

# **Z-Head-TC**

## **Thermocouple Remote Transmitter**

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Industrial Interface

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## Z-Head-TC

Each sensor unit has a 12 way switch inside to configure the network, update rate and channel. A yellow switch is used to connect/disconnect the battery power.

The Z-Head reads a thermocouple value, adjusts the value for CJC then linearizes and scales the answer as parameter 1. It also transmits the CJC value scaled -20 to 70 deg C as parameter 2. The thermocouple type and input range is printed on the Z-Head side label.

### 1. Setting up the 12 way switch

The 12 way switch is used to control the network, update rate and channel. Each Z-Port has a different network code associated with it.

Switches 1,2 and 3 control the Network Offset (0 means off, 1 means on)

<b>Network</b>	<b>1</b>	<b>2</b>	<b>3</b>
A	0	0	0
B	0	0	1
C	0	1	0
D	0	1	1
E	1	0	0
F	1	0	1
G	1	1	0
H	1	1	1

Switches 4, 5 and 6 control the update rate

This is the time the Z-Head spends in very low power mode between readings

<b>Update every</b>	<b>4</b>	<b>5</b>	<b>6</b>
10 seconds	0	0	0
30 seconds	0	0	1
1 minutes	0	1	0
2 minutes	0	1	1
5 minutes	1	0	0
10 minutes	1	0	1
30 minutes	1	1	0
60 minutes	1	1	1

Switches 7,8,9,10,11,12 control the channel number

<b>Channel</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>	<b>Channel</b>	<b>7</b>	<b>8</b>	<b>9</b>	<b>10</b>	<b>11</b>	<b>12</b>
1 (not used)	0	0	0	0	0	0	9	0	0	1	0	0	0
2	0	0	0	0	0	1	10	0	0	1	0	0	1
3	0	0	0	0	1	0	11	0	0	1	0	1	0
4	0	0	0	0	1	1	12	0	0	1	0	1	1
5	0	0	0	1	0	0	13	0	0	1	1	0	0
6	0	0	0	1	0	1	14	0	0	1	1	0	1
7	0	0	0	1	1	0	15	0	0	1	1	1	0
8	0	0	0	1	1	1	16	0	0	1	1	1	1

This binary sequence continues to channel 64. Channel 1 is reserved for the Z-Port and cannot be used.

## 2. Switching the Z-Head on

Push the yellow switch to the on position. The led will indicate the state of the sensor. Push and release the push button to wake the sensor and observe the led.

- ***Led does a double flash – successful send***

The button wakes the sensor up, the sensor reads the thermocouple and tries to send the data to the Z-Port. The data send was successful. It will now sleep for the update rate time, then wake, read the thermocouple and send the data to the Z-Port then sleep again.

- ***Led does a single flash – failed to send***

The button wakes the sensor up, the sensor reads the thermocouple and tries to send the data to the Z-Port. The data send failed. It will now sleep for the update rate time, then wake, read the thermocouple and try and send the data to the Z-Port then sleep again.

- ***Led does six short flashes followed by a long flash – successful join to network***

When it was woken the sensor was not joined to a network so it tried to join one and was successful. It will now sleep for the update rate time, then wake, read the thermocouple and send the data to the Z-Port then sleep again.

- ***Four short flashes – failed to join network***

When it was woken the sensor was not joined to a network so it tried to join one and failed. The sensor will now sleep for eight hours to conserve battery life before waking up and trying to join again. The push button can be used to wake it up to force it to try and join the network again.

## 3. Push button use

If the push button is pushed and released quickly the sensor is woken from sleep to read the thermocouple. The led will flash once or twice as described above. If the data is received by the Z-Port it will flash its led to confirm receipt. If the sensor had not previously joined a network it will try and join, flashing 7 times if successful or 4 times if not.

If the push button is pushed and held for 5 seconds the sensor can be forced to leave the network it was joined to. It will then try and join again, indicated by either 4 or 7 flashes as described earlier.

## 4. Wiring up a T type thermocouple to the Z-Head

The positive wire (usually green) goes to terminal 1.  
The negative wire (usually white) goes to terminal 2.

If the thermocouple is “burnt out” or a wire is not connected, E 16 will be displayed on the Z-Port indicating burnout error.