

“Sensing the pulse of industry”

tekMag TM03 Series Intelligent Magnetic Flow Sensors

The **tekMag TM03** Series is part of Tekflo's family of magnetic flow Sensors, each refreshingly having the highest signal to media noise ratio, with fast response low power consumption and attractive prices.

Production is strictly adhered and certified to ISO 9001 conditions. This assures consistent quality and guarantees to operate correctly to customized conditions straight from the packing crate.

The **tekMag TM03** is a general purpose magnetic flow sensor with a wide range of electrode and thick Neoprene and PTFE liners. It is suitable for drinking water, unfiltered raw sewage, pastes, slurries and a wide range of chemicals. But this is no ordinary mag meter. **tekMag's** powerful magnetizing current, complete with adjustable high exciter frequencies, provides insignificant media noise. For example, normal greasy sewage coatings have virtually no effect on accuracy.

Sizes range from 3mm to 2000mm (1/8" – 80"), dependent on liner type.

There is a choice of 2 Converters for **tekMagTM03**. They may be compact or remote, but all have the same unique **tekflo sensors** technology. These range from the basic to those with 0.25% accuracy, submerged, or have RS485 or HART communication protocols.

See the **tekMag TMC3A** and **TMC4A** specifications.

All **TekMags** are supplied with Calibration Certificates traceable to the USA National Institute of Standards and Technology (NIST) and other Internationally recognized standards.

Features:

- **tekMag** technology offers the highest possible signal : media noise ratio
- Suitable for permanent coatings of sewage grease, calcium carbonate and similar
- High accuracy < $\pm 0.2\%$ of reading > 0.1 m/s (0.3 fps) converter dependent
- Resolution to 1000th of range
- Calibration Certificates provided with traceability to USA NIST and other international standards
- Quality Assurance to ISO 9001
- Custom calibration guarantees operation to specification straight out of the packing crate
- Range of sizes 10 – 2000mm (0.5" – 80")
- Meets European EMC Conformity Standards EN 61326 – 1 for use in industrial locations
- Meets European Pressure Equipment Directive – Sound Engineering Practice



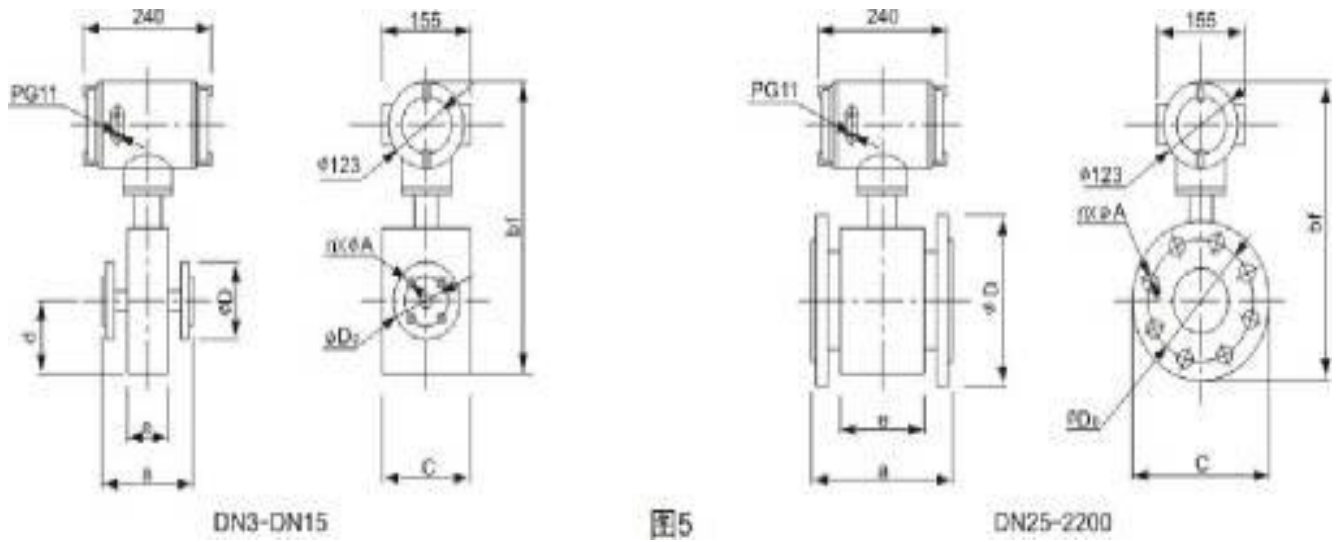
tekMag TM03 with TMC03 and TMC04 Converter Specification

