Data Sheet
D-FMP-DT43_3

# Electro-Magnetic Flowmeters
## COPA-XT™ 2-Wire
DT43

- 2-Wire Operation – Significantly reduces installation costs when compared to a traditional 4-wire magmeter.
- ±0.5% of rate system accuracy.
- Patented Multi-Frequency Coil Excitation to maximize performance.
- High Performance Magnetic System
- Field configurable via integral pushbuttons, thereby, eliminating the need for an external handheld device.
- FM Approved for installation in hazardous areas.
- Self-Diagnostics through microprocessor based converter.
- Flanged primary configuration available in sizes 1/2” to 4”.

**Series DT43 - COPA XT™**
**2-Wire Magnetic Flowmeters**

# 2-WIRE MAGNETIC FLOWMETER COPA-XT™ Series DT43

The Series DT43, COPA-XT™ Magmeter is the ideal flowmeter for metering liquids where the electrical conductivity exceeds 50 µS/cm. The COPA-XT™ is a metering system in the compact design utilizing 2-Wire, Loop Powered Technology. Flowmeter primary and converter are assembled as one unit and use only two wires to transmit output signal and receive power.

## Engineering Specifications

**Minimum Liquid Conductivity:** 50µS/cm

**Meter Capacity Table:** Full scale (20 mA) can be set to any value between the minimum and maximum values shown in the table below.

| | | Typical Flow Ranges: 0 to Value Tabulated | | | |
|---|---|---|---|---|---|
| SIZE | | Minimum Span Setting (0 to 1.64 ft/s) | | Meter Capacity & Maximum Span Setting (0 to 32.81 ft/s) | |
| Inch | mm | gpm | l/min | gpm | l/min |
| 1/2 | 15 | 1.3 | 5.0 | 26 | 100 |
| 1 | 25 | 2.6 | 10 | 53 | 200 |
| 1-1/2 | 40 | 7.9 | 30 | 158 | 600 |
| | | | m3/hr | | m3/hr |
| 2 | 50 | 13.2 | 3.0 | 264 | 60 |
| 3 | 80 | 39.6 | 9.0 | 793 | 180 |
| 4 | 100 | 52.8 | 12 | 1057 | 240 |

**Pressure Limits:**
740 psi (5.10 Mpa.) for all liners @ 100ºF (38ºC). (Limited by flange rating).

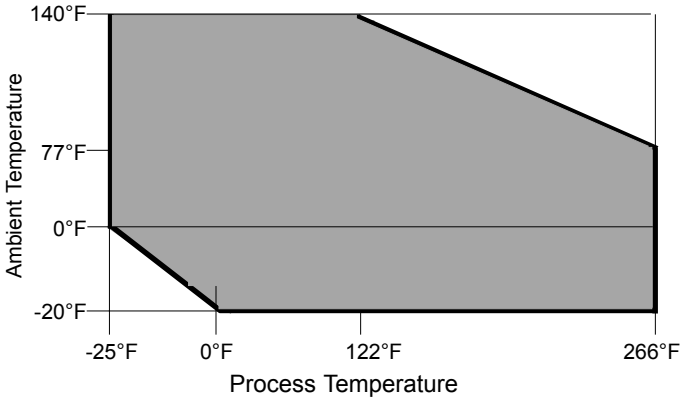
**Vacuum Limits:**
Teflon® and Tefzel® Liners:
1/2" to 4" - Full Vacuum to 266°F (130°C)
Polyurethane Liners:
2" to 4" - Full Vacuum to 190°F (88°C)

**Temperature Limits**:

Process:
Teflon® & Tefzel® Liners: 266°F (130°C)
Polyurethane Liners: 190°F (88°C)

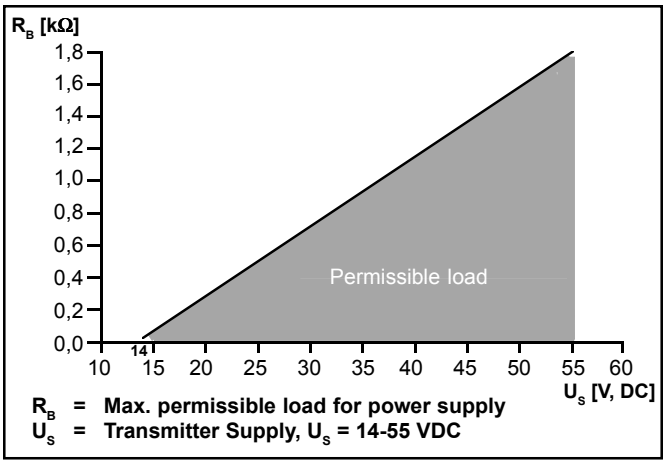
Ambient:
-4 to 140°F (-20 to 60°C)

