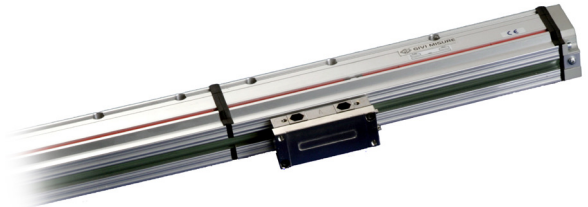


Code ST03	Project E03-A	Release M	TECHNICAL DATASHEET
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

OPTICAL SCALE GMS V (1 Vpp)

GENERAL FEATURES

- MODULAR optical scale with stainless steel grating, suitable for long strokes on CNC machine-tools (measuring length up to 30040 mm).
- Application in several industrial fields such as machine-tools, positioning systems, robotics, etc.
- Resolutions up to 0.1 μm .
- Reference indexes at coded distance, or at constant step, with predetermined or selectable positions.



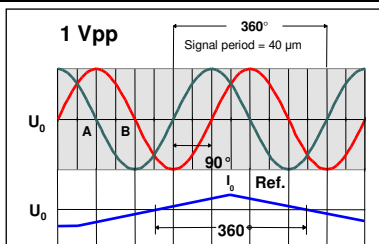
MECHANICAL AND ELECTRICAL CHARACTERISTICS

MECHANICAL	Cod. GMS	V40
<ul style="list-style-type: none"> • Rugged and heavy PROFILE: anodized aluminium, dimensions 50x58.5 mm. • SEALING LIPS along the sliding side of the reader head. • READER HEAD, consisting of tie rod and reading block, with fully protected place for electronic boards. • READING BLOCK sliding through ball bearings. • Die-cast TIE ROD. • Stainless steel GRATING placed in the aluminium profile. • Elastomeric GASKETS which allow to reproduce the full protection in mechanical joints. • Full possibility to disassemble and reassemble it. 	Measuring support Grating pitch Thermal expansion coefficient	stainless steel 40 μm  $10.6 \times 10^{-6} \text{ } ^\circ\text{C}^{-1}$
	Reference index (I_0)	C= coded distance (80 mm) P= constant step (50 mm) E= selectable (with magnet)
	Resolution	up to 0.1 μm *
	Accuracy grade	$\pm 10 \mu\text{m}$ **
	Measuring length ML in mm	up to 30040 mm with steps of 200 mm Segments length: 1000, 1200, 1400, 1600, 1800, 2000 mm
	Max. traversing speed	60 m/min
	Max. acceleration	30 m/s^2
	Required moving force	$\leq 6 \text{ N}$ (0.6 Kgf)
	Vibration resistance (EN 60068-2-6)	$\leq 100 \text{ m/s}^2$ [50 ÷ 2000 Hz]
	Shock resistance (EN 60068-2-27)	$\leq 300 \text{ m/s}^2$ [11 ms]
	Protection class (EN 60529)	IP 53 standard IP 64 pressurized
	Operating temperature	0 ÷ 50 $^\circ\text{C}$
	Storage temperature	-20 ÷ 70 $^\circ\text{C}$
	Relative humidity	20% ÷ 70% (not condensed)
	Sliding block	by ball bearings \odot
	Power supply	5 V \pm 5%
	Current consumption	100 mA_{MAX} (with R = 120 Ω)
	A and B output signals Period	1 Vpp  40 μm
	Maximum cable length	150 m
	Electrical connections	see related table
	Connector	in the transducer
	Electrical protections	inversion of polarity and short circuits
	Weight	1.8 kg + 3.3 kg/m

- ELECTRICAL**
- Reading device with an infra-red light emitter and receiving photodiodes.
 - A and B output signals with phase displacement of 90° (electrical).
 - Incremental reference indexes at coded distance, at constant step or selectable.
 - Cable with minimum bending radius of 80 mm.
 - Cable suitable to continuous movements can be requested, with a minimum bending radius of 80 mm.

SIGNALS	CONDUCTOR COLOR
A	Green
\overline{A}	Brown
B	Black
\overline{B}	Red
I_0	Grey
$\overline{I_0}$	Pink
Not connected	Violet
V- sense	Blue
V+ sense	White
V-	Green - White
V+	Green - Yellow
SHIELD	Shield

OUTPUT SIGNALS

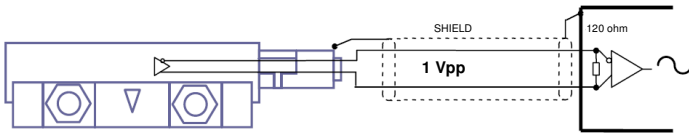


A and B amplitude	0.6 Vpp ÷ 1.2 Vpp typical 1 Vpp
I_0 amplitude	0.25 V ÷ 0.8 V (usable component)
A and B phase displacement	90° \pm 10° electrical
Reference voltage U_0	$\approx 2.2 \text{ V}$
The signal amplitudes are referred to differential measurement on 120 Ω impedance, with power supply voltage to the transducer of 5 V \pm 5%.	

