LVDT(C)-8 for imc CRONOScompact (CRC)

8-channel amplifier for LVDT displacement sensors

The imc CRONOS*compact* LVDT-8 conditioning module is specially designed for LVDT measurements (Schaevitz coils according to the transformer principle and inductive half bridges) and is also available in a compact DSUB-26-HD version (LVDTC-8).

Highlights

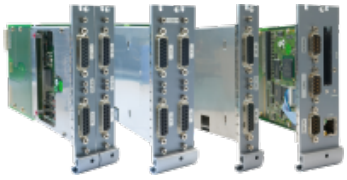
- Low cost 8-channel LVDT module for inductive displacement sensor

imc CRONOS*compact* - modular measurement system

imc CRONOS*compact* is a modular and reconfigurable hardware a "rack"-based series of devices available in a variety of housing sizes and device frames. imc CRONOS*compact* (CRC) plug-in-modules can be inserted into the system (CRC-400GP).

Once the modules are plugged into a portable or rack-based housing, they are electrically connected to the CRC-system and are supplied by the system with power. The data storage will be managed by the CRC-system.

Rack-based modules ("-R") differ from the standard modules only in terms of the front panel's attachment mechanism.



imc CRONOScompact plug-in-modules

imc CRONOScompact portable housing

Overview of available variants

Order Code		article no.
CRC/LVDT-8	DSUB-15	11700173
CRC/LVDT-8-R	DSUB-15	11700174
CRC/LVDTC-8	DSUB-26-HD	11700171
CRC/LVDTC-8-R	DSUB-26-HD	11700172

Included accessories

High-Density (HD) plug		
4x ACC/DSUBM-B2	DSUB-15 plug with screw terminals for 2-channel measurement of strain gauges, bridges and voltage	13500170

High-Density (HD) plug		
2x ACC/DSUBM-HD-B4	DSUB-26 plug with screw terminals for 4-channel measurement of strain gauges, bridges and voltage	13500197

Documents
Device certificate

Technical Specs - LVDT(C)-8

Inputs, Measurement modes		
Parameter	**Value**	**Remarks**
Inputs	8	
Measurement modes	LVDT bridge mode voltage measurement	Carrier Frequency mode (CF) 5 kHz
Terminal connection LVDT-8	4x DSUB-15	2 channels per plug, recommended plug: ACC/DSUBM-B2
LVDTC-8	2x DSUB-26-HD	4 channels per plug, recommended plug: ACC/DSUBM-HD-B4

Sampling rate, Bandwidth, Filter		
Parameter	**Value**	**Remarks**
Sampling rate	max. 100 kHz	per channel
Bandwidth	0 Hz to 50 Hz	allowable bandwidth of mechanical signal
Filter (digital) Frequency Characteristic Order	1 Hz to 20 Hz	 Butterworth, Bessel low pass 6th order
Resolution	16 Bit	internal processing 24 Bit

General			
Parameter	**Value typ.**	**min. / max.**	**Remarks**
Isolation (nominal rating)	±60 V (nominal)		galvanically block isolated to System-GND (case, CHASSIS) no channel-to-channel isolation
Max. common mode voltage	±5 V		channel-to-channel
Overvoltage protection	ESD 2 kV transient protection		
Input current operating conditions on overvoltage condition power off	0.2 nA	 25 nA 1 mA ≤5 mA	voltage mode, static
Non-linearity	<30 ppm		±2 V range, voltage mode
Auxiliary supply	+5 V (max. 160 mA / plug) non isolated		only with DSUB-15 variant

LVDT measurement			
Parameter	**Value typ.**	**min. / max.**	**Remarks**
Mode	CF		carrier frequency (5 kHz)
Bridge configuration	full bridge half bridge		LVDT transformer type transducers ("Schaevitz", transformator principle) inductive half bridge transducers
Input ranges	±800 mV/V,±400 mV/V, ±200 mV/V, … ±100 mV/V, ±40 mV/V, ±20 mV/V ±2000 mV/V,±1000 mV/V, ±500 mV/V,.. .. , ±250 mV/V, ±100 mV/V, ±50 mV/V		bridge supply = 2.5 V bridge supply = 1 V
Bridge excitation voltage (VB)	2.5 V, 1 V max. 28 mA		peak, sine wave, individually selectable per channel short circuit proof
Minimum transducer impedance	50 Ω, 10 mH 120 Ω, 10 mH		bridge supply = 1 V bridge supply = 2.5 V
Cable compensation	dual wire sense		adaptive compensation
Offset compensation range		≥±100% of range 9% 9%	of selected range ±2000 mV/V (bridge supply = 1 V) ±800 mV/V (bridge supply = 2.5 V)
Input impedance	6.7 MΩ	±1%	
Gain error	<0.025%	<0.05%	of the measured value
Gain drift		15 ppm/K·ΔT_a	$\Delta T_a = \lvert T_a$ -25 °C$\rvert$; with T_a = ambient temperature
Offset error	<0.02%	<0.05%	of input range after automatic bridge balancing
Offset drift		1 µV/V /K·ΔT_a	full bridge, no ext. bridge offset $\Delta T_a = \lvert T_a$ -25 °C$\rvert$; with T_a = ambient temperature
Half-bridge drift	0.5 µV/V /°C	1 µV/V /°C	internal half bridge completion
Max. lead wire resistance	<60 Ω <460 m		single cable with cable: 0.14 mm², 130 mΩ/m, AWG26
Input noise	5 $\mu V/V_{rms}$		bridge mode (bridge supply = 1 V) bandwidth 0.1 Hz to 50 Hz

Voltage measurement			
Parameter	**Value typ.**	**min. / max.**	**Remarks**
Input ranges	±5 V, ±2 V, ±1 V, ±500 mV		
Input coupling	DC		
Input configuration	differential		
Input impedance (differential)	6.7 MΩ 1 MΩ		ranges ≤±2 V range ±5 V
Gain error	<0.025%	<0.05%	of reading, 25°C
Gain drift		15 ppm/K·ΔT_a 50 ppm/K·ΔT_a	ranges ≤±2 V range ±5 V $\Delta T_a = \lvert T_a$ -25 °C$\rvert$; with T_a = ambient temperature
Offset error	<0.02%	<0.05%	of range
Offset drift		0.6 µV/K·ΔT_a 30 µV/K·ΔT_a	ranges ≤±2 V range ±5 V $\Delta T_a = \lvert T_a$ -25 °C$\rvert$; with T_a = ambient temperature
CMRR	>95 dB (50 Hz)		R_{source} = 0 Ω
Input noise	<2.6 μV_{rms} <15 μV_{pkpk}		bandwidth 0.1 to 50 Hz