

# ICA10 & ICA1



## In-Line Charge Amplifiers

Signal Conditioning for Structure-Borne Noise Sensors

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- ✓ high quality, wide bandwidth, low noise signal conditioning for charge accelerometers (like Discom's KS91D)
- ✓ high impedance charge signal converted to voltage output, supplied with IEPE (ICP® or CCLD®)

## Signal Conditioning for Charge Accelerometers

The **ICA10** and **ICA1** are in-line charge amplifier for charge accelerometers, such as Discom's KS91D. The accelerometer's high-impedance charge signal is converted to a low impedance voltage signal. The ICAs are very easy to use due to their IEPE-compatible (ICP®, CCLD®) output interface. The signal and IEPE constant current supply use the same coaxial cable. The IEPE-supply is provided by all of Discom's analog TAD input cards (TAD28, TAD48, TAD48+). In order to suppress high signal levels in the range of the sensor's resonance frequency, Discom also offers a version with a low-pass filter, the **ICA1-LP**.

- for use with charge accelerometers, such as Discom's **KS91D** & **KS91D1**

ICA10 & ICA1* – Specifications			
<b>Input Characteristics</b>			
Sensitivity (Charge-to-Voltage Conversion)	<b>ICA10</b>	10 mV/pC $\pm 2\%$	
	<b>ICA1</b>	1 mV/pC $\pm 2\%$	
Input Range	<b>ICA10</b>	$\pm 500$ pC	
	<b>ICA1</b>	$\pm 5000$ pC	
Linear Frequency Range	<b>ICA10</b>	$\pm 5\%$	3 Hz .. 30 kHz
		$\pm 3$ dB	1 Hz .. 70 kHz
	<b>ICA1</b>	$\pm 5\%$	3 Hz .. 30 kHz
		$\pm 3$ dB	1 Hz .. 70 kHz
	<b>ICA1-LP</b>	$\pm 5\%$	3 Hz .. 4.5 kHz
		-3 dB	1 Hz .. 13 kHz
		-5 dB	20 kHz
Sensor Cable Length	max. 2 m recommended		low capacitance cable
<b>IEPE Requirements</b>			IEPE aka ICP <sup>®</sup> , CCLD <sup>®</sup>
Constant Current Supply	2 mA .. 4 mA		
Excitation Voltage	18 V .. 28 V		DC
<b>Output Characteristics</b>	IEPE compatible		also ICP <sup>®</sup> , CCLD <sup>®</sup>
Output Bias Voltage	10 V .. 15 V		over temperature range
Noise	$< 50 \mu\text{V}_{\text{RMS}}$		bandwidth 0.5 Hz .. 20 kHz
Total Harmonic Distortion	$\leq 1\%$		@ 1 kHz / full scale input
Output Impedance	$< 100 \Omega$		@ 2.3 mA
Input / Output Phase	inversion		output signal is inverted compared to input signal (typical for charge amps)
Coaxial Cable Length	max. 15 m recommended max. 25 m allowed		
<b>Mechanical &amp; Environmental</b>			
Dimensions with isolation and UNF-adapter	15.25 mm		diameter
	85 mm		length
Weight (without cable)	38 g		g: gram
Case Material	brass, nickel-plated		
Cable Connection	radial		
Socket / Connector	IEPE: BNC, female Sensor: UNF 10-32, female		
Temperature Range (Operation)	-20 °C to +85 °C		
Mounting	bracket or provided plastic clips		
IP Protection Grade	IP40		<i>preliminary</i>
Isolation	by heat shrink tubing		<i>see installation instructions</i>

\* Unless specifically mentioned, all specifications of the ICA1 also apply to the ICA1-LP (low-pass version)

## Mounting

The ICA10 / ICA1 comes with two plastic holders, which can be mounted to a suitable surface. The holders will accommodate M5 screws (screws are not part of delivery).



Figure 1: ICA10 with holders (identical for ICA1)

### Important Installation Notes :

- Make sure that all parts of the ICA10 / ICA1 and the BNC connectors are **electrically isolated** from the test stand.
- Mind the maximum cable length (2m low noise on sensor side, 25m coaxial on IEPE side)

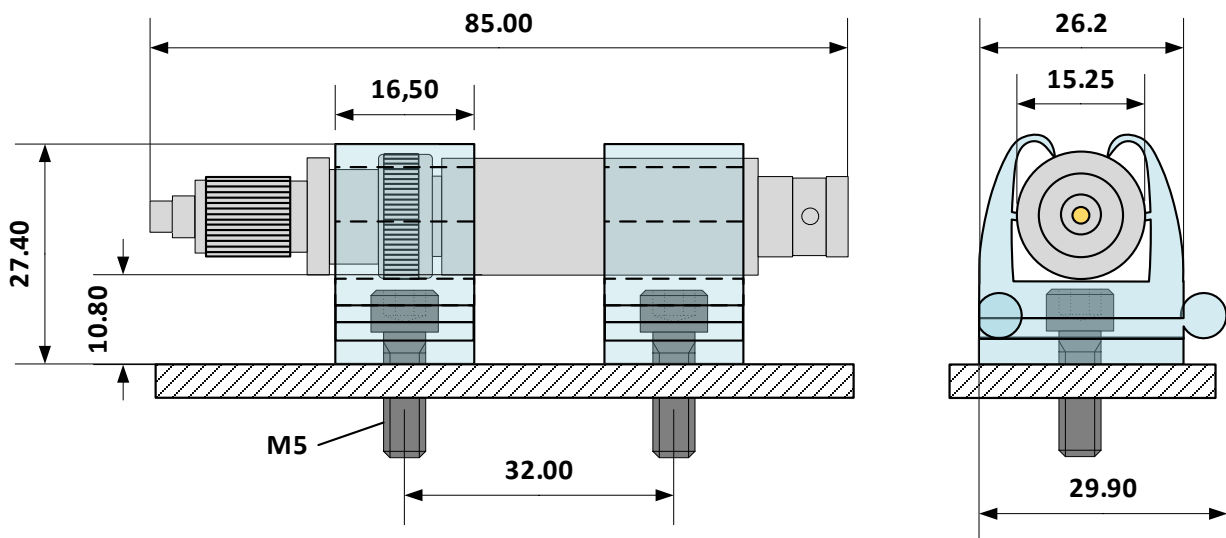


Figure 2: Dimensions of ICA10 & ICA1 with holders (in mm)

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