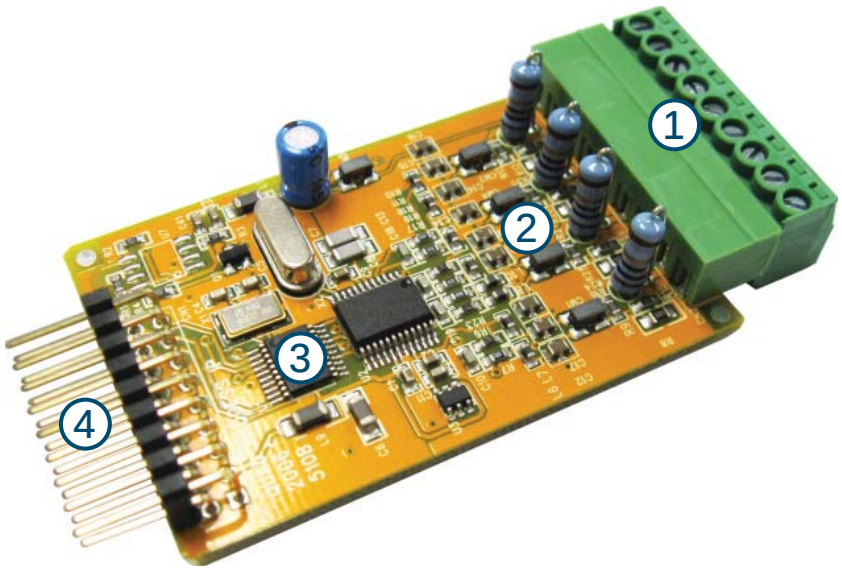
Texmate NZ intelligent control

SMART

ISQP1 Analog Input Module

Smart quad-channel 0-20mA current

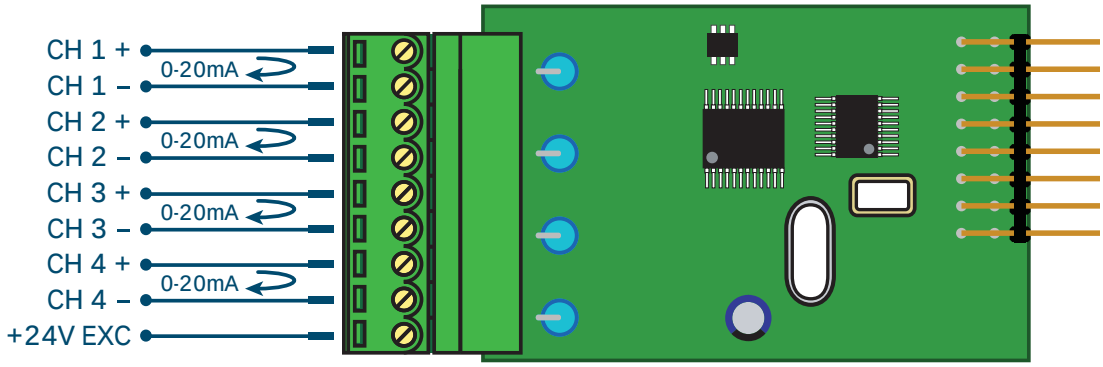


1- 4-channel 0-20mA current input plus 24V excitation
2- State-of-the-art electromagnetic noise suppression circuitry
3- On board digital signal processing
4- Interface to Texmate controller

ISQP1 Specifications

Input channels	4 x 0-20mA inputs
Resolution	100,000 counts
Zero drift	0.05µA/°C typical
Span drift	±25ppm/°C typical
Non-linearity	±0.01% of full scale maximum
Input noise	0.3µAp-p typical at 1Hz output rate
Sampling rate	0.5-40Hz per channel, software selectable
A/D converter	Low-noise sigma delta convertor
Noise rejection	50/60Hz noise rejection frequency, software selectable
Excitation voltage	24V, 50mA max

ISQP1 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

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

Programming Procedures

Below are instructions for the typical setup of an ISQP1 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
Rejection		*Output rate*
0 —	2 (Signal 1 voltage range: 0-20mA)	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
Processing Rate		*Output Register Map*
0 —	7 (Smart input module)	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
CH1 Post Processing	*Linearisation For CH1*	
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)	NB: The third digit in Code 3 is only used for 320 controllers - please see below
	6 32-pt (Tables 1-4 selected from input module's rear pins	

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

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

⑥ Press the P 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 **0XX**.

CODE 4 = 0XX

First Digit	Second Digit	Third Digit
	Output Register Map	*Linearisation*
0 (Voltage, current, smart)	*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: 0-20mA)	2 (Signal 3 voltage range: 0-20mA)	2 (Signal 2 voltage range: 0-20mA)

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
CH3 Post Processing	7 (Smart input module)	*Output Register Map*
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
CH4 Post Processing	7 (Smart input module)	*Output Register Map*
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
		Channel To Calibrate
1 (Calibration)	1 (2-point calibration)	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.

TexmateNZ intelligent control

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DOC. REVISION CODE: ISQP1-S25A-08-V.01

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