

Amplifier for Measuring of Pressure and Temperature

Type 4618A0, 4618A2,
4618A4

Universal amplifier for piezoresistive pressure sensors which require constant current excitation. Allows to measure pressure and temperature simultaneously with the standard pressure sensors. Mounted in rugged aluminum case for industrial applications.

- For pressure sensors Type 4043/45, 4053, 4073/75, 4065/67, 4090
- Two limit switches with optocouplers
- Pressure output 0 ... 10 V and 4 ... 20 mA possible
- Option: temperature output 10 mV/K (not in combination with Types 4043/45, 4053 and 4073/75)
- Conforming to CE



Technical Data

Constant Current Excitation

Current	mA	1,5 ±3 %
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Power Supply

Supply voltage	VDC	18 ... 30
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Current consumption

Type 4618A0	mA	<40
Type 4618A2	mA	<35
Type 4618A4	mA	<60

Amplifier Input

Input impedance	Ω	10 ¹²
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Input voltage range (differential)	mV	50 ... 1 000
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Adjustable zero range (as of input)

Coarse (resistors)	mV	-1 000 ... 1 000
Fine (11-turn potentiometer)	mV	±22

Voltage Output: Pressure

Range	V	0 ... 10
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Adjustable gain		
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Coarse (resistors)		10 ... 200
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Fine (11-turn potentiometer)	%	±10
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Rise/Fall time (10 ... 90 %; U _A = ±10 V _{pp})	μs	<7
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Frequency response (U _A = ±10 V _{pp})		
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-5 %	kHz	0 ... 19
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-3 dB	kHz	0 ... 40
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Thermal signal shift (0 ... 60 °C)		
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zero (as of input signal)	mV	<±1
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sensitivity	%FSO	<±0,2
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Output impedance	Ω	10
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Current Output: Pressure

Types 4618A0, 4618A4

Range	mA	4 ... 20
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Error		
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zero (4 mA)	%FS	<0,2
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sensitivity (16 mA)	%FS	<0,3
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Frequency response (I _A = 20 mA)		
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-5 %	kHz	>5,5
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-3 dB	kHz	9
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Load resistance	Ω	≤550
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Operating temperature range	°C	0 ... 60
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Technical Data (Continuation)

Voltage Output: Temperature		Types 4618A2, 4618A4	
Temperature signal (0 mV at 0 °C)	mV/K		10
Error	°C		<±3
Thermal shift of zero	%/K		±0,016
sensitivity	%/K		±0,007

Limit Switches

2 limit switches with optocouplers			
Adjustability with 11-turn potentiometer	V		0 ... 12
Switching hysteresis	%FSO		0,4
Optocouplers TLP 127 (I _F = 1 mA)			
Collector emitter voltage V _{CEO max}	V		300
Emitter collector current I _{E max}	mA		50
Power dissipation P _{C max}	mW		150
Isolating voltage V _{ISO}	V _{rms}		2 500
Current transfer ratio CTR I _C / I _F	%		>1 000

Built-In Calibrator

Calibration of zero and sensitivity			
Error	%FSO		≤±0,2

Housing

Dimensions	mm		98x64x34
Material			aluminum
Degree of protection			IP65
Weight	g		250

Mounting

The amplifier housing Fig. 1 may be mounted to any support with M4 bolts. The aluminum housing is connected to ground in order to provide electrical shielding for the electronics.

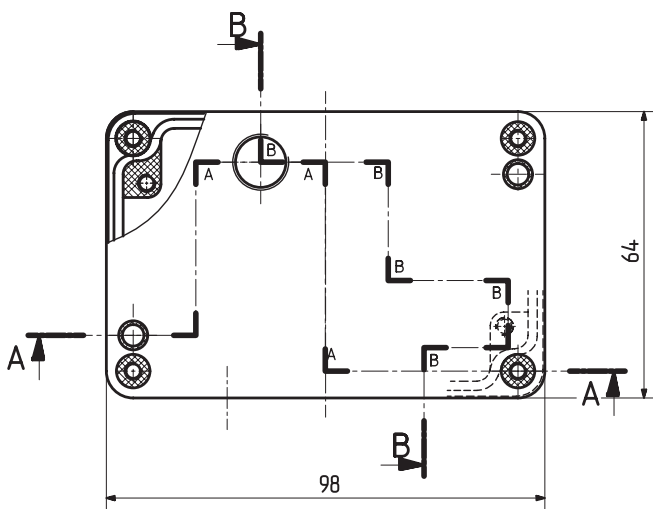


Fig. 1: Housing

Amplifier Circuit

Fig. 2 shows a schematic of the amplifier circuit. The connector wiring for sensor and signal output resp. power supply can be gathered from Fig. 3. Temperature output can be obtained from any piezoresistive pressure sensor with constant current excitation (Types 4065/67, 4090/91 and 4085).

The temperature signal is obtained from the thermal resistance change of the piezoresistive Wheatstone bridge. There is no need for a temperature sensor. The temperature signal must be calibrated at the works.

Calibration of the Amplifier

Standard pressure output is U_A = 0 ... 10 V or I_A = 4 ... 20 mA for FS. Smaller pressure ranges are available on request, e.g. U_A = 0 ... 5 V or I_A = 4 ... 12 mA for FS.

Temperature compensation, signal linearization, and coarse adjustment of zero and range are provided by resistors mounted in standardizing plugs Type 4958A0. The resistor values may readily calculated or read from tables. When ordering a replacement pressure sensor for the amplifier Type 4618A, a new standardizing plug will be included in the delivery.

