



Sensors

Melt pressure transducers and transmitters



GEFRAN

Our Know how,
Your Solution.

Melt pressure transducers and transmitters

GEFRAN Melt sensors are pressure/temperature transducers and transmitters for use in high-temperature environments, able to monitor melt pressure up to 538°C.

Based on two main constructive principles, with internal fluid (Extensimetric) and fluid free (Piezoresistive), they are available in 4 different versions: rigid rod, flexible sheathing, flexible plus thermocouple, and exposed tip.

The sensor monitors a full range of pressures: from minimum range of 0-17 bar up to the 0-3000 bar version.

mV/V output signals, 4-20mA, 0-10V, Gauge type, Can Open and Atex or Factory Mutual versions, complete the package of solutions for all architectures and applications used with plastics processing machines.

CE and GOST-R approval and high immunity to noise; for better adaptation to problems of electromagnetic disturbance in the field, working temperatures up to 538° C, are the main technical characteristics of GEFRAN Melt sensors.



Filled pressure sensor: extensimetric technology

By analyzing the construction of a filled sensor, it is evident that the structure is designed to transfer media pressure to the transduction part and keep it as far as possible from heat source.

The M/W/K/MJ series are in the filled sensor family.

The hydraulic circuit is composed of a tip with 0.1 mm internal diameter, at the end of which the contact diaphragm and extensimetric diaphragm are welded.

Inside the sensor, a filling fluid with low compression coefficient transfers the pressure. This fluid may be mercury, FDA-approved oil, or NaK. In all cases, fluid quantity depends on sensor design: the rigid rod contains 30 mm³; flex versions contain 40 mm³.

Diaphragm geometries are designed on the basis of the volumes and pressures that come into contact during measurement; the pressure that the media exerts on the contact diaphragm must create a precise deformation of the measurement diaphragm.

The measurement element, called extensimeter, is glued to the measurement diaphragm, and converts the physical pressure quantity into an electrical signal.

An extensimeter consists of a thin metal wire that is bent and inserted in a flexible insulating material according to a specific geometry.

The metal wire (measurement element) is an extra-thin leaf of a metal alloy formed by means of chemical engraving. This special engraving process produces metal grills with specific geometries that have maximum ability to modify their characteristics as they change shape.



mercury free



540°

NEW



Fluid-free pressure sensor: IMPACT technology

Series I (IMPACT) Melt sensors employ the piezoresistive principle: the pressure medium is converted into an electrical signal by a Wheatstone bridge built with 4 piezoresistors.

The Chip:

- the chip is the "sensing" element that converts pressure into an electrical signal
- the chip is made of a single microprocessed silicon structure into which piezoresistors are inserted to form a Wheatstone bridge
- the material used to make the chip and the technological process for the entire transducer structure guarantee that the device can be used up to 350°C



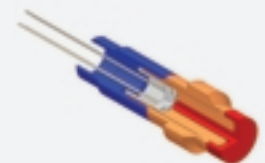
The package:

- the package guarantees mechanical transfer of the pressure to the chip without the use of transmission fluids
- the package has been optimized to make the sensor stronger and more reliable. All parts in contact with the process (and therefore subject to wear) are up to 35 times stronger than traditional sensors
- the modular structure is designed to resist dynamic pressures of up to 3500 bar
- the absence of filling fluid guarantees rapid response and total compatibility with RoHS directives



The complete sensor:

- conversion of the pressure into an electrical signal very close to the process permits a sensor with modular structure that makes the device easy to install and lets the user remote the electronics to the most practical location.



Extrusion applications: safety and performance

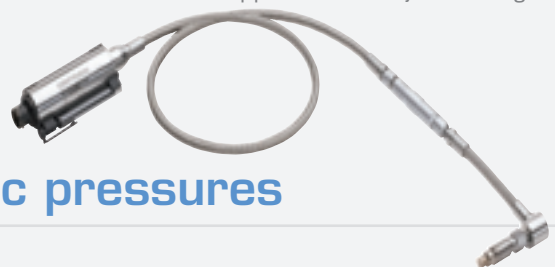
The Melt sensor is an essential tool in polymer production and processing.

Series M/W/K/I sensors are installed on extruders to monitor and control the principal process phases. Plant safety, prevention of excessive machine pressure, and increased performance thanks to a stable and optimum flow rate, are the reasons that make the use of Melt sensors indispensable in these applications. The positions are normally those for reading of cylinder pressure for purposes of checking its performance in screw development and design; in filter change to check cleaning; before and after the gear pump to maintain a constant flow rate; and in the head to check pressure in closed loops.

Thanks to its ability to resist dynamic pressures, the I series is the ideal solution for all applications subject to large fluctuations of the process pressure.

Injection applications: precision and reading of dynamic pressures

To satisfy the needs of the injection process, GEFTRAN has developed the IJ series, a Melt sensor built with IMPACT technology that can monitor dynamic pressures up to 3500 bar, with working temperatures up to 350°C. The sensor can be installed in the injection nozzle, in hot runners, or in external injection units. The reduced dimensions, the high robustness, the autocompensation and the new self learning function, the modularity and the full compatibility with all the industrial processes (Fluid Free technology), allow the IJ series to be an exclusive sensor on the market.



CANopen

Why choose GEFRAN

Mercury-free solutions

Concerned about environmental problems and in agreement with the RoHS directive, GEFRAN offers a wide range of "mercury-free" sensors.

These include series built with filled technology, from the W series containing FDA-approved oil to the K series containing NaK (Sodium-Potassium), a substance recognized as safe. The mercury-free solution par excellence is the I series, which has no filling at all.



mercury free



GTP

Our new GTP coating is used on the entire standard series and guarantees longer sensor life by reducing the coefficient of friction. It is extremely hard and resists high temperatures and corrosive chemicals.

Autozero

All transmitters in the M/W/K/I series with an output in current or voltage are equipped with the Autozero function, which eliminates all signal variations recorded by the sensor before the system is pressurized.

To activate the function, close the magnetic contact in the transmitter body. This procedure is permitted only with pressure at zero.

Autocompensation

With the SP option, internal autocompensation, M/W series transmitters can cancel the effect of the pressure signal variation caused by variation of the Melt temperature. This minimizes the error caused by heating of the filling fluid, typical of all sensors built with filled technology.

