

# ITXPlus

## Universal loop-powered (two-wire) signal isolator/converter

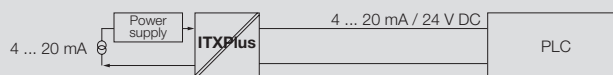
The ITXPlus is a compact, loop-powered, electrically-isolated, programmable signal isolator/converter. On the input side, optionally DC-current/voltage signals, 2-, 3-, or 4-wire PT100s, and thermocouples can be connected. The ITXPlus measures, filters and isolates the input parameters. It converts them into a proportional 4...20 mA signal.

For linear temperature measurements, all standard types of thermocouples and resistance temperature detectors (RTDs) can be connected. The ITXPlus can also process signals from any non-linear resistance device, such as an NTC, PTC, or log. potentiometer. For this, the appropriate characteristic may be programmed into a table containing up to 101 measurement values.

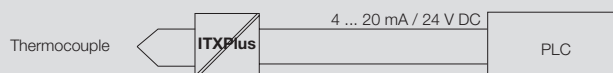
If the sensor is replaced or changed on the input side, then a fully-automatic calibration may be performed. The internal program also features many square-root, linear and  $x^{3/2}$ -/ $x^{5/2}$ -transfer functions. Other characteristics which have not been pre-programmed can be entered directly using a PC. In this way, any sensor may be reproduced.

The configuration software is user-friendly and runs on any PC after installation. It also allows the ITXPlus to be configured during active operations. The CBX100 interface connects the ITXPlus with the PC. It implements complete electrical isolation between the serial port and the signal transmitter.

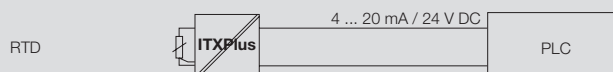
### Application 1:



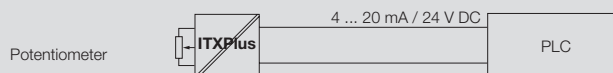
### Application 2:



### Application 3:



### Application 4:



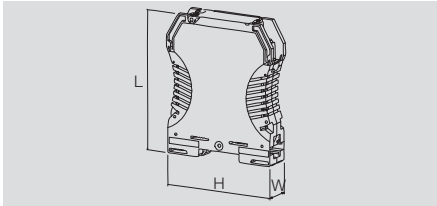
The ITXPlus signal converter, which is rail mounted, and the CBX100 interface have the following technical characteristics:

- A universal input for DC signals/thermocouples and RTD sensors
- Complete electrical isolation
- Loop-powered output
- Programmable via PC
- Automatic cold-junction compensation for thermocouple inputs
- Automatic wire-length compensation for resistance temperature detector (RTD) inputs
- Sensor wire-break detection
- Pre-set and user-defined linearisation
- Compact design - 12.5 mm width
- Mounts on TS35 rail

**ITXPlus Series**

Universal signal isolator / amplifier in 2-wire design

- Output loop-powered
- Programmable with PC
- Pluggable connection terminals
- Compact housing

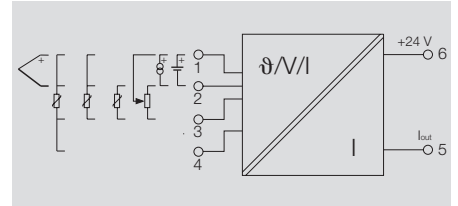


**ITXPlus**

Programmable with T-Set



- Current or voltage input
- Thermocouple
- Temperature resistance
- Conversion, isolation and filtering of all standard types of signals and sensors



**Technical data**

<b>Input</b>	
Type	Type, thermocouple
Input current	
Input voltage	
Input resistance	
<b>Output</b>	
Type	
Output current	
Limits of range	
Residual ripple	
Load resistance	
Calibration / set-up	
<b>General data</b>	
Voltage supply	
Influence on the voltage supply	
Humidity	
Temperature coefficient	
Long-term drift	
Cycle time	
Digital filter factor	
Interference radiation	
Step response time	
Impulse withstand voltage	
Isolation voltage	
Rated voltage	
Transmit function	
Operating temperature/Storage temperature	
EMC standards	
Approvals	

Universal signal isolator / amplifier, thermocoupler, RTD	
B / C / E / J / K / L / N / R / S / T / W3 / W5	
-200...+ 2300 °C depending on thermocoupler	
-10...+20 mA (min. span 1 mA)	
-5...+10 V / -100...+200 mV (min. span 0.5 V / 4 mV)	
2 MΩ (Voltage input) or 40 Ω (current input)	
<b>Current output</b>	
4...20 mA	
+ 22 mA	
< 20 mV <sub>SS</sub>	
[(Vs - 10) / 0.02] Ω (Typically 700 Ω @ 24 V DC)	
PC and CBX100 Interface required 7940010208	
10...40 V DC, powered by loop current	
0.005 % / V	
10...90 % (no condensation)	
typ. 0.02 % / °C	
0.1 % / 10,000 h	
20...200 ms	
1...100	
< ± 0,5 %	
Typically 200 ms (10 to 90 %)	
4 kV (1.2/50 μs)	
2 kV between ports	
300 V <sub>eff</sub>	
direct or reverse	
-10 °C...+70 °C / -20 °C...+70 °C	
DIN EN 61326	
CE, cULus	

**Connections**

Terminal	Signal	
5	Loop -ve	Supply voltage
6	Loop +ve	
1	Signal + Power supply Sensor	Thermocouple
2	Signal + Power supply Storage (only for programming)	
1	A-Sense	4-wire PT100/RTD (or resistance)
3	A	
2	B	3-wire PT100/RTD (or resistance)
3	A	
2	B	2-wire PT100/RTD (or resistance)
3	A	
1	Signal +	Voltage (mV or V)
2	Signal -	
1	Signal +	Current (mA)
2	Signal -	
1	Wiper	Potentiometer
2	B	