Zero fine and range fine are adjusted by internal potentiometers. Zero can be readjusted after opening the screw cap.

For replacing the pressure sensor, the standardizing plug must be also replaced. The values for the sensitivity and the zero of the sensor are given in the calibration sheet and can be adjusted with the built-in calibrator.

The temperature signal, however, can only be calibrated by Kistler.

Two additional internal potentiometers are available for adjusting the limit switches. The switching levels may be adjusted with a variable pressure or with a voltage taken from the electronic circuit. With the cover of the amplifier housing open, a schematic of the electronics can be found inside which shows the positions of the potentiometers and slide switches.

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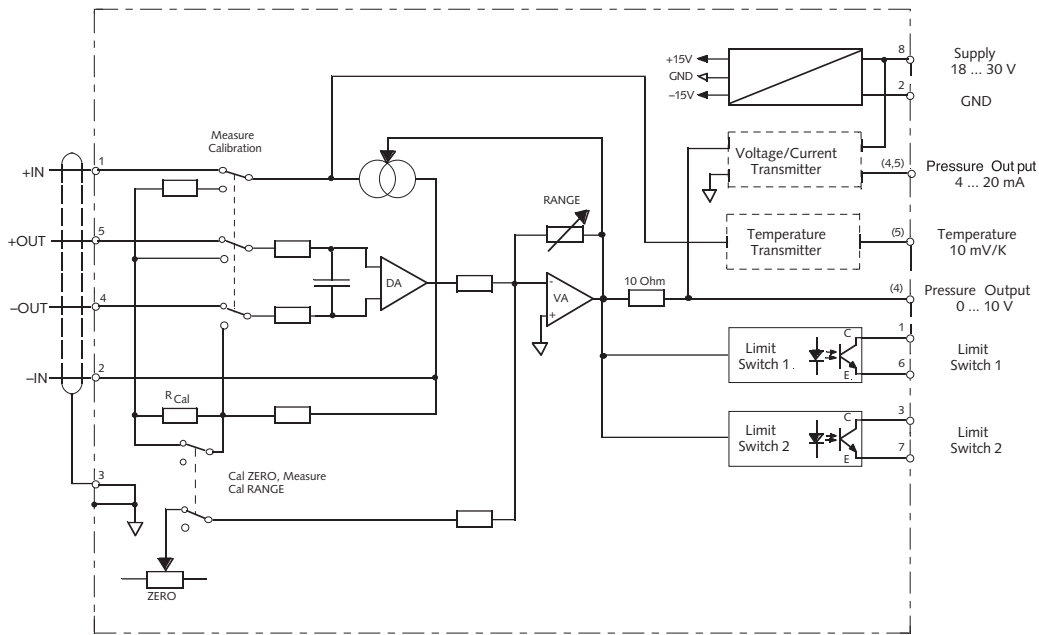


Fig. 2: Schematic view of amplifier

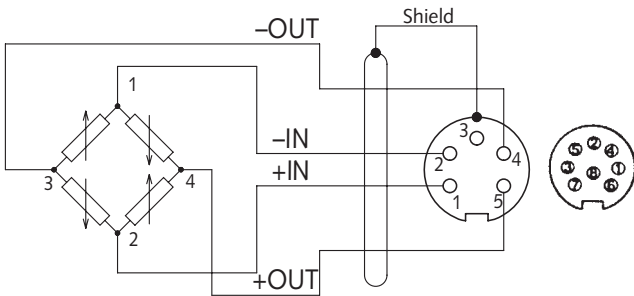


Fig. 3: Pin assignment of input and output

Output (Type 4618A0)

- 1 Limit Switch 1 Collector
- 2 GND
- 3 Limit Switch 2 Collector
- 4 Signal 0 ... 10 V
- 5 Signal 4 ... 20 mA
- 6 Limit Switch 1 Emitter
- 7 Limit Switch 2 Emitter
- 8 Supply (18 ... 30 VDC)

Output (Type 4618A2)

- 1 Limit Switch 1 Collector
- 2 GND
- 3 Limit Switch 2 Collector
- 4 Signal 0 ... 10 V
- 5 Temperature Signal 10 mV/K
- 6 Limit Switch 1 Emitter
- 7 Limit Switch 2 Emitter
- 8 Supply (18 ... 30 VDC)

Output (Type 4618A4)

- 1 Limit Switch 1 Collector
- 2 GND
- 3 Limit Switch 2 Collector
- 4 Signal 4 ... 20 mA
- 5 Temperature Signal 10 mV/K
- 6 Limit Switch 1 Emitter
- 7 Limit Switch 2 Emitter
- 8 Supply (18 ... 30 VDC)

Included Accessories

- Standardizing plug for specific sensor SN...
- 8 pin connector for power supply, output and limit switches, IP67, DIN 4532

Type/Art. No.

- 4958A0
- 1500A57

Optional Accessories

- Extension cable PVC for pressure sensors Types 4065/67
- Connecting cable PVC for pressure sensors Types 4043/45 and 4053
- Connecting cable PVC for pressure sensors Types 4073/75
- 5 pin connector for pressure sensor

Type/Art. No.

- 4757A5/A10
- 4765A2/A5/A10
- 4767A2/A5/A10
- 1500A81

Ordering Key

Amplifier with pressure output 0 ... 10 V and 4 ... 20 mA calibrated to ordered sensor	0
Amplifier with pressure output 0 ... 10 V and temperature output, calibrated to ordered sensor	2
Amplifier with pressure output 4 ... 20 mA and temperature output, calibrated to ordered sensor	4

Type 4618A

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