CITY MULTI

Voltage to Resistance Interpreter (RMF-CM-V2R-V1)

Device descriptions and function:

The voltage to resistance interpreter can be used with any City Multi Indoor unit. The interpreter has a 0-10 volt analogue input terminal to which an external 0-10volt temperature signal is connected, it interprets this signal to a resistance output that matches the resistance curve of the City Multi space temperature thermistor TH1. The function of the interpreter is thus to enable a third party external 0-10 volt analogue temperature signal to be directly connected to the City Multi indoor unit via the interpreter in place of the City Multi TH1 room temperature thermistor.

Photo 1. Top view with cover removed

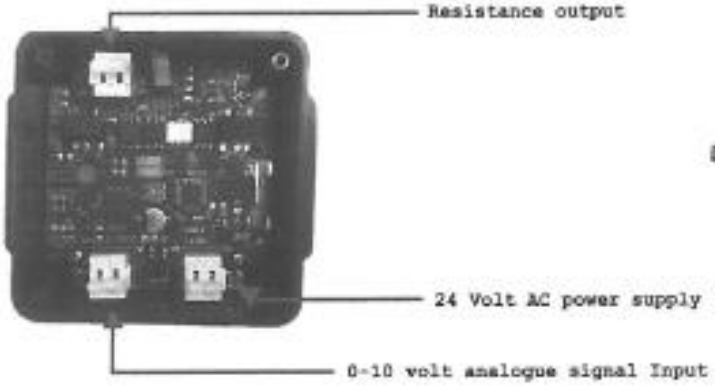


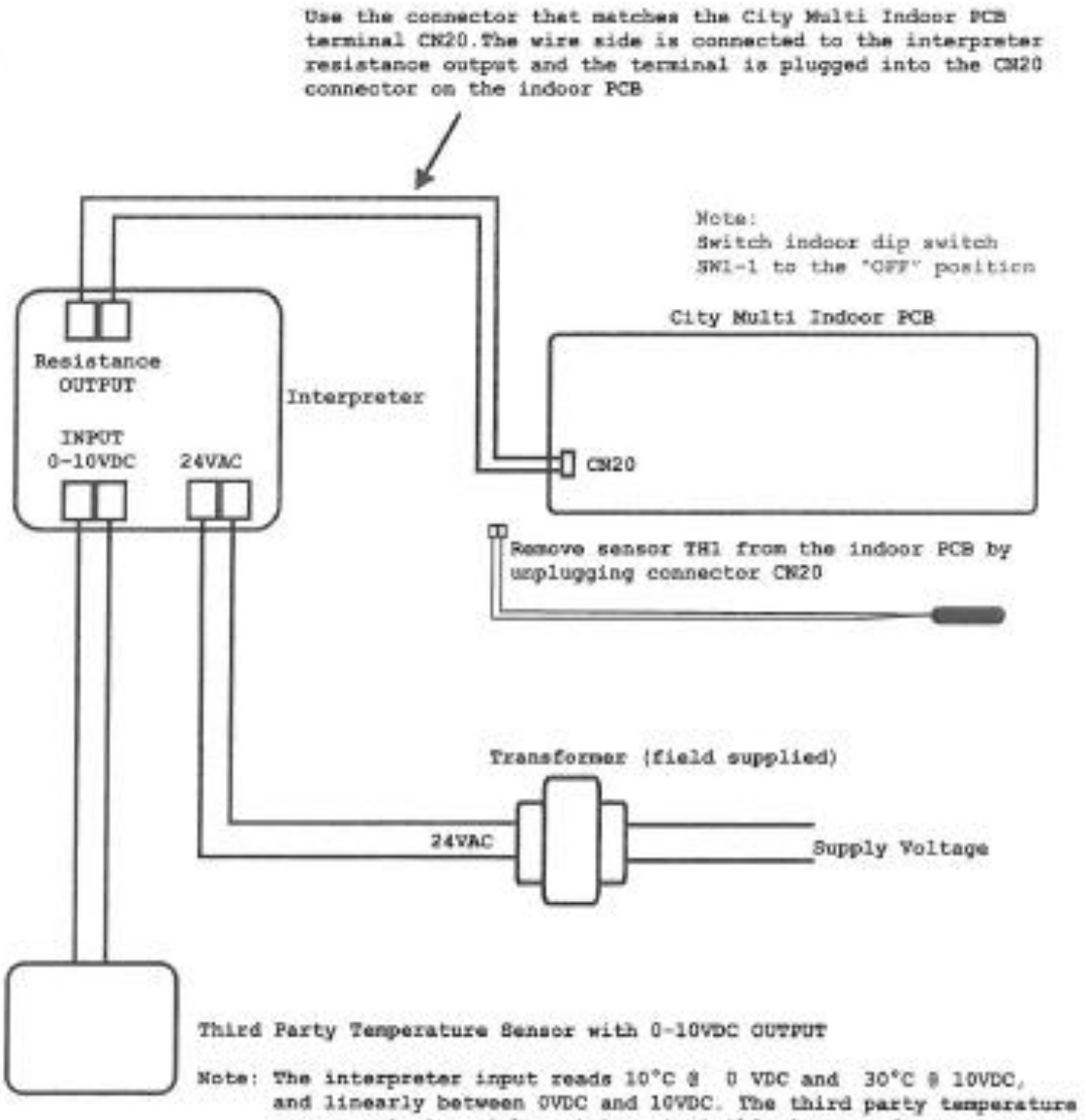
Photo 2. Side view

Base resistance adjustment and input voltage range calibration
(note: the range is calibrated during manufacturing)

Photo 3: TH1 connectors

Note:
The interpreter is shipped with two connectors, each having a different connection terminal. Use the connector that matches the City Multi Indoor PCB terminal CN20. The wire side is connected to the interpreter resistance output and the terminal is plugged into the CN20 connector on the indoor PCB

Connection Diagram



Note: The interpreter input reads 10°C @ 0 VDC and 30°C @ 10VDC, and linearly between 0VDC and 10VDC. The third party temperature sensor output must be set to output this in accordance.

Interpreter Input, temperature and output table

Column 1.in the table below indicates the input voltage
Column 2 indicates the temperature read by the interpreter at each input voltage.
Column 3 indicates the interpreter corresponding resistance output
It must be noted that the table below shows steps of 0.5 Deg C.
The interpreter however reads steps of 0.1 Deg C.
The accuracy of the interpreter is within 0.2 deg C but may differ
depending on external influences.

15exp[(3460(1/273+t - 1/273+0)]

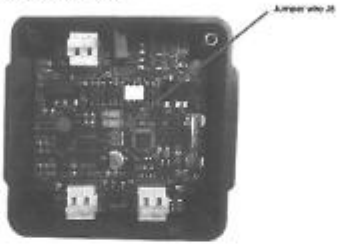
INPUT VDC	Temp °C	RESISTANCE OUTPUT
0	10	9.585
0.25	10.5	9.381
