



InteliSENS™



NON-CONTACT SPEED & LENGTH MEASUREMENT FOR THE METALS INDUSTRIES

SLRM, SLR, SLM, SL Series



- ▶ High-Accuracy, High-Reliability, Intelligent Measurement
- ▶ Non-Contact, Zero Slippage, Laser Doppler Technology
- ▶ Automatic Direction Detection with Measurement Down to Standstill Speed
- ▶ Manufactured and Supported by the Global Leader in Laser Doppler Speed & Length Measurement

PROTON PRODUCTS: Advanced Measurement Technologies

...non-contact laser Doppler speed and length measurement:
proven, rugged, reliable technology for the metals industry



Steel & Aluminum Processes:

- Hot Casting Mills: Slab, billet & bloom
- Roughing Mills
- Hot Rolling Mills
- Cold Rolling Mills
- Finishing Mills
- Leveler Lines
- Inspection Tables
- Pickling Lines
- Tinning and Galvanizing Lines
- Process Lines
- Slitting Lines

Speed & Length Applications:

- Mass Flow Measurement
- Rolling Process Elongation Control
- Shear & Slitting Control
- Automatic Gauge Control

PROTON PRODUCTS is a leading manufacturer of instrumentation and control equipment for industrial processes. The Company is owner-managed and produces products that are designed and manufactured in-house. PROTON continues to expand its product range and applications with affordable, innovative technologies that provides its customers with solutions to improve their quality and productivity while reducing scrap.

PROTON's InteliSENS family of non-contact laser Doppler speed and length sensors are robustly engineered for harsh metals industry environments and set new performance standards for hot mills, cold mills and process lines. Their laser Doppler measurement technique ensures high accuracy without slippage, drift or mechanical wear. The InteliSENS series has no moving parts for maintenance-free operation and delivers repeatable, precise measurement accuracy of better than $\pm 0.05\%$.

InteliSENS Laser Doppler Speed & Length Sensors

Precise, versatile measurement performance for all metals applications



PROTON PRODUCTS innovative laser Doppler sensors set new standards of performance with non-contact speed and length measurement for hot metals applications.

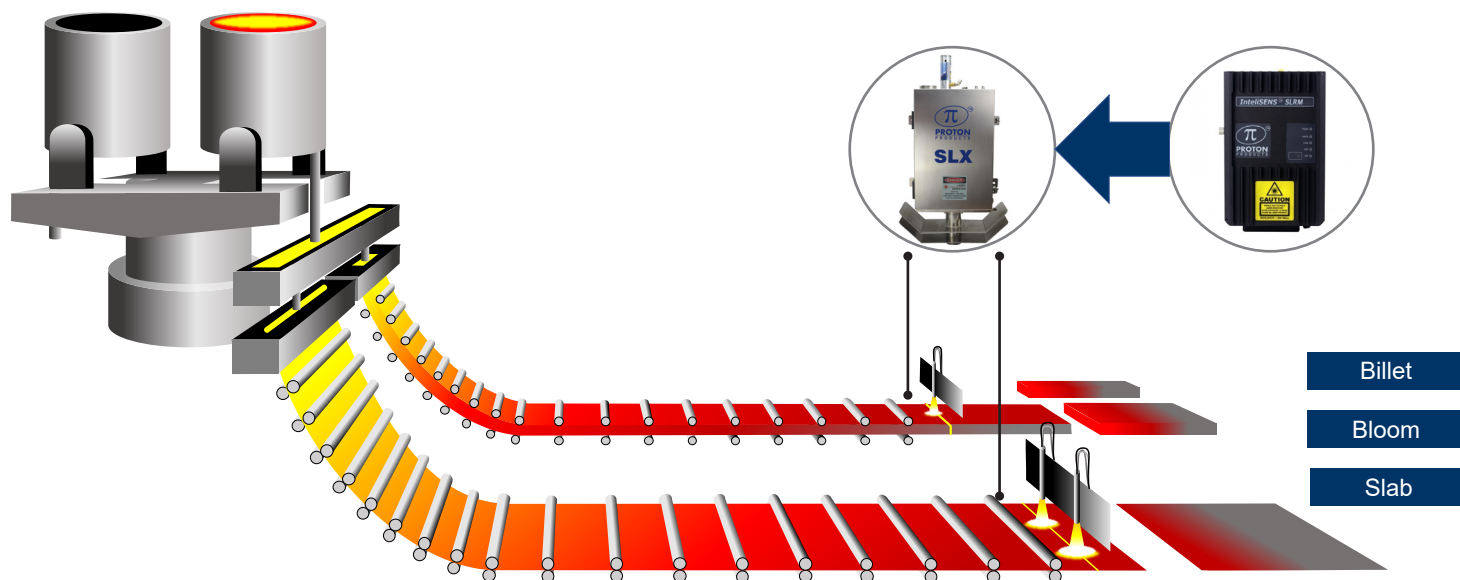
Designed to replace cumbersome, inaccurate, high-wear, high-maintenance speed and length measurement devices throughout the metals industries. These are prone to excessive measurement errors of up to several centimeters due to poor calibration, slippage, vibration, wear and dirt accumulation, resulting in product giveaway, lower quality and compromised delivery.

PROTON's InteliSENS Series deliver advanced technologies new levels of performance with:

- ▶ **Robust environmental unit:** Rugged double-wall stainless steel enclosure with air wipes, vortex coolers, water cooling and air amplifiers for hot mill operations.
- ▶ **High measurement availability:** Solid-state digital technology with no moving parts for rock-solid performance and reliability.
- ▶ **Precise measurement:** Permanently calibrated to UKAS Product Certification delivers accuracy to between $\pm 0.02\%$ and $\pm 0.05\%$ for high operator confidence and utilization. Sensors are subjected to temperature cycling tests before final QC testing. Each sensor is supplied with a unique calibration certificate associated with the sensor serial number. Recalibration is never required.
- ▶ **High-resolution measurement:** Tracks minute product movement for highly accurate elongation measurement for hot and cold rolling applications.
- ▶ **Zero speed measurement:** SLR Series accurately measure down to standstill speed and in both directions for hot and cold rolling mill applications.
- ▶ **Application-matched designs:** With stand-off distances ranging from 150mm to 2500mm will fit all metals processes.
- ▶ **Easy integration:** Intelligent sensors with standard and de-facto communications protocols for fast commissioning with PLC's, DCS and other automation and reporting platforms.
- ▶ **Compact form factor:** For integration into 3rd party C-frame metals thickness gauges.
- ▶ **Valuable setup and information insight:** Software packages with user-friendly GUI interfaces for menu-driven preset and alarm setup, trending, and data logging.
- ▶ **Excellent value:** Low cost of ownership. High Return on Investment.



PROTON PRODUCTS: Hot Casting Mill Applications



InteliSENS SLRM Series Hot Casting Mill Summary

Key InteliSENS SLRM Series Specifications

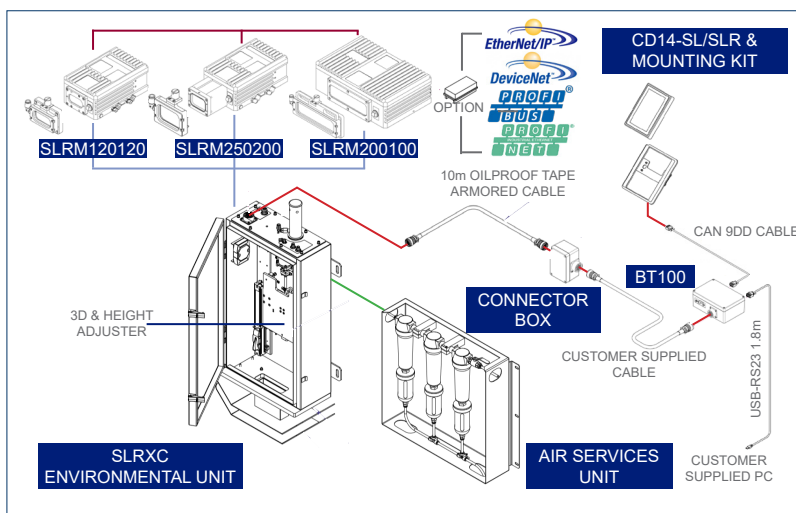
Accuracy	± 0.05%
Internal Measurement Rate	100kHz
Measurement Output Interval	40 μ seconds
Minimum/Maximum Line Speed	0/10,000m/min bi-directional
Communications: Standard	Ethernet, RS232, CANbus
Communications: Optional	Ethernet/IP, DeviceNET, PROFIBUS, PROFINET

InteliSENS SLRM Series Hot Mill Benefits

- Reliable, precise, non-contact speed & length measurement down to standstill speed for continuous caster applications with 0.05% accuracy.
- Direct strand measurement provides accurate, repeatable cut length control, beating traditional contacting measurements whose cut length performance is approximately ± 50 mm.
- Eliminates the measurement 'safety factor' compensation of 50-75mm when cutting billets, slab and blooms.
- Improves caster yield with reduced scrap including the downstream rolling processes.
- Accurate length measurement helps optimize chemistry change, ladle changes, spray practice and other casting process variables.

