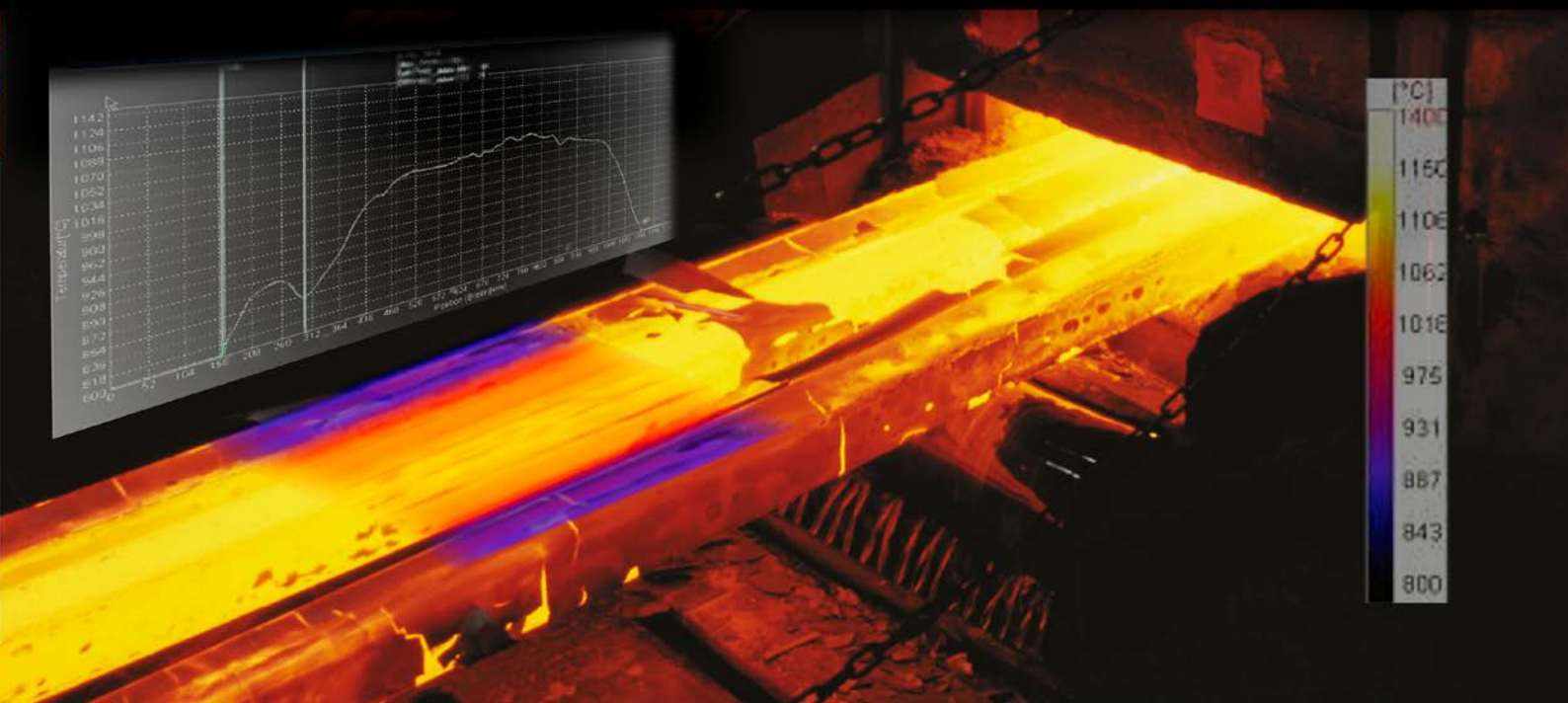
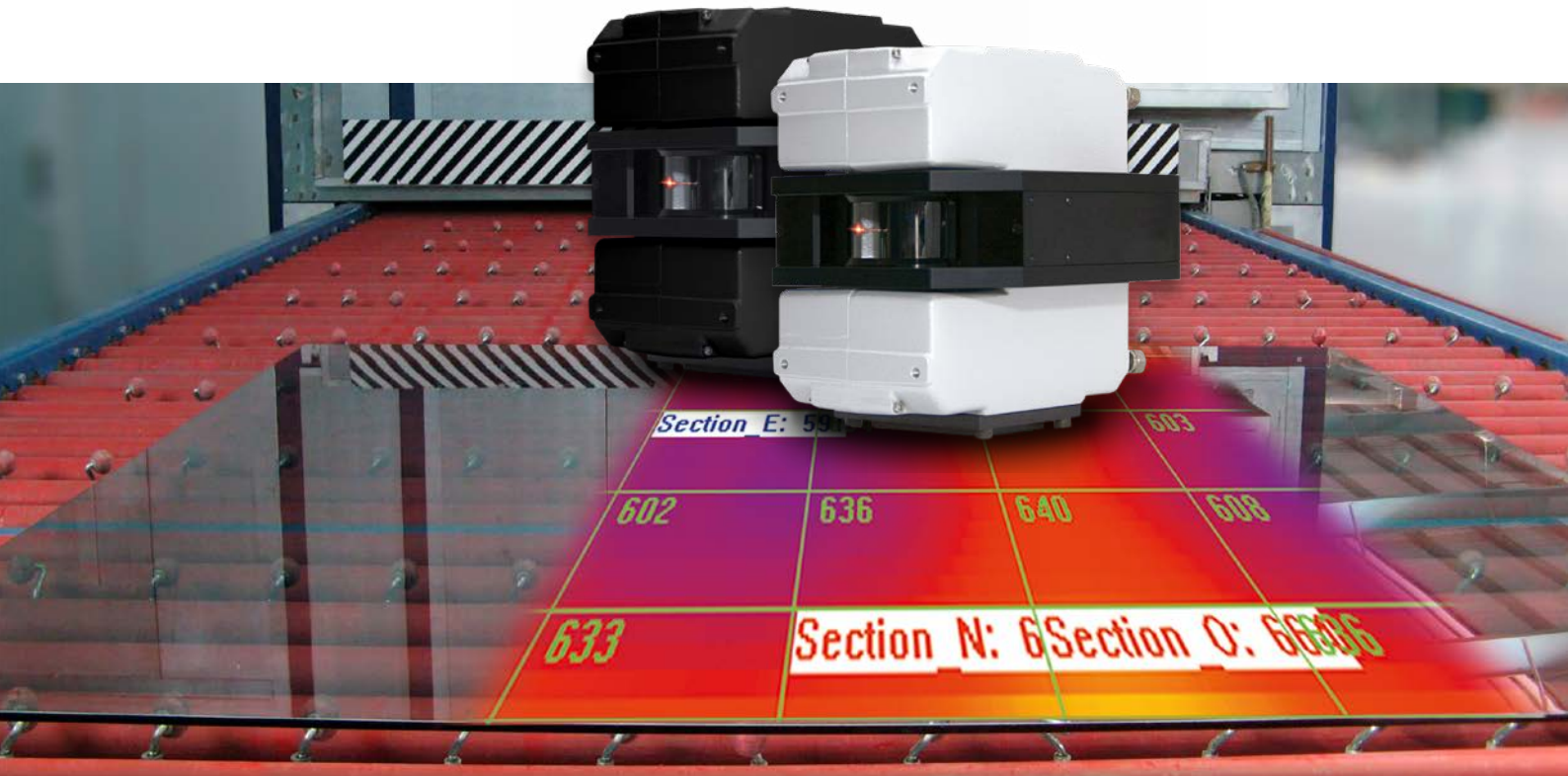


