PRECIMETER

Molten Metal Level Control

Product Catalogue

Precimeter ProH Digital Camera Sensor

Product Catalogue
All Products

Technical data are subject to change at any time. For updated information, please contact your local Precimeter representative.

Valid from 2014-01-01.

Contents:

PRECIMETER

Molten Metal Level Control

ProH Digital Camera Sensor

The Digital Camera Sensor Family **ProH** from Precimeter combines high performance laser triangulation with all the control functions you need to maintain an accurate molten metal level. The patented digital camera technology in the Precimeter sensors (US patent no 4,911,551), results in very high performance and accuracy. This enables the use of Laser Class II, which means that no special safety measures are required. The advanced technology makes it possible to give stable readings even when the material reflectivity changes dramatically and in harsh conditions like steam and smoke. The built in PI controller eliminates the need for an external industrial controller. This reduces the system cost and set up time.

Advantages

- No safety measures required, no yearly eye examination, no laser officer required.
- Stable readings even in difficult environments.
- Laser class II approved
- Easy to install
- Compact design
- Metal Level Control systems adapted to our actuators and sensors are availiable.
- **PC Software** gives access to all sensor parameters.

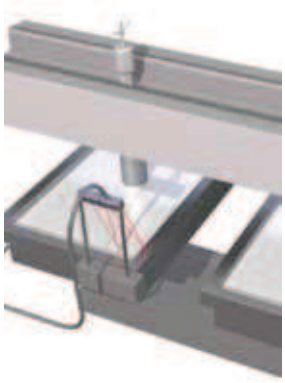
Technical Specifications

Sensor type:	**ProH CD200R200**
Clearence Distance:	200 mm (7.9″)
Measurement Range:	200 mm (7.9″)
Sensor type:	**ProH CD240R325**
Clearence Distance:	240 mm (9.4″)
Measurement Range:	325 mm (12.8″)
Sensor type:	**ProH CD250R500**
Clearence Distance:	250 mm (9.8″)
Measurement Range:	500 mm (19.7″)
Sensor type:	**ProH CD450R300**
Clearence Distance:	450 mm (17.7″)
Measurement Range:	300 mm (11.8″)
Sensor type:	**ProH CD700R300**
Clearence Distance:	700 mm (27.6″)
Measurement Range:	300 mm (11.8″)
Sensor type:	**ProH CD900R500**
Clearence Distance:	900 mm (35.4″)
Measurement Range:	500 mm (19.7″)
Sensor type:	**ProH CD800R1500**
Clearence Distance:	800 mm (31.5″)
Measurement Range:	1500 mm (59.0″)

Technical Specifications

Light source:	Laser diode 635 nm (visible red)
Laser power:	<1 mW, Class II
Sampling frequency:	252 Hz
Communication:	RS232-C
Analog output:	4-20 mA (optional 0-10 VDC, 0-20 mA)
Temperature output:	4-20 mA (0-100 °C)
Resolution:	R/4096
Non-linearity:	±0.2 % of measurement range
Power requirement:	18-32 VDC, < 1 A
Relative humidity:	25-85 % (non condensing)

ProH TwinDelta



The TwinDelta sensor is, amongst others, used in slab casting applications for mold level control.
Principle
The sensor measures the difference between the edge of the mold and the molten metal surface.This means that the calibration is maintained and the level of the molten metal is absolute correct.The longer clearance distance reduces potential sensor damage from surface heat an loss of cooling air. This increases the life length of the light sources.

The Digital Camera Sensor family ProH from Precimeter combines high performance laser triangulation with all the control functions you need to maintain an accurate molten metal level. The patented digital camera technology in the Precimeter sensors (US patent no 4,911,551), results in very high performance and accuracy. This enables the use of Laser Class II, which means that no special safety measures are required. The advanced technology makes it possible to give stable readings even when the material reflectivity changes dramatically and in harsh conditions like steam and smoke. The built in PI controller eliminates the need for an external industrial controller. This reduces the system cost and set up time.

Technical Specifications

Sensor type:	**ProH CD700R300**
Clearence Distance:	700 mm (27.6”)
Measurement Range:	300 mm (11.8”)

Other ranges are possible on demand.

The ProH TwinDelta was developed for a wide range of measurement scales. It can handle synchronized measurement points and can be installed in numerous applications.

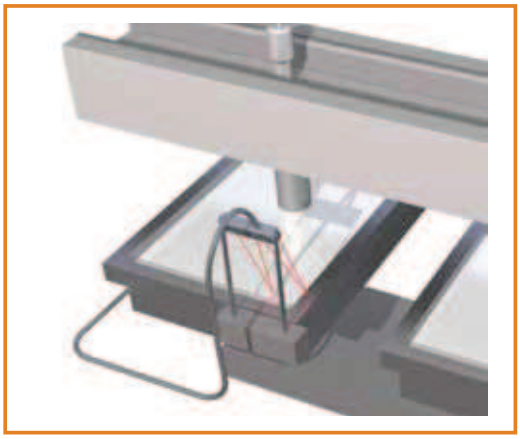
Light source:	Laser diode 635 nm (visible)
Laser power:	<1 mW, FDA Class II
Sampling frequency:	252 Hz
Communication:	RS232-C
Analog output:	4-20 mA (optional 0-10 VDC, 0-20 mA)
Temperature output:	4-20 mA (0-100 C)
Resolution:	0.08 mm / 0.003”
Power requirement:	18-32 VDC, < 1 A

Advantages

- No safety measures required, no yearly eye examination, no laser officer required.
- Stable readings even in difficult environments
- Laser class II approved.
- Easy to install
- Compact design
- Metal Level Control systems adapted to our actuators and sensors are availiable
- **PC Software** gives access to all sensor parameters.

