

## ICPU-16 for imc CRONOS-SL/compact

### 16-channel Voltage Amplifier

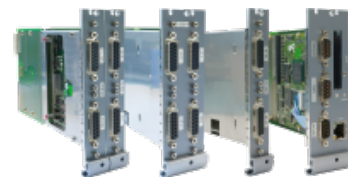
The **ICPU-16** module is a measurement amplifier for 16 differential, analog voltage or ICP-channels, available as a plug-in module for the imc *CRONOScompact* or as a configuration module for imc CRONOS-SL. Due to its BNC terminal for direct connection of ICP sensors (ICP™-, DELTATRON®-, PIEZOTRON®-Sensors),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

### imc *CRONOScompact* - modular measurement system

imc *CRONOScompact* is a modular and reconfigurable hardware a "rack"-based series of devices available in a variety of housing sizes and device frames. imc *CRONOScompact* (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 <i>CRONOScompact</i> housing
CRC/ICPU-16-R	11700122	11710081	for installation in an imc <i>CRONOScompact</i> 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 $f_{\text{cutoff}} = 0.4 f_s$
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 %	$\leq 0.05\text{ %}$	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} $ ambient temperature $T_a$
Offset uncertainty	0.02 %	$\leq 0.05\text{ %}$	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} $ ambient temperature $T_a$
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 $7\text{ V}_{\text{rms}}$ , 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 $7\text{ V}_{\text{rms}}$ , 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	$\pm 10\text{ %}$	
Compliance voltage	25 V	$> 24\text{ V}$	
Source impedance	280 k $\Omega$	$> 100\text{ k}\Omega$	