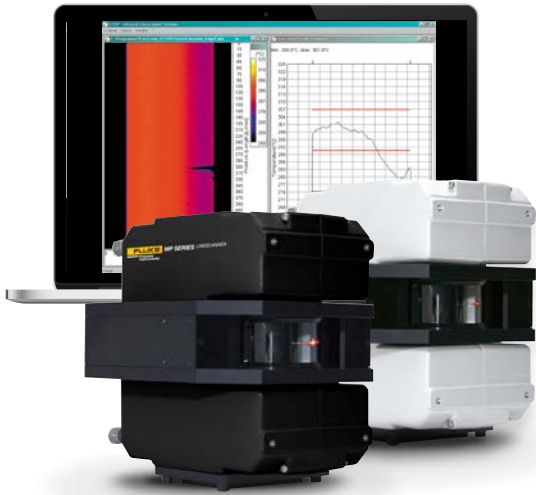
FLUKE®

**Process
Instruments**

MP Linescanner Series

Thermal Imaging for the harshest industrial applications





Processor box for 1M/2M/3M models with quick connector (option)

Key features*

- Real-time thermal imaging, scan speed up to 300 Hz
- Up to 1024 measurement points per line
- High-quality brushless motor (MTBF 40,000 h)
- Built-in Ethernet TCP/IP communications
- PC independent alarm output
- PC independent 4-20 mA interfaces (3 outputs)
- I/O module support for up to 10 sectors/zones (PC independent)
- Quick connector option (1M, 2M, 3M models)
- Internal Line Laser for accurate alignment
- Rugged, waterproof IP65 enclosure
- Air purge keeps window free of dirt and condensation
- Built-in water cooling for ambient up to 180 °C (356 °F)

*Check out the MP Datasheet for more information

The MP Linescanner Series

See every part of the harshest processes with real-time, non-contact temperature imaging and analysis

The MP Linescanner Series is a family of infrared linescanners that provide accurate, real-time thermal imaging for a range of industrial applications. The series features dedicated hardware and software options created specifically for specialized applications and harsh industrial environments.

With pre-wired cables that connect to a standard PC for fast installations, the MP linescanner series helps to reduce downtime. Meanwhile, the system's versatile DataTemp® DP Software lets you create custom operating parameter as well as easily display thermal images and temperature profiles.

MP Linescanner Models

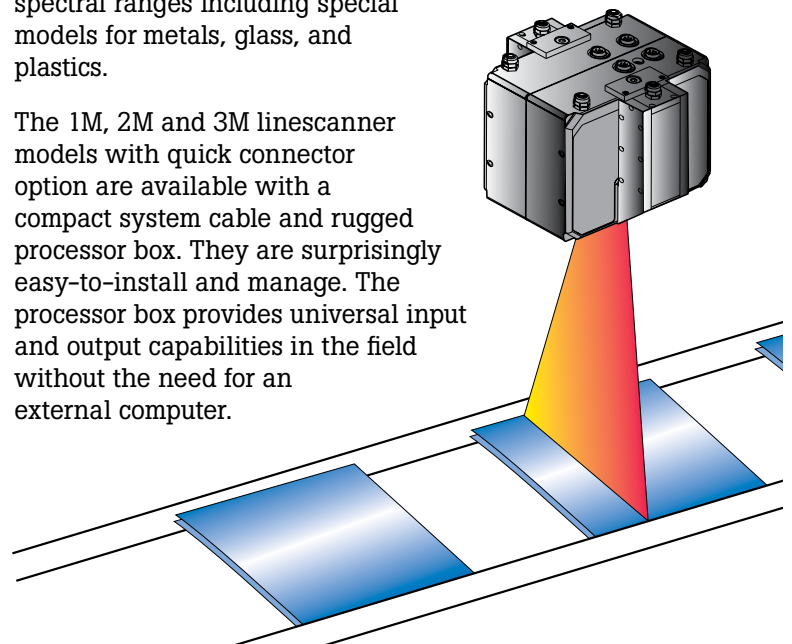
Edge-to-edge infrared temperature measurement that ensures you see it all

Scan rate is essential for rapid detection of temperature abnormalities such as non-uniformities and hot spots, which allow you to detect faulty temperatures before an error occurs.