The new digital electronics allows the Impact technology to compensate automatically the thermal drift.

Atex and Factory Mutual Certifications

Only those electronic devices that conform to a precise safety requisite may be used in zones with a risk of explosion.

Under no circumstances may these devices cause an explosion. GEFRAN's MX or WX (Atex) and MF or WF (Factory Mutual) transmitters and transducers are certified on the basis of applicable protection and safety requisites.

How to select the best sensor?

There are many variables involved in choosing the most appropriate sensor.

The main variables are:

- Maximum pressure to be measured
- Accidental over-pressures
- Static or dynamic pressure
- Required accuracy
- Mechanical dimensions
- Output signal and connections
- Environmental conditions
- Filling fluid
- Contact materials (coatings).



GUIDE TO CODES

The code identifying the various models of GEFRAN Melt sensors has three sections, with the following meanings.

example: ME2 - Melt sensor with mercury filling fluid, 4-20 mA output in current with flexible rod plus thermocouple



M		E		2	
M	Mercury	3	3.33 mV/V non-amplified output	0	rigid rod
W	FDA oil	2	2.5 mV/V non-amplified output	1	flexible sheath
K	Nak	E	4-20mA output in current	2	flexible rod plus thermocouple
I	Impact	N	0-10V output in voltage	3	exposed tips
IJ	Injection application, Impact	D	CAN-BUS DP404 digital output DP404		
MJ	Injection application, mercury	5	output: extensimeter, analog display		
		6	output: extensimeter, digital display		
		X	Atex, Intrinsic Safety		
		F	Factory Mutual Explosion proof		

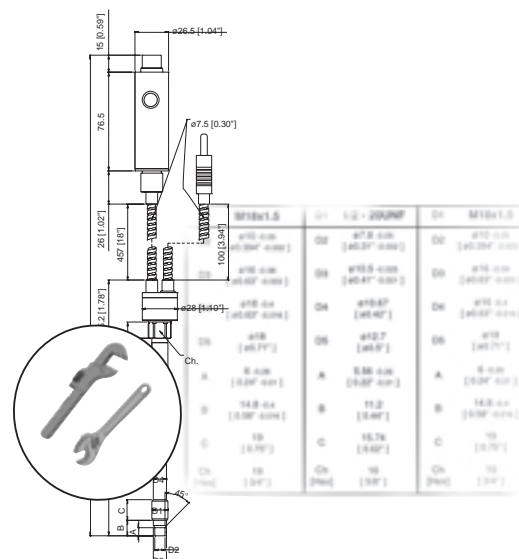
INSTALLATION GUIDE

Correct installation is essential for good sensor operation and long life.

Due to its position and the type of material it has to work in, the Melt sensor requires extremely careful installation.

To facilitate the installation procedure, the product is supplied with complete information on the size of the hole and the steps to perform before the sensor is used.

Drilling and cleaning kit, mounting brackets, dummy plugs, connectors and cables are provided as accessories.



EXTRUSION






Output mv/V



FILLING FLUID	mercury		diathermic oil (FDA approved)		sodium-potassium	
PRECISION CLASS (%FSO)	H 0,25%	M 0,50%	H 0,25%	M 0,50%	H 0,25%	M 0,50%
PRESSURE RANGE (bar)	0...35 to 0...2000bar 0...500 to 0...30000psi		0...35 to 0...1000bar 0...500 to 0...15000psi		0...35 to 0...1000bar 0...500 to 0...15000psi	
SUPPLY VOLTAGE (Vdc)	6...12Vdc(10Vdc typical)		6...12Vdc(10Vdc typical)		6...12Vdc(10Vdc typical)	
SIGNAL AT RATED PRESSURE	2.5 mV/V (option 2) 3.33mV/V (option 3)		2.5 mV/V (option 2) 3.33mV/V (option 3)		2.5 mV/V (option 2) 3.33mV/V (option 3)	
SIGNAL AT AMBIENT PRESSURE	±5% F.S.O.		±5% F.S.O.		±5% F.S.O.	
AMBIENT COMPENSATED TEMPERATURE RANGE (°C)(°F)	0...+100°C 32...212°F		0...+100°C 32...212°F		0...+100°C 32...212°F	
PERMITTED AMBIENT TEMPERATURE RANGE (°C)(°F)	-30...+120°C -22...250°C		-30...+120°C -22...250°C		-30...+120°C -22...250°C	
TEMPERATURE RANGE OF MEASUREMENT FLUID (°C)(°F)	400°C 750°F		315°C 600°F		0...+538°C 32...1000°F	
ZERO THERMAL DRIFT DUE TO VARIATION OF MEASUREMENT FLUID TEMPERATURE (bar/10°C)	0.02 bar/°C 15 psi/100°F		0.04 bar/°C 30 psi/100°F		<3.5 bar/100°C <51 psi/212°F	
PROTECTION DEGREE (IEC-529)	IP65		IP65		IP65	
TEMPERATURE SENSOR	Version M32 (Thermocouple type "J" isolated junction)		Version W32 (Thermocouple type "J" isolated junction)		Version K32 (Thermocouple type "J" isolated junction)	
MATERIAL IN CONTACT WITH PROCESS MEDIUM	15-5PH stainless steel with GTP coating 17-7 PH corrugated diaphragm with GTP coating for ranges < 100 bar (1500 psi)		17-7 PH corrugated diaphragm with GTP coating		15-5PH stainless steel with GTP coating 17-7 PH corrugated diaphragm with GTP coating for ranges < 100 bar (1500 psi) Up to 538°C Inconel with GTP coating	
ELECTRICAL CONNECTIONS	conn. 6 pin VPT07RA10-6PT (PT02A-10-6P) conn. 8 pin PC02E-12-8P		conn. 6 pin VPT07RA10-6PT (PT02A-10-6P) conn. 8 pin PC02E-12-8P		conn. 6 pin VPT07RA10-6PT (PT02A-10-6P) conn. 8 pin PC02E-12-8P	
PROCESS CONNECTIONS	1/2 - 20 UNF M14 x 1.5 M18 x 1.5 M10 x 1		1/2 - 20 UNF M18 x 1.5		1/2 - 20 UNF M18 x 1.5	
MECHANICS	M30 series – Rigid rod M31 series – Flex sheating M32 series – flex + thermos. *M33 series – exposed capillary		W30 series – Rigid rod W31 series – Flex sheating W32 series – flex + thermos. *W33 series – exposed capillary		K30 series – Rigid rod K31 series – Flex sheating K32 series – flex + thermos. *K33 series – exposed capillary	
OPTIONS	Rod and diaphragm in Hastelloy C276 Diaphragms coated with special coatings		Diaphragms coated with special coatings		Rod and diaphragm in Hastelloy C276 Diaphragms coated with special coatings	
MAIN APPLICATIONS	Extrusion of plastics Extrusion of fiber		Extrusion of plastics Mercury-free applications		Extrusion of plastics Mercury-free applications HT polymer processing	











