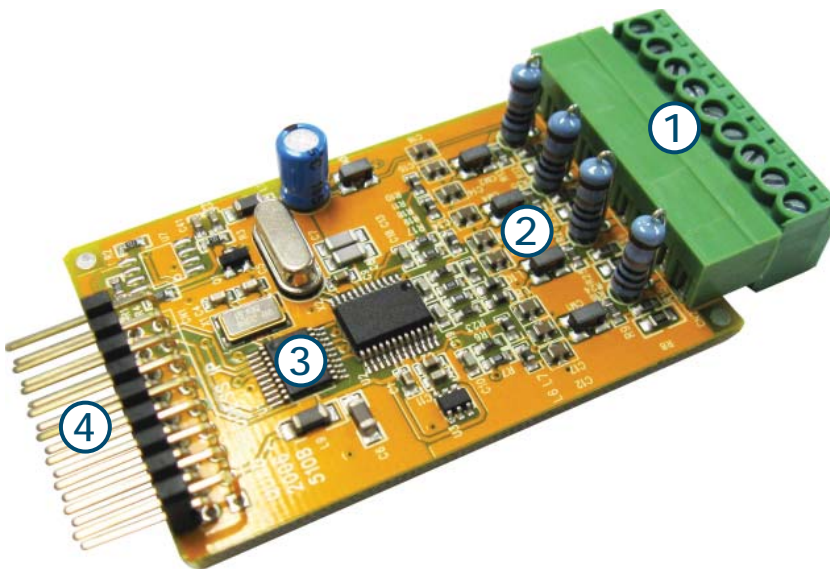


**SMART**

## ISQD1 Analog Input Module

Smart quad-channel process

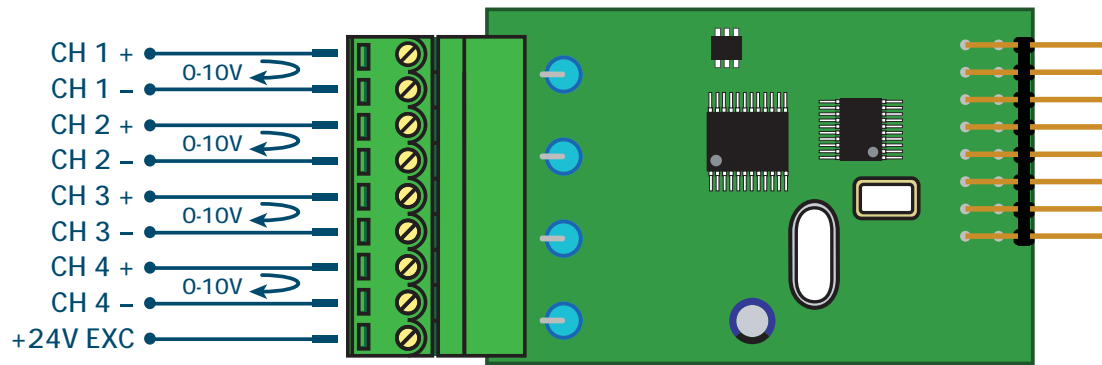


- 1- 4-channel voltage input plus 24V excitation
- 2- State-of-the-art electromagnetic noise suppression circuitry
- 3- On board digital signal processing
- 4- Interface to Texmate controller

### ISQD1 Specifications

<i>Input channels</i>	4 x $\pm 10V$ inputs
<i>Resolution</i>	100,000 counts
<i>Zero drift</i>	20 $\mu V/^\circ C$ typical
<i>Span drift</i>	$\pm 25ppm/^\circ C$ typical
<i>Non-linearity</i>	$\pm 0.01\%$ of full scale maximum
<i>Input noise</i>	10 $\mu Vp-p$ typical at 1Hz output rate
<i>Sampling rate</i>	0.5-40Hz per channel, software selectable
<i>A/D converter</i>	Low-noise sigma delta convertor
<i>Noise rejection</i>	50/60Hz noise rejection frequency, software selectable
<i>Excitation voltage</i>	24V, 50mA max

## ISQD1 Board Layout



The simplest way to configure your controller is to use the  
Texmate Configuration Utility program.

**Software + configuration macro available at**  
**[www.texmate.co.nz/downloads](http://www.texmate.co.nz/downloads)**

If you have a display, front panel configuration can be performed as shown.

## Programming Procedures

Below are instructions for the typical setup of an ISQD1 input module, where setup begins with factory defaults applied.

- ① Press the **P** and **▲** buttons together to enter the main programming mode.
- ② Press the **P** button three times to enter Code 2. Use the **▲** and **▼** buttons to set Code 2 to 177.
- ③ Press the **P** button to enter smart register 1 code setup menu. Use the **▲** and **▼** buttons to set Smart 1 to XXX, as required.

**SMART 1 = X2X**



First Digit	Second Digit	Third Digit
<i>Rejection</i>	2 (Signal 1 voltage range: ±10V)	<i>Output rate</i>
0 —		0 0.5Hz averaged
1 60Hz		1 1Hz averaged
2 —		2 5Hz averaged
3 50Hz		3 10Hz averaged
		4 20Hz averaged
		5 40Hz averaged

- ④ Press the **P** button to save your settings. The display returns to [Cod\_2] (177). Select the required settings for Channel 1 by using the **▲** and **▼** buttons to set Code 2 to X7X.

