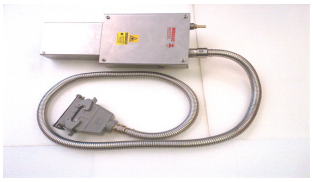
MODULOC®

Control Systems

MDCLS SERIES DIGITAL LASER LEVEL SENSORS



Main Features

- *Non-contact measurement on Launder and Head Box*
- *Internal Camera determines level via Laser spot position*
- *Operates off mirror like surfaces regardless of angle*
- *Single nozzle keeps out contaminate an reflections*
- *Configurable filtering with ability to remove bad readings*

- *Auto-gain circuit brightens laser when heavy fumes*
- *Operates off molten metal surfaces at up to 2,200°C*
- *Compact unit for confined space well away from heat*
- *Single purged aperture viewing penetrates heavy steam.*
- *Various Stand-off clearances and working ranges*

- *Measurement frequency of 1 k Hz and 0.3 mm resolution*
- *Serial, Analogue and Digital Outputs*
- *Digital Out-of-range and overheating Alarms*
- *Gate, Vertical, Pin Position & Tap Out Actuators available*

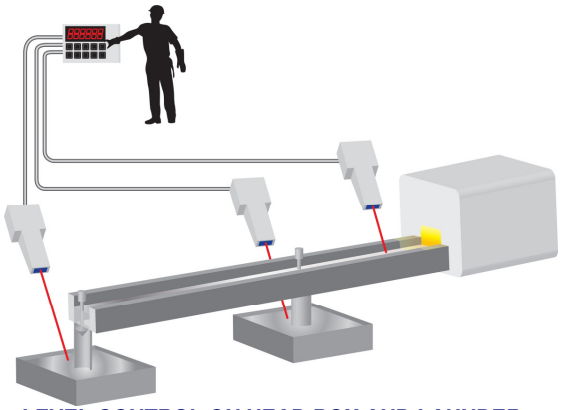
Description

The MDCLS Digital Laser Level Sensors are compact units with integrated optics and signal processor for precise measurement of the liquid level. A focused laser spot is illuminated on the molten metal surface and the image distance determined by internal CCD Camera.

Installation software is provided for connection to a PC and to display measured values. Measurement of data is via both RS232 and 4-20 mA analog output. Operate at a measuring frequency of 1000 measurements per second a serial output update frequency of 1000 measurement points per sec. or lower

The Laser unit is protected by in a Secondary robust stainless enclosure provided with air inlet with Vortex cooling option as Air purge venting out of the protective nozzle. This enables replacement of the Camera without disturbing mounting configuration. The connection cable is encased in a stainless flexible conduit to protect it from metal splash.

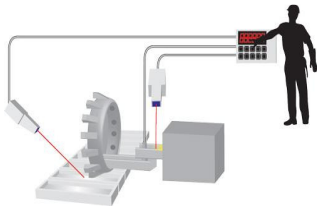
Various Actuators are also available to provide the user with the complete control solution. Gate valve Actuators, Vertical, Pin out and Tap out Actuators.



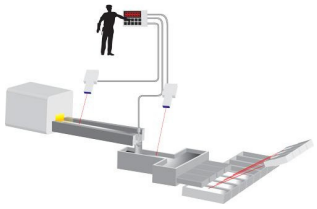
LEVEL CONTROL ON HEAD BOX AND LAUNDER

Typical Applications - Aluminium Casting Industry - Die Cast Aluminium Moulders - Lead, brass and Copper Foundries – Iron and Steel Plants

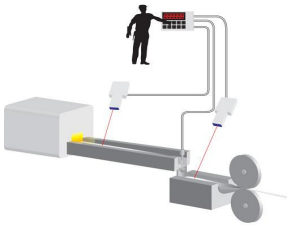
In all these Industries need reliable precise level control on the Launders, Troughs and Head boxes in use throughout the typical casting plant. With this in mind these Level Sensors incorporate digital outputs confirming level measurement is being transmitted and the internal temperature is within limits. The illustrations below show the various areas in the Casting House where these Laser Level Sensors provide the ideal solution for measurement of molten metal level, be it on Ingot Casters, Sheet or Rod Casters



