

ProTrak™ 2D/3D HD series



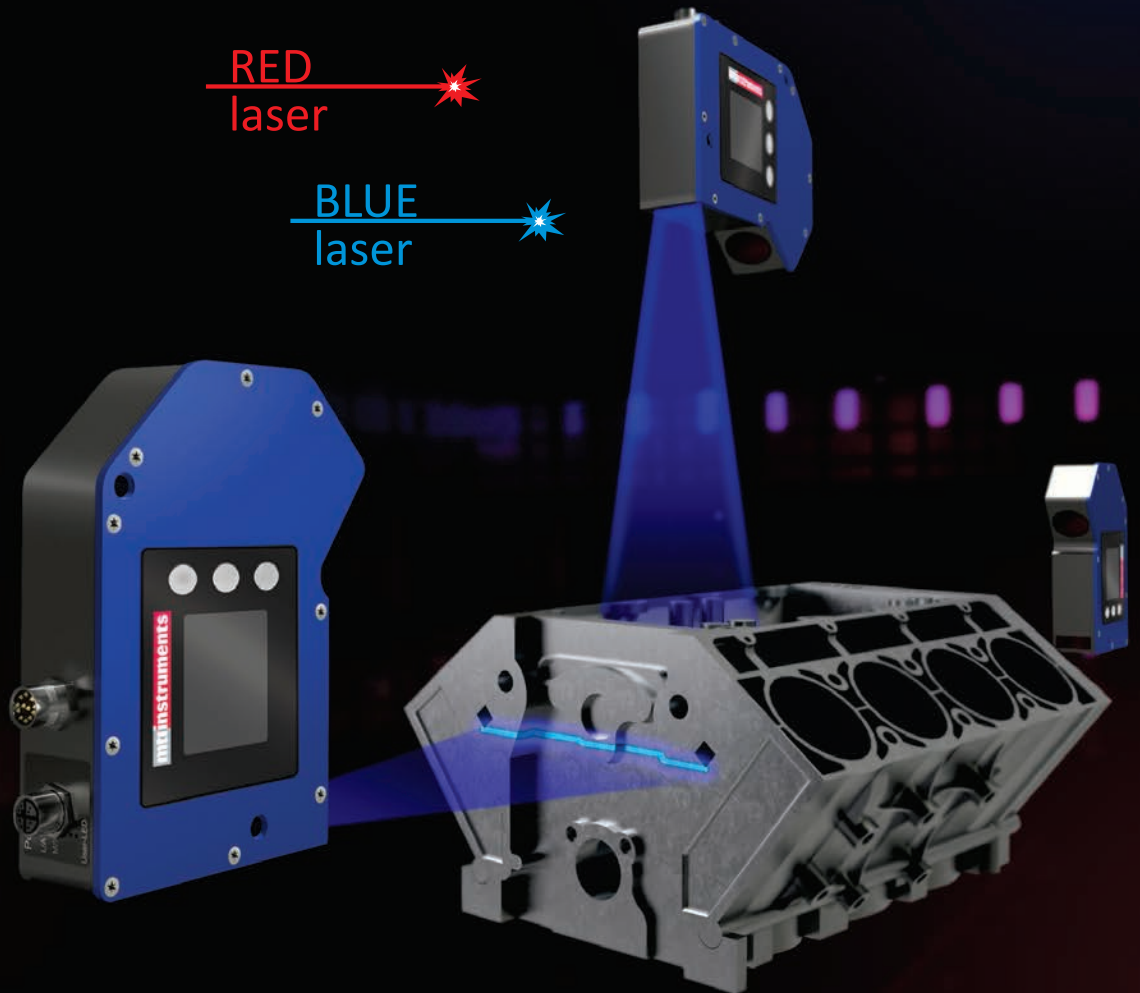
GbE data rate

**ULTRA
FAST**

**6,000 frames
per second**



**up to 2.5 μm
Resolution**



Accurate and repeatable measurements from
highly reflective to dull surfaces

mti instruments SDK  with
NI LabVIEW

available

Unmatched Features for Different Types of Applications

The MTI ProTrak™ laser displacement sensor is built to satisfy the most demanding industrial application. Able to detect various shapes and finishes, this laser sensor will give you the measurement accuracy whether with individual targets or targets on a fast conveyor belt. The calibrated line scan output means you don't have to assemble your own multiple laser/camera system and then figure out how to calibrate it.

