Excellence in Monitoring

Ronan Model X96S Series Weighing System

For more than 27 years Ronan has provided the process control industry with unsurpassed products in the harshest environments. With a philosophy of designing new products to be backward compatible, our customers have the confidence of an installed base of thousands of systems. A worldwide network of dealers, 24-hr factory certified Field Service Engineers and an experienced staff of Applications Engineers are ready to assist with your measurement needs.

Product Information

Applications

- Solids Measurement
- Measurement Not Affected by:
  - Dust or Moisture
  - High Temperatures
  - Corrosive, Abrasive or Toxic Materials
- Variable or Constant Speed Conveyors
- Automatic Compensation for Process Build-Up on Belt/Screw
- Upgrade Utilizing Existing Sources

Features and Benefits

- Lowest Activity Sources on the Market
- Single Computer, Compatible with all Ronan Detectors. Easily Expandable to Accurately Measure the Most Complex Processes
- Multiple User-Configurable Outputs
- Auto-Zero on Empty Conveyor
- Excellent Measurement Reliability due to Proprietary Filtering Technology
- Low Maintenance / No Component Wear

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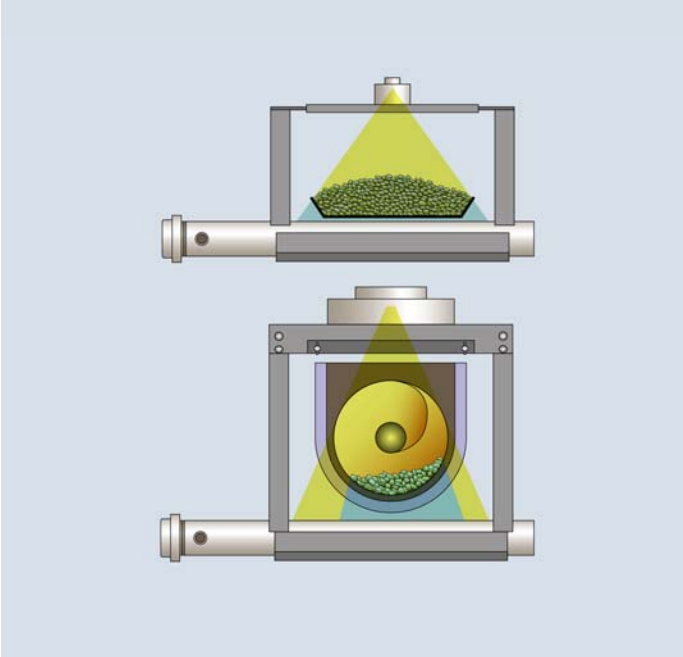
The X96S non-contact weighing system is an economical approach for solids weighing on belt and screw conveyors. It is designed to deliver outstanding performance in a wide range of difficult applications and process conditions for bulk solids. The system utilizes a single computer compatible with all Ronan detectors, which is easily expandable to accurately measure the most complex processes. These include the most dangerous materials such as caustic, toxic, corrosive, explosive, and carcinogenic irrespective of their temperature. The modular design is ideal to upgrade older systems while keeping the existing sources.

Measurement Principle

Each system consists of a gamma source, frame, detector and microprocessor. The gamma source, typically mounted on the top of the frame above the conveyor belt or screw, emits gamma energy through the material, collimated in a direction towards the detector mounted on the bottom of the conveyor. The mass of material on the conveyor attenuates the gamma energy. The amount of energy reaching the detector is inversely proportional to the mass on the conveyor. The detector measures the level of energy and sends a proportional signal to the X96S microprocessor which linearizes, filters, and correlates this signal to a weight and rate measurement.