* Available only in 1/2 - 20 UNF version













EXTRUSION	mercury		diathermic oil (FDA approved) 		sodium-potassium 	
Output mA	H 0,25%	M 0,5%	H 0,25%	M 0,5%	H 0,25%	M 0,5%
FILLING FLUID	mercury		diathermic oil (FDA approved) 		sodium-potassium 	
PRECISION CLASS (%FSO)	H 0,25%	M 0,5%	H 0,25%	M 0,5%	H 0,25%	M 0,5%
PRESSURE RANGE (bar)	0...35 to 0...2000bar 0...500 to 0...30000psi		0...35 to 0...1000bar 0...500 to 0...15000psi		0...35 to 0...1000bar 0...500 to 0...15000psi	
SUPPLY VOLTAGE (Vdc)	10...30Vdc		10...30Vdc		10...30Vdc	
SIGNAL AT RATED PRESSURE	20mA		20mA		20mA	
SIGNAL AT AMBIENT PRESSURE	4mA		4mA		4mA	
AMBIENT COMPENSATED TEMPERATURE RANGE (°C)(°F)	0...+85°C		0...+85°C		0...+85°C	
PERMITTED AMBIENT TEMPERATURE RANGE (°C)(°F)	-30...+105°C		-30...+105°C		-30...+105°C	
TEMPERATURE RANGE OF MEASUREMENT FLUID (°C)(°F)	400°C 750°F		315°C 600°F		0...538°C 32...1000°F	
ZERO THERMAL DRIFT DUE TO VARIATION OF MEASUREMENT FLUID TEMPERATURE (bar/10°C)	0.02 bar/°C 15 psi/100°F		0.04 bar/°C 30 psi/100°F		<3.5 bar/100°C <51 psi/212°F	
PROTECTION DEGREE (IEC-529)	IP65		IP65		IP65	
TEMPERATURE SENSOR	Version ME2 (Thermocouple type "J" isolated junction)		Version WE2 (Thermocouple type "J" isolated junction)		Version KE2 (Thermocouple type "J" isolated junction)	
MATERIAL IN CONTACT WITH PROCESS MEDIUM	15-5PH stainless steel with GTP coating 17-7 PH corrugated diaphragm with GTP coating for ranges < 100 bar (1500 psi)		17-7 PH corrugated diaphragm with GTP coating		15-5PH stainless steel with GTP coating 17-7 PH corrugated diaphragm with GTP coating for ranges < 100 bar (1500 psi) Up to 538°C Inconel with GTP coating 	
ELECTRICAL CONNECTIONS	conn. 6 pin VPT07RA10-6PT (PTO2A-10-6P) conn. 8 pin PCO2E-12-8P		conn. 6 pin VPT07RA10-6PT (PTO2A-10-6P) conn. 8 pin PCO2E-12-8P		conn. 6 pin VPT07RA10-6PT (PTO2A-10-6P) conn. 8 pin PCO2E-12-8P	
PROCESS CONNECTIONS	1/2 - 20 UNF M14 x 1.5 M18 x 1.5 M10 x 1		1/2 - 20 UNF M18 x 1.5		1/2 - 20 UNF M18 x 1.5	
MECHANICS	ME0 series – Rigid rod ME1 series – Flex sheathing ME2 series – flex + thermos. *ME3 series – exposed capillary		WE0 series – Rigid rod WE1 series – Flex sheathing WE2 series – flex + thermos. *WE3 series – exposed capillary		KE0 series – Rigid rod KE1 series – Flex sheathing KE2 series – flex + thermos. *KE3 series – exposed capillary	
OPTIONS	Rod and diaphragm in Hastelloy C276 Diaphragms coated with special coatings		Other diaphragm coatings		Rod and diaphragm in Hastelloy C276 Other diaphragm coatings	
MAIN APPLICATIONS	Extrusion of plastics Extrusion of fiber		Extrusion of plastics Mercury-free applications		Extrusion of plastics Mercury-free applications HT polymer processing	

