## Oval Gear Flowmeter for Low and High Viscosity Liquids



measuring •

monitoring

analyzing









- Measuring Range: 0.13...9.5 GPH to 40...660 GPM
- Viscosity Range: up to 1000 cP (Standard) (Higher Viscosities with Special Cut Rotors)
- Accuracy: ± 0.2% ... 1% of Reading
- Material: Aluminum or Stainless Steel
- p<sub>max</sub>: 1450 PSI; t<sub>max</sub>: 300 °F
- Pulse Output, LCD Display, 4...20 mA, Alarms, Mechanical Totalizer
- Bi-directional Measurement
- U-Pace Electronics: IO-Link and Temperature Measurement



# Order from: C A Briggs Company

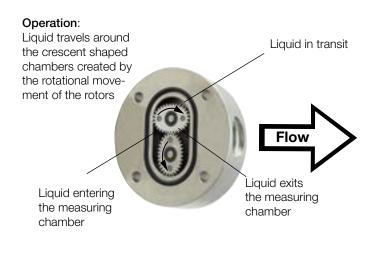
OIO-Link

622 Mary Street; Suite 101; Warminster, PA 18974 Phone: 267-673-8117 - Fax: 267-673-8118 Sales@cabriggs.com - www.cabriggs.com KOBOLD Instruments, Inc. 1801 Parkway View Drive Pittsburgh, PA 15205



#### Description

Oval gear flowmeters are categorized as positive displacement flow technology. When liquid flows through this type of positive displacement flowmeter, two oval gear rotors measure a constant volume per rotation within a precisely machined measuring chamber. With each rotation, a constant volume of liquid is measured. The rotation of the oval gears is sensed via magnets embedded within the rotors. These magnets transmit a high resolution pulse output. The output signal can be processed externally via a remote display controller or PLC or via a variety of output/display options available as accessories attached to the flowmeters.



In addition, our U-PACE electronics (Universal Precision and Control Electronics, (order code C3T0) is available and features two outputs arbitrarily configurable by the customer. The compact electronics offers various diagnostic functions and the following feastures:

- Flow and temperature measurement
- Monitoring, batching and transmitter function
- Batch function with external control input
- Colored, multi-parameter configurable TFT-display, rotatable in 90° increments
- Bidirectional measurement
- Intuitive steup menu via 4 optical touch keys
- 2 configurable outputs (pulse-/frequency-/alarm- and analog (tugtuo
- Grand and resettable totallizer
- IO link function

The positive displacement flow technology allows for precise flow measurement of most clean liquids regardless of the media's conductivity. Other liquid properties also have a minimal effect on the performance of this type of meter. Flow profile conditioning is not required, as with alternative flow technology options, making oval gear installations simple to install in tight spaces and at an economical price.

#### Areas of Application

Suitable for viscous, non abrasive, clean liquids like:

- Petroleum • Oil Chemicals • Grease
- Fuels • Ink Pastes

Aluminum body meters are compatible with fuels, fuel oils, & other lubricating liquids. In addition to lubricating media, stainless steel flowmeters are suitable for most products and chemicals.

Technical Data	
Materials	
DON-1/3	
Body:	Aluminum
Gears:	PPS GF30/PTFE, PEEK
Axles:	316L Stainless Steel
DON-2/4	
Body	
DON-x04 DON-x15:	316L Stainless Steel
DON-x20 DON-x60:	316L/301* Stainless Steel
Gears	
DON-x04 DON-x40:	316L Stainless Steel
DON-x45 DON-x60:	301* Stainless Steel
Bearing:	Carbon Graphite
Axles:	316L Stainless Steel

