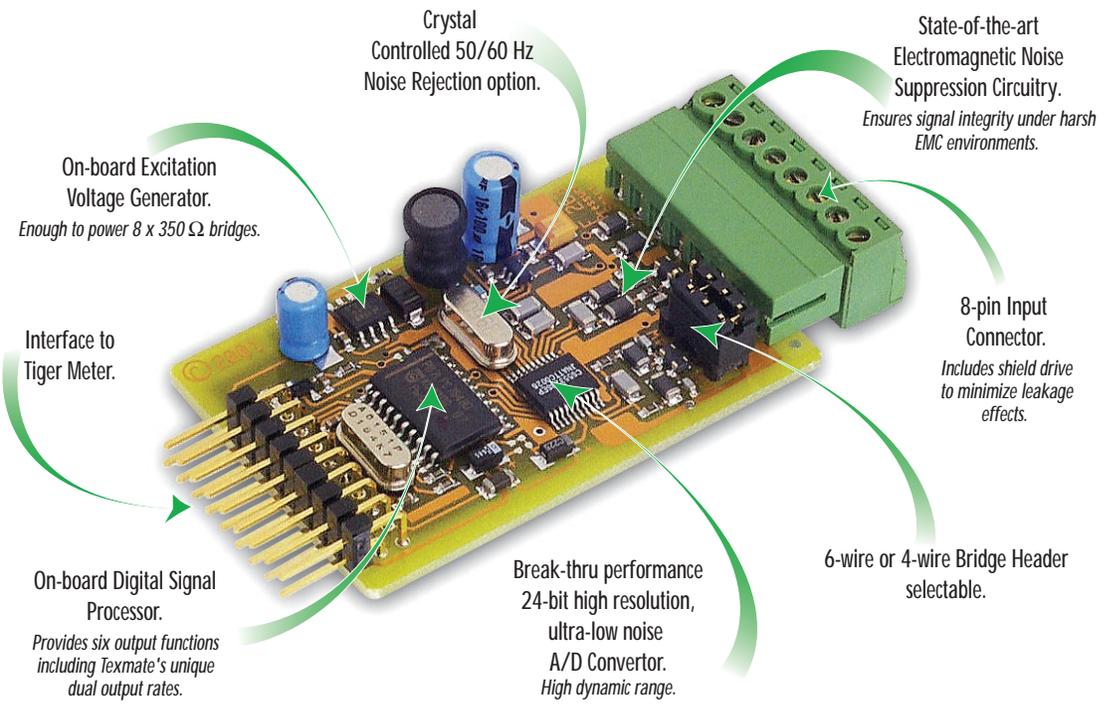


## 24-BIT SMART LOAD CELL INPUT MODULE

# 24-BIT SMART LOAD CELL



For the first time an exceptionally high performance load cell controller is available at a panel meter price

Combining this input module with the functionality of the Tiger 320 Series 32-bit operating system results in a versatile, powerful controller. Now such tasks as weighing, bagging, batching, and continuous batching control can be performed. In fact our customers have replaced multi-faceted control systems including weighing controllers, PLCs and timers with a single 320 Series controller.

Input Module  
Order Code Suffix

**ISS3 (50 Hz Rejection)**

**ISS4 (60 Hz Rejection)**



### Hardware Module Specifications

Excitation	5 V DC, 130 mA maximum.
Input Range	Software selectable for sensors from 1 mV/V to 20 mV/V.
Input Sensitivity	0.02 $\mu$ V/Count maximum.
Zero Drift	$\pm$ 40 nV/ $^{\circ}$ C typical.
Span Drift	$\pm$ 5 ppm/ $^{\circ}$ C of full scale maximum.
Non-linearity	$\pm$ 0.002% of full scale maximum.
Input Noise	80 nVp-p typical at 1 Hz output rate.
Signal Processing Rate	100 Hz maximum, 1 Hz minimum.
Line Frequency Rejection	ISS3 50 Hz (4.096 MHz xtal); ISS4 60 Hz (4.192 MHz xtal).