* Available only in 1/2 - 20 UNF version

Extensimetric pressure transmitters for high temperature

EXTRUSION						
						
Output Volt						
FILLING FLUID	mercury		diathermic oil (FDA approved) 		sodium-potassium 	
PRECISION CLASS (%FSO)	H 0,25%	M 0,5%	H 0,25%	M 0,5%	H 0,25%	M 0,5%
PRESSURE RANGE (bar)	0...35 to 0...2000bar 0...500 to 0...30000psi		0...35 to 0...1000bar 0...500 to 0...15000psi		0...35 to 0...1000bar 0...500 to 0...15000psi	
SUPPLY VOLTAGE (Vdc)	15...30Vdc N,C 10...30Vdc B,M		15...30Vdc N,C 10...30Vdc B,M		15...30Vdc N,C 10...30Vdc B,M	
SIGNAL AT RATED PRESSURE	5Vdc (M,H) - 10Vdc (N,L) 5,1Vdc (B) 10,1Vdc (C)		5Vdc (M,H) - 10Vdc (N,L) 5,1Vdc (B) 10,1Vdc (C)		5Vdc (M) - 10Vdc (N) 5,1Vdc (B) 10,1Vdc (C)	
SIGNAL AT AMBIENT PRESSURE	0Vdc (M,N,H,L) 0,1Vdc (B,C)		0Vdc (M,N,H,L) 0,1Vdc (B,C)		0Vdc (M,N) 0,1Vdc (B,C)	
AMBIENT COMPENSATED TEMPERATURE RANGE (°C)(°F)	0...+85°C		0...+85°C		0...+85°C	
PERMITTED AMBIENT TEMPERATURE RANGE (°C)(°F)	-30...+105°C		-30...+105°C		-30...+105°C	
TEMPERATURE RANGE OF MEASUREMENT FLUID (°C)(°F)	400°C 750°F		315°C 600°F		0...+538°C 32...1000°F	
ZERO THERMAL DRIFT DUE TO VARIATION OF MEASUREMENT FLUID TEMPERATURE (bar/10°C)	0.02 bar/°C 15 psi/100°F		0.04 bar/°C 30 psi/100°F		<3.5 bar/100°C <51 psi/212°F	
PROTECTION DEGREE (IEC-529)	IP65		IP65		IP65	
TEMPERATURE SENSOR	MN2 Version (Thermocouple type "J" isolated junction)		WN2 Version (Thermocouple type "J" isolated junction)		KN2 Version (Thermocouple type "J" isolated junction)	
MATERIAL IN CONTACT WITH PROCESS MEDIUM	15-5PH stainless steel with GTP coating 17-7 PH corrugated diaphragm with GTP coating for ranges < 100 bar (1500 psi)		17-7 PH corrugated diaphragm with GTP coating		15-5PH stainless steel with GTP coating 17-7 PH corrugated diaphragm with GTP coating for ranges < 100 bar (1500 psi) Up to 538°C Inconel with GTP coating 	
ELECTRICAL CONNECTIONS	conn. 6 pin VPT07RA10-6PT (PTO2A-10-6P) conn. 8 pin PC02E-12-8P		conn. 6 pin VPT07RA10-6PT (PTO2A-10-6P) conn. 8 pin PC02E-12-8P		conn. 6 pin VPT07RA10-6PT (PTO2A-10-6P) conn. 8 pin PC02E-12-8P	
PROCESS CONNECTIONS	1/2 - 20 UNF M14 x 1.5 M18 x 1.5 M10 x 1		1/2 - 20 UNF M18 x 1.5		1/2 - 20 UNF M18 x 1.5	
MECHANICS	MNO series – Rigid rod MN1 series – Flex sheating MN2 series – flex + thermos. *MN3 series – exposed capillary		WNO series – Rigid rod WN1 series – Flex sheating WN2 series – flex + thermos. *WN3 series – exposed capillary		KNO series – Rigid rod KN1 series – Flex sheating KN2 series – flex + thermos. *KN3 series – exposed capillary	
OPTIONS	Rod and diaphragm in Hastelloy C276 Diaphragms coated with special coatings		Other diaphragm coatings		Rod and diaphragm in Hastelloy C276 Other diaphragm coatings	
MAIN APPLICATIONS	Extrusion of plastics Extrusion of fiber		Extrusion of plastics Mercury-free applications		Extrusion of plastics Mercury-free applications HT polymer processing	

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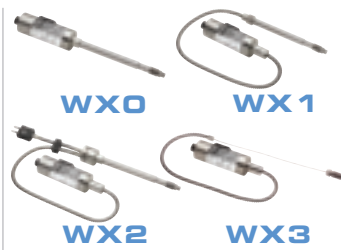
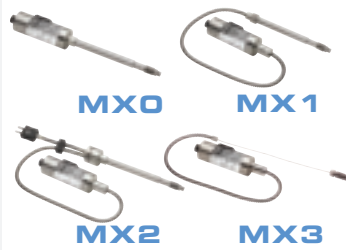
<p>EXTRUSION</p> <p>Digital Output</p> <p>CANopen </p>	 <p>MD0 MD1</p>  <p>MD2 MD3</p>		 <p>WDO WD1</p>  <p>WD2 WD3</p>		 <p>KDO KD1</p>  <p>KD2 KD3</p>	
<p>FILLING FLUID</p>	<p>mercury</p>		<p>diathermic oil (FDA approved) </p>		<p>sodium-potassium </p>	
<p>PRECISION CLASS (%FSO)</p>	<p>H 0,25%</p>	<p>M 0,5%</p>	<p>H 0,25%</p>	<p>M 0,5%</p>	<p>H 0,25%</p>	<p>M 0,5%</p>
<p>PRESSURE RANGE (bar)</p>	<p>0...35 to 0...2000bar 0...500 to 0...30000psi</p>		<p>0...35 to 0...1000bar 0...500 to 0...15000psi</p>		<p>0...35 to 0...1000bar 0...500 to 0...15000psi</p>	
<p>SUPPLY VOLTAGE (Vdc)</p>	<p>12...40Vdc</p>		<p>12...40Vdc</p>		<p>12...40Vdc</p>	
<p>POWER SUPPLY PROTOCOL</p>	<p>DP404 CAN OPEN, with baud rate selection from 10K to 1M baud (default 500K baud)</p>		<p>DP404 CAN OPEN, with baud rate selection from 10K to 1M baud (default 500K baud)</p>		<p>DP404 CAN OPEN, with baud rate selection from 10K to 1M baud (default 500K baud)</p>	
<p>STRAIN GAUGE HOUSING COMPENSATED TEMPERATURE RANGE</p>	<p>0...+76°C (32...170°F)</p>		<p>0...+76°C (32...170°F)</p>		<p>0...+76°C (32...170°F)</p>	
<p>STRAIN GAUGE HOUSING MAXIMUM TEMPERATURE RANGE</p>	<p>-30...+85°C (-22...185°F)</p>		<p>-30...+85°C (-22...185°F)</p>		<p>-30...+85°C (-22...185°F)</p>	
<p>TEMPERATURE RANGE OF MEASUREMENT FLUID (°C)(°F)</p>	<p>400°C 750°F</p>		<p>315°C 600°F</p>		<p>0...538°C 32...1000°F</p>	
<p>ZERO THERMAL DRIFT DUE TO VARIATION OF MEASUREMENT FLUID TEMPERATURE (bar/10°C)</p>	<p>0.02 bar/°C 15 psi/100°F</p>		<p>0.04 bar/°C 30 psi/100°F</p>		<p><3.5 bar/100°C <51 psi/212°F</p>	
<p>PROTECTION DEGREE (IEC-529)</p>	<p>IP65</p>		<p>IP65</p>		<p>IP65</p>	
<p>TEMPERATURE SENSOR</p>	<p>MD2 Version (Thermocouple type "J" isolated junction)</p>		<p>WD2 Version (Thermocouple type "J" isolated junction)</p>		<p>KD2 Version (Thermocouple type "J" isolated junction)</p>	
<p>MATERIAL IN CONTACT WITH PROCESS MEDIUM</p>	<p>15-5PH stainless steel with GTP coating 17-7 PH corrugated diaphragm with GTP coating for ranges < 100 bar (1500 psi)</p>		<p>17-7 PH corrugated diaphragm with GTP coating</p>		<p>15-5PH stainless steel with GTP coating 17-7 PH corrugated diaphragm with GTP coating for ranges < 100 bar (1500 psi) Up to 538°C Inconel with GTP coating </p>	
<p>ELECTRICAL CONNECTIONS</p>	<p>conn. 5 pin M12, DIN EN50044</p>		<p>conn. 5 pin M12, DIN EN50044</p>		<p>conn. 5 pin M12, DIN EN50044</p>	
<p>PROCESS CONNECTIONS</p>	<p>1/2 - 20 UNF M14 x 1.5 M18 x 1.5 M10 x 1</p>		<p>1/2 - 20 UNF M18 x 1.5</p>		<p>1/2 - 20 UNF M18 x 1.5</p>	
<p>MECHANICS</p>	<p>MDO series – Rigid rod MD1 series – Flex sheathing MD2 series – flex + thermos. *MD3 series – exposed capillary</p>		<p>WDO series – Rigid rod WD1 series – Flex sheathing WD2 series – flex + thermos. *WD3 series – exposed capillary</p>		<p>KDO series – Rigid rod KD1 series – Flex sheathing KD2 series – flex + thermos. *KD3 series – exposed capillary</p>	
<p>OPTIONS</p>	<p>Rod and diaphragm in Hastelloy C276 Diaphragms coated with special coatings</p>		<p>Other diaphragm coatings</p>		<p>Rod and diaphragm in Hastelloy C276 Other diaphragm coatings</p>	
<p>MAIN APPLICATIONS</p>	<p>Extrusion of plastics Extrusion of fiber</p>		<p>Extrusion of plastics Mercury-free applications</p>		<p>Extrusion of plastics Mercury-free applications HT polymer processing</p>	

