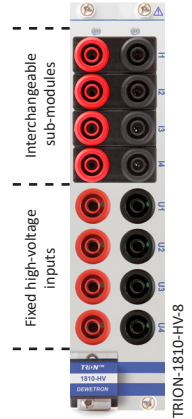


# TRION-1810-HV-8



## TRION-1810-HV-8

- ▶ Isolated TRION module for high-voltage inputs
- ▶ Channels: Up to 8 voltage channels
  - 4 permanently installed high-voltage channels
  - 4 interchangeable sub-modules
- ▶ Sampling: Up to 1 MS/s
- ▶ Resolution: 24-bit
- ▶ Input types
  - Fixed installed channels: 1000 V
  - Interchangeable sub-modules: 5 V, 600



## Module specifications

TRION-1810-HV-8 general specifications	
Input channels	Up to 8 (high) voltage channels with interchangeable inserts
Sampling rate	Up to 1 MS/s
Resolution	24-bit
Typical channel-to-channel phase mismatch	<250 ns (0.1° @ 1 kHz, 0.005° @ 50 Hz)
Typical board-to-board phase mismatch <ul style="list-style-type: none"> <li>– Same board type</li> <li>– Different board type</li> </ul>	<250 ns (0.1° @ 1 kHz, 0.005° @ 50 Hz) ±1 sample or 0.2° @ 1 kHz (whichever is higher)
Low pass filter (-3 dB, digital and analog combined) <ul style="list-style-type: none"> <li>– Filter order and characteristics</li> </ul>	100 Hz to 300 kHz freely programmable or OFF 2 <sup>nd</sup> , 4 <sup>th</sup> , 6 <sup>th</sup> , 8 <sup>th</sup> Bessel or Butterworth
Filter delay compensation	Up to 15 μs the group delay of the selected filter will be automatically compensated. This works for: <ul style="list-style-type: none"> <li>– 2<sup>nd</sup> order filter 15 kHz to 300 kHz</li> <li>– 4<sup>th</sup> order filter 30 kHz to 300 kHz</li> <li>– 6<sup>th</sup> order filter 60 kHz to 300 kHz</li> </ul>
Onboard data buffer	512 MB
Power consumption	Typ. 12.5 W, max. 14 W

Tab. 44: General specifications

# TRION-1810-HV-8



The following section provides detailed information on the fixed high-voltage inputs. The values given below were determined in a standardized test setting<sup>1)</sup>.

Fixed high-voltage inputs				
Input range	1000 V ( $\pm 2000 V_{PEAK}$ ) CF = 2			
Resolution	24-bit			
Accuracy <sup>1)2) 3)</sup>				
– DC	$\pm 0.02$ % of reading $\pm 0.02$ % of range			
– 0.5 Hz to 1 kHz	$\pm 0.03$ % of reading			
– 1 kHz to 5 kHz	$\pm 0.15$ % of reading			
– 5 kHz to 10 kHz	$\pm 0.35$ % of reading			
– 10 kHz to 50 kHz	$\pm 0.6$ % of reading			
– 50 kHz to 300 kHz	$\pm (0.02 \% * f)$ of reading			f: frequency in kHz
Gain drift	20 ppm/°C			
Offset drift	5 mV/°C			
Typical THD	-95 dB			
CMRR	>85 dB @ 50 Hz; >60 dB @ 1 kHz; >40 dB @ 100 kHz			
Bandwidth	5 MHz			
Rated input voltage to earth according to EN 61010-2-30	600 V CAT IV / 1000 V CAT III			
Common mode voltage	1000 V <sub>RMS</sub>			
Isolation voltage	3750 V <sub>RMS</sub> (1 min), 35 kV/ $\mu$ s transient immunity			
Overvoltage protection	4250 V <sub>PEAK</sub> or 3000 V <sub>RMS</sub> (1 min)			
Input resistance	5 M $\Omega$ ; 2 pF			
Isolation (earth) resistance	100 G $\Omega$ ; 2.5 pF			
Connector	Safety banana sockets			
	SNR	SFDR <sup>4)</sup>	ENOB <sup>5)</sup>	Noise <sub>pp</sub>
Sample rate	[dB]	[dB]	[Bit]	[mV]
0.1 kS/s	126	144	20.6	2.6
1 kS/s	123	140	20.1	4.5
10 kS/s	118	137	19.3	9.5
100 kS/s	110	134	18.0	27.2
1000 kS/s	100	134	16.3	92.5

Tab. 45: Fixed high-voltage inputs

1) The following accuracy conditions were applied: Temperature: 23  $\pm$  5 °C; humidity: 40 to 60 % rel. humidity; input waveform: sine wave; common mode voltage: 0 V; line filter: Auto; sample rate: 1 MS/s; resolution: 24 bit; power factor: 1; after warm-up; after zero level, accuracy: Frequency (f) in [kHz] (12-month accuracy  $\pm$  reading error and range error)

2) Add 0.02 % of reading with filter settings OFF

3) Below 1 % of range, add 10 ppm of range.

4) SFDR excluding harmonics

5) ENOB calculated from SNR

# TRION-1810-HV-8

## Interchangeable sub-modules

The following TRION-SUB-xV modules can be used with the TRION-1810-HV-8 module. For detailed information about the various sub-modules refer to chapter [TRION sub-modules](#) in the TRION(3) series modules technical reference manual.



Fig. 130: Supported TRION sub-modules

Type	Range	Bandwidth	Isolated
<a href="#">TRION-SUB-600V</a>	600 V <sub>RMS</sub> ( $\pm 1500$ V <sub>PEAK</sub> )	300 kHz	Yes
<a href="#">TRION-SUB-5V</a>	5 V <sub>RMS</sub> ( $\pm 10$ V <sub>PEAK</sub> )	300 kHz	Yes
<a href="#">TRION-SUB-XV</a>	600 V <sub>RMS</sub> ( $\pm 850$ V <sub>PEAK</sub> ) 60 V <sub>RMS</sub> ( $\pm 100$ V <sub>PEAK</sub> ) 6 V <sub>RMS</sub> ( $\pm 10$ V <sub>PEAK</sub> ) 0.6 V <sub>RMS</sub> ( $\pm 1$ V <sub>PEAK</sub> )	300 kHz	Yes

Tab. 46: Supported sub-modules