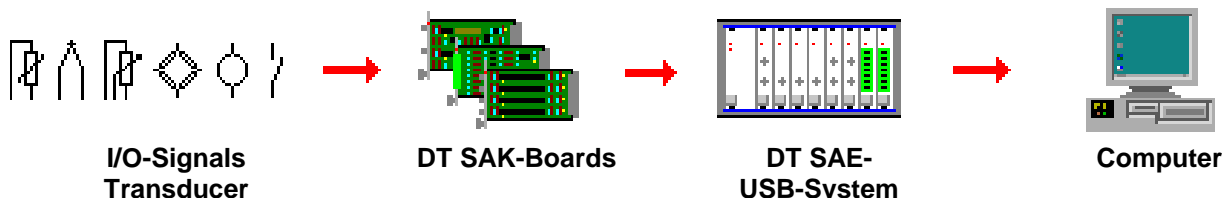


# Modular Signal Conditioning System

## DT SAE-USB-System



DT SAE-USB is a flexible and modular signal conditioning system with an USB Data Acquisition device, integrated in a compact housing and easily connectable with a standard USB cable. Choose an USB module from the DT9844-, DT9836-, DT9834-, DT9826-, DT9818-, or DT9800-series with 12-, 16-, 20-, or 24-bit resolution. High channel count systems can be configured with multiple USB modules as well.

For nearly all types of measurement signals and transmitters, e.g. temperature, pressure, bridge transducer, accelerometer, resistance, voltage, or current signals, DT SAK amplifier boards are available with or without galvanic isolation. Generally DT SAK-boards are available with 1, 2, or 4 channels.

The design of the DT SAE-USB-System allows signal conditioning of the analog output and digital input and output lines of a multifunction USB Data Acquisition module as well.



The DT SAK amplifier boards are 19" plug-in boards (Euro modules, 100x160 mm), placed into the front slots of the DT SAE-USB base units. 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 steady or mobile operation.

The input signals are connected to the DT SAK amplifier board by BNC, LEMO, Banana, Miniature Thermocouple connectors, or screw terminals on the front panels.

Each DT SAK amplifier board transforms the input signal range to an output signal of ±10V or 0-10V.

### DT SAE Base Units

DT SAE 16288/08	Desktop case with integrated USB module and 6 free slots	Dimensions (WxHxD): 260 x 160 x 330mm
DT SAE 16288/13	Desktop case with integrated USB module and 11 (12) free slots	Dimensions (WxHxD): 370 x 160 x 330mm
DT SAE 16288/19	Desktop case with integrated USB module and 17 free slots	Dimensions (WxHxD): 475 x 160 x 330mm
DT SAE 16288/BGT	19" rack mount with integrated USB module and 17 free slots	Dimensions (WxHxD): 483 x 132 x 290mm
Special systems on inquiry		



DT SAE 16288/BGT



DT SAE 16288/8



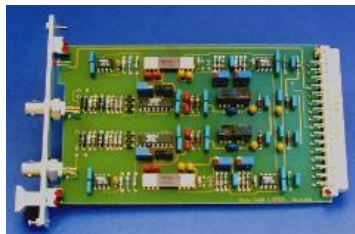
DT SAE 16288/19



DT SAE 16288/38 6U

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

The following tables list the standard DT SAK amplifier boards for the DT SAE-USB-System. For each type of the DT SAK amplifiers we can provide other measurement ranges and signal bandwidth.



