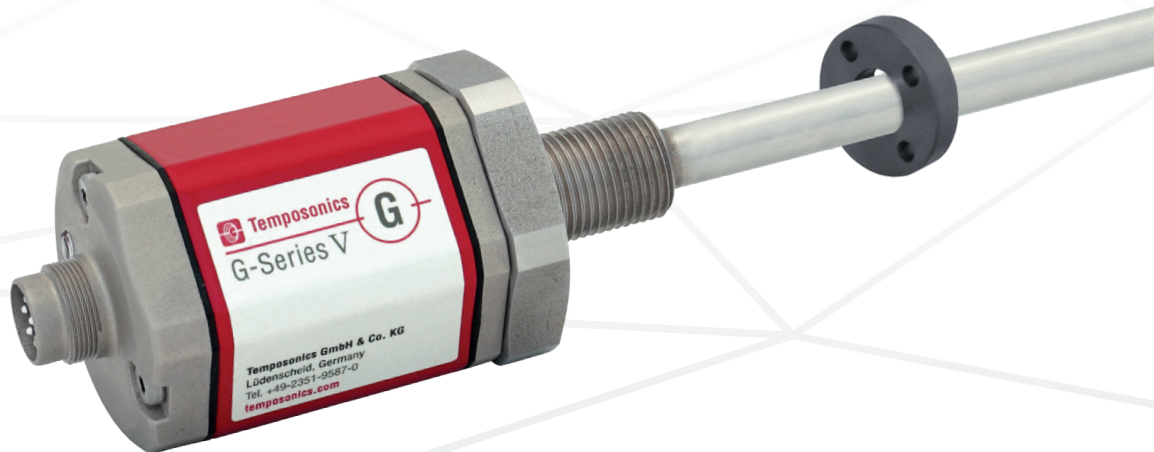


Data Sheet

G-Series V GH5 Digital Magnetostrictive Linear Position Sensors

- Digital-pulse output models: PWM or Start/Stop
- LED for visualization of the sensor status
- Field adjustments and diagnostics using the TempoLink® smart assistant



MEASURING TECHNOLOGY

The absolute, linear position sensors provided by Tempsonics rely on the company's proprietary magnetostrictive technology, which can determine position with a high level of precision and robustness. Each Tempsonics® position sensor consists of a ferromagnetic waveguide, a position magnet, a strain pulse converter and supporting electronics. The magnet, connected to the object in motion in the application, generates a magnetic field at its location on the waveguide. A short current pulse is applied to the waveguide. This creates a momentary radial magnetic field and torsional strain on the waveguide. The momentary interaction of the magnetic fields releases a torsional strain pulse that propagates the length of the waveguide. When the ultrasonic wave reaches the beginning of the waveguide it is converted into an electrical signal. Since the speed of the ultrasonic wave in the waveguide is precisely known, the time required to receive the return signal can be converted into a linear position measurement with both high accuracy and repeatability.

