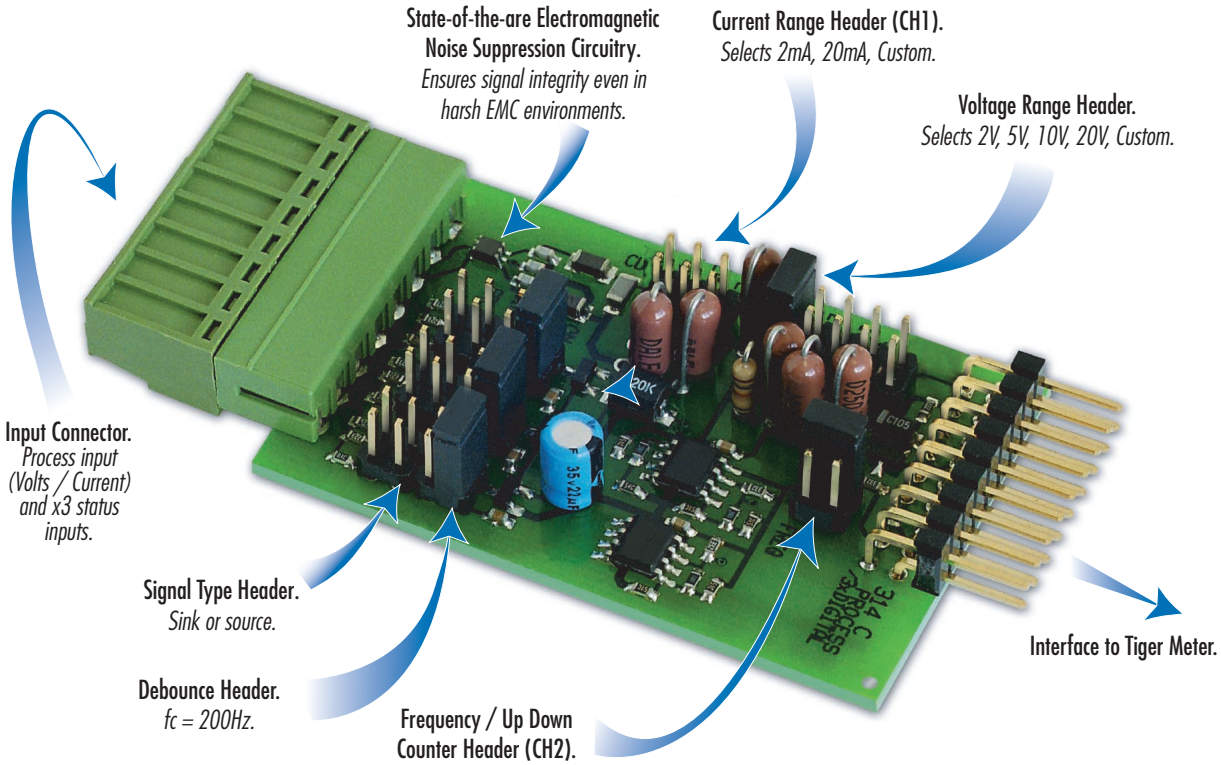
TEXMATE INC

Fits Tiger 320 Series

PROCESS & TRIPLE STATUS INPUTS



Introducing IP10 – The Direct Relay Control Solution.

Input module IP10 is designed for the process and control industry where additional status inputs are needed to control setpoints from external sources. A variety of interface configurations provide a much needed solution to direct relay control applications. Tiger 320 Series Macro programming means friendly user interface for individualized status feedback & control systems in addition to powerful software algorithms.

Input Module Order Code Suffix

IP10

Hardware Module Specifications	
Process Input	CH1 exclusive current / voltage header selectable. Either 2 mA / 20 mA DC or 2 V / 5 V / 10 V / 20 V DC header selectable. EMI protection includes common mode and differential filtering.
Status Inputs	CH1, CH2, and digital inputs D1, D2, and D3 in combinations of up to 3 inputs. Overvoltage protection by diode clipping and input signal shaped by Schmidt trigger circuitry.
	Sensor Header: Optional sink / source for transistor or switch interface.
	Debounce Header: Low pass analog filter with f_c = 200 Hz optional.
	Frequency/Counter Header: CH2 can be configured as frequency or up / down counter.
Excitation Voltage	24 V DC (50 mA) to power external transducers.

