

# Piezoresistive Amplifier with PiezoSmart®

Type 4624AK...

Measuring amplifier for piezoresistive pressure sensors for universal application. Particularly recommended for high-accuracy measurements with digitally compensated sensors.

- PiezoSmart® sensor identification; compatible with pressure sensors Types 40xx ... S
- Support of digital compensation for maximum measuring accuracy
- Analog pressure and temperature signal (adjustable voltage or current signal)
- Simple zero-point setting
- Signal display and amplifier parameterization via web browser (Ethernet)

## Description

The piezoresistive single-channel amplifier Type 4624AK... is equipped with Kistler PiezoSmart® sensor identification. The amplifier is ideally suited for use with digitally compensated sensors. The characteristic values of the sensor are automatically read out by the electronic sensor data sheet (TEDS), so that the measuring chain is ready to start measuring within a very short amount of time. This leads to maximum process reliability and great flexibility at the same time. No rigid coupling between sensor and amplifier. PiezoSmart® sensors are easy to replace, e.g. for calibration or for use in another system (e.g. Kistler SCP).

The amplifier Type 4624AK... is also for universal use with pressure sensors that are not equipped with sensor identification. The characteristic values of the sensor (sensitivity, zero point) can be saved on the amplifier by means of manual input via an Ethernet connection and a web browser. The sensor data remain saved, even in the event of voltage loss.

The measuring chain is ready for use once automatic or manual amplifier configuration has been completed. If required, the pushbuttons on the housing of the amplifier enable rapid correction of the zero point of the sensor (e.g. for adjusting to barometric pressure). Alternately, zero point correction can also be accomplished via the web browser.

## Application

The amplifier is suitable for signal processing for most common piezoresistive pressure sensors from Kistler, according to the measuring chain overview on page 2. The easy-to-use single-channel measuring system is particularly recommended for



applications in which only single sensors are used, but where at the same time maximum demands with respect to measurement accuracy apply: e.g. with on-board measurement in motor vehicles, or for demanding measurement tasks in testing laboratories.

## Technical data

Number of channels		1
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### Interfaces

Sensor interface		Fischer socket 5-pin (103 A054)
PiezoSmart support		Kistler TEDS 3/4
Power supply interface and signal output		industrial plugs, 8 pin with M12 locking mechanism
Data interface		RJ45 Ethernet socket/IP65

### Supply

Power supply amplifier	VDC	10 ... 30
Current consumption (max.)	mA	<400
Sensor supply (integrated)	mA	1,00

### Analog signal outputs

<i>Pressure output</i>		
Voltage output	V	0 ... 5 ±0,025 0 ... 10 ±0,05
User-defined amplification	%FS	±0,25 %
Zero point error	V	<±0,05
Frequency range (-3 dB)	kHz	0 ... >40
Output signal noise (0,1 Hz ... 1 MHz)	mVpp	<25 (sensor-dependent)

## Technical data (continued)

Current output	mA	4 ... 20 ±0,08
Zero point error	mA	<±0,05
Frequency range (-3 dB)	kHz	0 ... >10

### Temperature output

Max. error	°C	±3
Frequency range (-3 dB)	Hz	0 ... 5
Voltage output	V	-3,5 ... 11
Zero point (0 °C)	mV	0 ±20
Sensitivity	mV/°C	10
Current output	mA	-16 ... 22
Zero point (0 °C)	mA	4 ±0,05
Sensitivity	µA/°C	20

### Zero point adjustment

Zero balancing range	%FS	±20
Zero balancing resolution	%FS	≈0,01

### Additional amplifier properties

Error of the electronics	%FS	<±0,5
Error of the electronics when using sensors* with linearity correction	%FS	<±0,75
Temperature coefficient of the electronics	ppm/°C	<50
Signal time delay	µs	<10
Digitally adjustable low-pass filter	kHz	1,3, 2, 3, 5, 10, 20, 30, 40

### Additional amplifier properties

Dimensions	mm	110x112x35
Weight	g	215
Protection Class (EN60529) with mounted Ethernet cover or IP-65 Ethernet cable	IP	65
Operating temperature range	°C	-40 ... 70

\* Types 4065..., 4067...

## Measuring chain overview

	Sensors	Cable	Remark
1	40xx...DS	–	Plug & Play
2	4007B...S 4049A...S 4065A...S 4067C...S	4761B	Plug & Play
3	4005BA...V200S 4045A...V200S 4075A...V200S	4763B	TEDS version not supported. Manual parameterization via web interface required
4	4045A	4761B	Manual parameterization via web interface
5	4075A	4763B	
	Sensors from other manufactures		1. Testing for correct connection and supply 2. Manual parameterization via web interface