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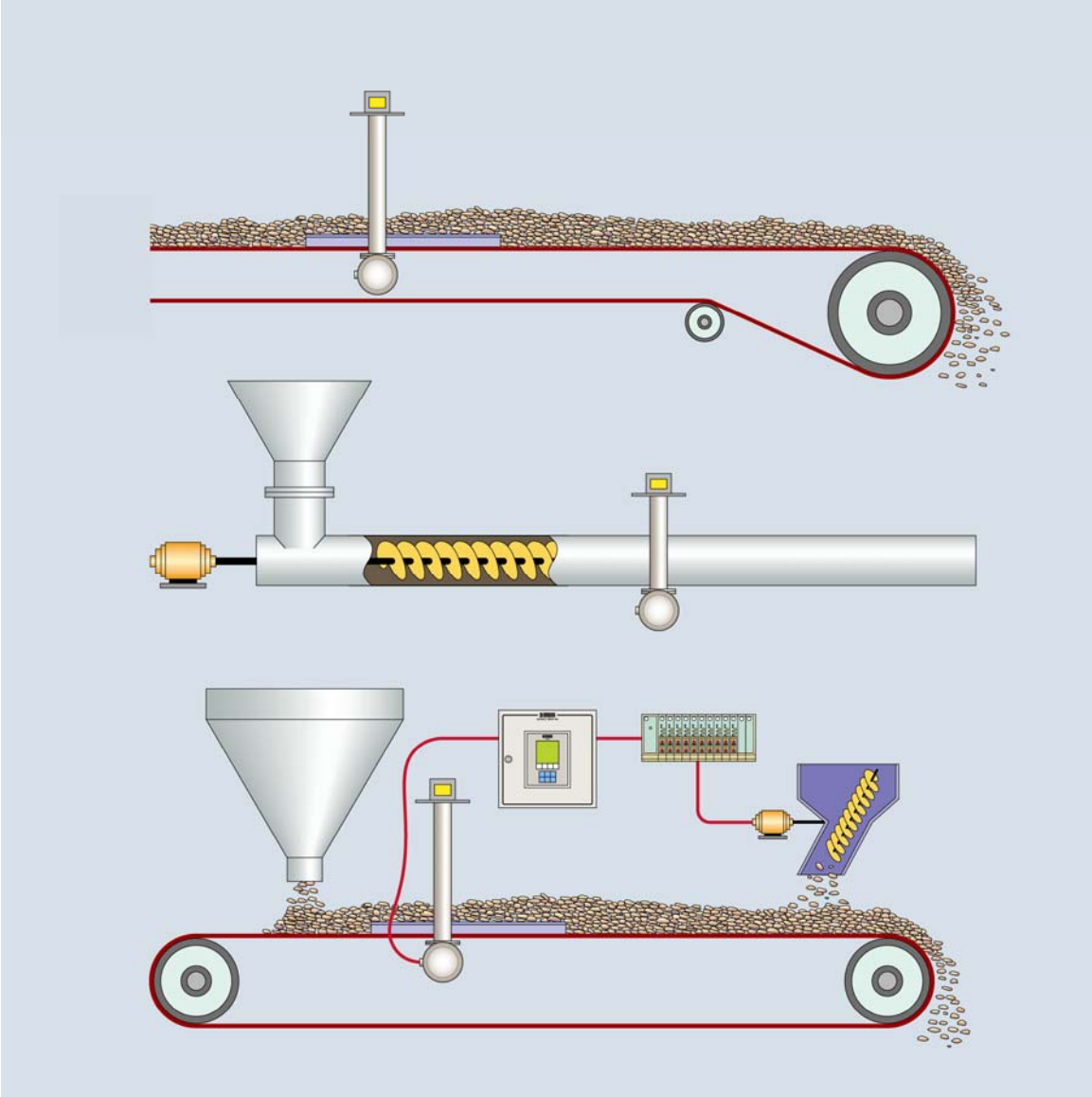

The entire system is mounted external to the conveyor and can be installed by simply bolting the frame around the conveyor, without the need to make any costly modifications to the conveyor itself. The lightweight, compact design enables it to be located in areas where space is a limitation and without the need for additional supports or foundations.

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Excellence in Monitoring

X96S Weighing System

Source Holders

Ronan pioneered the development of ultra-low level sources to greatly improve safety, and eliminate the requirement for surveys, wipe tests, inspections and much of the documentation. They are so safe the NRC permits their removal and installation without a licensed person being present, translating into significant cost savings for the user.

The RLL-1 ultra low source utilizes very small quantities of radioactive materials. RLL is a Ronan Engineering term that stands for "Radiation Low Level." RLL technology utilizes up to a total of 0.9 mCi (0.033 GBq) of cesium source. In comparison, some conventional weight gamma gauges use source sizes with a hundred times more activity to make the same measurement. Because of these very low-levels of activity, and their simplicity of design, Ronan systems are the safest gamma gauges on the market. The NRC recognized this in 1999 when Ronan Engineering attained certification for the first RLL source design.

