

Specifications

Digital Input Mode

Inputs:	32 bits.
Logic Threshold:	Each bit separately programmable, $\pm 50V$ in 25mV steps or $\pm 10V$ in 5mV steps. Range is programmable.
Logic Sense:	Programmable: active high or active low.
Strobe Input:	Logic sense: programmable, positive/negative going transition or ignored. Logic Threshold: TTL level compatible.
Arm/Strobe Input (Digital Mode):	In Digital mode, this input can be enabled to act as the strobe input. This signal strobes all digital input latches simultaneously. Programmably enabled/disabled. Minimum pulse width: 50 ns. Polarity: Programmable.
TTLTRG* (Digital Mode):	Compliant with VXIbus defined Synchronous Trigger Protocol. In Digital mode or Combination Analog/Digital mode, any one of these inputs can be enabled to act as the strobe input or to synchronize the time tag counter. Individually programmable enable/disable. Minimum pulse width: 10 ns. Polarity: Active low per VXIbus defined Synchronous Trigger Protocol.

Analog Comparator Mode

Inputs:	32 bipolar analog input channels.
Logic Threshold:	Programmable by channel $\pm 50V$ in 25mV steps or $\pm 10V$ in 5mV steps. Range is programmable.
Trigger Condition:	Programmable by channel, greater or less than voltage threshold. Condition may be disabled, on a by-channel basis.
Trigger Programmability:	May program an interrupt and the EQU OUT signal to occur on any positive logic AND/OR combination of threshold occurrences on any of the 32 channels. Programmed via sum-of-products Boolean equation.
Hysteresis, TTL Outputs:	This is the hysteresis which exists on the inputs with respect to the TTL Outputs. 15 mV.

Hysteresis, Recording Into Event buffer:

This hysteresis defines a voltage range such that an input signal will not be recorded until it exceeds the programmed voltage plus half this value, and will not be recorded again until it goes below the programmed voltage minus half this value. This implies the Flip bit is set on this channel (FLIPCONT command) and that programmable hysteresis has been activated (HYST command). For further details, see TRG command.

Programmable in steps of 5mV ($\pm 10V$ range), or 25mV ($\pm 50V$ range), over the entire range.

Default hysteresis (if not specified in command) is 15mV (both ranges).

Minimum Pulse Width:

Input		Minimum
<u>Step size</u>	<u>Overdrive</u>	<u>Pulse Width</u>
(both ranges)		
100 mV	50 mV	3.0 μ secs
	500 mV	0.5 μ secs
	5 V	0.2 μ secs
1V	50 mV	8 μ secs
	500 mV	2 μ secs
	5 V	1 μ secs
5V	50 mV	9 μ secs
	500 mV	3 μ secs
	5 V	2 μ secs
($\pm 50V$ range only)		
25V	250 mV	9 μ secs
	2.5 V	3 μ secs
	25 V	2 μ secs

Time Tag Clock Accuracy: 50 ppm (5 ppm clock available as an option).

Time Tag Uncertainty: This is the maximum time interval between when an event occurs and when its time tag is recorded. See the [Time Tag Uncertainty](#) subsection for details.

EQU OUT Output: Pulses when a defined AND/OR combination of threshold occurrences has occurred.

Polarity: Programmable.

Pulse width: 2.4 μ sec.

Delay from when the event occurs and pulse occurs is equal to the time tag uncertainty.

Arm/Strobe Input (Analog Mode):

In Analog mode, this input acts as the Arm input. It can be programmed to be active (do not begin monitoring inputs until the ARM pulse) or disabled (module is continually monitoring inputs).

Minimum pulse width: 50 ns.

Polarity: Programmable.

TTLTRG*

(Analog Model):

Compliant with VXIbus defined Synchronous Trigger Protocol. In Analog mode (but not in Combination Analog/Digital mode), any one of these inputs can be enabled to act as the arm input or to synchronize the time tag counter. In Combination Analog/Digital mode, these inputs cannot be used for the arm function, but may be used as the strobe function.

Minimum pulse width: 10 ns.

Polarity: Active low per VXIbus defined Synchronous Trigger Protocol.

Common Specifications

Overall Accuracy:	40 mV on $\pm 10V$ range, 100 mV on $\pm 50V$ range at 25° C.
Temperature Coefficient:	60 ppm/ degree C.
Calibration Cycle:	12 months.
Monitonicity:	Guaranteed within either range.
Maximum Input:	$\pm 120V$ rms, 150V DC.
Input Impedance:	98K ohm ($\pm 10V$ range). 52K ohm ($\pm 50V$ range).
Debounce Counters:	Two. Each group of four channels can be selectively enabled/ disabled. Channels 0-7 and 16-23 operate with debounce counter 1. Channels 8-15 and 24-31 operate with debounce counter 2.
Debounce Delay:	This is the time delay that the input voltage may toggle before it is captured. Can be enabled or disabled in groups of four inputs. When enabled, programmable from 1/10 milliseconds to 6.5535 secs, in units of tenths of milliseconds.
Volt Meter Reading:	30 mV accuracy with a 2.5 mV resolution on the ± 10 volt range; 100 mV accuracy with a 12.5 mV resolution on the ± 50 volt range.
Programmed By:	ASCII characters.
Power Up Conditions:	When power is applied, the module goes to the following known states:

General

Power LED: lit.