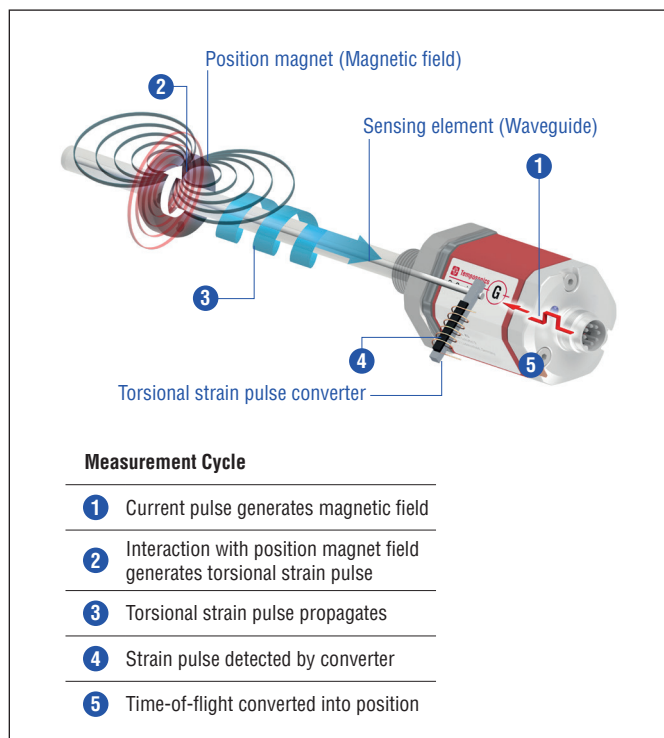


Fig. 1: Time-of-flight based magnetostrictive position sensing principle

G-SERIES V GH5 Digital

The Tempsonics® G-Series V brings balanced sensor performance to meet the many demands of your application. The main advantages of the rod version GH5 with digital output PWM and Start/Stop are:



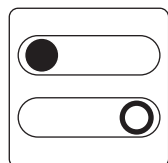
9 positions simultaneously

The G-Series V Digital can detect and report the position of up to 9 magnets simultaneously (controller dependent).



LED for sensor status

The LED in the housing cover visualizes the sensor status. This allows you to see the current status of the sensor at a glance.



Switching output

You can switch the digital output of the sensor from Start/Stop to Pulse Width Modulation (PWM) and vice versa on site.

All settings under control with the smart assistant for the G-Series V

The TempoLink® smart assistant supports you in setup and diagnostics of the G-Series V. Among other things, you can adjust the parameters of the sensor to your application on site or read out information about the current status of the sensor.

For more information of this assistant please see the data sheet:

- TempoLink® smart assistant
(Document part number: [552070](#))