0.5	11	9.181
0.75	11.5	8.987
1	12	8.797
1.25	12.5	8.612
1.5	13	8.431
1.75	13.5	8.255
2	14	8.083
2.25	14.5	7.916
2.5	15	7.752
2.75	15.5	7.592
3	16	7.436
3.25	16.5	7.284
3.5	17	7.136
3.75	17.5	6.991
4	18	6.849
4.25	18.5	6.711
4.5	19	6.576
4.75	19.5	6.444
5	20	6.315
5.25	20.5	6.189
5.5	21	6.066
5.75	21.5	5.946
6	22	5.829
6.25	22.5	5.715
6.5	23	5.603
6.75	23.5	5.493
7	24	5.386
7.25	24.5	5.282
7.5	25	5.18
7.75	25.5	5.08
8	26	4.983
8.25	26.5	4.887
8.5	27	4.794
8.75	27.5	4.703
9	28	4.614
9.25	28.5	4.527
9.5	29	4.442
9.75	29.5	4.358
10	30	4.277

Checking calibration in the field

"Note that the units is calibrated during manufacturing and this step should only be taken if the temperature reading shows discrepancies"

Base resistance adjustment and input voltage range calibration:

1. Connect ohmmeter to resistance output.
2. Connect 10VDC to voltage input (+/- 0.05V).
3. Connect 24V AC to power input.
4. Short **J5**. Wait 5 seconds before making any adjustments.
5. Adjust the calibration adjustment pot so that the output measures 4.277kOhm (+/-20 Ohms)
6. Remove J5 (this saves the calibration, do not turn off the power or 10V before this is done)
7. Disconnect power and other connections.



Resistance output full range calibration:

1. Connect ohmmeter to resistance output.
2. Connect 5V to voltage input. (the input will need to be adjusted between 2V and 8V)
3. Connect 24V AC to power input.
4. Short **J6**. Wait 5 seconds before making any adjustments.
6. Read the output resistance. Adjust the input voltage up or down until you read 9.585kOhm. Increasing the input voltage will increase the output resistance. Decreasing the input voltage will decrease the output resistance. The voltage value is not critical, the adjustment at the input is only used so that the output can be changed. Note: Do not adjust the calibration adjustment pot
7. When the output resistance reads 9.585kOhm (+/-20 Ohms), remove J6. (this saves the calibration, do not turn off the power or change input voltage before this is done)
8. Disconnect power and other connections.