

# Multichannel Amplifier System for Engine Indication

Type 5044A, 4643, 5738A...,  
5740A..., 5669...

This modular measuring system can be assembled as required from the 2-channel modules  
Type 5044A, Charge amplifier  
Type 4643, Piezoresistive amplifier  
and a case. The modules can also be used directly in the AVL-IndiSet.

- 2-channel piezoresistive module Type 4643
- 2-channel charge amplifier Type 5044A with drift compensation
- AVL-IndiSet compatible

## Description

### Multichannel System for max. 8 Channels

Type 5738A0 (Fig. 4):

Aluminum cassette for 4 modules with integrated power supply. The output signals are fed out from the back panel via BNC-neg. connectors.

There is a connector (D-Sub 25) for the 8-channel Reset/Operate remote control Type 5669Y0402. The cassette can be mounted in a standard 19" rack.

Type 5738A1:

As Type 5738A0, (aluminum cassette for 4 modules) with additional plastic desk-top case.

### Multichannel System for max. 16 Channels

Type 5740A1

Module shelf 19" rack including 2 cassettes Type 5738A0, prepared for 8 modules (16 channels)

Type 5740A2 (Fig. 5)

Desk-top case with carrying handle including 2 cassettes Type 5738A0, prepared for 8 modules (16 channels)

### Charge Amplifier Module Type 5044A

2-channel charge amplifier with selectable drift compensation (Fig. 2).

### Drift Compensation

The drift compensation is used in engine measuring with uncooled sensors. Temperature changes will cause the sensor signal to drift. The zero line of the pressure signal at the out-



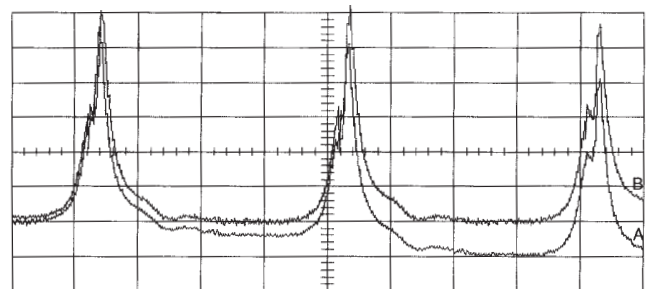
put thus remains at a constant level even in the event of an engine/sensor temperature change. The amplitude of the pressure signal is not affected by the compensation.

### Example:

Uncooled sensor in dynamic operation (Fig. 1).

The zero line of the uncompensated signal drifts in the negative direction (A); the zero line of the compensated signal remains constant (B).

With an engine speed of 600 1/min. (Four stroke engine), the max. error is <1 % of the peak pressure.



B drift compensated A drift not compensated

Fig. 1: Cylinder pressure signal with and without compensation

**Technical Data\***

**Charge Amplifier Type 5044A**

Number of channels		2
Measuring range	pC	±100 ... ±49'950
Error	%	<±1
Sensitivity (adjustable to three significant digits)	pC/M.U.	1 ... 99,9
Scale (in 1,2,5 steps)	M.U./V	1 ... 50
Drift (0 ... 60 °C)	pC/s	<±0,2
(25 °C)	pC/s	<±0,05
Reset-Long jump	pC	<±1
Time constant, Long	s	>100'000
Output voltage	V	±10
Output current	mA	<2
Output resistance	Ω	10
Zero error (Reset)	mV	±15
Output noise (0,1 Hz, 0 ... 1 MHz) max./typ.	mV <sub>pp</sub>	<15/<5
Frequency range (at 20 V <sub>pp</sub> )	Hz	≈0 ... >45'000
Offset selectable with jumper, Output voltage ±10 V is retained	V	-8,0 ±1 %
Voltage between Sensor GND and output/ supply GND	V	<±50

**Drift Compensation (activ)**

Circuit on (Drco)

Offset error	mV	±20
Error at Repetition frequency 5 Hz (600 1/min. Four stroke engine)	%	<1

**Power Supply**

Supply voltage	V DC	±15
Supply current	mA	<±80

**General Data**

Operating temperature range	°C	0 ... 60
min./max. temperature	°C	-10/60
Vibration resistance (20 Hz ... 2000 Hz, duration 16 min.)	gp	10
Shock resistance (1 ms)	g	200
Dimensions (Frontpanel)	mm	128,7 x 50,6

\* In all Kistler documents, the decimal sign is a comma on the line (ISO 31-0: 1992).

