# 8N

# JMS-SE
# Non-Isolated
# *Low Profile*
# Programmable
# 2-wire Transmitter
# for RTD and T/C

**8N is a basic, non-isolated, easy-to-use 2-wire transmitter for in-head mounting in DIN B and similar heads.**

**Reduced height simplifies mounting in low connection heads.**

**Configuration is made in seconds with the user friendly Windows software, MINIPAQ Soft. No external power is needed.**

**8N is programmable for RTD's in 3- and 4-wire connection as well as for 11 T/C types.**

**Useful error correction functions improve the accuracy.**

### Measurements with RTD's in 3- and 4-wire connection
8N accepts inputs from a number of standardized RTD's such as Pt100, Pt500 and Pt1000 acc. to IEC 60751 (α=0.00385), Pt100 acc. to JIS C 1604 (α=0.003916) and US standards (α=0.003902), Ni100 and Ni1000 acc. to DIN 43760 as well as Ni120 and Cu10 acc. to Edison curves. 3- and 4-wire connection can be selected.

### Measurements with Thermocouples
8N accepts inputs from 11 types of standardized Thermocouples.
For T/C input, the CJC (Cold Junction Compensation) is fully automatic, by means of an accurate measurement of the terminal temperature. Alternatively, the CJC can be disabled.

### Temperature linear output
Fully temperature linear 4-20 mA output for RTD's and Thermocouples.

### Designed for harsh conditions
Rugged design tested for 10 g vibrations.

### NAMUR compliant
Output limitations and fail currents according to NAMUR recommendations.

### Sensor matching and error corrections for maximum accuracy
A matching to a calibrated temperature sensor can easily be performed with the *Sensor Error Compensation* function. The *System Error Compensation* is a convenient way to adjust the sensor/transmitter combination (or just the transmitter) for highest accuracy in a certain measuring range.

### Mounting, wiring and testing
8N is designed to ft inside connection heads type DIN B or larger. The large center hole, dia. 7 mm / 0.28 inch, the robust terminals with test connections and the low hight greatly simplify the mounting, wiring and testing procedure.

### Configuration without external power
Edit or read the confguration off-line by just connecting to the USB port of a PC.

### Easy-to-use Windows configuration software
The simple and user friendly software is used for transmitter configuation in seconds. In one window all parameters are set, such as sensor type, measuring range, flter activation, CJC, sensor failure action, error corrections etc.

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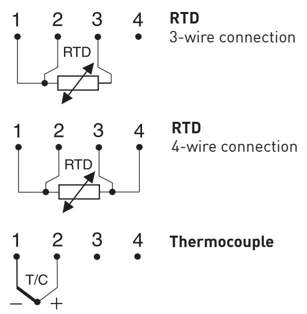
# JMS-SE
# 8N Non-Isolated Transmitter
# Specifications