SPEED

- up to 6,000Hz output rate
- 1 Gigabit Ethernet

RESOLUTION

- Highly precise resolution of up to 2.5µm
- Accuracy is independent of material variation and environmental light

VERSATILITY

- Choose from different laser class(2M, 3R or 3B)
- Models available from short range to ultra long range

ELECTRONIC COMPONENTS



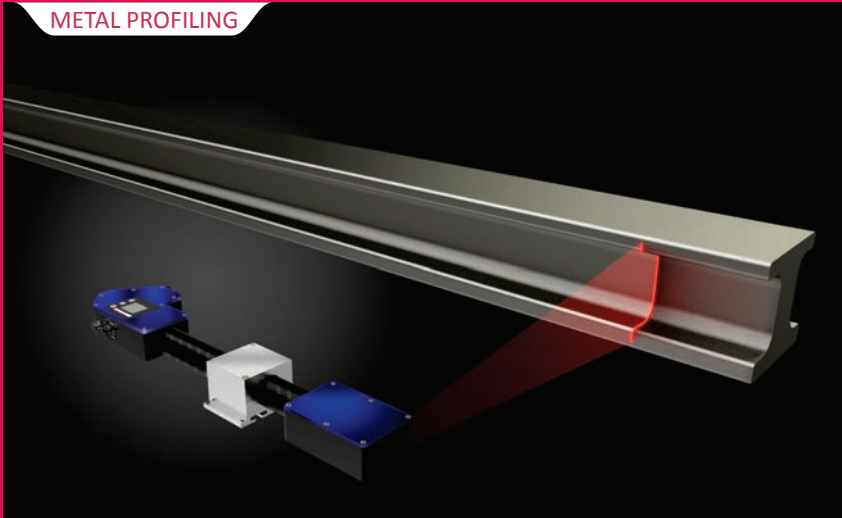
WELD BEAD/SEAM TRACKING



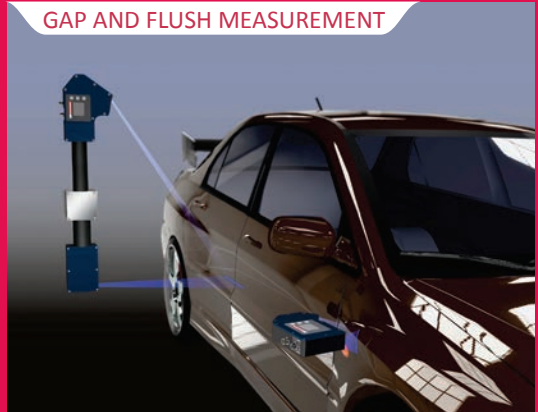
OCR



METAL PROFILING



GAP AND FLUSH MEASUREMENT



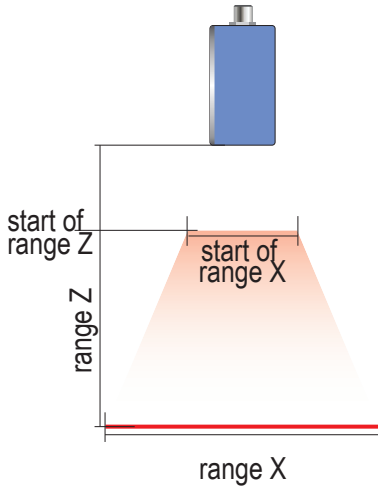
5 Measurement Ranges Available



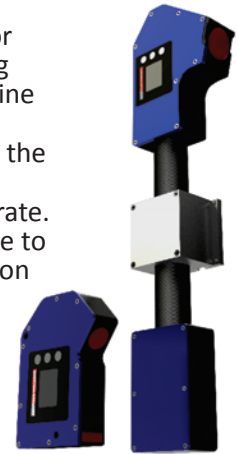
A quad B encoder input is available to sync Y dimension

- Welding
- Thickness
- Displacement
- Warp
- Step height
- Run-out
- Dimensional gauging
- Angle measurement
- Flatness
- Alignment
- Profiling
- Adhesive bead inspection
- Fill height
- Expansion/Contraction
- Structural Dynamics
- Presence/Absence of product