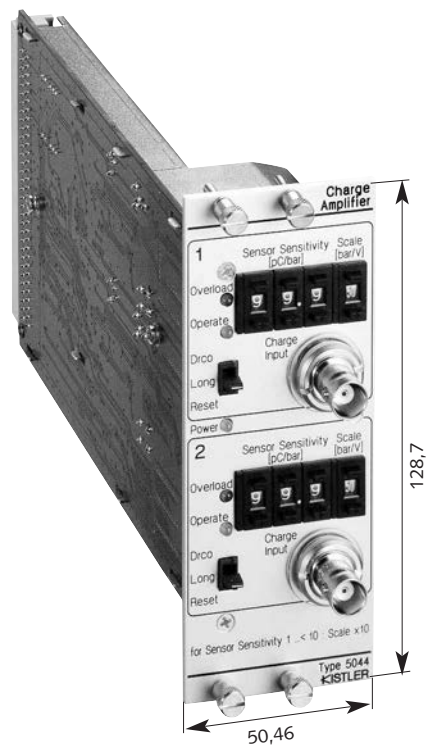


Fig. 2: Charge amplifier Type 5044A

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**Technical Data\***

**Amplifier Module Type 4643**

Number of channels		2
Amplification	mA	20 ... 49,99
(≅Calibrating current:) (adjustable to four significant digits)	mA	(2,000 ... 4,999)
Error	%	<±0,5
Output voltage	V	±10
Output current	mA	<±2
Output resistance	Ω	10
Adjustment range of the zero point correction	mV	±30
Output noise		
(0,1 Hz, 0 ... 10 MHz) max./typ.	mV <sub>pp</sub>	<20/<10
Frequency range (at 20 V <sub>pp</sub> )	Hz	0 ... 20'000
Offset selectable with jumpers	V	-8,0 ±1 %

**Supply for Sensor/Remote Amplifier**

Sensor current supply	mA	2 ±0,1 %
Load	kΩ	>1 ... <5
Selection of 24 V supply for in-situ amplifier Type 4618A0 occurs automatically with special cable Type 4769 and is indicated by LED		
Output current at 24 V supply (per channel)	mA	<20

**Power Supply**

Supply voltage	V DC	±15
Current input without remote amplifier	mA	<±80

**General Data**

Operating temperature range	°C	0 ... 60
min./max. temperature	°C	-10/60
Vibration resistance		
(20 Hz ... 2000 Hz, duration 16 min., cycle 2 min.)	gp	10
Shock resistance (1 ms)	g	200
Dimensions Front panel	mm	128,7 x 50,6

\* In all Kistler documents, the decimal sign is a comma on the line (ISO 31-0: 1992).

**Amplifier Module Type 4643**

2-channel piezoresistive amplifier with adjustable calibration current (Fig. 3).

A low-pass filter of the 2nd-order can be connected at the output and an offset of -8 V is selectable with a jumper.

If the output voltage is outside the permitted range, this is indicated by a LED.

The module can be operated directly with low-pressure sensors of the series 4045/4075 (intake / exhaust measurement) or with high-pressure sensors 4065/67 (injection pressure measurement incl. remote amplifier Type 4618A0) (Fig. 6).