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EXTRUSION

Hazardous Area

ATEX



FILLING FLUID

mercury

diathermic oil (FDA approved)

mercury

PRECISION CLASS (%FSO)

H 0,25%
M 0,50%

H 0,25%
M 0,50%

H 0,25%
M 0,50%

PRESSURE RANGE (bar)

0...35 to 0...2000bar
0...500 to 0...30000psi

0...35 to 0...1000bar
0...500 to 0...15000psi

0...35 to 0...1000bar
0...500 to 0...15000psi

SUPPLY VOLTAGE (Vdc)

12...30Vdc

12...30Vdc

12...30Vdc

SIGNAL AT RATED PRESSURE

20mA

20mA

20mA

SIGNAL AT AMBIENT PRESSURE

4mA

4mA

4mA

AMBIENT COMPENSATED TEMPERATURE RANGE (°C)(°F)

-20...+70°C
-4...+158°F

-20...+70°C
-4...+158°F

-20...+70°C
-4...+158°F

PERMITTED AMBIENT TEMPERATURE RANGE (°C)(°F)

See Safety Mode

See Safety Mode

See Safety Mode

TEMPERATURE RANGE OF MEASUREMENT FLUID (°C)(°F)

400°C
750°F

315°C
600°F

400°C
750°F

ZERO THERMAL DRIFT DUE TO VARIATION OF MEASUREMENT FLUID TEMPERATURE (bar/10°C)

0.02 bar/°C
15 psi/100°F

0.04 bar/°C
30 psi/100°F

0.02 bar/°C
15 psi/100°F

PROTECTION DEGREE (IEC-529)

IP65

IP65

IP65

TEMPERATURE SENSOR

Version MX2 (Thermocouple type "J" isolated junction)

Version WX2 (Thermocouple type "J" isolated junction)

PROTECTION MODE

EEx ia IIC T5,T4
ambient temperature
20...+55°C/+60°C/+70°C

EEx ia IIC T5,T4
ambient temperature
20...+55°C/+60°C/+70°C

EEx ia IIC T5,T4
ambient temperature
20...+55°C/+60°C/+70°C

MATERIAL IN CONTACT WITH PROCESS MEDIUM

15-5 PH stainless steel with GTP coating
17-7 PH corrugated diaphragm with GTP coating for ranges <100bar (1500psi)

17-7 PH corrugated diaphragm with GTP coating

15-5 PH stainless steel with GTP coating
17-7 PH corrugated diaphragm with GTP coating for ranges <100bar (1500psi)

ELECTRICAL CONNECTIONS

conn. 6 pin VPT07RA10-6PT (PT02A-10-6P)
conn. 8 pin PC02E-12-8P

conn. 6 pin VPT07RA10-6PT (PT02A-10-6P)
conn. 8 pin PC02E-12-8P

conn. 6 pin VPT07RA10-6PT (PT02A-10-6P)
conn. 8 pin PC02E-12-8P

PROCESS CONNECTIONS

1/2 - 20 UNF
M14 x 1.5
M18 x 1.5
M10 x 1

1/2 - 20 UNF
M18 x 1.5

Flange

MECHANICS

MX0 series – Rigid rod
MX1 series – Flex sheathing
MX2 series – flex + thermos.
*MX3 series – exposed capillary

WX0 series – Rigid rod
WX1 series – Flex sheathing
WX2 series – flex + thermos.
*WX3 series – exposed capillary