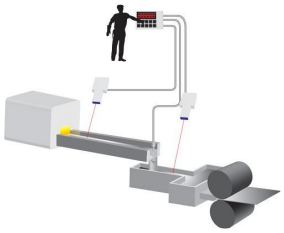
INGOT CASTER



TILT TABLE



ROD CASTER



SHEET CASTER

MODULOC TECHNOLOGY – Lasers for Precise Product Measurement

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MODELS IN RANGE

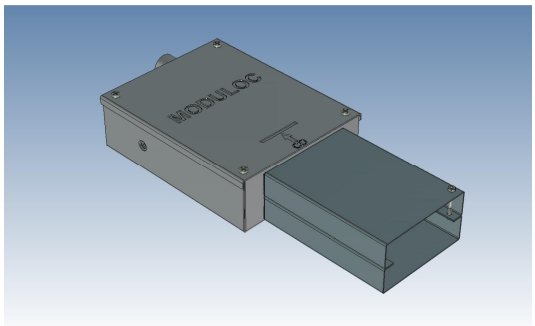
Laser Model	MDCLS 700R400-RB	MDCLS 400R300-RB	MDCLS-LR 2000-RD	MDCLS-LR300-BL
Measuring range (mm)	400	300	1000	1000
Stand-off (mm)	700	400	3000	3000
Resolution	0.5 mm	0.5 mm	1,000 deg C	2,200 deg C
Reproducibility	±0.5mm	±0.5 mm	2 mm	2 mm
Linearity	±0.5 mm	±0.5 mm	2 mm	2 mm
Laser Class	Class II Red	Class II Red	Class 3R Red	Class 3B Blue

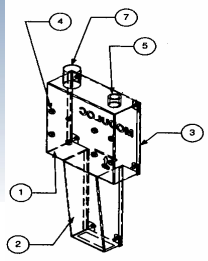
GENERAL SPECIFICATIONS

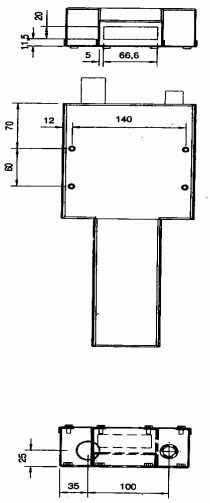
Serial Output	RS232 Baud Rate 38400	Supply Voltage	24VDC ±10%
Serial Output	RS422/485 (optional)	Power Consumption	4.5 Watt
Digital Output	1/10 mm	Digital Outputs (Two)	Temp okay and device measuring
Analog Output[2)]	4-20mA	Operating Temperature	0℃ to +45℃ (32℉ to 113℉)
Measuring Frequency	1000 Hz	Storage Temperature	-20℃ to +70℃ (-4℉ to 158℉)
Temperature Deviation	±0.03% of F.S./℃	Product Temp. Limit	Standard 1000℃
Light Source	Visible 665 nm Laser	Laser Class	Class II, IEC 2

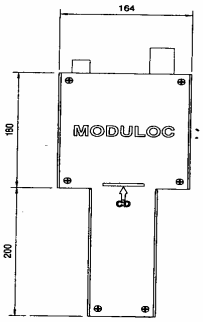
Configurable Filters - All Models have a programming/select functionality. In Group Mode a running average is calculated over a user specified number of measuring points. The user also programs the sensor to disregard a number of, usually all, bad (zero) measuring points before calculating the average value. The average values are calculated at full measuring frequency and are used for converting the analog signals. Several other filters are available to ensure robust measurement values are provided.

DIMENSIONS





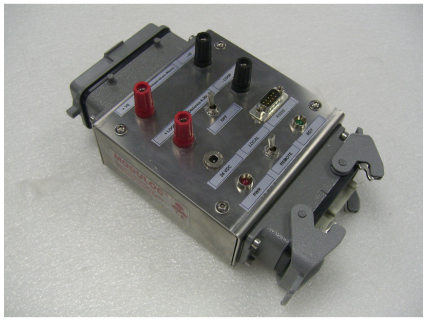




1. Laser unit protective enclosure
2. Purged & baffled lens nozzle
3. Base of enclosure with 140 x 60 ctr. M5 mtg. hole
4. Cover screws 4 x M6
5. Cable inlet
6. Air purge inlet