ProH TwinDelta

- Slab caster mould level edition



The TwinDelta sensor is, amongst other applications, very suitable in slab casting applications for mold level control.

Principle
The sensor measures the difference between the edge of the mold and the molten metal surface.This means that the calibration is maintained and the level of the molten metal is absolute correct.

The Digital Camera Sensor family ProH from Precimeter combines high performance laser triangulation with all the control functions you need to maintain an accurate molten metal level. The patented digital camera technology in the Precimeter sensors (US patent no 4,911,551), results in very high performance and accuracy. The advanced technology makes it possible to give stable readings even when the material reflectivity changes dramatically and in harsh conditions like steam and smoke.

Technical Specifications

Sensor type:	**ProH CD450R300**
Clearence Distance:	450 mm (17.7”)
Measurement Range:	300 mm (11.8”)

Other ranges are possible on demand.

The ProH TwinDelta was developed for a wide range of measurement scales. It can handle synchronized measurement points and can be installed in numerous applications.

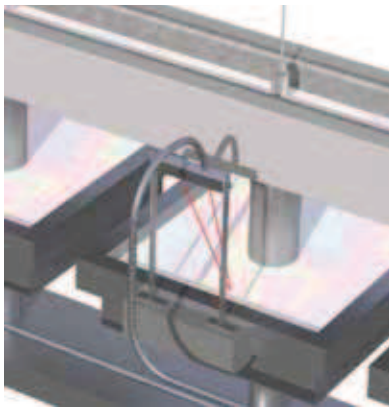
Light source:	Laser diode 635 nm (visible)
Laser power:	<1 mW, FDA Class II or <5 mW, Class 3R
Sampling frequenzy:	252 Hz
Analog output:	4-20 mA (optional 0-10 VDC, 0-20 mA)
Temperature output:	4-20 mA (0-100 C)
Resolution:	0.08 mm / 0.003”
Power requirement:	18-32 VDC, < 1 A

Advantages

- Adapted for best performance in slab caster mould environment.
- Enhanced cooling system
- Stable readings even in difficult environments
- Laser class 2 and 3R approved.
- Easy to install
- Compact design
- Metal Level Control systems adapted to our actuators and sensors are availiable
- **PC Software** gives access to all sensor parameters.

ProH Digital Camera Sensor

- Slab caster mould level edition



The ProH Slab Edition sensor is, amongst other applications, very suitable in slab casting applications for mold level control.

The Digital Camera Sensor family ProH from Precimeter combines high performance laser triangulation with all the control functions you need to maintain an accurate molten metal level. The patented digital camera technology in the Precimeter sensors (US patent no 4,911,551), results in very high performance and accuracy. The advanced technology makes it possible to give stable readings even when the material reflectivity changes dramatically and in harsh conditions like steam and smoke.

Technical Specifications

Sensor type: ProH CD450R300 Slab edition
Clearence Distance: 450 mm (17.7")
Measurement Range: 300 mm (11.8")

Light source:	Laser diode 635 nm (visible red)
Laser power:	<1 mW, Class II or <5 mW, Class 3R
Sampling frequenzy:	252 Hz
Analog output:	4-20 mA (optional 0-10 VDC, 0-20 mA)
Temperature output:	4-20 mA (0-100 °C)
Resolution:	0.08 mm
Non-linearity:	±0.2 % of measurement range
Power requirement:	18-32 VDC, < 1 A
Relative humidity:	25-85 % (non condensing)

Advantages

- Adapted for best performance in slab caster mould environment.
- Enhanced cooling system
- Stable readings even in difficult environments
- Laser class 2 and 3R approved.
- Easy to install
- Compact design
- Metal Level Control systems adapted to our actuators and sensors are availiable
- **PC Software** gives access to all sensor parameters.

ProH Narrow

The Digital Camera Sensor Family **ProH** from Precimeter combines high performance laser triangulation with all the control functions you need to maintain an accurate molten metal level. The patented digital camera technology in the Precimeter sensors (US patent no 4,911,551), results in very high performance and accuracy. This enables the use of Laser Class II, which means that no special safety measures are required. The advanced technology makes it possible to give stable readings even when the material reflectivity changes dramatically and in harsh conditions like steam and smoke. The built in PI controller eliminates the need for an external industrial controller. This reduces the system cost and set up time.

Technical Specifications

Sensor type:	**ProH CD900R600**
Clearence Distance:	900 mm (35.4”)
Measurement Range:	600 mm (23.6”)

ProH Narrow is specially designed for launder, furnace and mold level control where the need of level control is better than ± 0.5 mm (0.02”)

Light source:	Laser diode 635 nm (visible red)
Laser power:	<1 mW, Class II
Sampling frequency:	252 Hz
Communication:	RS232-C
Analog output:	4-20 mA (optional 0-10 VDC, 0-20 mA)
Temperature output:	4-20 mA (0-100 C)
Resolution:	0.15 mm / 0.006”
Power requirement:	18-32 VDC, < 1 A

Advantages

- No safety measures required, no yearly eye examination, no laser officer required.
- Stable readings even in difficult environments
- Laser class II approved.
- Easy to install
- Compact design
- Metal Level Control systems adapted to our actuators and sensors are availiable
- **PC Software** gives access to all sensor parameters.

