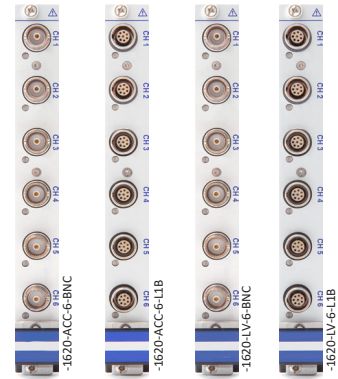


TY-1620-ACC/LV

- ▶ Sampling: 2 MS/s per channel at 16-bit; 24-bit in oversampling mode
- ▶ ADC: Low noise, SAR
- ▶ Input ranges
 - Voltage: ± 5 mV to ± 100 V
 - IEPE®: ± 5 mV to ± 50 V
- ▶ Isolated



Module specifications

TY-1620-ACC/LV specifications				
Input channels		TY-1620-LV-6-BNC	6 channels BNC, voltage input	
		TY-1620-ACC-6-BNC	6 channels BNC, voltage input; IEPE®; 1 counter	
		TY-1620-LV-6-L1B	6 channels 1B LEMO, voltage or current input, 1 to 28 V sensor supply, TEDS	
		TY-1620-ACC-6-L1B	6 channels 1B LEMO, voltage or current input, IEPE®, 1 counter, sensor supply, TEDS	
Sampling rate / resolution		Highspeed mode	>1 to 2 MS/s	16-bit
		Over sampling mode	100 S/s to 1 MS/s	24-bit
Data transfer		16-bit / 24-bit		
Data rate DMA transfer		6 analog channels: max 24 MB/s; 1 x counter: max. 16 MB/s		
ADC type		SAR (Successive Approximation Register)		
Input ranges				
– Voltage		±5 mV, ±10 mV, ±20 mV, ±50 mV, ±100 mV, ±200 mV, ±500 mV, ±1 V, ±2 V, ±5 V, ±10 V, ±20 V, ±50 V, ±100 V,		
– IEPE®		±5 mV, ±10 mV, ±20 mV, ±50 mV, ±100 mV, ±200 mV, ±500 mV, ±1 V, ±2 V, ±5 V, ±10 V, ±20 V, ±50 V		
– Current ¹⁾		±10 mA, ±20 mA, ±50 mA, ±100 mA		
Accuracy ³⁾	Voltage	DC to 1 kHz	±0.02 % of reading ± 0.02 % of range ±20 µV	
		>1 kHz to 5 kHz	±0.2 % of reading ± 0.02 % of range ±20 µV	
		>5 kHz to 10 kHz	±0.5 % of reading ± 0.02 % of range ±20 µV	
		>10 kHz to 50 kHz	±1.00 % of reading ± 0.02 % of range ±20 µV	
		>50 kHz to 100 kHz	±3.00 % of reading ± 0.02 % of range ±20 µV	
	Current ¹⁾	DC to 1 kHz	±0.1 % of reading ± 0.02 % of range ±10 µA	
		>1 kHz to 5 kHz	±0.2 % of reading ± 0.02 % of range ±10 µA	
		>5 kHz to 10 kHz	±0.5 % of reading ± 0.02 % of range ±10 µA	
		>10 kHz to 50 kHz	±1.00 % of reading ± 0.02 % of range ±10 µA	
		>50 kHz to 100 kHz	±2.00 % of reading ± 0.02 % of range ±20 µA	
MTBF ⁴⁾		TY-1620-LV-6-BNC: 230,318 h		
Input noise (5 mV range)				
– 0 to 10 Hz		1.5 µV _{pp}		
– Noise density		6.4 nV/SQRT(Hz)		

