

# Multi Sensor Set p-T

Type 6833B...

## Cavity Pressure and Temperature Sensors with Multichannel Connectors, includes Mold Identification

Modular system for injection molding, multichannel applications or in multi-cavity injection molds. It consists of pressure and temperature sensors with Unisens<sup>®</sup> sensitivity for a 2- or 4-channel measurement configuration. All sensors are equipped with the single-wire technique.

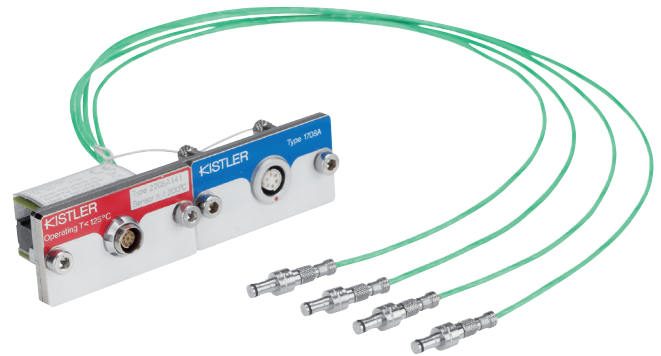
- Compact for two or four pressure and temperature sensors Type 6188AAG (front  $\varnothing$ 1 mm), Type 6189AG (front  $\varnothing$ 2,5 mm) or Type 6190CAG (front  $\varnothing$ 4 mm)
- Simplified connections, using single-wire technique, designed for industrial applications
- Use of 4-channel cables for pressure and temperature sensors
- Uniform Unisens<sup>®</sup> sensitivity of all sensors
- Multichannel connector with mold identification

### Description

The choice of pressure and temperature sensors with single-wire cable available for this set are the  $\varnothing$ 1 mm Type 6188AAG,  $\varnothing$ 2,5 mm Type 6189AG and  $\varnothing$ 4 mm Type 6190CAG. The Set includes the 4-channel connector Type 1708A1 as well as the 2- or 4-channel temperature amplifier Type 2205A... . The two connectors, Types 1708A1 and 2205A..., are premounted on an adapter plate Type 5700A25 to avoid the need for more than one recess in the mold.

The pressure acts directly over the entire front of the sensor and is transmitted to the crystal force link, which produces a proportional electrical charge. All sensor parts are corrosion-resistant. The sensitivity (charge per pressure or pC/bar) is the same for all sensors with Unisens technology and needs to be entered only once in the process monitoring system (e.g. CoMo Injection).

The contact temperature of the plastic is measured by means of a thermocouple welded into the front of the sensor. The temperature amplifier Type 2205A... converts the signal into a 0 ... 10 V voltage that can be passed on to an evaluation unit or process monitoring system.



The small cross-sectional area of the sensor cable allows flexibility of installation. With single-wire technology, electrical shielding is provided by the mold. The flying lead end of the cable is connected to the back of the multichannel connector using a cut and grip contact, thus dispensing with the need for a single-channel conventional connector Type 1839. The flying lead ends of the two thermocouple cables are connected on the back of the temperature amplifier.

### Technical Data

#### Multi Sensor Set Type 6833B...

Number of channels		2	4
Mounting		in mold	in mold
Multichannel connector pressure	Type	1708A1	1708A1
Pressure measurement	bar	0 ... 2 000	0 ... 2 000
Temperature amplifier	Type	2205A121	2205A141
Temperature measurement	°C	0 ... 200	0 ... 200
Mounting dimensions (LxBxT)	mm	104,5x28x30	104,5x28x30
Adapter plate Type 5700A25 (with 1708A1 and 2205A1x1)			
Extension cable (pressure)	Type	1995A...	1995A...
Extension cable (temperature)	Type	1457A1A...	1457A1A...
Mold temperature	°C	125	125

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**QUALITY MOLDING**  
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### Application

The multi sensor set is designed for industrial use in multi-cavity molds. The compact premounted assembly of an adapterplate with the 4-channel connector Type 1708A1 and the temperature amplifier Type 2205A... saves space. The simplified connection technique reduces the time needed to install the multichannel extension cables Types 1995A... and 1457A... for the pressure and temperature signals.