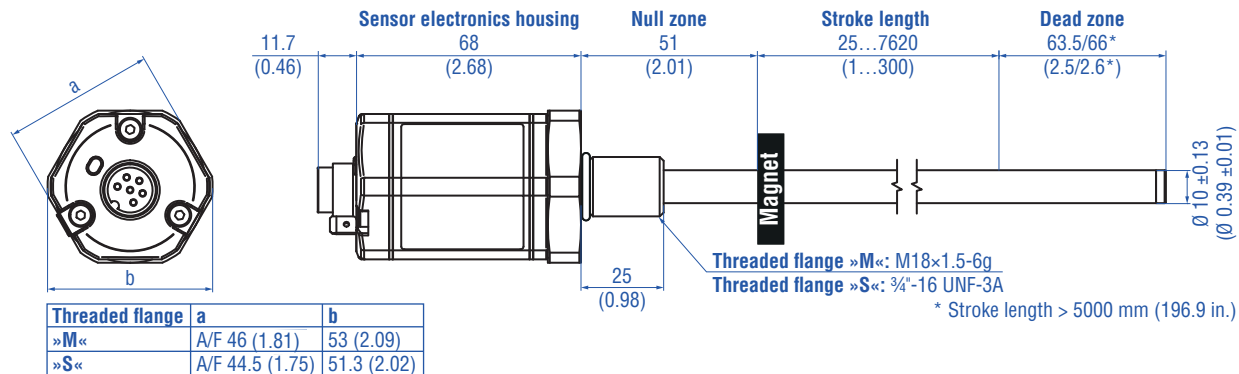
TECHNICAL DATA

Output						
Digital pulse outputs	Start/Stop and Pulse Width Modulation (PWM)					
Measured output variables	Position or liquid level					
Measurement parameters						
Null/Span adjustment	100 % of electrical stroke					
Resolution	0.1, 0.01 and 0.005 mm (controller dependent)					
Update time	Stroke length	≤ 500 mm	≤ 1100 mm	≤ 3000 mm	≤ 6250 mm	≤ 7620 mm
	Update time	500 μs	1 ms	2 ms	4 ms	5 ms
Linearity deviation ¹	< ±0.02 % F.S. (minimum ±50 μm)					
Repeatability	< ±0.002% % F.S. (minimum ±5 μm)					
Hysteresis	< 4 μm typical					
Temperature coefficient	< 30 ppm/K typical					
Operating conditions						
Operating temperature	–40...+80 °C (–40...+176 °F)					
Humidity	90 % relative humidity, no condensation					
Ingress protection	IP67 (connectors correctly fitted)/IP68 (3 m/3 d) and IP69 for cable outlet					
Shock test	100 g/11 ms, IEC standard 60068-2-27					
Vibration test	30 g/10...2000 Hz, IEC standard 60068-2-6 (excluding resonant frequencies)/ GH5-J: 15 g/10...2000 Hz, IEC standard 60068-2-6 (excluding resonant frequencies)					
EMC test	Electromagnetic emission according to EN 61000-6-3 Electromagnetic immunity according to EN 61000-6-2 The GH5 sensors fulfill the requirements of the EMC directives 2014/30/EU, UKSI 2016 No. 1091 and TR CU 020/2011.					
Operating pressure	450 bar (6,527 psi)/700 bar (10,153 psi) peak (at 10 × 1 min) for sensor rod/GH5-J: 800 bar (11,603 psi)					
Magnet movement velocity	Any					
Design/Material						
Sensor electronics housing	Aluminum (painted), zinc die cast					
Sensor flange	Stainless steel 1.4305 (AISI 303)					
Sensor rod	Stainless steel 1.4306 (AISI 304L)					
RoHS compliance	The used materials are compliant with the requirements of EU Directive 2011/65/EU and EU Regulation 2015/863 as well as UKSI 2022 No. 622 with amendments					
Stroke length	25...7620 mm (1...300 in.)/GH5-J: 25...5900 mm (1...232 in.)					
Mechanical mounting						
Mounting position	Any					
Mounting instruction	Please consult the technical drawings on page 4					
Electrical connection						
Connection type	1 × M16 male connector (6 pin) or cable outlet					
Operating voltage	Standard: +24 VDC (–15/+20 %)/option: +9 VDC...+28.8 VDC; The GH5 sensors must be power supplied via an external Class 2 power source in accordance with the UL approval					
Power consumption	2.5 W typical (3.5 W maximum)					
Dielectric strength	500 VDC (DC ground to machine ground)					
Polarity protection	Up to –30 VDC					
Overvoltage protection	Up to 36 VDC					

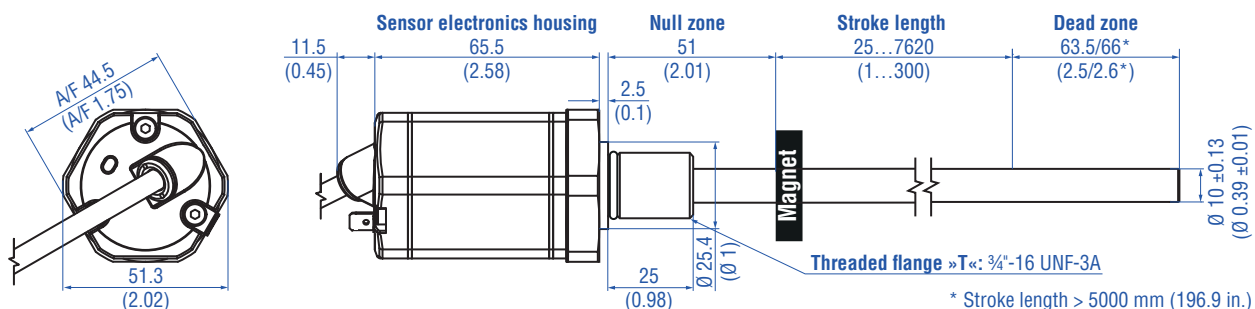
1/ With position magnet # 251 416-2

TECHNICAL DRAWING

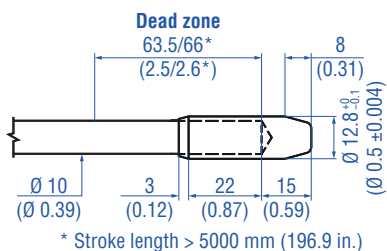
GH5-M/S-A/V – GH5 with threaded flange M18×1.5-6g or ¾"-16 UNF-3A, example: Connection type D60 (connector outlet)