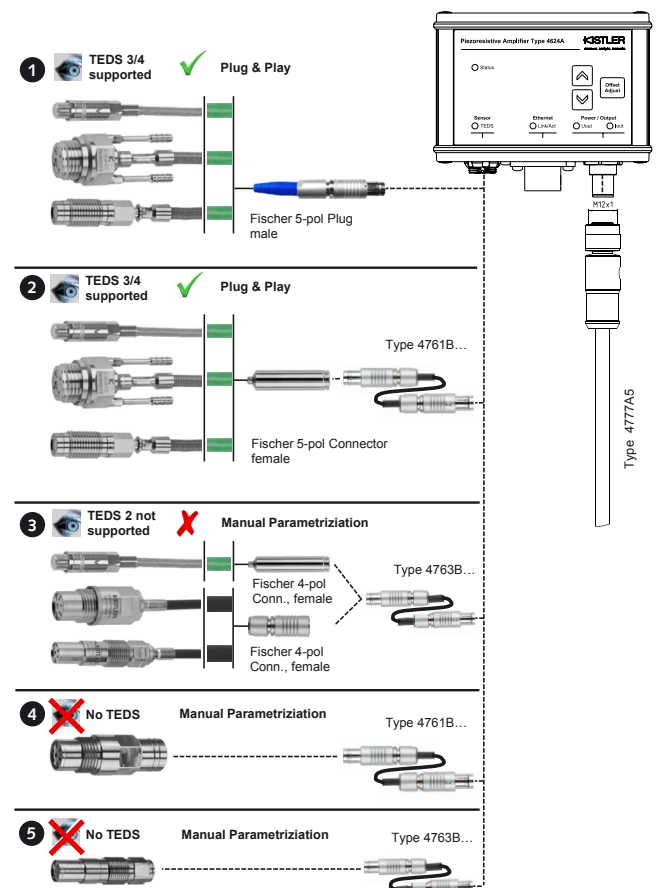


Fig. 1: Possible configurations of measuring chains with amplifier Type 4624AK...

## Sensor connection, voltage supply and signal outputs

The voltage supply of the amplifier Type 4624AK... is accomplished through a commercially available 8 pin connecting cable (e.g. Type 4777A5). The pin configuration is displayed in Fig. 3. In addition, an adapter cable (Type 4775A0,5) from Binder plug to 8 pin plug enables a rapid connection of the amplifier in cases in which a measuring chain amplifier of Type 4618 was previously in operation.

## Setting the sensor zero point

The pushbuttons on the amplifier housing (Fig. 2) can be used for easy correction of the zero point of the pressure output signal. This is useful for the fine adjustment to barometric pressure or to correct sensor installation sensitivities.

## Installation

The amplifier housing can be screwed onto a suitable support surface with the enclosed installation plate (Fig. 2).

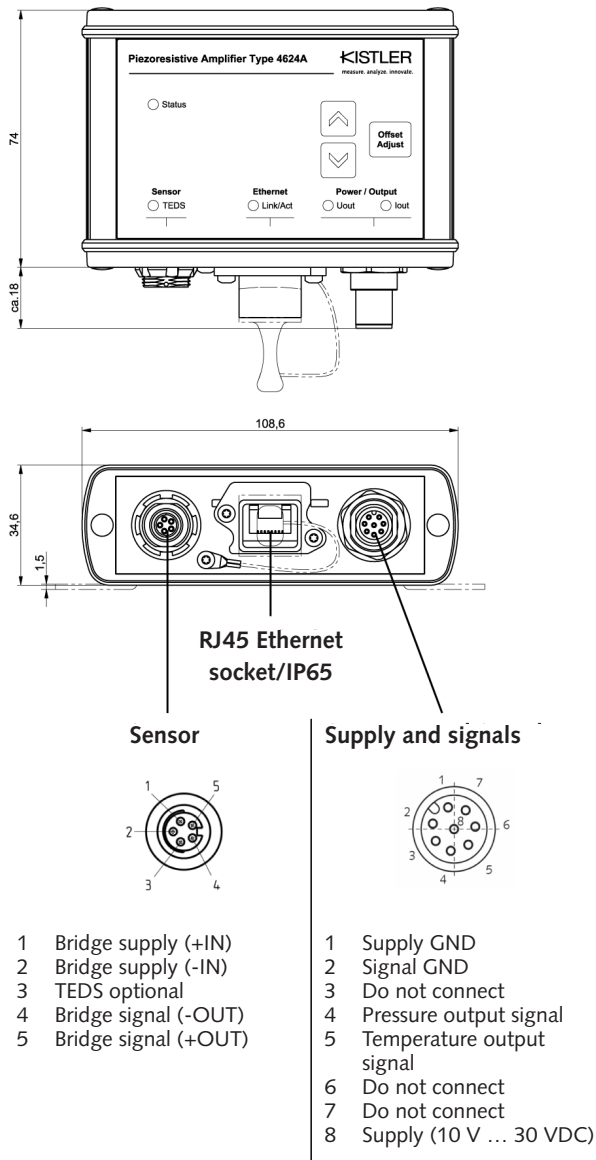


Fig. 2: Front panel with buttons for zero point correction, in addition to connector pin assignment for sensor, supply and signal output