### Voltage Inputs with Galvanic Isolation

Input Range(s)	Channels	Features	Type	Output
±5V, 500mV, 50mV	1	U(Iso)=1000V, Bandwidth max. 15kHz	DT SAK 11-140-153-10	±10V
±10V, 1V, 100mV	1	U(Iso)=1000V, Bandwidth max. 15kHz	DT SAK 11-150-153-10	±10V
±10V, 1V, 100mV	1	U(Iso)=1500V, Bandwidth max. <b>100kHz</b>	DT SAK 11-150-104-10	±10V
±25V, 2.5V, 250mV	1	U(Iso)=1000V, Bandwidth max. 15kHz	DT SAK 11-160-153-10	±10V
±50V, 5V, 500mV	1	U(Iso)=1000V, Bandwidth max. 15kHz	DT SAK 11-168-153-10	±10V
±100V, 10V, 1V	1	U(Iso)=1000V, Bandwidth max. 15kHz	DT SAK 11-170-153-10	±10V
±400V, 40V, 4V	1	U(Iso)=1000V, Bandwidth max. 15kHz	DT SAK 11-178-153-10	±10V
±400V, 40V, 4V	1	U(Iso)=1500V, Bandwidth max. <b>100kHz</b>	DT SAK 11-178-104-10	±10V
±500V	1	U(Iso)=1000V, Bandwidth max. 100Hz	DT SAK 11-180-101-10	±10V
±5V, 500mV, 50mV	2	U(Iso)=1000V, Bandwidth max. 15kHz	DT SAK 12-140-153-10	±10V
±10V, 1V, 100mV	2	U(Iso)=1000V, Bandwidth max. 15kHz	DT SAK 12-150-153-10	±10V
±10V, 1V, 100mV	2	U(Iso)=1500V, Bandwidth max. <b>100kHz</b>	DT SAK 12-150-104-10	±10V
±25V, 2.5V, 250mV	2	U(Iso)=1000V, Bandwidth max. 15kHz	DT SAK 12-160-153-10	±10V
±50V, 5V, 500mV	2	U(Iso)=1000V, Bandwidth max. 15kHz	DT SAK 12-168-153-10	±10V
±100V, 10V, 1V	2	U(Iso)=1000V, Bandwidth max. 15kHz	DT SAK 12-170-153-10	±10V
±400V, 40V, 4V	2	U(Iso)=1000V, Bandwidth max. 15kHz	DT SAK 12-178-153-10	±10V
±400V, 40V, 4V	2	U(Iso)=1500V, Bandwidth max. <b>100kHz</b>	DT SAK 12-178-104-10	±10V

### Voltage Inputs with Galvanic Isolation - Continuation

Input Range(s)	Channels	Features	Type	Output
±100mV	4	U(Iso)=1000V, Bandwidth max. 1000Hz	DT SAK 14-120-102-10	±10V
±200mV	4	U(Iso)=1000V, Bandwidth max. 1000Hz	DT SAK 14-125-102-10	±10V
±1V	4	U(Iso)=1000V, Bandwidth max. 1000Hz	DT SAK 14-130-102-10	±10V
±2V	4	U(Iso)=1000V, Bandwidth max. 1000Hz	DT SAK 14-132-102-10	±10V
±5V	4	U(Iso)=1000V, Bandwidth max. 1000Hz	DT SAK 14-140-102-10	±10V
±10V	4	U(Iso)=1000V, Bandwidth max. 1000Hz	DT SAK 14-150-102-10	±10V
±20V	4	U(Iso)=1000V, Bandwidth max. 1000Hz	DT SAK 14-159-102-10	±10V
±25V	4	U(Iso)=1000V, Bandwidth max. 1000Hz	DT SAK 14-160-102-10	±10V
±30V	4	U(Iso)=1000V, Bandwidth max. 1000Hz	DT SAK 14-165-102-10	±10V
±100V	4	U(Iso)=1000V, Bandwidth max. 1000Hz	DT SAK 14-170-102-10	±10V
±150V	4	U(Iso)=1000V, Bandwidth max. 1000Hz	DT SAK 14-171-102-10	±10V
±400V	4	U(Iso)=1000V, Bandwidth max. 1000Hz	DT SAK 14-178-102-10	±10V

### Voltage Inputs with Galvanic Isolation and 4-pole low-pass filter

Input Range(s)	Channels	Features	Type	Output
±1V	2	U(Iso)=1000V, available bandwidth 50, 100, 200, 500, 1000, 2000, 5000Hz	DT SAK 12-130-TP4-FFF-10	±10V
±5V	2	U(Iso)=1000V, available bandwidth 50, 100, 200, 500, 1000, 2000, 5000Hz	DT SAK 12-140-TP4-FFF-10	±10V
±10V	2	U(Iso)=1000V, available bandwidth 50, 100, 200, 500, 1000, 2000, 5000Hz	DT SAK 12-150-TP4-FFF-10	±10V
±30V	2	U(Iso)=1000V, available bandwidth 50, 100, 200, 500, 1000, 2000, 5000Hz	DT SAK 12-165-TP4-FFF-10	±10V
±100V	2	U(Iso)=1000V, available bandwidths 50, 100, 200, 500, 1000, 2000, 5000Hz	DT SAK 12-170-TP4-FFF-10	±10V