MP Linescanners can measure up to **1024 temperature points** across a scan line at a rate of up to **300 lines per second** and features rotating optics with a 90-degree field of view that quickly renders a 2D image on a PC.

To best fit your process, the MP Linescanner Series is available with a choice of temperature and spectral ranges including special models for metals, glass, and plastics.

The 1M, 2M and 3M linescanner models with quick connector option are available with a compact system cable and rugged processor box. They are surprisingly easy-to-install and manage. The processor box provides universal input and output capabilities in the field without the need for an external computer.



Model	Spectral Response	Optics	Temperature Range ³	Lines per Second (Hz)	Model Number
1ML	1 μm	200:1	600 to 1500 °C (1112 to 2732 °F)	150	MP1501ML
			650 to 1500 °C (1202 to 2732 °F)	300	MP3001ML
1MH	1 μm	200:1	700 to 1800 °C (1292 to 3272 °F)	150	MP1501MH
				300	MP3001MH
2M	1.6 μm	200:1	350 to 1500 °C (662 to 2732 °F)	150	MP1502M
			400 to 1500 °C (752 to 2732 °F)	300	MP3002M
3M	2.4 μm	200:1	200 to 1500 °C 392 to 2732 °F)	150	MP1503M
			250 to 1500 °C (482 to 2732 °F)	300	MP3003M
MT	3.9 μm	170:1	100 to 800 °C (212 to 1472 °F)	150	RAYTMP150MT
G5	5 μm	170:1	100 to 950 °C (212 to 1742 °F)	150	RAYTMP150G5
P30	3.43 μm	33:1	30 to 250 °C (86 to 482 °F)	150	RAYTMP150P30
P31	3.43 μm	75:1	100 to 350 °C (212 to 662 °F)	150	RAYTMP150P31
LT	3 – 5 μm	170:1	20 to 350 °C (68 to 662 °F)	150	RAYTMP150LT
HR	3.5 – 4 μm	170:1	100 to 650 °C (212 to 1202 °F)	150	RAYTMP150HR

DataTemp® DP Software

See 2D thermal images, temperature profiles and difference images in one complete package



Imaging

Quickly detect when temperatures are out of set parameters by viewing cross-machine temperature profiles, contour graphs, and thermograms in multiple windows.



Alarming

Set specific areas of interest that can be programmed to calculate average, maximum, or minimum temperatures, as well as trigger an alarm if there is a thermal defect.



Interfacing

Interface with other control systems through an OPC service. Temperature values can also be output as current or voltage by using the standard Ethernet communications of a PC.

Key features*

- Supports multiple product specific configurations (recipes)
- Text file alarm logging
- Fail-safe alarm logging
- Reference image for comparative analysis
- Saved thermal images can be played back like a time-lapse movie
- Multiple system interfaces digital and analog I/O, OPC, direct forwarding of data via ASCII
- Supports multiple MP Linescanners
- Password protected access levels
- Multiple language support
- Real-time ambient temperature compensation or emissivity adjustment

*Check out the MP Datasheet for more information

Application Specific Systems

Customized solutions for your specialized applications

Fluke Process Instruments offers customized process imaging systems to meet the specific application requirements for kiln shell monitoring, gypsum wallboard production, thermoforming machine control, extrusion coating, and glass processing.

The **TF System** reduces scrap and improves product quality by visualizing temperature distribution across plastic parts during thermoforming processes.

The **GS System** allows glass manufacturers to measure temperature distributions for glass annealing, glass tempering, and glass bending operations (even for Low-E glass).

The **EC System** helps improve quality and detects defects in real-time with thermal imaging and analysis for plastic extrusion, coating, and lamination processes.

The **ES System** continuously monitors web processes ranging from hot rolling mills to paper drying applications.

The **CS400 System** helps prevent costly machinery damage and extends production runs by monitoring, controlling, and analyzing the rotating kiln shells used in cement and lime production.

The **TIP900 System** can result in quality improvements, increased production, fuel savings, reduced rework rates, and more with detailed wallboard dryer balance analysis and board thermal mapping.

The Fluke Process Instruments Guarantee

The MP Linescanner Series is supported by a 2 year warranty. With a network of trained representatives and agents in over one hundred countries and offices located in the U.S., Germany and China, we provide local service and support.

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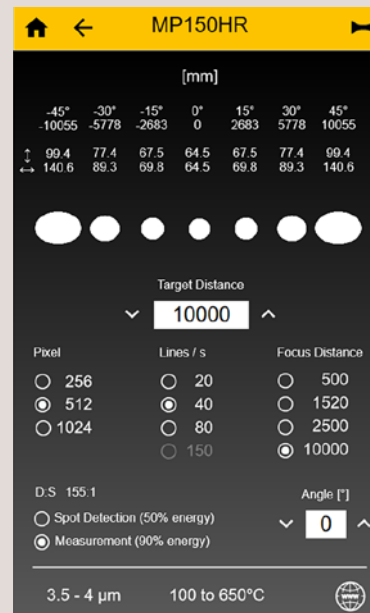
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Spot Size Calculator

The Spot Size Calculator calculates the horizontal and vertical sizes for selected pixels across the linescanner's field of view (from -45 to 45°). Relevant parameters are target and focal distance, scan frequency, optical resolution and rotation angle. The app indicates overlapping or gaps between two scanned lines.