Combination: Allowable fluid temperature as a function of the Ambient Temperature indicated below:




**Vibration Limits:**
Maximum Allowable = 1.5g at 10 – 150 Hz

**Power Requirements:**
14 to 55 Vdc from regulated transmitter power supply. (see figure below for loading characteristics)




**Contact Output:** May be configured for either

- **Scaled Pulse Output** (Passive):
  Maximum output 100 Hz, pulse factor between 0.001 and 1000 for multiplication of the displayed value. The pulse width can be set between 0.100 and 50 ms.
- **System Supervision Contact Output**:
  Closed Contact
- **Min. – Max. Alarm**: Closed Contact

**Limits for Solid State DC Contact Output:**
Operating Voltage: <28V
Operating Current: <20mA

**HART® Protocol Communications:** 1200 Baud using frequency shift keying. Maximum cable length: 5000 feet (1500m).

**Isolation**: Current and pulse outputs are galvanically isolated from each other.

**System Accuracy**:
Frequency Output:
Flow > $0.2Q_{max;}$ ±0.5% of rate
Flow < $0.2Q_{max;}$ ±0.001 $Q_{max}$
Analog Output:
Same as digital output with the addition of an additional +0.1% of rate.

**Repeatability:** < 0.2% of rate

**Response Time:** Step Function 0-99% (5t) < 5s maximum

**Enclosure Classification**:
IEC 529, IP67 accidental submergence in water up to a depth of 33 feet for up to 48 hours.

**Electrical Connections:** Screwless cage-clamp terminals for wiring and 1/2" NPT internally threaded conduit fittings.

**Display:** LCD dot matrix, 2 lines x 16 digits. The internal flow totalizer integrates on both forward and reverse flow directions. For better readability, the converter housing may be rotated up to 90°.

**Data Security:** All data is stored in a NV-RAM for a period of more than 10 years without requiring external power. Additional data security is offered by an external serial EEPROM located in the converter. The EEPROM can be transferred to a replacement converter to transfer the primary data and customer configuration parameters.

## Materials of Construction

**Meter Spool (pipe)**: Stainless Steel

**Flanges:** 304 SST

**Liners:** TEFLON® PTFE, Tefzel®, Neoprene, Polyurethane.

**Electrode Material:** 316 SST, Hastelloy® C, Titanium, Tantalum, Platinum / Iridium

**Housing & Customer Connection Box:** Epoxy coated painted aluminum.

**Liner Protectors or Grounding Rings:** 316 SST or Hastelloy® C

## Approximate Shipping Weight

| Meter Size | | ANSI Class 150 | |
|---|---|---|---|
| in. | mm. | lbs | kg. |
| 1/2" | 15 | 9.5 | 4.5 |
| 1" | 25 | 14 | 6.5 |
| 1-1/2" | 40 | 17 | 7.5 |
| 2" | 50 | 23 | 10.5 |
| 3" | 80 | 31 | 14 |
| 4" | 100 | 45 | 20.5 |

**Condensed chart, piping configuration, up/downstream are measured in pipe diameters**

| Configuration | Up Stream | Down Stream | Comments |
|---|---|---|---|
| Elbow | 3 | None | |
| Tee | 3 | None | |
| Reducers | None | None | <15º |
| Control Valves | 10 | 2 | |
| Gate Valves | None | None | Fully open |
| Check Valves | 10 | None | |
| Butterfly Valves | 10 | 2 | |
| Pump | 10 | None | |
| Magmeter accuracies of 1% can be achieved with these configurations | | | |

**Ordering Information**

For detailed specifications, refer to Product Specification D-FMP-DT43 Product Family: D