### Isolated high voltage inputs with RMS value transformer and Galvanic Isolation

Input Range(s)	Channels	Features	Type	Output
10V <sub>eff</sub> (±10V)	1	U(Iso)=1000V, Bandwidth 10Hz (500Hz)	DT SAK 11-194-100-10	0-10V (±10V)
283V <sub>eff</sub> (±400V)	1	U(Iso)=1000V, Bandwidth 10Hz (500Hz)	DT SAK 11-192-100-10	0-10V (±10V)
400V <sub>eff</sub> (±565V)	1	U(Iso)=1000V, Bandwidth 10Hz (500Hz)	DT SAK 11-190-100-10	0-10V (±10V)
490V <sub>eff</sub> (±700V)	1	U(Iso)=1000V, Bandwidth 10Hz (500Hz)	DT SAK 11-198-100-10	0-10V (±10V)

### Voltage Inputs with Instrumentation Input Amplifier

Input Range(s)	Channels	Features	Type	Output
±1V, 100mV, 10mV	2	Bandwidth max. 15kHz	DT SAK 32-130-153-10	±10V
±5V, 500mV, 50mV	2	Bandwidth max. 15kHz	DT SAK 32-140-153-10	±10V
±10V, 1V, 100mV	2	Bandwidth max. 15kHz	DT SAK 32-150-153-10	±10V
±25V, 2.5V, 250mV	2	Bandwidth max. 15kHz	DT SAK 32-160-153-10	±10V
±30V, 3V, 300mV	2	Bandwidth max. 15kHz	DT SAK 32-165-153-10	±10V
±40V, 4V, 400mV	2	Bandwidth max. 15kHz	DT SAK 32-168-153-10	±10V
±1V, 100mV, 10mV	4	Bandwidth max. 15kHz	DT SAK 34-130-153-10	±10V
±5V, 500mV, 50mV	4	Bandwidth max. 15kHz	DT SAK 34-140-153-10	±10V
±10V, 1V, 100mV	4	Bandwidth max. 15kHz	DT SAK 34-150-153-10	±10V
±25V, 2.5V, 250mV	4	Bandwidth max. 15kHz	DT SAK 34-160-153-10	±10V
±30V, 3V, 300mV	4	Bandwidth max. 15kHz	DT SAK 34-165-153-10	±10V
±40V, 4V, 400mV	4	Bandwidth max. 15kHz	DT SAK 34-168-153-10	±10V

### Current Inputs with Galvanic Isolation

Input Range(s)	Channels	Features	Type	Output
±20mA, 2mA	1	U(Iso)=1000V, Bandwidth max. 15kHz	DT SAK 11-320-153-10	±10V
±20mA, 2mA	2	U(Iso)=1000V, Bandwidth max. 15kHz	DT SAK 12-320-153-10	±10V
±20mA	4	U(Iso)=1000V, Bandwidth max. 1000Hz	DT SAK 14-320-102-10	±10V

### Current Inputs with Galvanic Isolation and 4-pole low-pass filter

Input Range(s)	Channels	Features	Type	Output
±20mA	2	U(Iso)=1000V, available bandwidth 50, 100, 200, 500, 1000, 2000, 5000Hz	DT SAK 12-320-TP4-FFF-10	±10V

### Isolated high current inputs with RMS value transformer and Galvanic Isolation

Input Range(s)	Channels	Features	Type	Output
10A <sub>eff</sub> (±14.1A)	1	U(Iso)=1000V, Bandwidth 10Hz (500Hz)	DT SAK 11-375-100-10	0-10V (±10V)
±35A	1	U(Iso)=1000V, Bandwidth max. 500Hz	DT SAK 11-380-501-10	±10V
35A <sub>eff</sub> (±49.5A)	1	U(Iso)=1000V, Bandwidth 10Hz (500Hz)	DT SAK 11-390-100-10	0-10V (±10V)