Measurement Configuration

InteliSENS SLRM Series	SLR200100: Min Speed 2.7m/min. Min. Cut Speed 0.13m/min SLR120120: Min Speed 4.0m/min. Min. Cut Speed 0.2m/min SLR250200: Min Speed 2.9m/min. Min. Cut Speed 0.2m/min
SLRXC Environmental Unit	Air-Driven Vortex Cooler Air Amplifier Gauge Water Cooling Plate (option) Air Wipe (option) Shutter 3D & Height Adjuster (option) Heat Baffle Shield Plates Unified Electrical & Communications Connectors
Oilproof, Armored Cable	Connects between SLRXC and BT 100. Breakaway cable reduces replacement time, cost & sensor damage. 10m oilproof, tape-armored cable.
Connector Box	Breakaway connector box protects equipment in event of process damage.
BT100	Power supply and cable connection to the SLRXC Box. Includes DB9 connectors to access CAN, RS-232 and PROFIBUS ports. Supplies 24Vdc sensor power.
Air Services Unit	Supplies clean purge air for vortex coolers, air amplifiers and air wipes.
CD14-SL/SLR Display & Mounting Kit	Displays speed, length, preset length. Connects via RS232. Display, PSU, break-out box and laser safety switch.



SLRXC Environmental Unit: The Ultimate Protection for Reliable Measurement

Air-Driven Vortex Cooler (option): The SLRXC enclosure is fitted with a vortex cooler tube. The cold air stream is fed into the SLRXC to both cool the SLRM gauge and provide airflow to keep dust, fumes and contaminants out of the enclosure. The hot air stream is vented out of the top of the vortex cooler tube.

SLRXC Environmental Unit: Stainless steel double-wall environmental protection housing for hot rolling mills. Includes unified electrical connector for electrical and communications plus air wipe and water cooling ports. Conforms to Class A Heavy Industrial CE and EMC Standards.

Air Services Unit (not shown): Provides filtered air which is dust, water and oil free.

Used to drive vortex coolers, air amplifiers and air wipes.

Air Amplifier: Clean, high-pressure air (4-5 bar) is routed to the air amplifier at high-speed into the laser beam tube to create a cool, dry, clean measurement environment.

Gauge Water Cooling (option): SLRM gauges may be water cooled via the integrated base block of the gauge for use with ambient temperatures above 50°C.

Water Cooling Plate (option): The front of the SLRXC enclosure is fitted with a water cooling plate for additional cooling in very high temperature environments.

Air Wipe (option): Quick change window and air wipe unit for use in environments where condensation or particulates may be deposited on the optical window.

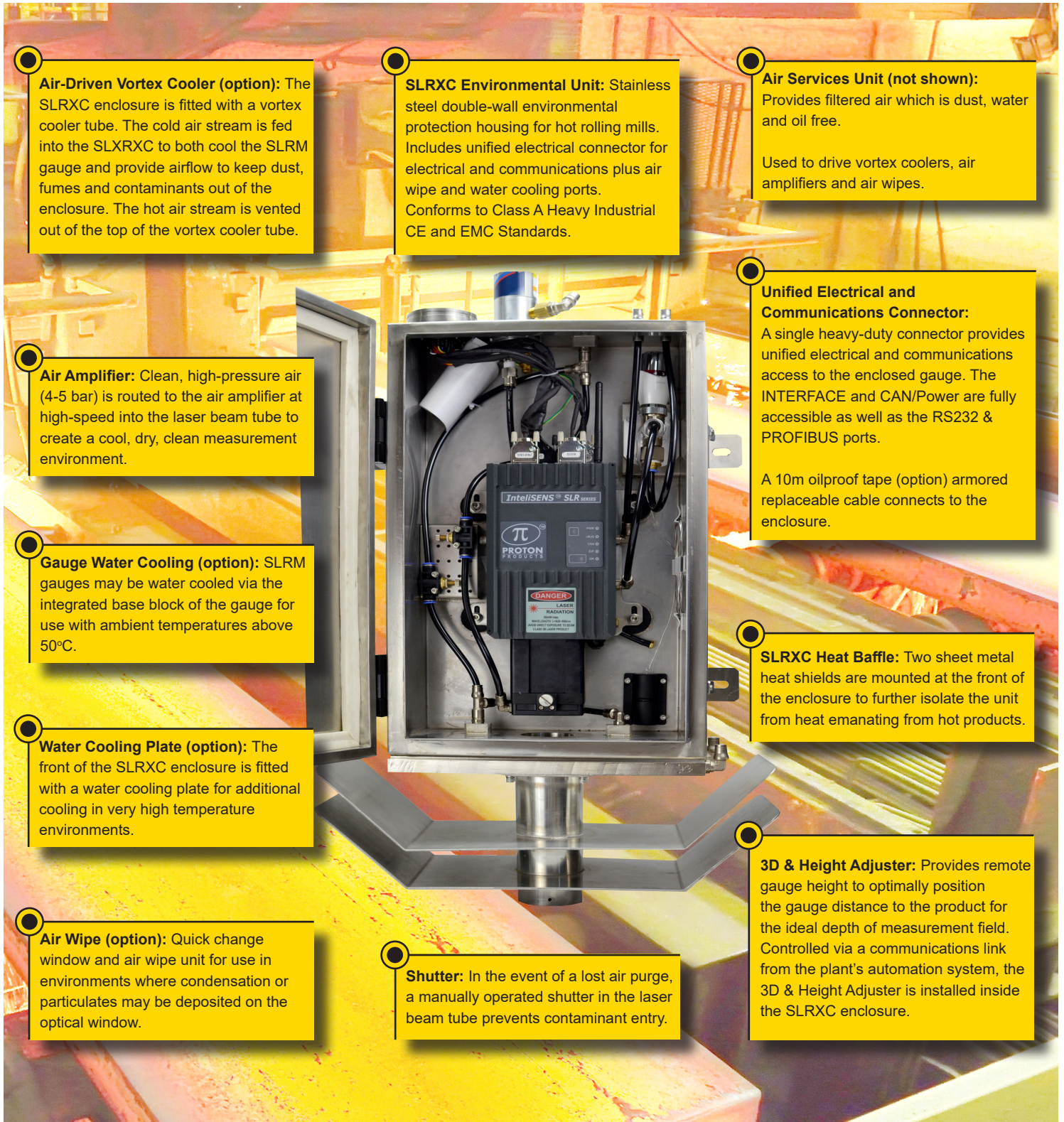
Unified Electrical and Communications Connector: A single heavy-duty connector provides unified electrical and communications access to the enclosed gauge. The INTERFACE and CAN/Power are fully accessible as well as the RS232 & PROFIBUS ports.

A 10m oilproof tape (option) armored replaceable cable connects to the enclosure.