Mode: Analog mode.

Threshold level: 1.4V.

Range: ± 10 volt range.

Trigger sense: Greater than threshold level (>).

Comparator status latches: cleared.

TTL Outputs: tri-stated.
Error buffer: cleared.
Error LED: off.
Readback type: error buffer.
Interrupts: disabled.
Aperture time (for VOLT? command): 10 milliseconds.

Associated with Analog Mode

Module unarmed.
Inputs when in Analog mode: disabled.
EQU OUT signal polarity: active low.
Current time: zeroed.
Event buffer: cleared.
Analog readback format: returned by individual channel number, by event, relative time tag in seconds.
Channel names: CH<channel number> where <channel number> is a two digit number.
Analog display mode: real time.
Analog channel priority: 0 highest, 31 lowest.
Comparator status latches: cleared.
Flip bits: cleared (both sets).
Debounce counter time: 1/10 of a second.
Debounce enable: all channels disabled.
Source of Counter Synchronization Pulse: front panel P4
Programmable hysteresis: off.

Associated with Digital Mode

Inputs when in Digital mode: enabled.
External Strobe: Disabled, strobe on readback of digital data.
Digital readback format: ASCII hex, from digital input latches.
Digital display mode: real time.
Digital display byte order: 1,0, left to right.

TTL Output Lines:	Current output available per channel: 15 mA source, 24 mA sink. Logic sense: active high. Number of outputs: 32. Function: Analog Mode - High if corresponding comparator status latch is set. Digital Mode - High if corresponding input bit is true.
Power Requirements:	All required dc power is provided by the Power Supply in the VXIbus mainframe.
Voltage:	- 5 Volt Supply: 4.75 V dc to 5.25 V dc. + 24 Volt Supply: +23.5 V dc to +24.5 V dc. -24 Volt Supply: -23.5 V dc to -24.5 V dc.

Current (Peak Module, I_{PM}):	5 volt supply: 2.0 A + 24 volt supply: 130 mA -24 volt supply: 120 mA + 12 volt supply: 0 A -12 volt supply: 0 A -5.2 volt supply: 0 A -2.0 volt supply: 0 A
Replacement Fuses:	+ 24V: Littelfuse P/N 273002 -24V: Littelfuse P/N 273002 + 5V: Littelfuse P/N 273005
Cooling:	Provided by fans in the VX1400 Mainframe. The module will have a temperature rise of $< 10^{\circ}\text{C}$ with 0.9 liters/sec per slot of air and a pressure drop of 0.16 mm of H_2O .
Temperature:	0°C to $+50^{\circ}\text{C}$, operating. -40°C to $+85^{\circ}\text{C}$, storage.
Humidity:	Less than 95% R.H. non-condensing, 0°C to $+30^{\circ}\text{C}$. Less than 75% R.H. non-condensing, $+31^{\circ}\text{C}$ to $+40^{\circ}\text{C}$. Less than 45% R.H. non-condensing, $+41^{\circ}\text{C}$ to $+50^{\circ}\text{C}$.
VXIbus Radiated Emissions:	Complies with VXIbus Specification.
VXIbus Conducted Emissions:	Complies with VXIbus Specification.
Module Envelope	
Dimensions:	VXI C size. 262 mm x 353 mm x 30.5 mm (10.3 in x 13.9 in x 1.2 in)
Dimensions, Shipping:	When ordered with a Tek/CDS mainframe, the module is installed and secured in one of the instrument module slots (slots 1 - 12). When ordered alone, shipping dimensions are: 406 mm x 305 mm x 102 mm. (16 in x 12 in x 4 in).
Weight:	1.44 kg. (3.2 lb).
Weight, Shipping:	When ordered with a Tek/CDS mainframe, the module is installed and secured in one of the instrument module slots (slots 1 - 12). When ordered alone, shipping weight is: 1.89 kg. (4.2 lb).
Mounting Position:	Any orientation.

Mounting Location:	Installs in an instrument module slot (slots 1-12) of a C or D size VXIbus mainframe. (Refer to D size mainframe manual for information on required adapters.)
Front Panel Signal Connections:	Two 50 pin male D connectors (32 channel inputs, 32 TTL output lines, daughter board common voltage signal, clock synchronization signal). Two BNC (Arm/Strobe input, EQU OUT output).
Recommended Cable or Connectors:	VX1733 Cable or VX1780S Hooded Connector.
Equipment Supplied:	1 - VX4286 Module.
Software Revision:	V2.2