ProLAD

The ProLAD digital camera sensor from Precimeter combines high performance laser triangulation with all the control functions you need to maintain molten metal level, or other chosen application. The patented digital camera technology in the ProLAD sensor results in very high sensitivity and accuracy. This enables the use of class 2 lasers, which means that no special safety measures are required. The advanced technology makes it possible to give stable readings even when the material reflectivity changes dramatically and in harsh conditions like steam and smoke.The built-in PI controller eliminates the need for an external industrial controller. The system cost is reduced and settingup the system becomes easy. ProLAD is especially designed for Launder, Furnace and Mold level control.

Technical Spcifications

Sensor type:	**CD900R750**
Clearence Distance:	900 mm (35.4”)
Measurement Range:	750 mm (29.5”)
Light source:	Laser diode 635 nm (visible red)
Laser power:	<1 mW, Class II
Sampling frequency:	252 Hz
Communication:	RS232-C
Analog output:	4-20 mA (optional 0-10 VDC, 0-20 mA)
Temperature output:	4-20 mA (0-100 °C)
Resolution:	±1 mm / ±0.04”
Non-linearity:	±0.3 % of measurement range
Power requirement:	18-32 VDC, < 1 A
Relative humidity:	25-85 % (non condensing)

2 meters of marked cable included.

Advantages

- No safety measures required, no yearly eye examination, no laser officer required.
- Stable readings even in difficult environments
- Laser class II approved.
- Easy to install
- Compact design
- Metal Level Control systems adapted to our actuators and sensors are availiable
- **PI Tool Software** gives access to all sensor parameters.

PXP-2(E) Pin Position Actuator

Vertical drop control with PXP-2(E) pin positioner. The Precimeter pin position actuator PXP-2(E) connected to the ProH and the MLC-M1 control panel form a system which very precisely controls the molten metal level, in for example a tundish.

The Pin Position Actuator PXP-2 is primarily used to control the flow of molten metal trough a pin plug valve; for instance in ingot casting. The PXP-2 is also availiable as PXP-2E with either an emergency closing or emergency opening system. The actuator is then equiped with an air cylinder with a spring return.

For certain applications we recommend the use of a pin rotator as seen in the picture above

Technical Specifications

Stroke:	50 mm (2”)
Plug pin load range:	Up to 100 N (22 lbs)
Positioning:	Stepper motor
Power requirement:	18-32 VDC / 1.2 A
Interface:	4-20 mA (or 0-10 VDC or 0-20 mA)
Analog input:	4-20 mA
Digital inputs:	Analog enable / Move pin according to 4-20 mA. Calibrate to closed or open position.
Analog outputs:	4-20 mA feed back signal.

Optional emergency closing or opening - PXP-2E

Emergency closing/opening:	Spring back spring
Load of spring:	Pressurized air 6-8 kg/cm^2 (75-110 PSI)

PXP-2(E) includes a 10 pin industrial heavy duty connector.

PXP-2LP Pin Position Actuator

Vertical drop control with PXP-2LP pin positioner. The Precimeter pin position actuator PXP-2LP connected to the ProH and the MLC-M1 control panel forms a system which very precisely controls the molten metal level, for example in a tundish.

The Pin Position Actuator PXP-2LP is primarily used to control the flow of molten metal trough a pin-plug valve in for instance ingot casting. The PXP-2LP actuator offers a lower height profile over the through or launder than the PXP-2(E). This means that it can be used in areas where space above the through or launder is restricted. This actuator can easily be adapted to fit any through configuration.

Technical Specifications

Stroke:	6-50.4 mm (0.25”-2.0”)
Plug pin load range:	Up to 35 N (8 lbs)
Positioning:	Stepper motor
Power requirement:	24 VDC (18-32 VDC) / 1.2 A
Interface:	4-20 mA (optional 0-10 VDC or 0-20 mA)
Analog input:	4-20 mA, resolution 16 bit
Digital inputs:	Analog enable / Move pin according to 4-20 mA. Calibrate to closed or open position.
Analog outputs:	4-20 mA feed back signal.
Digital output:	Temperature alarm 65°C (150°F)

PXP-2LP includes a 10 pin industrial heavy duty connector.

PXP-2EM Pin Position Actuator

Vertical drop control with PXP-2 pin positioner. The Precimeter pin position actuator PXP-2 connected to the ProH and an MLC control panel form a system which very precisely controls the molten metal level, in for example a tundish or a DC slab casting mold.

The Pin Position Actuator PXP-2 is primarily used to control the flow of molten metal trough a stopper and nozzle valve; for instance in ingot casting. The PXP-2 is also availiable as PXP-2EM with a fail safe emergency closing system.