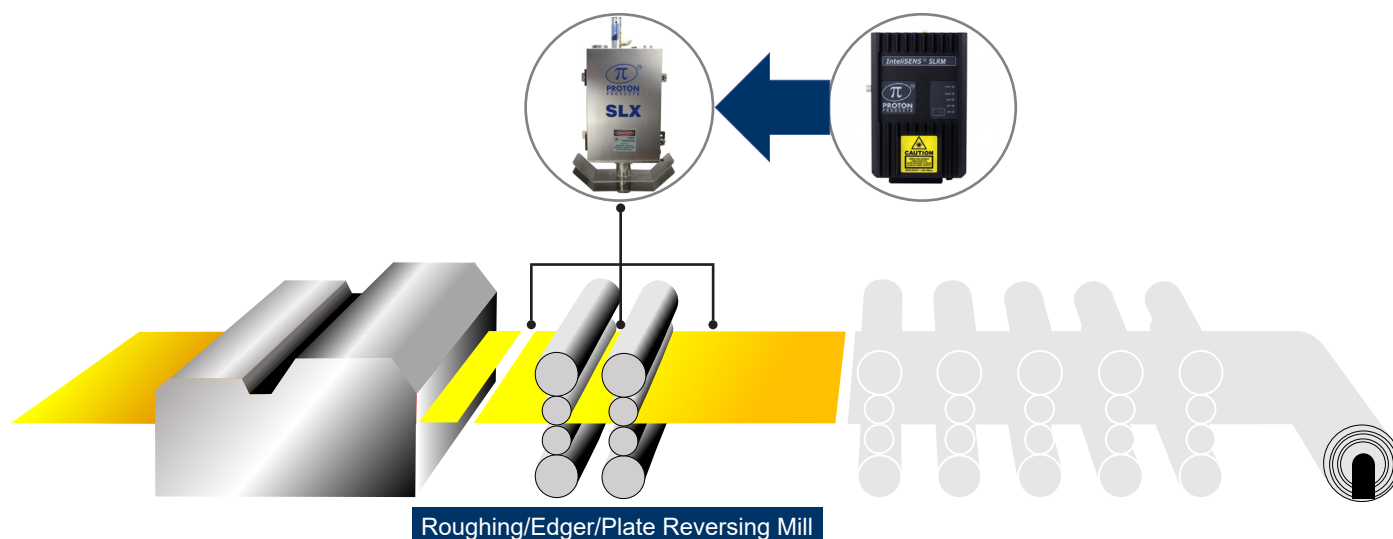
SLRXC Heat Baffle: Two sheet metal heat shields are mounted at the front of the enclosure to further isolate the unit from heat emanating from hot products.

3D & Height Adjuster: Provides remote gauge height to optimally position the gauge distance to the product for the ideal depth of measurement field. Controlled via a communications link from the plant's automation system, the 3D & Height Adjuster is installed inside the SLRXC enclosure.

Shutter: In the event of a lost air purge, a manually operated shutter in the laser beam tube prevents contaminant entry.



PROTON PRODUCTS: Hot Roughing Mill Applications



InteliSENS SLRM Series Hot Roughing Edger & Plate Mill Rolling Summary

Key InteliSENS SLRM Specifications

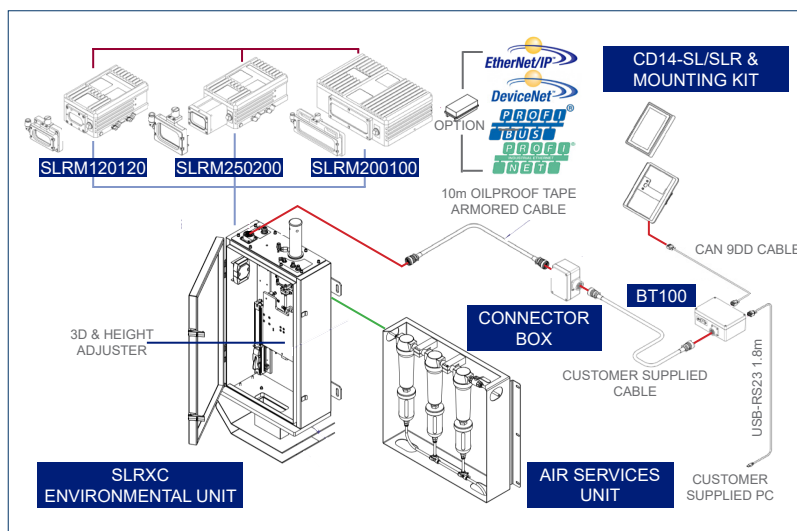
Accuracy	± 0.05%
Internal Measurement Rate	100kHz
Measurement Output Interval	40 μ seconds
Minimum/Maximum Line Speed	0/10,000m/min bi-directional
Communications: Standard	Ethernet, RS232, CANbus
Communications: Optional	Ethernet/IP, DeviceNET, PROFIBUS, PROFINET

InteliSENS SLRM Series Roughing Mill Benefits

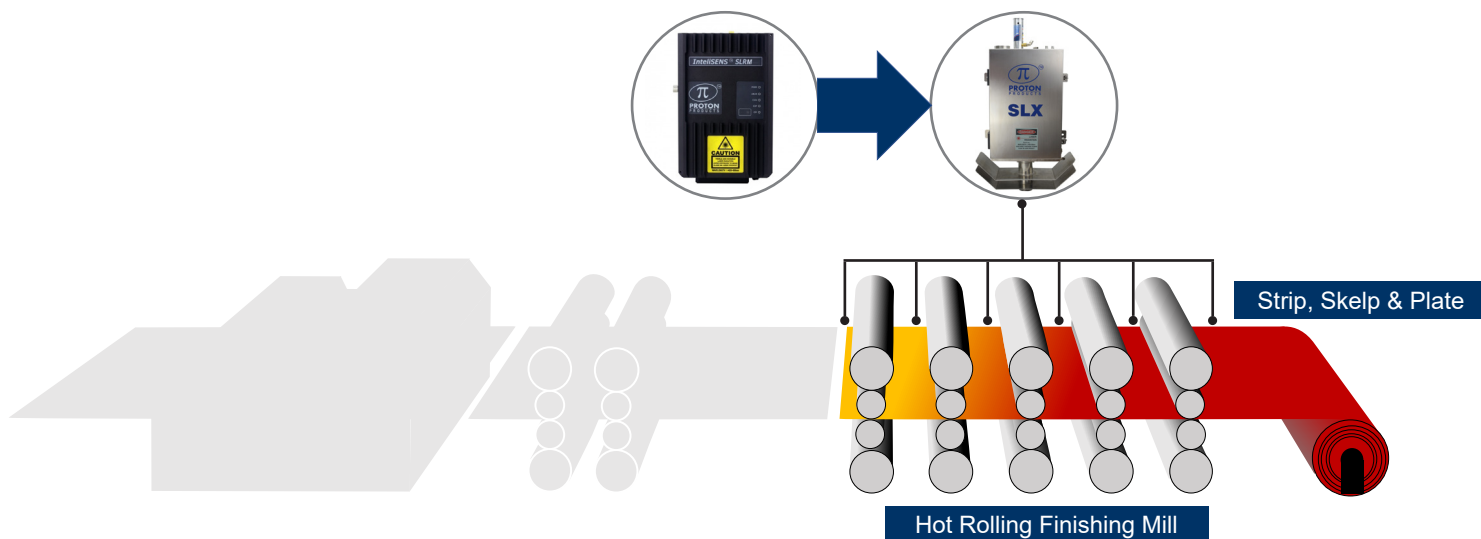
- Elongation measurement and control for tighter quality management and product consistency for roughing mill operations
- Provides Automatic Gauge Control (AGC) to precisely position the roller displacement at each stand
- Inter stand and exit strip measurement for mass flow control
- Rugged, reliable industrial design includes the SLRXC Environmental Unit plus accessories for harsh hot mill environments
- Precise speed and length measurement during line standstill, crawl and normal operations

Measurement Configuration

InteliSENS SLRM Series	SLR200100: Min Speed 2.7m/min. Min. Cut Speed 0.13m/min SLR120120: Min Speed 4.0m/min. Min. Cut Speed 0.2m/min SLR250200: Min Speed 2.9m/min. Min. Cut Speed 0.2m/min
SLRXC Environmental Unit	Air-Driven Vortex Cooler Air Amplifier Gauge Water Cooling Plate (option) Air Wipe (option) Shutter 3D & Height Adjuster (option) Heat Baffle Shield Plates Unified Electrical & Communications Connectors
Oilproof, Armored Cable	Connects between SLRXC and BT 100. Breakaway cable reduces replacement time, cost & sensor damage. 10m oilproof, tape-armored cable.
Connector Box	Breakaway connector box protects equipment in event of process damage.
BT100	Power supply and cable connection to the SLRXC Box. Includes DB9 connectors to access CAN, RS-232 and PROFIBUS ports. Supplies 24Vdc sensor power.
Air Services Unit	Supplies clean purge air for vortex coolers, air amplifiers and air wipes.
CD14-SL/SLR Display & Mounting Kit	Displays speed, length, preset length. Connects via RS232. Display, PSU, break-out box and laser safety switch.



