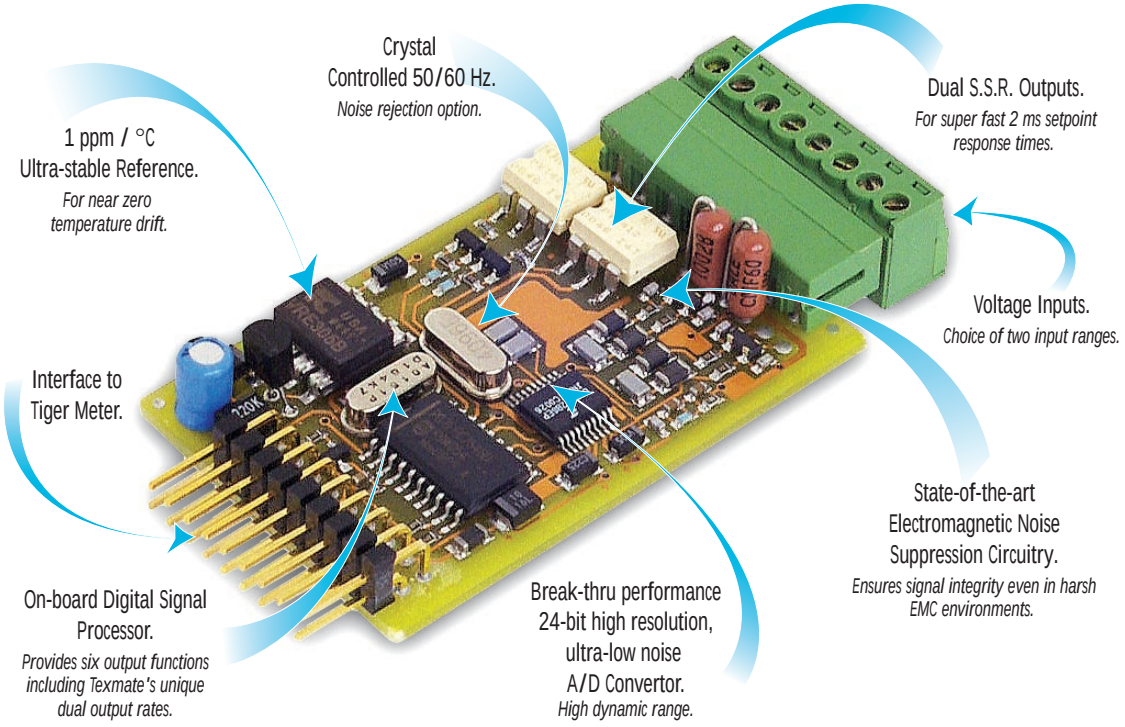
TEXMATE INC

Fits Tiger 320 Series

24-BIT SMART DC VOLTS INPUT MODULE



For the first time, an exceptionally high performance mV/V controller is available at a panel meter price

This input module outperforms many laboratory benchtop meters and calibrators. Where absolute accuracy is a must, this is the module to use.

Input Module Order Code Suffix

ISD5 (50 Hz Rejection)
ISD6 (60 Hz Rejection)
ISD7 (50 Hz w/SSRs)
ISD8 (60 Hz w/SSRs)

Hardware Module Specifications	
Input Range	Software selectable from 30 mV to 60 V.
Input Sensitivity	5 nV/ count maximum.
Zero Drift	± 40 nV/ °C typical.
Span Drift	± 3 ppm/ °C of F.S. (typical) for 30 mV to 2 V ranges.
	± 30 ppm/°C of F.S. (typical) for 60 V range.
Non-linearity	± 0.002% of full scale maximum.
Input Noise	40 nV p-p typical at 1 Hz output rate (30 mV range).
SSR Processing Rate	960 Hz maximum 1 Hz minimum.
Tiger 320 Processing Rate	10 or 100 Hz.
Solid State Relay (SSR)	17 Ω, 140 mA (± 400 V Breakdown).

Software Module Features	
Dual output rates	Rapid and average response outputs.
Peak & Valley Outputs	Monitoring over and under-shoots.
Capture Output	Hardwire signal capture.
Rate of Change Output	Useful for fine tuning reaction times.

Some Relevant Tiger 320 Series Operating System Features
Smart Averaging.
Setpoints.
Linearization.
Macro Compiler for complex math Functions.

