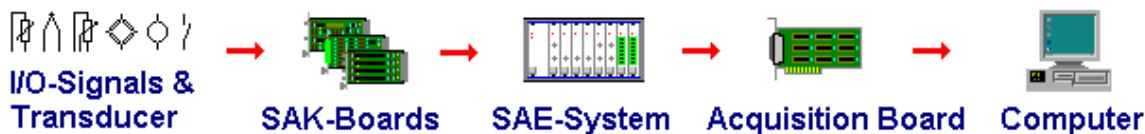


# Modular Signal Conditioning System DT SAE - System



## Product Overview:

DT SAE is a flexible and modular signal conditioning system for PC-based data acquisition. The DT SAE-System is connected to the PCI Data Acquisition board by using a signal adapter. This adapter is placed in the rear panel of the base unit and uses the same signal connector as the data acquisition board. Choose a PCI board from the DT 300-, DT 3000-, or DT 3010-/DT 3034-series with 12-bits or 16-bits resolution. Custom systems may contain multiple PCI modules also. The DT SAE base units are available as desktop cases and as 19" rack mount systems. All DT SAE base units include a power supply. For nearly all types of measurement signals and transmitters, e.g. temperature, pressure, bridge transducer, voltage, or current signals, DT SAK-amplifier boards are available with or without galvanic isolation.

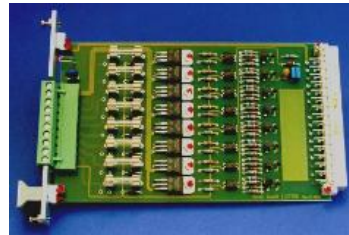
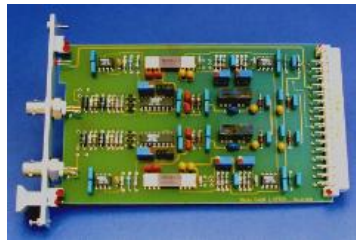


Generally DT SAK-amplifier-boards are available with 1, 2, or 4 channels. Each DT SAK-amplifier transforms the input signal range to an output signal of  $\pm 10V$  or  $0-10V$ . The input signals are connected to the DT SAK-board by BNC, LEMO, Miniature Thermocouple connectors, or screw terminals on the front panel. The design of the DT SAE-System allows signal conditioning of the analog output and digital input and output lines of a multifunction PCI data acquisition board as well.

| DT SAE – Base Units        |   |
|----------------------------|---|
| DT SAE16288/05             | Desktop case with 5 slots for DT SAK-boards     |
| DT SAE16288/08             | Desktop case with 8 slots for DT SAK-boards     |
| DT SAE16288/13             | Desktop case with 13 slots for DT SAK-boards    |
| DT SAE16288/19             | Desktop case with 19 slots for DT SAK-boards    |
| DT SAE16288/BGT            | 19" Rack system with 19 slots for DT SAK-boards |
| Special systems on inquiry |   |

## DT SAK-Amplifier Boards for the DT SAE-System

The following tables list the standard DT SAK-amplifier boards for the DT SAE-System. The standard signal output range of all DT SAK-amplifiers for analog values is -10V ... +10V. DT SAK-amplifier boards with an output signal range of  $\pm 5V$  are available also. For each type of DT SAK-amplifier we can provide other measurement ranges and signal bandwidth.