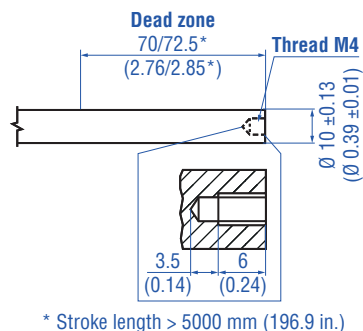
GH5-T-A/V – GH5 with threaded flange ¾"-16 UNF-3A with raised-face, example: Connection type EXX/GXX/LXX (angled cable outlet)



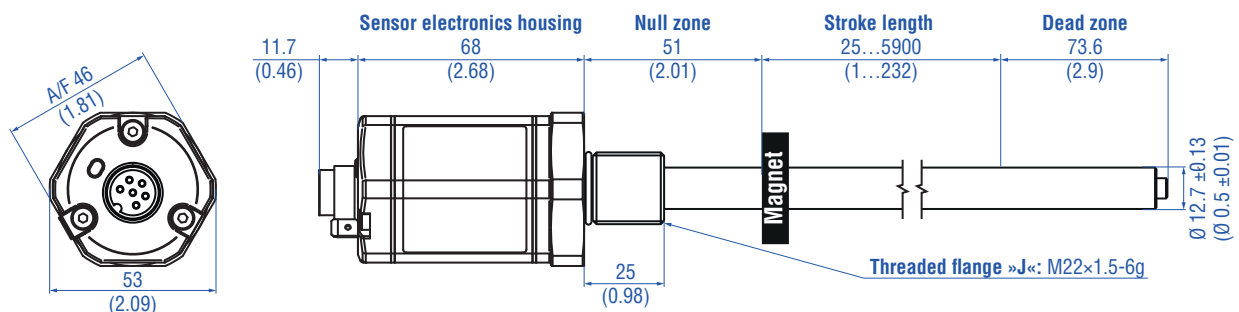
Mechanical option »B«: Bushing on rod end for threaded flange M18×1.5-6g or ¾"-16 UNF-3A



Mechanical option »M«: Thread M4 at rod end for threaded flange M18×1.5-6g or ¾"-16 UNF-3A



GH5-J-A/V – GH5 with threaded flange M22×1.5-6g and Ø 12.7 mm rod, example: Connection type D60 (connector outlet)



Controlling design dimensions are in millimeters and measurements in () are in inches

Fig. 2: Temposonics® GH5 with ring magnet

CONNECTOR WIRING

D60		
Signal + power supply		
M16 male connector	Pin	Function
 View on sensor	1	Gate (-) for PWM Stop (-) for Start/Stop
	2	Gate (+) for PWM Stop (+) for Start/Stop
	3	Interrogation (+) for PWM Start (+) for Start/Stop
	4	Interrogation (-) for PWM Start (-) for Start/Stop
	5	+24 VDC (-15/+20 %)
	6	DC Ground (0 V)