Line Scanner Measurement Principles



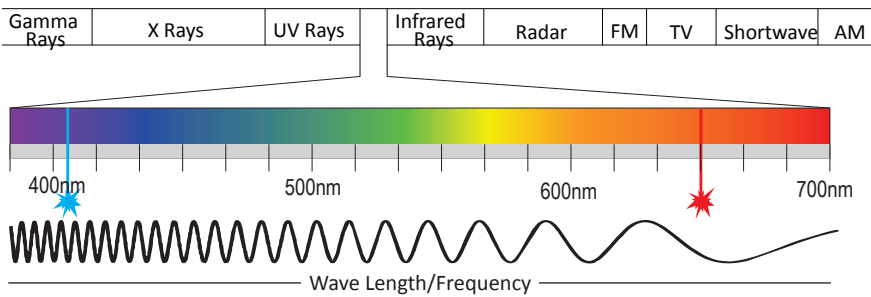
The ProTrak™ HD uses the triangulation principle to obtain a two dimensional height profile of target surfaces. A laser line generator projects a diverging line that has a beginning dimension of starting range x and maximum width dimension at of end of range x. The line is diffusely reflected back onto the CMOS camera array through focusing lenses. The CMOS line profile image is then processed by the internal electronics and an X-Z calibrated array output is made available for the application or display software at a 6kHz update rate. Moving the sensor along the target allows the application software to build a 3D image of the target. Encoder inputs allow synchronization of the motion with X-Z calibrated data.



| Model | PT-HD 60/30/52 | PT-HD 130/50/110 | PT-HD 260/150/230 | PT-HD 520/290/455 | PT-HD 800/450/720 |
|----------------------------|----------------|------------------|-------------------|-------------------|-------------------|
| Start of Range Z <i>mm</i> | 70 | 83 | 215 | 390 | 600 |
| Z Range <i>mm</i> | 60 | 130 | 260 | 520 | 800 |
| Resolution Z <i>µm</i> | 2 to 4.9 | 3.2 to 14 | 9.6 to 22 | 17.8 to 43 | 28 to 67 |
| Start of Range X <i>mm</i> | 30 | 50 | 150 | 290 | 450 |
| X End <i>mm</i> | 52 | 110 | 230 | 455 | 720 |
| Resolution X <i>µm</i> | 17 to 26 | 26 to 55 | 79 to 120 | 151 to 238 | 235 to 361 |
| Linearity Z <i>µm</i> | 9 | 32 | 65 | 130 | 200 |

| Laser Color | RED | BLUE | RED | BLUE | RED | BLUE | RED | BLUE | RED | BLUE |
|--------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|---------------|
| Wave Length | 660 nm | 405 nm | 660 nm | 405 nm | 660 nm | 405 nm | 660 nm | 405 nm | 660 nm | 405 nm |
| Laser Class | | | | | | | | | | |
| 2M Product # | 8000-1034-060 | 8000-1035-060 | 8000-1034-130 | 8000-1035-130 | 8000-1034-260 | 8000-1035-260 | 8000-1034-520 | 8000-1035-520 | 8000-1034-800 | 8000-1035-800 |
| 3R Product # | 8000-1036-060 | 8000-1037-060 | 8000-1036-130 | 8000-1037-130 | 8000-1036-260 | 8000-1037-260 | 8000-1036-520 | 8000-1037-520 | 8000-1036-800 | 8000-1036-800 |
| 3B Product # | N/A | 8000-1039-060 | N/A | 8000-1039-130 | N/A | 8000-1039-260 | N/A | 8000-1039-520 | N/A | 8000-1039-800 |

A Blue laser profile provides optimal stability and accuracy on a wide variety of targets.



The blue laser allows a sharper line image to be formed on the 2D sensor. The higher precision profile allows higher accuracy and less image blur even on targets with wider ranges of reflectivities such as machined or turned metal surfaces.

Additionally the blue laser can also outperform red laser light in specific applications such as automotive window to auto frame profiling.

Software Interface

The ProfileTrak HD series has a free SDK software and LabVIEW drivers. Each SDK contains the DLL for C# and C++.

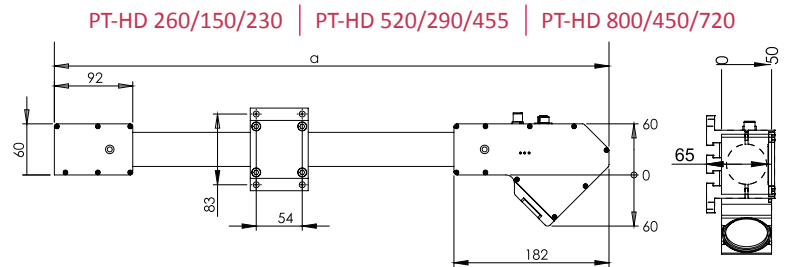
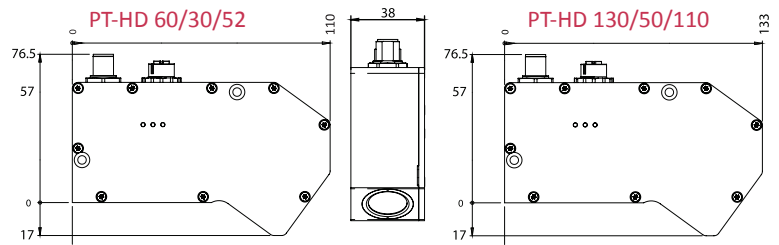
A free demo program is available to get the 2D/ 3D sensor working immediately on a PC so the user can visualize a 2D profile or a 3D profile if encoder input is provided. Additionally, the PT-HD series sensors can also work with most GiGE client software such as Matlab, Halcon, NI LabVIEW and etc.