24-BIT SMART DC VOLTS

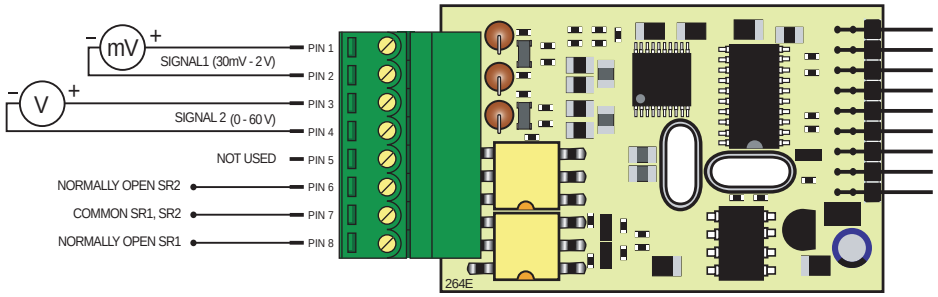
INPUTS

High Resolution
High Accuracy
High-speed S.S.R.
Output

Volts DC
Millivolts DC

Amps DC
with Ext. Shunt

Connector Pinouts



Smart Setup Registers

The meter can be connected to two input ranges, but perform signal conditioning on only one. The required input range is selected through software configuration.

ISD5 is a crystal controlled 50 Hz frequency range input module and **ISD6** is a crystal controlled 60 Hz frequency range input module.

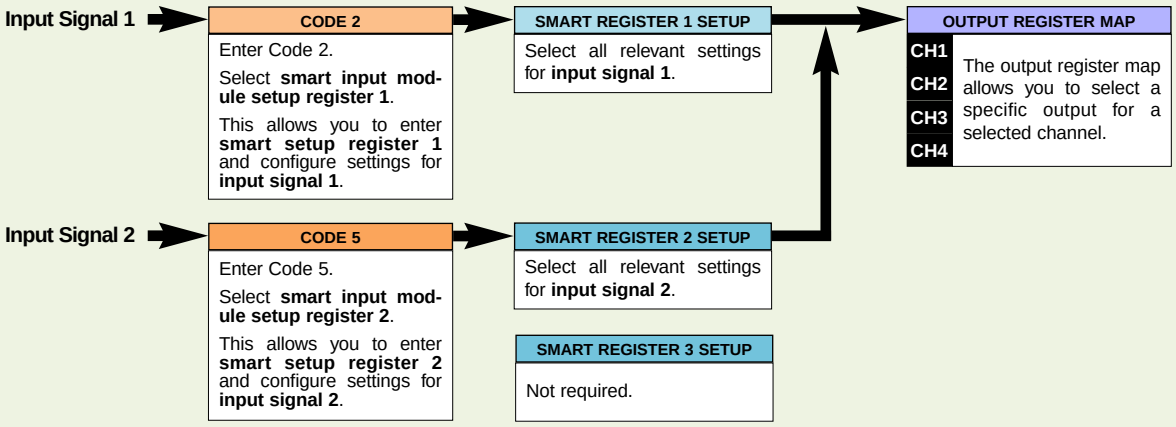
ISD7 is a crystal controlled 50 Hz frequency range input module with two solid state relay (SSR) outputs. **ISD8** is a crystal controlled 60 Hz frequency range input module with two SSR outputs.

The SSR outputs are known as smart relay 1 (SR1) and smart relay 2 (SR2) and are controlled through meter setpoints SP5 and SP6 respectively. In their unenergized state, the SSRs can be configured in software to be either a normally open (NO) or normally closed (NC) contact and can be switched at the selected averaged input signal or rapid response rate.

The meter uses three smart setup registers to configure all smart input modules. ISD5 and ISD6 require only **smart register 1** to be set up, while ISD7 and ISD8 require **smart register 1** and **smart register 2** to be set up.

This module produces **six output registers**. One of these registers can be transferred to Channel 1 via Code 2, the same or another register to Channel 2 via Code 4, the same or another register to Channel 3 via Code 5, and the same or another register to Channel 4 via Code 6.

Smart Setup Register – Operational Flow Diagram



Programming Procedures

The following programming procedures cover all the steps required to configure ISD7. Similar procedures can be followed to configure ISD5, ISD6, and ISD8. Remember, ISD5 and ISD6 do not have SSRs, so Steps 6 to 10 can be skipped during configuration.