Fig. 3: Connector wiring D60

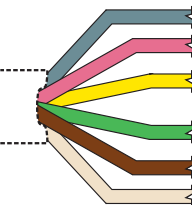
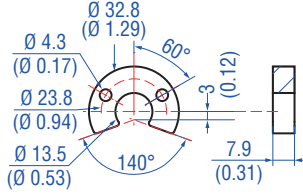
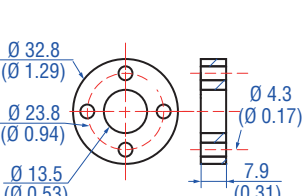
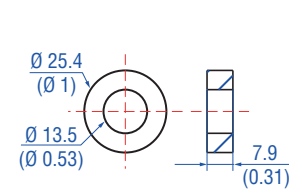
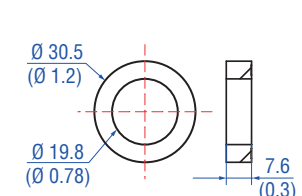
EXX/GXX/LXX		
Signal + power supply		
Cable	Color	Function
	GY	Gate (-) for PWM Stop (-) for Start/Stop
	PK	Gate (+) for PWM Stop (+) for Start/Stop
	YE	Interrogation (+) for PWM Start (+) for Start/Stop
	GN	Interrogation (-) for PWM Start (-) for Start/Stop
	BN	+24 VDC (-15/+20 %)
	WH	DC Ground (0 V)

Fig. 4: Connector wiring cable outlet

FREQUENTLY ORDERED ACCESSORIES – Additional options available in our [Accessories Catalog](#) 551444

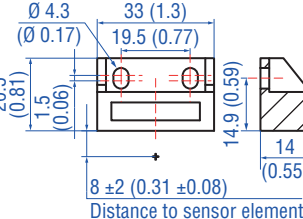
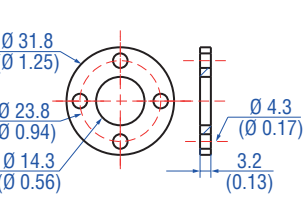
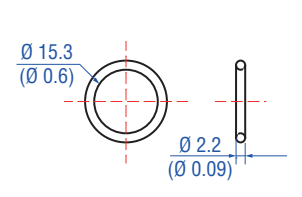
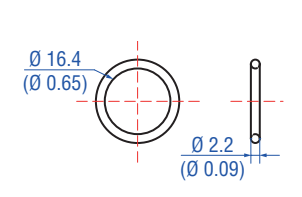
Position magnets

 U-magnet OD33 Part no. 251 416-2 Material: PA ferrite GF20 Weight: Approx. 11 g Surface pressure: Max. 40 N/mm² Fastening torque for M4 screws: 1 Nm Operating temperature: -40...+120 °C (-40...+248 °F)	 Ring magnet OD33 Part no. 201 542-2 Material: PA ferrite GF20 Weight: Approx. 14 g Surface pressure: Max. 40 N/mm² Fastening torque for M4 screws: 1 Nm Operating temperature: -40...+120 °C (-40...+248 °F)	 Ring magnet OD25.4 Part no. 400 533 Material: PA ferrite Weight: Approx. 10 g Surface pressure: Max. 40 N/mm² Operating temperature: -40...+120 °C (-40...+248 °F)	 Ring magnet Part no. 402 316 Material: PA ferrite coated Weight: Approx. 13 g Surface pressure: Max. 20 N/mm² Operating temperature: -40...+100 °C (-40...+212 °F)
---	---	--	---

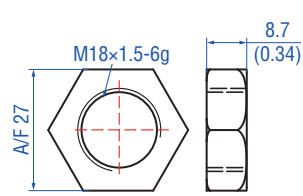
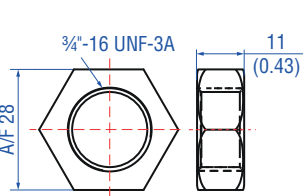
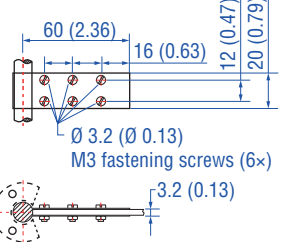
Position magnet

