

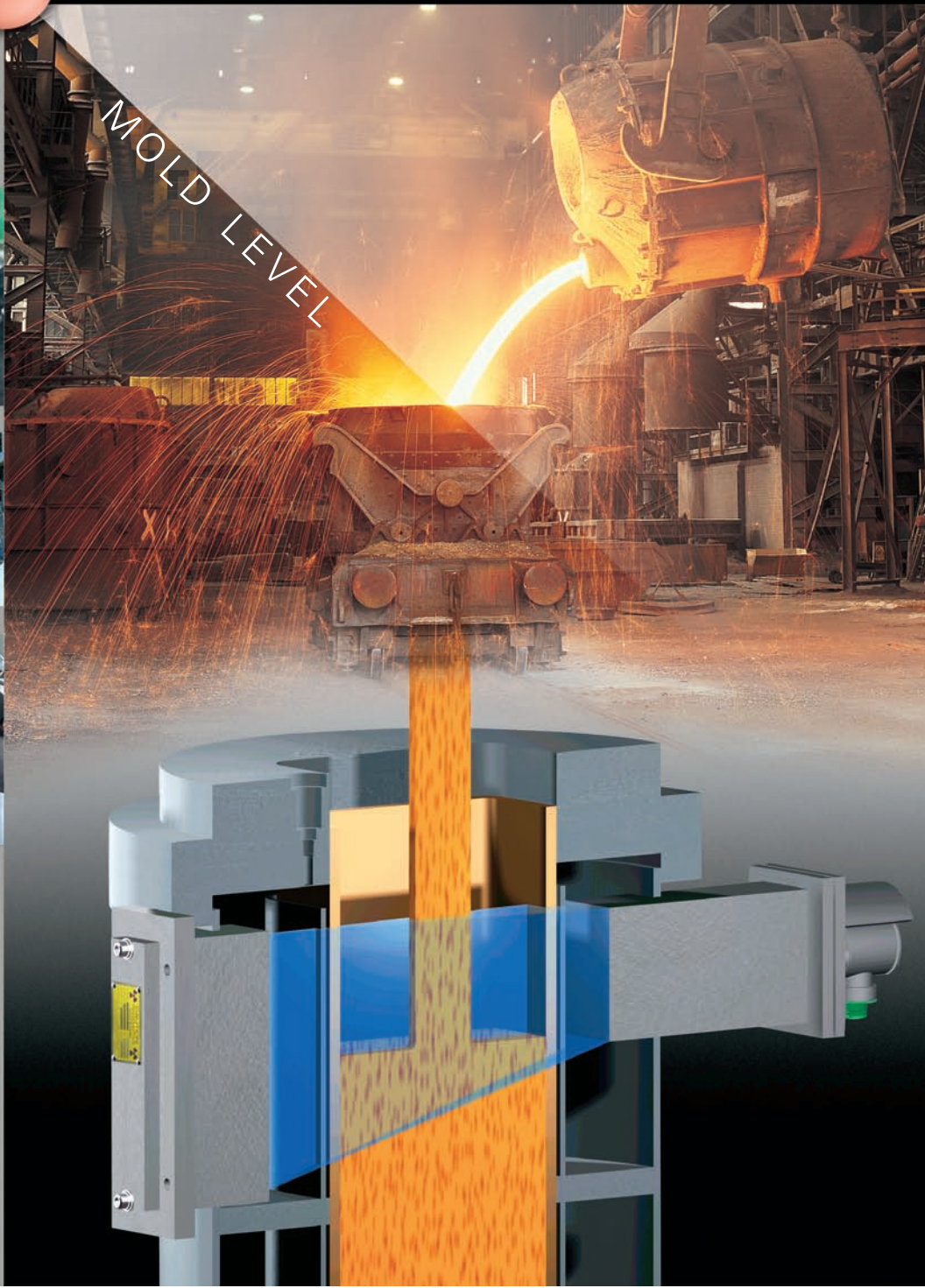


Measurements Division



# X96 Series

NON-CONTACT MEASUREMENTS



## Mold Level Measurement

The X96 Non-Contact Mold Level Measurement System is specifically designed to measure the level of molten metal during the continuous casting of billets, blooms or slabs. Ronan has been a trusted name in the steel industry around the world for over 20 years designing each system to customer specifications, giving the optimal performance for each mold configuration.