### Voltage Input with Galvanic Isolation

| Input Range(s)                     | Channels | Features                            | Type                | Output                 |
|------------------------------------|----------|-------------------------------------|---------------------|------------------------|
| $\pm 5V$ , 500mV, 50mV             | 1        | U(Iso)=1000V, Bandwidth max. 15kHz  | DT SAK11-140-153-10 | $\pm 10V$              |
| $\pm 10V$ , 1V, 100mV              | 1        | U(Iso)=1000V, Bandwidth max. 15kHz  | DT SAK11-150-153-10 | $\pm 10V$              |
| $\pm 10V$ , 1V, 100mV              | 1        | U(Iso)=1500V, Bandwidth max. 100kHz | DT SAK11-150-104-10 | $\pm 10V$              |
| $\pm 25V$ , 2.5V, 250mV            | 1        | U(Iso)=1000V, Bandwidth max. 15kHz  | DT SAK11-160-153-10 | $\pm 10V$              |
| $\pm 50V$ , 5V, 500mV              | 1        | U(Iso)=1000V, Bandwidth max. 15kHz  | DT SAK11-168-153-10 | $\pm 10V$              |
| $\pm 100V$ , $\pm 10V$ , $\pm 1V$  | 1        | U(Iso)=1000V, Bandwidth max. 15kHz  | DT SAK11-170-153-10 | $\pm 10V$              |
| $\pm 400V$ , $\pm 40V$ , $\pm 4V$  | 1        | U(Iso)=1000V, Bandwidth max. 15kHz  | DT SAK11-178-153-10 | $\pm 10V$              |
| $\pm 400V$ , $\pm 40V$ , $\pm 4V$  | 1        | U(Iso)=1000V, Bandwidth max. 100kHz | DT SAK11-178-104-10 | $\pm 10V$              |
| $\pm 500V$                         | 1        | U(Iso)=1000V, Bandwidth max. 100Hz  | DT SAK11-180-101-10 | $\pm 10V$              |
| 400V <sub>eff</sub> ( $\pm 565V$ ) | 1        | U(Iso)=1000V, Bandwidth max. 10Hz   | DT SAK11-190-100-10 | 0-10V<br>( $\pm 10V$ ) |
| $\pm 5V$ , 500mV, 50mV             | 2        | U(Iso)=1000V, Bandwidth max. 15kHz  | DT SAK12-140-153-10 | $\pm 10V$              |
| $\pm 10V$ , 1V, 100mV              | 2        | U(Iso)=1000V, Bandwidth max. 15kHz  | DT SAK12-150-153-10 | $\pm 10V$              |
| $\pm 10V$ , 1V, 100mV              | 2        | U(Iso)=1500V, Bandwidth max. 100kHz | DT SAK12-150-104-10 | $\pm 10V$              |
| $\pm 25V$ , 2.5V, 250mV            | 2        | U(Iso)=1000V, Bandwidth max. 15kHz  | DT SAK12-160-153-10 | $\pm 10V$              |
| $\pm 50V$ , 5V, 500mV              | 2        | U(Iso)=1000V, Bandwidth max. 15kHz  | DT SAK12-168-153-10 | $\pm 10V$              |
| $\pm 100V$ , $\pm 10V$ , $\pm 1V$  | 2        | U(Iso)=1000V, Bandwidth max. 15kHz  | DT SAK12-170-153-10 | $\pm 10V$              |
| $\pm 400V$ , $\pm 40V$ , $\pm 4V$  | 2        | U(Iso)=1000V, Bandwidth max. 15kHz  | DT SAK12-178-153-10 | $\pm 10V$              |
| $\pm 400V$ , $\pm 40V$ , $\pm 4V$  | 2        | U(Iso)=1000V, Bandwidth max. 100kHz | DT SAK12-178-104-10 | $\pm 10V$              |
| $\pm 100mV$                        | 4        | U(Iso)=1000V, Bandwidth max. 1000Hz | DT SAK14-120-102-10 | $\pm 10V$              |
| $\pm 1V$                           | 4        | U(Iso)=1000V, Bandwidth max. 1000Hz | DT SAK14-130-102-10 | $\pm 10V$              |
| $\pm 10V$                          | 4        | U(Iso)=1000V, Bandwidth max. 1000Hz | DT SAK14-150-102-10 | $\pm 10V$              |
| $\pm 25V$                          | 4        | U(Iso)=1000V, Bandwidth max. 1000Hz | DT SAK14-160-102-10 | $\pm 10V$              |

|       |   |                                     |                     |      |
|-------|---|-------------------------------------|---------------------|------|
| ±30V  | 4 | U(Iso)=1000V, Bandwidth max. 1000Hz | DT SAK14-165-102-10 | ±10V |
| ±100V | 4 | U(Iso)=1000V, Bandwidth max. 1000Hz | DT SAK14-170-102-10 | ±10V |
| ±400V | 4 | U(Iso)=1000V, Bandwidth max. 1000Hz | DT SAK14-178-102-10 | ±10V |