Magnet spacer

O-rings

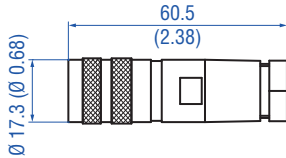
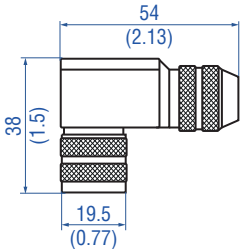
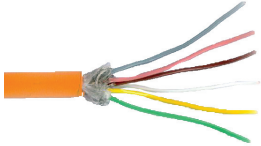
 Block magnet L Part no. 403 448 Material: Plastic carrier with neodymium magnet Weight: Approx. 20 g Fastening torque for M4 screws: 1 Nm Operating temperature: -40...+75 °C (-40...+167 °F) This magnet may influence the sensor performance specifications for some applications.	 Magnet spacer Part no. 400 633 Material: Aluminum Weight: Approx. 5 g Surface pressure: Max. 20 N/mm² Fastening torque for M4 screws: 1 Nm	 O-ring for threaded flange M18×1.5-6g Part no. 401 133 Material: Fluoroelastomer Durometer: 75 ±5 Shore A Operating temperature: -40...+204 °C (-40...+400 °F)	 O-ring for threaded flange ¾"-16 UNF-3A Part no. 560 315 Material: Fluoroelastomer Durometer: 75 ±5 Shore A Operating temperature: -40...+204 °C (-40...+400 °F)
--	---	--	---

Mounting accessories

 Hex jam nut M18×1.5-6g Part no. 500 018 Material: Steel, zinc plated	 Hex jam nut ¾"-16 UNF-3A Part no. 500 015 Material: Steel, zinc plated	 Fixing clip Part no. 561 481 Application: Used to secure sensor rods (Ø 10 mm (Ø 0.39 in.)) when using an U-magnet or block magnet Material: Brass, non-magnetic
---	--	---

Cable connectors*

Cables

			
M16 female connector (6 pin), straight Part no. 370 423	M16 female connector (6 pin), angled Part no. 370 460	PVC cable Part no. 530 032	PUR cable Part no. 530 052
Material: Zinc nickel plated Termination: Solder Cable Ø: 6...8 mm (0.24...0.31 in.) Operating temperature: -40...+100 °C (-40...+212 °F) Ingress protection: IP65/IP67 (correctly fitted) Fastening torque: 0.6 Nm	Material: Zinc nickel plated Termination: Solder Cable Ø: 6...8 mm (0.24...0.31 in.) Wire: 0.75 mm ² (20 AWG) Operating temperature: -40...+95 °C (-40...+203 °F) Ingress protection: IP67 (correctly fitted) Fastening torque: 0.6 Nm	Material: PVC jacket; gray Features: Twisted pair, shielded, flexible Cable Ø: 6 mm (0.23 in.) Cross section: 3 × 2 × 0.14 mm ² Bending radius: 10 × D (fixed installation) Operating temperature: -40...+105 °C (-40...+221 °F)	Material: PUR jacket; orange Features: Twisted pair, shielded, highly flexible, halogen free, suitable for drag chains, mostly oil & flame resistant Cable Ø: 6.4 mm (0.25 in.) Cross section: 3 × 2 × 0.25 mm ² Bending radius: 5 × D (fixed installation) Operating temperature: -20...+80 °C (-4...+176 °F)

Cable



FEP cable Part no. 530 157

Material: FEP jacket; black
 Features: Twisted pair, shielded
 Cable Ø: 6.7 mm (0.26 in.)
 Cross section: 3 × 2 × 0.14 mm²
 Operating temperature: -40...+180 °C (-40...+356 °F)

*/ Follow the manufacturer's mounting instructions
 Color of connectors and cable jacket may change. Color codes for the individual wires and technical properties remain unchanged.
 Controlling design dimensions are in millimeters and measurements in () are in inches

Extension cables M16





PVC cable with M16 female connector (6 pin), straight – pigtail

PUR cable with M16 female connector (6 pin), straight – pigtail

FEP cable with M16 female connector (6 pin), straight – pigtail

PVC cable (part no. 530 032) with M16 female connector, straight (part no. 370 423)

PUR cable (part no. 530 052) with M16 female connector, straight (part no. 370 423)

