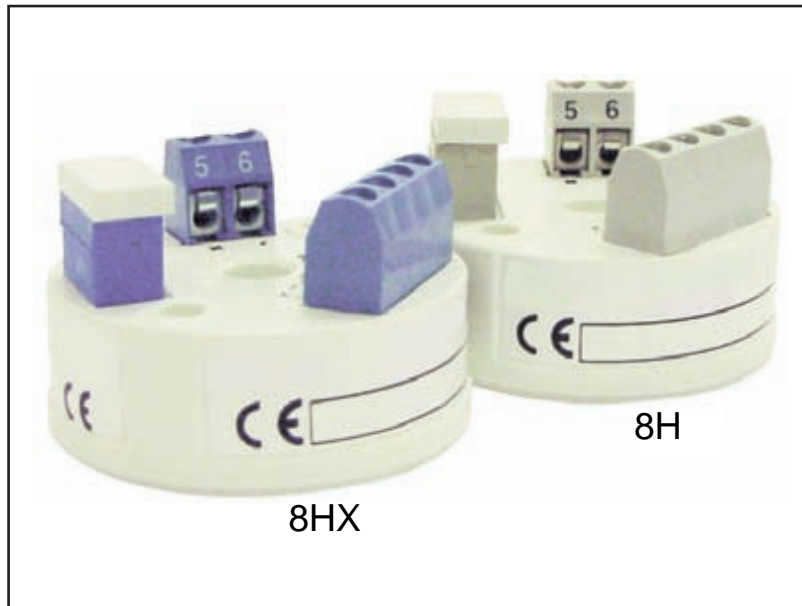


ISOLATED TRANSMITTERS

The JMS 8H, I, and E series isolated transmitter (TempIR) is a 2-wire loop-powered intelligent transmitter. Small size and extreme versatility makes the TempIR an ideal choice for all industrial instrumentation. The transmitter is manufactured for inputs from a wide range of RTD's, thermocouples, plain mV, and resistance. A customized linearization can easily be generated.

A wide power supply range allows for high load in the output loop, e.g. long output leads and multiple instruments. TempIR is configured with TempPRO, the general software to configure the entire temp-family. The program is Windows driven and easy to use. The configuration can be performed on-line, with in and outputs connected. While receiving new parameters, the transmitter will freeze the output signal and return to normal operation after completed transmission of the new parameters.

The 8H series transmitters are microcontroller based and do multiple measurements beyond the standard measurements. One of these controls is to monitor the isolation resistance of the sensor and the sensor leads. This function named, TempIRsense, is available for thermocouples and 3-wire RTD's (see page 8-25 and 8-26 for a technical note).



Performance and design:

- **Excellent stability**
Long-term stability 0.1% / year.
- **Enhanced total system accuracy**
- **Input-output isolation 1500 VAC**
Eliminates measuring errors due to ground loops.
- **High load capacity**
Only 6.5 V voltage drop over the transmitter allows for high loads.
- **Designed for harsh conditions**
Operation temperature: -40 to +85°C, -40 to +185°F.
Excellent EMC performance.
Durable, shockproof design.
- **Simplified mounting and connection**
For DIN B head or larger.
Large center hole (dia. 7mm / 0.28 inch).

Standard Inputs for:

- **RTD's, Thermocouples, mV and resistance**
Reduced inventory costs.
Simplified plant engineering.
- **True on-line configuration**
Full access to all features while in operation.
- **Customized 40 point linearization**
- **TempIRsense, unique monitoring of insulation resistance**
Detects low sensor isolation (see below).
Selectable sensor break action.
- **Simplified loop check-up**
The transmitter works as an accurate current generator.
- **Easy to configure**
- **On-screen indications and line recording**
Valuable tools for temporary measurements.

ISOLATED TRANSMITTERS

Specifications

Input		
Pt100	3, 4 wire	-200 to +1000°C -328 to +1832°F
Pt1000	3, 4 wire	-200 to +200°C -328 to +392°F
Ni100	3, 4 wire	-60 to +250°C -76 to +482°F
Ni1000	3, 4 wire	-60 to +150°C -76 to +302°F
Potentiometer	3, 4 wire	0 - 2000Ω
Sensor Current	approx. 0.4mA	
mAx. Permissible Lead Resistance	25 Ω/lead	

Thermocouples & Voltage	
T/ C	B, E, J, K, L, N, R, S, T, U
Voltage Input	-10 -500 mV
Input Resistance	>10 Mohm
Total permissible lead resistance for both input leads	500 ohms

Monitoring	
	User definable settings
Sensor break detection	3.5 - 22.8 mA
TempIRsense, sensor isolation monitoring	3.5 - 22.8 mA

Adjustments		
Zero adjustments		no limitation
Minimum ranges	Pt100, Pt1000	
	Ni100, Ni1000	10°C, 18°F
	Potentiometer	10Ω
	T/C, mV	2 mV

Output	
Straight, reversed or any intermediate value	4 - 20 mA
Resolution	5μA
Min output signal	appr. 3.5mA
Max output signal	appr. 23 mA

General Data	
Selectable filter time for low pass filter	0-60 s
Scan time	appr. 0.5 s
Rise time 10 -90 %	appr. 0.3 s
Transformer Isolation In- Out	1500 VAC 1 min

Power Supply	
Power supply polarity protected	6.5-36 VDC 10-36 VDC

Accuracy		
Linearity	RTD, mV T/C	0.05% ¹ 0.1% ¹
Calibration	Pt100, Pt1000 Ni100, Ni1000 Potentiometer mV, T/C	The larger of 0.1°C 0.2°F or 0.05% ¹ The larger of 0.1Ω or 0.5% ¹ The larger of 20μV or 0.05% ¹
Cold Junction Compensation	T/C	0.5°C, 0.9°F
Temperature Drift		The larger of 0.005 °C/°C, 0.005 °F/°F or 0.005 %/°C, 0.003%/°F
Cold Junction Compensation	T/C	0.02°C/°C, 0.02°F/°F

Lead Wire Resistance Influence:		
RTD 3-wire		See Table 1
RTD 4-wire		negligible
Thermocouple		negligible
Load influence		negligible
Power supply influence		negligible
Long term drift, 25°C, 77°F		typ 0.1%/year

Temperature	
Ambient Temperature	-40 to +85°C -40 to +185°C

Emission, EN 50081-2 Industrial Environment	30-230 MHz, 30dB (μV/m) 230-1000MHz, 37dB (μV/m)
Immunity, EN50082-2 Industrial Environment	RF, air, 80-1000MHz, AM RF, air, 900 MHz, pulse modulated (GSM cellular telephone) RF, cables, 0.15-80 MHz, ESD 4kV contact, 8kV contact, 8kV air discharge Fast transients, cables, 2kV
HF immunity tested for 10v/m	up to 1000MHz

Housing	
Material	PC +ABS, UL V0
Mounting	DIN B-head or larger
Weight	appr. 50g

¹ selected maximum signal

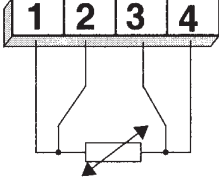
ISOLATED TRANSMITTER INPUT

INPUTS

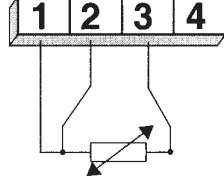
RTD

Pt100, Pt1000, Ni100, Ni1000, PtX, D100

4 - wire connection

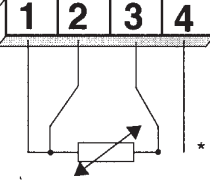


3 - wire connection



Pt100, D100

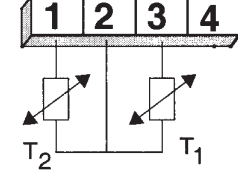
3 - wire connection



* TempIR Sense lead

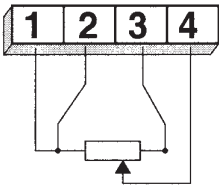
Pt100

Diff temperature $T_1 > T_2$

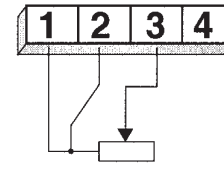


Potentiometer

4 - wire connection

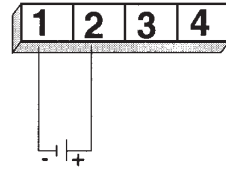


3 - wire connection



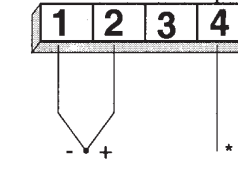
Voltage

millivolt



Thermocouple

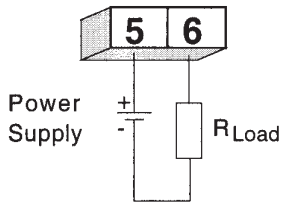
AE, B, E, J, L, N, R, S, T, U
or customer specific



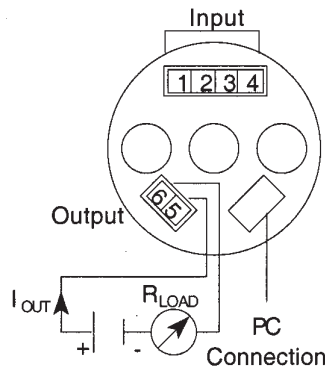
* TempIR Sense lead

OUTPUT

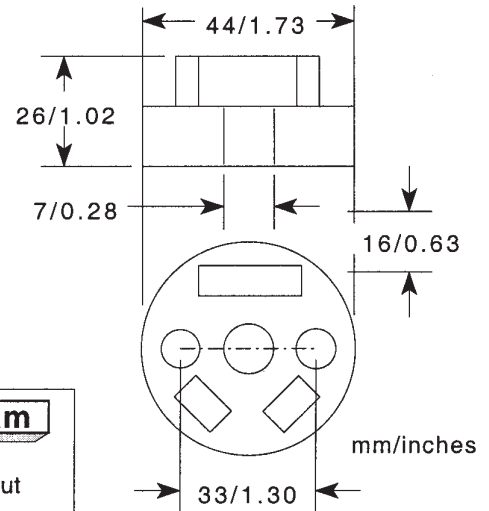
4-20mA Output



Connections

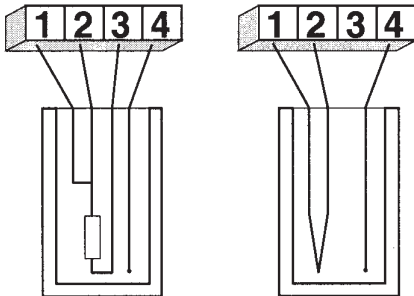


Dimensions



Dimensions

FIG.5



Pt100/D100

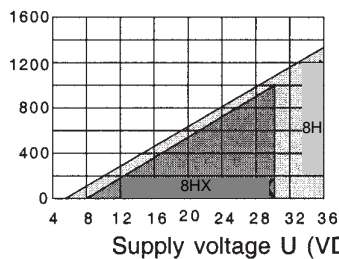
T/C

* TempIR Sense

Output load diagram

FIG.6

Permissible R_{LOAD} at 22 mA output
 R_{LOAD} (Ω)



$$R_{LOAD} = (U - 6.5) / 0.022 \quad (\text{TEMPIR 8H})$$

$$R_{LOAD} = (U - 8) / 0.022 \quad (\text{TEMPIR 8HX})$$