### Current Input with Instrumentation Input Amplifier

Input Range(s)	Channels	Features	Type	Output
±20mA, 2mA	2	Bandwidth max. 15kHz	DT SAK 32-320-153-10	±10V
±20mA, 2mA	4	Bandwidth max. 15kHz	DT SAK 34-320-153-10	±10V

### Thermocouple Inputs with Galvanic Isolation and integrated CJC

Input Range(s)	Channels	Features	Type	Output
Type J: 0..750°C	1	CJC	DT SAK 11-410-100-10	0..10V
Type J: 0..750°C	1	CJC + Linearization	DT SAK 11-610-100-10	0..10V
Type K: 0..500°C	1	CJC	DT SAK 11-462-100-10	0..10V
Type K: 0..500°C	1	CJC + Linearization	DT SAK 11-662-100-10	0..10V
Type K: 0..1000°C	1	CJC	DT SAK 11-460-100-10	0..10V
Type K: 0..1000°C	1	CJC + Linearization	DT SAK 11-660-100-10	0..10V
Type L: 0..500°C	1	CJC	DT SAK 11-420-100-10	0..10V
Type R: 0..1500°C	1	CJC	DT SAK 11-430-100-10	0..10V
Type B: 0..1800°C	1	CJC	DT SAK 11-440-100-10	0..10V
Type T: 0..300°C	1	CJC	DT SAK 11-470-100-10	0..10V
Type S: 0..1500°C	1	CJC	DT SAK 11-480-100-10	0..10V
Type C: 0..1300°C	1	CJC	DT SAK 11-490-100-10	0..10V
Type J: 0..750°C	2	CJC	DT SAK 12-410-100-10	0..10V
Type J: 0..750°C	2	CJC + Linearization	DT SAK 12-610-100-10	0..10V
Type K: 0..500°C	2	CJC	DT SAK 12-462-100-10	0..10V
Type K: 0..500°C	2	CJC + Linearization	DT SAK 12-662-100-10	0..10V
Type K: 0..1000°C	2	CJC	DT SAK 12-460-100-10	0..10V
Type K: 0..1000°C	2	CJC + Linearization	DT SAK 12-660-100-10	0..10V
Type L: 0..500°C	2	CJC	DT SAK 12-420-100-10	0..10V
Type R: 0..1500°C	2	CJC	DT SAK 12-430-100-10	0..10V
Type B: 0..1800°C	2	CJC	DT SAK 12-440-100-10	0..10V
Type T: 0..300°C	2	CJC	DT SAK 12-470-100-10	0..10V
Type S: 0..1500°C	2	CJC	DT SAK 12-480-100-10	0..10V
Type C: 0..1300°C	2	CJC	DT SAK 12-490-100-10	0..10V

### Thermocouple Inputs with Instrumentation Input Amplifier and CJC

Input Range(s)	Channels	Features	Type	Output
Type J: 0..750°C	2	CJC	DT SAK 32-410-100-10	0..10V
Type J: 0..750°C	4	CJC	DT SAK 34-410-100-10	0..10V
Type K: 0..500°C	2	CJC	DT SAK 32-462-100-10	0..10V
Type K: 0..500°C	4	CJC	DT SAK 34-462-100-10	0..10V
Type K: 0..1000°C	2	CJC	DT SAK 32-460-100-10	0..10V
Type K: 0..1000°C	4	CJC	DT SAK 34-460-100-10	0..10V

- Other input ranges on request

### Pt100 inputs with Galvanic Isolation

Input Range(s)	Channels	Features	Type	Output
0..400°C	1	4-Wire-Mode	DT SAK 11-914-100-10	0..10V
0..400°C	2	4-Wire-Mode	DT SAK 12-914-100-10	0..10V

- Other input ranges on request

### Pt100 inputs with Instrumentation Input Amplifier

Input Range(s)	Channels	Features	Type	Output
0..400°C	2	4-Wire-Mode	DT SAK 32-914-100-10	0..10V
0..400°C	4	4-Wire-Mode	DT SAK 34-914-100-10	0..10V

