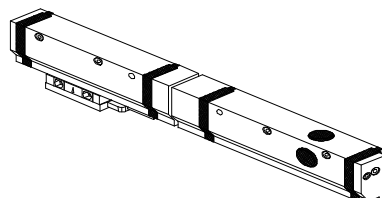


Code	Project	Release	Title
ST03	A34	F	TECHNICAL DATASHEET




OPTICAL SCALE GMS V (1Vpp)

GENERAL FEATURES

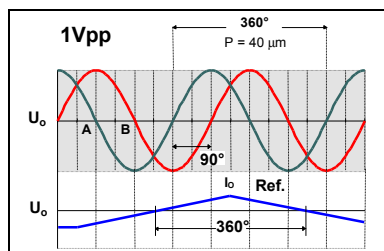
- MODULAR optical scale with stainless steel grating, suitable for long strokes on CNC machine-tools (ML up to 30040 mm).
- Application in several industrial fields such as machine-tools, positioning systems, robotics, etc.
- Resolutions up to 0.1 μm
- Reference indexes at coded distance, or at constant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



MECHANICAL AND ELECTRICAL FEATURES

MECHANICAL	Code GMS	V40																									
<ul style="list-style-type: none"> • Rugged and heavy PROFILE: anodized aluminium, dimensions 50x58.5 mm. • LIP SEALS 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 (in case of disassembly). • Full possibility to disassemble and reassemble it. 	Measuring support stainless steel Grating pitch 40 μm 																										
<ul style="list-style-type: none"> • Reading device with an infra-red light emitter and receiving photodiodes. • A and B output signals with phase displacement of 90° (electrical). • Real signal I_o of reference index approximately equal to 0.5 V. • Incremental reference index every 50 mm, selectable or coded. • Cable with minimum bending radius of 50 mm. • Cable suitable to continuous movements can be requested, with minimum cable bending radius of 33 mm. 	Reference index (I_o) C = at coded distance (80 mm) P = at constant step (50 mm) E = selectable (via magnet)																										
<ul style="list-style-type: none"> • Full possibility to disassemble and reassemble it. 	Resolution up to 0.1 μm																										
ELECTRICAL	Accuracy ± 10 μm																										
SIGNALS	Measuring length ML in mm 3240 to 30040 _{MAX} steps 200 mm length of each module: 1000, 1200, 1400, 1600, 1800, 2000																										
<table border="1" style="width: 100%;"> <thead> <tr> <th>SIGNALS</th> <th>WIRE COLOUR</th> </tr> </thead> <tbody> <tr><td>A</td><td>GREEN</td></tr> <tr><td>\bar{A}</td><td>BROWN</td></tr> <tr><td>B</td><td>BLACK</td></tr> <tr><td>\bar{B}</td><td>RED</td></tr> <tr><td>I_o</td><td>GREY</td></tr> <tr><td>\bar{I}_o</td><td>PINK</td></tr> <tr><td>not connected</td><td>VIOLET</td></tr> <tr><td>0V sense</td><td>BLUE</td></tr> <tr><td>5V sense</td><td>WHITE</td></tr> <tr><td>0V</td><td>GREEN - WHITE</td></tr> <tr><td>5V</td><td>GREEN - YELLOW</td></tr> <tr><td>SHIELD</td><td>SHIELD</td></tr> </tbody> </table>	SIGNALS	WIRE COLOUR	A	GREEN	\bar{A}	BROWN	B	BLACK	\bar{B}	RED	I _o	GREY	\bar{I}_o	PINK	not connected	VIOLET	0V sense	BLUE	5V sense	WHITE	0V	GREEN - WHITE	5V	GREEN - YELLOW	SHIELD	SHIELD	Max. traversing speed 120 m/min Max. acceleration 30 m/s ² Required moving force ≤ 6 N (0.6 Kgf) Vibration resistance (EN 60068-2-6) ≤ 300 m/s ² [50 ÷ 2000 Hz] Shock resistance (EN 60068-2-27) ≤ 300 m/s ² [11 ms] Protection class (EN 60529) IP 53 standard - IP 64 pressurized Operating temperature 0° ÷ 50° C Storage temperature -20° ÷ 70° C Relative humidity 20% ÷ 70% (not condensed) Block sliding by ball bearings  Power supply 5 V ± 5% Current consumption 100 mA _{MAX} (with R = 120 Ω) A and B output signals 1 Vpp  Period 40 μm Maximum cable length 150 m Electrical connection see rel. table Electrical protections inversion of power supply polarity and short circuit on output port Weight 1.8 kg + 3.3 kg/m
SIGNALS	WIRE COLOUR																										
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I _o	GREY																										
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0V	GREEN - WHITE																										
5V	GREEN - YELLOW																										
SHIELD	SHIELD																										

OUTPUT SIGNALS



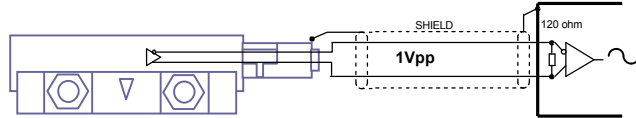
A and B amplitude	0.6 Vpp + 1.2 Vpp typical 1 Vpp
I_o amplitude	0.25 V + 0.8 V (useful zone)
A and B phase displacement	90° ± 10° electrical
Signal amplitude is referred to a differential measurement made with 120 Ω impedance, with power supply voltage to the transducer of 5 V ± 5%.	