**Data of Housing**

Clamping range (rating- / min. / max.)	mm²	1.5 / 0.5 / 2.5
Type of connection / Terminal rail		Screw connection / TS 35
Type of Housing / Weight		Plastic housing / 83 g
Length x width x height	mm	92.4 x 12.5 x 112.4

**Note**

**Ordering data**

Type	
Universal input	
Special adjustment	

**Note**

Type	Qty.	Order No.
ITX+ 4-20mA/4-20mA	1	7940016563
ITX+ variable	1	8944980000

Additional input and output versions available on request

**Accessories**

**Note**

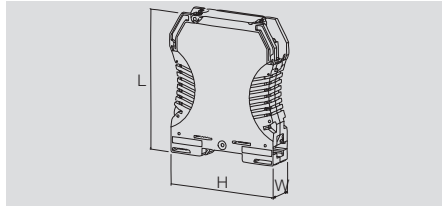
CBX100 Interface - 7940010208  
Connects the ITX+ with the PC for calibration

# MANN SERIES – Signal transmitter

## ITXPlus Series

Universal signal isolator / amplifier in 2-wire design

- Output loop-powered
- Programmable with PC
- Pluggable connection terminals
- Compact housing



## ITXPlus



- Current or voltage input
- Thermocouple
- Temperature resistance
- Conversion, isolation and filtering of all standard types of signals and sensors

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### Technical data

Inputs		
Typ	Typ	Standard
Thermocouple inputs	B	
	C	
	E	IEC584
	J	
	K	
	L	DIN 43710
	N	
	R	IEC584
	S	
	T	
	W3	ASTM E98890
	W5	
	User-defined Input	
	Cold-junction compensation	
	Wire-break recognition	

mA	
volt	
mV	

2, 3, 4-wire RTD		
Type	Standard	
PT 100	DIN 43710	
PT 100	JIS	
PT 200	DIN 43710	
PT 200	JIS	
NI 120	DIN 43710	
CU 100	DIN 43710	
Cable resistance		5 Ω max.
Sensor current		0.1 mA
Influence of cable resistance sensor (3/4 wire)		< 0.002 Ω per Ω wire resistance

Resistance

Accuracy		
Type	Range	
E, J, K, L, N, T, U	< 500 °C	
	> 500 °C	
B, C, R, S, W3, W5		
mV, V, mA	All	
PT100/RTD		
Resistance		

Thermocouple, PT100/RTD, mA, volt, mV, resistance			
Lower limit	Upper limit	Min. range	
400 °C	1828 °C	200 °C	
0 °C	2000 °C		
-100 °C	1000 °C	50 °C	
-100 °C	1200 °C		
-180 °C	1372 °C		
-100 °C	900 °C		
-180 °C	1300 °C	100 °C	
-50 °C	1760 °C	200 °C	
-50 °C	1760 °C		
-200 °C	400 °C	50 °C	
0 °C	2300 °C	200 °C	
2-101 values			
± 1.0 °C			
yes			
- 10 mA to + 20 mA to 40 Ω input resistance (min. range 1 mA)			
- 5 V to + 10 V to 2 M Ω input resistance (min. range 0.5 V)			
- 100 mV to + 200 mV to 2 M Ω input resistance (min range 4 mV)			

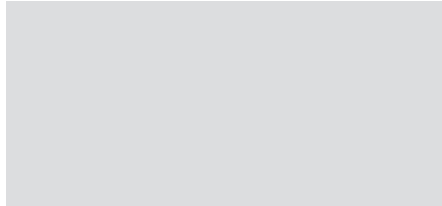
Lower limit	Upper limit	Min. range
-200 °C	850 °C	50 °C
-200 °C	630 °C	
-200 °C	850 °C	
-200 °C	630 °C	
-80 °C	320 °C	
-100 °C	260 °C	100 °C

Temperature coefficient		Accuracy
± 0.02 °C per C° ambient temperature		≤ ± 1.0 °C
± 0.01% of end value per °C ambient temperature		
± 0.02 °C per C° ambient temperature		≤ ± 2.0 °C
		≤ ± 0.1 % of end value
		≤ ± 0.5 °C
		≤ ± 0.1 % of end value

**CBX100 USB**



- Interface for ITXPlus configuration
- USB port for PC
- Tx and Rx status displays



**Technical data**

**Display**

Status indicator

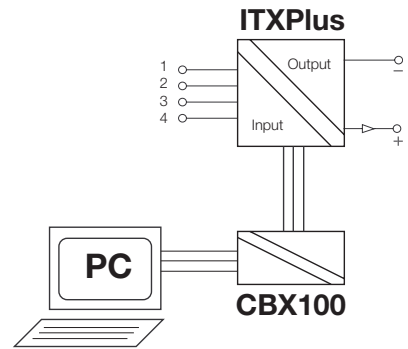
**General data**

Isolation voltage  
 Operating temperature / storage temperature  
 Air humidity  
 Software  
 Interface  
 Approvals

LED (send / receive)

500 V for 60s  
 -20 °C...+70 °C / -25 °C...+70 °C  
 10...90 % (no condensation)  
 T-Set as of V.4.2 (can be downloaded from [www.mannseries.com](http://www.mannseries.com))  
 USB  
 CE, cULus

**Connections**



**Note:** Disconnect the charging unit before operating the CBX100

Note:

**Ordering data**

Type	Interface device
CBX100 USB	

Type	Qty.	Order No.
CBX100 USB	1	7940025031

Note:

**Accessories**

Note: