VersaTenn V Retransmit Signal Converter

Figure 1 TE1803 Retransmit Converter

Overview

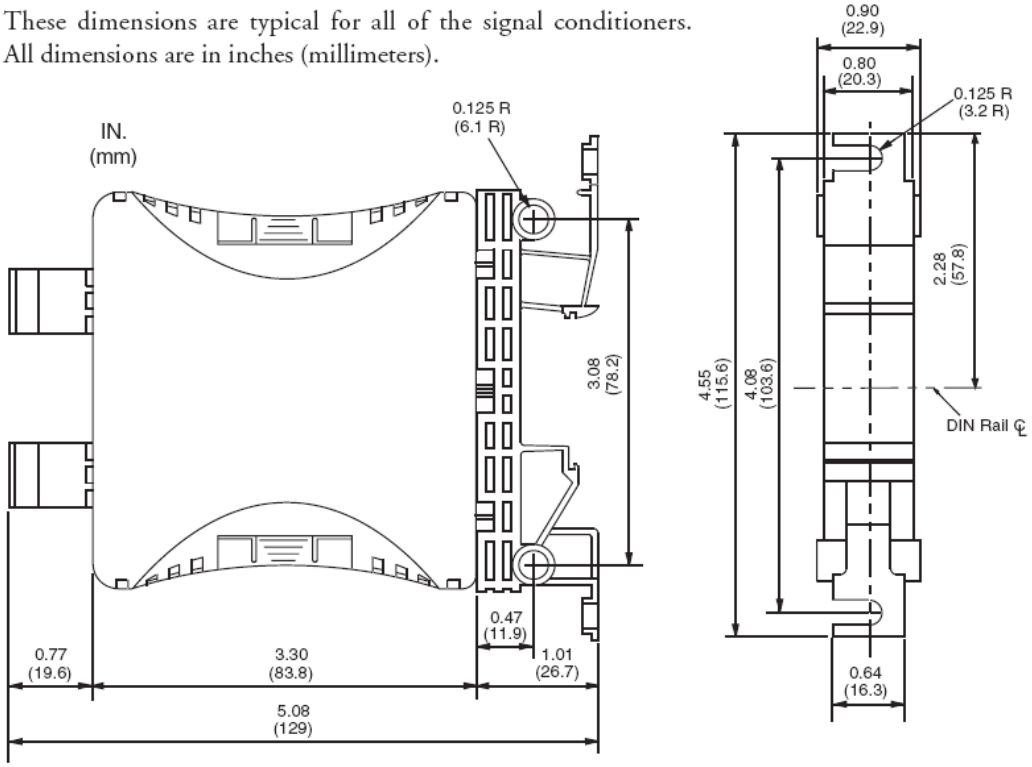
The TE1803 is a DIN rail or side mount, selectable input/output signal conditioner with 1500 VDC isolation between input and output, and 1500 VDC isolation between 24-volt power and input/output. The field configurable input/output types allow a wide ranging capability for 0-5 V, 0-10 V, 0-20 mA and 4-20 mA signals. TE1803 provides isolation and converts the VersaTenn V and Synergy Controller Olympic board retransmits signals from 5VDC Full Scale to 4- 20 mA, 0-10 VDC or 0-5VDC.

The Olympic board power source can be used to supply the 24 VDC required by the converter.

The TE1803 has built-in self-calibration, but also has OFFSET (zero) and SPAN (full scale) adjustments of the output signal. The OFFSET has an adjustment range of 0 to 25% of full scale input and the SPAN has an adjustment of 80% to 102%.

The TE1803, field configurable isolated input/output signal conditioner is useful in eliminating ground loops and interfacing the controller's 0-5VDC signals to valves. The TE1803 has 3-way isolation; this feature solves many types of configuration problems.

These dimensions are typical for all of the signal conditioners.
All dimensions are in inches (millimeters).



General Specifications	
Accuracy vs. Temperature	± 0.005% / °C (50ppm/°C)
Input Power	24VDC ±10% @ 50mA
Recommended Fuse	0.032mA Series 217 current inputs
Isolation	1500VDC input - output 1500VDC power - input 1500VDC power - output * applied for 1 second
Maximum Inaccuracy of output (Includes offset,span,linearity)	0.05% FSO @ 25°C 0.25% FSO @ 0 - 60°C
Output Current	21mA maximum (for mA output)
Approx. field cal. range	0 - 25% (0 - 1.5V / 5V mode) 80% - 102% (4 - 5.1V / 5V mode)

Figure 3 TE1803 Retransmit Converter Specifications

Input Ranges	Output Ranges	Switch Position							
		1	2	3	4	5	6	7	8
0 - 5V		1	0	1	1				
0 - 10V		0	0	1	0				
0 - 20mA		1	0	0	1				
4 - 20mA		1	0	0	0				
	0 - 5V					1	1	0	1
	0 - 10V					1	0	0	0
	0 - 20mA					0	1	0	0
	4 - 20mA					0	0	0	0
Factory Default Settings									
4 - 20mA	4 - 20mA	1	0	0	0	0	0	0	0

Specifications	
Input Ranges	0-5V, 0-10V, 0-20mA, 4-20mA
Input impedance	250Ω ±0.1% current input 200KΩ / 400KΩ Voltage Input
Output Ranges	0-5V, 0-10V, 0-20mA, 4-20mA
Load Impedance	2KΩ minimum, voltage output 0Ω minimum, current output
Maximum Load / Current	550Ω @ 24V sink/source
Sample Duration Time	10mS
Filter Characteristic	-3dB @ 3Hz, -6dB/octave
Linearity Error	0.05% FSO maximum
Stability	0.05% FSO maximum

Figure 4 TE1803 Retransmit Converter Dip Switch Settings

For example: to convert the controllers retransmit signal to 4-20 mA, set the dipswitches as follows:

Switch position							
1	2	3	4	5	6	7	8
1	0	1	1	0	0	0	0

Controls

Level LED: The LED is a powerful tool when setting up the signal conditioner. During normal operation the LED will blink at a proportional rate to the selected input signal level. When performing field calibration the LED is used for indication of the internal calibration process.

CAL-Pushbutton: This pushbutton, along with various switch settings, allows you to calibrate the OFFSET and/or SPAN for your application or to restore factory default calibration.

Adjustments

The TE1803 has built-in self-calibration, but also has OFFSET (zero) and SPAN (full scale) adjustment of the input signal. If your application requires, different span or offset (i.e. 3.6mA offset and 19.6mA span) you can adjust accordingly.

Calibrating the input signal level –

1. Select the signal range (i.e. 4 - 20mA).

2. Connect 24 volt power to the signal conditioner.

3. Connect the minimum input signal level.

4. Turn Switch 2 ON, press and hold the CAL pushbutton until the LEVEL LED comes ON steady (approx. 3 seconds), then release immediately. If the pushbutton is NOT released while the Level LED is ON steady, the signal conditioner will return to factory calibration.

5. Repeat above sequence for maximum input signal.

6. Turn Switch 2 OFF.

To return to factory calibration-

1. Turn switch 2 ON, press and hold the CAL pushbutton until the LEVEL LED comes ON steady and then starts flashing (approx. 10 seconds), then release the pushbutton. The unit has now been returned to factory calibration.

2. Turn Switch 2 OFF.

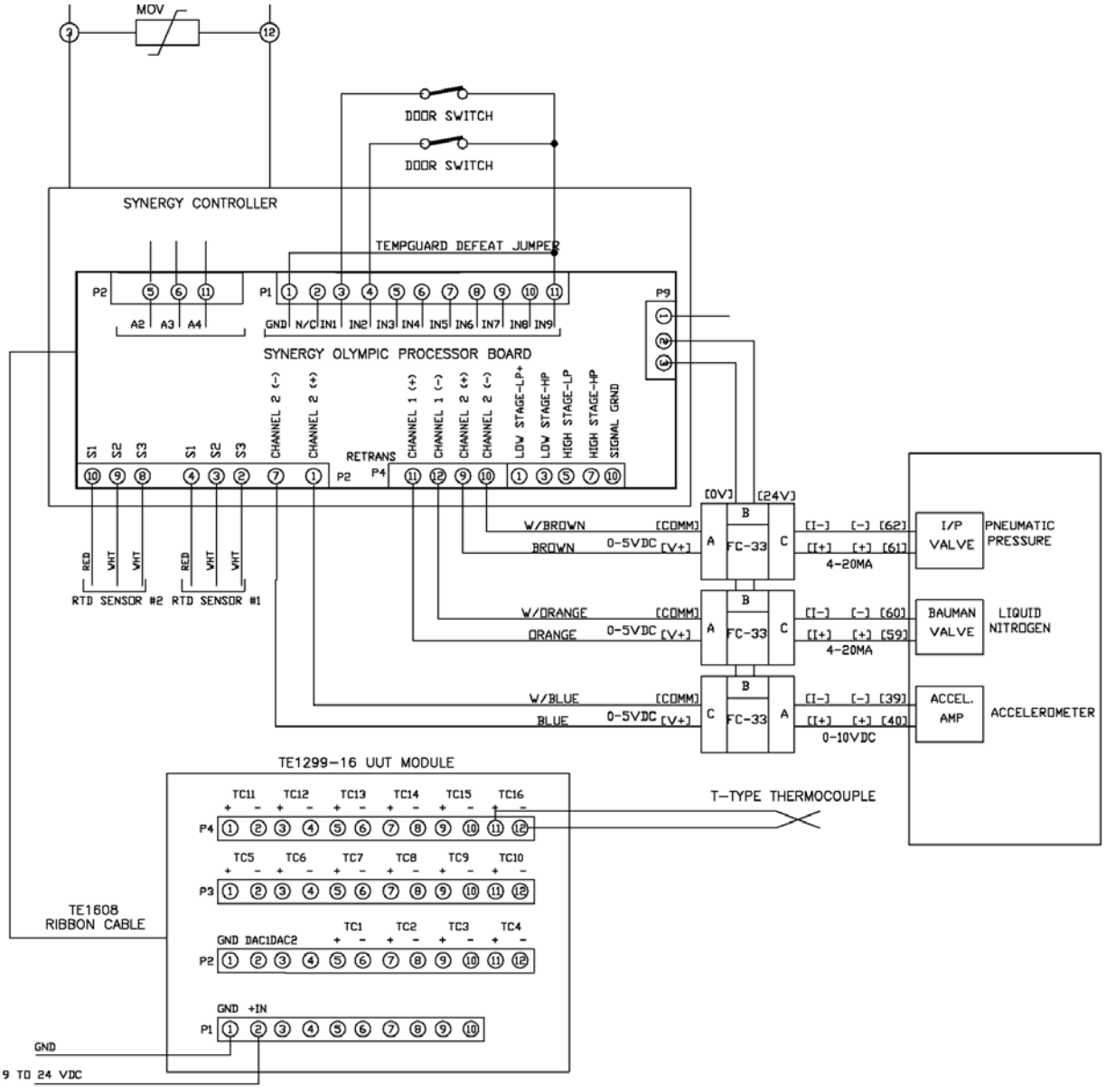


Figure 5 Typical Retransmit Converter Application Drawing

The schematic diagram in Figure 5 is a typical application of the TE1803 converter. In the drawing the two retransmit signals connect to two TE1803 converters and the converter outputs go to 4-20 mA valves. In addition, a third converter is used to isolate the 0-5 VDC signal on Channel 2.

About Tidal Engineering

Headquartered in Randolph, NJ, Tidal Engineering Corporation has been designing and building award-winning embedded hardware and software for test and measurement and data acquisition applications since 1992. The company further provides product development services together with engineering support, and is recognized for technical expertise in such areas as Embedded IEEE 488, and turnkey SCADA (Supervisory Control and Data Acquisition) systems. Tidal's products are available exclusively through ADI American Distributors Inc., an ISO-9002 certified distributor of electronic and electromechanical components and assemblies.

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