Z-Head Pressure Sensors

Each Z-Head unit has a 12 way switch inside to configure the settling time, sleep time and channel. A yellow switch is used to connect/disconnect the battery power.

The Z-Head produces an excitation voltage of 3.3V. It is calibrated for a 0 to 33mV input, so is intended for pressure sensors that produce 10mV / V.

1. Setting up the 12 way switch

The 12 way switch is used to control the settling time, sleep time and channel.

Switches 1,2 and 3 control the settling time of the pressure sensor
This is the time the Z-Head waits after switching the excitation voltage on before a reading.

Time (seconds)	**1**	**2**	**3**
0.5	0	0	0
1	0	0	1
1.5	0	1	0
2	0	1	1
2.5	1	0	0
3	1	0	1
3.5	1	1	0
4	1	1	1

Switches 4,5 and 6 control the sleep time
This is the time the Z-Head spends in very low power mode between readings

Time (seconds)	**4**	**5**	**6**
5	0	0	0
10	0	0	1
15	0	1	0
20	0	1	1
25	1	0	0
30	1	0	1
60	1	1	0
600	1	1	1

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

Channel	**7**	**8**	**9**	**10**	**11**	**12**	**Channel**	**7**	**8**	**9**	**10**	**11**	**12**
1	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.

2. Z-Head Connections

1. **Excitation voltage +3V3**
2. **Input +ve**
3. **Input -ve**
4. **Excitation voltage 0V**

3. Switching the Z-Head on

Push the yellow switch to the on position . The led will indicate the state of the Z-Head. The led is located between the battery and the push button.
Push and release the push button to wake the Z-Head and observe the led.

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

The button wakes the Z-Head up and the first flash is seen. The Z-Head switches on the excitation voltage for a short time, then reads the pressure and sends the data to the Z-Port. The second flash confirms the data send was successful. The Z-Head will now sleep for the sleep time, then wake, read the pressure and send the data to the Z-Port then sleep again etc.

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

The button wakes the Z-Head up and the first flash is seen. The Z-Head switches on the excitation voltage for a short time, then reads the pressure and sends the data to the Z-Port. The absence of a second flash indicates the data send was unsuccessful. The Z-Head will now sleep for the sleep time, then wake, read the pressure and send the data to the Z-Port then sleep again etc.

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

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

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

When it was woken the Z-Head was not joined to a network so it tried to join one and failed. The Z-Head 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.

4. Push button use

If the push button is pushed and released quickly the Z-Head is woken from sleep to read the pressure sensor. 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 Z-Head 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 Z-Head 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.