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**System configuration**

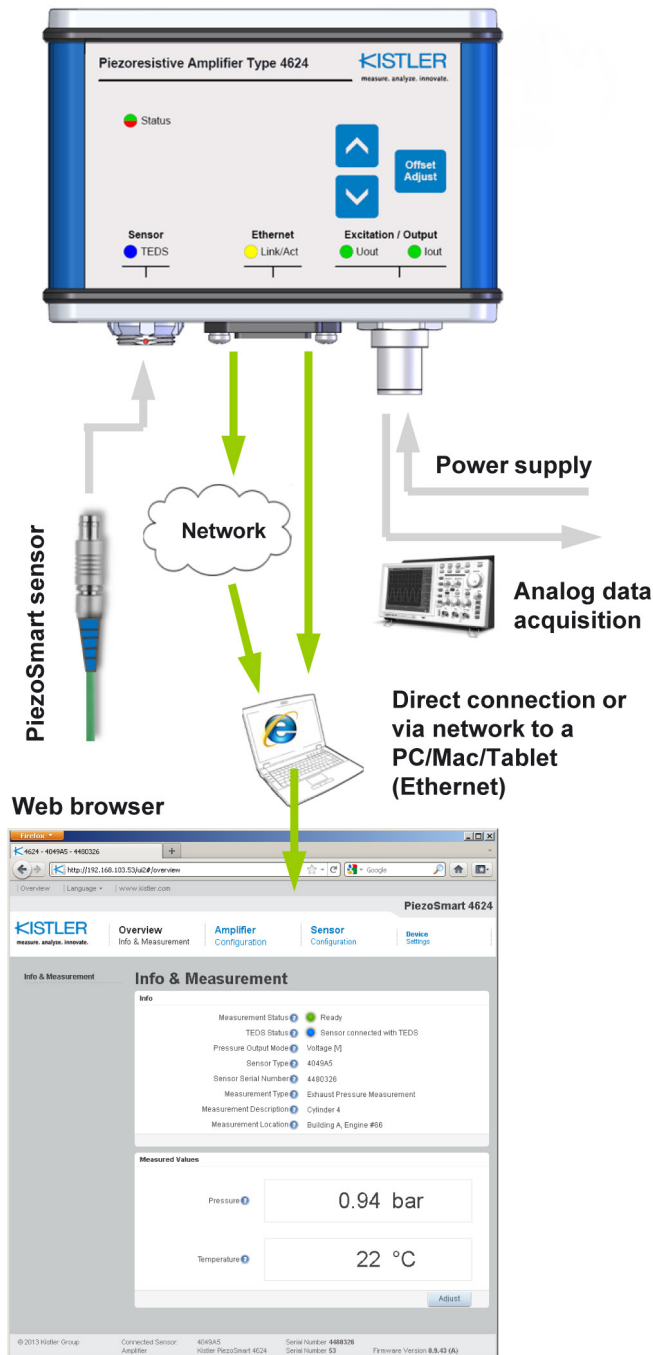


Fig. 3: Connection of the amplifier to a network and parameterization via a web browser

**Amplifier parameterization via web browser**

Parameterization of the amplifier is usually not necessary thanks to the integrated PiezoSmart® functionality. The following properties can be set with the aid of a web browser (supported web browsers: Internet Explorer 10, Firefox, Google Chrome), and a network connection to the amplifier (Fig. 3):

- Sensitivity and zero point settings of sensors without sensor identification (TEDS) or with earlier TEDS standard (40xx...V200S)
- Signal output conversion (voltage to current output)
- User-defined amplification factors

In addition, there is also the possibility of using extended features of the amplifier:

- Information regarding a connected PiezoSmart® sensor
- Digital display of pressure and temperature
- Zero-point setting
- Digitally adjustable low-pass filter

The connection and commissioning of an amplifier of Type 4624AK... is described in the enclosed quick start operating instructions.

**Included accessories**

- Mounting plate

**Type/Mat. No.**  
55118749

**Optional accessories**

- Connecting cable, 8-pin, with wire ends and sleeves (5 m)
- Connecting cable, 8-pin, with BNC-connectors for signal outputs (3 m)
- Adaption cable, compatible to amplifier Type 4618 (0,5 m)
- Extension cable for Type 4777A5 or Type 1200A179A3 (5 m)
- Ethernet cable IP67 (5 m)
- Power supply/AC adapter 100 ... 260 VAC - 24 VDC, incl. wiring terminal adapter

**Type/Mat. No.**  
4777A5

1200A179B3

4775A0,5

1200A177A5

1200A49A1

5781A6

**Ordering key**

Type 4624AK

**Connecting cable for power supply and signal output**

No cable/connector	0
Connecting cable Type 4777A5, 8-pin, with wire ends and sleeves (5 m)	1
Connecting cable Type 1200A179B3, 8-pin, with BNC-connectors for signal outputs (3 m)	2
Adaption cable Type 4775A0,5, compatible to amplifier Type 4618 (0,5 m)	3

**Connecting cable for ethernet**

No cable	0
Ethernet cable Type 1200A49A1, IP67 (5 m)	1

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