

μ Line F1

Laser Interferometer

The precise alignment and calibration of machines is an important part of Quality Management. Especially in the tool machinery market precision down to a μm is required. The new μ Line system is an easy to handle yet very precise system for the measurements of straightness and parallelism.

Not only does it provide extremely precise length / distance measurement but also straightness measurements in X and Y. The first stage interferometer prism is kept out of the laser housing thus avoiding thermal influences and offering maximum flexibility in the setup.

The system provides 3D measurements and has a integrated compensation station in the laser head!



Part No:
BT 840205

Technical Data

System Specifications

Measurement Type	Measurement Range	Resolution	Accuracy in the field
Positioning:	0 – 30 m	100 µm (0.0001 µm)	0.4 µm/m
Velocity:	0 – 6 m/s	0.25 µm/s	0.1 %
Angle:	± 5°	0.04 arcsec	± 0.2 %
Straightness measurement using angular:	0 – 15 m	0.02 µm (for a 100 mm baseline)	± 1 %
Flatness:	0 – 15 m vertical area ± 2 mm	0.02 µm (for a 100 mm baseline)	± 0.5 %
Straightness measurement using a Wollstone Prism:	0 – 3 m	0.5 µm	± 1 % ± (0.5 ± 0.15 L ₂) in metres
3D Straightness Measurement:	0 – 5 m	0.1 µm	(5 ± 10 x L) µm L in metres
Rectangularity:	± 1000 arcsec	0.4 arcsec	± 1 % ± (1.5 arcsec)
Angular Measurement:	0 – 3600 arcsec	0.04 arcsec	± 0.2 %

Laser head

Laser type:	Zeeman Helium Neon Laser (HeNe), frequency stabilized	Beam diameter:	8 mm
Heating time:	Approx. 5 min	Distance between out- and ingoing beam:	12,7 mm
Wavelength (vacuum):	632,990566 nm (H) 632,992031 nm (V)	Laser head dimensions:	45 x 70 x 245 mm
Wavelength accuracy:	± 0,005 ppm	Net weight:	1500g
Short time stability:	± 0,001 ppm (1 hour)	Safety class:	Class 2 Laser product according to PN-91 / T-06700
Output power:	800 µW		

Laser head outputs – analog

Signal resolution:	User defined: 100 nm – 5 mm / period in 100 nm / period step
Signal type:	SinA / CosB
Voltage level:	1 Vpp
Max. Signal frequency:	5 MHz

Laser head outputs – digital, Typ 1

Signal resolution:	User defined: 100 nm – 5 mm / period in 100 nm / period step
Signal type:	A quad B
Voltage level:	5 V differential CMOS
Max. Signal frequency:	5 MHz

Laser head outputs – digital, Typ 2

Signal resolution:	User defined: 0,1 nm – 5 µm / pulse in 0,1 nm / pulse step	Pulse width:	5 ns
Signal type:	Shift / Sign	Max. Signal frequency:	100 MHz
Voltage level:	5 V differential CMOS		

Laser head outputs – Extension connector pinout

Connector type: Hirose Connector LX40-20P, CL No. CL245-0017-0

Pin number

Function

1.	24 V Supply
2. Digital IO	Reserved for the future
3. Digital IO	Reserved for the future
4. Digital IO	Reserved for the future
5. Digital IO	Reserved for the future
6. Digital IO	Reserved for the future
7. Digital IO	Reserved for the future
8. Digital IO	<ul style="list-style-type: none">• Negative output of Differential B signal pair (Digital AquadB Output)• Negative output of Differential Sign signal pair (Shift / Sign Output)
9. Digital IO	<ul style="list-style-type: none">• Negative output of Differential A signal pair (Digital AquadB Output)• Negative output of Differential Module signal pair (Shift / Sign Output)
10. Digital IO	<ul style="list-style-type: none">• Positive output of Differential B signal pair (Digital AquadB Output)• Positive output of Differential Sign signal pair (Shift / Sign Output)
11. Digital IO	<ul style="list-style-type: none">• Positive output of Differential A signal pair (Digital AquadB Output)• Positive output of Differential Module signal pair (Shift / Sign Output)
12.	5 V Supply
13. Analog Output	Negative output of Differential Cosine signal pair (Sine / Cosine Output)
14. Analog Output	Negative output of Differential Sine signal pair (Sine / Cosine Output)
15. Analog Output	Positive output of Differential Cosine signal pair (Sine / Cosine Output)
16. Analog Output	Positive output of Differential Sine signal pair (Sine / Cosine Output)
17.	Ground
18.	Ground
19.	Ground
20.	Ground

System work conditions

Temperature range: 10 – 35° C

Humidity range: 10 – 90 % (non-condensing)

Power supply

Voltage: 90 – 230 VAC, 50 – 60 Hz

Power: 100 W (during heating)
15 W (work)

PC interface Type 1

Interface: USB 2.0

Data rate: 3125000 bps (VCOM)

PC interface Type 2

Interface: Bluetooth 2.0 + EDR

Connection: Point-to-Point (pico net)

Frequency: 2.400 to 2.4835 GHz

Tx Power: Max 18 dBm (Class 1)

Rx Sensivity: -86 dBm typical

Coverage: Up to 25m

Environment compensation

Wavelength compensation

Manual: Environments parameters entered from keyboard

Automatic: With the use of the Environmental Compensation Unit (ECU)

Parameters of the wireless Environmental Compensation Unit – (ECU) compensation

Air temperature: Range 0 – 40° C, accuracy 0,1° C

Time constants: Temperature 8s, pressure 2s, humidity 20s

Pressure: Range 940 – 1060 hPa, accuracy 1 hPa

Dimension: Ø 50 x 50 mm

Humidity: Range 10 – 90%, accuracy 10%

Net weight: 150g

Wireless material temperature compensation

Manual: Temperature of material entered from keyboard

Time constant: 10s

Automatic: With the use of 1 to 3 wireless temperature sensors

Net weight: 150g

Temperature sensor: Pt-1000

 All Status Pro Laser and Receiver Instruments are developed and manufactured according to the following CE Standards: EN 55 011, EN 55 022, EN 61 000-4-2, EN 61 000-4-3, EN 60 335.

This document was prepared with the utmost of care. Changes and errors cannot be completely avoided.

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