### Software Module Features

Dual output rates	Rapid and average response outputs. Ideal for 2 and 3-speed weighing / bagging systems.
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

Auto Zero Maintenance.
Set TARE, Reset TARE.
Setpoint Timer Functions.
Setpoint Register Reset and Trigger Functions.
On-demand Calibration.
Macro Compiler for PLC Functions.
32-Point Linearization.
Totalizer and Serial Printing.

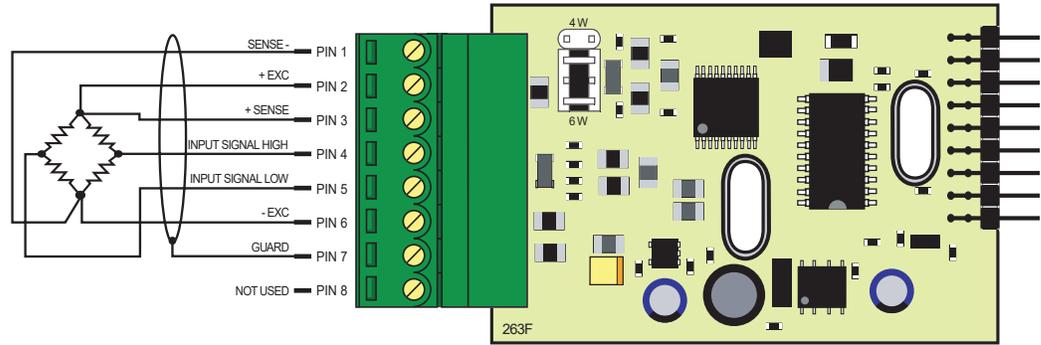
#### INPUTS



Load-cell Pressure

## Connector Pinouts

**6-wire Bridge Configuration**  
(for 4-wire bridge disconnect sense leads and swop header to 4W position)

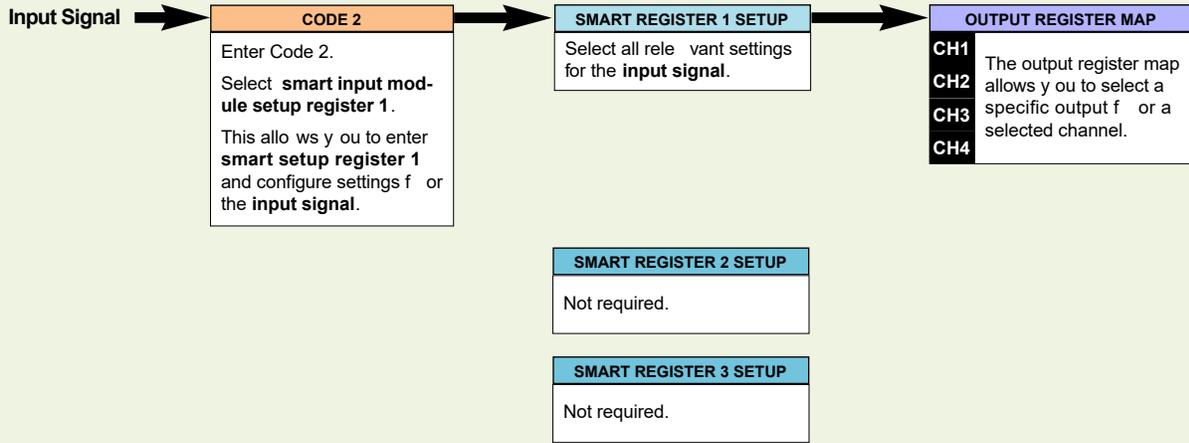


## Smart Setup Registers

The meter uses three smart setup registers to configure all smart input modules. ISS3 and ISS4 require only **smart register 1** to be configured.

These modules produce **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 smart input module ISS3 or ISS4. Steps 1 to 6 describe how to select the **sensor input** and **output rate** settings through smart register 1.

Steps 7 to 13 describe how to select the output registers for Channels 1, 2, 3, or 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].

[Cod\_2] [X77]

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

FIRST DIGIT
<b>TIGER PROCESSING RATE</b>
0 10 Hz
1 10 Hz
2 100 Hz
3 100Hz

SECOND DIGIT
<b>MEASUREMENT TASK</b>
0 <b>Voltage, Current</b>
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 <b>Smart Input Module</b>

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

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

\*\* Hardware initiated from meter CAPTURE pin.

- 3 Press the **P** button.

5776 | 000

This menu provides settings unique to the ISS3 or ISS4 input module.

FIRST DIGIT
Not relevant

SECOND DIGIT
SENSOR INPUT mV/V
0 -
1 -
2 -
3 -
4 1 - 20 mV/V
5 -
6 1 - 5 mV/V
7 -

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

- 4 Using the **↑**/**↓** buttons, select the relevant **sensor input** and **output rate** settings.

- 5 Press the **P** button. This takes you back to the Code 2 menu.

Cod\_2 | X77



Note the output registers in the 3rd digit are specific to ISS3/ISS4. These registers vary for each different smart input module.

- 6 Using the **↑**/**↓** buttons, reset the 3rd digit to select an output register from the output register map.

## Select a Channel

Select the output register for the required channels

- 7 Press the **P** and **↑** button at the same time again to re-enter the main programming mode.

- 8 Press the **P** button three times to enter Code 2.

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

CH1 Cod\_2 | X7X

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



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

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

- 10 To select **channel 2**, enter Code 4 and select the required register map settings for **CH2** in the 2nd digit.

CH2 Cod\_4 | 0X0

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
0 Channel 2 Disabled
1 Direct (no post processing)
2 Square Root of Channel 2
3 Inverse of Channel 2
4 Output Register 1 (smart module)*
5 Output Register 2 (smart module)*
6 Output Register 3 (smart module)*
7 Output Register 4 (smart module)*

\*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 smart register 1 map (3rd digit):

2nd Digit	Output Register Map
4 selects	0 Averaged signal*
5 selects	1 Rapid response signal*
6 selects	2 Peak signal*
7 selects	3 Valley signal*

- 11 To select **channel 3**, enter Code 5 and select the required post processing settings for **CH3** in the 1st digit and the required register map settings in the 3rd digit.

CH3 Cod\_5 | X7X

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 Rapid response signal*
2 Peak signal*
3 Valley signal*
4 Capture signal**
5 Rate of change of signal
6 -
7 Smart input module register 1 code setup

From Procedure 12, page 4



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

- 12 To select **channel 4**, enter Code 6 and select the required post processing settings for **CH4** in the 1st digit and the required register map settings in the 3rd digit.

\* Signal output at the A/D sampling rate.  
 \*\* Hardwire initiated from meter CAPTURE pin.

**CH4** [Cod\_6] [X7X]

Press the **[P]** button to save the settings.

- 13 Press the **[P]** and **[↑]** buttons at the same time to return to the operational display.

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

To Procedure 11, page 3

## Example Load Cell Setup Procedure

For example, a 2 mV/V load cell requires maximum signal resolution and minimum signal noise for a slowly varying change in weight. As an option, the user also requires to monitor the raw signal.

Select a **load input** of 5 mV/V and a 1 Hz averaged **output rate** with the **averaged signal** read by CH1 and the **rapid response signal** read by CH3.

- 1 Select **LOAD INPUT** for 5 mV/V with a 1 Hz averaged **OUTPUT RATE**:

In **[CODE 2]** select **[X77]** then press **[P]** button.

Display toggles between **[SMt1]** **[000]**

Set **[SMt1]** to **[X60]**

- 2 Select **AVERAGED SIGNAL** for CH1:

In **[CODE 2]** select **[X70]**

- 3 Select **RAPID RESPONSE SIGNAL** for CH3:

In **[CODE 5]** select **[X71]**

## Customer Configuration Settings:

	5	7	7	1
	1st Digit	2nd Digit	3rd Digit	
<b>CH1</b>	[Cod_2]		7	
	1st Digit	2nd Digit	3rd Digit	
<b>CH2</b>	[Cod_4]	0		0
	1st Digit	2nd Digit	3rd Digit	
<b>CH3</b>	[Cod_5]		7	
	1st Digit	2nd Digit	3rd Digit	
<b>CH4</b>	[Cod_6]		7	
	1st Digit	2nd Digit	3rd Digit	

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