- Other input ranges on request



### Strain Gage inputs for Full Bridge sensors with Galvanic Isolation

Input Range(s)	Channels	Features	Type	Output
±10mV, 100mV, 1V	1	U(Ref)=10V (5V, 2.5V)), max. 30mA (50mA), Bandwidth 1kHz	DT SAK 11-500-102-10	±10V
±20mV, 200mV, 2V	1	U(Ref)=10V (5V, 2.5V), max. 30mA (50mA), Bandwidth 1kHz	DT SAK 11-501-102-10	±10V
±30mV, 300mV, 3V	1	U(Ref)=10V (5V, 2.5V), max. 30mA (50mA), Bandwidth 1kHz	DT SAK 11-502-102-10	±10V
±10mV	2	U(Ref)=10V, max. 35mA, Bandwidth 1kHz	DT SAK 12-500-102-10	±10V
±20mV	2	U(Ref)=10V, max. 35mA, Bandwidth 1kHz	DT SAK 12-501-102-10	±10V
±30mV	2	U(Ref)=10V, max. 35mA, Bandwidth 1kHz	DT SAK 12-502-102-10	±10V

### Strain Gages for Full or Half Bridge sensors with instrumentation Input Amplifier

Input Range(s)	Channels	Features	Type	Output
±10mV, ±20mV	2	U(Ref)=10V, max. 35mA, Bandwidth 5kHz	DT SAK 32-570-502-10	±10V
±20mV, ±40mV	2	U(Ref)=10V, max. 35mA, Bandwidth 5kHz	DT SAK 32-571-502-10	±10V
±30mV, ±60mV	2	U(Ref)=10V, max. 35mA, Bandwidth 5kHz	DT SAK 32-572-502-10	±10V

- Also available with 5V reference voltage

### Strain Gage inputs for Full Bridge sensors with Instrumentation Input Amplifier

Input Range(s)	Channels	Features	Type	Output
±10mV, 100mV, 1V	2	U(Ref)=10V, max. 30mA, Bandwidth 1kHz	DT SAK 32-500-102-10	±10V
±20mV, 200mV, 2V	2	U(Ref)=10V, max. 30mA, Bandwidth 1kHz	DT SAK 32-501-102-10	±10V
±30mV, 300mV, 3V	2	U(Ref)=10V, max. 30mA, Bandwidth 1kHz	DT SAK 32-502-102-10	±10V
±10mV, 100mV, 1V	4	U(Ref)=10V, max. 30mA, Bandwidth 1kHz	DT SAK 34-500-102-10	±10V
±20mV, 200mV, 2V	4	U(Ref)=10V, max. 30mA, Bandwidth 1kHz	DT SAK 34-501-102-10	±10V
±30mV, 300mV, 3V	4	U(Ref)=10V, max. 30mA, Bandwidth 1kHz	DT SAK 34-502-102-10	±10V

### Strain Gage inputs for Half Bridge sensors with Instrumentation Input Amplifier

Input Range(s)	Channels	Features	Type	Output
±10mV	2	U(Ref)=10V, max. 30mA, Bandwidth 1kHz	DT SAK 32-520-102-10	±10V
±20mV	2	U(Ref)=10V, max. 30mA, Bandwidth 1kHz	DT SAK 32-521-102-10	±10V
±30mV	2	U(Ref)=10V, max. 30mA, Bandwidth 1kHz	DT SAK 32-522-102-10	±10V
±10mV	4	U(Ref)=10V, max. 30mA, Bandwidth 1kHz	DT SAK 34-520-102-10	±10V
±20mV	4	U(Ref)=10V, max. 30mA, Bandwidth 1kHz	DT SAK 34-521-102-10	±10V
±30mV	4	U(Ref)=10V, max. 30mA, Bandwidth 1kHz	DT SAK 34-522-102-10	±10V

### Strain Gage inputs for Quarter Bridge sensors with Instrumentation Input Amplifier

Input Range(s)	Channels	Features	Type	Output
±10mV	2	U(Ref)=10V, max. 30mA, Bandwidth 1kHz	DT SAK 32-530-102-10	±10V
±20mV	2	U(Ref)=10V, max. 30mA, Bandwidth 1kHz	DT SAK 32-531-102-10	±10V
±30mV	2	U(Ref)=10V, max. 30mA, Bandwidth 1kHz	DT SAK 32-532-102-10	±10V
±10mV	4	U(Ref)=10V, max. 30mA, Bandwidth 1kHz	DT SAK 34-530-102-10	±10V
±20mV	4	U(Ref)=10V, max. 30mA, Bandwidth 1kHz	DT SAK 34-531-102-10	±10V
±30mV	4	U(Ref)=10V, max. 30mA, Bandwidth 1kHz	DT SAK 34-532-102-10	±10V

