LV-16 for imc CRONOS-SL (CRSL/LV-16)

16-channel Differential Amplifier

LV-16 is a measurement amplifier for 16 channels available as a plug-in module for **imc CRONOS*compact*** or as a configuration module for **CRONOS-SL**. It enables measurement of 16 differential analog channels which can measure voltage and current.

By means of an optional connector, the measurement of ICP sensors[1] is also possible.

Highlights

- Acquisition of voltage and current
- Supports *imc Plug & Measure* (Transducer Electronic Data Sheets)

Overview of available variants

Order code	article no.	remarks
CRSL/LV-16-D	11800015	with DSUB-15 sockets
CRSL/LV-16-L	11800016	with LEMO sockets

Included accessories

Documents
Getting started with imc CRONOS*compact* & imc CRONOS-SL (one copy per delivery / system)
Device certificate

Technical Specs - CRSL/LV-16

Parameter	Value	Remarks
Inputs	16	differential, analog, non isolated
Measurement modes (DSUB)	voltage measurement current measurement current fed sensors (IEPE/ICP)	with shunt plug (ACC/DSUBM-I4) with DSUB-15 expansion plug ACC/DSUB-ICP4, not isolated ACC/DSUBM-ICP2I-BNC-S/-F [1], isolated
Measurement modes (LEMO)	voltage measurement current measurement	with external shunt

Terminal connection
    Standard
 	
    LEMO
	
	4x DSUB-15 socket
	4 channels per plug
	16x LEMO / 1 channel per socket	

Sampling rate, Bandwidth, Filter, TEDS		
Parameter	**Value**	**Remarks**
Sampling rate	≤20 kHz	per channel
Bandwidth	0 Hz to 6.6 kHz 0 Hz to 5 kHz	-3 dB (analog AAF 5th order) -0.2 dB

Filter (digital)
    cut-off frequency
    characteristic
    order
	2 Hz to 5 kHz	Butterworth, Bessel (digital)
		low pass filter 8. order
		Anti-aliasing filter:
		Cauer 8. order with $f_{cutoff} = 0.4\,f_s$

Resolution	16 Bit	internal processing 24 Bit
TEDS	conforming to IEEE 1451.4 Class II MMI	esp. with ACC/DSUBM-TEDS-xx (DS2433)

General			
Parameter	**Value typ.**	**min. / max.**	**Remarks**
Overvoltage protection		±40 V	permanent channel to chassis
Input coupling	DC		
Input configuration	differential		
Input impedance	20 MΩ		differential, >10 kΩ off-state

Auxiliary supply
    voltage
    available current
    internal resistance
	
	+5 V
	0.26 A
	1.0 Ω
		
		±5%
		0.2 A
		<1.2 Ω
			for IEPE/ICP-extension plug
			independent of integrated sensor supply, short-circuit protected power per DSUB-plug

1   When using the two-channel IEPE plug in combination with the analog inputs, which provide four channels per socket, only channels 1 and 3 can be used.

Voltage measurement			
Parameter	**Value typ.**	**min. / max.**	**Remarks**
Input ranges	±10 V, ±5 V, ±2.5 V, ±1 V, ±500 mV, ±250 mV		
Gain: error drift	0.02 % ±8 ppm/K·ΔT_a	≤0.05 % ±30 ppm/K×DTa	of reading $\Delta T_a = \lvert T_a - 25°C \rvert$; with T_a= ambient temperature
Offset: error drift	0.02 % (±18 µV/K)·ΔT_a (±2 µV/K)·ΔT_a	≤0.05 % (±45 µV/K)·ΔT_a (±5 µV/K)·ΔT_a	of range ±10 V to ±2.5 V ±1 V to ±250 mV $\Delta T_a = \lvert T_a - 25°C \rvert$; with T_a= ambient temperature
Max. common mode voltage		±12 V	
Common mode rejection Ranges ±10 V to ±2.5 V ±1 V to ±250 mV	-90 dB -108 dB	-80 dB -97 dB	common mode test voltage: ±10 $V_=$ and 7 V_{rms}, 50 Hz
Channel to channel crosstalk Ranges 10 V to ±2.5 V ±1 V to ±250 mV	-90 dB -116 dB		test voltage: ±10 $V_=$ and 7 V_{rms}, 0 Hz to 50 Hz; range: ±10 V
Noise	12 $µV_{rms}$		bandwidth: 0.1 Hz to 1 kHz

Current measurement			
Parameter	**Value typ.**	**min. / max.**	**Remarks**
Input ranges	±50 mA, ±20 mA, ±10 mA, ±5 mA		50 Ω shunt in terminal plug
Max. over load	±60 mA		permanent
Input configuration	differential		50 Ω shunt plug (ACC/DSUBM-I4)
Gain: error drift	0.02 % (±20 ppm/K)·ΔT_a	≤0.06 % ≤0.1 % (±55 ppm/K)·ΔT_a	of reading plus error of 50 Ω shunt $\Delta T_a = \lvert T_a - 25°C \rvert$; with T_a= ambient temperature
Offset: error drift	0.02 % (±30 nA/K)·ΔT_a	≤0.05 % (±60 nA/K)·ΔT_a	of range $\Delta T_a = \lvert T_a - 25°C \rvert$; with T_a= ambient temperature