## Voltage Input with Instrumentation Input Amplifier

| Input Range(s)    | Channels | Features             | Type                | Output |
|-------------------|----------|----------------------|---------------------|--------|
| ±1V, 100mV, 10mV  | 2        | Bandwidth max. 15kHz | DT SAK32-130-153-10 | ±10V   |
| ±5V, 500mV, 50mV  | 2        | Bandwidth max. 15kHz | DT SAK32-140-153-10 | ±10V   |
| ±10V, 1V, 100mV   | 2        | Bandwidth max. 15kHz | DT SAK32-150-153-10 | ±10V   |
| ±25V, 2.5V, 250mV | 2        | Bandwidth max. 15kHz | DT SAK32-160-153-10 | ±10V   |
| ±30V, 3V, 300mV   | 2        | Bandwidth max. 15kHz | DT SAK32-165-153-10 | ±10V   |
| ±40V, 4V, 400mV   | 2        | Bandwidth max. 15kHz | DT SAK32-168-153-10 | ±10V   |
| ±1V, 100mV, 10mV  | 4        | Bandwidth max. 15kHz | DT SAK34-130-153-10 | ±10V   |
| ±5V, 500mV, 50mV  | 4        | Bandwidth max. 15kHz | DT SAK34-140-153-10 | ±10V   |
| ±10V, 1V, 100mV   | 4        | Bandwidth max. 15kHz | DT SAK34-150-153-10 | ±10V   |
| ±25V, 2.5V, 250mV | 4        | Bandwidth max. 15kHz | DT SAK34-160-153-10 | ±10V   |
| ±30V, 3V, 300mV   | 4        | Bandwidth max. 15kHz | DT SAK34-165-153-10 | ±10V   |
| ±40V, 4V, 400mV   | 4        | Bandwidth max. 15kHz | DT SAK34-168-153-10 | ±10V   |

## Current Input with Galvanic Isolation

| Input Range(s)              | Channels | Features                            | Type                | Output          |
|-----------------------------|----------|-------------------------------------|---------------------|-----------------|
| ±20mA, 2mA,                 | 1        | U(Iso)=1000V, Bandwidth max. 15kHz  | DT SAK11-320-153-10 | ±10V            |
| ±20mA, 2mA                  | 2        | U(Iso)=1000V, Bandwidth max. 15kHz  | DT SAK12-320-153-10 | ±10V            |
| ±20mA                       | 4        | U(Iso)=1000V, Bandwidth max. 1000Hz | DT SAK14-320-102-10 | ±10V            |
| 10A <sub>eff</sub> (±14.1A) | 1        | U(Iso)=1000V, Bandwidth max. 10Hz   | DT SAK11-375-100-10 | 0-10V<br>(±10V) |
| ±35A                        | 1        | U(Iso)=1000V, Bandwidth max. 500Hz  | DT SAK11-380-501-10 | ±10V            |
| 35A <sub>eff</sub> (±49.5A) | 1        | U(Iso)=1000V, Bandwidth max. 10Hz   | DT SAK11-390-100-10 | 0-10V<br>(±10V) |

## Current Input with Instrumentation Input Amplifier

| Input Range(s) | Channels | Features             | Type                | Output |
|----------------|----------|----------------------|---------------------|--------|
| ±20mA, 2mA     | 2        | Bandwidth max. 15kHz | DT SAK32-320-153-10 | ±10V   |
| ±20mA, 2mA     | 4        | Bandwidth max. 15kHz | DT SAK34-320-153-10 | ±10V   |

## RTD Pt100 Transmitter with Galvanic Isolation

| Input Range(s)  | Channels | Features    | Type                | Output |
|-----------------|----------|-------------|---------------------|--------|
| Pt100: 0..400°C | 1        | 4-Wire-Mode | DT SAK11-914-100-10 | 0..10V |
| Pt100: 0..400°C | 2        | 4-Wire-Mode | DT SAK12-914-100-10 | 0..10V |

- Other input ranges on request

## RTD Pt100 Transmitter with Instrumentation Input Amplifier

| Input Range(s)  | Channels | Features    | Type                | Output |
|-----------------|----------|-------------|---------------------|--------|
| Pt100: 0..400°C | 2        | 4-Wire-Mode | DT SAK32-914-100-10 | 0..10V |
| Pt100: 0..400°C | 4        | 4-Wire-Mode | DT SAK34-914-100-10 | 0..10V |

