

# Charge Attenuator

## for electrical charge signals

Type 5361B...

The charge attenuator divides the electric charge applied to the input by the factor  $x$  (division ratio) and makes the charge reduced by the factor  $x$  available at the output.

### Description

The charge attenuator consists of two high-insulating capacitors, one of which is in parallel with the input (parallel capacitance), while the other is connected between input and output (series capacitance). This connection leads to a division of the input charge and thus to a smaller output charge by a factor of  $x$  (division ratio). At each end of the housing there is a BNC connector (input: BNC neg., output: BNC pos.), so that the charge attenuator can be connected directly between the sensor cable (e.g. Type 1631C...) and any extension cable (e.g. Type 1603B...) or between the sensor cable and the amplifier input, if no extension cable is required.

### Application

The charge attenuator is required if the charge emitted by the piezoelectric sensor exceeds the largest measuring range of the charge amplifier used.

### Example

Measuring a force of 600 kN with a force sensor Type 9091B results in a charge of 1 260 000 pC with a sensor sensitivity of -2.1 pC/N.

The charge is too high for the available Type 5073A charge amplifier, whose widest measuring range covers charges up to 1 000 000 pC.

By using a charge attenuator, e.g. Type 5361BY0157 with a division ratio of 2:1, the charge at the input of the charge amplifier can be limited to 630 000 pC.



### Technical data

Charge attenuator		
Insulation resistance	$\Omega$	$>10^{14}$
Accuracy	%	$\leq \pm 1$
Input connector		BNC neg.
Output connector		BNC pos.
Dimensions (incl. connectors)	mm	78x28,7x22,4
Weight	g	80

### Division ratios

Type	Division ratio	Parallel capacitance nF	Series capacitance nF
5361BY0157	2 : 1	100	100
5361BY0531	3 : 1	100	50
5361BY0532	4 : 1	66	22
5361BY0156	5 : 1	88	22
5361B	10 : 1	99	11
5361BY0140	20 : 1	133	7
5361BY0118	100 : 1	99	1
5361BY0380	200 : 1	199	1
5361BY0264	1 000 : 1	100	0,1

**Dimensions Charge Attenuator Type 5361B...**

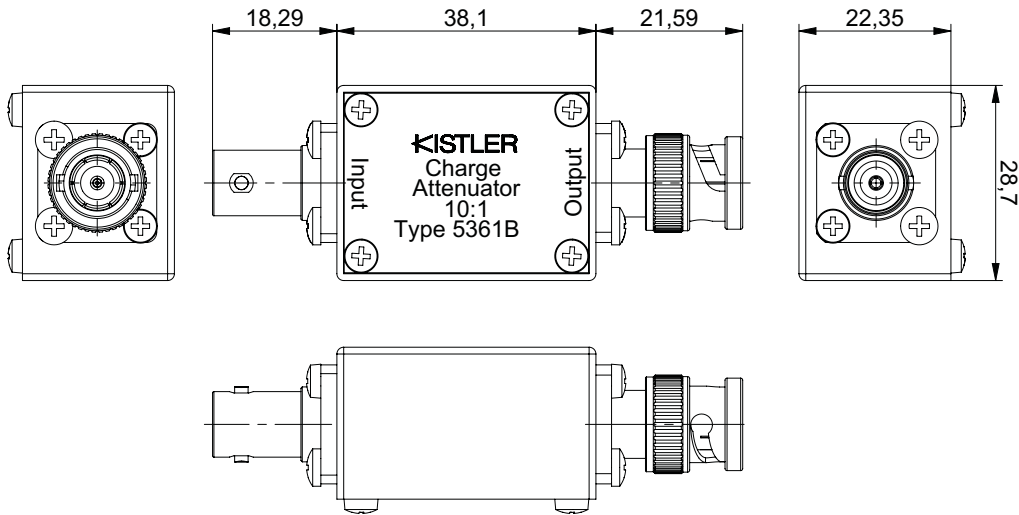


Fig. 1: Dimensions Charge Attenuator Type 5361B...

**Operation**

The charge attenuator should be connected between the sensor cable and any extension cable or between the sensor cable and the charge amplifier input. It should be noted that the sensor cable must be as short as possible. The advantage of this arrangement is that the parallel capacitance at the input of the charge attenuator, consisting of sensor and sensor cable capacitance, remains negligibly small and thus hardly influences the division ratio. The cable capacitance of any extension cable at the output of the charge attenuator has no influence on the division ratio.

**Ordering key**

Division ratio	
2 : 1	Y0157
3 : 1	Y0531
4 : 1	Y0532
5 : 1	Y0156
10 : 1	-
20 : 1	Y0140
100 : 1	Y0118
200 : 1	Y0380
1 000 : 1	Y0264

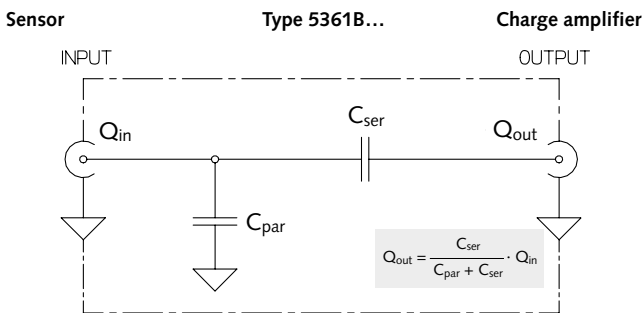
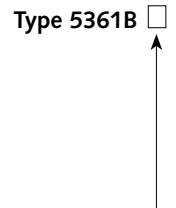


Fig. 2: Block diagram

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