MX4 series - flange

OPTIONS

Rod and diaphragm in Hastelloy C276
Other diaphragm coatings

Other diaphragm coatings

Other diaphragm coatings

MAIN APPLICATIONS

Extrusion of plastics
Extrusion of fiber

Extrusion of plastics
Mercury-free applications

Extrusion of plastics
Extrusion of fiber

* Available only in 1/2 - 20 UNF version

EXTRUSION

Hazardous Area

**FACTORY
MUTUAL**



FILLING FLUID	mercury		diathermic oil (FDA approved)	
PRECISION CLASS (%FSO)	H 0,25%	M 0,5%	H 0,25%	M 0,5%
PRESSURE RANGE (bar)	0...35 to 0...2000bar 0...500 to 0...30000psi		0...35 to 0...1000bar 0...500 to 0...15000psi	
SUPPLY VOLTAGE (Vdc)	12...30Vdc (24Vdc rec.)		12...30Vdc (24Vdc rec.)	
SIGNAL AT RATED PRESSURE	20mA		20mA	
SIGNAL AT AMBIENT PRESSURE	4mA		4mA	
AMBIENT COMPENSATED TEMPERATURE RANGE (°C)(°F)	0°C to 76°C (32°F to 170°F)		0°C to 76°C (32°F to 170°F)	
PERMITTED AMBIENT TEMPERATURE RANGE (°C)(°F)	-30...85°C (-22...185°F)		-30...85°C (-22...185°F)	
TEMPERATURE RANGE OF MEASUREMENT FLUID (°C)(°F)	400°C 750°F		315°C 600°F	
ZERO THERMAL DRIFT DUE TO VARIATION OF MEASUREMENT FLUID TEMPERATURE (bar/10°C)	0.02 bar/°C 15 psi/100°F		0.04 bar/°C 30 psi/100°F	
PROTECTION DEGREE (IEC-529)	IP65		IP65	
PROTECTION MODE	Explosionproof per la Classe I, Divisione 1, Gruppi A,B,C,D e polveri Ignitionproof per la Classe II, Divisione 1, Gruppi E,F,G		Explosionproof per la Classe I, Divisione 1, Gruppi A,B,C,D e polveri Ignitionproof per la Classe II, Divisione 1, Gruppi E,F,G	
MATERIAL IN CONTACT WITH PROCESS MEDIUM	15-5 PH stainless steel with GTP coatingP 17-7 PH corrugated diaphragm with GTP coating for ranges <100bar (1500psi)		17-7 PH corrugated diaphragm with GTP coating for ranges <100bar (1500psi)	
ELECTRICAL CONNECTIONS	Cable (type NPT)		Cable (type NPT))	
PROCESS CONNECTIONS	1/2 - 20 UNF M14 x 1.5 M18 x 1.5 M10 x 1		1/2 - 20 UNF M18 x 1.5	
MECHANICS	MFO series – Rigid rod MF1 series – Flex sheathing MF2 series – flex + thermos. *MF3 series – exposed capillary		WFO series – Rigid rod WF1 series – Flex sheathing WF2 series – flex + thermos. *WF3 series – exposed capillary	
OPTIONS	Rod and diaphragm in Hastelloy Diaphragm coated with special coatings		Other diaphragm coatings	
MAIN APPLICATIONS	Extrusion of plastics Extrusion of fiber		Extrusion of plastics Mercury-free applications	

* Available only in 1/2 - 20 UNF version

Extensimetric pressure transmitters for high temperature

EXTRUSION

Digital indication



NOMINAL ACCURACY INCLUDING LINEARITY, REPEATABILITY, HYSTERESIS

M > ±0.50% FSO

M > ±0.50% FSO

MEASUREMENT RANGE (bar)

0...35 a 0...1000bar
0...500 a 0...15000psi

0...35 a 0...1000bar
0...500 a 0...15000psi

SUPPLY VOLTAGE (Vdc)

115 VAC o 230VAC (factory set)

115 VAC o 230VAC (factory set)

RETRANSMISSION OF PRESSURE VALUE

4-20 mA (650Ω max.load)

4-20 mA (650Ω max.load)

MAXIMUM HOUSING TEMPERATURE

55°C (130°F)

55°C (130°F)

THERMAL DRIFT IN COMPENSATED RANGE

Zero Sensitivity

4.0%/100°C (2.0%/100°F)
2.0%/100°C (1.0%/100°F)

4.0%/100°C (2.0%/100°F)
2.0%/100°C (1.0%/100°F)

MAXIMUM DIAPHRAGM TEMPERATURE

400°C (750°F)

315°C (600°F)

ZERO DRIFT DUE TO CHANGE IN PROCESS TEMPERATURE

0.02 bar/°C
(15 psi/100°F)

0.04 bar/°C
(30 psi/100°F)

MATERIAL IN CONTACT WITH PROCESS MEDIUM

Standard
70bar
(1000psi)

15-5 PH SS (GTP coated)
Corrugated 17-7 PH SS
(GTP coated)

Corrugated 17-7 PH SS
(GTP coated)

THERMOCOUPLE (M62-W62 MODEL)

Type "J" (isolated junction)

Type "J" (isolated junction)

RETRANSMISSION

4-20mA

4-20mA

EXTRUSION

Analog indication



M50



M51



M52

NOMINAL ACCURACY INCLUDING LINEARITY, REPEATABILITY, HYSTERESIS

$L < \pm 1\% \text{ FSO}$

$L < \pm 1\% \text{ FSO}$

$L < \pm 1\% \text{ FSO}$

MEASUREMENT RANGE (bar)

0...350 to 0...700bar
0...5000 to 0...10000psi

0...350 to 0...700bar
0...5000 to 0...10000psi

0...350 to 0...700bar
0...5000 to 0...10000psi

MAXIMUM OVERPRESSURE

1.5 x FSO

1.5 x FSO

1.5 x FSO

MEASUREMENT PRINCIPLE

Bourdon tube

Bourdon tube

Bourdon tube

HOUSING TEMPERATURE RANGE

-30...85°C (-22...185°F)

-30...85°C (-22...185°F)

-30...85°C (-22...185°F)

MAXIMUM DIAPHRAGM TEMPERATURE

400°C (750°F)

400°C (750°F)

400°C (750°F)

ZERO DRIFT DUE TO CHANGE IN PROCESS TEMPERATURE

0.02 bar/°C
(15 psi/100°F)

0.02 bar/°C
(15 psi/100°F)

0.02 bar/°C
(15 psi/100°F)