- Other input ranges on request

## Thermocouple with Galvanic Isolation

| Input Range(s)       | Channels | Features            | Type                | Output |
|----------------------|----------|---------------------|---------------------|--------|
| Type J: 0 .. 750°C   | 1        | CJC                 | DT SAK11-410-100-10 | 0..10V |
| Type J: 0 .. 750°C   | 1        | CJC + Linearization | DT SAK11-610-100-10 | 0..10V |
| Type J: 0 .. 750°C   | 2        | CJC                 | DT SAK12-410-100-10 | 0..10V |
| Type J: 0 .. 750°C   | 2        | CJC + Linearization | DT SAK12-610-100-10 | 0..10V |
| Type K: 0 .. 500°C   | 1        | CJC                 | DT SAK11-462-100-10 | 0..10V |
| Type K: 0 .. 500°C   | 1        | CJC + Linearization | DT SAK11-662-100-10 | 0..10V |
| Type K: 0 .. 500°C   | 2        | CJC                 | DT SAK12-462-100-10 | 0..10V |
| Type K: 0 .. 500°C   | 2        | CJC + Linearization | DT SAK12-662-100-10 | 0..10V |
| Type K: 0 .. 1.000°C | 1        | CJC                 | DT SAK11-460-100-10 | 0..10V |
| Type K: 0 .. 1.000°C | 1        | CJC + Linearization | DT SAK11-660-100-10 | 0..10V |
| Type K: 0 .. 1.000°C | 2        | CJC                 | DT SAK12-460-100-10 | 0..10V |
| Type K: 0 .. 1.000°C | 2        | CJC + Linearization | DT SAK12-660-100-10 | 0..10V |
| Type T: 0 .. 300°C   | 1        | CJC                 | DT SAK11-470-100-10 | 0..10V |
| Type T: 0 .. 300°C   | 2        | CJC                 | DT SAK12-470-100-10 | 0..10V |
| Type L: 0 .. 500°C   | 1        | CJC                 | DT SAK11-420-100-10 | 0..10V |
| Type L: 0 .. 500°C   | 2        | CJC                 | DT SAK12-420-100-10 | 0..10V |
| Type R: 0 .. 1.500°C | 1        | CJC                 | DT SAK11-430-100-10 | 0..10V |
| Type R: 0 .. 1.500°C | 2        | CJC                 | DT SAK12-430-100-10 | 0..10V |
| Type B: 0 .. 1.800°C | 1        | CJC                 | DT SAK11-440-100-10 | 0..10V |

|                      |   |     |                     |        |
|----------------------|---|-----|---------------------|--------|
| Type B: 0 .. 1.800°C | 2 | CJC | DT SAK12-440-100-10 | 0..10V |
| Type S: 0 .. 1.500°C | 1 | CJC | DT SAK11-480-100-10 | 0..10V |
| Type S: 0 .. 1.500°C | 2 | CJC | DT SAK12-480-100-10 | 0..10V |
| Type C: 0 .. 1.300°C | 1 | CJC | DT SAK11-490-100-10 | 0..10V |
| Type C: 0 .. 1.300°C | 2 | CJC | DT SAK12-490-100-10 | 0..10V |

## Thermocouple with Instrumentation Input Amplifier

| Input Range(s)      | Channels | Features | Type                | Output |
|---------------------|----------|----------|---------------------|--------|
| Type J 0 .. 750°C   | 2        | CJC      | DT SAK32-410-100-10 | 0..10V |
| Type J 0 .. 750°C   | 4        | CJC      | DT SAK34-410-100-10 | 0..10V |
| Type K 0 .. 500°C   | 2        | CJC      | DT SAK32-462-100-10 | 0..10V |
| Type K 0 .. 500°C   | 4        | CJC      | DT SAK34-462-100-10 | 0..10V |
| Type K 0 .. 1.000°C | 2        | CJC      | DT SAK32-460-100-10 | 0..10V |
| Type K 0 .. 1.000°C | 4        | CJC      | DT SAK34-460-100-10 | 0..10V |

- Other input ranges on request

## Strain Gages with Galvanic Isolation

Signal conditioning for **Full-Bridge** Sensors

| Input Range(s)   | Channels | Features                   | Type                | Output |
|------------------|----------|----------------------------|---------------------|--------|
| ±10mV, 100mV, 1V | 1        | U(Ref)=10V (5V), max. 30mA | DT SAK11-500-102-10 | ±10V   |
| ±20mV, 200mV, 2V | 1        | U(Ref)=10V (5V), max. 30mA | DT SAK11-501-102-10 | ±10V   |
| ±30mV, 300mV, 3V | 1        | U(Ref)=10V (5V), max. 30mA | DT SAK11-502-102-10 | ±10V   |
| ±10mV            | 2        | U(Ref)=10V, max. 35mA      | DT SAK12-500-102-10 | ±10V   |
| ±20mV            | 2        | U(Ref)=10V, max. 35mA      | DT SAK12-501-102-10 | ±10V   |
| ±30mV            | 2        | U(Ref)=10V, max. 35mA      | DT SAK12-502-102-10 | ±10V   |