Technical Specifications

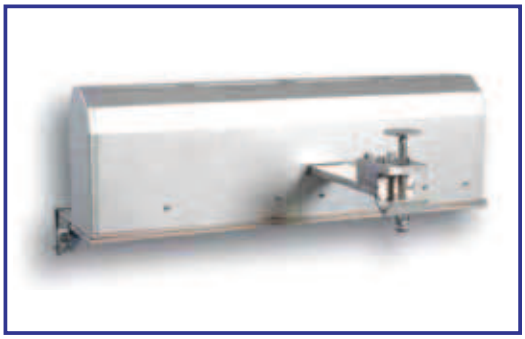
Stroke:	50 mm (2”)
Positioning:	Stepper motor
Power requirement:	18-32 VDC / 1.2 A
Interface:	4-20 mA (or 0-10 VDC or 0-20 mA)
Analog input:	4-20 mA
Digital inputs:	Analog enable / Move pin according to 4-20 mA. Calibrate to close position.
Analog outputs:	4-20 mA feed back signal.

Optional emergency closing - PXP-2EM

Emergency closing:	Electro magnet release
Load carrier/charge magnet:	24 VDC Digital output

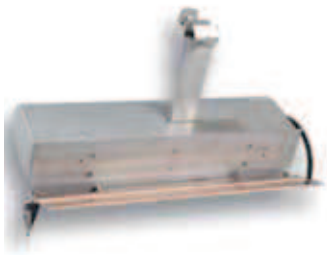
PXP-2(EM) includes a 10 pin industrial heavy duty connector.

TXP-6E Tap Out Actuator



Furnace tap out control with TXP-6E Tap Out Actuator. The Precimeter TXP-6E actuator connected to the ProH and the MLC-M1 control panel forms a system that controls the molten metal level in for example a launder very precisely.

The Tap Out Actuator TXP-6E is primarily used to control the flow of molten metal through the exit tap hole of a stationary furnace. The heavy duty design allows for round the clock operation 365 days/year. The tilt away design makes for easy maintenance.

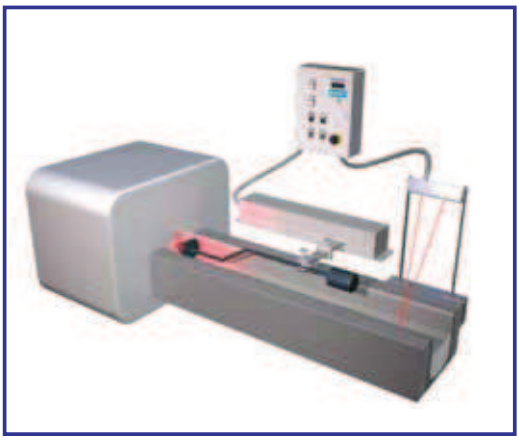


Technical Specifications

Stroke:	150 mm (6”)
Positioning:	Stepper motor 10A
Plug pin load range:	0-1500 N (0-330 lbs)
Force:	1500 N (330 lbs)
Weight (less mounting bracket):	80 Kgs (180 lbs)
Power requirement:	24 VDC ±20% , 4 A
Emergency closing:	Pneumatic (air accumulator)
Air pressure:	6-8 kg/cm² / 75-110 PSI
Dimensions:	522 x 248 x 112 mm (20.6” x 9.8” x 4.4”)
Analog input:	4-20 mA control signal
Digital inputs:	Analog enable / move pin according to 4-20 mA. Enable operation
Digital output:	Unit in operating position
Option analog output:	4-20 mA feed back position signal.

TXP-6E includes one heavy duty connector and mating bulk mount connector. This actuator can be ordered to be placed on the left or right side of the launder.

TXP-10 Tap Out Actuator



Furnace tap out control with TXP-10 Tap Out Actuator. The Precimeter TXP-10 actuator connected to the ProH and the MLC-M1 control panel form a system that controls the molten metal level very precisely.

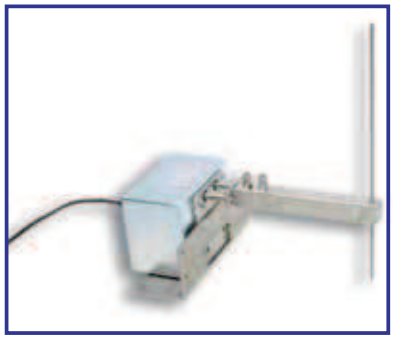
The Tap Out Actuator TXP-10 is primarily used to control the flow of molten metal through the exit tap hole of a stationary furnace.
The TXP-10 can be mounted vertically with a special linkage arm system which has a stroke of 101 mm (4”).
This actuator is also avaliable as the TXP-20 with a 20” stroke.

Technical Specifications

Stroke:	32 - 254 mm or - 508 mm (1.24”-10.0” - 20.0”)
Positioning:	Stepper motor
Stepper Motor resolution:	0.0635 mm (0.0025”)
Closing force:	100 Kg (220 lbs)
Ambient temperature:	175 °C (350 °F)
Power requirement:	24 VDC (18-32 VDC), 4 A
Analog input:	4-20 mA control signal
Analog output:	4-20 mA feed back position signal
Digital inputs:	Analog enable/move pin according to 4-20 mA.
Digital output:	Temperature alarm 65 °C (150 °F)

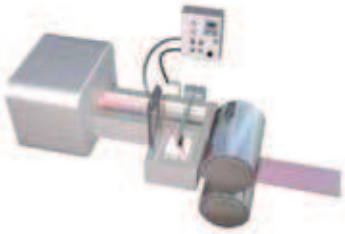
TXP-10 includes one heavy duty connector with mating control box.

