Electronics & Software

Charge Amplifier
for Industrial Use

This instrument is housed in a rugged, sealed plastic case and can be supplied as a one or three channel version, already adjusted or adjustable in situ (see order designation Page 4).

- Industrial charge amplifier for on-site application
- Rugged, sealed case per degree of protection IP65
- Range can be supplied adjusted to a specific sensor
- Option: Semiconductor reset instead of relay reset
- Conforming to CE

Description
The charge amplifier is designed for industrial use and converts the piezoelectric measurement signal into a proportional voltage signal.

The highly sensitive charge input range of ±20 pC yields a maximum output voltage of ±10 V.

Application
This industrial charge amplifier is particularly suited in all applications where smallest forces or – in the indirect force measuring – strain with a low measurement signal occur. The version with semiconductor reset (...Y39) is used at high cycle rates. Since no moving parts are in use, the entire measuring system virtually operates maintenance free.

Technical Data

Charge Amplifier

<table>
<thead>
<tr>
<th>Number of channels</th>
<th>1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type 5037B1...</td>
<td>3</td>
</tr>
<tr>
<td>Measuring range FS</td>
<td>±200 ... ±1 000</td>
</tr>
<tr>
<td>already adjusted</td>
<td>±20 ... ±650 000</td>
</tr>
<tr>
<td>Gain, continuously</td>
<td>1 ... 5</td>
</tr>
</tbody>
</table>

Connections

<table>
<thead>
<tr>
<th>Input signal/optional</th>
<th>Connections</th>
</tr>
</thead>
<tbody>
<tr>
<td>BNC neg.</td>
<td>IP60</td>
</tr>
<tr>
<td>TNC neg.</td>
<td>IP65</td>
</tr>
<tr>
<td>KIAG 10-32 neg.</td>
<td>IP65</td>
</tr>
<tr>
<td>Screw connection M13x1 for protective tubing</td>
<td>IP67</td>
</tr>
<tr>
<td>Fischer connection plug DBEE 103A015-18</td>
<td>IP60</td>
</tr>
</tbody>
</table>

Interface

<table>
<thead>
<tr>
<th>Digital Input</th>
<th>V/mA</th>
<th>&lt;7/1,5</th>
</tr>
</thead>
<tbody>
<tr>
<td>Operate, Measure (Low)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Reset (High or open)</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

General Data

<table>
<thead>
<tr>
<th>Output signal</th>
<th>V</th>
<th>±10</th>
</tr>
</thead>
<tbody>
<tr>
<td>Output current</td>
<td>mA</td>
<td>≤±5</td>
</tr>
<tr>
<td>Output impedance</td>
<td>Ω</td>
<td>≥10</td>
</tr>
<tr>
<td>Error, referred to FS = 10 V</td>
<td>%</td>
<td>&lt;0,2</td>
</tr>
<tr>
<td>after adjustment</td>
<td>%</td>
<td>&lt;0,2</td>
</tr>
<tr>
<td>Linearity</td>
<td>%</td>
<td>&lt;0,2</td>
</tr>
<tr>
<td>Noise (0,1 Hz ... 10 MHz)</td>
<td>mVpp</td>
<td>≤5</td>
</tr>
<tr>
<td>Cable noise</td>
<td>pC√/pF</td>
<td>&lt;2·10⁻⁵</td>
</tr>
</tbody>
</table>

This information corresponds to the current state of knowledge. Kistler reserves the right to make technical changes. Liability for consequential damage resulting from the use of Kistler products is excluded.
Charge Amplifier – for Industrial Use, Type 5037B...

Frequency range (–3 dB, <±200 000 pC) kHz 0 ... >30
Drift at 25 °C (typ./max.) pC/s <±0,03 (<±0,07)
Drift with semiconductor reset ...Y39 at 25 °C (60 °C) pC/s <±0,1 (<±0,5)
Power supply VDC ±15

Current
Type 5037B1... +15 V (-15 V) mA ≈30 (~15)
Type 5037B3... +15 V (-15 V) mA ≈80 (~40)

Working temperature range °C 0 ... 60

Weight
Type 5037B1... g ≈180
Type 5037B3... g ≈360

Conformity to EC Directive
EMC Emission EN 50081-2
EMC Immunity EN 50082-1

Installation
The unit is screw mounted by means of four screws. The signal ground is case isolated. The supply ground is connected to the signal ground.

Dimension

Fig. 1: 1-channel Charge Amplifier Type 5037B1...

Fig. 2: 3-channel Charge Amplifier Type 5037B3...
Measuring connections

Input

Fig. 3: BNC neg., Type 5037Bxxx1

Fig. 4: TNC neg., Type 5037Bxxx2

Fig. 5: KIAG 10-32 neg., Type 5037Bxxx3

Fig. 6: Mini-coax. pos. – Screw connection M13x1 for protection hose, Type 5037Bxxx4/Typ 5037B3xx5

Output/Power Reset-Operate

Fig. 8: Terminal screws 1,5 mm²/Screwing PG7, Type 5037B1...

Fig. 9: Terminal screws 1,5 mm²/Screwing PG9, Type 5037B3...

Fig. 7: Fischer connector DBEE103A015-18, Type 5037Bxxx7
Included Accessories  
• None

Optional Accessories  
• None

Ordering Examples

Example 1  
Type 5037B3115Y39
• Charge amplifier, three channels  
• nonadjusted, to be adjusted in situ  
for ±200 ... ±1 000 pC ÷ ±10 V  
• Inputs mini-coax pos.,  
(with 1 screw connection M13x1 for protection hose)  
• Semiconductor reset

Example 2  
Type 5037B1211Y39
• Charge amplifier, single-channel  
• Adjusted for ±15 000 pC = ±10 V  
• Input BNC neg.  
• Semiconductor reset

Example 3  
Type 5037B1212
• Charge amplifier, single-channel  
• Adjusted to sensor Type ... SN ...  
for a range of ... (kN, bar, ...) ÷ 10 V  
• Input TNC neg.

Ordering Key

Type 5037B

1 channel, 1 range

Range  
nonadjusted, to be adjusted in situ  
±200 ... ±1 000 pC ÷ ±10 V  
calibrated as specified in the order  
±20 ... ±650 000 pC ÷ ±10 V

Input Stage of the Amplifier  
MOSFET

Connections for Measured Signal Input

BNC neg.  
1

TNC neg. (für IP65)  
2

KIAG 10-32 neg.  
3

Mini-coax pos.  
(with screwing M13x1 for protection hose)  
4

Only Type 5037B3...

Mini-coax pos. (with only one piece  
screwing M13x1 for protection hose)  
5

Fischer DBEE103A015-18  
7

Semiconductor reset  
Y39

Type 5037B

3 channels, 1 range/channel

Range  
nonadjusted, to be adjusted in situ  
±200 ... ±1 000 pC ÷ ±10 V  
calibrated as specified in the order  
±20 ... ±650 000 pC ÷ ±10 V

Input Stage of the Amplifier  
MOSFET

Connections for Measured Signal Input

BNC neg.  
1

TNC neg. (für IP65)  
2

KIAG 10-32 neg.  
3

Mini-coax pos.  
(with screwing M13x1 for protection hose)  
4

Only Type 5037B3...

Mini-coax pos. (with only one piece  
screwing M13x1 for protection hose)  
5

Fischer DBEE103A015-18  
7

Semiconductor reset  
Y39

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