MATERIAL IN CONTACT WITH PROCESS MEDIUM

Standard

15-5 PH SS (GTP coated)

15-5 PH SS (GTP coated)

15-5 PH SS (GTP coated)

THERMOCOUPLE (M62-W62 MODEL)

Type "J" (isolated junction)

Type "J" (isolated junction)

Type "J" (isolated junction)

Extensimetric pressure indicators for high temperature

EXTRUSION / INJECTION-BLOW MOULDING



IE1
Current output



IN1
Voltage output



I3
mV/V output

ACCURACY CLASS (%FSO)

H
0,25%

M
0,5%

H
0,25%

M
0,5%

H
0,25%

M
0,5%

MEASUREMENT RANGE (bar)

0...100 to 0...1000bar
0...1500 to 0...15000psi

0...35 to 0...1000bar
0...500 to 0...15000psi

0...35 to 0...1000bar
0...500 to 0...15000psi

POWER SUPPLY (Vdc)

10...30Vdc N,C

15...30Vdc

8...12Vdc

SIGNAL AT RATED PRESSURE

20mA

5Vdc (M) - 10Vdc (N)
5,1Vdc (B,C) - 10,1Vdc (C)

2,5mV/V (2)
3,33mV/V (3)

SIGNAL AT AMBIENT PRESSURE

4mA

0Vdc (M,N)
0,1Vdc (B,C)

0mV/V

AMBIENT COMPENSATED TEMPERATURE RANGE

0...+85°C

0...+85°C

0...+85°C

PERMITTED AMBIENT TEMPERATURE RANGE

-30...+105°C

-30...+105°C

-30...+105°C

MAXIMUM DIAPHRAGM TEMPERATURE (°C)[°F]

350°C
660°F

350°C
660°F

350°C
660°F

ZERO THERMAL DRIFT DUE TO VARIATION OF MEASUREMENT OF PROCESS OF RANGE 20-350°C

< ± 1,2 %FSO

< ± 1,2 %FSO

< ± 1,2 %FSO

FULL SCALE SIGNAL VARIATION DUE TO PROCESS TEMPERATURE VARIATION IN RANGE 20-350°C

< ± 1 %FSO

< ± 1 %FSO

< ± 1 %FSO

MATERIAL IN CONTACT WITH PROCESS MEDIUM

15-5 PH
GTP coated

15-5 PH
GTP coated

15-5 PH
GTP coated

PROTECTION DEGREE

IP65

IP65

IP65

ELECTRICAL CONNECTIONS

conn. 6 pin VPT07RA10-6PT
(PTO2A-10-6P)
conn. 8 pin PC02E-12-8P

conn. 6 pin VPT07RA10-6PT
(PTO2A-10-6P)
conn. 8 pin PC02E-12-8P

conn. 6 pin VPT07RA10-6PT
(PTO2A-10-6P)
conn. 8 pin PC02E-12-8P

PROCESS CONNECTIONS

1/2 - 20 UNF
M18 x 1,5

1/2 - 20 UNF
M18 x 1,5

1/2 - 20 UNF
M18 x 1,5

MECHANICS

Flex sheating

Flex sheating

Flex sheating

MAIN APPLICATIONS

Extrusion of plastics
Food and Pharmaceutical applications
Mercury-free applications
Abrasive polymers (fiber glass/recycling)
Dynamic pressure
Injection-Blow moulding

Extrusion of plastics
Food and Pharmaceutical applications
Mercury-free applications
Dynamic pressure
Injection-Blow moulding

Extrusion of plastics
Food and Pharmaceutical applications
Mercury-free applications
Dynamic pressure
Injection-Blow moulding

INJECTION



IX
Current output



IJ-N (Voltage output)
IJ-D (Digital output) **CANopen**



MJ-N (Voltage output)
MJ-D (Digital output)

H 0,25%	M 0,5%	$\pm 0,5\%$	$\pm 0,25\%$ FSO
0...35 to 0...1000bar 0...500 to 0...15000psi	0...3500bar 0...40000psi	0...2500bar 0...35000psi	
10...30 Vdc	15...30 Vdc N,C (IJ-N) 12...40 Vdc (IJ-D)	15...30 Vdc (MJ-N) 12...40 Vdc (MJ-D)	
20mA	Depends of FSO	10Vdc (MJ-N) Depends of FSO (MJ-D)	
4mA	0Vdc (IJ-N) 0 (IJ-D)	0Vdc (MJ-N) 0 (MJ-D)	
0...+85°C	0...+85°C	0...+85°C	
-20...+85°C	-30...+105°C	-30...+105°C	
350°C 660°F	350°C 660°F	400°C 750°F	
$< \pm 1,2\%$ FSO	$< \pm 1\%$ FSO	0,03bar/°C	
$< \pm 1\%$ FSO	$< \pm 1\%$ FSO	$\leq 0,02\%$ FSD/°C	
15-5 PH GTP coated	15-5 PH GTP coated	17-7 PH TiAlN coated	
IP65	IP65	IP65	
conn. 6 pin VPT07RA10-6PT (PT02A-10-6P) conn. 8 pin PC02E-12-8P	conn. 6-7-8 pin conn. 5 pole M12 (IJ-D)	conn. 5-7 pin	
1/2 - 20 UNF M18 x 1,5	1/2 - 20 UNF	1/2 - 20 UNF M10x1	
Flex sheating	Flex sheating	Flex sheating	
Extrusion of plastics Extrusion of fiber Food and Pharmaceutical applications (Mercury free) Dynamic pressure	Injection presses for plastics. Pressure measurement in real time	Injection presses for plastics. Pressure measurement in real time	