**CODE 2 = X7X**

First Digit	Second Digit	Third Digit
<i>Processing Rate</i>	7 (Smart input module)	<i>Output Register Map</i>
0 —		0 Averaged signal 1
1 10Hz		1 Averaged signal 2
2 —		2 Averaged signal 3
3 100Hz		3 Averaged signal 4

- ⑤ Press the **P** button to save your settings. The display shows [Cod\_3] (000). 000 is the typical setting and *in most cases* does not need to be changed.

However, for 320 controllers and/or controllers requiring square root, inverse or linearisation, Code 3 should be adjusted using the  and  buttons as follows:




**CODE 3 = XXX**

First Digit	Second Digit	Third Digit
<i>CH1 Post Processing</i>	<i>Linearisation For CH1</i>	
0 Direct display of input	0 No linearisation	0 (Not used)
1 Square root of CH1	1 32-pt (using Table 1)	
2 Inverse of CH1	2 32-pt (using Table 2)	
	3 32-pt (using Table 3)	
	4 32-pt (using Table 4)	
	5 125-pt (Tables 1-4 cascaded)	
	6 32-pt (Tables 1-4 selected from input module's rear pins)	
		NB: The third digit in Code 3 is only used for 320 controllers - please see below

NB: These further options in the third digit are for *320 controllers only*.

Third Digit
<i>Serial Mode</i>
0 ASCII mode
1 Modbus mode
2 Master mode
3 Print mode
4 Ethernet mode
5 Devicenet mode

**CODE 4 = OXX**

- ⑥ Press the  button to save your settings and enter Code 4. Select the required settings for Channel 2 by using the  and  buttons to set Code 4 to OXX.

First Digit	Second Digit	Third Digit
0 (Voltage, current, smart)	<i>Output Register Map</i>	<i>Linearisation</i>
	0 - 3 not used	0 No linearisation
	4 Averaged signal 1	1 32-pt (using Table 1)
	5 Averaged signal 2	2 32-pt (using Table 2)
	6 Averaged signal 3	3 32-pt (using Table 3)
	7 Averaged signal 4	4 32-pt (using Table 4)
		5 125-pt (Tables 1-4 cascaded)

⑦ Press the **P** button to save your settings and enter Code 5. Use the **▲** and **▼** buttons to set Code 5 to 077.

⑧ Press the **P** button to enter smart register 2 code setup menu. Use the **▲** and **▼** buttons to set Smart 2 to 222.

**SMART 2 = 222**

First Digit	Second Digit	Third Digit
2 (Signal 4 voltage range: $\pm 10V$ )	2 (Signal 3 voltage range: $\pm 10V$ )	2 (Signal 2 voltage range: $\pm 10V$ )

⑨ Press the **P** button to save your settings. The display shows [Cod\_5] [077]. Select the required settings for Channel 3 by using the **▲** and **▼** buttons to set Code 5 to X7X, as required.

**CODE 5 = X7X**

First Digit	Second Digit	Third Digit
<i>CH3 Post Processing</i>	7 (Smart input module)	<i>Output Register Map</i>
0 Direct display of input		0 Averaged signal 1
1 Square root of CH3		1 Averaged signal 2
2 Inverse of CH3		2 Averaged signal 3
3 32-pt linearisation of CH3 (Table 3)		3 Averaged signal 4

⑩ Press the **P** button to save your settings and enter Code 6. Select the required settings for Channel 4 by using the **▲** and **▼** buttons to set Code 6 to X7X, as required. (See overleaf.)

**CODE 6 = X7X**

First Digit	Second Digit	Third Digit
<i>CH4 Post Processing</i>	7 (Smart input module)	<i>Output Register Map</i>
0 Direct display of input		0 Averaged signal 1
1 Square root of CH4		1 Averaged signal 2
2 Inverse of CH4		2 Averaged signal 3
3 32-pt linearisation of CH4 (Table 4)		3 Averaged signal 4

- ⑪ Press **[P]** again to save your settings. Then press the **[P]** and **[▲]** buttons at the same time to exit and return to the operational display.

### Final Customer Configuration Settings:

Code 2		7	
Code 3			
Code 4	0		
Code 5		7	

Code 6		7	
Smart 1		2	
Smart 2	2	2	2

## 2-Point Calibration

① Press the **[P]** and **[▲]** buttons at the same time to enter the main programming mode. *(1602 & 1602+K users - skip this step.)* Press **[P]** to enter the calibration mode.

② The display shows [CAL] [000]. Use the **[▲]** and **[▼]** buttons to set CAL to 11X. Press **[P]** to confirm.

CAL = 11X

First Digit	Second Digit	Third Digit
1 (Calibration)	1 (2-point calibration)	<i>Channel To Calibrate</i>
		1 Channel 1
		2 Channel 2
		3 Channel 3
		4 Channel 4

③ The display shows [ZERO]. Use the **[▲]** and **[▼]** buttons to adjust the display to the desired reading for zero input. Apply the low input signal to the appropriate channel for at least 5 seconds, and then press **[P]** to save the zero value.

④ The display shows [SPAN]. Use the **[▲]** and **[▼]** buttons to adjust the display to the desired span reading. Apply the high input signal for at least 5 seconds.

⑤ Press **[P]** to save the span value and apply the new calibration values.  
*If calibration is unsuccessful, the display will show [ERR\_1] for a few seconds before returning to [CAL] [11X]. Check your signal inputs and connections. Then press **[P]** and begin again from Step 3.*

⑥ On successful calibration, the display shows [CAL] [11X]. Use the **[▲]** and **[▼]** buttons to reset CAL back to 000.

⑦ Press **[P]** again to confirm. Then press the **[P]** and **[▲]** buttons at the same time to exit and return to the operational display.



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