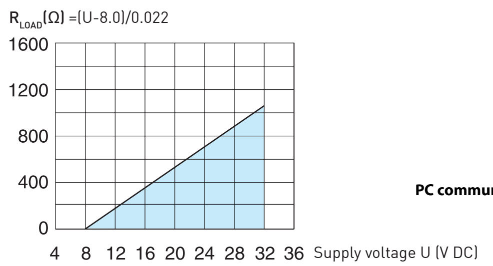
| | | |
|---|---|---|
| **Input RTD** | | |
| Pt100 (IEC 60751, α = 0.00385) | 3-, 4-wire connection | -200 to + 1000 °C / -328 to + 1832 °F |
| Pt 100 (JIS C 1604, α = 0.003916) | 3-, 4-wire connection | -200 to + 1000 °C / -328 to + 1832 °F |
| Pt 100 (US, α = 0.003902) | 3-, 4-wire connection | -200 to + 1000 °C / -328 to + 1832 °F |
| Pt1000 (IEC 60751, α = 0.00385) | 3-, 4-wire connection | -200 to + 200 °C / -328 to + 392 °F |
| Ni100 (DIN 43760) | 3-, 4-wire connection | -60 to + 250 °C / -76 to + 482 °F |
| Ni1000 (DIN 43760) | 3-, 4-wire connection | -100 to + 150 °C / -148 to + 302 °F |
| PtX (IEC 60751, α = 0.00385) | 3-, 4-wire connection | Any Pt function between Pt10- Pt1000 |
| Ni120 (Edison No.7) | 3-, 4-wire connection | -70 to + 300 °C / -94 to + 572 °F |
| Cu10 (Edison No.15) | 3-, 4-wire connection | -200 to + 260 °C / -328 to + 500 °F |
| Sensor current | | ~ 0.4 mA |
| Maximum sensor wire resistance | | 25 Ω/wire |
| **Input Thermocouples** | | |
| Range | Type: B, C, E, J, K, L, N, R, S, T, U | Acc. to T/C standards |
| Maximum sensor wire resistance | | 500 Ω (total loop) |
| **Monitoring** | | |
| Sensor failure monitoring | | Upscale or downscale action |
| **Adjustments** | | |
| Zero adjustment | All inputs | Any value within range limits |
| Minimum spans | Pt and Ni input | 10 °C / 18 °F |
| | Cu10 | 100 °C / 180 °F |
| | T/C | 2 mV |
| **Output** | | |
| Analog | | 4-20 mA, temperature linear |
| Resolution | | 5 µA |
| Minimum output signal | Measurement/Failure | 3.8 mA / 3.5 mA |
| Maximum output signal | Measurement/Failure | 20.5 mA / 21.6 mA |
| Permissible load, see load diagram | | 725 Ω @ 24 VDC |
| **Temperature** | | |
| Ambient, storage and operation | | -40 to + 85 °C / -40 to + 185 °F |
| **General data** | | |
| Selectable dampening time | | ~ 2 s |
| Update time | | ~ 1.5 s |
| Isolation In - Out | | Non-isolated |
| Humidity | | 0 to 100 %RH |
| Vibration | | Acc. to IEC 60068-2-6, test Fc, 60-500 Hz, 10 g |
| **Power supply**,polarity protected | | |
| Supply voltage | | 8 to 32 VDC |
| Permissible ripple | | 4 V p-p @ 50/60 Hz |
| **Accuracy** | | |
| Linearity | RTD | ±0.1 % [1] |
| | T/C | ±0.2 % [1] |
| Calibration | RTD | Max. of ±0.2 °C/ ±0.4 °F or ±0.1 % [1] |
| | T/C | Max. of ±20 µV or ±0.1 % [1] |
| Cold Junction Compensation (CJC) | T/C | ±0.5 °C / ±0.9 °F |
| Temperature influence [3] | All inputs | Max. of ±0.25 °C/25 °C or ±0.25%/25 °C [1] [2] |
| | | Max. of ±0.5 °F/50 °F or ±0.28%/50 °F [1] [2] |
| Temperature influence CJC [3] | T/C | ±0.5 °C/25 °C / ±1.0 °F/50 °F |
| RFI influence, 0.15 to 1000 MHz, 10 V or V/m | | ±0.5% [1] (typical) |
| Long-term stability | | ±0.2 % [1] /year |
| **Housing** | | |
| Material, Flammability (UL) | | PC/ABS + PA, V0 |
| Mounting | | DIN B-head or larger, DIN rail (with mounting kit) |
| Connection | Single/stranded wires | Max. 1.5 mm², AWG 16 |
| Weight | | 32 g |
| Protection, housing / terminals | | |

[1] Of input span
[3] Reference temperature 20 °C / 68 °F
[2] If zero-deflection > 100% of input span: add 0.125% of input span/25 °C or 0.14% of input span/50 °F per 100% zero-deflection

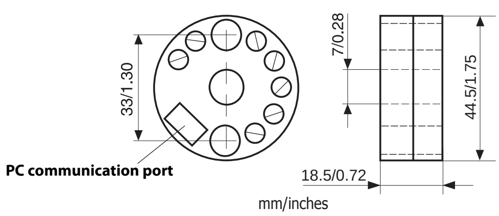
## Input connections



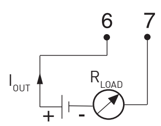

## Output load diagram




## Dimensions




## Output connections



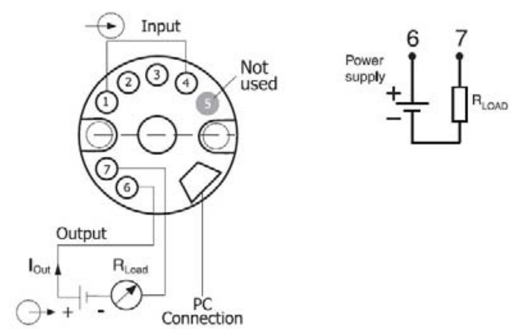

All information subject to change without notice.

# NON-ISOLATED TRANSMITTERS

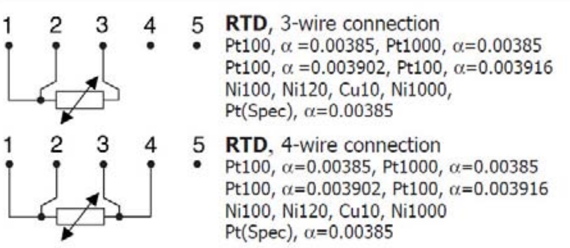
The series N transmitter is a non-isolated 2 wire temperature transmitter. The transmitters are completely potted in a special epoxy with only the screw terminals exposed. **Specification of two wire non-isolated transmitters are as follows:**

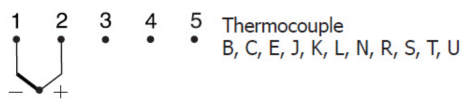
OUTPUT:
4/20mA, two-wire (loop-powered) output
ACCURACY:
±0.1% of span or better (factory calibration)
OPEN INPUT:
Offscale high output (T/C, RTD only)
TEMPERATURE:
±(0.02% + 1uV/°C or better
STABILITY:
-40 to +80°C (-40 to 176°F)
POWER:
Loop Powered. 12V min, 36V max at output
INPUTS:
DC spans 2mV to 250V, or 1 to 100mA current
thermocouple minimum span

**CONNECTIONS**



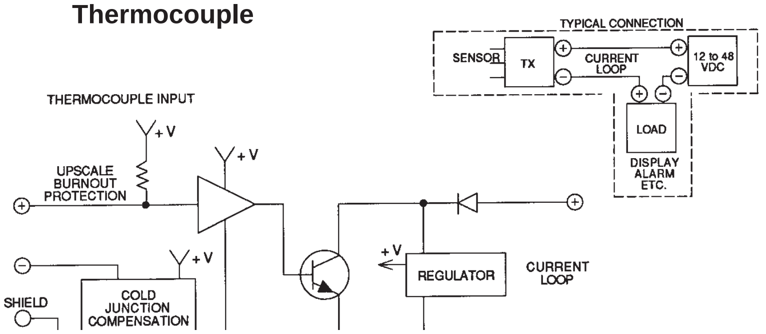

**INPUT CONNECTIONS**




## Block Diagrams and Terminal Connections

### Thermocouple




**Series:** 8N

Wiring: For a thermocouple input, the first two terminals looking at the transmitter from the front, are for the (+) and (-) output signal. The thermocouple shield, if used, should be connected to the third terminal from the left. The (-) negative thermocouple lead (usually red), should be connected into the fourth terminal. The (+) positive thermocouple lead should be connected to the fifth terminal.
This transmitter is not recommended for grounded thermocouples.

**Series:** 8N

For an RTD input, the power supply and output are connected on terminals one and two as described above. The negative/common leads (red) should be connected to terminals 2 and 3. The positive (white) lead should be connected to terminal 1.

### RTD