* Depending on CNC division factor.
 ** The declared accuracy grade of $\pm X \mu\text{m}$ is referred to a measuring length of 1 m.

Code ST03	Project E03-A	Release M	TECHNICAL DATASHEET
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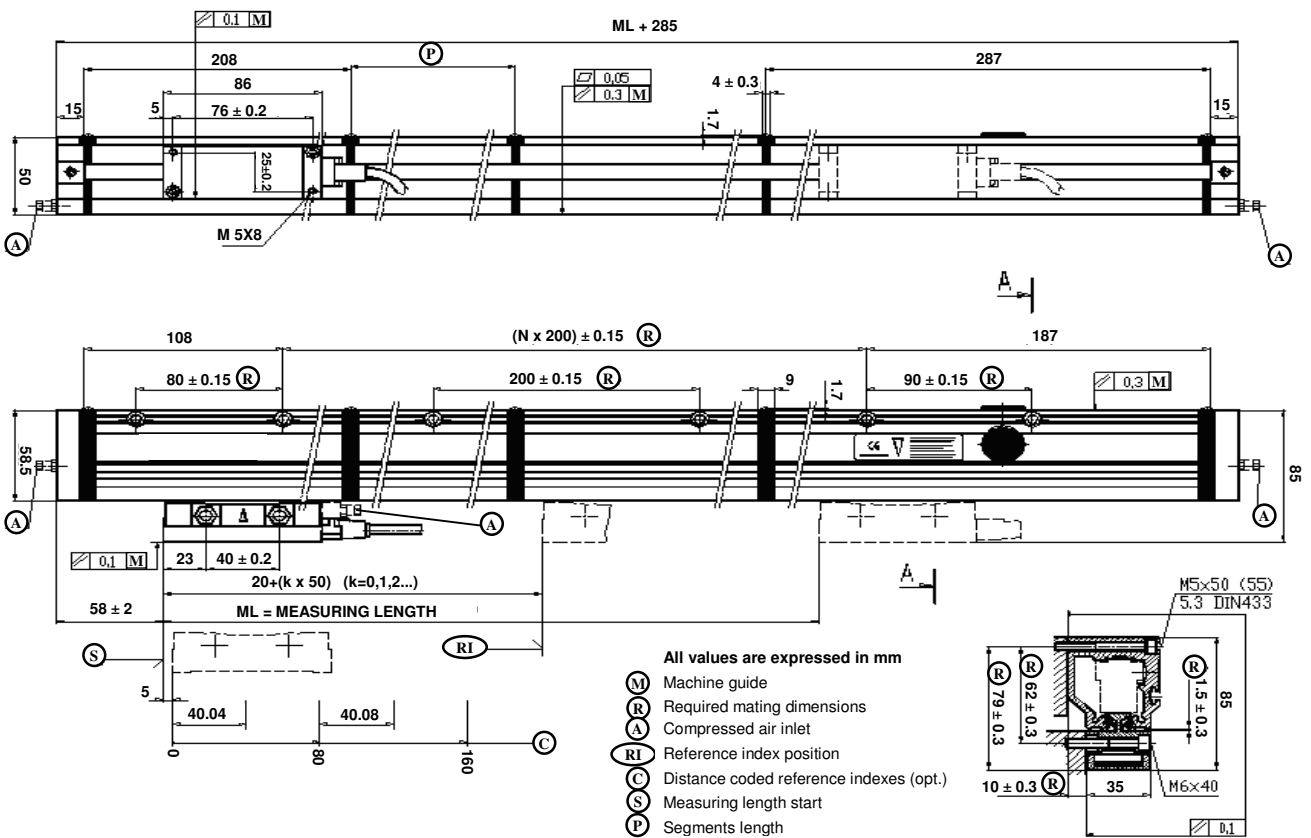
CABLE



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

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

DIMENSIONS



ORDERING CODE

MODEL	SCALE TYPE, GRATING PITCH, INDEX (OPT.)	MEASURING LENGTH	POWER SUPPLY, OUTPUT SIGNALS	CABLE LENGTH, CABLE TYPE	CONNECTOR WIRING	SPECIAL, PRESSURIZED
GMS	V40C	03240	05VS	M04 / S	CC6	PR

V = 1 Vpp
40 = 40 μm
C = index at coded distance
P = index at constant step
E = selectable index
 Length in mm
03240 = ML
30040 = ML_{MAX}
05V = 5 V
S = sine wave
Mnn = length in m
M04 = 4 m (standard)
M50 = 50 m
120 = 120 m
S = unarmored cable
T = tubeflex
Cnn = progressive
No cod. = standard
SPnn = special nn
PR = pressurized

Example  **OPTICAL SCALE GMS V40C 03240 05VS M04/S CC6 PR**