### Anti-Aliasing-Filter –Low-pass filter 4<sup>th</sup> Order with fixed cut-off frequencies

Input Range(s)	Channels	Features	Type	Output
±10V, 1V, 100mV	2	4th Order f(-3dB)=100Hz	DT SAK 52-150-101-10	±10V
±10V, 1V, 100mV	2	4th Order f(-3dB)=500Hz	DT SAK 52-150-501-10	±10V
±10V, 1V, 100mV	2	4th Order f(-3dB)=1000Hz	DT SAK 52-150-102-10	±10V
±10V, 1V, 100mV	2	4th Order f(-3dB)=2000Hz	DT SAK 52-150-202-10	±10V
±10V, 1V, 100mV	2	4th Order f(-3dB)=3000Hz	DT SAK 52-150-302-10	±10V
±10V, 1V, 100mV	2	4th Order f(-3dB)=4000Hz	DT SAK 52-150-402-10	±10V
±10V, 1V, 100mV	2	4th Order f(-3dB)=5000Hz	DT SAK 52-150-502-10	±10V
±10V, 1V, 100mV	2	4th Order f(-3dB)=7500Hz	DT SAK 52-150-752-10	±10V
±10V, 1V, 100mV	2	4th Order f(-3dB)=10000Hz	DT SAK 52-150-103-10	±10V

### Anti-Aliasing-Filter – Butterworth Low-pass filter with 15 programmable cut-off frequencies

Input Range(s)	Channels	Features	Type	Output
±10V	4	Butterworth 8th Order, 15 programmable frequencies from 100 to 10000 Hz	DT SAK 52-150-PGF01-10	±10V

### Anti-Aliasing-Filter – Butterworth Filter 5<sup>th</sup> Order with fixed cut-off frequencies

Input Range(s)	Channels	Features	Type	Output
±10V	4	5th Order f(-3dB)=100Hz	DT SAK 54-150-TPF5.101-10	±10V
±10V	4	5th Order f(-3dB)=500Hz	DT SAK 54-150-TPF5.501-10	±10V
±10V	4	5th Order f(-3dB)=1000Hz	DT SAK 54-150-TPF5.102-10	±10V
±10V	4	5th Order f(-3dB)=2000Hz	DT SAK 54-150-TPF5.202-10	±10V

### Anti-Aliasing-Filter – Butterworth Filter 10<sup>th</sup> Order with Fixed cut-off frequencies

Input Range(s)	Channels	Features	Type	Output
±10V	4	10th Order f(-3dB)=10Hz	DT SAK 54-150-100-10	±10V
±10V	4	10th Order f(-3dB)=100Hz	DT SAK 54-150-101-10	±10V
±10V	4	10th Order f(-3dB)=1000Hz	DT SAK 54-150-102-10	±10V
±10V	4	10th Order f(-3dB)=5000Hz	DT SAK 54-150-502-10	±10V

### Potentiometer inputs with Instrumentation Input Amplifier

Input Range(s)	Channels	Features	Type	Output
±10V, 1V, 100mV	2	U(Ref)=10V, max. 30mA, 1 kΩ to 50kΩ	DT SAK 32-550-102-10	±10V
±10V, 1V, 100mV	4	U(Ref)=10V, max. 30mA, 1 kΩ bis 50kΩ	DT SAK 34-550-102-10	±10V

### Resistance Measurement with Galvanic Isolation

Input Range(s)	Channels	Features	Type	Output
0 .. 1000Ω	1	U(Iso)=1000V, I(Ref)=0.5mA, 10Hz	DT SAK 11-990-100-10	0..10V
0 .. 1000Ω	2	U(Iso)=1000V, I(Ref)=0.5mA, 10Hz	DT SAK 12-990-100-10	0..10V
0 .. 5000Ω	2	U(Iso)=1000V, I(Ref)=0.5mA, 10Hz	DT SAK 12-995-100-10	0..10V