FEP cable (part no. 530 112) with M16 female connector, straight (part no. 370 423)

Order code:

K2-A-370423-xxxxyy-530032-0

(where xxxx = cable length and yy = unit in centimeters “CM” or feet “FT”)

Order code:

K2-A-370423-xxxxyy-530052-0

(where xxxx = cable length and yy = unit in centimeters “CM” or feet “FT”)

Order code:

K2-A-370423-xxxxyy-530112-0

(where xxxx = cable length and yy = unit in centimeters “CM” or feet “FT”)

Notice for extension cables M16

Standard cable lengths

Meters	Feet	Code
1.5	5.0	0150
2.0	6.6	0200
4.6	15.0	0460
5.0	16.4	0500
7.6	25.0	0760
10.0	32.8	1000
15.2	50.0	1520

For additional extension cables reference the accessories catalog for industrial sensors (document part no.: 551444).

Programming tools

Programming tools



- TempoLink® kit for Temposonics® G-Series V**
Part no. TL-1-0-AD60 (for D60)
Part no. TL-1-0-AS00 (for cable outlet)
- Connect wirelessly via Wi-Fi enabled device or via USB with the diagnostic tool
 - Simple connectivity to the sensor via 24 VDC power line (permissible cable length: 30 m)
 - User friendly interface for mobile devices and desktop computers
 - See data sheet “TempoLink® smart assistant” (document part no.: [552070](#)) for further information

Color of connectors and cable jacket may change. Color codes for the individual wires and technical properties remain unchanged.
 Controlling design dimensions are in millimeters and measurements in () are in inches

ORDER CODE

1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19
G	H	5																
a	b	c	d	e	f	g	h											

19 optional

a	Sensor model
G H 5	Rod

b	Design
B	Base unit (only for replacement)
J	Threaded flange M22×1.5-6g (rod Ø 12.7 mm, 800 bar), max. stroke length 5900 mm
M	Threaded flange M18×1.5-6g (standard)
S	Threaded flange ¾"-16 UNF-3A (standard)
T	Threaded flange ¾"-16 UNF-3A (with raised-face)

c	Mechanical options
A	Standard
B	Bushing on rod end (only for design »M«, »S« & »T«)
M	Thread M4 at rod end (only for design »M«, »S« & »T«)
V	Fluorelastomer seals for the sensor electronics housing

d	Stroke length
X X X X M	0025...7620 mm
Standard stroke length (mm) Ordering steps	
25... 500 mm	5 mm
500... 750 mm	10 mm
750...1000 mm	25 mm
1000...2500 mm	50 mm
2500...5000 mm	100 mm
5000...7620 mm	250 mm
X X X X U	001.0...300.0 in.
Standard stroke length (in.) Ordering steps	
1... 20 in.	0.2 in.
20... 30 in.	0.4 in.
30... 40 in.	1.0 in.
40...100 in.	2.0 in.
100...200 in.	4.0 in.
200...300 in.	10.0 in.
Non-standard stroke lengths are available; must be encoded in 5 mm/0.1 in. increments.	

e	Number of magnets
X X	01...09 positions (1...9 magnets) (multi-position measurement* only for outputs »R0« & »RF«)

*Number of magnets ≥ 2 magnets

f	Connection type
Connector	
D 6 0	M16 male connector (6 pin)
Angled cable outlet	
E X X	XX m/ft. PVC cable (part no. 530 032) E01...E30 (1...30 m)/E03...E99 (3...99 ft.) See "Frequently ordered accessories" for cable specifications
G X X	XX m/ft. FEP cable (part no. 530 157) G01...G30 (1...30 m)/G03...G99 (3...99 ft.) See "Frequently ordered accessories" for cable specifications
L X X	XX m/ft. PUR cable (part no. 530 052) L01...L30 (1...30 m)/L03...L99 (3...99 ft.) See "Frequently ordered accessories" for cable specifications
Encode in meters if using metric stroke length. Encode in feet if using US customary stroke length.	