## Strain Gages with Instrumentation Input Amplifier

Signal Conditioning for **Full-Bridge and Half-Bridge** Sensors

| Input Range(s) | Channels | Features              | Type                | Output |
|----------------|----------|-----------------------|---------------------|--------|
| ±10mV, ±20mV   | 2        | U(Ref)=10V, max. 35mA | DT SAK32-570-102-10 | ±10V   |
| ±20mV, ±40mV   | 2        | U(Ref)=10V, max. 35mA | DT SAK32-571-102-10 | ±10V   |
| ±30mV, ±60mV   | 2        | U(Ref)=10V, max. 35mA | DT SAK32-572-102-10 | ±10V   |

## Strain Gages with Instrumentation Input Amplifier

Signal Conditioning for **Full-Bridge** Sensors

| Input Range(s)   | Channels | Features              | Type                | Output |
|------------------|----------|-----------------------|---------------------|--------|
| ±10mV, 100mV, 1V | 2        | U(Ref)=10V, max. 30mA | DT SAK32-500-102-10 | ±10V   |
| ±20mV, 200mV, 2V | 2        | U(Ref)=10V, max. 30mA | DT SAK32-501-102-10 | ±10V   |
| ±30mV, 300mV, 3V | 2        | U(Ref)=10V, max. 30mA | DT SAK32-502-102-10 | ±10V   |
| ±10mV, 100mV, 1V | 4        | U(Ref)=10V, max. 30mA | DT SAK34-500-102-10 | ±10V   |
| ±20mV, 200mV, 2V | 4        | U(Ref)=10V, max. 30mA | DT SAK34-501-102-10 | ±10V   |
| ±30mV, 300mV, 3V | 4        | U(Ref)=10V, max. 30mA | DT SAK34-502-102-10 | ±10V   |

## Strain Gages with Instrumentation Input Amplifier

Signal Conditioning for **Half-Bridge** Sensors

| Input Range(s) | Channels | Features              | Type                | Output |
|----------------|----------|-----------------------|---------------------|--------|
| ±10mV          | 2        | U(Ref)=10V, max. 30mA | DT SAK32-520-102-10 | ±10V   |
| ±20mV          | 2        | U(Ref)=10V, max. 30mA | DT SAK32-521-102-10 | ±10V   |
| ±30mV          | 2        | U(Ref)=10V, max. 30mA | DT SAK32-522-102-10 | ±10V   |
| ±10mV          | 4        | U(Ref)=10V, max. 30mA | DT SAK34-520-102-10 | ±10V   |
| ±20mV          | 4        | U(Ref)=10V, max. 30mA | DT SAK34-521-102-10 | ±10V   |
| ±30mV          | 4        | U(Ref)=10V, max. 30mA | DT SAK34-522-102-10 | ±10V   |

## Strain Gages with Instrumentation Input Amplifier

Signal Conditioning for **Quarter-Bridge** Sensors

| Input Range(s) | Channels | Features              | Type                | Output |
|----------------|----------|-----------------------|---------------------|--------|
| ±10mV          | 2        | U(Ref)=10V, max. 30mA | DT SAK32-530-102-10 | ±10V   |
| ±20mV          | 2        | U(Ref)=10V, max. 30mA | DT SAK32-531-102-10 | ±10V   |
| ±30mV          | 2        | U(Ref)=10V, max. 30mA | DT SAK32-532-102-10 | ±10V   |
| ±10mV          | 4        | U(Ref)=10V, max. 30mA | DT SAK34-530-102-10 | ±10V   |
| ±20mV          | 4        | U(Ref)=10V, max. 30mA | DT SAK34-531-102-10 | ±10V   |
| ±30mV          | 4        | U(Ref)=10V, max. 30mA | DT SAK34-532-102-10 | ±10V   |