TXP-2 Tap Out Actuator



Head box tap out control with TXP-2 and ProH sensor

This small and compact Tap Out Actuator is primarily used for control of metal flow through a pin plug valve in head box applications.



Technical Specifications

Stroke:	50 mm (2”)
Positioning:	Stepper motor
Closing force:	Up to 35 N (8 lbs)
Ambient temperature:	175 °C (350 °F)
Power requirement:	18-32 VDC / 1.2 mA
Analog input:	4-20 mA
Analog output:	4-20 mA feed back position signal
Digital inputs:	Analog enable / move pin according to 4-20mA. Calibrate to closed or open position
Digital output:	Temperature alarm 65 °C (150 °F)

TXP-2 includes a 10 pin industrial heavy duty connector.

SDX-8 Starter Dam Actuator

The Starter Dam Actuator SDX-8 is the ideal solution opening the gate when you have reached the optimal filling of the launder in front of the slab-, ingot- or billet molds. The dam provides accurate stoppage and metal direction flow control.
Easy to install to different types of launders. Precimeter SDX-8 is designed and produced for existing or new launder steelwork. The unique flexible mounting system allows moving the actuator to different positions.
The SDX-8 comes standard with a manual valve, but today's units are often delivered with a complete automatic system with interface to the supervising PLC system. The automatic starter dam can also be equipped with a leveling sensor, opening the dam when a desired level in the launder is reached.The SDX-8 is ideal for your automated casting system.
SDX-8 can be supplied with stainless steel safety guards that are removable. The basic SDX-8 comes with push button control and flexible mounting rack using an air cylinder and solenoid valves. The guide system uses 4 stainless steel guides providing strong support for the dam mounting bracket.

Technical Specifications

Dual acting air cylinder.

Air supply:	5 bar (72 psi)
Travel height:	203 mm (8″) Other heights possible on request.
Launder width:	100-500 mm (4-20″)
Power supply:	120 VAC or 220 VAC

Note: Refractory dam not included.

GXP-10 Gate Valve Actuator

Tundish level control with Precimeter Gate Valve Actuator GXP-10 connected to the ProH laser sensor and MLC-M1 system that very accurately controls the metal level down-

Tundish level control with Precimeter Gate Valve Actuator GXP-10, shown here side mounted, connected to the ProH laser sensor and MLC-M1 control system that very accurately controls the metal level downstream in a launder.

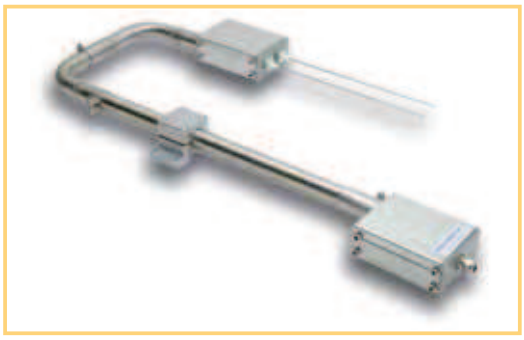
Technical Specifications

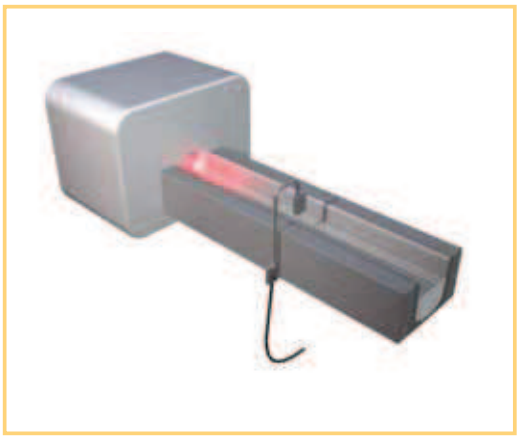
GXP-10 is also available as **GXP-20** with a 20" stroke.

Stroke:	32-254 mm (or -508 mm) (1.25"-10" or -20")
Positioning:	Stepper motor
Gate load range:	up to 180 N (40 lbs)
Interface:	4-20 mA (optional 0-10 VDC or 0-20 mA)
Power requirement:	24 VDC (18-32 VDC) / 4 A
Analog input:	4-20 mA
Analog output:	4-20 mA feed back position signal
Digital inputs:	Analog enable / move pin according to 4-20 mA.
Digital output:	Temperature alarm 65 °C (150 °F)

GXP-10 includes one heavy duty connector and mating control box.

OFG-285 Over Filling Guard





The OFG-285 consists of a main unit with a safety circuit and a swing arm conduit to an electrode head. The main box can be mounted to brackets 50 mm (2”) outside a launder. The electrode head is to be swung over the molten metal and leveled so that the ends of the electrodes hit just above the maximum allowed level in the launder. The electrode head can be swung out from the launder during maintenance.

Technical Specifications

Power requirement:	24 VDC +15 % / 0.4 A
Power consumption:	< 2.8 W
Closure stainless steel:	IP 66 / NEMA 4
Dimensions Main Box:	300x150x80 mm (11.8”x5.9”x3.2”)
Dimensions Electrode Head:	100x100x80 mm (3.9”x3.9”x3.2”)
Electrode legth:	285 mm (11.2”)
Digital output:	Over-filling limit, interlocking relay contacts. Failure monitoring on connections to electrodes.