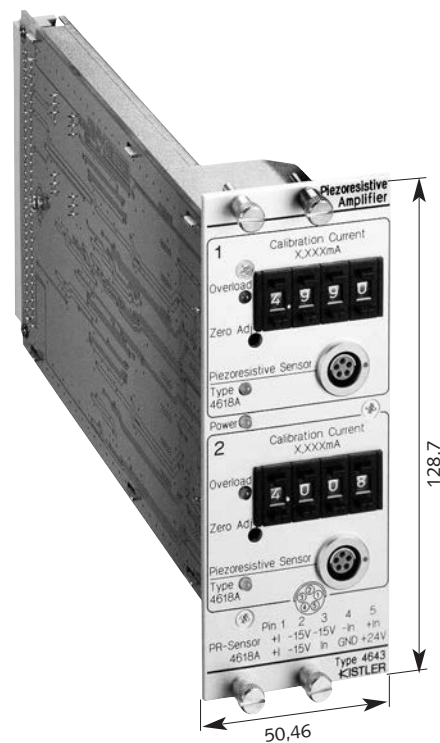


Fig. 3: Piezoresistive module amplifier Type 4643

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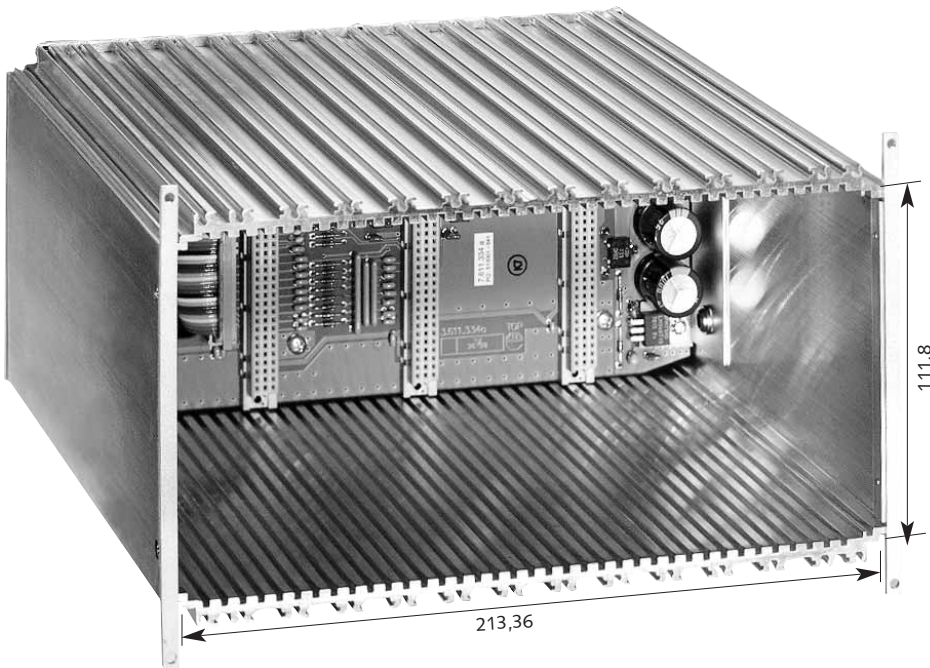


Fig. 4: Aluminium cassette for 4 modules with integrated power supply Type 5738A0

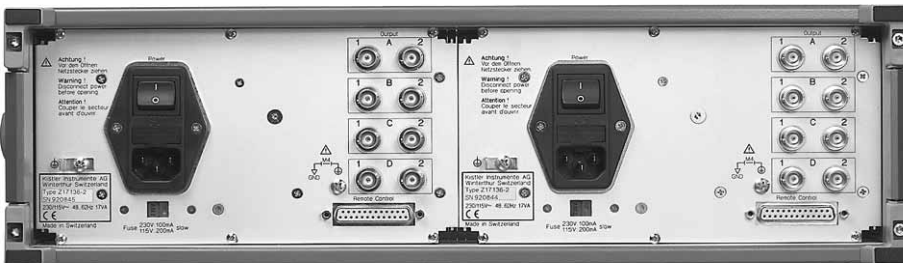


Fig. 5: Rear panel of the desktop with Type 5740A2 and 2 integrated cassettes Type 5783A0