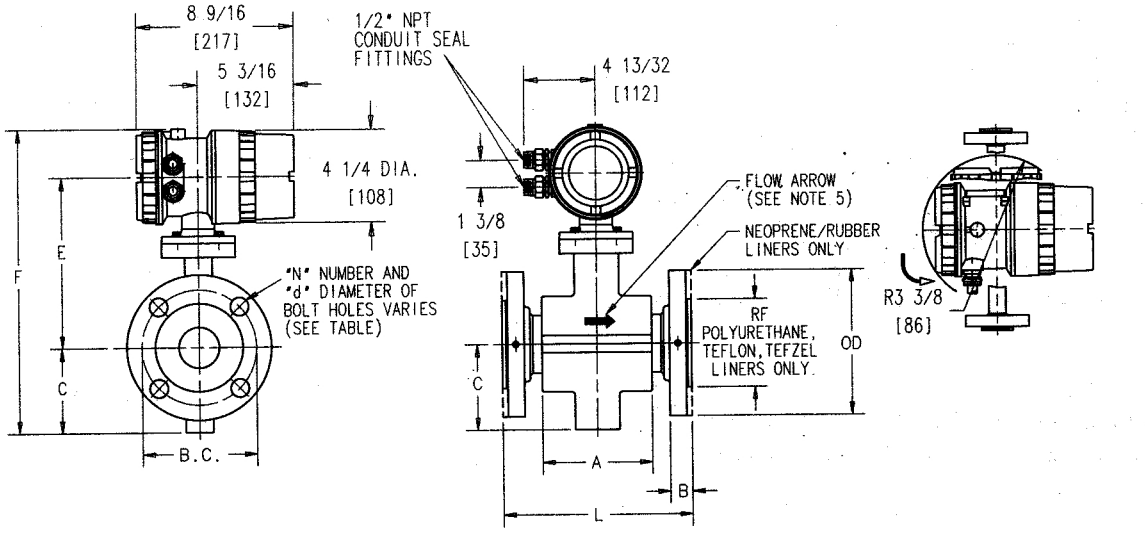
| Model Code | DT43 01 - 04 | F 05 | 06 | 07 | 08 | 09 | 10 | 11 | 12 | 13 | 14 | 15 |
|---|---|---|---|---|---|---|---|---|---|---|---|---|
| **Meter Construction** | | | | | | | | | | | | |
| Flanged | | F | | | | | | | | | | |
| **Liner Material** | | | | | | | | | | | | |
| Teflon® PTFE | | | T | | | | | | | | | |
| Tefzel® | | | E | | | | | | | | | |
| Polyurethane (2" - 4" sizes only) | | | U | | | | | | | | | |
| **Meter Size** | | | | | | | | | | | | |
| 1/2" (15mm) (Teflon® or Tefzel® Liner only) | | | | 1 | 5 | | | | | | | |
| 1" (25mm) (Teflon® or Tefzel® Liner only) | | | | 2 | 5 | | | | | | | |
| 1-1/2" (40mm) (Teflon® or Tefzel® Liner only) | | | | 4 | 0 | | | | | | | |
| 2" (50mm) | | | | 5 | 0 | | | | | | | |
| 3" (80mm) | | | | 8 | 0 | | | | | | | |
| 4" (100mm) | | | | 1 | H | | | | | | | |
| **Electrode Material** | | | | | | | | | | | | |
| 316 Stainless Steel | | | | | | S | | | | | | |
| Hastelloy® C | | | | | | H | | | | | | |
| Titanium | | | | | | M | | | | | | |
| Tantalum | | | | | | T | | | | | | |
| Platinum / Iridium | | | | | | P | | | | | | |
| **Flange Pressure Rating** | | | | | | | | | | | | |
| ANSI Class 150 | | | | | | | P | | | | | |
| ANSI Class 300 | | | | | | | Q | | | | | |
| **Flange Material** | | | | | | | | | | | | |
| 304 Stainless Steel, Standard | | | | | | | | 2 | | | | |
| **Flange Accessories** | | | | | | | | | | | | |
| None | | | | | | | | | A | | | |
| 316 SST Protector Plates (Teflon® Liner only) | | | | | | | | | B | | | |
| 316 SST Grounding Rings (pair) | | | | | | | | | C | | | |
| Hastelloy® C Grounding Rings (pair) | | | | | | | | | D | | | |
| **Approvals** | | | | | | | | | | | | |
| FM Approved, Cl. I, Div. 1, Gps B, C & D | | | | | | | | | | 1 | | |
| FM Approved, Cl. I, Div. 2, Gps A, B, C & D | | | | | | | | | | 3 | | |
| **Display** | | | | | | | | | | | D | |
| **Communication** | | | | | | | | | | | | |
| None, **Standard** | | | | | | | | | | | | A |
| HART® Protocol | | | | | | | | | | | | D |
| **Instruction Manual:** PN24983 *(One copy is supplied with order at no charge)* | | | | | | | | | | | | |