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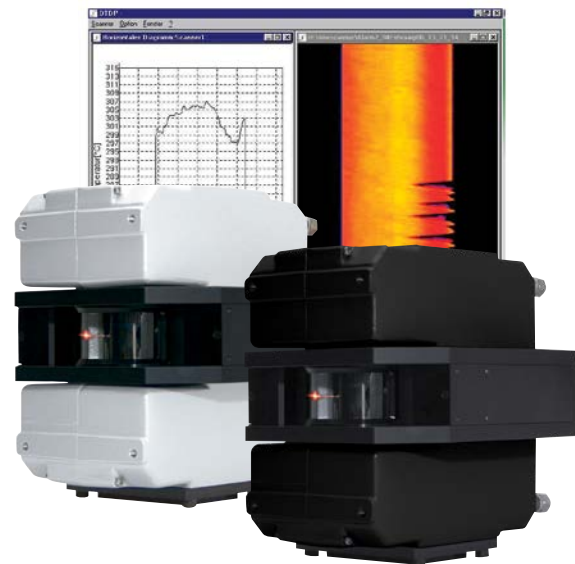
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TECHNICAL DATA

MP Linescanner Series

Highlights

- Real-time thermal imaging, scan speed up to 300 Hz
- Up to 1024 measurement points per line
- Wide choice of spectral and temperature ranges
- High-quality brushless motor (MTBF 40,000 h)
- Built-in Ethernet TCP/IP communications
- PC independent alarm output
- PC independent 4–20 mA interfaces (3 outputs)
- I/O module support for up to 10 sectors/zones (PC independent)
- Quick connector option (1M, 2M, 3M models)
- Internal Line Laser for accurate alignment
- Rugged, waterproof IP65 enclosure
- Air purge keeps window free of dirt and condensation
- Built-in water cooling for ambient up to 180 °C (356 °F)



Electrical Specifications

Analog Outputs	3 user-configurable 0/4 – 20 mA, current outputs, collectively isolated, maximum load 500 Ω
Alarm Output	Relay, contacts 30 V, 1 A
Inputs	Laser switching, emissivity setting, background radiation compensation
Ethernet Communication	TCP/IP protocol 10/100 Mbit/s
Serial Communication	RS485 full duplex, non-addressable
Power	24 VDC ±25 %, 1 A
Warm-Up Time	30 min.

General Specifications

Environmental Rating	IP65 (IEC 60529)
Operation Temperature	without water cooling 0 °C to 50 °C (32 °F to 122 °F) with water cooling max. 180 °C (356 °F) with internal heater min. -40 °C (-40 °F)
Internal Operation Temperature	0 °C to 60 °C (32 °F to 140 °F)
Laser	Automatic switch off at < 5 °C (41 °F) or > 50 °C (122 °F)
Storage Temperature	-25 °C to 65 °C (-13 °F to 149 °F)
Relative Humidity	10 ... 90%, non-condensing
Shock	IEC 60068-2-27, 3 axes, operating: 5 g at 11 ms, 15 g at 6 ms
Vibration	IEC 60068-2-6, 3 axes, 10 to 150 Hz, operating 2 g above 20 Hz
Scan Motor	MTBF: 40,000 h
Water Cooling, Air Purge	Standard
max. water pressure	15 bar (218 psi)
max. air pressure	3 bar (44 psi)
Weight	7 kg (15 lb), incl. air purge

Measurement Specifications

	MP150 / RAYTMP150	MP300
Optical Scan Rate	max. 150 Hz	max. 300 Hz
Field of View	90°	
Focus	1.52 m (4.9 ft) standard; custom focuses available	
Emissivity	0.1 ... 1.0 digitally adjustable	
Samples	256 per scan line up to 150 Hz 512 per scan line up to 80 Hz 1024 per scan line up to 40 Hz	256 per scan line up to 300 Hz 512 per scan line up to 160 Hz 1024 per scan line up to 80 Hz
Signal Processing	Max, Min, AVG, Peak/Valley Hold, Alarm setpoints; further signal processing function configurable through software	

Models

Model Number	Lines per Second	Temperature Range ³	Spectral Response	Accuracy ²	Repeatability ²	Hot Spot Detection ⁴	Measurement Resolution ⁵
MP1501ML	150 Hz	600 to 1500 °C (1112 to 2732 °F)	1 μm	± 0.5% or ± 3 °C (6 °F) ¹	± 2 °C (4 °F)	600:1	200:1
MP3001ML	300 Hz	650 to 1500 °C (1202 to 2732 °F)					
MP1501MH	150 Hz	700 to 1800 °C (1292 to 3272 °F)	1 μm	± 0.5% or ± 3 °C (6 °F) ¹	± 2 °C (4 °F)	600:1	200:1
MP3001MH	300 Hz						
MP1502M	150 Hz	350 to 1500 °C (662 to 2732 °F)	1.6 μm	± 0.5% or ± 3 °C (6 °F) ¹	± 2 °C (4 °F)	600:1	200:1
MP3002M	300 Hz	400 to 1500 °C (752 to 2732 °F)					
MP1503M	150 Hz	200 to 1500 °C (392 to 2732 °F)	2.4 μm	± 0.5% or ± 3 °C (6 °F) ¹	± 2 °C (4 °F)	600:1	200:1
MP3003M	300 Hz	250 to 1500 °C (482 to 2732 °F)					
RAYTMP150MT	150 Hz	100 to 800 °C (212 to 1472 °F)	3.9 μm	± 0.5% or ± 3 °C (6 °F) ¹	± 1 °C (2 °F)	510:1	170:1
RAYTMP150G5	150 Hz	100 to 950 °C (212 to 1742 °F)	5 μm	± 0.5% or ± 3 °C (6 °F) ¹	± 1 °C (2 °F)	510:1	170:1
RAYTMP150P30	150 Hz	30 to 250 °C (86 to 482 °F)	3.43 μm	± 3 °C (6 °F)	± 1 °C (2 °F)	100:1	33:1
RAYTMP150P31	150 Hz	100 to 350 °C (212 to 662 °F)	3.43 μm	± 3 °C (6 °F)	± 1 °C (2 °F)	225:1	75:1
RAYTMP150LT	150 Hz	20 to 350 °C (68 to 662 °F)	3 – 5 μm	± 2 °C (4 °F)	± 1 °C (2 °F)	510:1	170:1
RAYTMP150HR	150 Hz	100 to 650 °C (212 to 1202 °F)	3.5 – 4 μm	± 0.5% or ± 3 °C (6 °F) ¹	± 1 °C (2 °F)	510:1	170:1

