open-circuit voltage 28V
	3-wire sensor power supply V+	
13	2-wire sensor power supply V-	DC 0V(GND)
	3-wire sensor power supply	3-wire current input mA
14	3-wire sensor power supply V-	DC 0V(GND)
16		
10	RS485,D+	Downlink wiring cathode Data+
12	RS485,D-	Downlink wiring cathode Data-

ORDERING INFORMATION



Global Network



Head Quarter

Taiwan
FineTek Co., Ltd. - Taipei Head Quarter
No.16, Tzuchiang St., Tucheng Industrial Park
New Taipei City 236, Taiwan
TEL: 886-2-2269-6789
FAX: 886-2-2268-6682
EMAIL: info@fine-tek.com

North America

California, U.S.
Aplus Finetek Sensor Inc. - US Office
355 S. Lemon Ave, Suite D
Walnut, CA 91789
TEL: 1 909 598 2488
FAX: 1 909 598 3188
EMAIL: info@aplusfine.com

Europe

Germany
FineTek GmbH - Germany Office
Bei den Kämpen 26
21220 Seevetal-Ramelsloh, Germany
TEL: +49-(0)4185-8083-12
FAX: +49-(0)4185-8083-80
EMAIL: info@fine-tek.de

Mütec Instruments GmbH - Germany Office
Bei den Kämpen 26
21220 Seevetal-Ramelsloh, Germany
TEL: +49-(0)4185-8083-0
FAX: +49-(0)4185-8083-80
EMAIL: muetec@muetec.de

Asia

China
Fine automation Co., Ltd. - Shanghai Factory
No.451 DuHui Rd, MinHang District, Shanghai,
China 201109
TEL: 86-21-6490-7260
EMAIL: info.sh@fine-tek.com

Singapore
FineTek Pte Ltd. - Singapore Office
37 Kaki Bukit Place, Level 4 Singapore 416215
TEL: 65-6452-6340
EMAIL: info.sg@fine-tek.com

Indonesia
PT. FineTek Automation Indonesia - Indonesia Office
PERGUDANGAN TUNAS BITUNG
JL. Raya Serang KM. 13,8, Blok C3 No. 12&15, Bitung Cikupa,
Tangerang 15710
TEL: 62 (021)-2958-1688
EMAIL: info.id@fine-tek.com

FineTek

Distributor:

08-TXXEP-082620