TAFB Tilt Angle Feedback

The Tilt Angle Feedback (TAFB) is designed for use in control of a tilting furnace whenever feedback of the tilt angle is needed. The sensor is specifically engineered for use in foundries for tilt angle feed back on furnaces, ladles, launders etc in conjunction with other Precimeter equipment for metal level control.

The TAFB is a 1-dimensional ±45° tilt angle sensor.

Technical Specifications

Measurement axes:	1 axis
Measurement ranges:	±45°
Resolution (at zero point):	0.05°
Calibration accuracy (at 25° C):	±0.5° (zero point and accumulated values)
Nonlinearity (sine):	Max. ±0.3°
Temperature coefficient (zero point):	±0.009 °/K
Critical frequency typ.:	18 Hz
Operating temperature:	Up to +80 °C
Characteristics	
Interface current loop:	4-20 mA
Electrical Parameters	
Supply voltage:	15 V DC to 30 V DC
Current consumption:	< 25 mA
Mechanical Parameters	
Degree of protection:	IP65/67
Shock survival Max.:	3500 g

ProV Digital Camera Sensor

Advantages:
- Stable readings in harsh environments
- Optimized for high temperature alloys
- Non contact measurement
- Easy to install

The ProV Digital Camera Sensor from Precimeter combines high performance laser triangulation with all the control functions you need to maintain molten metal level.

The patented digital camera technology in the Precimeter sensors, results in very high performance and accuracy. The advanced technology makes it possible to give stable readings even when the material reflectivity changes dramatically and in harsh conditions like steam and smoke.

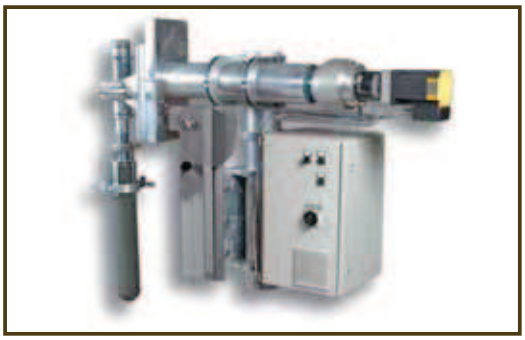
The ProV series is developed and optimized to measure on high temperature molten metal surfaces above 800 ºC.

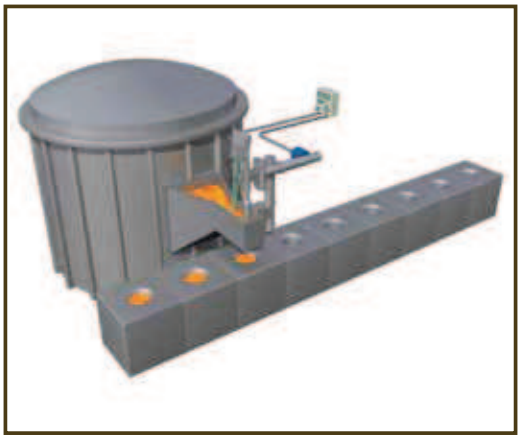
Technical Specifications	
Sensor type:	**ProV CD180R200**
Clearence Distance:	180 mm (7.1”)
Measurement Range:	200 mm (7.9”)
Sensor type:	**ProV CD1150R400**
Clearence Distance:	1150 mm(45.3”)
Measurement Range:	400 mm(15.8”)
Sensor type:	**ProV CD1000R900**
Clearence Distance:	1000 mm(39.4”)
Measurement Range:	900 mm(35.4”)

Other ranges available upon requests

Technical Specifications	
Light source:	Laser
Laser power:	<30 mW, Class IIIB
Sampling frequenzy:	252 Hz
Communication:	RS232-C
Analog output:	4-20 mA (optional 0-10 VDC, 0-20 mA)
Temperature output:	4-20 mA (0-100 C)
Resolution:	Typical 0.1 mm
Non-linearity:	± 0.2% of measurement range
Power requirement:	18-32 VDC, < 1 A

RACT Heavy Duty Actuator





The RACT is designed to fit almost any tap out application in the molten iron industry. The mechanical parts and properties are very robust and the mounting is very flexible.

There are many options like the possibility to rotate the rod and also an internal cleaning plunger to remove sludge. The drive system is available as either electrical or pneumatic.

When used for filling molds in a fast operating line the drive system uses a servomotor system. RACT has been designed to work with the Precimeter ProFe level sensor.

Technical Specifications

Power requirements:	380 Volts AC, 0,65 kW
Motor control:	Servo motor
Stroke:	100 mm / Stroke time for max flow is less than 100 ms
Force:	2000 N (500 lbs)
Feedback:	Potentiometer (0-10V)
Set point signals:	0..+10V, +2..+10V, 0...+5V, -10..+10V.
Mounting:	Vertical mounting plate is provided. This plate can slide vertically and can be rotated 360 degrees.
Options	
Stopper rod holder	This rod holder fits almost all rod sizes.
Rod rotation function	The rod is rotated to avoid leakage.
Automated rod cleaning plunger	A steel plunger is driven through the rod to remove sludge.
Emergency closing	In case of power outage.

CLP Continuous Level Probe

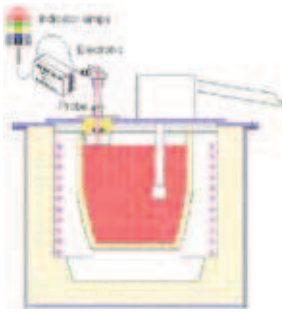
Precimeter measuring systems - withstanding over 800°C; suitable for aluminum, magnesium, lead, tin and zinc. Other materials are available on request.