## Linear Low-pass Filter with Fixed Cut-off Frequencies

| Input Range(s)  | Channels | Features                   | Type                | Output |
|-----------------|----------|----------------------------|---------------------|--------|
| ±10V, 1V, 100mV | 2        | 4th Order f(-3dB)=100Hz    | DT SAK52-150-101-10 | ±10V   |
| ±10V, 1V, 100mV | 2        | 4th Order f(-3dB)=500Hz    | DT SAK52-150-501-10 | ±10V   |
| ±10V, 1V, 100mV | 2        | 4th Order f(-3dB)=1000Hz   | DT SAK52-150-102-10 | ±10V   |
| ±10V, 1V, 100mV | 2        | 4th Order f(-3dB)=2000Hz   | DT SAK52-150-202-10 | ±10V   |
| ±10V, 1V, 100mV | 2        | 4th Order f(-3dB)=3000Hz   | DT SAK52-150-302-10 | ±10V   |
| ±10V, 1V, 100mV | 2        | 4th Order f(-3dB)=4000Hz   | DT SAK52-150-402-10 | ±10V   |
| ±10V, 1V, 100mV | 2        | 4th Order f(-3dB)=5000Hz   | DT SAK52-150-502-10 | ±10V   |
| ±10V, 1V, 100mV | 2        | 4th Order f(-3dB)=7500Hz   | DT SAK52-150-752-10 | ±10V   |
| ±10V, 1V, 100mV | 2        | 4th Order f(-3dB)=10,000Hz | DT SAK52-150-103-10 | ±10V   |

## Butterworth Low-pass Filter with Fixed Cut-off Frequencies

| Input Range(s) | Channels | Features                  | Type                     | Output |
|----------------|----------|---------------------------|--------------------------|--------|
| ±10V           | 4        | 5th Order f(-3dB)=100Hz   | DT SAK54-150-TPF5.101-10 | ±10V   |
| ±10V           | 4        | 5th Order f(-3dB)=500Hz   | DT SAK54-150-TPF5.501-10 | ±10V   |
| ±10V           | 4        | 5th Order f(-3dB)=1000Hz  | DT SAK54-150-TPF5.102-10 | ±10V   |
| ±10V           | 4        | 5th Order f(-3dB)=2000Hz  | DT SAK54-150-TPF5.202-10 | ±10V   |
| ±10V           | 4        | 10th Order f(-3dB)=10Hz   | DT SAK54-150-100-10      | ±10V   |
| ±10V           | 4        | 10th Order f(-3dB)=100Hz  | DT SAK54-150-101-10      | ±10V   |
| ±10V           | 4        | 10th Order f(-3dB)=1000Hz | DT SAK54-150-102-10      | ±10V   |
| ±10V           | 4        | 10th Order f(-3dB)=5000Hz | DT SAK54-150-502-10      | ±10V   |

## Butterworth Low-pass Filter with 15 programmable Cut-off Frequencies

| Input Range | Channels | Features                        | Type                  | Output |
|-------------|----------|---------------------------------|-----------------------|--------|
| ±10V        | 2        | 8th Order f(-3dB)=100Hz – 10kHz | DT SAK52-150-PGF01-10 | ±10V   |

## Sample & Hold Amplifier

| Input Range | Channels | Features         | Type                | Output |
|-------------|----------|------------------|---------------------|--------|
| ±10V        | 4        | 100kHz Bandwidth | DT SAK64-150-104-10 | ±10V   |

## Frequency-Voltage Converter with Galvanic Isolation

| Input Range(s) | Channels | Features               | Type                 | Output |
|----------------|----------|------------------------|----------------------|--------|
| 0..1000Hz      | 1        | max. Input Voltage 60V | DT SAK11-5B45-102-10 | 0..10V |
| 0..5000Hz      | 1        | max. Input Voltage 60V | DT SAK11-5B45-502-10 | 0..10V |
| 0..50KHz       | 1        | max. Input Voltage 60V | DT SAK11-5B45-503-10 | 0..10V |

## Potentiometer Input

| Input Range | Channels | Features              | Type                | Output |
|-------------|----------|-----------------------|---------------------|--------|
| ±10V        | 2        | U(Ref)=10V, max. 30mA | DT SAK32-550-102-10 | ±10V   |