Steps 1 to 5 describe how to select the signal (1 or 2), voltage, and output rate through **smart register 1**.

Steps 6 to 9 describe how to select the SR1 and SR2 output mode and the source of data for SP5 and SP6 through **smart register 2**.

Steps 10 to 16 describe how to select the output register for channels 1, 2, 3, and 4 as required.

1 Press the [P] and [⬆] buttons at the same time to enter the main programming mode.

2 Press the [P] button three times to enter Code 2. Set Code 2 to [X77].

This setting enters the **smart register 1** code setup menu.

Note:
The 1st digit setting is not relevant to this step. 0 is the default setting.

FIRST DIGIT
TIGER PROCESSING RATE
0 10 Hz
1 10 Hz
2 100 Hz
3 100Hz

SECOND DIGIT	
MEASUREMENT TASK	
0	**Voltage, Current**
1	TC (3rd digit selects type of TC)
2	RTD 3-wire (3rd digit selects type of RTD)
3	RTD 2- or 4-wire (3rd digit selects type of RTD)
4	Frequency
5	Period
6	Counter
7	Smart Input Module

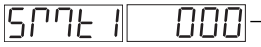
THIRD DIGIT	
OUTPUT REGISTER MAP	
0	**Averaged signal 1 or 2**
1	Rapid response signal 1 or 2*
2	Peak signal 1 or 2*
3	Valley signal 1 or 2*
4	Capture signal 1 or 2**
5	Rate of change of signal 1 or 2
6	-
7	Smart input module **register 1** code setup

* *Signal output at the A/D sampling rate.*

** *Hardwire initiated from meter Capture pin.*

3 Press the P button.

This enters **smart register 1** code setup menu.



FIRST DIGIT
Not relevant

SECOND DIGIT	
	FULL SCALE SIGNAL
0	**± 2.0 V – Signal 1**
1	± 1.25 V – Signal 1
2	± 600 mV – Signal 1
3	± 300 mV – Signal 1
4	± 150 mV – Signal 1
5	± 70 mV – Signal 1
6	± 30 mV – Signal 1
7	± 60 V – Signal 2

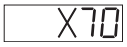
THIRD DIGIT	
	OUTPUT RATE
0	**1 Hz averaged: 50/60 Hz rapid response**
1	10 Hz averaged: 50/60 Hz rapid response
2	10 Hz averaged: 800/960 Hz rapid response
3	50/60 Hz averaged: 800/960 Hz rapid response
4	50/60 Hz averaged: 400/480 Hz rapid response
5	50/60 Hz averaged: 200/240 Hz rapid response
6	-
7	-

2nd digit settings 0 to 6 allows you to select input signal 1 with a range of full scale voltage settings from –30 mV to –2 V. Setting 7 allows you to select input signal 2 with a full scale voltage setting of averaged 60 V. The 3rd digit allows you to select the output rate.

4 Using the ↑ ↓ buttons, select the relevant **input signal, voltage**, and **output rate** settings.

5 Press the P button.

This takes you back to the Code 2 menu. 

6 Using the ↓ button, reset the 3rd digit to zero [X70] to leave the smart register 1 menu. 

Note, leaving the 3rd digit as 7 means the display constantly cycles between [Cod_2] and [SMt1].

7 Press the P button three times to enter Code 5. Set Code 5 to [X77].

FIRST DIGIT
CH3 POST PROCESSING
0 Direct Display of Input (no processing)
1 Square Root of Channel 3
2 Inverse of Channel 3
3 **Meters with 4 kB memory** NO Linearization **Meters with 32 kB memory** 32-point Linearization of CH3 using Table 3

SECOND DIGIT	
	MEASUREMENT TASK
0	**No function**
1	Voltage, current
2	TC
3	RTD
4	Real time clock & timer
5	-
6	-
7	Smart input module

THIRD DIGIT	
	OUTPUT REGISTER MAP
0	**Averaged signal 1 or 2**
1	Rapid response signal 1 or 2*
2	Peak signal 1 or 2*
3	Valley signal 1 or 2*
4	Capture signal 1 or 2**
5	Rate of change of signal 1 or 2
6	-
7	Smart input module **register 2** code setup

8 Press the P button.

This setting enters the **smart register 2** code setup menu.