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Connector Pinouts & Module Layout

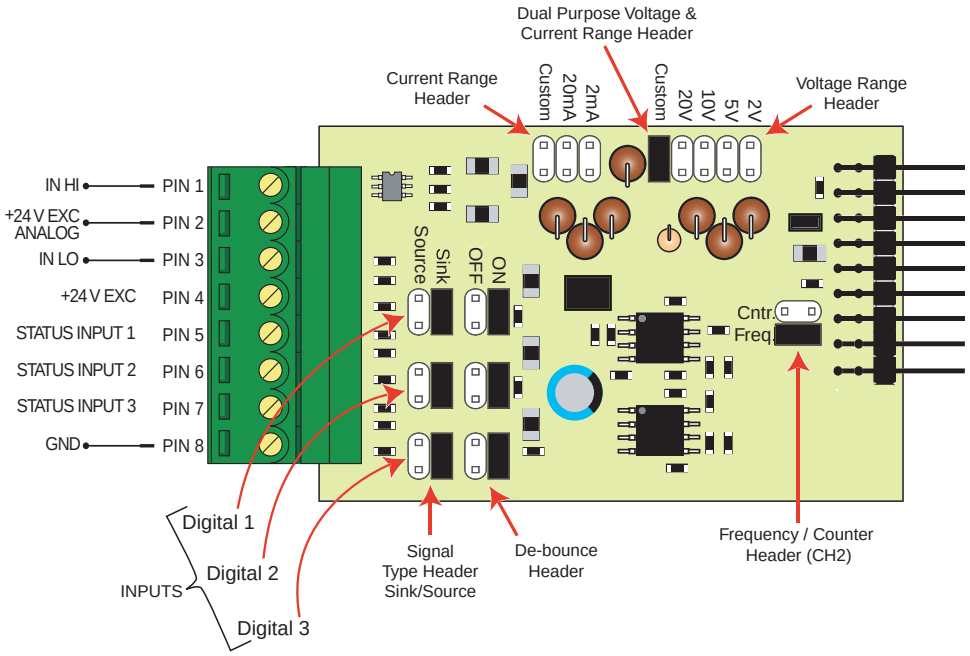


Figure 1 – IP10 Process / Triple Status Input Module

The three status inputs are referenced to ground. There are two +24 V DC excitation voltages available to power external sensors. +24 V excitation analog connected to pin 2 is a filtered excitation voltage and should be used to power external sensors with process outputs, for example: 4-20 mA RTD transducers. The ordinary +24 V excitation connected to pin 4 should be used to power sensors with switched inputs such as proximity sensors.

Detailed Description

The Tiger 320 Series controller has four input channels capable of processing almost any input signal type. Input module IP10 uses channel 1 (CH1) and channel 2 (CH2) of the four input channels and three digital inputs D1, D2, and D3. Table 1 provides a list of the available input combinations using the IP10 input module.

TABLE 1 AVAILABLE COMBINATIONS

Input	Connection	Signal Type	Function	Destination
Process	Pin 1 / Pin 3	Current or Voltage (header selectable)	Process Input	CH1
Status Input 1	Pin 5	Sink or Source (header selectable)	• Digital Input • Frequency or UP Counter (software selectable)	D1 CH1
Status Input 2	Pin 6	Sink or Source (header selectable)	• Digital Input • Frequency or UP / DOWN Counter (header selectable)	D2 CH2
Status Input 3	Pin 7	Sink or Source (header selectable)	Digital Input	D3

Process Input

The process input can be selected for either a current or voltage input signal and automatically defaults to CH1. A single current or voltage header is used to select the full scale range of the input. Figure 2 shows the header position for a 10 V DC range.

Status Inputs

All three status inputs can be configured for either sink or source configuration by selecting the relevant position on the signal type header of each status input. A debounce header on each status input provides a 200 Hz cut-off frequency low pass analog filter for signal stability. Each status input signal is 'cleaned up' using Schmidt trigger circuitry.

Status Input 1

Status input 1 feeds directly to digital input D1 in the controller and can also be software selected as a frequency input or up counter displayed on CH1 if

Note:
The Current Range Header and the Voltage Range Header share a common jumper. If the jumper is placed in a current setting, then the voltage header is bypassed and vice versa.

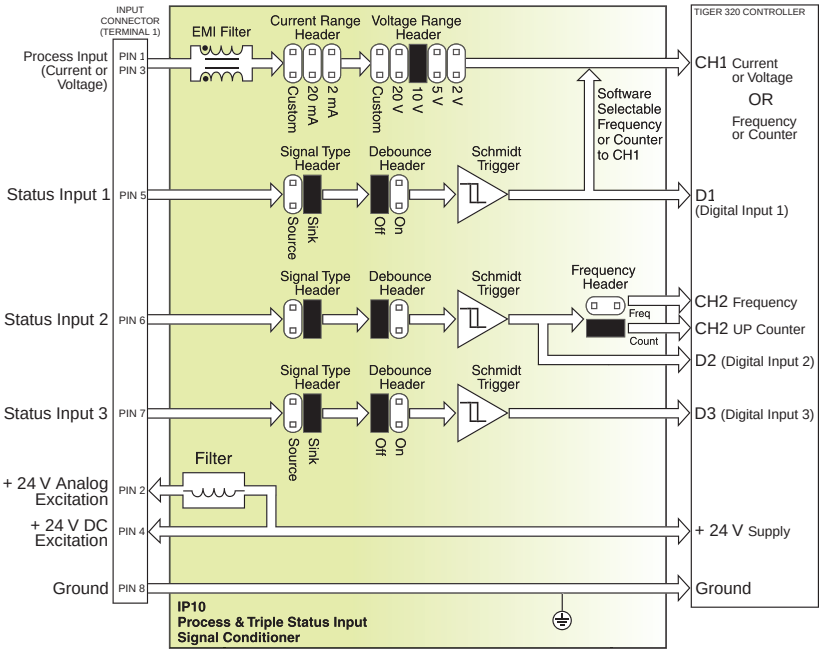


Figure 2 – IP10 Process / Triple Status Input Module Signal Flow Diagram

CH1 is not required as a process input.

Status Input 2

Status input 2 feeds directly to digital input D2 and also doubles as either a header selectable frequency or up / down counter for CH2.

Status Input 3

Status input 3 feeds directly to digital input D3.

Digital Inputs D1, D2, D3

Digital inputs D1, D2, and D3 can be used to trigger setpoints and be incorporated into macro programs as external control signals.

Interface Configuration Examples

Examples 1 and 2 show the header positions for a range of transducer types and signals.

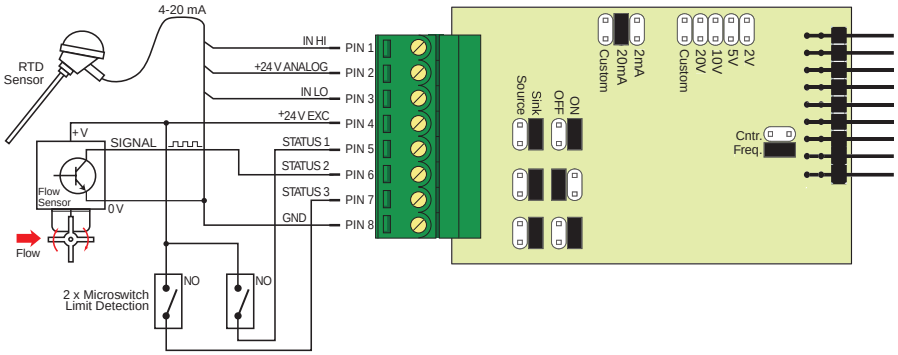
Example 1

In Figure 3, IP10 is configured to accept a 4 to 20 mA DC process input which is fed to CH1, a frequency input from an NPN open-collector switched input to CH2, and two status inputs from simple detection switches.

Sensors: **Process Input**: 4 to 20 mA DC output from an RTD temperature sensor requiring +24 V DC excitation. Current range header set to 20 mA full scale.

Status Input 2: A flow rate sensor having an NPN open-collector switched output. No low-pass filtering on the input (Debounce header OFF). Pull-up resistors to +24 V DC excitation. Signal type header set to Sink.

Status Inputs 1 & 3: Normally open, limit detection switches with low-pass filtering on the input (debounce ON). Signal type header set to Sink.



Note the position of the headers

Figure 3 – IP10 Configured for Process Input, Frequency Input, and Two Status Inputs

Controller Code Setup

Process Input: To configure the 4-20 mA process input as a current input signal for CH1, set Code 2 to [X00].

Status Input 1: To read a frequency input on CH2 from the switched input flow rate sensor, set Code 4 to [300].

Note:
Status input 1 cannot be used as a frequency input as CH1 is already being used by the process input.

Digital Inputs D1 & D2: Use the setpoint and relay control functions [SPC_X] to select digital inputs D1 and D2 as the selected source for predetermined setpoint / relay control.

2nd Digit

Select the relevant digital input from the 2nd digit settings.

SP Activation Source	
0	**Activate Setpoint Source from Selected Register**
1	Select Source for Setpoint
2	Digital Input – Capture Pin
3	Digital Input – D1 (selected input modules)
4	Digital Input – D2 (selected input modules)
5	Digital Input – D3 (selected input modules)
6	HOLD Pin
7	LOCK Pin

**Note:*
If the setpoint source is set to [oFF] or a digital input, the setpoint activation value will have no effect and will not be displayed.

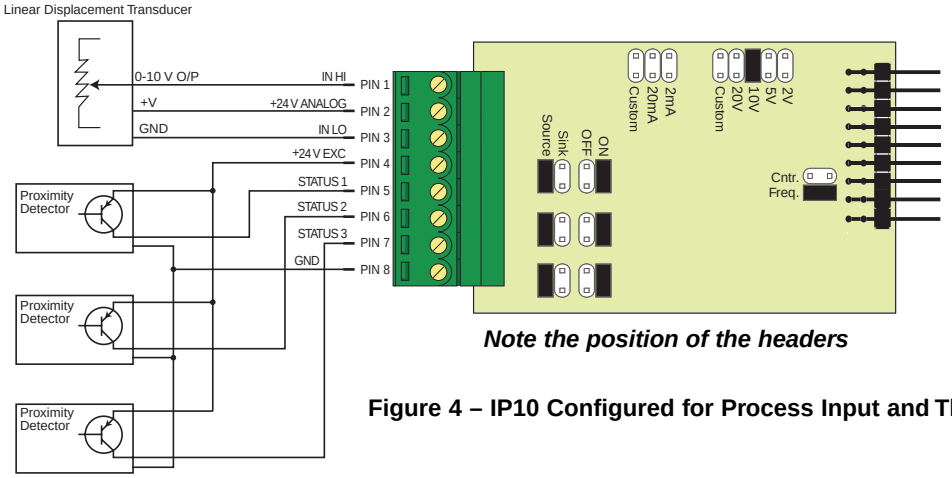
Example 2

Example 2 shows a linear displacement transducer used to monitor the position of a hydraulic press using three proximity sensors with open-collector PNP switched outputs. The PNP switched outputs function as preset limit controls, switching relays on activation. Status inputs 1, 2, and 3 are allocated setpoints SP1, SP2, and SP3 respectively. The linear displacement sensor outputs a 10 V maximum voltage and requires +24 V excitation.

Sensors: **Process Input**: 0 to 0 V DC output from an linear displacement transducer requiring +24 V DC excitation. Voltage range header set to 10 V full scale.

Status Inputs 1 to 3: All three signal type headers set to source. All three debounce headers set to ON.

In Figure 4, IP10 is configured to accept a 0 to 10 V DC process input signal from an analog linear displacement sensor displayed on CH1. The voltage header is set to +10 V. The proximity detectors feed three switched PNP open-collector signals through status inputs 1, 2, and 3 to digital inputs D1, D2, and D3 respectively.



Note the position of the headers

Figure 4 – IP10 Configured for Process Input and Three Status Inputs

Controller Code Setup

Process Input:

To configure the 0-10 V DC process input as a voltage input signal for CH1, set Code 2 to [X00].

Digital Inputs D1-D3:

Use the setpoint and relay control functions [SPC_X] to select digital inputs D1, D2, and D3 as the selected source for predetermined setpoint / relay control.

2nd Digit

Select the relevant digital input from the 2nd digit settings:

SPC_1 select D1.

SPC_2 select D2.

SPC_3 select D3.

SP Activation Source	
0	**Activate Setpoint Source from Selected Register**
1	Select Source for Setpoint
2	Digital Input – Capture Pin
3	Digital Input – D1 (selected input modules)
4	Digital Input – D2 (selected input modules)
5	Digital Input – D3 (selected input modules)
6	HOLD Pin
7	LOCK Pin

**Note:*
If the setpoint source is set to [oFF] or a digital input, the setpoint activation value will have no effect and will not be displayed.

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