¹ Whichever is greater

² For the whole ambient operating temperature range

³ Temperature limits: 0 °C and 3000 °C (32 °F and 5432 °F)

⁴ Optical resolution for 50% energy, slit response at 20 Hz scan rate, per pixel at focus distance

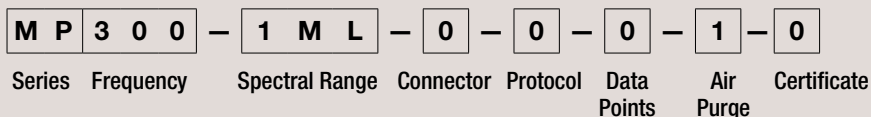
⁵ Optical resolution for 90% energy, slit response at 20 Hz scan rate, per pixel at focus distance

Model Identification Charts

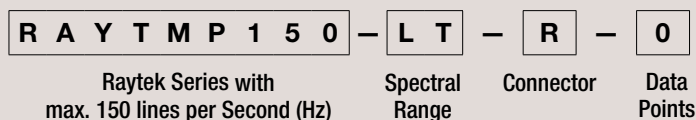
The model number represents the specifications for a specific linescanner.

Example: Model **MP300-1ML-0-0-0-1-0** describes a MP300 linescanner with 1ML spectral range; 7.5 m (25 ft) Ethernet cable with M12 plug and RJ45 connector; Ethernet TCP/IP protocol; 512 data points per scan line and air purge. A certificate is not included.

MP300/MP150 Variants:



RAYTMP150 Variants:



Frequency (MP300/150)	Spectral Range		Connector		Protocol (MP300/150)	Data Points all Models	Air Purge (MP300/150)	Certificate (MP300/150)
	MP300/150	RAYTMP150	MP300/150	RAYTMP150				
150 = 150 Hz 300 = 300 Hz	1ML 1MH 2M 3M	LT MT G5 P30 P31 HR	0 1	R	0 = Ethernet TCP/IP	0 = 512 1 = 1024	0 = No 1 = Yes	0 = No 1 = Yes
			0/R = M12 plug 7.5 m (25 ft) cable with RJ45 1 = Quick connector					

RAYTMP150 Options

- MPCERT-0** No Certificate
- MPCERT-1** Manufacturer's Calibration Certificate (based on NIST/DakKS certified probes)

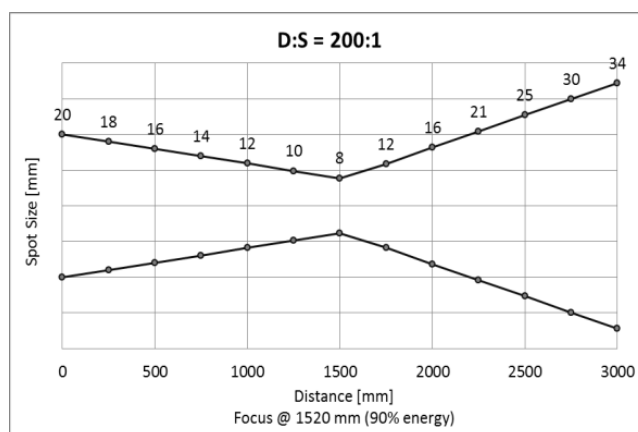
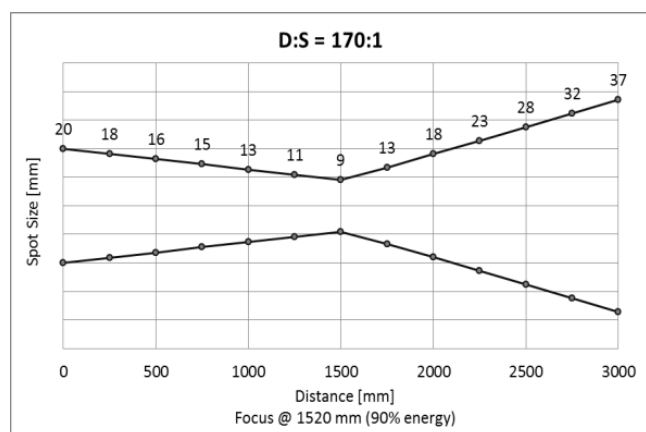
Accessories

- Adjustable mounting base (**A-MP-RMB**)
- Power supply, 240 VAC/24 VDC, 1.3 A (**A-PS-DIN-24V**)
- Thermostat for linescanner (**A-MP-THERM**)