* Depending on CNC division factor.

** The declared accuracy rate of ± $\chi\mu\text{m}$ is referred to a measuring length of 1000 mm.

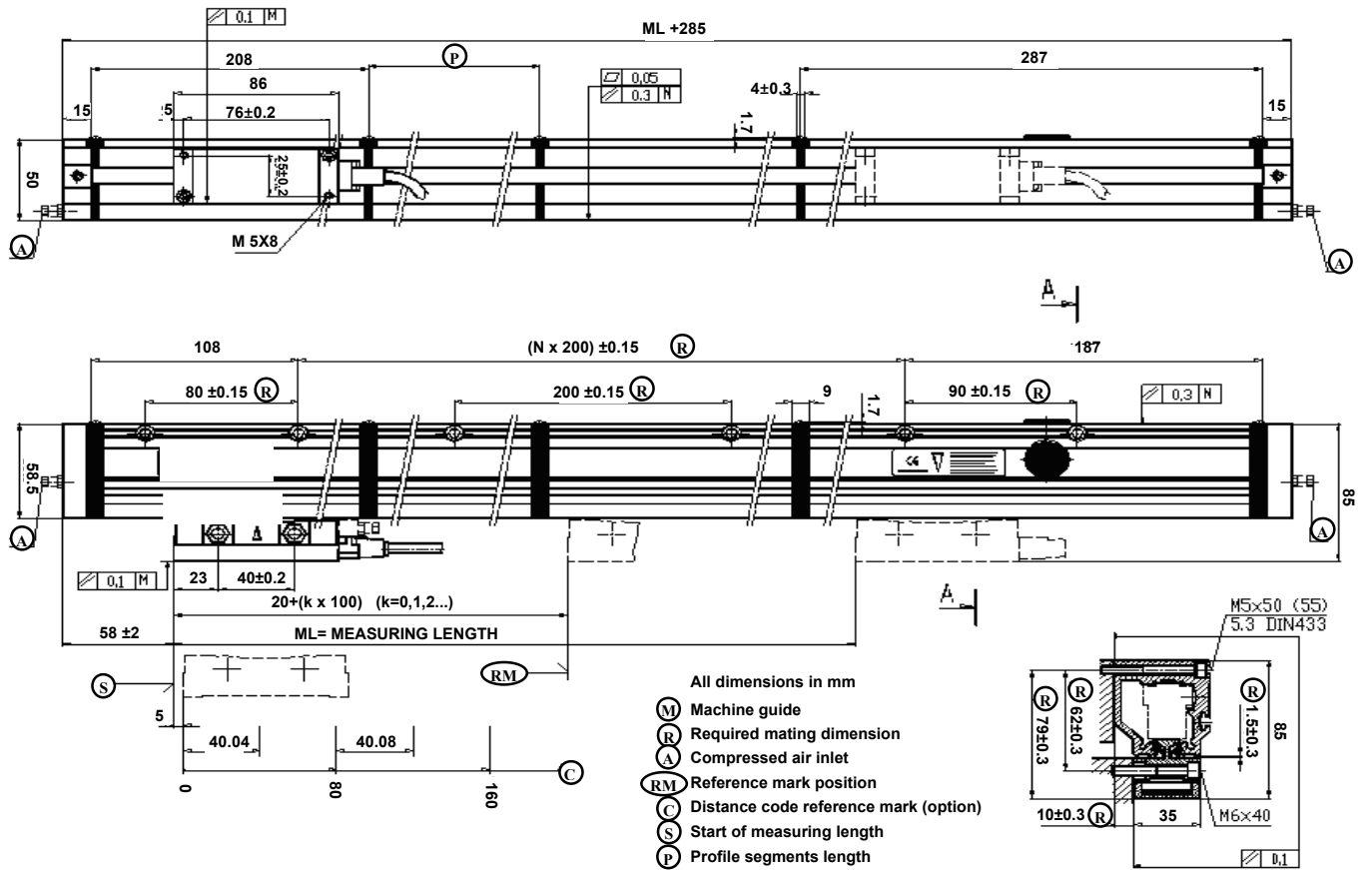
Code ST03	Project A34	Release F	Title TECHNICAL DATASHEET
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CABLE CONNECTION



In case of cable extension, ensure the connection between the body of connectors.

DIMENSIONS



ORDERING CODE

MODEL	TYPE OF SCALE, GRATING PITCH, INDEX (OPTIONS)	MEASURING LENGTH	POWER SUPPLY, SIGNAL OUTPUT	CABLE LENGTH, CABLE TYPE	CONNECTOR WIRING	SPECIAL, PRESSURIZED
GMS	V40C	03240	05VS	M03 / N	CV	SP10

V = 1Vpp
 40 = 40µm (grating pitch)
 C = indexes at coded distance
 P = indexes at constant step
 E = selectable indexes at constant step

Length in mm
 03240 = ML
 30040 = ML_{MAX}

05V = 5V
 S = sinusoidal

Mnn = length in m
 M03 = 3m
 M04 = 4m (standard)
 M50 = 50m
 120 = 120m

Cnn = progressive
 No code = standard
 SPnn = special nn
 PR = pressurized

Example **OPTICAL SCALE GMS V40C 03240 05VS M03/N CV SP10**