This menu provides smart relay settings unique to input module ISD7 or ISD8.

Select the required smart relay output mode and source of data for setpoints SP5 and SP6.

FIRST DIGIT
SMART RELAY OUTPUT MODE
0 SR1 & SR2 NC
1 SR1 NO, SR2 NC
2 SR1 NC, SR2 NO
3 SR1 & SR2 NO

Note:
SP5 controls SR1.
SP6 controls SR2.

SECOND DIGIT	
	SP6 SOURCE
0	**Averaged signal 1 or 2**
1	Rapid response signal 1 or 2*
2	Peak signal 1 or 2*
3	Valley signal 1 or 2*
4	Capture signal 1 or 2**
5	Rate of change of signal 1 or 2
6	-
7	-

THIRD DIGIT	
	SP5 SOURCE
0	**Averaged signal 1 or 2**
1	Rapid response signal 1 or 2*
2	Peak signal 1 or 2*
3	Valley signal 1 or 2*
4	Capture signal 1 or 2**
5	Rate of change of signal 1 or 2
6	-
7	-

9 Press the P button to save the settings.

The display toggles between [Cod_5] and [X77].

10 Using the ↑ ↓ buttons, reset the 3rd digit to 0 to leave the **smart register 2** menu.

11 Press the P and ↑ buttons at the same time to return to the operational display.

12 Press the P and ↑ buttons at the same time again to re-enter the main programming mode.

13 Press the P button three times to enter Code 2.

Note:

Reset of Peak, Valley, and Capture Signals

Reset of peak/valley/capture signals options are:

1. *If peak/valley/capture signals are stored in CH1, CH2, CH3, or CH4, a macro can reset CH1 by resetting register 253, CH2 by resetting register 252, CH3 by resetting register 251, and CH4 by resetting register 250.*
2. *As for Step 1, but using the LOCK pin to reset.*
3. *As for Step 1, but only applying to CH1 using the HOLD pin to reset.*
4. *As for Step 1, but using SPC1 to reset CH1, SPC3 to reset CH3, and SPC4 to reset CH4.*

Select a Channel

Select the output register for the required channels

14 To select **channel 1**, set Code 2 to [X7X]. Select the required processing rate for **CH1** in the 1st digit and the required output register map settings in the 3rd digit.

CH1 

FIRST DIGIT
TIGER PROCESSING RATE
0 10 Hz
1 10 Hz
2 100 Hz
3 100Hz

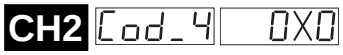
* *Signal output at the A/D sampling rate.*

** *Hardwire initiated from meter Capture pin.*

THIRD DIGIT	
	OUTPUT REGISTER MAP
0	**Averaged signal 1 or 2**
1	Rapid response signal 1 or 2*
2	Peak signal 1 or 2*
3	Valley signal 1 or 2*
4	Capture signal 1 or 2**
5	Rate of change of signal 1 or 2
6	-
7	Smart input module register 1/2/3 code setup

Note the output register map is different for each smart input module type.

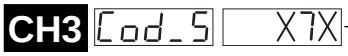
15 To select **channel 2**, set Code 4 to [0X0]. Select the required output register map settings for **CH2** in the 2nd digit.



FIRST DIGIT
MEASUREMENT TASK
0 Voltage, Current
1 TC (type as per 2nd digit)
2 RTD (type as per 2nd digit)
3 Second Digital Input Channel (type as per 2nd digit)

SECOND DIGIT		
FOR VOLTAGE & CURRENT	*Note: *The logic for CH2 is not the same as CH1, CH3, or CH4. The 1st and 3rd digits must both be set to 0. Selecting 040 to 070 in the 2nd digit of Code 4 directly selects one of the following settings in the output register map (3rd digit):*	
0 Channel 2 Disabled	**2nd Digit**	**Output Register Map**
1 Direct (no post processing)	4 selects	**0 Averaged signal 1 or 2**
2 Square Root of Channel 2	5 selects	1 Rapid response signal 1 or 2*
3 Inverse of Channel 2	6 selects	2 Peak signal 1 or 2*
4 Output Register 1 (smart module)*	7 selects	3 Valley signal 1 or 2*
5 Output Register 2 (smart module)*		
6 Output Register 3 (smart module)*		
7 Output Register 4 (smart module)*		

16 To select **channel 3**, enter Code 5 and select the required output register map settings for **CH3** in the 3rd digit.