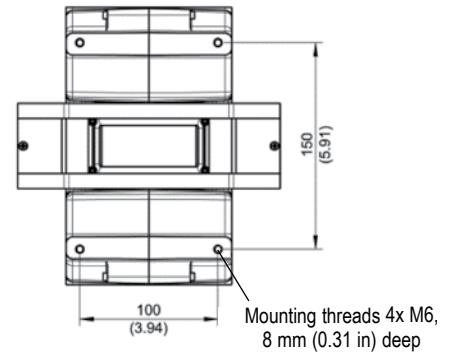
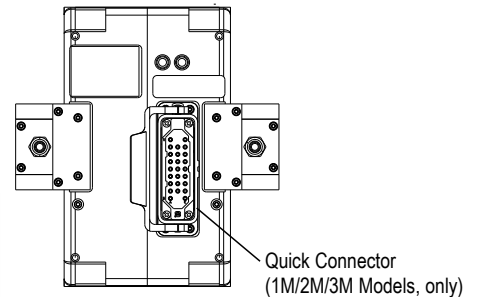
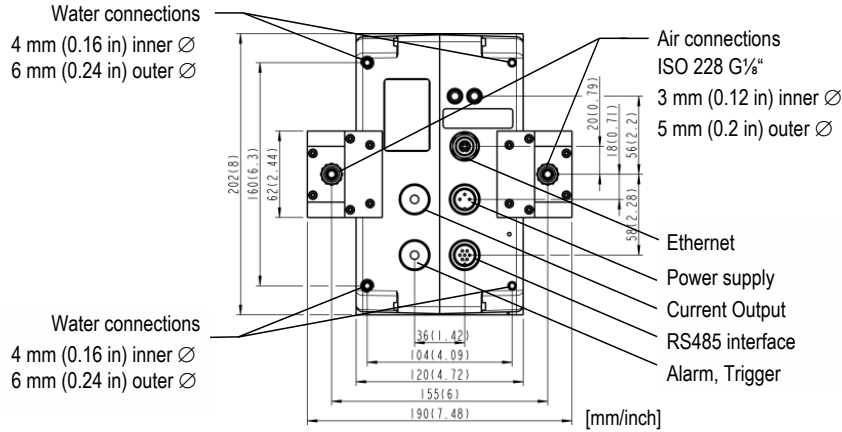
Accessories Quick Connector Models (1M, 2M, 3M)

- Quick connector system cable (**A-CB-QUICKCON-XX**)
- Main processor box (**A-MP-BOX-QUICKCON**)
- Enclosure and Base (**A-MP-ENC-QUICKCON**)
- Insulation shield (**A-MP-ENC-INSU**)
- Water Cooled Shield (**A-MP-ENC-WCS**)

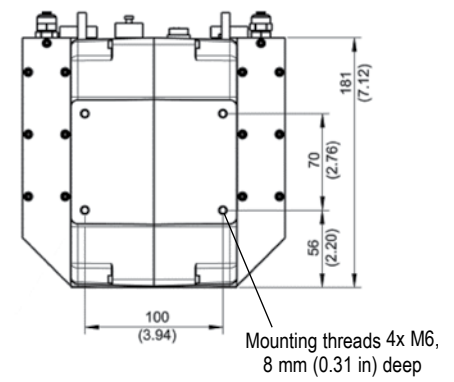
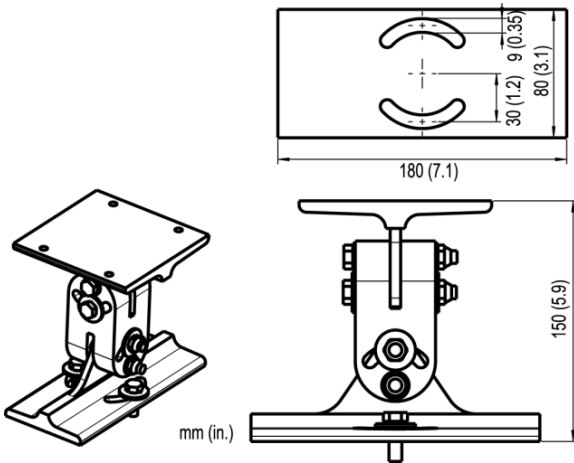
Optical Specifications



Mountings and Fittings



Adjustable Mounting Base



The Fluke Process Instruments Guarantee

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6/2022 MP Linescanner DS_RevB-Draft 1

Highlights

- High temperature enclosure for MP150 linescanner withstands process temperatures up to 1090°C
- Modular system with choice of cooling options allows user to configure to suit application
- Rugged stainless steel construction
- Integrated shutter for fail-safe operation
- Designed to provide cooling with water or air or both
- Part number: XXXSYSENC

Process Temperatures

Enclosure + Vortex Cooler + External Insulating Shield	340°C
Enclosure + Vortex Cooler + External Water Cooled Shield	540°C
Enclosure + Vortex Cooler + External Water Cooled Shield + External Insulating Shield	760°C
Enclosure + Internal Cold Plates + Vortex Cooler + External Water Cooled Shield + External Insulating Shield	1090°C

Pressures

Integrated Shutter	max. 8 bar
Scanner Air Purge	max. 3 bar
Internal Cold Plates	max. 8 bar
External Water Cooled Shield	max. 8 bar
Vortex Cooler	max. 7 bar

Flow Rate

Water	
Internal Cold Plates	min. 1 l/min
External Water Cooled Shield	min. 7.6 l/min
Air	
Scanner Air Purge	100 to 200 l/min
Vortex Cooler (for heat dissipation of 820 W / 706 kcal/h)	1132 l/min

Material

Enclosure	stainless steel 1.4301 with refractory lining and base plate: hard coated Aluminum
External Water Cooled Shield	stainless steel 1.4301
External Insulating Shield	stainless steel 1.4301, packed with refractory
Vortex Cooler	stainless steel, type 316

MP150 High Temp Enclosure Datasheet



Scope of Delivery

The enclosure package includes the following:

- Stainless steel enclosure with base plate and mounting aperture for high performance vortex cooler
- Integrated fail-safe shutter
- 2" cable conduit, 1.5 m long

Options

Options must be specified at time of order.