\* Closest AISI Equivalent to 1.3955 Stainless Steel

#### Oval Gear Flowmeter Model DON



DON-39'     ± 3% of Reading (0.130.95 GPH), ± 1% of Reading (0.5595 GPH)       Body     ± 1% of Reading (0.530.95 GPH),       DON-x04DON-x05:     316L/301*Stainless Steel       Don-x20DON-x60:     316L/301*Stainless Steel       Gears:     PPS GF 30/PTE, PEEK       Axles:     316L/301*Stainless Steel       O-Rings (Media Temperature:     ± 0.5% of Reading (0.130.95 GPH),       FKM:     -4300*F       FRM:     -4300*F       FEP with EPDM/FKM cor:     -5248 *F       (only for DON-x04DON-x40DON-x40,       FLooroprene*:     -4300 *F Acc. to Regulation (EC) No.       1935/2004       Electrical Cover (for Cables - Unsetion)       Stainless Steel       Optional:     316L Stainless Steel       ODN-x15	Materials (Continued)		Accuracy**	
Body     ±1% of Reading (0.959.5 GPH)       DON-x04DON-x15:     ±1% of Reading       DON-x20DON-x60:     316L Stainless Steel       Gears:     PPS G7 0/ PTFE, PEEK       Axles:     316L Stainless Steel       O-Rings (Media Temperature     ±0.5% of Reading:       FKM:     -4300 °F       NBR:     -4300 °F       Gonly for DON-x40DON-x40)     FUnction       FEP with EPDM/FKM core:     -2248 °F       (only for DON-x40DON-x40)     ±0.5% of Reading (Retter Accuracy (only for DON-x40DON-x40)       Fluoroprene*:     -4300 °F Acc. to Regulation (EC) No. 1935/2004       Electrical Cover (for Cable U-U-U-U     -4300 °F Acc. to Regulation (EC) No. 1935/2004       Stainless Steel     Option M4:     ±1% of Reading (Retter Accuracy tor higher viscosities on request)       Standard:     0400 × 1.5 or 1/2" NPT Adapter     Additional Max. Inaccuracy tor higher viscosities on request)       Magnet Encapsulation     Y20 × 1.5 or 1/2" NPT Adapter     analog output -CT: < 200ppm/K       Magnet Encapsulation     Y20 × 1.5 or 1/2" NPT Adapter     remperature: analog output -CT: < 200ppm/K       Magnet Encapsulation     Y20 × 1.5 or 1/2" NPT Adapter     remperature: analog output -CT: < 200ppm/K       Magnet Encapsulation     Y20 × 1.5 or 1/2" NPT Adapter     remperature: analog output -CT: < 200ppm/K       for Aluminum Housing:     Stainless Stee	· · · · ·		DON-x04:	± 3% of Reading (0.130.95 GPH),
DON-x04DON-x15:     316L.Stainless Steel       DON-x20DON-x60:     316L/301* Stainless Steel       Gears:     PPS GF30/PTFE, PEEK       Atles:     316L.Stainless Steel       O-Rings (Media Temperature Limits)     S Rotors:     ± 0.5% of Reading:       FKM:     -4300°F     PPS Rotors:     ± 0.5% of Reading:       NBR:     -4212 °F     ± 1% of Reading:     ± 0.2% of Reading:       FEP with EPDM/FKM core:     5248°F     23/3A Electronics w/ Linearization       Fuoroprene*:     -(only for DON-x04DON-x40)     PPS Rotors:     ± 1% of Reading:       FLectrical Cover (for Cable/FLECTON)     316L.Stainless Steel     23/3A Electronics w/ Linearization       Standard:     Polyamide PA6 GF35 UL94 HB/VO     •16 Polyamide PA6 GF35 UL94 HB/VO       Optional:     316L Stainless Steel     Additional Max. Inaccurecy for higher viscosities on request)       Magnet Encapsulation     M20 x 1.5 or 1/2' NPT Adapter     analog output 4-20mA for -Lx and -2x electronics: ± 0.15% full scale       DON-x15 DON-x16.     Steel Coated with GEOMET® 321 (or DON-252 and DON-825)     if equency output -CT: <200ppm/K       for Aluminum Housing:     Stainless Steel (Standard)     Steel Coated with GEOMET® 321 (or DON-252 and DON-825)     if equency output -CT: <200ppm/K       for Stainless Steel Housing:     Stainless Steel (Standard)     Steel Coated with GEOMET® 321 (or DON-320; for M4)     4.				± 1% of Reading (0.959.5 GPH)
DON-x20DON-x60         316L/301* Stainless Steel         DON-x20DON-x60           Gears:         PPS GF30/PTFE, PEEK         ± 0.5% of Reading; ± 0.2% of Reading; ± 0.2% of Reading; ± 0.2% of Reading;           Axles:         316L Stainless Steel         Z3/3A Electronics w/ Linearization           O-Rings (Media Temperature:         FMM:         -4300 °F           FKM:         -4300 °F         ± 1% of Reading;           NBR:         -4300 °F C         ± 0.5% of Reading w/ Optional           FPW with EPDM/FKM core:         5248 °F         ± 0.5% of Reading w/ Optional           (only for DON-x04DON-x40)         Function         Function           Fluoroprene®:         -4300 °F Acc. to Regulation (EC) No.         Additional Max. Inaccursure         for Inger viscosities on request)           Standard:         Polyamide PA6 GF35 UL94 HB/VO         Option M4:         ± 1% of Reading (Better Accuracy to rhigher viscosities on request)           Optional:         316L Stainless Steel         Additional Max. Inaccursure         analog output 4-20m A for -Lx and -Zx electronics: ± 0.15% full scale           DoN-v40DON-x10:         PEEK         analog output -CT: < 200ppm/K         frequency output -CT: <100ppm/K           Magnet Encapsulation:         Steel Coated with GEOMETI% 321         (or DON-225 and DON-325)         for Aluminum Housing:         Steel Coated with GEOMET	5		DON-x05DON-x15:	± 1% of Reading
DON-x20DON-x60:       316L301*Stanless Steel       \$\$ Shots::       ± 0.5% of Reading:         Gears:       PPS GF30/PTFE, PEEK       ± 0.2% of Reading:       ± 0.2% of Reading:         Axles:       316L Stainless Steel       Z37A Electronics w/ Linearization         O-Rings (Media Temperature Limits)       Function       Function         FKM:       -4300°F       PPS Rotors:       ± 1% of Reading:         MBR:       -4300°F       Z37A Electronics w/ Linearization         (only for DON-x04DON-x04DON-x04.)       Function       Function         FLooroprene*:       -4300°F Acc. to Regulation (EC) No.       1935/2004       ± 1% of Reading (Better Accuracy         Electrical Cover (for Cable Coverction)       316L Stainless Steel       Option M4:       ± 1% of Reading W/ Optional         Cable Entry:       M16 Stainless Steel       Additional Max. Inaccuracy       Thereperature error referenced to         Magnet Encapsulation       Tool 1/2* NPT Adapter       remperature:       analog output -CT: < 200ppm/K         Magnet Encapsulation       Steel Coated with GEOMET® 321       Protection Class: ± 0.15% full scale       Temperature:         for Aluminum Housing:       Stainless Steel (Standard)       Steel Coated with GEOMET® 321       Media Temperature       -4176 °F         DON-X04DON-x25:       Ste			DON-x20DON-x60	-
Gears:       PPS GF30/PTFE, PEEK       ± 0.2% of Reading w/ Optional         Axles:       316L Stainless Steel       23/3A Electronics w/ Linearization         O-Rings (Media Temperature Limits)       Function       Function         FKM:       -4300 °F       PS Rotors:       ± 1% of Reading w/ Optional         Standard:       5248 °F       ± 0.5% of Reading w/ Optional         (only for DON-x04DON-x40)       PPS Rotors:       ± 1% of Reading (Potional         Fluoroprene®:       -4300 °F Acc. to Regulation (EC) No. 1935/2004       POtion M4:       ± 1% of Reading (Better Accuracy for higher viscosities on request)         Additional Max. Inaccuracy for Stainless Catel       Polyamide PA6 GF35 UL94 HB/VO 0ptional:       Option M4:       ± 1% of Reading (Better Accuracy for Beading w/ Optional         Standard:       Polyamide PA6 GF35 UL94 HB/VO 0ptional:       Option M4:       ± 1% of Reading (Datter Accuracy for Stainless Steel         Cable Entry:       M20 x 1.5 or 1/2" NPT Adapter       Additional Max. Inaccuracy frequency output -CT < 200ppm/K frequency output -CT < 200ppm/K for Aluminum Housing:       Stainless Steel (Standard) Steel Coated with GEOMET® 321 (optional) for Higher Pressure Rating (See Order Details)       Repeatability:       ± 0.03% Typical         Frequency output -CT < 200ppm/K requency output -CT < 200ppm/K for Stainless Steel (Standard) Steel Coated with GEOMET® 321 (optional) for H	DON-x20DON-x60:			± 0.5% of Reading:
Axles:     316L. Stainless Steel     Z3/3A. Electronics w/ Linearization       O-Rings (Media Temperature:     4300 °F     Function       FKM:     4300 °F     29° Rotors:     ± 1% of Reading:       NBR:     4300 °F     23/3A. Electronics w/ Linearization       FEP with EPDM/FKM core:     5248 °F     ± 0.5% of Reading: w/ Diponal       (only for DON-x04DON-x40)     Function     23/3A. Electronics w/ Linearization       Fluoroprene®:     4300 °F. Acc. to Regulation (EC) No.     23/3A. Electronics w/ Linearization       Standard:     Polyamide PA6 GF35 UL94 HB/OO     Option M4:     ± 1% of Reading (Better Accuracy for Signal Outputs)       Additional Max. Inaccurse     analog output 4-20mA for -Lx and -2x electronics: ± 0.15% full scale       Cable Entry:     M20 x 1.5 or 1/2* NPT Adapter     for Elec. Signal Outputs)     analog output -CT: < 200ppm/K       DN-x04 DON-x10:     PEEK     analog output -CT: < 100ppm/K       DN-x15 DON-x06:     16L Stainless Steel     Protection Class:     10 °6 /67 (10 °6 / 10 °6	Gears:	PPS GF30/PTFE, PEEK		0
O-Rings (Media Temperature limits)       Function         FKM:       -4300°F       PPS Rotors:       ± 1% of Reading;         NBR:       -4212 °F       ± 0.5% of Reading w/ Optional         NBR:       -4200*FAcc: to Regulation (EC) No.       23/3A Electronics w/ Linearization         (m) for DON-x04DON-x40,       Portion Mat:       ± 1% of Reading (Better Accuracy         1935/2004       -4300°F Acc: to Regulation (EC) No.       23/3A Electronics w/ Linearization         Fluoroprene®:       -4300°F Acc: to Regulation (EC) No.       21% of Reading (Better Accuracy         935/2004       -4300°F Acc: to Regulation (EC) No.       21% of Reading (Better Accuracy         Fluoroprene®:       -4300°F Acc: to Regulation (EC) No.       21% of Reading (Better Accuracy         5000       -4300°F Acc: to Regulation (EC) No.       21% of Reading (Better Accuracy         60tional:       316 Stainless Steel       Additional Max: Inaccurrey         60tional:       161 Stainless Steel       analog output 4-20mA for -Lx and         0DN-x04DON-x06:       316 Stainless Steel       Portion Class:       analog output -CT: <100pm/K         DON-x04DON-x06:       316 Stainless Steel       Portection Class:       0.03% Typical         for Aluminum Housing:       Stainless Steel (Standard)       Media Temperature       -41	Axles:	316L Stainless Steel		
NBR:       -4212 °F       ± 1% of Heading;         FEP with EPDM/FKM core:       5248 °F       23/3A Electronics w/ Linearization         (only for DON-x04DON-x40)       Function       23/3A Electronics w/ Linearization         Fluoroprene®:       -4300 °F Acc. to Regulation (EC) No. 1935/2004       ± 1% of Reading; w/ Uptional         Electrical Cover (for Cable Connection)       -4300 °F Acc. to Regulation (EC) No. 1935/2004       Option M4:       ± 1% of Reading; M/ Uptional         Standard:       Polyamide PA6 GF35 UL94 HB/VO Optional:       316L Stainless Steel       Additional Max. Inaccuracy for higher viscosities on request)         Cable Entry:       M20 x 1.5 or 1/2" NPT Adapter       analog output 4-20mA for -Lx and -Zx electronics: ± 0.15% full scale         DON-x04 DON-x60:       316L Stainless Steel       Temperature error referenced to room temperature: analog output -CT: <100ppm/K         Screw Material       Steel Coated with GEOMET® 321 (or DON-225 and DON-825)       Protection Class:       IP 66/67 (IP 65 for M4)         Media Temperature       -4176 °F       -4176 °F         OptionLx,Zx,MV w/ Puise Out and OptionTx, w/ Cooling Fins:       -428 °F         OptionTo:       -4302 °F       Models with PS/ PEEK Rotors:       Max. 176 °F         For Stainless Steel (Standard)       Steel Coated with GEOMET®321 (optional) for Higher Pressure Rating (See Order Details)	O-Rings (Media Temperature	e Limits)		
NBR:       -4212 °F       ± 0.5% of Reading w/ Optional         FEP with EPDM/FKM core:       5248 °F       Z3/3A Electronics w/ Linearization         (only for DON-x04DON-x40)       Function       Function         Fluoroprene*:       -4300 °F Acc. to Regulation (EC) No.       1935/2004       Option M4:       ± 1% of Reading (Better Accuracy for higher viscosities on request)         Electrical Cover (for Cable Connection)       316L Stainless Steel       Additional Max. Inaccuracy       for higher viscosities on request)         Standard:       Polyamide PA6 GF35 UL94 HB/VO       Option M4:       ± 1% of Reading (Better Accuracy for higher viscosities on request)         Cable Entry:       M20 x 1.5 or 1/2° NPT Adapter       Additional Max. Inaccuracy       for Elec. Signal Outputs:       analog output 4-20mA for -Lx and         DON-x04 DON-x10:       PEEK       analog output -CT: < 200ppm/K       frequency output -CT: < 100ppm/K         DON-x04 DON-x60:       316L Stainless Steel       Repeatability:       ± 0	FKM:	-4300°F	PPS Rotors:	± 1% of Reading:
FEP with EPDM/FKM core:       5248 °F (only for DON-x04DON-x40)       Z3/3A Electronics w/ Linearization Function         Fluoroprene®:       -4300 °F Acc. to Regulation (EC) No. 1935/2004       Option M4:       ± 1% of Reading (Better Accuracy for higher viscosities on request)         Electrical Cover (for Cable Contextion)       Magnet Encapsulation       Additional Max. Inaccuracy for Elec. Signal Outputs:       analog output 4-20mA for -Lx and -Zx electronics: ± 0.15% full scale         Cable Entry:       M20 x 1.5 or 1/2* NPT Adapter       malog output -CT: < 200ppm/K full scale         DON-x04 DON-x10:       PEEK       analog output -CT: < 200ppm/K         DON-x15 DON-x60:       316L Stainless Steel       requercy output -CT: < 100ppm/K         Screw Material       for Aluminum Housing:       Stainless Steel (Standard) Steel Coated with GEOMET® 321 (for DON-225 and DON-825)       Protection Class:       IP 66/67 (IP6 5 for M4)         for Stainless Steel Housing:       Steel Coated with GEOMET® 321 (optional, for Higher Pressure Rating (See Order Details)       Steel Coated with GEOMET®321 (option	NBR:	-4212 °F		-
Image: Image	FEP with EPDM/FKM core:	5248°F		0
Fluoroprene®:       -4300 °F Acc. to Regulation (EC) No. 1935/2004       Dotion M4:       ± 1% of Reading (Better Accuracy for higher viscosities on request)         Electrical Cover (for Cable Connection)       Main and go utput 4-20m A for -Lx and 316L Stainless Steel       Additional Max. Inaccuracy for Elec. Signal Outputs:       analog output 4-20m A for -Lx and -Zx electronics: ± 0.15% full scale         Cable Entry:       M20 x 1.5 or 1/2" NPT Adapter       Temperature error referenced to room temperature:       Temperature:         DON-x04 DON-x10:       PEEK       analog output -CT: < 200ppm/K frequency output -CT: < 200ppm/K         Screw Material       For Aluminum Housing:       Stainless Steel (Standard) Steel Coated with GEOMET® 321 (for DON-225 and DON-825)       Protection Class:       IP 66/67 (IP 65 for M4)         for Stainless Steel Housing:       Steel Coated with GEOMET® 321 (optional) for Higher Pressure Rating (See Order Details)       Steel Coated with GEOMET®321 (optional) for Higher Pressure Rating (See Order Details)       Mex. 176 °F         Models with PS/JPEEK Rotors:       Max. 176 °F		(only for DON-x04DON-x40)		
1935/2004     for higher viscosities on request)       Electrical Cover (for Cable Connection)       Standard:     Polyamide PA6 GF35 UL94 HB/VO       Optional:     316L Stainless Steel       Cable Entry:     M20 x 1.5 or 1/2" NPT Adapter       Magnet Encapsulation     requency output -CT: < 200ppm/K	Fluoroprene®:	-4300°F Acc. to Regulation (EC) No.	Option M4:	
Electrical Cover (for Cable Connection)       Additional Max. Inaccuracy         Standard:       Polyamide PA6 GF35 UL94 HB/VO         Optional:       316L Stainless Steel         Cable Entry:       M20 x 1.5 or 1/2" NPT Adapter         Magnet Encapsulation       remperature error referenced to         DON-x04 DON-x10:       PEEK         DON-x04 DON-x60:       316L Stainless Steel         Screw Material       requency output -CT: < 200pm/K         for Aluminum Housing:       Stainless Steel (Standard)         Steel Coated with GEOMET® 321       (for DON-225 and DON-825)         for Stainless Steel Housing:       Stainless Steel (Standard)         Steel Coated with GEOMET® 321       (optional) for Higher Pressure Rating         (bottomal) for Higher Pressure Rating       Steel Coated with GEOMET®321         (optional) for Higher Pressure Rating       Steel Coated with GEOMET®321         (optional) for Higher Pressure Rating       Option		1935/2004	option m4.	0
Standard:Polyamide PA6 GF35 UL94 HB/VOfor Elec. Signal Outputsanalog output 4-20mA for -Lx and -Zx electronics: ± 0.15% full scaleOptional:316L Stainless SteelTemperature error referenced to room temperature:DON-x04 DON-x10:PEEKanalog output -CT: < 200ppm/KDON-x15 DON-x60:316L Stainless SteelFeepeatability:Screw MaterialYet Coated with GEOMET® 321 (for DON-225 and DON-825)Protection Class:for Stainless Steel Housing:Stainless Steel (Standard) Steel Coated with GEOMET® 321 (for DON-225 and DON-825)Media Temperature: -4176 °F DON-1/3/8/9:for Stainless Steel Housing:Stainless Steel (Standard) Steel Coated with GEOMET® 321 (for DON-225 and DON-825)Media Temperature: -4176 °F DON-1/3/8/9:-4176 °F -4248 °Ffor Stainless Steel Housing:Steel Coated with GEOMET® 321 (optional) for Higher Pressure Rating (See Order Details)OptionLx,Zx,M4: -4176 °F-4176 °F -4248 °FModels with PPS/PEEK Rotors:Max. 176 °F -4176 °F-4176 °F -4176 °FModels with PPS/PEEK Rotors:Max. 176 °F -4176 °FModels with PPS/PEEK Rotors:Max. 176 °F -4140 °FModels with PS/PEEK Rotors:-4176 °F -4140 °FMotels with PS/PEEK Rotors:-4176 °F -4140 °FMotels With Option TA:-4140 °F -4140 °FOption M4: Option TC:-4140 °F -4140 °FOption Y to 5A: Option CT:-4140 °F -4140 °F	Electrical Cover (for Cable C	connection)	Additional Max Inaccurac	0
Optional:       316L Stainless Steel       -Zx electronics: ± 0.15% full scale         Cable Entry:       M20 x 1.5 or 1/2" NPT Adapter       Temperature error referenced to         Magnet Encapsulation       room temperature:       analog output -CT: < 200ppm/K         DON-x04 DON-x10:       PEEK       analog output -CT: < 200ppm/K         DON-x15 DON-x60:       316L Stainless Steel       Feepeatability:       ± 0.03 % Typical         Screw Material       Protection Class:       IP 66/67 (IP65 for M4)         Media Temperature       -4176 °F         Joon-x25 and DON-825)       OptionsLx, .Zx,M4:       -4176 °F         Joon-1/38/9:       -4176 °F         DON-2/24 w/ Pulse Out and       OptionZx w/ Cooling Firs:       -4248 °F         OptionTo:       -4248 °F       OptionTo:       -4248 °F         OptionTo:       -4248 °F       OptionTo:       -4248 °F         OptionTo:       -4248 °F       OptionTo:       -4248 °F         Option M4:       32140 °F       Models with       PS/PEEK Rotors:       Max. 176 °F         Models with       PS/PEEK Rotors:       Max. 176 °F       Models with       PS/PEEK Rotors:       Max. 176 °F         Option M4:       32140 °F       Option M4:       3	Standard:	Polyamide PA6 GF35 UL94 HB/VO		•
Cable Entry:       M20 x 1.5 or 1/2" NPT Adapter       Temperature error referenced to room temperature:         Magnet Encapsulation       room temperature:       analog output - CT: < 200ppm/K	Optional:	316L Stainless Steel	ior Elec. Signal Outputs.	0
Magnet Encapsulation       room temperature:         DON-x04 DON-x10:       PEEK         DON-x15 DON-x60:       316L Stainless Steel         316L Stainless Steel       frequency output -CT: < 200ppm/K         Screw Material       frequency output -CT: <100ppm/K         for Aluminum Housing:       Stainless Steel (Standard)         Steel Coated with GEOMET® 321 (for DON-225 and DON-825)       Protection Class:       IP 66/67 (IP65 for M4)         for Stainless Steel Housing:       Stainless Steel (Standard)       Media Temperature         Steel Coated with GEOMET® 321 (for DON-225 and DON-825)       OptionsLx,Zx,M4: -4176 °F         DON-1/3/8/9:       -4176 °F         DON-2/4 w/ Pulse Out and       OptionZx w/ Cooling Fins: -4248 °F         OptionT0:       -4302 °F         Models with       PPS /PEEK Rotors:       Max. 176 °F         Option M4:       32140 °F         Ambient Temperature:       -4176 °F         Option M4:       32140 °F         Option S 1A to 5A:       -4140 °F         Option T0:       -4140 °F         Option T0:       -4140 °F         Option T0:       -4140 °F	Cable Entry:	M20 x 1.5 or 1/2" NPT Adapter		
DON-x04 DON-x10:PEEKanalog output -CT: < 200ppm/K	•			
DON-x15 DON-x60:       316L Stainless Steel       frequency output -CT: <100ppm/K	0	PFFK		
Screw MaterialRepeatability:± 0.03 % Typicalfor Aluminum Housing:Stainless Steel (Standard) Steel Coated with GEOMET® 321 (for DON-225 and DON-825)Protection Class:IP 66/67 (IP 65 for M4)for Stainless Steel Housing:Stainless Steel (Standard) (for DON-225 and DON-825)Media Temperature OptionsLx,Zx,M4:-4176 °F DON-1/3/8/9:for Stainless Steel Housing:Stainless Steel (Standard) (optional) for Higher Pressure Rating (See Order Details)OptionZx w/ Cooling Fins:-4248 °F -4302 °FModels with PPS/PEEK Rotors:Max. 176 °F 4176 °F Option M4:Max. 176 °F -4140 °F Options 1A to 5A:Max. 176 °F -4140 °F -4140 °F (at Tmedia ≤ 158°F)				<b>o</b> 1
Screw Material       Protection Class:       IP 66/67 (IP65 for M4)         for Aluminum Housing:       Stainless Steel (Standard)       Media Temperature         Steel Coated with GEOMET® 321 (for DON-225 and DON-825)       OptionsLx,Zx,M4:       -4176 °F         for Stainless Steel Housing:       Stainless Steel (Standard)       OptionTo:       -4248 °F         Steel Coated with GEOMET®321 (optional) for Higher Pressure Rating (See Order Details)       OptionTo:       -4302 °F         Models with PPS/PEEK Rotors:       Max. 176 °F       Models with         PS/PEEK Rotors:       Max. 176 °F         Option M4:       32140 °F         Options 1A to 5A:       -4140 °F         Option CT:       -4140 °F			Repeatability:	
for Aluminum Housing:       Stainless Steel (Standard) Steel Coated with GEOMET® 321 (for DON-225 and DON-825)       Media Temperature OptionsLx,Zx,M4: -4176 °F DON-1/3/8/9: -4176 °F         for Stainless Steel Housing:       Stainless Steel (Standard) Steel Coated with GEOMET®321 (optional) for Higher Pressure Rating (See Order Details)       Media Temperature OptionLx,Zx,M4: -4176 °F         PON-1/3/8/9: DON-2/4 w/ Pulse Out and OptionT0: (See Order Details)       -4302 °F         Models with PPS/PEEK Rotors:       Max. 176 °F         Ambient Temperature: Option M4: Option State of Complexities       -4140 °F         Option CT: Option CT:       -4140 °F	Sorow Matarial			
Steel Coated with GEOMET® 321 (for DON-225 and DON-825)       OptionsLx,Zx,M4:       -4176 °F         for Stainless Steel Housing: Stainless Steel (Standard)       DON-1/3/8/9:       -4176 °F         Steel Coated with GEOMET®321 (optional) for Higher Pressure Rating (See Order Details)       OptionT0:       -4302 °F         Models with PPS/PEEK Rotors:       Max. 176 °F         Ambient Temperature:       -4176 °F         OptionT0:       -4302 °F         Models with PPS/PEEK Rotors:       Max. 176 °F         Option M4:       32140 °F         Options 1A to 5A:       -4140 °F         Option CT:       -4140 °F (at Tmedia ≤ 158°F)				
Image: constant of the object with GLOWE TWORD OF Stainless Steel With GLOWE TWORD OF Stainless Steel (Standard)       DON-1/3/8/9:       -4176 °F         for Stainless Steel Housing: Stainless Steel (Standard)       OptionZx w/ Cooling Fins:       -4248 °F         Steel Coated with GEOMET®321       OptionT0:       -4302 °F         Models with       PPS/PEEK Rotors:       Max. 176 °F         PPS/PEEK Rotors:       Max. 176 °F         Option M4:       32140 °F         Option S1A to 5A:       -4140 °F         Option CT:       -4140 °F (at Tmedia ≤ 158°F)	for Aluminum Housing:			-4 176°F
for Stainless Steel Housing: Stainless Steel (Standard)       OptionZx w/ Cooling Fins: -4248 °F         Steel Coated with GEOMET®321       OptionT0:       -4302 °F         Models with       PPS/PEEK Rotors:       Max. 176 °F         Steel Corder Details)       Ambient Temperature:       -4176 °F         Option M4:       32140 °F         Options 1A to 5A:       -4140 °F         Option CT:       -4140 °F (at Tmedia ≤ 158°F)				
Steel Coated with GEOMET®321       OptionT0:       -4302 °F         (optional) for Higher Pressure Rating       PPS/PEEK Rotors:       Max. 176 °F         (See Order Details)       Ambient Temperature:       -4176 °F         Option M4:       32140 °F         Options 1A to 5A:       -4140 °F         Option CT:       -4140 °F (at Tmedia ≤ 158°F)				4 04005
Steer Coated with GEOME (6321)       Models with         (optional) for Higher Pressure Rating       PPS/PEEK Rotors:       Max. 176 °F         (See Order Details)       Ambient Temperature:       -4176 °F         Option M4:       32140 °F         Options 1A to 5A:       -4140 °F         Option CT:       -4140 °F (at Tmedia ≤ 158°F)	for Stainless Steel Housing	, ,		
(See Order Details)       Ambient Temperature:       -4176 °F         Option M4:       32140 °F         Options 1A to 5A:       -4140 °F         Option CT:       -4140 °F (at Tmedia ≤ 158°F)			•	-+002 1
Option M4:         32140 °F           Options 1A to 5A:         -4140 °F           Option CT:         -4140 °F (at Tmedia ≤ 158°F)			PPS/PEEK Rotors:	
Options 1A to 5A:         -4140 °F           Option CT:         -4140 °F (at Tmedia ≤ 158°F)		(See Order Details)	•	
Option CT:         -4140 °F (at Tmedia ≤ 158°F)			•	
			-	
				,

\*\* Reference Conditions: DON-x10...x60 (Calibration Oil, 4.6 cSt, 77 °F, 14 PSIG) DON-x04, DON-x05 and DON-x15 for higher viscosities (Calibration Oil, 10 cSt, 68 °F, 14 PSIG) Accuracy data is valid for given viscosities and higher



ATEX-Approval Mechanical Explosion Protection:	II 2G Ex h IIC T4/T3 Gb	D
Options 1A/2A/3A/5A:		
Intrinsically Safe	<ul> <li>II 2G Ex ia IIC T4 Gb</li> </ul>	
-	(-20 °C ≤ Ta ≤ +60 °C)	
Options HE, DE, BE, KE, GE, LE:		
Flameproof Enclosure	II 2G Ex db IIC T4/T6 C	Gb
	I M2 Ex db I Mb	
Options HA, DA, BA, KA, GA:		
Intrinsically Safe	II 3G Ex ic IIC T4/T3 G	С
IECEx - Approval		
Options HE, DE, BE, KE, GE, LE:		
Flameproof Enclosure	Ex db IIC T4 Gb	
	Ex db I Mb	

Maximum Pressure (Threaded Models)

	Maximum Pressure (PSI)					
Model	DON-1/3	DON- DON-1 2/4/8/9 (Option-M4)		DON-2/8 (Option-M4)		
DON-x04			-	-		
DON-x05		1450	-	-		
DON-x10	925	1450	-	-		
DON-x15	925			-	-	
DON-x20		1000*	580	580		
DON-x25		870*				
DON-x30	580	725				
DON-x35	560	125	435	435		
DON-x40						
DON-x45		230				
DON-x50	230		230 2	230	230	
DON-x55						
DON-x60						

With flanges: Maximum pressure rating as above or as per flange rating, whichever is lower. \* Max pressure of 1450 psi possible with steel screws (see order details)

#### Pulse Output (.. H0/HE/HA)

Options H0/HE/HA are equipped with a Reed switch pulse output and a Hall sensor pulse output:

#### **Reed Switch Pulse Output**

The reed switch output is a two wire, normally open, SPST, voltage free contact ideal for installations without power or for use in hazardous area locations where Intrinsically Safe (I.S.) is required. Note: when using the reed switch output, the liquid temperature must not change at a rate greater than 18 °F per minute.

Average switching life of reed contact (MTTF): Max. Load (30 V/10 mA)  $5 \times 10^5$  switching cycles Min. Load (<5 V/10 mA)  $5 \times 10^8$  switching cycles Switching Capacity: Max. 30 V<sub>DC</sub>, Max. 20 mA

#### Hall Sensor Pulse Output

With this signal output, a Hall Effect sensor is combined with an active push-pull output. The signal output is actively switched either to +Vs or to ground. No additional external circuit is required (e.g. pull-up resistor). The "high" signal is approximately equal to the supply voltage +Vs and the "low" signal is approximately 0 V. The electronic utilizes a 3-wire connection with an external supply voltage of 8...30  $V_{DC}$ . The electrical load may be optionally connected to the supply voltage or to GND. Maximum output current (current source or sink): 100 mA (short circuit protected).

#### Hall Sensor Pulse Output (.. HU)

Like option H0, except an NPN output in place of the push-pull output and a supply voltage of 5-30  $\rm V_{\rm pC}$ 

#### Hall Sensor Pulse Output, (.. B0/BE/BA)

Like options H0/HE/HA; however with bipolar sensors and alternating polarized magnets. This option is used for pulsating flow, but is not equipped with a Reed switch and has half the k-factor value as compared to H0/HE/HA.

## High-Resolution Hall Sensor Pulse Output, (..G0/GE/GA, ..K0/KE/KA)

Like options H0/HE/HA; the models DON-x05 and DON-x10 can be supplied with four times the pulse count per volume unit (..G0/GE/GA) and models DON-x05, DON-x10 and DON-x15 with double the amount of pulses (..K0/KE/KA) (See table «Output Pulse Resolution» on the following pages).

#### Quadrature Hall Effect Pulse Output (..D0/DE/DA)

The DON with option D0/DE/DA provides two independent Hall sensors. They are arranged to give separate outputs out of phase with one another.

The QUAD output is mostly suitable for detecting bidirectional flows (detection of flow direction) or where a redundant signal is desirable. Maximum output current per channel (current source or sink): 100 mA (short circuit protected).

#### Analog Output (..L0/LE)

The options L0 and LE (Exd) are available with a loop-powered 4-20 mA output. The loop must be powered with an external, 16...32  $V_{DC}$  power supply. The maximum resistance of the series loads (PLC analog input/display electronics) depends on the magnitude of the supply voltage and can be calculated as follows:

Max. load [Ohm] = (+Vs - 9  $V_{DC}$ ) / 0.02 A [ $\Omega$ ]

Example: +Vs = 32  $V_{\text{DC}}$  = > max. load = 1150  $\Omega$ 

+Vs = 16 V<sub>DC</sub> => max. load = 350  $\Omega$ 

The load can be inserted at any point in the current loop, observing correct polarity.

#### Mechanical Totalizer (...M4)

The DON-x20.. through DON-x60.. are available with a 4-digit resettable totalizer and indication of accumulated total value. The motion of the rotors is transmitted to the mechanical register totalizer via an interfacing reduction gear train and dynamic seal assembly. Option M4 is available in liters and gallons for DON-x20.. through DON-x40.., and in 10 liters and 10 gallons for DON-x45.. through DON-x60..

Body Material: Enameled Die-cast Aluminum, Powder-coated Protection: IP 65

Ambient Temp: 32...140 °F Media Temp: -4...176 °F

#### Recommended Filter (for example model MFR-DO..):

DON-x04 ... DON-x15 < 75 μm (200 mesh) DON-x20 ... DON-x35 < 150 μm (100 mesh) DON-x40 ... DON-x60 < 350 μm (45 mesh)



#### Electronic with LCD Display

Model	Z1	Z2	Z3	Z5	ZE	ZB	1A	2A	3A	5A
Function	Dual Totalizer	Batching Unit		Rate/Te	otalizer		Dual Totalizer	Batching Unit	Rate/Totalizer	Rate/Totalizer
		•	•	F	Power Supp	oly				
External	5-28 V <sub>DC</sub>	12-28 V <sub>DC</sub>	5-28	B V <sub>dc</sub>	9-28 V <sub>DC</sub>	-		$I_i = I_i$	= 28 V 100 mA = 0.7 W	_
Battery-Operation (Outputs Inactive) <sup>2)</sup>	yes	no	yes	no	yes	yes	yes	no	yes	no
Battery Included in Shipment <sup>3)</sup>	yes	-	yes	-	yes	yes	yes	-	yes	-
		•			LCD Displa	y				•
Selectable Units	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Decimal Point	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Accumulative Total	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Resettable Total	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Linearization	yes	no	yes	yes	yes	yes	yes	no	yes	yes
Rate Display	yes	yes	yes	yes	yes	yes	yes	yes	yes	yes
Backlighting	yes	yes	yes	yes	yes	no	no	no	no	no
					Input					
Sensors					Hall Se	ensor/Reed	Switch			
					Outputs					
4-20 mA	no	no	yes	yes	no	no	no	no	yes	yes
Flow Rate Alarm Min./Max.	no	no	NPN/PNP/ Push-Pull	NPN/PNP/ Push-Pull	no	no	no	no	no	with Solid State Relay Board
Batch End & Control	no	yes	no	no	no	no	no	yes	no	no
Pulse Output	no	no	Push-Pull	Push-Pull	Push-Pull	no	no	no	no	with Solid State
2 x SPDT Relays <sup>1)</sup>	no	yes	no	yes	no	no	no	with Solid State Relay Board	no	Relay Board
					Installation	1				
IP 65	yes	yes	yes	yes	IP 66/67	IP 66/67	yes	yes	yes	yes
Cable Entries					M2	0x1.5 or ½"	NPT			
Media Temperature Range (Cooling Fin Option: Max. 250 °F)						-4176 °I	=			
Ambient Temperature Range	-4 176 °F 32 140 °F									
Housing Material	PA6 GF35 UL94 HB/VO/PC UL94 V-2									
0										

 $^{\mbox{\tiny 1)}}$  Replaces solid state outputs, for details see ZOK Datasheet

<sup>2)</sup> Battery operation only applicable with the reed switch sensor option of electronics options H0/HE/HA

<sup>3)</sup> Options Z5, Z6, Z7, Z8, and Z9 are shipped without batteries



#### U-PACE electronics (...CT)

The universal U-PACE electronics (Universal Precision and Control Electronics, order code C3T0) features two outputs arbitrarily configurable by the customer. In addition, the U-PACE electronics offers various diagnostic functions and the following features:

- Flow and temperature measurement
- Monitoring, batching and transmitter function
- Batch function with external control input
- Colored, multi-parameter configurable TFT-display, rotatable in 90°steps
- Bidirectional measurement
- Intuitive steup menu via 4 optical touch keys
- 2 configurable outputs (pulse-/frequency-/alarm- and analog output)
- Grand and resettable totallizer
- IO link function

### Materials

Housing:	aluminum for DON-1 and DON-3
Display	316L SS for DON-2,4,8,9
Display:	PC
Housing Screw Cap: Electrical Details U-PACE	PA6
	10.20 V internal neuror
Supply voltage:	19-30 $V_{DC}$ , internal power
Disalar	consumption max. 200mA
Display:	TFT display, 128 x 128 pixels,
	1.4" display orientation in 90° steps
	adjustable
Display repetition rate:	0.5 10s, adjustable
Pulse output:	Push-Pull, freely scalable, configurable
	for partial and accumulated totalizer
Frequency output:	Push-Pull, freely scalable,
	2kHz @ overflow
	f <sub>min</sub> @ FS = 50 HZ
	f <sub>max</sub> @ FS = 1000 HZ
Alarm output:	NPN, PNP, Push-Pull
	configurable max. 30 V <sub>DC</sub>
	max. 200mA short-circuit proof
Analog output:	active, 3 wire, 0(4)-20 mA,
	max. load 500 or 0(2)-10 V <sub>DC</sub> ,
	(R <sub>i</sub> = 500Ω)
	factory calibrated with $R_L = 1M$ )
Control input:	active signal U <sub>high</sub> max. 30 V <sub>DC</sub>
	0 < Low < 10 V <sub>DC</sub>
	$15 V_{DC} < High < V_s$
Batching function:	Batching output OUT2:
	Push-Pull, High active
	Control input OUT 1:
	START/STOP 0.5 s $< t_{high} < 4$ s
	RESET t <sub>hiah</sub> < 5 s
Response time electrical	ngn
outputs:	Size X05 to X20 and
	X45 to X60: < 1.5 s

Size Z25 to X40: < 0.5 s

#### Temperature measurement

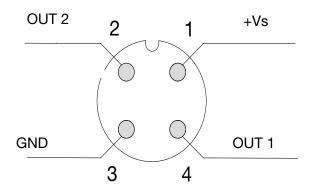
Meas. range:	-4176°
Accuracy:	± 1.8° F
Response time t <sub>90</sub>	
(Sensor)	< 30 sec

#### **Configuration of outputs**

Output 1 (OUT1, PIN4)	Output 2 (OUT2, PIN2)
Analog output 4-20 mA	Analog output 4-20 mA
Analog output 0-20 mA	Analog output 0-20 mA
Analog output 2-10 V	Analog output 2-10 V
Analog output 0-10 V	Anaog output 0-10 V
Switching output NPN/PNP/PP	Switching output NPN/PNP/PP
Pulse output PP	Pulse output PP
Frequency output PP	Frequencey output PP
Communication mode KofiCom	
Communication mode IO-Link	
Control Input	
Control input batching function	Batching output

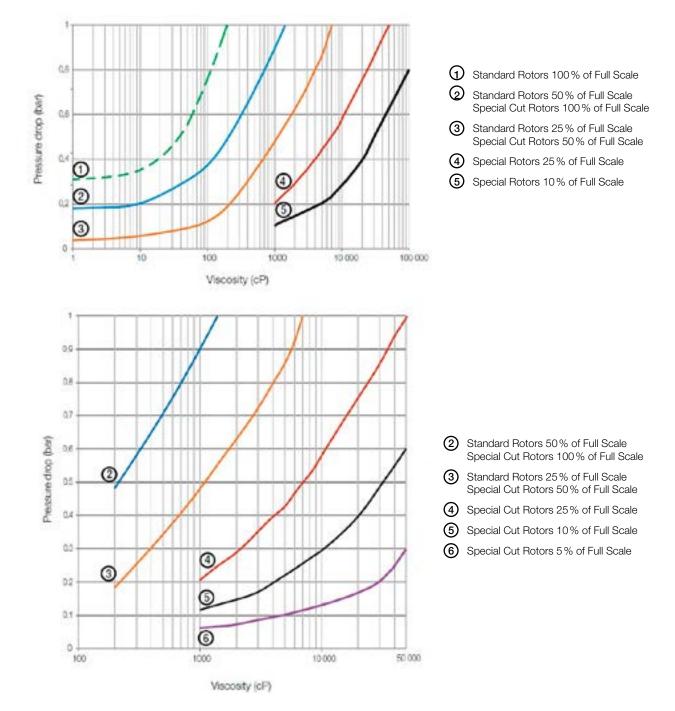
#### **IO-Link specification**

Manufacturer ID:	1105 (decimal), 0 x 0451 (hex)
Manufacturer name:	Kobold Messring GmbH
IO-Link specification:	V1.1
Bitrate:	COM3
Minimal cycle time:	1.1 ms
SIO-Mode:	yes (OUT1 in configuration IO-Link)
Block parameterization:	yes
Operational readiness:	10 s
Max. cable length:	20 m





## DON Pressure Drop Versus Viscosity Curves



#### Pressure Drop Limit Versus Flowrate

The curves above represent the pressure drop for standard cut oval rotors. Special cut rotors of DON-3/4/9 have alternate tooth relief which effectively reduces the pressure drop by 50%. When sizing a meter, be sure your selection falls below the 1 bar (14.5 PSI) maximum allowable pressure drop line on the graph.



#### Maximum Flowrate Multiplier (for Higher Viscosities)

Viscosity (cPs)	Standard Rotor	Special Cut Rotor
≤ 1,000	1	1
≤ 2,000	0.5	1
≤ 4,000	0.42	0.84
≤ 6,000	0.33	0.66
≤ 8,000	0.25	0.5
≤ 30,000	0.15	0.3
≤ 60,000	0.12	0.25
≤ 150,000	0.1	0.2
≤ 250,000	0.05	0.1
≤ 1,000,000	0.025	0.05

#### **Special Cut Rotors for Higher Viscosities**

For viscosities > 1000 cP, special cut rotors of DON/3/4/9 are normally required to keep the maximum pressure drop from exceeding acceptable levels. This option applies to DON-x15 and larger sizes. For higher viscosities, the flowmeter max. flowrate is derated according to the table above. At viscosities < 1000 cP these special rotors are less accurate Example:

DON-x25G measuring viscous oil at 8000 cP:

max. flow of 40 GPM x 0.5 = 20.0 GPM new max. flow rate.

(CPS)	Rotor	Rotor
≤ <b>1,000</b>	1	1
≤ 2,000	0.5	1
≤ 4,000	0.42	0.84
≤ 6,000	0.33	0.66
≤ 8,000	0.25	0.5
≤ <b>30,000</b>	0.15	0.3
≤ 60,000	0.12	0.25
≤ 150,000	0.1	0.2
≤ 250,000	0.05	0.1
< 1.000.000	0.025	0.05

### Noise Level (in dB) at Full Scale

Size	PPS Gears	SS Gears
x25	83	91
x30	84	93.1
x35	83.5	95
x40	85.4	96
x45	87.5	98
x50	86.1	99.4
x55	86.1	98.1
x60	85	99

#### Information Required for Order:

To ensure proper operation, this product requires a completed application guide form to be submitted with any order. Please refer to the 'documentation' tab on the bottom of the product page for this product on our website in order to obtain the correct form. You can also contact your KOBOLD representative for this form.

	Flow Range (GPM)	Pulse per Gallon							
Model		Reed Switch H	Hall Sensor Ix	Hall Sensor Bx	Quadrature- Hall Sensor Dx	Hall Sensor, High-Resolution Gx	Hall Sensor, High-Resolution Kx		
DON-x04	0.139.5 GPH	10107	10107		10093	42851	20214		
DON-x05	0.139.5 GPH	10107	10107		10093	42851	20214		
DON-x10	0.527 GPH	4020	4020		4020	16080	8040		
DON-x15	4145 GPH	1329	2657	1329	2657		5315		
DON-x20	0.2610.6	310	617	310	617				
DON-x25	2.640	98	394	98	197				
DON-x30	4.066	51	208	51	102				
DON-x35	8.0120	24.2	96.5	24.2	51.1				
DON-x40	13150	18.5	74.2	18.5	37.1				
DON-x45	10200	9.7	39.0	9.7	19.5				
DON-x50	13260	5.7	22.3	5.7	11.4				
DON-x55	20400	3.97	15.9	3.97	7.95				
DON-x60	40660	2.12	8.71	2.12	4.35				

#### **Nominal Output Pulse Resolution\***

\*The output resolution values listed in the above table are only approximate values. The exact output resolution value is noted within the calibration certificate delivered with each flowmeter.

**Oval Gear Flowmeter Model DON** 



#### Order Details (Example: DON-105G N1 1 L0 N 0)

	Housin	g/Rotor M	aterial <sup>4)</sup>						
Measuring Range	Aluminum with PPS/ PEEK <sup>12)</sup> Rotor	Stainless Steel	St. Steel with PPS/PEEK <sup>12)</sup> Rotor	Connection	O-ring Material	Electronic/Display	Cable Entry	Option	
0.139.5 GPH	DON-104G	DON-204G	DON-804G	N1 = ¼"NPT R1 = G %		H0 = Pulse Output Hall Sensor (Push-Pull)/ Reed Switch HU <sup>14)</sup> = Pulse Output Hall Sensor			
0.139.5 GPH	DON-105G	DON-205G	DON-805G	N1 = <sup>1</sup> / <sub>8</sub> "NPT R1 = G <sup>1</sup> / <sub>8</sub>		(NPN)/Reed Switch, Supply 5-30 V <sub>DC</sub> B0 <sup>9</sup> = Pulse Output Hall			
0.527 GPH	DON-110G	DON-210G	DON-810G	N2 = 1/4"NPT R2 = G 1/4		Sensor (Push-Pull) for Pulsating Flow T0 <sup>8</sup> ) = Pulse Output Hall			
4145 GPH	DON-115G	DON-215G	DON-815G	N3 = ¾"NPT R3 = G ¾		Sensor (Push-Pull), High-Temp 300 °F Max. K0 <sup>9</sup> = Pulse Output Hall			
0.2610.6 GPM	DON-120G	DON-220G	DON-820G	N4 = ½"NPT R4 = G½ P4 <sup>5</sup> = ½"NPT (1450 psi) H4 <sup>5</sup> = G½ (1450 psi)		Sensor (Push-Pull), High Resolution (x2) = Pulse Output Hall Sensor (Push-Pull), High Resolution (x4) D0. = Quad. Hall Sensor			
2.640 GPM	DON-125G	DON-225G	DON-825G	N6 = 1"NPT R6 = G 1 A6 = 1" 150 lb ANSI Flange B6 = 1" 300 lb ANSI Flange F6 = DN25 PN40 DIN Flange P6 <sup>5)</sup> = 1"NPT (1450 psi) H6 <sup>5)</sup> = G 1 (1450 psi)	<b>1</b> = FKM <b>3</b> <sup>14</sup> = FEP with	2 Phased Outputs (Push-Pull) L0 = 420 mA Loop Powered, Analog Output Z1 = LCD Dual Totalizer with Battery Supply, Outputs Deactivated (ZOK-Z1) Z2 = LCD Batching Unit (ZOK-Z2) Z3 = LCD Totalizer, Rate, Outputs: 4-20 mA, Alarm, Pulse (ZOK-Z3) (Impulses	M = M20 N = ½" NPT	0 = Without	
4.066 GPM	DON-130G	DON-230G	DON-830G	N8 = 1½"NPT R8 = G 1½ A8 = 1½" 150 lb ANSI Flange B8 = 1½" 300 lb ANSI Flange F8 = DN40 PN40 DIN Flange	EPDM/ FKM Core 4 = NBR 5 <sup>13)</sup> = Fluoroprene® 9 = Special Materials	not for Battery Supply) Z5 = Z3 + 2 SPDT Relays Z6 = Z1 + B0 Z7 = Z3 + B0 Z9 = Z1 + D0 Z9 = Z3 + D0 Z9 = LCD Rate/Total (ZOE with External Supply/with Battery) ZB <sup>11</sup> ) = LCD Rate/Total	<b>S</b> <sup>7</sup> = M20 with Cooling Fin <b>T</b> <sup>7</sup> = ½" NPT with Cooling	Battery Y = Special Request, not for ATEX. (Specify in clear text, e.g.	
8.0120 GPM	DON-135G	DON-235G	DON-835G	N9 = 2"NPT R9 = G 2 A9 = 2" 150 lb ANSI Flange	(not for ATEX)	(ZOE without External Supply/ with Battery) HE = H0 + ATEX (Exd) BE <sup>3</sup> = B0 + ATEX (Exd) KE <sup>9</sup> = K0 + ATEX (Exd)	Fin	check valve)	
13150 GPM	DON-140G	DON-240G	DON-840G	B9 <sup>1)</sup> = 2" 300 lb ANSI Flange F9 = DN50 PN16 DIN Flange C9 <sup>8)</sup> = DN50 PN40 DIN Flange		GE <sup>2)</sup> = G0 + ATEX (Exd) DE = D0 + ATEX (Exd) LE = L0 + ATEX (Exd) HA = H0 + ATEX (Exi) BA <sup>3)</sup> = B0 + ATEX (Exi)			
10200 GPM	DON-145G	DON-245G	DON-845G	NB = 3"NPT RB = G 3	•	KA <sup>9)</sup> = K0 + ATEX (Exi) GA <sup>2</sup> = G0 + ATEX (Exi) DA = D0 + ATEX (Exi)			
13260 GPM	DON-150G	DON-250G	DON-850G	AB = 3" 150 lb ANSI Flange FB = DN80 PN16 DIN Flange		1A       = ZOK-E1 + HA ATEX (Exi)        2A       = ZOK-E2 + HA ATEX (Exi)        3A       = ZOK-E3 + HA ATEX (Exi)        5A       = ZOK-E5 + HA ATEX (Exi)			
20400 GPM	DON-155G	DON-255G	DON-855G	NC = 4"NPT RC = G 4		CT <sup>15</sup> = Compact display, 2 outputs (current/voltage/ pulse/frequency/alarm output/10-link configurable)			
40660 GPM <sup>10)</sup>	DON-160G	DON-260G	DON-860G	AC = 4" 150 lb ANSI Flange FC = DN100 PN16 DIN Flange		M12 x1 plug	<b>0</b> = Without		

<sup>1)</sup> Only for DON-x35 <sup>2)</sup> Only for DON-x04, -x05 and -x10 <sup>3)</sup> Not for DON-x04, -x05 and -x10 <sup>4)</sup> Replace 'G' with 'H' to order LPM (LPH) <sup>5)</sup> With steel screws, only for DON-2... and DON-8... <sup>6)</sup> Only for DON-x20...DON-x60. Please specify flow direction when ordering (Possible flow directions: Bottom to Top, Left to Right, or Right to Left) <sup>7)</sup> Not for electronic options 1A to 5A, not for DON-1... and DON-8... <sup>8)</sup> Only for DON-20 <sup>4)</sup> Only for DON-x04, -x05, -x10, -x15 without reed switch <sup>10</sup> Calibrated up to 580 GPM. Higher flow rate calibration on request <sup>11)</sup> Without backlighting <sup>12</sup> From DON-x20 PPS <sup>13</sup> Only for DON-x04...DON-x04, -x05, -x10, -x15 without reed switch <sup>10</sup> Calibrated up to 580 GPM. Higher flow rate calibration on request <sup>11)</sup> Without backlighting <sup>12</sup> From DON-x20 PPS <sup>13</sup> Only for DON-x04...DON-x04, -x05, -x10, -x15 without reed switch <sup>10</sup> Calibrated up to 580 GPM. Higher flow rate calibration on request <sup>11)</sup> Without backlighting <sup>12</sup> From DON-x20 PPS <sup>13</sup> Only for DON-x04...DON-x04, -x05, -x10, -x15 without reed switch <sup>10</sup> Calibrated up to 580 GPM. Higher flow rate calibration on request <sup>11)</sup> Without backlighting <sup>12</sup> From DON-x20 PPS <sup>13</sup> Only for DON-x04...DON-x04, -x05, -x10, -x15 without reed switch <sup>10</sup> Calibrated up to 580 GPM. Higher flow rate calibrated range and temperature <sup>7</sup>() for DON-x04...DON-x04 <sup>13</sup> //min-package (nameplate (//min or ml/min, <sup>o</sup>C, bar)), calibrated range and temperature <sup>7</sup>()



#### Oval Gear Flowmeter Model DON

#### Order Details (Example: DON-105G N1 1 L0 N 0)

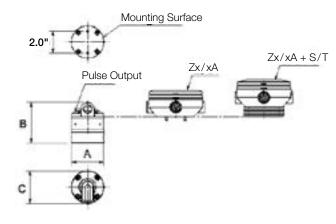
	Hous	sing/Rotor Material4)						
Measuring Range <sup>15)</sup>	Aluminum with PPS/ PEEK <sup>12)</sup> Rotor for High Viscosities	Stainless Steel for High Viscosities	St. Steel with PPS/PEEK <sup>12)</sup> Rotor for High Viscosities	Connection	O-ring Material	Electronic / Display	Cable Entry	Option
0.139.5 GPH	-	-	-	<b>N1</b> = 1/8"NPT <b>R1</b> = G 1/8		H0 = Pulse Output Hall Sensor (Push-Pull)/Reed Switch		
0.139.5 GPH	-	-	-	<b>N1</b> = 1/8"NPT <b>R1</b> = G 1/8		HU <sup>14)</sup> = Pulse Output Hall Sensor (NPN)/Reed Switch, Supply 5-30 V <sub>DC</sub>		
0.527 GPH	-	-	-	N2 = 1/4"NPT R2 = G 1/4		B0 <sup>3</sup> = Pulse Output Hall Sensor (Push-Pull) for Pulsating Flow T0 <sup>8</sup> = Pulse Output Hall Sensor		
4145 GPH	DON-315G	DON-415G	DON-915G	N3 = 3/8" NPT R3 = G 3/8		(Push-Pull), High-Temp 300 °F Max.		
0.2610.6 GPM	DON-320G	DON-420G	DON-920G	N4 = ½"NPT R4 = G½ P4 <sup>5</sup> = ½"NPT (1450 psi) H4 <sup>5</sup> = G½ (1450 psi)		<ul> <li>K0<sup>9</sup> = Pulse Output Hall Sensor (Push-Pull), High Resolution (x2)</li> <li>G0<sup>2</sup> = Pulse Output Hall Sensor (Push-Pull), High Resolution (x4)</li> </ul>		
2.640 GPM	DON-325G	DON-425G	DON-925G	N6 = 1"NPT R6 = G 1 A6 = 1" 150 lb ANSI Flange B6 = 1" 300 lb ANSI Flange F6 = DN25 PN40 DIN Flange P6 <sup>9</sup> = 1"NPT (1450 psi) H6 <sup>9</sup> = G 1 (1450 psi)	<b>1</b> = FKM	<ul> <li>(x4)</li> <li>D0 = Quad. Hall Sensor 2 Phased Outputs (Push-Pull)</li> <li>L0 = 420 mA Loop Powered Analog Output</li> <li>Z1 = LCD Dual Totalizer with Battery Supply, Outputs Deactivated (ZOK-21)</li> <li>Z2 = LCD Batching Unit (ZOK-22)</li> <li>Z3 = LCD Totalizer, Rate, Outputs:</li> </ul>	<b>M</b> = M20	0 = Without
4.066 GPM	DON-330G	DON-430G	DON-930G	N8 = 1½"NPT R8 = G 1½ A8 = 1½" 150 lb ANSI Flange B8 = 1½" 300 lb ANSI Flange F8 = DN40 PN40 DIN Flange	3 <sup>14)</sup> = FEP with EPDM/ FKM Core 4 = NBR	4-20 mA, Alarm, Pulse (ZOK-Z3) (Impulses not for Battery Supply) Z5 = Z3 + 2 SPDT Relays Z6 = Z1 + B0 Z7 = Z3 + B0 Z8 = Z1 + D0 Z9 = Z3 + D0	S <sup>7)</sup> = M20 with Cooling Fin	N = Without Battery Y = Special Request, not for ATEX.
8.0120 GPM	DON-335G	DON-435G	DON-935G	N9 = 2"NPT R9 = G 2 A9 = 2" 150 lb ANSI Flange B9 <sup>1)</sup> = 2" 300 lb	5 <sup>13)</sup> = Fluoroprene® 9 = Special Materials (not for ATEX)	ZE = LCD Rate/Total (ZOE with External Supply/with Battery) ZB <sup>11</sup> ) = LCD Rate/Total (ZOE without External Supply/ with Battery)	T <sup>7)</sup> = ½" NPT with Cooling Fin	(Specify in clear text, e.g. check valve)
13150 GPM	DON-340G	DON-440G	DON-940G			HE = H0 + ATEX (Exd) BE <sup>(3)</sup> = B0 + ATEX (Exd) KE <sup>(9)</sup> = K0 + ATEX (Exd) GE <sup>(2)</sup> = G0 + ATEX (Exd) DE = D0 + ATEX (Exd) LE = L0 + ATEX (Exd)		
10200 GPM	DON-345G	DON-445G	DON-945G	NB = 3"NPT RB = G3 AB = 3" 150 lb		<b>HA</b> = H0 + ATEX (Exi) <b>BA</b> <sup>3</sup> ) = B0 + ATEX (Exi)		
13260 GPM	DON-350G	DON-450G	DON-950G	ANSI Flange FB = DN80 PN16 DIN Flange		KA <sup>9</sup> = K0 + ATEX (Exi) GA <sup>2</sup> = G0 + ATEX (Exi) DA = D0 + ATEX (Exi)		
20400 GPM	DON-355G	DON-455G	DON-955G	NC = 4"NPT		1A         = ZOK-E1 + HA ATEX (Exi)          2A         = ZOK-E2 + HA ATEX (Exi)          3A         = ZOK-E3 + HA ATEX (Exi)          5A         = ZOK-E5 + HA ATEX (Exi)		
40660 GPM <sup>10)</sup>	DON-360G	DON-460G	DON-960G	FC = 4" 150 lb ANSI Flange FC = DN100 PN16 DIN Flange		CT <sup>16</sup> = Compact display, 2 outputs (current/voltage/ pulse/frequency/alarm output/10-link configurable) M12 x1 plug M4 <sup>6</sup> = Mechanical Totalizer	<b>0</b> = Without	-

<sup>1</sup> Only for DON-x35 <sup>2</sup> Only for DON-x04, -x05 and -x10 <sup>3</sup> Not for DON-x04, -x05 and -x10 <sup>4</sup> Replace 'G' with 'H' to order LPM (LPH) <sup>5</sup> With steel screws, only for DON-3.. and DON-9.. <sup>9</sup> Only for DON-x20...DON-x60. Please specify flow direction when ordering (Possible flow directions: Bottom to Top, Left to Right, or Right to Left) <sup>7</sup> Not for electronic options 1A to 5A, not for DON-3.. and DON-9.. <sup>9</sup> Only for DON-x40, -x05, -x10, -x15 without reed switch <sup>10</sup> Calibrated up to 580 GPM. Higher flow rate calibration on request <sup>11</sup> Without backlighting <sup>12</sup> From DON-x20 PPS <sup>13</sup> Only for DON-x04...DON-x20, this version is not calibrated (no calibration certificate). Use k-factor values from the datasheet <sup>14</sup> Only for DON-x04...DON-x40 <sup>15</sup> Refer to the "Maximum Flowrate Multiplier (for Higher Viscosities)" table for the actual max. flow rate <sup>16</sup> //min-package (nameplate (l/min or ml/min, °C, bar)), calibrated range and temperatue °C, GPM-package (nameplate (GPM or GPH, °F, PSI)), calibrated range and temperatue °F)

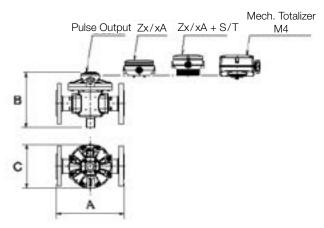


#### Dimensions DON-1/2/3/4/8/9)...

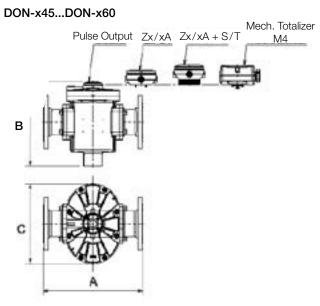
#### DON-x04...DON-x15



#### DON-x20...DON-x40



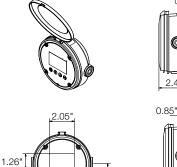
Dimensions\* DON-1/2/3/4/8/9... (± 0.08")



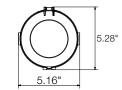
2.4"

2.4"

#### Electronic with LCD Display Zx/xA



2.6"

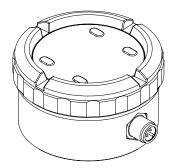


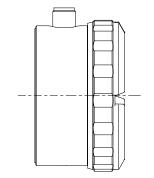
Model	А			В		С		
	Thread Connection	Flange Connection	Pulse Output	Zx/xA	Mechanical Totalizer M4	Pulse Output/Lx	Zx/xA	Mechanical Totalizer M4
DON-x04	2.67"	-	3.62"	5.16"	-	2.83"	5.28"	-
DON-x05	2.67"	-	3.62"	5.16"	-	2.83"	5.28"	-
DON-x10	2.67"	-	3.62"	5.16"	-	2.83"	5.28"	-
DON-x15	2.67"	-	3.89"	5.43"	-	2.83"	5.28"	-
DON-x20	4.33"	-	4.13" (3.98")	5.28" (5.12")	7.17" (7.01")	4.41"	5.28"	6.50"
DON-x25	6.93"	9.33"	5.36"	6.50"	7.64"	4.72"	5.28"	6.69"
DON-x30	7.40"	9.92"	6.54"	7.68"	8.78"	6.42"	6.42"	7.88"
DON-x35	8.34"	10.90"	6.77"	7.92"	9.61"	7.09"	7.09"	7.88"
DON-x40	8.34"	10.90"	9.69"	10.83"	11.77"	7.09"	7.09"	7.88"
DON-x45	10.50"	13.90"	9.13"	10.28"	11.18"	9.37"	9.37"	9.41"
DON-x50	11.60"	15.00"	9.02"	10.16"	11.89"	11.41"	11.41"	11.41"
DON-x55	11.60"	15.30"	10.80"	11.93"	13.66"	11.41"	11.41"	11.41"
DON-x60	12.60"	16.30"	13.80"	14.96"	16.70"	13.03"	13.03"	13.03"

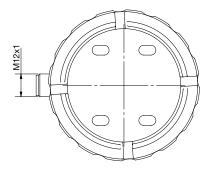
\*Dimensions for DON-2/4/8/9... are specified in ( ) only when they are different from DON-1/3...

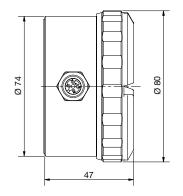


#### DON with CT Electronics









Order from: **C A Briggs Company** 622 Mary Street; Suite 101; Warminster, PA 18974 Phone: 267-673-8117 - Fax: 267-673-8118 <u>Sales@cabriggs.com</u> - <u>www.cabriggs.com</u>