FIRST DIGIT
CH3 POST PROCESSING
0 Direct Display of Input (no processing)
1 Square Root of Channel 3
2 Inverse of Channel 3
3 **Meters with 4 kB memory** NO Linearization **Meters with 32 kB memory** 32-point Linearization of CH3 using Table 3
Note: All linearization tables are set up in the Calibration Mode [24X].

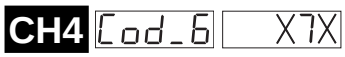
THIRD DIGIT
OUTPUT REGISTER MAP
0 Averaged signal 1 or 2
1 Rapid response signal 1 or 2*
2 Peak signal 1 or 2*
3 Valley signal 1 or 2*
4 Capture signal 1 or 2**
5 Rate of change of signal 1 or 2
6 -
7 Smart input module register 1/2/3 code setup

Note the output register map is different for each smart input module type.

* *Signal output at the A/D sampling rate.*

** *Hardwire initiated from meter Capture pin.*

17 To select **channel 4**, enter Code 6 and select the required output register map settings for **CH4** in the 3rd digit.



Press the P button to save the settings.

FIRST DIGIT
CH4 POST PROCESSING
0 Direct Display of Input (no processing)
1 Square Root of Channel 4
2 Inverse of Channel 4
3 **Meters with 4 kB memory** NO Linearization **Meters with 32 kB memory** 32-point Linearization of CH4 using Table 4
Note: All linearization tables are set up in the Calibration Mode [24X].

18 Press the P and ↑ buttons at the same time to return to the operational display.

Customer Configuration Settings:

SMt 1

1st Digit	2nd Digit	3rd Digit

SMt2

1st Digit	2nd Digit	3rd Digit

CH1 Cod_2

1st Digit	2nd Digit	3rd Digit
	7	

CH2 Cod_4

1st Digit	2nd Digit	3rd Digit
0		0

CH3 Cod_5

1st Digit	2nd Digit	3rd Digit
	7	

CH4 Cod_6

1st Digit	2nd Digit	3rd Digit
	7	

WARRANTY

Texmate warrants that its products are free from defects in material and workmanship under normal use and service for a period of one year from date of shipment. Texmate's obligations under this warranty are limited to replacement or repair, at its option, at its factory, of any of the products which shall, within the applicable period after shipment, be returned to Texmate's facility, transportation charges pre-paid, and which are, after examination, disclosed to the satisfaction of Texmate to be thus defective. The warranty shall not apply to any equipment which shall have been repaired or altered, except by Texmate, or which shall have been subjected to misuse, negligence, or accident. In no case shall Texmate's liability exceed the original purchase price. The aforementioned provisions do not extend the original warranty period of any product which has been either repaired or replaced by Texmate.

USER'S RESPONSIBILITY

We are pleased to offer suggestions on the use of our various products either by way of printed matter or through direct contact with our sales/application engineering staff. However, since we have no control over the use of our products once they are shipped, NO WARRANTY WHETHER OF MERCHANTABILITY, FITNESS FOR PURPOSE, OR OTHERWISE is made beyond the repair, replacement, or refund of purchase price at the sole discretion of Texmate. Users shall determine the suitability of the product for the intended application before using, and the users assume all risk and liability whatsoever in connection therewith, regardless of any of our suggestions or statements as to application or construction. In no event shall Texmate's liability, in law or otherwise, be in excess of the purchase price of the product.

Texmate cannot assume responsibility for any circuitry described. No circuit patent or software licenses are implied. Texmate reserves the right to change circuitry, operating software, specifications, and prices without notice at any time.

TEXMATE INC

995 Park Center Drive • Vista, CA 92081-8397

Tel: 1-760-598-9899 • USA 1-800-839-6283 • That's 1-800-TEXMATE

Fax: 1-760-598-9828 • Email: sales@texmate.com • Web: www.texmate.com

Texmate has facilities in Japan, New Zealand, Taiwan, and Thailand. We also have authorized distributors throughout the USA and in 28 other countries.

For product details visit www.texmate.com

Local Distributor Address

Copyright © 2004 Texmate Inc. All Rights Reserved.