Internal Cooled Plates (XXXSYSENCICP)

Internal cold plates cool scanner by contact. Eliminates the need to disconnect fittings to remove scanner. Supplied in sets of two.

Accessories

External Water Cooled Shield (XXXSYSENCWCS)

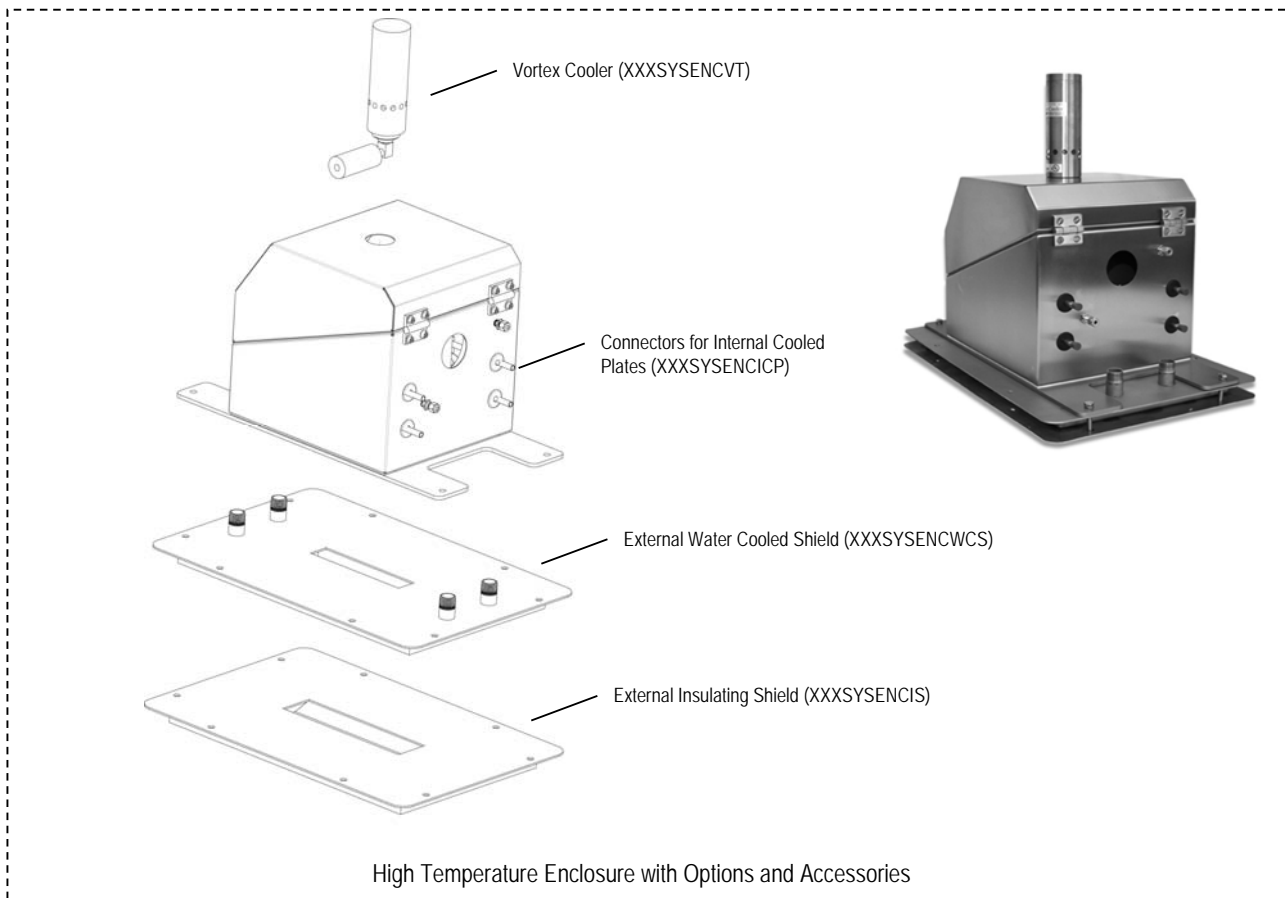
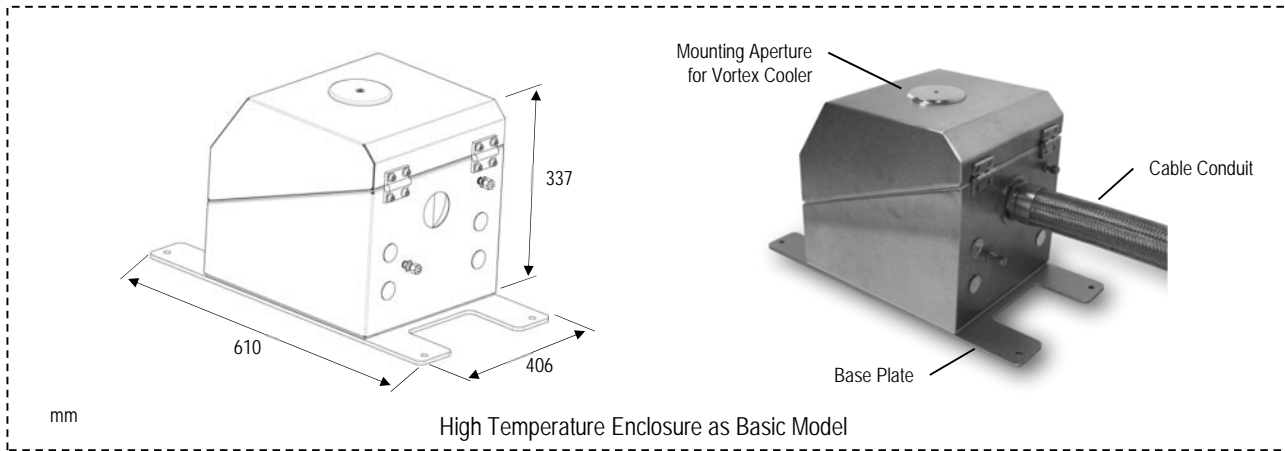
Stainless steel high performance water shield. ¾ inch water inlet and outlet permit high flow rates and extremely high heat removal capability.

