Datasheet

- Particularly suitable for CNC machines.
- Innovative device inside the scale for the disposal of liquids coming from inefficient filtering systems.
- Connector incorporated into the transducer.
- Reference indexes at coded distance, or at constant step, with predetermined or selectable positions.
- Small size, to allow installation in narrow spaces.
- Reading device with an infra-red light emitter and receiving photodiodes.
- Full possibility to disassemble and reassemble the scale.
- Possibility of direct service.

Parts

Measuring support	glass scale
Body	40x24 mm; anodized aluminium
Cable	<80m; PUR external sheath Ø6.1 mm; 8-wire shielded cable Conductors section: 0.35 mm²; signals 0.14 mm² The cable's bending radius should not be lower than 80 mm The cable is suitable for continuous movements
Elastic COUPLING	for misalignment compensation and self-correction of mechanical hysteresis. Backlash error <0.2 µm.
SEALING LIPS	non-extendible along the sliding side of the reader head, fixed at the lateral ends.
READER HEAD,	consisting of tie rod and reading block, with fully protected place for electronic boards.
READING BLOCK	sliding through ball bearings.
Elastomeric GASKETS	which allow to reproduce the full protection in mechanical joints (in case of disassembling).
Die-cast TIE ROD	with nickel-plating surface treatment.
Wight	435 g 1290g/m

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Mechanical Data

Grating Pitch	20 µm 
Resolution	<0,01 µm[1)]
Accuracy[2)]	±5 µm standard ±3 µm high-accuracy (±2 µm at ML up to 720 mm)
Measuring Length (ML)	70, 120, 170, 220, 270, 320, 370, 420, 470, 520, 570, 620, 720, 770, 820, 920, 1020, 1140, 1240, 1340, 1440, 1540, 1640, 1740, 1840, 2040, 2240, 2440, 2640, 2840, 3040, <3240 mm
Reference Indexes (I_0)	C = coded distance P = constant step (every 40 mm) E = selectable (every 20 mm)
Movement Speed	<120 m/min
Acceleration	<30m/s²
Required Moving Force	≤ 2,5 N
Vibration Resistance (EN 60068-2-6)	100 m/s² [55-2000 Hz]
Shock Resistance (EN60068-2-27)	150 m/s² [11 ms]
Protection Class (EN60529)	IP 54 standard IP 64 pressurized[2)]
Thermal Expansion Coefficient	$8x10^{-6}$ °C^{-1}
Relative Humidity	20% … 80% (not condensed)
Operating Temperature	0 °C … +50 °C
Storage Temperature	-20 °C … +70 °C
IP-Rating	IP54 Standard IP64 pressurized

[1)] Depending on CNC division factor
[2)] The declared accuracy grade of ± X µm is referred to a measuring length of 1 m.

Electrical Data

Power Supply	5 VDC ±5%
Current Consumption	<120 mA (with R=120 Ω)
Output Signals[1)] (A, B and I_0)	1Vpp  20µm
A and B amplitude	0,8 Vpp … 1,2 Vpp typical 1 Vpp
I_0 amplitude	0,25 V … 0,8 V (usable compontent)
A and B phase displacement	90° ± 5° electrical
Reference voltage U_0	~2,3 V
Electrical Protections	inversion of polarity and short circuits

Note
Signal amplitude is referred to a differential measurement made with 120
Impedance and power supply voltage to the transducer of 5 V ±5%

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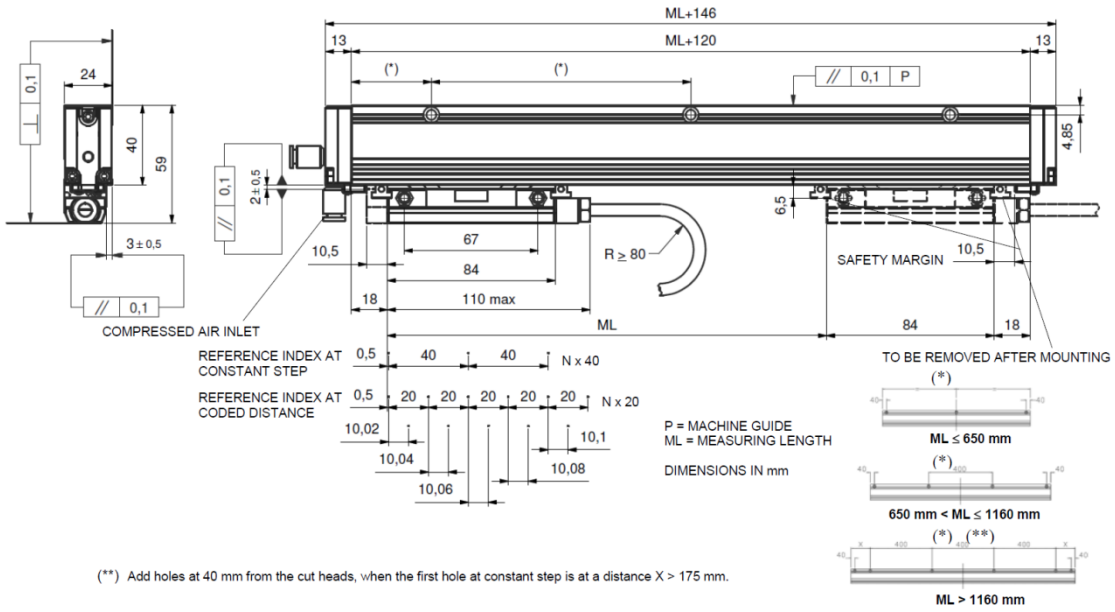
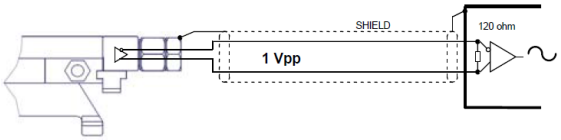
Dimensions



(**) Add holes at 40 mm from the cut heads, when the first hole at constant step is at a distance X > 175 mm.

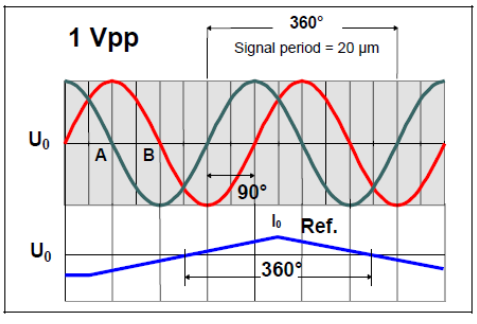
Cable



In case of cable extension, it is necessary to guarantee:

- the electrical connection between the body of the connectors and the cabled shield
- a minimum power supply voltage of 5 V to the transducer.

Assignment



Pin	TTL
red	+V
dark blue	0 V
green	A
orange	$\overline{A}$
white	B
light-blue	$\overline{B}$
brown	I_0
yellow	$\overline{I_0}$
shield	SCH

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Ordering Example

Type	GVS 600	-	V 20 C	-	03240	-	05VS	-	M04/S	-	SC	-	PR

Scale Type
V = 1 Vpp

Resolution
20 = 20 µm

Index (optional)
C = indexes at coded distance
P = indexes at constant step
E = selectable indexes

Measuring Length [mm]
03240 = < ML

Power supply
05V = 5 VDC

Output Signals
S = sine wave

Cable Length
Mnn = Length in mm
M04 = 4 m (standard)

Cable Type
S = PUR cable for continuous movements

Connector Wiring
Cnn = progressive
SC = without connector

Special, pressurization
No cod. = standard
SPnn = special nn
PR = pressurized

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