RLL-1 Low level Source Holder

SA-1 Source Holder

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X96S Microprocessor

The X96S Process Measurement Computers are the most advanced, featuring the fastest processors in the radiametric gauging industry. The modular design allows for low-cost expansion of outputs and measurement variables. Calibration and configuration is in a simplified format, and can be achieved locally through push buttons on an liquid crystal graphic display, or remotely through industry standard protocols.

Features

For Use in the Following Measurements:
- Level
- Level with Density Compensation
- Mold Level
- Density
- Mass Flow
- Weight

- System Integration via:
  - HART
  - Foundation Fieldbus
  - PROFIBUS PA
- Local Display Shown in HART Format
- Optional Local and/or Remote Eight Line Display
- Flexible, Modular Design Permits Customization
- Multiple Detector Capability
- State of the Art Dynamic Filtering
- Isolated Digital and Analog I/O, Software Settable
- NEMA-4, 4X, Enclosure or Rack Mount Chassis

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Specifications

Performance	
	The X96S Microprocessor is compatible with all Ronan detector configurations and is interchangeable between Density, Level and Weight applications.
System Accuracy	+/- 1 % span
Outputs	HART® 4-20mA, Foundation Fieldbus™ PROFIBUS PA Up to 4 Form "C" Relay Outputs Up to 4 Isolated Open Collector Outputs Capable of Switching 4.5 to 30 volts
Inputs	Pressure Input: Support for Process Pressure from 0-10 volts, or 4-20 mA Up to 8 Digital Inputs which can be Configured (Individually) as Dry or Live Contacts, Quadrature, Encoders or Pulse Counters Temperature Input: Nickel or Platinum RTD
Diagnostics	On-Board Modular Self-Test Watchdog Timer and Status LEDs
Calibration	Available Through LOI, PC Based Software or Hand Held Communicator / DCS Utilizing HART® , Foundation Fieldbus™ or PROFIBUS PA RS-232/RS-485 Optional
Environmental	
Operating temperature	-10 to +60 C
Electrical	
Power supply	24 VDC @ .035 A
Mechanical	
Construction	Housing - NEMA 4 Standard - Stainless Steel Optional - Explosion Proof Optional
Approvals	
	Complies with Cenelec/Atex CSA Class 1, Div 1 Groups A,B,C,D Nema 4, Nema 4X
Warranty	Three Year Limited Warranty

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Ronan Scintillation Detector

Ronan pioneered the use of solid crystal scintillation detectors more than 20 years ago, and now has an installed base in the thousands across a wide variety of applications worldwide. Ronan employs two types of crystals: Scintillating Plastic Crystals for standard applications, and Sodium Iodide scintillating crystals for ultra low-level fields.

Features

- High Detector Efficiency
- Detector Lengths up to 15ft Active Length…Longest in Industry
- Only Company to Manufacture Curved Solid Crystals
- Spring Tension of PM Tube. Maintains Integrity of the Signal Path Under Vibration and When Detector is Mounted Inverted
- Lowest Gamma Fields in Industry
- Ronan Quality Manufacturing-Backed by a Three Year Limited Warranty

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Excellence in Monitoring

Specifications

Performance	
Level Range	The maximum active length of each detector is 15 feet (4.6 meters). Up to four detectors can be summed in a single electronics, giving a total continuous measurement range of 60 feet (18.4 meters)
System Accuracy	+/- 1 % span
Environmental	
Operating temperature	-10 to +60 C (Low Temperature and High Temperature Options Available)
Electrical	
Power supply	24 VDC @ .035 A
Mechanical	
Construction	Electronics - Stainless Steel Housing - Schedule 40 Carbon Steel, Epoxy Painted - 304 Stainless Steel Optional - PVC Optional
Scintillation Crystal	Plastic or Sodium Iodide
Weight	15 lb/ foot
Approvals	Complies with Cenelec/Atex CSA Class 1, Div 1 Groups A,B,C,D Nema 4, Nema 4X
Warranty	Three Year Limited Warranty

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Excellence in Monitoring

Ronan Ion Chamber Detector

First introduced in the 1970s, the ion chamber detector has been in constant use due to the reliability and robustness of the design. It can withstand intense vibration, while delivering accurate and repeatable measurements even on narrow density ranges.