External Insulating Shield (XXXSYSENCIS)

Insulated shield is a custom stainless steel envelope filled with high performance refractory material. Placed closest to the process, it prevents heat from entering the enclosure and lessens the heat removal requirements of other elements.

Vortex Cooler (XXXSYSENCVT)

High performance vortex cooler separates compressed air (or nitrogen) into hot and cold streams to actively cool enclosure interior, supplied with maintenance unit (particle filter, oil removal filter).



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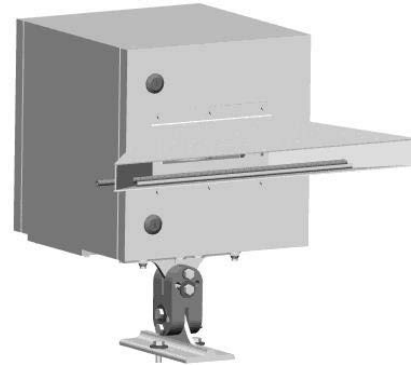
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TECHNICAL DATA

MP Protective Housing

Highlights

- Stainless steel protective housing (XXXSYSPHSS)
- Quick-release rail mounted system for MP linescanner
- Air purge for protective window
- 3-dimensional adjustable mounting bracket for a precise alignment
- IP54 rating



Specifications

Ambient Temperature

Minimum	-40 °C (-40 °F) - for MP with internal heater
Maximum	45 °C (113 °F) - with MP, shadow temperature, no direct sunlight
Maximum	80 °C (176 °F) without MP
with Air-Water-Cooler	max. 130 °C (266 °F)

Environmental Rating

IP54

Material

Housing	Stainless steel 1.4301
Seal	EPDM, CR
Mounting bracket	Galvanized steel

Dimension

Housing (H x W x L)	300 x 300 x 300 mm (12 x 12 x 12 in)
with mounting bracket	H 450 mm (18 in)

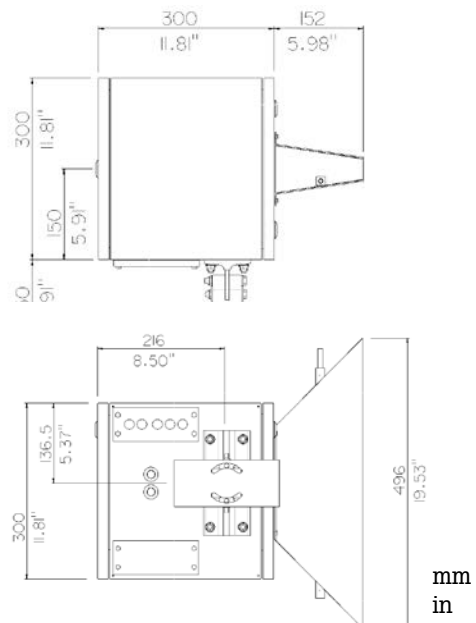
Weight (without MP)

13 kg (29 lb)

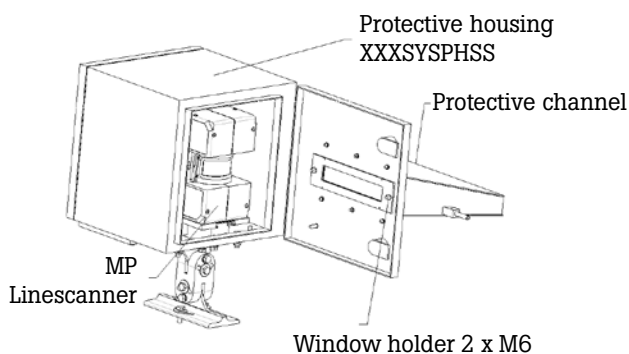
Air Purge

Connector	Outer x 8 mm (0.31 in)
Pressure	1.5 - 3 bar (22 psi) - cleaned air

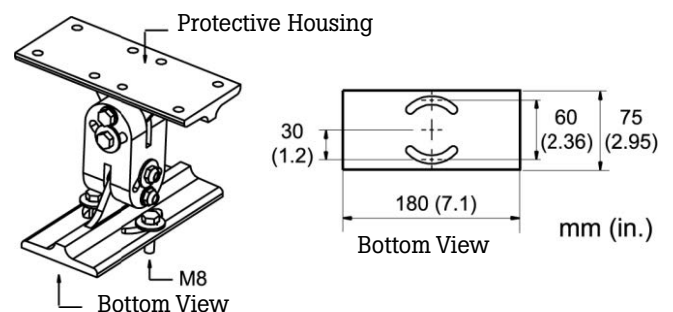
Dimensions



Protective Housing with Linescanner



Adjustable Mounting Bracket



Scope of Delivery

- Protective housing with removable window
- Quick-release rail mounted system
- Adjustable mounting bracket
- Spare removable window

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