Technical Specifications

| | |
|------------------------------|-----------------------------------|
| Light Source | Laser |
| Service Life (Tu=+25 °C) | 20.000 h |
| Max. Ambient Light | 5.000 Lux |
| Supply voltage | +24 V DC, typ. 300 mA |
| Output Rate | 180 to 6000 Hz |
| Temperatur Range | 0 to 40 °C |
| Storage Temperature | -20 to 60 °C |
| Interface | Ethernet TCP/IP |
| Transfer Rate | 1 Gigabit/sec. |
| Humidity | < 90%, non-condensing |
| Max. Vibration | 5 g up to 1 kHz |
| Permitted Pressure (cooling) | Max. operating pressure: 1.5 bar |
| Cooling Medium | Compatible with aluminium and NBR |
| Protection Class | III |
| Housing Material | Aluminium |
| Degree of Protection | IP64 |
| Connection | M12x1;8-pin |

Product Dimensions (mm)



Optional Accessories

| Product # | Description |
|---------------|--|
| 8000-1062-001 | Mounting fixture (aluminum 8 to 12.5mm diameter) |
| 8000-1062-002 | Mounting fixture (plastic 30mm diameter) |



Protective Discs (5 pairs)
8000-1069-001
8000-1069-002

| | Product # | Description |
|---------------------------------|---------------|---|
| Ethernet M12 to RJ45 | 8000-1050-020 | 2m Ethernet M12 to RJ45 |
| | 8000-1050-050 | 5m Ethernet M12 to RJ45 |
| | 8000-1050-100 | 10m Ethernet M12 to RJ45 |
| Ethernet Right Angle M12 to M12 | 8000-1054-020 | 2m Ethernet M12 to M12 (8-pin right-angle) |
| | 8000-1054-050 | 5m Ethernet M12 to M12 (8-pin right-angle) |
| | 8000-1054-100 | 10m Ethernet M12 to M12 (8-pin right-angle) |
| Power M12 to M12 | 8000-1057-100 | 10m Ethernet M12 (8-pin right-angle) |
| | 8000-1056-020 | 2m Power M12 to M12 cable (12-pin) |
| | 8000-1056-050 | 5m Power M12 to M12 cable (12-pin) |
| Power Right Angle M12 | 8000-1056-100 | 10m Power M12 to M12 cable (12-pin) |
| | 8000-1055-020 | 2m Power M12 to ferrule cable (12-pin right-angle) |
| | 8000-1055-050 | 5m Power M12 to ferrule cable (12-pin right-angle) |
| Power M12 | 8000-1055-100 | 10m Power M12 to ferrule cable (12-pin right-angle) |
| | 8000-1040-020 | 2m Power M12 to ferrule cable (12-pin straight) |
| | 8000-1040-050 | 5m Power M12 to ferrule cable (12-pin straight) |
| | 8000-1040-100 | 10m Power M12 to ferrule cable (12-pin straight) |
| | 8000-1070-001 | Cooling unit PT-HD 60/30/52 |
| | 8000-1070-002 | Cooling unit PT-HD 130/50/110 |
| | 8000-1070-003 | Cooling unit PT-HD 260/150/230, 520/290/455 and 800/450/720 |
| | 8000-1071-001 | Protective disc holder PT-HD 60/30/52 |
| | 8000-1071-002 | Protective disc holder PT-HD 130/50/110 |
| | 8000-1071-003 | Protective disc holder PT-HD 260/150/230, 520/290/455 and 800/450/720 |
| | 8000-1069-001 | 5 pairs protective glass discs PT-HD 60/30/52, 130/50/110 |
| | 8000-1069-002 | 5 pairs protective glass discs 260/150/230, 520/290/455 and 800/450/720 |

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