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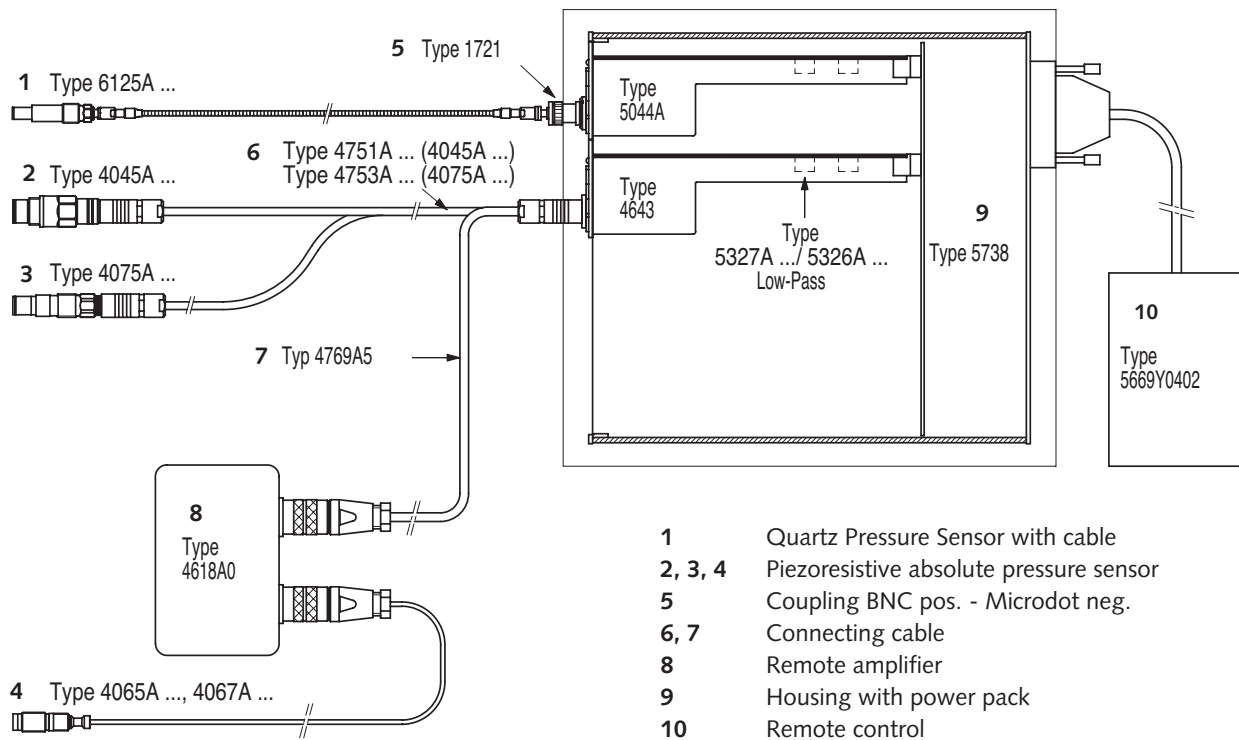


Fig. 6: Typical System Configuration

Designation for Ordering	Type	Optional Accessories	Type
Aluminium cassette for 4 modules	5738A0	Low-pass filter	5326A...
Desktop aluminium cassette for 4 modules	5738A1		5327A..
		Dummy plate	5742
19"-Rack for 8 modules	5740A1		
19"-Desktop rack for 8 modules	5740A2	Cable for Piezoresistive Sensors with 5-pin Fischer connector SE103A054 for Type 4045A...	
Remote control (Reset/Long/Drco)	5669Y0402	l = 2 m	4751A2
2-channel piezoresistive amplifier	4643	l = ... m	4751sp ...
2-channel charge amplifier	5044A		
Remote amplifier	4618A0	with 4-pin Fischer connector SE102A054 for Type 4075A...	
		l = 2 m	4753A2
		l = ... m	4753sp ...
		Connecting Cable for Remote Amplifier Type 4618A0	
		8-pin connector DIN 45326	
		l = 5 m	4769A5

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