CF = Consult Factory

*Standard Product =*

## Outline Dimensions

| OUTLINE DIMENSIONS inches (mm) | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| DIM | Size | 1/2 (15) | | 1 (25) | | 1-1/2 (40) | | 2 (50) | | 3 (80) | | 4 (100) | |
| | FLANGE CLASS | 150 | 300 | 150 | 300 | 150 | 300 | 150 | 300 | 150 | 300 | 150 | 300 |
| | MODEL NO. | | | | | | | | | | | | |
| L | DT43F | 7-7/8 (200) | 9 (229) | 7-7/8 (200) | 9 (229) | 7-7/8 (200) | 9 (229) | 7-7/8 (200) | 9 (229) | 7-7/8 (200) | 9 (229) | 9-7/8 (250) | 11 (280) |
| | | | | | | | | | | | | 12 (305) | |
| | | | | | | | | | | | | | |
| | | | | | | | | | | | | | |
| | LINER | | | | | | | | | | | | |
| RF | POLY/TEFL/ TEFZ | 1-3/8 (35) | | 2 (51) | | 2-7/8 (73) | | 3-5/8 (92) | | 5 (127) | | 6-3/16 (157) | |
| B | POLY/NEO/ RUBBER | N/A | | N/A | | N/A | | 15/16 (24) | 1-1/16 (27) | 1-1/8 (29) | 1-5/16 (33) | 1-1/8 (29) | 1-7/16 (36) |
| | TEFLON | 1/2 (13) | 5/8 (16) | 11/16 (17) | 13/16 (21) | 27/32 (21) | 31/32 (25) | 29/32 (23) | 1-1/32 (26) | 1-3/32 (27) | 1-9/32 (32) | 1-3/32 (27) | 1-13/32 (35) |
| | TEFZEL | | | 5/8 (16) | 3/4 (19) | 3/4 (19) | 7/8 (22) | 27/32 (21) | 31/32 (25) | 3/4 (19) | 1-1/4 (32) | 1-3/32 (27) | 1-3/8 (35) |
| d | | 5/8 (16) | | 5/8 (16) | 3/4 (19) | 5/8 (16) | 7/8 (22) | 3/4 (19) | 3/4 (19) | 3/4 (19) | 7/8 (22) | 3/4 (19) | 7/8 (22) |
| N | | 4 | 4 | 4 | 4 | 4 | 4 | 4 | 8 | 4 | 8 | 8 | 8 |
| BC | | 2-3/8 (60) | 2-5/8 (67) | 3-1/8 (79) | 3-1/2 (89) | 3-7/8 (98) | 4-1/2 (114) | 4-3/4 (121) | 5 (127) | 6 (152) | 6-5/8 (168) | 7-1/2 (191) | 7-7/8 (200) |
| OD | | 3-1/2 (89) | 3-3/4 (95) | 4-1/4 (108) | 4-7/8 (124) | 5 (127) | 6-1/8 (156) | 6 (152) | 6-1/2 (165) | 7-1/2 (190) | 8-1/4 (210) | 9 (229) | 10 (254) |
| A | | 2-15/16 (75) | | 3-7/16 (87) | | 3-15/16 (100) | | 4-9/16 (116) | | 3-15/16 (100) | | 5-1/8 (130) | |
| C | | 2-7/16 (62) | | 2-7/8 (73) | | 3-7/32 (82) | | 3-17/32 (90) | | 4-11/32 (110) | | 5-1/8 (130) | |
| E | | 6-17/32 (166) | | 6-31/32 (177) | | 7-5/16 (186) | | 7-21/32 (194) | | 8-7/16 (214) | | 9-7/32 (234) | |
| F | | 8-31/32 (228) | | 9-13/32 (239) | | 9-3/4 (248) | | 10-3/32 (256) | | 10-7/8 (276) | | 11-21/32 (296) | |




NOTES:
1) ALL DIMENSIONS ARE IN INCHES. DIMENSIONS IN BRACKETS [ ] ARE IN MILLIMETERS [MM].
2) DIMENSIONS ARE GUARANTEED ONLY IF THIS PRINT IS CERTIFIED.
3) THIS DRAWING IS THIRD ANGLE PROJECTION AS SHOWN.
4) FLANGE BOLTS STRADDLE CENTERLINES.
5) FLOW MUST BE IN SAME DIRECTION AS FLOW ARROW.
6) METER MUST BE COMPLETELY FILLED WITH LIQUID TO INSURE ACCURACY.
7) ALL DIMENSIONS SUBJECT TO MANUFACTURING TOLERANCES OF +/- 1/8 [3].

Notes



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