Another very useful application is the equipping of large single or two-cavity molds, in which the pressure and temperature curve has to be measured at several locations in one cavity. The multi sensor set, with the single-wire technology and the multichannel connector, allows simple mold design for two or four sensors with central cable connections.

This simplifies and standardizes the connection to quality monitoring systems like the CoMo Injection. The hazards of a potential mix-up can be excluded when connecting the sensors to the CoMo Injection.

The measuring range and the operating temperature range are dependent on the type of basic sensor and can be taken from the corresponding data sheet.

### Mounting

The sensors Types 6188AAG and 6189AG with a front diameter of 1 mm or rather front diameter of 2,5 mm is secured in the mounting bore with the spacer sleeve Type 6464A3. As the front of the sensor forms part of the cavity wall, it has to be set flush. The sensor Type 6190CAG with front diameter of  $\varnothing 4$  mm is secured in the bore with the mounting nut Type 6457. Details of the chosen sensors are to be found in the corresponding data sheets 6188A\_000-887, 6189A\_000-536 and 6190CA\_000-680.

The green sensor cable includes a single-wire cable for pressure signal and must be dressed into the mold and the multichannel connector must be mounted directly in the mold. The multichannel connector also has to be mounted directly in the mold to ensure electrical shielding. In order to provide adequate protection, the connector should be let into the wall of the mold (see mounting illustration Fig. 4).



Fig. 1: 4-channel connector Type 1708A1 for connection up to four sensors



Fig. 2: 2-channel or 4-channel temperature amplifier Type 2205A... for connection up to four sensors

The single-wire cables of the cavity pressure sensors are tightened by hand directly into the cut-and-grip contacts behind the multichannel connector. The cable can be cut to length as appropriate for the mold dimensions.

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### Mold Cavity Pressure Sensors

Only single-wire sensors with Unisens sensitivity are used for the multi sensor set (i.e. a mean sensitivity with tolerance of  $\pm 2\%$ ). The technical data along with the supplementary mounting instructions for the single-wire sensors are contained in the appropriate data sheet for the standard type of sensor. Direct mounting of the single-wire cables with the multichannel connector is a requisite for the multichannel system; this connector can then be connected via a corresponding multichannel extension cable to the CoMo Injection monitoring unit Type 2869...

For this reason, the included accessories for the multi sensor set do not contain the connector (Type 1839) or the mounting plate (Art. No. 3.520.328) listed in the data sheet for multi sensor set pT.

The Unisens sensitivity makes it easier to set up the monitoring unit. In the case of the CoMo Injection Type 2869..., the entered sensitivity can be copied from one channel to all of the others.

### Processing of Measured Data

The following systems is available for automatic processing of the measured data. The relevant data sheet is:

- CoMo Injection Type 2869... for process monitoring (2869B\_000-665)

### Spare Parts

Sensors and cables must be ordered individually as spare parts. For sensor Type 6190CAG the spare cable of 2 m length is the Type 2219AG, the spare cable of 5 m length is the Type 2219AG1.

The cable of the sensors Types 6188AAG and 6189AG may only be replaced in the Kistler factory.

When reordering these sensors, the average sensitivity of multi sensor set p-T must be stated. The sensitivity together with the serial number is engraved on the identification plate.

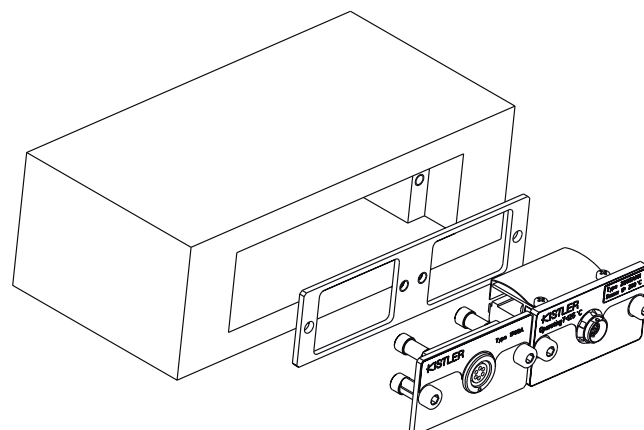


Fig. 3: Mounting for the 4-channel connector Type 1708A1 and temperature amplifier Type 2205A... with adapter plate Type 5700A25