In response to market demands for a viable option for the high speed thin slab casters where high speed sampling is critical (nominally in the 20-50 millisecond range), Ronan introduced the X96S ML microprocessor in 2006. With an unmatched update time of 10 ms, and fast “Cast Start” capability, the user is now able to obtain high speed sampling of the level in the mold, giving better control and enabling the user to increase throughput and improve quality.

Ronan differentiates itself from competitors through its unmatched service and repair organization and innovations in technology to improve both safety and the ability to control the level of molten metal. In 1999, improvements in detector and microprocessor technology enabled Ronan to be the first in introducing the RLL Device with source activities generally 100 times less than the normal amount required. The lower levels of activity not only provide a safer working environment; they also exempt the user from having to obtain a Specific License, Wipe Tests and Surveys.

Ronan’s experienced engineering team will work with the end user and/or OEM company from the design phase of a project through the commissioning phase to ensure the seamless integration of the level measurement to the mold design and control specifications.

For mills where the user is already using gamma technology, Ronan offers a cost-effective solution to upgrade to this latest technology while utilizing existing sources, irrespective of original manufacturer. In cases where the user has a large inventory of detectors, solutions are available where those can still be used, thus increasing the cost-effectiveness of upgrading.



*SA-1 Ductile Iron Point Source Holder  
with Internal Rotary Shutter.  
Mounts External to Mold*



*GS- 200/300 Point or  
Strip Source Holder with  
Internal Rotary Shutter.  
Mounts either External  
or Internal to Mold*



*RLL-1 Low Level Source Holders with Shipping Shields:*

- Cartridge Style Side Insertion Mounting
- Cartridge Style Top Loading Insertion Mounting
- Fixed Inserted in Water Jacket Mounting



## SPECIFICATIONS

### Three Analog Outputs

- Selectable for 0 to 20 mA, 4 to 20 mA, and 0 to 10 Volts
- Analog Output – The X96S offers three analog outputs. Two are 10 millisecond update rates and are customer selectable; the third is for temperature output and occurs on a longer scan rate basis.

### Digital Outputs – Alarm Capability

- Alarm for system failure that can be tied back into the Controller Start Cast output (TTL logic signal). This output is used to queue the system to start the motors.
- Digital output (TTL logic signal) to signal the system that the X96S is in a calibration cycle.
- Digital Inputs – Two digital (TTL level) inputs: one each for High/Low Auto-Calibrate.

### Five Digital Relays and Five Digital TTL Outputs

- Including one fast TTL and one fast Relay (Assignable)
- High level Alarm
- Low level Alarm
- Auto Calibration Low

- High Detector Temperature
- Start Cast (Fast TTL)
- Detector Fail Alarms
- System Fail Alarms

### Two Selectable Detector Inputs

- For detector type (Scintillator/Ion)
- For detector head temperature

### Two Digital Inputs

- For remote Auto Calibration. Single Remote Push-Button contact
- For remote Auto Calibration. Single Remote Push-Button contact

### Two Isolated Filters with the ability to change the filter variables without upsetting the level. (Bump-less)

- Typically used for control
- Typically used for tuning or display

### Communications

- HART
- Profibus (Pending – 2006)
- Fieldbus (Pending – 2006)



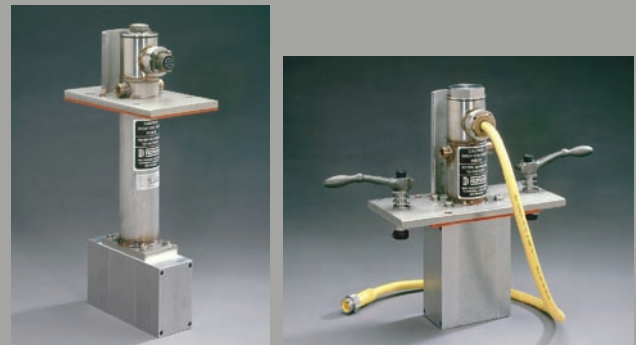
*X96S Microprocessor in a Surface Mount Chassis Enclosed in a NEMA-4 Enclosure with a Panel Mounted Programmer and LCD Graphic Display*



*Scintillation Detectors:*

- 50 mm General Purpose Detector
- 60 mm Water Cooled Detector

*Detectors Mount either Inside or External to the Mold Water Jacket*



*Large Crystal Detectors:*

- Bolt-in Flange Mounting
- Quick-disconnect Flange Mounting

*Detectors Typically Mount Inside the Mold Water Jacket*