PROTON PRODUCTS: Hot Rolling Mill Applications



InteliSENS SLRM Series Hot Strip, Skelp & Plate Rolling Summary

Key InteliSENS SLRM Specifications

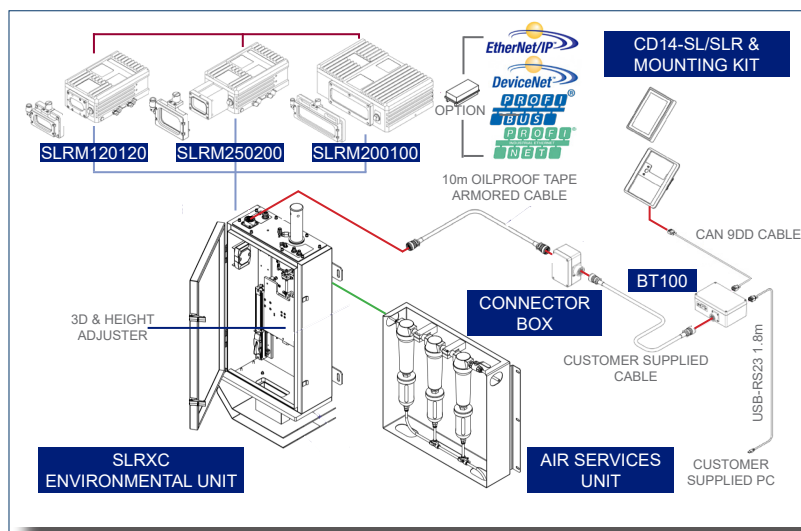
Accuracy	± 0.05%
Internal Measurement Rate	100kHz
Measurement Output Interval	40 μ seconds
Minimum/Maximum Line Speed	0/10,000m/min bi-directional
Communications: Standard	Ethernet, RS232, CANbus
Communications: Optional	Ethernet/IP, DeviceNET, PROFIBUS, PROFINET

InteliSENS SLRM Series Hot Finishing Mill Benefits

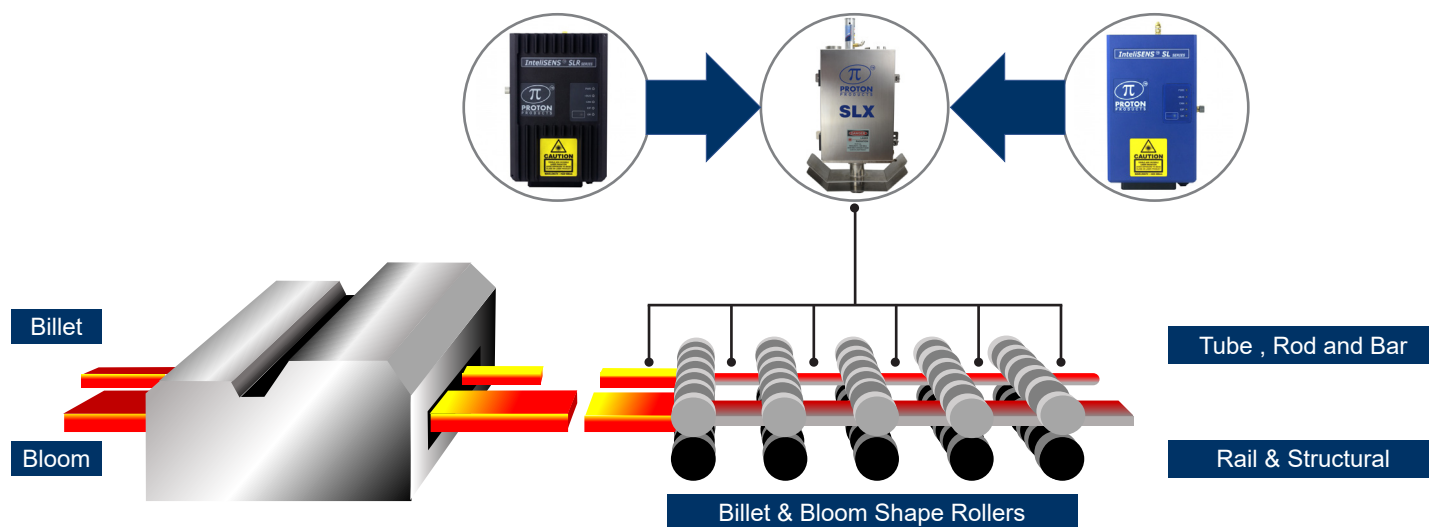
- Elongation measurement and control for tighter quality management and product consistency for hot finishing mill operations
- Provides Automatic Gauge Control (AGC) to precisely position the roller displacement at each stand for optimum rolling performance
- Inter stand and exit strip measurement for mass flow control
- Rugged, reliable industrial design includes the SLRXC Environmental Unit plus accessories for harsh hot mill environments
- Speed measurement provides coil box synchronization, crop optimization and cooling control
- Precise speed and length measurement during line stoppage, crawl and normal operations

Measurement Configuration

InteliSENS SLRM Series	SLR200100: Min Speed 2.7m/min. Min. Cut Speed 0.13m/min SLR120120: Min Speed 4.0m/min. Min. Cut Speed 0.2m/min SLR250200: Min Speed 2.9m/min. Min. Cut Speed 0.2m/min
SLRXC Environmental Unit	Air-Driven Vortex Cooler Air Amplifier Gauge Water Cooling Plate (option) Air Wipe (option) Shutter 3D & Height Adjuster (option) Heat Baffle Shield Plates Unified Electrical & Communications Connectors
Oilproof, Armored Cable	Connects between SLRXC and BT 100. Breakaway cable reduces replacement time, cost & sensor damage. 10m oilproof, tape-armored cable.
Connector Box	Breakaway connector box protects equipment in event of process damage.
BT100	Power supply and cable connection to the SLRXC Box. Includes DB9 connectors to access CAN, RS-232 and PROFIBUS ports. Supplies 24Vdc sensor power.
Air Services Unit	Supplies clean purge air for vortex coolers, air amplifiers and air wipes.
CD14-SL/SLR Display & Mounting Kit	Displays speed, length, preset length. Connects via RS232. Display, PSU, break-out box and laser safety switch.



PROTON PRODUCTS: Hot Billet & Bloom Rolling Applications



InteliSENS SLRM Series Billet & Bloom Tube, Rod, Bar and Rail Rolling Summary

Key InteliSENS SLRM Specifications

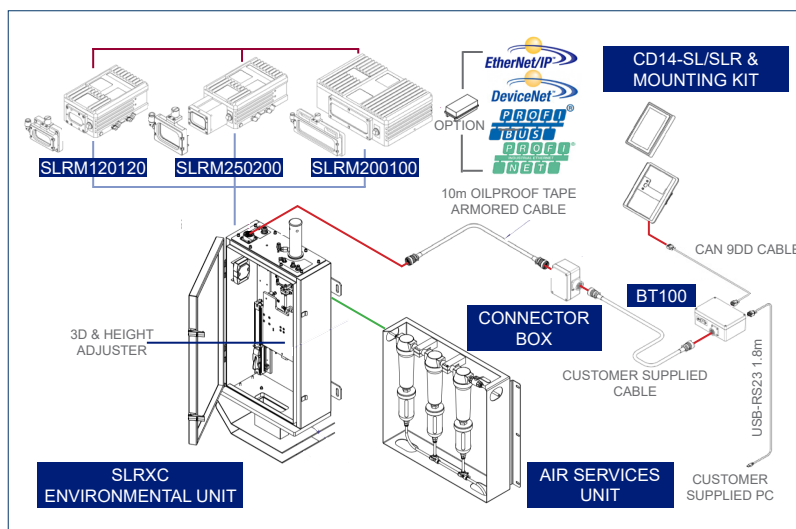
Accuracy	± 0.05%
Internal Measurement Rate	100kHz
Measurement Output Interval	40 μ seconds
Minimum/Maximum Line Speed	0/10,000m/min bi-directional
Communications: Standard	Ethernet, RS232, CANbus
Communications: Optional	Ethernet/IP, DeviceNET, PROFIBUS, PROFINET