Our level measuring systems are used to regulate, control or measure filling levels in melt and holding furnaces, intermediate vessels, channels and launders. The CLP is a submersible probe suitable for furnace level control.

Principle

The submersible CLP from Precimeter is a high tech product. It works in the submerged condition with an appropriate protective tube at a melt temperature of over 800°C and can therefore also be used in closed systems without forced air cooling. The CLP is a system that directly registers the exact level in the molten metal through a protective tube.
With an airtight adapter available from Precimeter the probes can also be used in closed systems with low pressure castings. Only the best quality materials are used combined with a good quality assurance system. Each probe is tested before delivery and the results are documented.
Standard lengths are up to a meter. Longer lengths are possible. With a gas tight dosing furnace, the furnace level can be monitored by a submerged probe combined with the appropriate electronics with programmed limit values from Precimeter.

PLP Proximity Level Probe



PLP non contact probe used to control the maximum level in a furnace

Precimeter non contact measuring systems - withstanding over 800°C; suitable for aluminium, magnesium, lead, tin, zinc. Other materials are availiable on request.

Our non contact level measuring systems are used to regulate, control or measure filling levels in melt and holding furnaces, intermediate vessels, channels and launders. The PLP is a non contact probe suitable for several different applications.

Principle

This non contact measuring probe is made for smaller measuring ranges. The measuring range depends on the diameter of the probe. For the standard probe with a probe diameter of 115 mm, a measuring range of 100 mm is achieved.

A major advantage is remote operation in relation to the melt. The probe should not come into direct contact with liquid metal. For extreme applications in which heavy splashing cannot be ruled out, the probe should be protected with a monalite protection hood.

The probes can withstand up to 800°C and can also be used in closed systems without forced air cooling.

RP Ring Probe

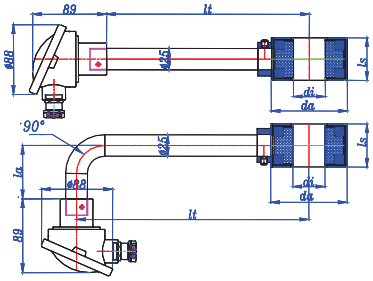
RP used to control the metal level in a riser tube

Precimeter measuring systems - withstanding over 800°C; suitable for aluminium, magnesium, lead, tin and zinc. Other materials are availiable on request.

Our level measuring systems are used to regulate, control or measure filling levels in melt and holding furnaces, intermediate vessels, channels and launders. The RP is suitable to control the metal level in a riser tube.

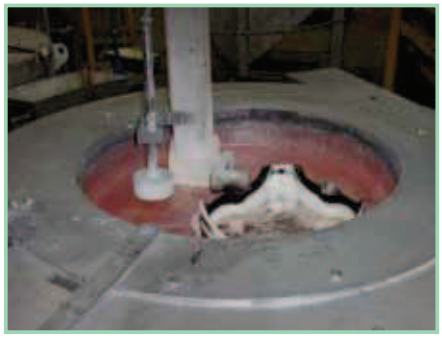
Principle

The ring probe was developed to measure the metal inside a ceramic riser tube in low-pressure casting systems. The ring probe is pushed over the tubing, so that the injection process can be started with rising metal from a preadjusted reference point.



lt = dead length
la = bend offset length
ls = height of probe
di = inner diameter
da = outer diameter

PLPR Robot Automation



Precise ladle control with non contact PLPR from Precimeter

As an alternative to electrode scanning, Precimeter offers a purpose-built proximity probe to allow positioning of the exact operating point of the spoon.

The advantages are:

- No contact with the melt
- Less down time than electrodes
- No robot arm repairs
- No oxide adherence
- No corrosion
- Accurate approach of the point of reference

This contact free measuring probe is made for smaller measuring ranges. The measuring range depends on the diameter of the probe. For the standard probe with a probe diameter of 115 mm, a measuring range of 100 mm is achieved.
A major advantage is remote operation in relation to the melt. The probe should not come into direct contact with liquid metal. For extreme applications in which heavy splashing cannot be ruled out, the probe should be protected with a monolith protection hood. The probes can withstand up to 800°C and can also be used in closed systems without forced air cooling.

Electromagnetic Pumps

Electromagnetic Flat Channel Pump for molten metal transfer

Electromagnetic pumps - withstanding up to 800°C; suitable for aluminium, magnesium, lead, tin and zinc. Other materials are available on request.

Advantages of electromagnetic pumps:

- No moving parts, low on maintenance
- No mechanical wear
- Withstands high temperatures
- Life expectancy up to 10 years
- Laminar flow
- Can pump up to 80 metric tons/hour
- Fast return on investment due to better quality, low maintenance and long life expectancy

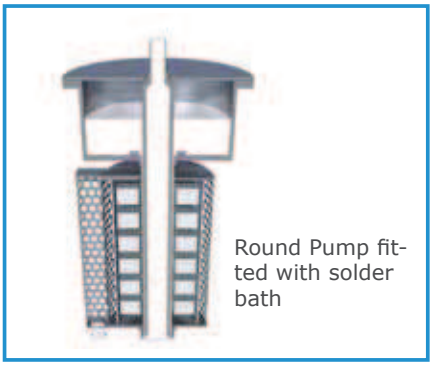
A very important criterion for high-quality cast products is a turbulence free flow of the liquid melt that is as even as possible during the casting process. This cannot be achieved with a mechanical system. Using an electromagnetic pump would be ideal with an adjustable flowrate and high reliabilty. An electro-magnetically regulated solution in form of a high-delivery pump would be ideal for this procedure; this pump is able to deliver a large volume of liquid melt with a constantly adjustable performance and very high reliability.