TY-1620-ACC/LV specifications									
Input impedance	1 M Ω shunted by 18 pF								
Current input	Internal 10 Ω shunt; max. 100 mA protected with resettable fuse								
Input bias current	<1 nA								
Input coupling	DC; AC: 0.16Hz ²⁾								
Gain drift	Typically 10 ppm/°C max. 20 ppm/°C								
Offset drift	Typically 0.3 μ V/°C + 10 ppm of range/°C, max 15 μ V/°C + 20 ppm of range/°C								
Linearity	Typically 0.01 %								
Input configuration	Isolated								
Isolation impedance	Isolation resistance >1 G Ω ; Isolation capacitance typically 15 pF								
Rated input voltage to earth according to EN 61010-2-30	33 V _{RMS} , 46.7 V _{PEAK} , 70 V _{DC}								
Isolation voltage (channel-to-channel and channel-to-chassis)	1500 V _{PEAK}								
Overvoltage protection	$\pm$ 300 V _{DC}								
IEPE® excitation ²⁾	4 mA, 8 mA $\pm$ 10 % @ 1 % $\pm$ 1 mV accuracy @ 24 V compliance voltage								
Voltage excitation ¹⁾	1 to 28 V @ 1 % $\pm$ 1 mV accuracy freely programmable (max. 100 mA, max. 1 W) per channel								
Typical signal-to-noise ratio, spurious	20 mV range			2 V range			100 V range		
Free SNR, effective number of Bits ⁵⁾	SNR	SFDR ⁶⁾	ENOB ⁷⁾	SNR	SFDR ⁶⁾	ENOB ⁷⁾	SNR	SFDR ⁶⁾	ENOB ⁷⁾
Sample rate	[dB]	[dB]	[Bit]	[dB]	[dB]	[Bit]	[dB]	[dB]	[Bit]
0.1 kS/s	104	125	17.0	130	155	21.3	130	155	21.3
1 kS/s	97	125	15.8	123	150	20.1	122	145	20.0
10 kS/s	91	122	14.8	111	150	18.1	112	135	18.3
100 kS/s	82	116	13.3	106	142	17.3	105	130	17.1
200 kS/s	78.7	116	12.8	103.7	142	16.9	102	125	16.7
500 kS/s	74	114	12.0	99.5	140	16.2	98	121	16.0
1000 kS/s	71	87	11.5	93.2	130	15.2	93	116	15.2
2000 kS/s	56	56	9.0	88	88	14.3	88	88	14.3
Typical THD	-97 dB								
Typical CMR	– $\leq$2 V range >140 dB @ 50 Hz >120 dB @ 1 kHz – >2 V range >90 dB @ 50 Hz >60 dB @ 1 kHz								
Low pass Filter (-3 dB, digital)	10 Hz, 30 Hz, 100 Hz, 300 Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz, 100 kHz, 300 kHz, 600 kHz								
– Characteristic	Bessel or Butterworth								
– Filter order	2 nd , 4 th , 6 th , 8 th								
Analog anti-aliasing filter	2 nd order Bessel, automatically selected								
Bandwidth (-3 dB, deactivated digital filter)	1 MHz 2 nd order Bessel filter								
Crosstalk fin 1 kHz [10 kHz]	$\leq$ 2 V Range: 120 dB [105 dB]								
Channel-to-channel phase mismatch	Typically <10 ns when using the same range; <60 ns for using different ranges								
Board-to-board phase mismatch	<30 ns								

Tab. 15: Module specifications

TY-1620-ACC/LV specifications	
Counter	1x counter channel linked to analog channel #1; trigger level 70 % of actual analog input range
Counter modes	Event counting, period, frequency, pulse width, duty cycle
Counter input bandwidth	1 MHz to 10 kHz depending on analog filter of CH1
Counter time base	80 MHz
ESD protection	IEC61000-4-2: ±8 kV air discharge, ±4 kV contact discharge
Supported TEDS chips (LEMO only)	All common TEDS chips are supported.
Power consumption	Voltage mode: 6 W; IEPE® mode: 7.5 W

Tab. 15: Module specifications

- 1) TY-1620-LV-6-L1B only

2) TY-1620-ACC only

3) 1 year accuracy 23 °C ±5 °C

4) Mean time between failure
- 5) LP Filter in auto mode

6) SFDR excluding harmonics

7) ENOB calculated from SNR