Guide to selection of the diaphragm in contact with extruded polymer

SECTOR OF USE	MATERIAL WORKED	TEMPERATURE AND PROCESS PRESSURE	NOTES	SPECIAL VERSION
Heat insulation panels / Plexiglas; plastics for injection	PMMA (high viscosity), plexiglass	190-230°C	Standard diaphragm	000
Hydraulic tubes (drains, sewers, etc.)	PVC-U, UPVC, RPVC (high viscosity)	180-200°C	Standard diaphragm	026-109
Hydraulic tubes for heating, high pressure tubes, tubes for the chemical industry	PP (Polypropylene)	200-230°C	Standard diaphragm	000
Rugs and carpets (moquettes)	PP (Polypropylene)	200-230°C	Standard diaphragm	000
Plastic bags, wrapping films and tapes, low-cost laminates	PE-LD (Low density) (o LO-PE)	170-190°C	Standard diaphragm	000
Bags for potato chips, reclosable bags (W/K/I series)	PP (Polypropylene)	200-230°C	Use W series	000
Plastic bottles and other food applications (W/K/I series)	PET,		Use W series	000
Nylon films and tapes for packaging; covers with high mechanical strength and resistance to high temperatures (profiles, corners, etc..)	PA6 (Nylon 6)	210-260°C / P < 500bar	Special diaphragm with excellent resistance to contact with adhesive materials	123
Films, monofilaments and misc. profiles	PA66 (Nylon 66, Polyamide 66) / PVDF	210-290°C / P > 500bar	Special diaphragm with excellent resistance to contact with adhesive materials	110
Films for food (roast in a bag) (W/K/I series)	PA66 (Nylon 66, Polyamide 66)	265-290°C	Use W series	123
Packaging for food (DOMOPACK or "cheese paper") (W/K/I series)	PE-HD-High Density (o HD-PE)	180-210°C	Use W series with standard diaphragm	000
Building industry; mixers for tires	Highly abrasive plastics; extrusion at high flow rate; fiberglass, ceramics, mineral resins, rubber	fino a 400°C 200°C	Special diaphragm with high strength and resistance to abrasion and rod drift, accuracy and sensitivity	261 - B31
Insulating sheathing for electrical cables	PVC / Corrosive plastics	205-240°C 100-250bar	Special diaphragm, resistant to corrosive materials	109
Finishings (caravans, furniture, home appliances, freezers, formica, etc.)	ABS (Acrylonitrile Butadiene Styrene)		Special diaphragm, resistant to corrosive materials	109
Packing; building	Teflon, PC Polycarbonate-Makrolon, coloring agents; resin additives		Special diaphragm, resistant to adhesive materials	B31
Pharmaceutical use (W/K/I series)	Teflon, PC Polycarbonate-Makrolon, coloring agents; resin additives		Series K with special diaphragm or series W with GTP standard	B31
Abrasive applications with moderate temperatures	Processes containing vitreous materials or abrasive resins		Special diaphragm with resistance to abrasion and rod drift, accuracy and sensitivity	B31
Abrasive applications	Processes containing vitreous materials or abrasive resins		Special diaphragm with resistance to abrasion and rod drift, accuracy and sensitivity	B31
Recycling of plastic materials	Bulk materials + solid impurities		Special diaphragm with resistance to abrasion and rod drift, accuracy and sensitivity	B31
Plastics industry FDA approved			W/K/I series with FDA approved coating	B39

Accessories

Safety devices

BURST DISKS -GRD-

The burst disk, also known as burst cap, is an entirely mechanical device designed to give way under a defined pressure. It is mounted on the extruder and prevents sudden and dangerous pressure increases in the machine by breaking and releasing pressure.

High accuracy (0,5%) and a pressure range of use make the GRD an excellent addition to traditional control devices, especially in emergencies demanding a rapid response time.

Process connection: 1/2 20 UNF

Tip size: 8mm

Main characteristics: maximum working temperature 400°C

Pressures: 2500/12000 psi

DRILLING AND CLEANING KIT



Drilling kit for 1/2 - 20 UNF KF12
 Drilling kit for M18 - 1,5 KF18
 Drilling kit for M10x1 KF10
 (only for MJ)

Cleaning kit for 1/2 - 20 UNF CT12
 Cleaning kit for M18 x 1,5 CT18
 Cleaning kit for M10x1 CT10
 (only for MJ)

BRACKETS AND PROTECTION PLUG



Bracket SF18



Protection cap for 1/2 - 20 UNF SC12
 Protection cap for M18x1,5 SC18
 Protection cap for M10x1 SC10
 (only for MJ)

FEMALE CONNECTORS



6-pin female connector (IP65)
 CON300



5-pin female connector (IP65)
 CON031



8-pin female connector
 CON307

TS3

Transducer simulator

The TS3 simulates the output of a Gefran mV/V melt pressure transducer (M3 and W3 series) at various pressure levels.

The TS3 simulates any strain gage-based transducer and is available in either a 6-pin (TS36) or 8-pin (TS38) version.

Extension cables



		For digital output	
5-pin cable with 1 meter cable	(3,3ft)		PCAV310
5-pin cable with 2 meters cable	(7ft)		PCAV311
5-pin cable with 5 meters cable	(17ft)		PCAV314
		for not amplified output	for amplified output
6-pin cable with 8 meters cable	(25ft)	C08W	C08WLS
6-pin cable with 15 meters cable	(50ft)	C15W	C15WLS
6-pin cable with 25 meters cable	(75ft)	C25W	C25WLS
6-pin cable with 30 meters cable	(100ft)	C30W	C30WLS
8-pin cable with 8 meters cable	(25ft)	E08W	E08WLS
8-pin cable with 15 meters cable	(50ft)	E15W	E15WLS
8-pin cable with 25 meters cable	(75ft)	E25W	E25WLS
8-pin cable with 30 meters cable	(100ft)	E30W	E30WLS

CMI

CAN-OPEN Module Interface for not-amplified transducer

The CAN OPEN module interface for not-amplified transducers has been developed to acquire low level signals from strain gage bridges (load cells, pressure transducers) and to convert them in digital format according to standard CAN OPEN DSP 404.

This module makes easier the creation of the CAN nets using sensors and standard transducers with savings on wiring costs.

This is the ideal solution for retrofitting or for the up-grade for systems and machineries.



Accessories for IJ and MJ series



5 pin female connector
(IP65) CON031



7 pin female connector
(IP40) CON320



7 pin female connector 90°C
(IP40) CON322



6 pin female connector
CON022



8 pin female connector
CON026



Bracket PKIT 172
(only for MJ)



Bracket PKIT 176
(only for MJ)

APPLICATIONS

	<p>POLYMER</p> 
	<p>EXTRUSION</p> 
	<p>INJECTION</p> 
	<p>INJECTION/ BLOW-MOULDING</p> 

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