

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

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.

Overview of available variants

Standard version		
Order Code	article no.	remarks
CRSL/ICPU-16	11800033	

Included accessories

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

Technical Specs - CRSL/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 $f_{\text{cutoff}} = 0.4 f_s$
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	$\pm 10\text{ V}$, $\pm 5\text{ V}$, $\pm 2.5\text{ V}$, $\pm 1\text{ V}$, $\pm 500\text{ mV}$, $\pm 250\text{ mV}$		
Gain error	0.02 %	$\leq 0.05\%$	of the reading
Gain drift	$(\pm 8\text{ ppm/K}) \cdot \Delta T_a$	$(\pm 30\text{ ppm/K}) \cdot \Delta T_a$	$\Delta T_a = T_a - 25^\circ\text{C} $; with $T_a =$ ambient temperature
Offset uncertainty	0.02 %	$\leq 0.05\%$	of range
Offset drift	$(\pm 18\text{ }\mu\text{V/K}) \cdot \Delta T_a$ $(\pm 2\text{ }\mu\text{V/K}) \cdot \Delta T_a$	$(\pm 45\text{ }\mu\text{V/K}) \cdot \Delta T_a$ $(\pm 5\text{ }\mu\text{V/K}) \cdot \Delta T_a$	$\pm 10\text{ V}$ to $\pm 2.5\text{ V}$ $\pm 1\text{ V}$ to $\pm 250\text{ mV}$ $\Delta T_a = T_a - 25^\circ\text{C} $; with $T_a =$ ambient temperature
Max. common mode voltage		$\pm 12\text{ V}$	
Common mode rejection ranges: $\pm 10\text{ V}$ to $\pm 2.5\text{ V}$ $\pm 1\text{ V}$ to $\pm 250\text{ mV}$	-90 dB -108 dB	-80 dB -97 dB	common mode test voltage: $\pm 10\text{ V}_\pm$ and 7 V_{rms} , 50 Hz
Channel to channel crosstalk range $\pm 10\text{ V}$ to $\pm 2.5\text{ V}$ $\pm 1\text{ V}$ to $\pm 250\text{ mV}$	-90 dB -116 dB		test voltage: $\pm 10\text{ V}_\pm$ and 7 V_{rms} , 0 Hz to 50Hz; range: $\pm 10\text{ V}$
Noise	$12\text{ }\mu\text{V}_{\text{rms}}$		bandwidth: 0.1 Hz to 1 kHz

Constant current supply			
ICP current sources	4.2 mA/channel	$\pm 10\%$	
Compliance voltage	25 V	$> 24\text{ V}$	
Source impedance	280 k Ω	$> 100\text{ k}\Omega$	