Features

- Rugged Design
- Spring Tension of PM Tube. Maintains Integrity of the Signal Path Under Vibration
- Ronan Quality Manufacturing-Backed by a Five Year Limited Warranty

Specifications

- Construction: Electronics – 4" Diameter, 6" Length in Stainless Steel Housing
  Housing - Schedule 40 Carbon Steel, Epoxy Painted
  - 304 Stainless Steel or PVC Optional
- System Accuracy: +/- 1 % span (typical)
- Power Requirements: 24 VDC @ .035 A,
- Ratings: UL, Cenelec/Atex
  Class 1, Div 1
  Nema 4, Nema 4X
- Operating Temperature: -40 to +60 C

Heater Blankets Available for Low Temperatures and small Measurement

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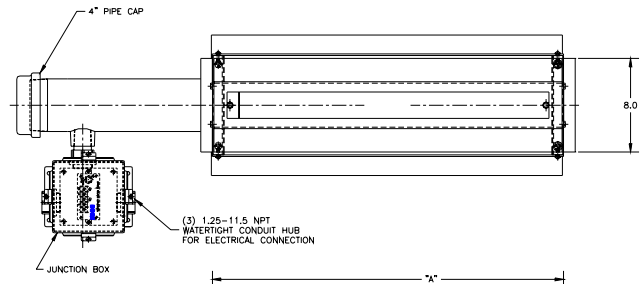
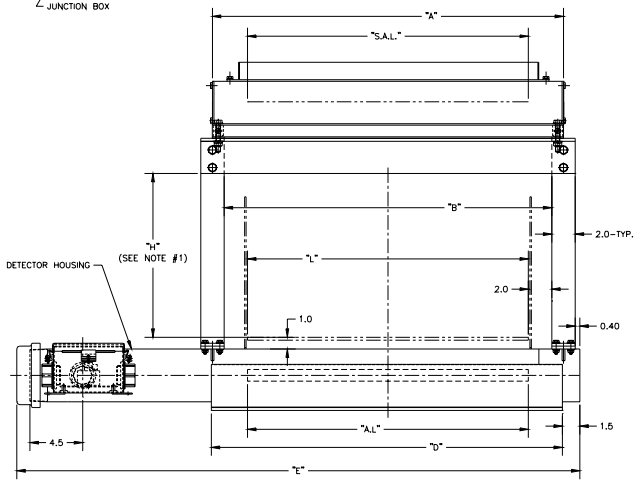
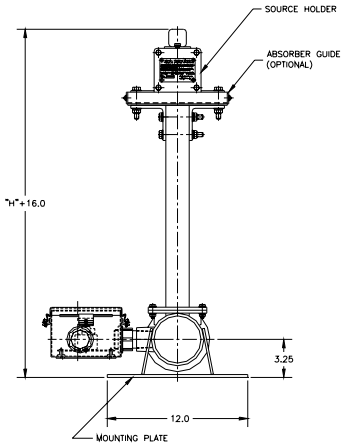
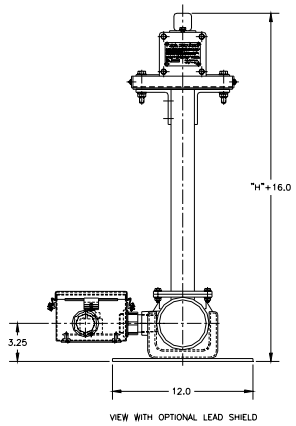
Belt Conveyor Configuration



BELT WIDTH "L"	DETECTOR ACTIVE LENGTH A.L.	SOURCE ACTIVE LENGTH S.A.L.		"A"		"B"	"D"	"E"
		FLAT BELT	IDLED BELT	FLAT BELT	IDLED BELT			
12"	12"	12"	4"	18"	10"	16"	18"	36.12"
18"	18"	18"	6"	24"	12"	22"	24"	42.12
24"	24"	24"	8"	30"	14"	28"	30"	48.12
30"	30"	30"	10"	36"	16"	34"	36"	54.12
36"	36"	36"	12"	42"	18"	40"	42"	60.12
42"	42"	42"	14"	48"	20"	46"	48"	66.12
48"	48"	48"	16"	54"	22"	52"	54"	72.12
54"	54"	48"	18"	60"	24"	58"	60"	78.12
60"	60"	48"	20"	66"	26"	64"	66"	84.12







L = 24", H = 14", FLAT BELT SYSTEM IS SHOWN

FOR GENERAL PURPOSE USE ONLY!

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Screw Conveyor Configuration

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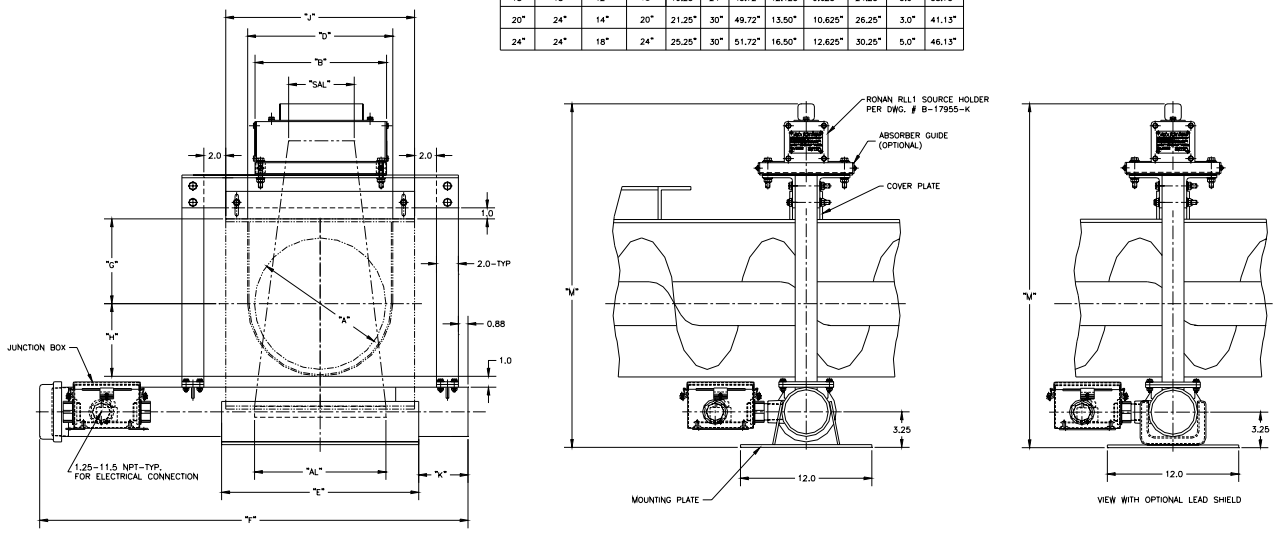
CONV. DIA. A	DETECTOR ACTIVE LENGTH AL	SOURCE ACTIVE LENGTH SAL	B	D	E	F	G	H=REF. H=D/2	J	K	M
6"	6"	2"	8"	7.25"	12"	32.47"	4.50"	3.625"	9.75"	3.75"	25.13"
9"	12"	3"	9"	10.25"	18"	37.35"	6.125"	5.125"	13.5"	2.62"	28.25"
10"	12"	4"	10"	11.25"	18"	37.85"	6.375"	5.625"	14.5"	3.12"	29.0"
12"	12"	6"	12"	13.25"	18"	39.22"	7.75"	6.625"	17.25"	4.5"	31.38"
14"	18"	8"	14"	15.25"	24"	43.22"	9.25"	7.625"	19.25"	2.5"	33.88"
16"	18"	10"	16"	17.25"	24"	44.22"	10.625"	8.625"	21.25	3.5"	36.25"
18"	18"	12"	18"	19.25"	24"	45.72"	12.125"	9.625"	24.25"	5.0"	38.75"
20"	24"	14"	20"	21.25"	30"	49.72"	13.50"	10.625"	26.25"	3.0"	41.13"
24"	24"	18"	24"	25.25"	30"	51.72"	16.50"	12.625"	30.25"	5.0"	46.13"



A=12" SYSTEM IS SHOWN

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