### Resistance Measurement with Instrumentation Input Amplifier

Input Range(s)	Channels	Features	Type	Output
0 .. 1000Ω	2	I(Ref)=0.5mA, Bandwidth 10 Hz	DT SAK 32-990-100-10	0..10V
0 .. 5000Ω	2	I(Ref)=0.5mA, Bandwidth 10Hz	DT SAK 32-995-100-10	0..10V
0 .. 1 MΩ	2	I(Ref)=8.5μA, Bandwidth 10 Hz	DT SAK 32-998-100-10	0..10V
0 .. 1000Ω	4	I(Ref)=0.5mA, Bandwidth 10 Hz	DT SAK 34-990-100-10	0..10V

### Linear Variable Differential Transformer Inputs (LVDT)

Input Range(s)	Channels	Features	Type	Output
80mV/V	2	Excitation 2,4V(eff) 4100Hz, Half Bridge	DT SAK 32-610-201	±10V



Data Translation GmbH • Im Weilerlen 10 • 74321 Bietigheim-Bissingen

**ICP<sup>®</sup> - / IEPE-Sensor inputs with galvanic isolation**

Input Range(s)	Channels	Features	Type	Output
±5V, 2V	2	IEPE / ICP compliance 4mA / 24V, 10kHz	SAK 12-580-502-10	±10V

**ICP<sup>®</sup> - / IEPE-Sensor inputs**

Input Range(s)	Channels	Features	Type	Output
±10V, 5V	2	IEPE / ICP compliance 4mA / 24V, 20kHz	SAK 32-580-203-10	±10V
±10V, 5V	4	IEPE / ICP compliance 4mA / 24V, 20kHz	SAK 34-580-203-10	±10V

**Voltage or Current Output with Galvanic Isolation**

Input Range(s)	Channels	Features	Type	Output
±10V, ±5V	2	U(Iso)=1000V, Bandwidth 10kHz/1kHz/100Hz	SAK 22-150-103-10	±10V
±10V, ±5V	2	U(Iso)=1000V, Bandwidth 50Hz	SAK 22-395-500-10	±20mA

### Digital Input or Output with Galvanic Isolation

Input Range(s)	Channels	Features	Type	Output
12..24V DC	8	Digital Input	DT SAK 81-100	TTL
TTL..24V DC	8	Digital Input	DT SAK 81-200	TTL
230V AC	8	Digital Input	DT SAK 81-400	TTL
TTL	8	Digital Output	DT SAK 82-100	12..24VDC
TTL	8	Digital Output	DT SAK 82-200	5VDC (TTL)
12..24VDC / TTL	4+4	Digital In- / Output	DT SAK 83-100	TTL/12..24VDC
TTL ... 10V	4	Relay Output	DT SAK 84-100	2 openers 2 closers

### Trigger and Controller Boards with Galvanic Isolation

TTL - 30V	1	Trigger board with push button for manual trigger pulse and galvanic isolation, bandwidth 100 kHz	DT SAK 71-101	TTL
TTL - 30V	1	Controller board for trigger or counter inputs with galvanic isolation, bandwidth 250 kHz	DT SAK 71-221	TTL
TTL - 30V	2	Controller board for trigger or counter inputs with galvanic isolation, bandwidth 250 kHz	DT SAK 71-222	TTL
TTL - 30V	2	Controller board for time measurement between the edges of two input signals, with galvanic isolation	SAK71-810	TTL

### Passive Signal Connection Boards

For direct connection of analog and digital signals to the measurement device

Input Range(s)	Channels	Features	Type	Output
±10V	2	Analog Input	DT SAK 22-100	±10V
±10V	4	Analog Input	DT SAK 44-100	±10V
±10V	4	Analog Output	DT SAK 24-100	±10V
TTL(5VDC)	1	Controller board for trigger or counter input	DT SAK 71-201	TTL
TTL(5VDC)	2	Controller board for trigger or counter inputs	DT SAK 71-202	TTL
TTL(5VDC)	8	Digital Input	DT SAK 81-120	TTL
TTL(5VDC)	8	Digital Output	DT SAK 82-120	TTL
TTL(5VDC)	4+4	Digital In- / Output	DT SAK 83-120	TTL