The **Micha Pyranometer to 4-20mA Transducer** has been designed to be used in conjunction with Pyranometer PN 102 443 which has a nominal output of 95mV ± 8% at 1000W/m²
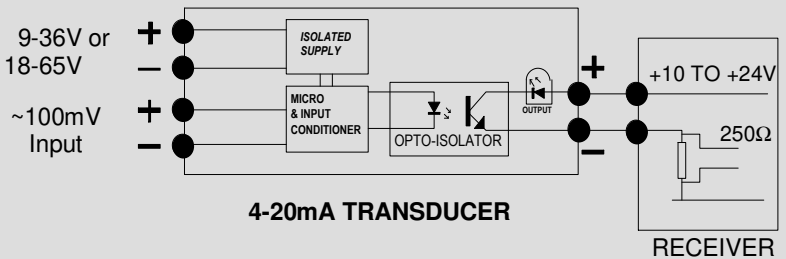
The transducer modules come in two supply-voltage versions: one will operate from 9VDC to 36VDC and the other from 18V to 65VDC. (See the table at the end of the datasheet for part numbers.) The output loop is isolated from the supply and requires a 10-24VDC supply. The on-board microcontroller allows user-set offsets and ranges for maximum flexibility.

Two LED's give continuous status, a Blue LED indicating operating status and a Green LED shows current flowing through the output loop.

The transducer is housed in a plastic enclosure with integral clips for symmetric (35 x 7.5mm) and asymmetric (32 x 15mm) DIN rails.

Typical application:

Connections and Setup:

The pyranometer voltage to be measured is connected across terminals 5 & 6.

A separate supply of between 9-36VDC or 18-65VDC must be connected across pins 3 & 4. This supply voltage is fed to an isolating DC-DC converter allowing the loop power to be fed from a different source.
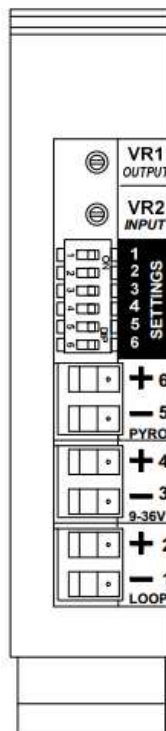
The 4-20mA loop 'receiver' should source a voltage of between 10-24V and should be connected across the output terminals 1 & 2.

The Offset and Span of the unit is selected using DIP switches 1 to 4 - for examples see the Calibration section below.

Note: a switch is set to '1' when moved to the right (ON) position.

The transducer is supplied calibrated to give a 20mA output with a 100mV input but can be readily calibrated for different full-scale input voltages.

WARNING: Do **NOT** exceed the rated input voltage of 100mV by more than 20%.

Setting the Offset and Span:

The microprocessor allows the user to set a variety of offsets and spans, regardless of the input voltage. For example, if monitoring a 100mV input, the user can select the 4-20mA output to cover an input range of 30mV to 90VmV.

Offset: Switches **1** & **2** set the offset (input voltage to give 4mA) - see the table right for the available settings.

Span: Switches **3** & **4** set the span (input voltage to give 20mA).

Example 1: to set a range of 24-60mV (24mV = 4mA; 60mV = 20mA) for a 60mV transducer, the switches should be set as follows:

Sw1: 1	Sw2: 0	Sw3: 1	Sw4: 1	Sw5: 0	Sw6: 0
Offset = 24mV		*Span = 60mV*		*Mode = Normal*	

Example 2: to set a range of 30-90mV (30mV = 4mA; 90mV = 20mA) for a 100mV transducer, the switches should be set as follows:

Sw1: 0	Sw2: 1	Sw3: 1	Sw4: 0	Sw5: 0	Sw6: 0
Offset = 30mV		*Span = 90mV*		*Mode = Normal*	

Selection Switches

```
12 : 4mA (Offset)
        60mV  100mV
00     0.0     0.0
01    18.0    30.0
10    24.0    40.0
11    30.0    50.0

34 : 20mA (Span)
        60mV  100mV
00    30.0    50.0
01    45.0    75.0
10    54.0    90.0
11    60.0   100.0

56 : Mode
00   Normal (4-20mA)
01   Ext: <3mA-20mA
10   Fixed 4mA
11   Fixed 20mA

1 = ON    0 = OFF
```

Mode:

For normal use, switches 5 & 6 should be set to **0 0**.

If an offset is applied using Switches **1 & 2**, the output will not drop below at 4mA in 'Normal Mode' regardless of input voltage. If switches 5 & 6 are set to 'Extended Mode' **0 1**, and the input falls below any offset, the output will drop to approximately 3mA, which may be detected as a fault by the receiving transducer. Note: the maximum output is 20mA.

For uses of the fixed 4mA and 20mA modes, see the calibration section.

Indicators:

During normal operation, the blue **STATUS** LED on the top of the unit will flash once approximately once a second. If the input voltage drops below the Offset voltage, the **STATUS** LED will blink twice, and if the input voltage exceeds the Span voltage, the **STATUS** LED will blink three times.

The **OUTPUT** LED is in series with the output loop and varies in intensity with the 4-20mA current.
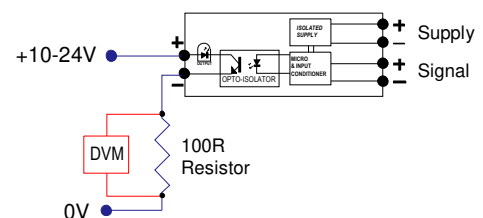
Calibration:

If it is necessary to re-calibrate to unit, this can be done as follows:

Set DIP Switches 5 & 6 to **1 1**.

Fit a 100R resistor in series with the output and connect a voltmeter (DVM) across it. Adjust VR1 until the DVM reads 2.00V (representing 20mA). The 4mA output can be confirmed by setting switches 5 & 6 to **1 0** and checking for a voltage of 0.40V across the resistor.

Set DIP Switches 5 & 6 to **0 0**

With the Span set to the required voltage, apply that voltage to the Signal input terminals (e.g. Switches 3&4 = **11** on a 100mV transducer, Input = 100mV). Adjust VR2 until the DVM just reads 2.00V. Note: if the input voltage exceeds the Span setting, the output will remain at the maximum of 20mA but the STATUS LED will flash three times.

General Specification:

Supply Input Voltage Range :	9VDC to 36VDC at nominal 20mA : 18VDC to 65VDC at nominal 5mA
Loop Voltage Range :	10VDC to 24VDC, maximum burden at 24V approx 560R
Connectors :	2-part, rising-clamp, maximum cable size: 2.5mm²
Accuracy/Linearity :	Better than 1%
Operating Temperature Range :	-5°C to +55°C
Enclosure :	Self-extinguishing polyammide 6,8 (UL 94 v0)
Dimensions :	22.5mm (W); 82mm plus terminals (D); 102mm above chassis
Part Numbers :	9-36VDC Supply: 102 870 18-65VDC Supply; 102 444
Country of Origin/HS Code :	United Kingdom / Commodity Code: 90328900