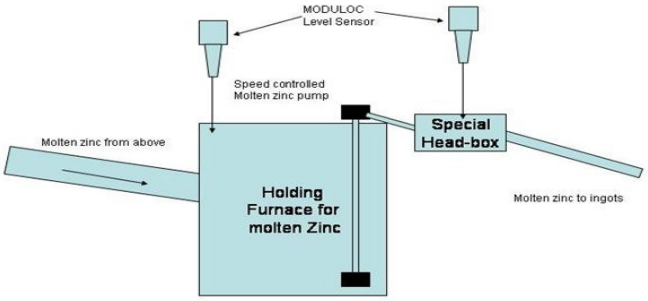
Weight of Laser unit in Secondary Cover – 4 kilos
Camera unit rating IP65

Service Adapter - To assist the user and provide speedy and straight-forward commissioning and integration of these Sensors a Service adapter is available that allows the user to connect a Portable Voltmeter and view the analogue output from the Sensor locally. This adapter fits directly between the Sensor and the users local interface so that the Sensors supply and analogue output are not interrupted.



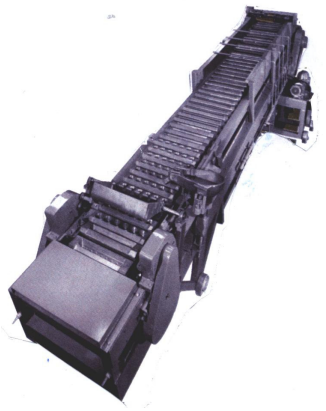
TYPICAL USAGES

METALLIC PUMP SPEED LEVEL CONTROL



Better Level Control Removes the Dross

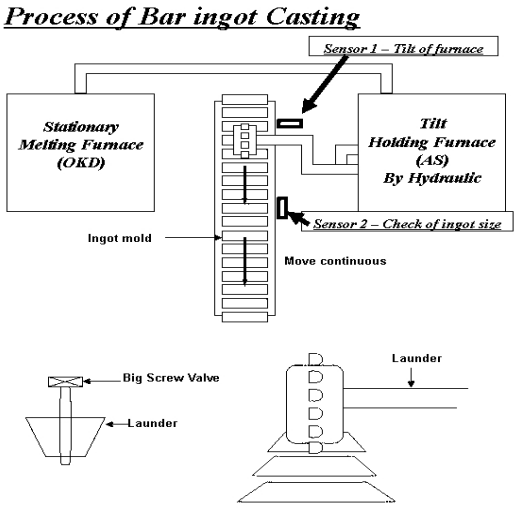
It is now becoming common practice for the traditional Launder fed Casting lines to be fed via a Metallic Pump. Moduloc is now able to provide the total control solution that also greatly eliminates the build up of heavy dross which is a typical consequence of this process.



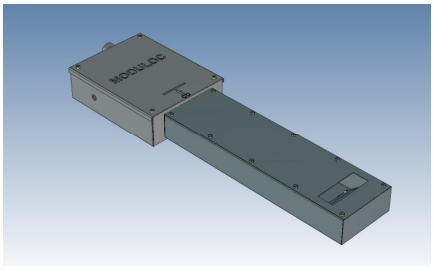
Bar Ingot Casting Conveyors

For such Conveyors to work efficiently at maximum output and minimal wastage the automatic pouring needs to be carefully controlled to a high accuracy.

Our Company has teamed up with T. Masters and Sons Ltd, the Leading UK manufacturer of these Conveyors to supply the total solution to the Ingot Caster that ensures a constant ingot height and volume with the minimum of impurities in the discharged ingot.



PERISCOPE LASER ON THE CASTER LINE MOLD AND POD



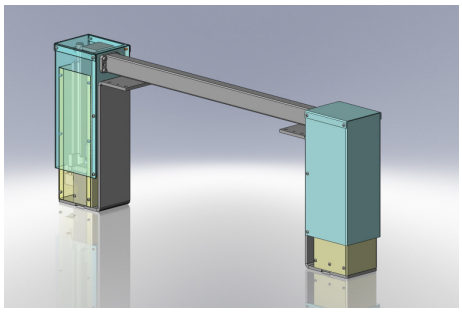
A typical installation where a Periscope Sensor would be the ideal solution

We have now introduced a Periscope Laser Level Sensors that enable the user to mount the Sensor well away from the high ambient and yet monitor the molten metal in close proximity for assured measurement.