The electromagnetic pumps for liquid metal are based on the principle of a linear motor. This type of electromagnetic pump results in almost laminar motion of the molten liquid in the pump tube.

Round pump for metal transfer

Electromagnetic Pumps

- for soldering applications



Round Pump fitted with solder bath

The main advantages of the electromagnetic pumps are:

- No mechanical wear
- Withstands high temperatures
- Life expectancy up to 10 years
- Laminar flow
- Fast return on investment due to better quality, low maintenance and long life expectancy

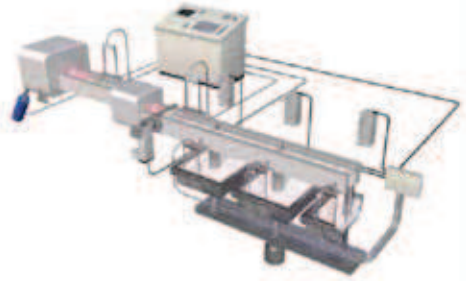
The electromagnetic round pump is designed for pumping tin, lead and solder in variable quantities. This pump is especially designed for use in automatic soldering machines, i.e. for partial soldering. Depending on the application, the pump allows you to design a single or multiple soldering system. The solder wave is variable. The main advantage of this design is that there are no moving parts in the metal bath. Because of the reliable construction we can provide a nearly maintenance free and economical pump.

Technical Data R6D85

Connection:
3 x 25 V AC, 50/60 Hz
3 x 11 A

Capacity:
Max. delivery height:
100 mm
(at a specific weight of 8,5 g/cm3)

Metal Level Control Systems



Slab caster with MLC-Advanced, ProH sensors and actuators from Precimeter

Precimeter offers a state of the art Metal Level Control (MLC) System family. The system is fully compatible with the entire Precimeter product line. The MLC family consists of four different levels. The four different levels make the system suitable for all different kinds of foundry automation. To achieve the best results within foundry automation, we strongly recommend the use of the Precimeter products together with an appropriate MLC system from us.

The Precimeter MLC Systems

Based on flexibility, the MLC system is available in different versions. The systems are called M1, A1, Flex and Advanced. Depending on application, we recommend different models. The A1 and above are PLC based, and the Advanced system is also available with a SCADA based HMI system for the more demanding application.

MLC-M1

The MLC-M1 is used for a wide range of applications. It is a Precimeter built system based on the internal controller of the ProH sensor.

The M1 is suitable for actuator or pump control. It is built to control one single point which can handle one sensor and control one piece of equipment such as an actuator or pump.

MLC-A1

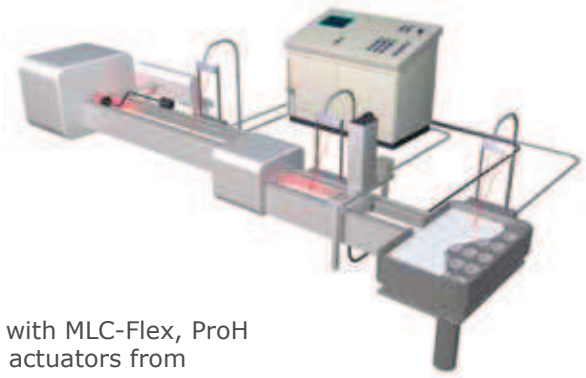
The MLC-A1 is the big brother of the M1. In addition to the M1 functions, the A1 provides an integrated automated logger storing data onto a USB memory stick. The A1 has an ethernet connection. It is also possible to work with an automated start up.

A1 is the recommended system for applications involving a tilting furnace. Furthermore it has the ability to handle recipes for different set ups.

The A1 is built to control one single point which can handle one sensor and control one piece of equipment such as an actuator, pump or furnace.

Metal Level Control Systems

The ProH Digital Camera Sensor lays the foundation in every successfully automated foundry system



Billet caster with MLC-Flex, ProH sensors and actuators from Precimeter

MLC-Flex	MLC-Advanced
The MLC-Flex is a custom built system designed to fit all the needs of the customer. We take all the experience of the Precimeter team and use it to design the best system possible for every application. The system also includes the ability to log data. It has an HMI panel providing a user friendly interface. The system can to control up to three points and can handle up to four sensors and control three pieces of equipment. The picture above shows an MLC-Flex billet casting application controlling one furnace tap out actuator, the flow in the launder and the table level.	The MLC-Advanced is the largest system Precimeter offers. It is designed for the largest and most demanding applications. The MLC-Advanced is entirely tailor made to fit the specific needs of the customer. With full access to the Precimeter knowledge and technology, we can guarantee a state of the art system that will solve your automation problems. The MLC-Advanced can control up to 20 sensors and pieces of equipment at the same time. With a larger HMI panel than the flexible, the interface is even more user friendly. There is also the option to fully integrate SCADA into the system.