ICPU-16 for imc CRONOS-SL/compact

16-channel Voltage Amplifier

The **ICPU-16** module is a measurement amplifier for 16 differential, analog voltage or ICP-channels, available as a plug-in module for the imc CRONOS*compact* or as a configuration module for imc CRONOS-SL. Due to its BNC terminal for direct connection of ICP sensors (ICP™-, DELTATRON®-, PIEZOTRON®-Sensors), it is well adapted for applications in the fields of noise and vibration measurement engineering.

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-400 / CRC-2000G).

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

Standard version		ET version *	
Order Code	article no.	article no.	remarks
CRC/ICPU-16	11700058	11710033	for installation in an imc CRONOS*compact* housing
CRC/ICPU-16-R	11700122	11710081	for installation in an imc CRONOS*compact* RACK
CRSL/ICPU-16		11800033	for installation in an imc CRONOS-SL housing

* ET: Version in extended temperature range

Technical Specs - ICPU-16

Parameter	Value	Remarks
Inputs	16	
Measurement modes	voltage measurement current fed sensors IEPE/ICP	 (e.g. ICP™-, DELTATRON®-Sensors)
Terminal connection	BNC	

Sampling rate, bandwidth, filter, TEDS			
Parameter	**Value**		**Remarks**
Sampling rate	≤20 kHz		per channel total sampling rate 320 ksps
Bandwidth	0 kHz to 5 kHz 0 kHz to 6.6 kHz		-0.1 dB -3 dB (analog 5. order AAF)
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 $f_{cutoff} = 0.4\ f_s$
Filter cut-off frequency (high-pass, 3rd order, -3 dB)	0.43 Hz	±5%	AC, differential AC, single end with current source
TEDS - Transducer Electronic Data Sheets	conforming to IEEE 1451.4 Class II MMI		

General			
Parameter	**Value typ.**	**min. / max.**	**Remarks**
Overvoltage protection		±40 V	permanently
Input coupling	DC AC, ICP		AC-coupling (or ICP) means a high pass filter at the input. To avoid drifting of the module, a high pass filter is always calculated, even if the user selects "without filter".
Input configuration	differential single-end		software-configurable
Input impedance	 908 kΩ 1.82 MΩ 20 MΩ		at DC-voltage resp. 50 Hz ICP (single-end) AC (differential) DC (differential)

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	0.02 %	≤0.05 %	of the reading
Gain drift	±8 ppm/K·ΔT_a	±30 ppm/K·ΔT_a	ΔT_a= |T_a -25°C| ambient temperature T_a
Offset uncertainty	0.02 %	≤0.05 %	of range
Offset drift	±18 µV/K·ΔT_a ±2 µV/K·ΔT_a	±45 µV/K·ΔT_a ±5 µV/K·ΔT_a	±10 V to ±2.5 V ±1 V to ±250 mV ΔT_a= |T_a -25°C| ambient temperature T_a
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 range ±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 50Hz; range: ±10 V
Noise	12 μV_{rms}		bandwidth: 0.1 Hz to 1 kHz

Constant current supply			
ICP current sources	4.2 mA/channel	±10 %	
Compliance voltage	25 V	>24 V	
Source impedance	280 kΩ	>100 kΩ	