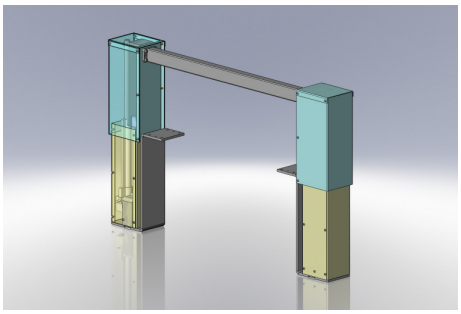
Used in conjunction with more powerful red or blue laser to measure off molten product up to 2,2000 deg C this provides the ideal solution to the Casting House be it aluminium, copper, brass or lead being produced.

ACTUATOR OPTIONS AND OTHER DEVICES AVAILABLE ON REQUEST

GATE VALVE ACTUATOR

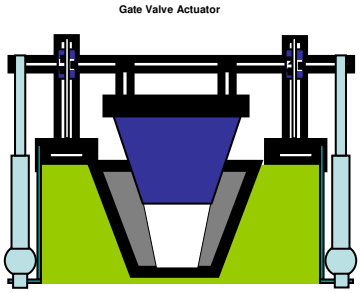


Actuator in Closed Position



Actuator in Open Position

Illustration showing Gate Valve in Closed Position



General Specifications:

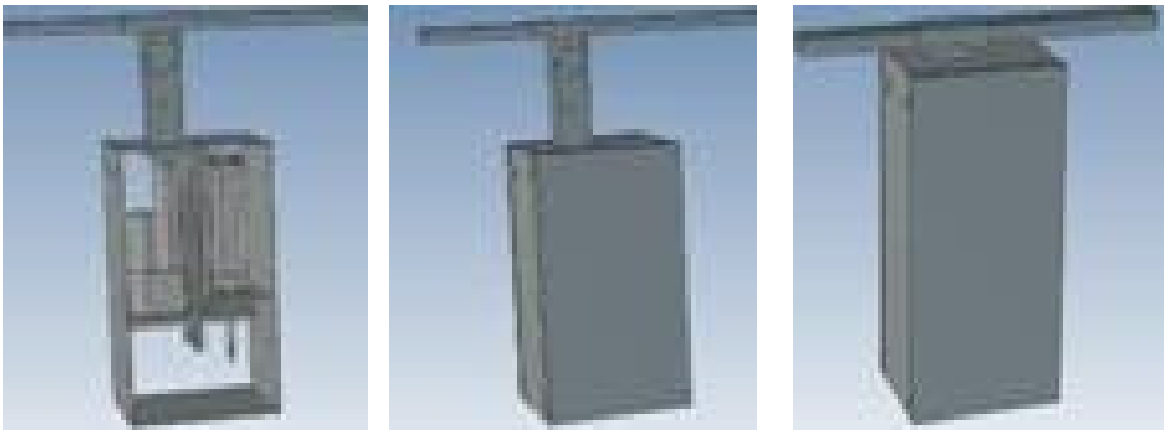
Motor: DC, electronic controlled, towing and pressing force separate adjustable 0-6000N.

Dam load range: Dam load up to 6000N (1400lbs) / leg.
Stroke: 300mm (12”)
Power requirement: 24VDC 5Amp.
Analogue Input: 4-20Ma
Analogue Output: 4-20mA for actuator position.
Digital Inputs: 5
Digital Outputs: 2

BOTTOM TAP ACTUATORS

Linear Actuators on troughs or wall mounted linkage systems available. **Ask for details**

PIN POSITION ACTUATOR



Available with or without emergency closing/opening devices:
Suitable for any accurate controlled pouring into head boxes, normal moulds and slab caster moulds.
Pin rotation function is available

General Specifications:

Motor: DC, electronic controlled, lifting and pressing force separate adjustable 0-1100N by soft ware.

Plug pin load range: Actuator pin load up to 1100N
Air cylinder charge to load spring: Pressure 6-8kg/cm2
Power requirement: 24VDC 5Amp.
Analogue output: 4-20mA for actuator position.

Emergency device: Spring back spring
Stroke: 75mm (3”)
Analogue input: 4-20mA
Digital inputs: 5, Digital outputs: 2

Other devices: **Over pouring guard**
Furnace tilt angle feed back unit: