

Data Sheet Type 5060D

PRIAMUS Advanced Charge and Temperature Amplifier

- 8 switchable charge ranges ! (max. 100'000pC)
- plug-compatible to all PRIAMUS charge amplifiers
- test function
- signal input for sensors with and without sensitivity detection (PRIASED™-System)
- signal input for thermocouples Type N,J,K
- all control signals can be run with positive or negative logic
- auto-range function
- automatic switchover at volumetric filling



Description

The charge and temperature amplifier Type 5060D... is basically designed for injection molding, however it can be used anywhere, where piezoelectric sensors are used together with thermocouples. Due to its many switchable charge ranges and due to the unusual high charge range a very high resolution of the piezoelectric signal is being achieved in any industrial application.

The 25-pin D-Sub connector is plug-compatible to all industrial PRIAMUS charge amplifiers, so that different amplifier versions (e.g. multi-channel amplifiers) can be simply exchanged by the user (Plug & Play). The amplifier is identified by a code in the D-Sub connector, and can be checked by a test signal. The charge ranges are selected by a control-code. The control signals ‚operate‘, ‚range‘ and ‚test‘ can be run with positive or negative logic.

The microprocessor in the amplifier detects PRIAMUS sensors and their sensitivity automatically. The microprocessor detects also switchover at volumetric filling in injection molding and makes it available as a logic output signal. The ‚auto-range‘ function additionally adjusts the optimum output voltage proportional to the measuring signal.

Alternatively thermocouples types N, J and K can be connected, however, due to its specifications it is recommended to use type N in any case (PRIAMUS types 4001A und 4002A)!

Technical Data (Charge Amplifier)

Measuring range	nominal number of ranges	pC 8	± 500 ... 100'000
Accuracy		%	< ± 1
Output signal		V	± 10
Output offset		mV	< ± 15
Output noise	0,1 Hz ... 100 kHz	mVpp	< 20
Linearity		% FS	< 0,02
Output impedance		Ω	10
Max. output load		mA kΩ	5 2
Reset time	Q = charge at reset time Example: Q = 3000 pC	ms ms	< 0,6 • Q/nC + 1 < 8 ms
Reset operate transition		pC	< 2
Drift (typ. at 20 °C)		pC/s	< 0,03
Frequency range		kHz	ca. 0 ... 20
SLP reaction time		ms	< 3

subject to technical amendments

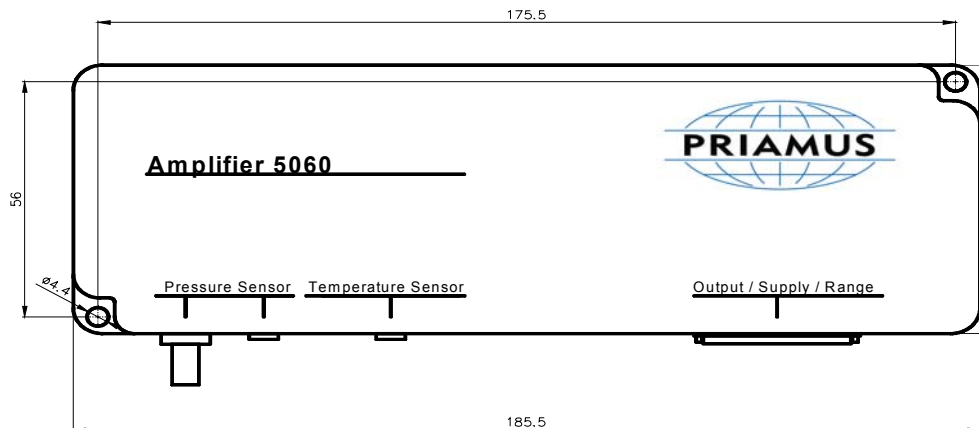
Technical Data (Temperature Amplifier)

Potential separation of the measuring element (no galvanical separation)		Vmax	± 42
Thermocouple (selectable by jumper)		Type	N, J, K
Output signal		V	0 ... 10
Max. output load		mA	5
		kΩ	2
Sensor break (no sensor connected)		V	< 1
Zero voltage (0 °C)		V	2
Sensitivity (selectable by jumper)	200 °C at 10 V	mV/K	40
	400 °C at 10 V	mV/K	20
	Zero point adjustment (trimmer)	K	+ / - 6
Accuracy		°C	2 ± 1 %
Frequency range		Hz	0 ... 1000

Technical Data (General)

Supply	VDC	15 ... 30
	W	approx. 1.5
Operating temperature range	°C	0 ... 60

Dimensions

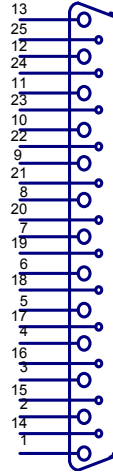


Graduation of Charge and Pressure Ranges

	Range2 VO	Range1 VO	Range0 VO	no sensor detection pC / 10V	PRIASED™ bar / 10V
Range 1	0	0	0	100'000	10'000
Range 2	0	0	1	50'000	5'000
Range 3	0	1	0	20'000	2'000
Range 4	0	1	1	10'000	1'000
Range 5	1	0	0	5'000	500
Range 6	1	0	1	2'000	200
Range 7	1	1	0	1'000	100
Range 8	1	1	1	500	50

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Pin Allocation



Pin	Function
1	Signal Out ±10V
2	Temp Out 0...10V
3	-
4	-
5	-
6	Range 2 I/O
7	Range 1 I/O
8	Range 0 I/O
9	Supply GND / Code Supply GND
10	Supply 15 ... 30V
11	Code 2
12	Code 0
13	Code Supply +
14	Signal GND
15	Sens Ident
16	SLP
17	-
18	Auto – Range
19	Com Logic Input
20	Operate
21	80% Test
22	Supply GND / Code Supply GND
23	Code 3
24	Code 1
25	Com Logic Output

Control Signals (Input)

Operate	reset (input open or)	V	0 ... 0,8
	operate	V	3 ... 45
80 % test	no test (input open or)	V	0 ... 0,8
	test	V	3 ... 45
Range 0 ... 2 I/O	0: inactive (input open or)	V	0 ... 0,8
	1: active	V	3 ... 45
Auto – Range	0: inactive (input open or)	V	0 ... 0,8
	1: active	V	3 ... 45

Control Signals (Output)

Sens - Ident	0: no sensor detection	kΩ	> 100
	1: PRIASED™ sensor detected	kΩ	< 0,1
Range 0 ... 2 I/O	0: inactive	kΩ	> 100
	1: active	kΩ	< 0,1
Switchover	0: before switchover	kΩ	> 100
	1: after switchover	kΩ	< 0,1

Switchover is identified by a signal change from 0 to 1.
The switchover signal is set back to 0 during the reset period.

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Connectors (Signal Input)

Piezoelectric with sensor detection	Fischer D102A051-60
Piezoelectric without sensor detection	BNC female connector (negative)
Temperature	Lemo Type EGG 0B 302 CLL

Identification of the Charge Amplifier

The amplifier can be identified via a code in the D-Sub connector. For this reason a defined voltage (typically the supply voltage) must be applied to D-Sub pin 13 (Code Supply +).

At the D-Sub pin „Code 0 ... 3“ the code, which corresponds to this amplifier, can be read (for detailed information see the operating instructions).

Auto-Range

In the operating mode ‚Auto-Range‘ the amplifier determines the optimum measuring range for the piezoelectric signal (in injection molding: cavity pressure signal). The switching of the ranges happens only during the reset period, in fact immediately after a switch from ‚operate‘ to ‚reset‘.

The PRIASED™ – System

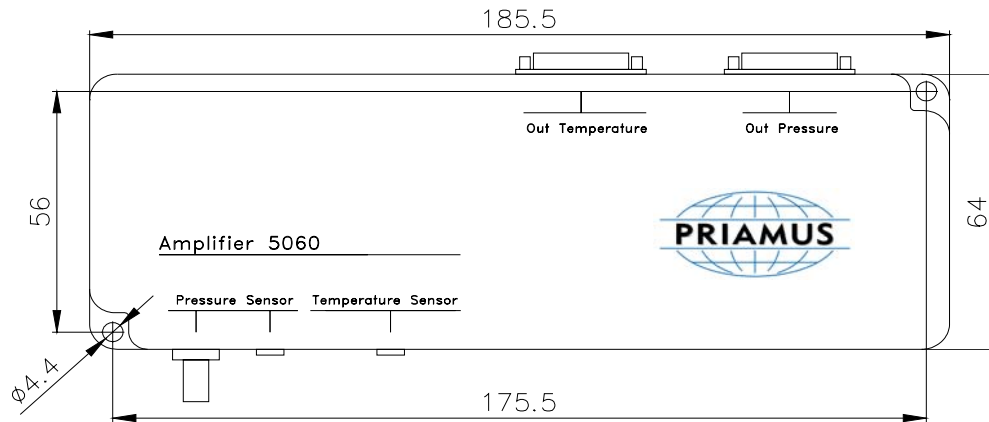
PRIASED™ stands for **PRIAMUS SENSITIVITY DETECTION**. This is a patented procedure for the automatic sensitivity detection of PRIAMUS sensors. Due to product liability reasons the system uses a hardware code (no memory chip!), and is therefore extremely robust and temperature resistant.

The amplifier type 5060D... detects piezoelectric PRIAMUS sensors and their sensitivity automatically.

All piezoelectric sensors which are not equipped with a hardware code can also be connected to the amplifier.

Version 5060D-M04 (Arburg)

Dimensions

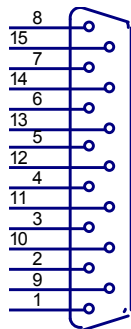


Graduation of Charge and Pressure Ranges

	Range	no sensor detection pC / 10V	PRIASED™ bar / 10V
Range 1	0	20'000	2'000
Range 2	1	5'000	5'00

Pin Allocation

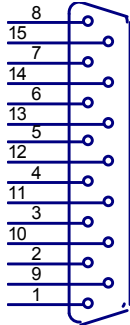
Pressure



Pin	Function
1	-15 V Supply
2	GND 15V Supply
3	Free
4	Range (Input, 0V = 20'000pC/10V)
5	GND Code
6	C2 Code
7	+15V Supply
8	Free
9	Signal
10	GND Signal
11	C3 Code
12	Operate (Input, 0V = Operate)
13	Free
14	C1 Code
15	C0 Code

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Temperature



Pin	Function
1	-15 V Supply
2	GND 15V Supply
3	Free
4	Free
5	GND Code
6	C2 Code
7	+15V Supply
8	Free
9	Signal
10	GND Signal
11	C3 Code
12	Operate (Input, 0V = Operate)
13	SLP
14	C1 Code
15	C0 Code

Control Signals (Input)

Operate	reset (input open or operate (GND input or)	V	V (U _S -0,8V)...U _S 0V...(U _S -3V)
Range (5.000 / 20.000 pC)	inactive (input open or active (GND input or)	V	V (U _S -0,8V)...U _S V 0V...(U _S -3V)

Control Signals (Output)

Switchover	0: before switchover 1: after switchover	kΩ	> 100 < 0,1
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Switchover is identified by a signal change from 0 to 1
The switchover signal is set back to 0 during the reset period