## Resistance Measurement with Galvanic Isolation

| Input Range(s) | Channels | Features                   | Type                | Output |
|----------------|----------|----------------------------|---------------------|--------|
| 0 .. 1000Ω     | 1        | U(Iso)=1000V, I(Ref)=0.5mA | DT SAK11-990-100-10 | 0..10V |
| 0 .. 1000Ω     | 2        | U(Iso)=1000V, I(Ref)=0.5mA | DT SAK12-990-100-10 | 0..10V |
| 0 .. 5000Ω     | 2        | U(Iso)=1000V, I(Ref)=0.5mA | DT SAK12-995-100-10 | 0..10V |

## Resistance Measurement with Instrumentation Input Amplifier

| Input Range(s) | Channels | Features     | Type                | Output |
|----------------|----------|--------------|---------------------|--------|
| 0 .. 1000Ω     | 2        | I(Ref)=0.5mA | DT SAK32-990-100-10 | 0..10V |
| 0 .. 5000Ω     | 2        | I(Ref)=0.5mA | DT SAK32-995-100-10 | 0..10V |
| 0 .. 1000Ω     | 4        | I(Ref)=0.5mA | DT SAK34-990-100-10 | 0..10V |

## LVDT Linear Variable Differential Transformer

| Input Range(s) | Channels | Features                    | Type                | Output |
|----------------|----------|-----------------------------|---------------------|--------|
| fullbridge     | 2        | Excitation 2.2V(eff) 3500Hz | DT SAK32-600-401-10 | ±10V   |
| halfbridge     | 2        | Excitation 1V(eff) 5000Hz   | DT SAK32-605-401-10 | ±10V   |

## ICP<sup>®</sup>-Sensors

| Input Range(s) | Channels | Features                                       | Type             | Output |
|----------------|----------|--|------------------|--------|
| ±10V (5V)      | 2        | ICP supply current 4mA and signal conditioning | SAK32-580-153-10 | ±10V   |
| ±10V (5V)      | 4        | ICP supply current 4mA and signal conditioning | SAK34-580-153-10 | ±10V   |

## Voltage or Current Output with Galvanic Isolation

| Input Range(s) | Channels | Features                      | Type             | Output |
|----------------|----------|-------------------------------|------------------|--------|
| ±10V, 5V       | 2        | U(Iso)=1000V, Bandwidth 1kHz  | SAK22-150-102-10 | ±10V   |
| ±10V, 5V       | 2        | U(Iso)=1000V, Bandwidth 100Hz | SAK22-395-101-10 | ±20mA  |

## Digital Input or Output with Galvanic Isolation

| Input Range(s)  | Channels | Features             | Type      | Output   |
|-----------------|----------|----------------------|-----------|--|
| 12..24V DC      | 8        | Digital Input        | SAK81-100 | TTL  |
| TTL..24V DC     | 8        | Digital Input        | SAK81-200 | TTL  |
| 230V AC         | 8        | Digital Input        | SAK81-400 | TTL  |
| TTL             | 8        | Digital Output       | SAK82-100 | 12..24V DC                                     |
| TTL             | 8        | Digital Output       | SAK82-200 | 5VDC (TTL)                                     |
| 12..24VDC / TTL | 4+4      | Digital Input/Output | SAK83-100 | TTL/12..24VDC                                  |
| TTL             | 4        | Relay Output         | SAK84-100 | Up to 4 openers /closers<br>2 two-way switches |

## Trigger and Controller Boards with or without Galvanic Isolation

| Input Range(s) | Channels | Features  | Type      | Output |
|----------------|----------|---|-----------|--------|
| TTL - 30V      | 1        | Trigger board with push button for manual trigger pulse and galvanic isolation, bandwidth 100kHz      | SAK71-101 | TTL    |
| TTL            | 1        | Controller board for trigger or counter inputs no active signal conditioning                          | SAK71-201 | TTL    |
| TTL            | 2        | Controller board for trigger or counter inputs no active signal conditioning                          | SAK71-202 | TTL    |
| TTL - 30V      | 1        | Controller board for trigger or counter inputs with galvanic isolation, bandwidth 250kHz              | SAK71-221 | TTL    |
| TTL - 30V      | 2        | Controller board for trigger or counter inputs with galvanic isolation, bandwidth 250kHz              | SAK71-222 | TTL    |
| TTL - 30V      | 2        | Controller board for time measurement between the edges of two input signals, with galvanic isolation | SAK71-810 | TTL    |