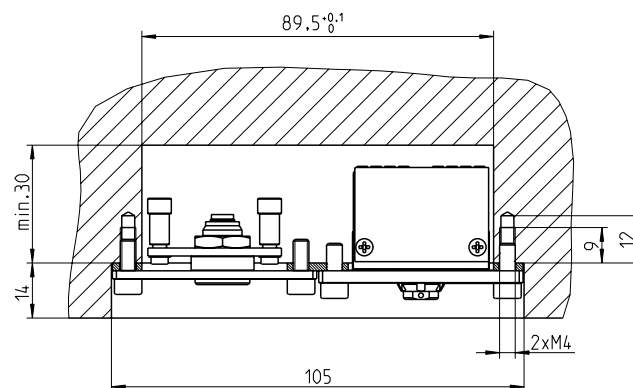


Fig. 4: Mounting dimensions for multi sensor set consisting of Type 1708A1 and 2205A...

Included Accessories	Type/Art. No.
• Mounting nut (for Type 6190CAG only)	6457
• Spacer sleeve (for Types 6188AAG and 6189AG only)	6464A3
• Checking tool (for Type 6188AAG only)	3.050.241
• Checking tool (for Type 6189AG only)	3.050.243
• 4-channel connector for pressure signals (charge)	1708A1
• Temperature amplifier 2-channel for temperature signals (voltage)	2205A121
<b>or</b>	
• Temperature amplifier 4-channel for temperature signal (voltage)	2205A141
• Adapter plate	5700A25
• Cable sheath stripping tool	1367
• Marker set for numbering of sensor cable	5.210.579
• Identification plate with sensor sensitivity	3.520.1093
• Document mounting instructions	002-405

**Note**

Cables, mounting nuts, spacer sleeves and checking tools are supplied according the number of sensors ordered.

**Optional Accessories** **Type**

4-channel extension cable for Type 1708A... (max. 4 sensors) connector 6 pin pos. to connector 6 pin neg.

• Length 1 m	1995A1
• Length 2 m	1995A2
• Length 5 m	1995A5
• Length costumer specific (L <sub>min</sub> = 0,3 m/L <sub>max</sub> = 10 m)	1995A <sub>sp</sub>

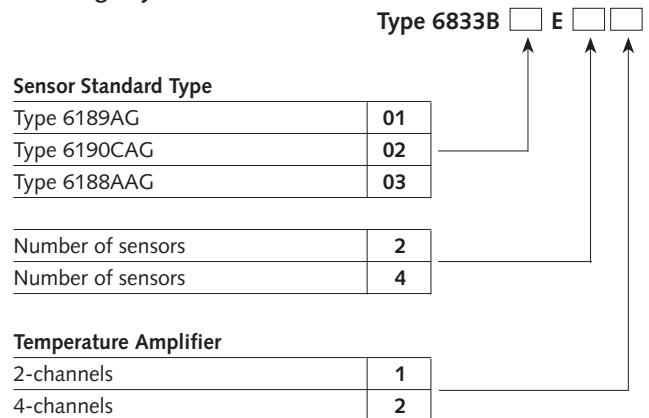
4-channel extension cable for Type 2205A... (max. 4 sensors) Fischer connector 102 pos. to connector D-Sub 15 pin pos.

• Length 1 m	1457A1A1
• Length 2 m	1457A1A2
• Length 5 m	1457A1A5
• Length costumer specific (L <sub>min</sub> = 0,3 m/L <sub>max</sub> = 30 m)	1457A1A <sub>sp</sub>

• Mounting tool for connecting the temperature cable to Type 2205A...	1300A20
• Extraction tools for Types 6188AAG and 6189AG	1358A
for Type 6190CAG	1315A
• Tubular socket wrench (only for Type 6190CAG)	1383

Optional Monitoring System	Type
• CoMo Injection for visualizing and monitoring the molding process, cable for connecting Type 6869A..., see data sheet for Type 2869B... (2869B_000-665)	2869...

**Ordering Key**



**Each set includes one 4-channel connector Type 1708A1.**

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