InteliSENS SLRM Series Billet & Bloom Benefits

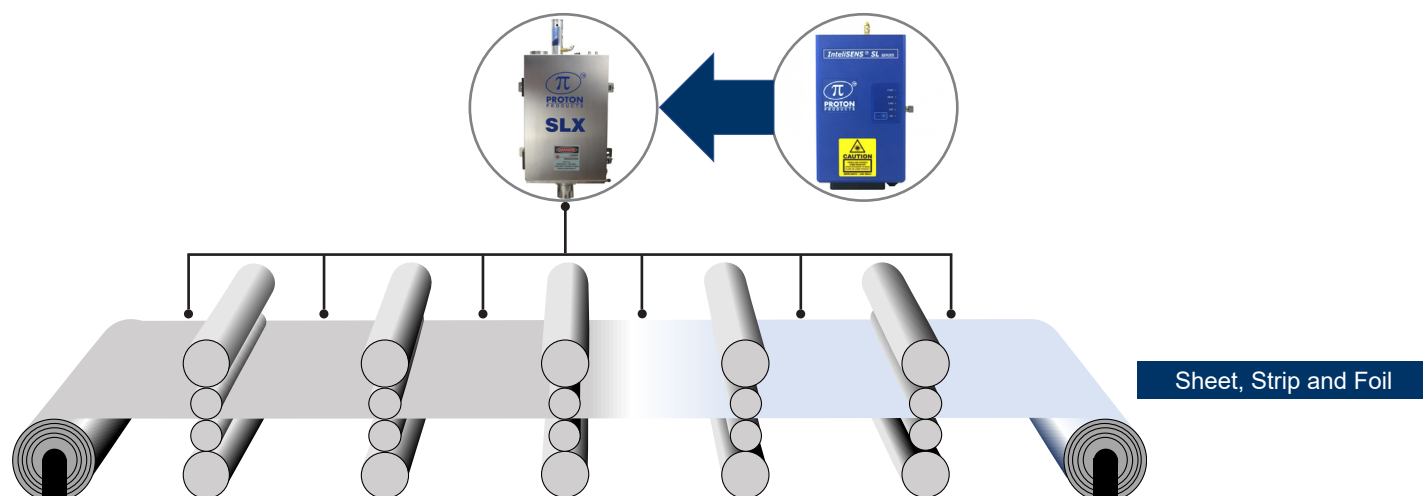
- Elongation measurement and control for tighter quality management and product consistency for billet and bloom rolling operations
- Provides Automatic Gauge Control (AGC) to precisely position the roller displacement at each stand for optimum rolling & shape performance
- Accurate cut to length control for long products in sectional processes
- Rugged, reliable industrial design includes the SLRXC Environmental Unit plus accessories for harsh hot mill environments
- Precise product speed and length measurement during line stoppage, crawl and reversing operations

Measurement Configuration

InteliSENS SLRM Series	SLRM200100: Min Speed 2.7m/min. Min. Cut Speed 0.13m/min SLRM120120: Min Speed 4.0m/min. Min. Cut Speed 0.2m/min SLRM250200: Min Speed 2.9m/min. Min. Cut Speed 0.2m/min
SLRXC Environmental Unit	Air-Driven Vortex Cooler Air Amplifier Gauge Water Cooling Plate (option) Air Wipe (option) Shutter 3D & Height Adjuster (option) Heat Baffle Shield Plates Unified Electrical & Communications Connectors
Oilproof, Armored Cable	Connects between SLRXC and BT 100. Breakaway cable reduces replacement time, cost & sensor damage. 10m oilproof, tape-armored cable.
Connector Box	Breakaway connector box protects equipment in event of process damage.
BT100	Power supply and cable connection to the SLRXC Box. Includes DB9 connectors to access CAN, RS-232 and PROFIBUS ports. Supplies 24Vdc sensor power.
Air Services Unit	Supplies clean purge air for vortex coolers, air amplifiers and air wipes.
CD14-SL/SLR Display & Mounting Kit	Displays speed, length, preset length. Connects via RS232. Display, PSU, break-out box and laser safety switch.



PROTON PRODUCTS: Cold Rolling Mill Applications



InteliSENS SLM Series Sheet, Strip & Foil Cold Rolling Summary

Key InteliSENS SLM Specifications

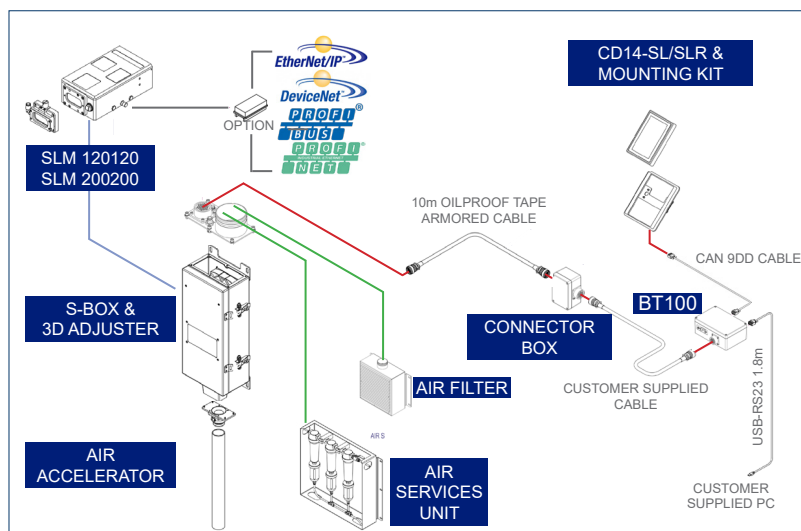
Accuracy	± 0.05%
Internal Measurement Rate	100kHz
Measurement Output Interval	40 μ seconds
Minimum/Maximum Line Speed	0/10,000m/min unidirectional
Communications: Standard	Ethernet, RS232, CANbus
Communications: Optional	Ethernet/IP, DeviceNET, PROFIBUS, PROFINET

InteliSENS SLM Series Cold Rolling Mill Benefits

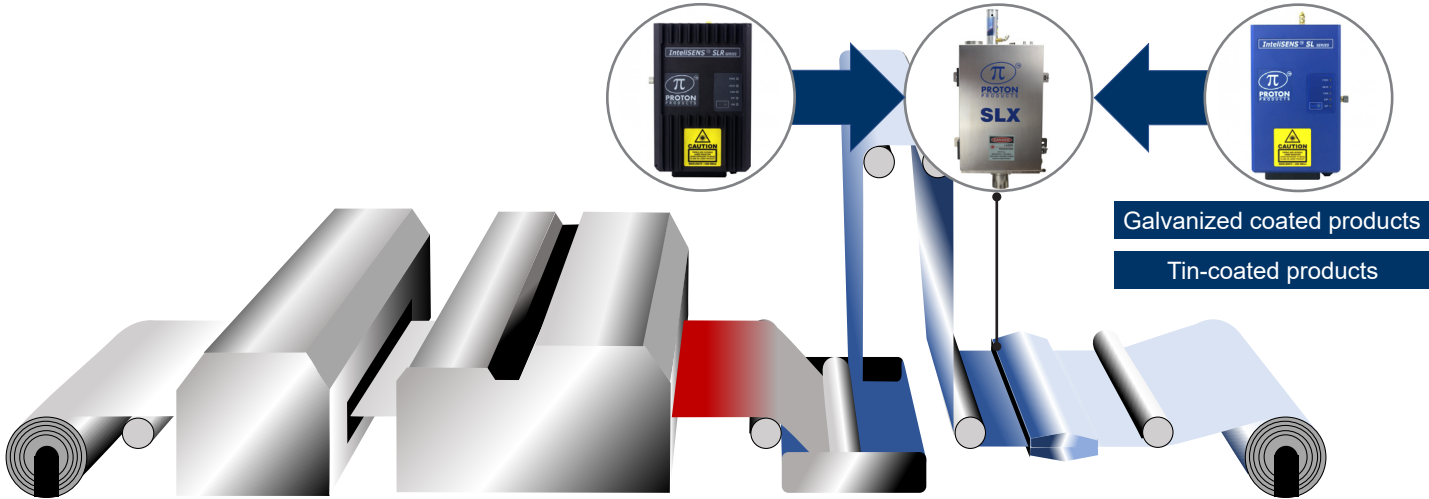
- ▶ Rugged, reliable industrial design includes the optional S-Box Environmental Unit to protect the sensor from airborne rolling mill contaminants
- ▶ S-Box Air accelerator removes laminar surface lubricants to provide a clean optical path for greater accuracy and reliability
- ▶ Precise product speed and length measurement during line standstill, crawl and reversing operations
- ▶ Inter stand and exit strip speed & length measurements provide mass flow control
- ▶ Elongation measurement and control for billet and bloom rolling operations delivers higher quality and product consistency
- ▶ Automatic Gauge Control (AGC) precisely positions the roller displacement at each stand for optimum rolling performance
- ▶ Final coil length measurement with a contact output to an on-line process shear

Measurement Configuration

InteliSENS SLM Series	SLM120120: 1200mm standoff, 120mm depth of field. SLM200200: 2000mm standoff, 200mm depth of field One sensor/stand plus one
S-BOX Environmental Unit	Air-Driven Vortex Cooler Air Amplifier Gauge Water Cooling Plate (option) Air Wipe (option) Shutter Gauge Positioner Slider Unified Electrical & Communications Connectors
Oilproof, Armored Cable	Connects between the S-Box and the Connector Box. Breakaway cable reduces replacement time, cost & sensor damage. 10m oilproof, tape-armored cable.
Connector Box	Breakaway connector box protects equipment in event of process damage
BT100	Power supply and cable connection to the S-Box. Includes DB9 connectors to access CAN, RS-232 and PROFIBUS ports. Supplies 24Vdc sensor power
Air Services Unit & Air Filter	Supplies clean purge air for the air accelerator, vortex coolers and air wipes
CD14-SL/SLR Display & Mounting Kit	Displays speed, length, preset length. Connects via RS232. Display, PSU, break-out box and laser safety switch.



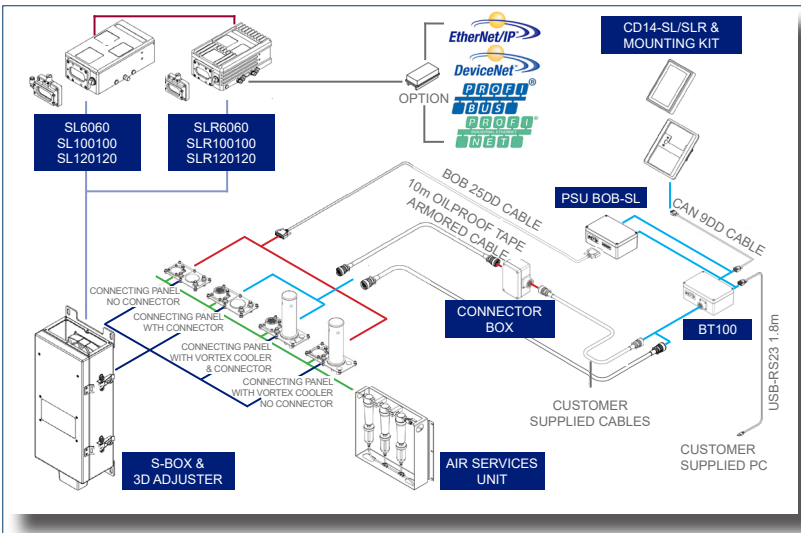
PROTON PRODUCTS: Galvanizing & Tinning Applications



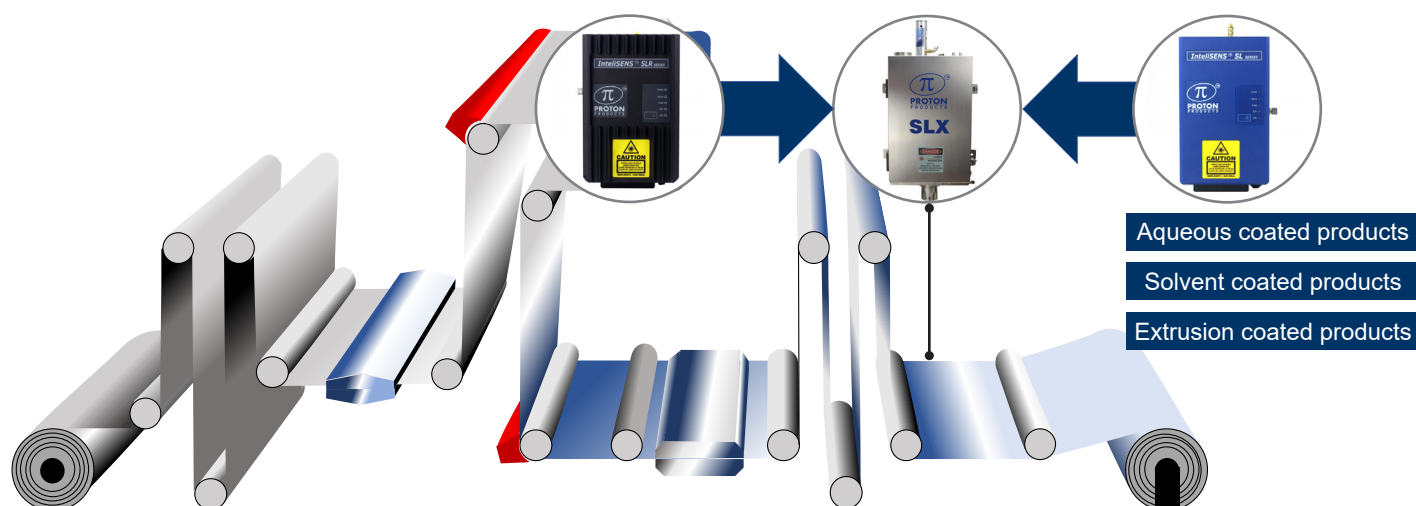
InteliSENS SL/SLR Series Galvanizing and Tinning Coating Summary

Key InteliSENS SL/SLR Specifications		InteliSENS SL/SLR Series Galvanizing Benefits	
Accuracy	± 0.05%	<ul style="list-style-type: none">▶ Rugged, reliable industrial design includes the optional S-Box Environmental Unit to protect the sensor from airborne contaminants▶ Non-contact measurement avoids surface marking the surface of galvanized finishes▶ No slippage, bounce or dirt accumulation as with contacting encoders▶ Precise speed and length measurement during line crawl and normal operations▶ Final coil length measurement with a contact output to an on-line process shear▶ Accurate cut length control avoids product give-away or short length delivery complaints	
Internal Measurement Rate	200kHz		
Measurement Output Interval	20 µ seconds		
Minimum/Maximum Line Speed	0.82/5,000m/min		
Communications: Standard	Ethernet, RS232, CANbus		
Communications: Optional	Ethernet/IP, DeviceNET, PROFIBUS, PROFINET		

Measurement Configuration	
InteliSENS SL Series	SL/SLR6060: 600mm standoff, 60mm depth of field. SL/SLR100100: 1000mm standoff, 100mm depth of field. SL/SLR120120: 1200mm standoff, 120mm depth of field.
S-BOX Environmental Unit	Air-Driven Vortex Cooler Air Amplifier Gauge Water Cooling Plate (option) Air Wipe (option) Shutter Gauge Positioner Slider Unified Electrical & Communications Connectors
Oilproof, Armored Cable	Connects between the S-Box and the Connector Box. Breakaway cable reduces replacement time, cost & sensor damage. 10m oilproof, tape-armored cable.
PSU-BOB-SL	Power supply, break-out box, laser safety key switch. Connects via DB25 interface and supplies 24Vdc to the sensor. Input voltage range 90-260Vac @ 45-65Hz
BOB 25DD Cable	Connects the sensor interface port to a PSU-BOB-SL, terminal strip or CS1G-SL. Lengths are 3m, 5m, 10m, 20m, 30m
CD14-SL/SLR Display & Mounting Kit	Displays speed, length, preset length. Connects via RS232. Display, PSU, break-out box and laser safety switch.



PROTON PRODUCTS: Metals Coating Applications



InteliSENS SL/SLR Series Solvent, Aqueous or Extrusion Metals Coating Summary

Key InteliSENS SL/SLR Specifications

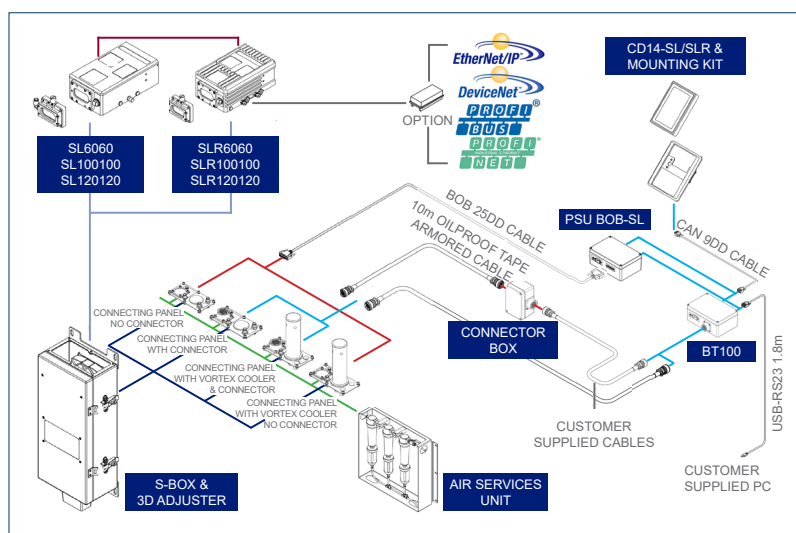
Accuracy	± 0.05%
Internal Measurement Rate	200kHz
Measurement Output Interval	20 μ seconds
Minimum/Maximum Line Speed	0.82/5,000m/min
Communications: Standard	Ethernet, RS232, CANbus
Communications: Optional	Ethernet/IP, DeviceNET, PROFIBUS, PROFINET

InteliSENS SL/SLR Metals Coating Benefits

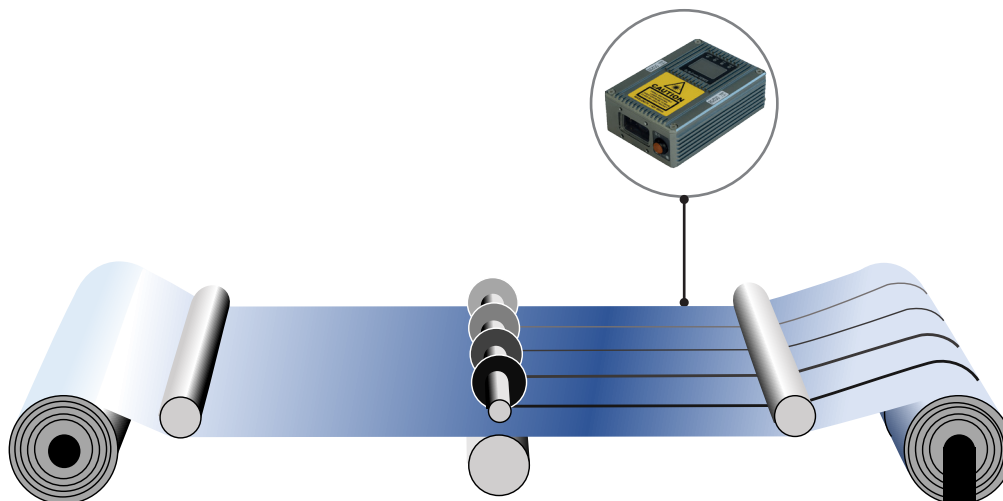
- ▶ Rugged, reliable industrial design includes the optional S-Box Environmental Unit to protect the sensor from airborne coating contaminants
- ▶ Non-contacting measurement avoids surface marking the surface of coated metal products
- ▶ No slippage, bounce or coating accumulation as with contacting encoders
- ▶ Precise speed and length measurement during line crawl and normal operations
- ▶ Final coil length measurement with a contact output to an on-line process shear
- ▶ Accurate cut length control avoids product give-away or short length delivery complaints

Measurement Configuration

InteliSENS SL Series	SL/SLR6060: 600mm standoff, 60mm depth of field. SL/SLR100100: 1000mm standoff, 100mm depth of field. SL/SLR120120: 1200mm standoff, 120mm depth of field.
S-BOX Environmental Unit	Air-Driven Vortex Cooler Air Amplifier Gauge Water Cooling Plate (option) Air Wipe (option) Shutter Gauge Positioner Slider Unified Electrical & Communications Connectors
Oilproof, Armored Cable	Connects between the S-Box and the Connector Box. Breakaway cable reduces replacement time, cost & sensor damage. 10m oilproof, tape-armored cable.
PSU-BOB-SL	Power supply, break-out box, laser safety key switch. Connects via DB25 interface and supplies 24Vdc to the sensor. Input voltage range 90-260Vac @ 45-65Hz
BOB 25DD Cable	Connects the sensor interface port to a PSU-BOB-SL, terminal strip or CS1G-SL. Lengths are 3m, 5m, 10m, 20m, 30m
CD14-SL/SLR Display & Mounting Kit	Displays speed, length, preset length. Connects via RS232. Display, PSU, break-out box and laser safety switch.



PROTON PRODUCTS: Metals Slitting Applications



InteliSENS SL mini Series Metals Slitting Lines Summary

Key InteliSENS SL mini Series Specifications

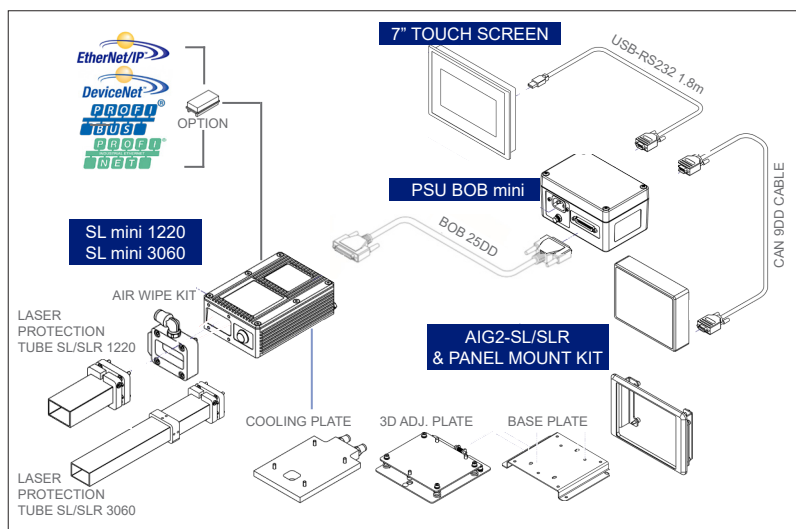
Accuracy	± 0.05%
Internal Measurement Rate	200kHz
Measurement Output Interval	20 μ seconds
Minimum/Maximum Line Speed	0.25/5,000m/min
Communications: Standard	Ethernet, RS232, CANbus
Communications: Optional	Ethernet/IP, DeviceNET, PROFIBUS, PROFINET

InteliSENS SL mini Series Slitting Lines Benefits

- ▶ No slippage, bounce or coating accumulation as with contacting encoders
- ▶ Rugged, reliable industrial design for coated metals mill environments
- ▶ Precise speed and length measurement during line crawl and normal operations
- ▶ Final coil strip length measurement with a contact output to an on-line process shear
- ▶ Accurate length measurement for coils avoids product give-away or short-length delivery complaints

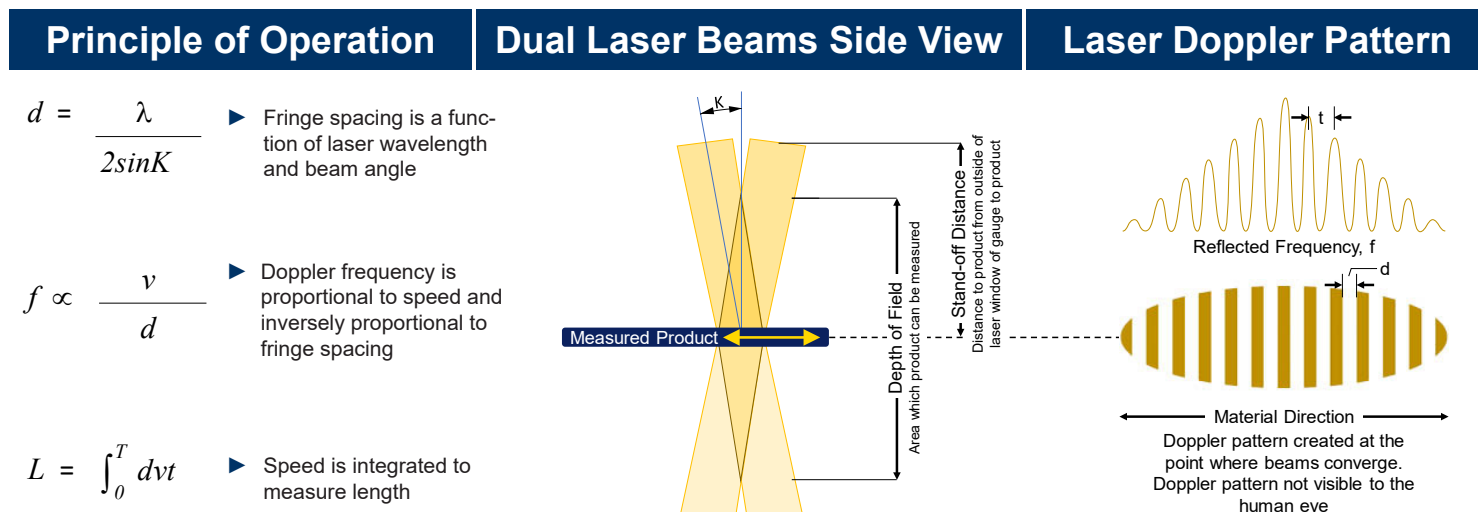
Measurement Configuration

InteliSENS SL Mini	SL mini 1220- Sensor: 120mm standoff, 20mm depth of field SL mini 3060 Sensor: 300mm standoff, 60mm depth of field
AiG2-SL/SLR	AiG2-SL Display Module: Connects via a CAN-bus port on the PSU-BOB mini. Displays speed & length. Includes menu-based settings for all parameters
CAN 9DD Cable	Connects between the PSU-BOB mini and an AiG2-SL/SLR display unit
PSU-BOB Mini	PSU-Bob mini Series includes power supply, break-out box, laser safety key switch. Connects via DB25 interface and supplies 24Vdc to the sensor. Input voltage range 90-260Vac @ 45-65Hz
BOB 25DD Cable	BOB 25DD cable connects the sensor interface port to a PSU-BOB-SL, terminal strip or CS1G-SL. Lengths are 3m, 5m, 10m, 20m, 30m
Standard Power Cord	
Ethernet/IP-M	



InteliSENS Series Operation and General Specifications

Hi-spec, innovative speed & length sensors



► A Bragg Cell is incorporated into the SLRM and SLR sensors for 'standstill' reversing mill measurement

General Specifications

Measurement Units (Configurable)	Speed	meters/minute	feet/minute		
	Length	meters	feet	yards	
Laser Safety Control Inputs	Laser	External closed SPST contact enabled laser diode			
	Shutter	External closed SPST contact opens laser shutter			
2x Logic Inputs (Configurable)	Electrical	Maximum voltage: +24Vdc			
	Function	Length reset	Display Hold	Length Hold	
		Speed hold	Direction	Pause	
3x Relay Outputs (Configurable)	Electrical	Isolated floating relay contacts			
		Maximum voltage 50Vdc	Maximum current: 0.5A		
	Function	Gauge OK	Laser at temp	Shutter open	Laser on
		Measuring	Preset length 1	Preset length 2	
3x Pulse Outputs (Configurable)	Electrical	Opto-isolated differential pairs			
		Output voltage: 5V or user supplied (up to 24v)			
		Maximum frequency: 250kHz			
	Function	Quadrature	Index		
Analog Output (Configurable)	Electrical	Output voltage: 0 to 10v (end-user scalable)			
	Function	Speed	Good readings		
CANbus Communications		Connects to an optional PROTON PRODUCTS AiG2 interface display unit			
Serial Communications		RS232	RS-422 / 485		
Optional Communications (Factory installed, choice of one)		PROFIBUS	Ethernet/IP	DeviceNET	
Optional wireless communications (Factory installed, choice of one)		Bluetooth			

InteliSENS SLRM Series: Hot casting mill applications



- ▶ Rugged industrial design for use on hot rolling processes with extended stand-off distances and greater depth of field.
- ▶ SLRXC environmental enclosure (required) provides air or water cooling and air purge for reliable, accurate measurement in hot, hostile environments.
- ▶ Optional infra-red filter available for hot applications.
- ▶ Bi-directional and standstill speed measurement ensures accuracy when lines either stop, reverse or exhibit creepage.
- ▶ Reports correct speed and length during line stoppage (standstill) and direction reversals.
- ▶ Differential speed measurement using a pair of gauges can be used to control elongation in hot or cold rolling mills.
- ▶ Precise cut-to-length control reduces scrap and improves downstream yields.

SLRM Series	SLRM120120	SLRM200100	SLRM250200	SLRM6060	SLRM150200	SLRM200200
Stand-off distance* mm (in)	1200 (47.2)	2000 (78.7)	2500 (98.4)	600 (23.6)	1500 (59.06)	2000 (78.7)
Depth of field mm (in)	120 (4.72)	150 (5.91)	200 (7.87)	60(2.36)	200 (7.87)	200 (7.87)
Max/Min speed \pm m/min (\pm ft/min)	10000 (32800)	5000 (16400)	10000 (32800)	5000 (16400)	10000(32800)	10000(32800)
Measurement update rate (khz)	100	100	100	100	100	100
Measurement output rate (μ s)	40	40	40	40	40	40

InteliSENS SLM Series: Cold rolling mill applications



- ▶ Unidirectional speed & length measurement for cold rolling lines and process line applications.
- ▶ Extended stand-off distances and depth of field plus the optional air accelerator makes the SLM Series ideal where surface laminar cold-rolling mill lubricants are used.
- ▶ S-Box harsh environment enclosure (required for cold rolling applications) includes air or water cooling to protect the sensor from high process temperatures, plus air-born rolling mill contaminants.
- ▶ Optional infra-red filter available for hot object applications.
- ▶ Differential speed measurement using a pair of gauges can be used to control material elongation in hot or cold rolling mills.
- ▶ Precise cut-to-length control reduces scrap and improves downstream yield.

SLM Series	SLM120120	SLM200200	SLM6060
Stand-off distance* mm (in)	1200 (47.2)	2000 (78.7)	600 (23.6)
Depth of field mm (in)	120 (4.72)	200 (7.87)	60 (2.36)
Maximum Speed m/min (ft/min)	10000 (32800)	10000 (32800)	5000(16400)
Measurement update rate (khz)	100	100	100
Measurement output rate (μ s)	40	40	40

InteliSENS SL/SLR Series: Process line coating applications



- ▶ Process line coating applications include galvanizing, tinning, solvent, aqueous & extrusion processes.
- ▶ Uni-directional (SL). Bi-directional (SLR) with standstill speed measurement ensures accuracy when lines either stop, reverse or exhibit creepage.
- ▶ Extended measurement stand-off distances ensure that measurement is unaffected by excessive product surface heat.
- ▶ S-Box environment enclosure with air or water cooling and air purge may be required when airborne coating materials are present for improved accuracy and reliability.
- ▶ Reports correct speed and length during line stoppage (standstill) and direction reversals.
- ▶ Precise cut-to-length control reduces scrap and improves downstream yield.

SLR/SL Series	SLR6060	SLR100100	SLR120120	SL6060	SL100100	SL120120
Stand-off distance* mm (in)	600 (23.6)	1000 (39.37)	1200 (47.2)	600 (23.6)	1000(39.37)	1200(47.2)
Depth of field mm (in)	60 (2.36)	100 (3.94)	120 (4.72)	60 (2.36)	100 (3.94)	120 (2.36)
Max/Min speed \pm m/min (\pm ft/min)	5000 (16400)	10000 (32800)	10000 (32800)	5000 (16400)	10000(32800)	0000(32800)
Measurement update rate (khz)	100	100	100	100	100	100
Measurement output rate (μ s)	40	40	40	40	40	40

InteliSENS SL mini Series: Process line slitting applications



- ▶ Compact form factor; the smallest on the market, enables speed and length measurement from tight locations while also saving installation costs.
- ▶ Industry-leading 200kHz measurement rate outputs every 20 microseconds to provide fast, high-resolution, accurate measurement that is ideal for Process Line applications.
- ▶ Shares common capability with all Intelisens speed & length sensors by including industry-standard communications interfaces for easy integration with PLC's and other automation platforms.
- ▶ Precise cut-to-length measurement of high-value-added Process Line products reduces scrap, product give-away and short-delivery returns

SL mini Series	SL mini 1220	SL mini 3060
Stand-off distance* mm (in)	120 (4.7)	300 (11.8)
Depth of field mm (in)	20 (0.79)	60 (3.36)
Max/Min Speed \pm m/min (\pm ft/min)	5000 (16400)	5000 (16400)
Measurement update rate (khz)	200	200
Measurement output rate (μ s)	20	20



NON-CONTACT SPEED & LENGTH MEASUREMENT FOR THE METALS INDUSTRIES

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