g	System
1	Standard
2	Operating voltage: +9...+28.8 VDC

h See next page

Continue to the next page

h	Output
R O	Start/Stop
R F	Start/Stop with closed error signal utility
D I X	PWM, internal interrogation X denotes the number of circulations (see table 1)
F I X	PWM, internal interrogation with closed error signal utility X denotes the number of circulations (see table 1)
D E X	PWM, external interrogation X denotes the number of circulations (see table 1)
F E X	PWM, external interrogation and closed error signal utility X denotes the number of circulations (see table 1)

»X« for output »DIX«, »FIX«, »DEX« and »FEX«										
Number of circulations	1	2	3	4	5	6	7	8	9	10
»X« in order code	1	2	3	4	5	6	7	8	9	A
Number of circulations	11	12	13	14	15	16	17	18	19	20
»X« in order code	B	C	D	E	F	G	H	I	J	K

Table 1: Number of circulations

NOTICE

- Specify the number of magnets for your application and order magnets separately.
- The number of magnets is limited by the stroke length. The minimum allowed distance between magnets (i.e. front face of one to the front face of the next one) is 75 mm (3 in.)
- Use magnets of the same type for multi-position measurement.

DELIVERY



GH5-B:

- Base unit (without flange & rod assembly)
- 3 × socket screws M4×59

GH5-J/M/S/T:

- Sensor
- O-ring

Accessories have to be ordered separately.

Manuals, Software & 3D Models available at:
www.temposonics.com

GLOSSARY

C

Closed Error Signal Utility

At very high shock or vibration events, the magnet may no longer be detected properly. For these error events the Closed Error Signal Utility will produce an output signal waveform that corresponds to a value of just over the 100 % full stroke position. Therefore, the Closed Error Signal Utility should only be used with certain Allen Bradley and Digitron Electronics interface cards that are designed to process this sensor output appropriately. Contact Applications Engineering for more information.

E

External Interrogation

For a sensor that is configured for external interrogation, a signal is required from the controller or interface module to initiate every measurement cycle.

I

Internal Interrogation

For a sensor that is configured for internal interrogation, no signal is needed from the controller as the sensor itself initiates the next measurement cycle upon the completion of the current cycle.



Temposonics

AN AMPHENOL COMPANY

UNITED STATES
Temposonics, LLC
Americas & APAC Region
3001 Sheldon Drive
Cary, N.C. 27513
Phone: +1 919 677-0100
E-mail: info.us@temposonics.com

GERMANY
Temposonics GmbH & Co. KG
EMEA Region & India
Auf dem Schüffel 9
58513 Lüdenscheid
Phone: +49 2351 9587-0
E-mail: info.de@temposonics.com

ITALY
Branch Office
Phone: +39 030 988 3819
E-mail: info.it@temposonics.com

FRANCE
Branch Office
Phone: +33 6 14 060 728
E-mail: info.fr@temposonics.com

UK
Branch Office
Phone: +44 79 21 83 05 86
E-mail: info.uk@temposonics.com

SCANDINAVIA
Branch Office
Phone: +46 70 29 91 281
E-mail: info.sca@temposonics.com

CHINA
Branch Office
Phone: +86 21 3405 7850
E-mail: info.cn@temposonics.com

JAPAN
Branch Office
Phone: +81 3 6416 1063
E-mail: info.jp@temposonics.com

Document Part Number:
552223 Revision B (EN) 08/2025



temposonics.com

© 2025 Temposonics, LLC – all rights reserved. Temposonics, LLC and Temposonics GmbH & Co. KG are subsidiaries of Amphenol Corporation. Except for any third party marks for which attribution is provided herein, the company names and product names used in this document may be the registered trademarks or unregistered trademarks of Temposonics, LLC or Temposonics GmbH & Co. KG. Detailed trademark ownership information is available at www.temposonics.com/trademarkownership.