| | |
|--|--|
| Accuracy: | < ± 0.5% of reading > 0.1 m/s (0.33 fps) to 12m/s (39 fps) < ± 0.0005 m/s (0.0016 fps) for < 0.1 m/s (0.33 fps) |
| High accuracy version: | < ±0.25% of reading > 0.1 m/s (0.33 fps) to 12m/s (39 fps) < 0.00025 m/s (0.000825 fps) for < 0.1 m/s (0.33 fps) |
| Sizes: | 3 – 2000mm diameter (1/8" – 80") liner dependent |
| Maximum pressures: | Diameter dependent: 3 – 80mm (1/8" – 3"): 40 bar g (580 psig) 100 – 150mm (4" – 6"): 16 bar g (232 psig) 200 – 1000mm (8" – 40"): 10 bar g (145 psig) 1200 – 2000mm (48" – 80"): 6 bar g (87 psig) |
| Flanged connections: | ANSI 150 DIN 2633 PN6, PN10, PN16, PN25, PN40 JIS 10k, JIS16k, JIS25k, JIS 40 k AWWA flat face, Class D |
| European Pressure Equipment Directive: | tekMags conform to the European Pressure Directive PED97/23/EC, Article 3, Sound Engineering Practice (SEP), Table 7 Group 2, Table 8 Group 1, and Table 9, Group 2 up to the maximum specified pressures |
| Ambient temperature: | -25° to +65°C (-13° to +150°F) |
| Media temperature range: | With remote tekMag Converters: Teflon liners: -25° to +170°C (-13° to +338°F) Neoprene liners: -20° to +65°C (150°F) With compact tekMag Converters: -25° to +65° C (-13° to + 150° F) |
| Media minimum conductivity: | 5 micro Siemens/cm (5 micro mhos/cm) |
| Materials of construction: | AISI 304 non-magnetic stainless steel flow tube, lined. |
| Flange & casing optional construction materials: | epoxy coated carbon steel or AISI 304 stainless steel or AISI 316 stainless steel |
| Electrode/grounding materials: | AISI 316L stainless steel, Hastelloy C, titanium, platinum, tantalum, tungsten carbide |
| Electrode seals: | Nitrile rubber (Buna N), Kalrez. Note: PTFE liners do not require seals. |
| Liner materials: | Neoprene: 10mm – 2000 mm (1/2" – 80") PTFE: 3mm – 2000mm (1/8" – 80") |
| Sensor Protection class: | IP65 / NEMA 4X weatherproof for compact converters. |
| With remote converters only: | IP 68 / NEMA 6P protected against permanent water immersion to 1 m w.g. |
| Cable length: | 5 m (16 feet) standard with remote converter TMC4A only. |
| (Remote TMC4 Only) | Special max cable length: 90 meters OR 3 x media conductivity microS/cm 300 feet OR 10 x media conductivity micromhos whichever is less. |
| European EMC Conformity: | Meets EN61326 – 1 Class A, Table 2 for industrial locations |
| tekMag compatible | TMC3A(compact), TMC4A (remote) |
| Converters: | See separate specifications |
| Min and max ranges: | Nominal min range 0 – 1m/s (0 – 3 fps) mean velocity Nominal max range 0 – 12m/s (0 – 39 fps) mean velocity See Flow Range Table below. |
| Converter Features: | TMC3A: system NIST traceable accuracy < ± 0.5% of reading (see above spec.) TMC4A: system NIST traceable accuracy < ± 0.25% of reading (see abv spec.) |
| Bi-directional Outputs: | ± 4 – 20mA into 500 Ohms max. Frequency ± 0 – 100 Hz adjustable to 1 – 5000 Hz, current load 30mA max. ± RS 485 with optional HART communication |
| High ± alarms for connection to 24 V dc, max 30mA | |
| Low ± alarms for connection to 24 V dc, max 30mA | |
| Power supply: | Optional 85 – 265 V, 50 – 60 Hz or 18 – 36 V dc |
| English language displays: | LCD bi-directional, backlit displays of +ve, -ve and net totals and flow rate |
| Non-full pipe and alarms: | LED indication. Non full pipe relay max 36 V dc, max 30 mA |
| Programming: | Waterproof buttons |
| Converter protection: | IP 65 and NEMA 4X |
| Note: for submersible tekMag use, a remote TMC4A converter must be used | |

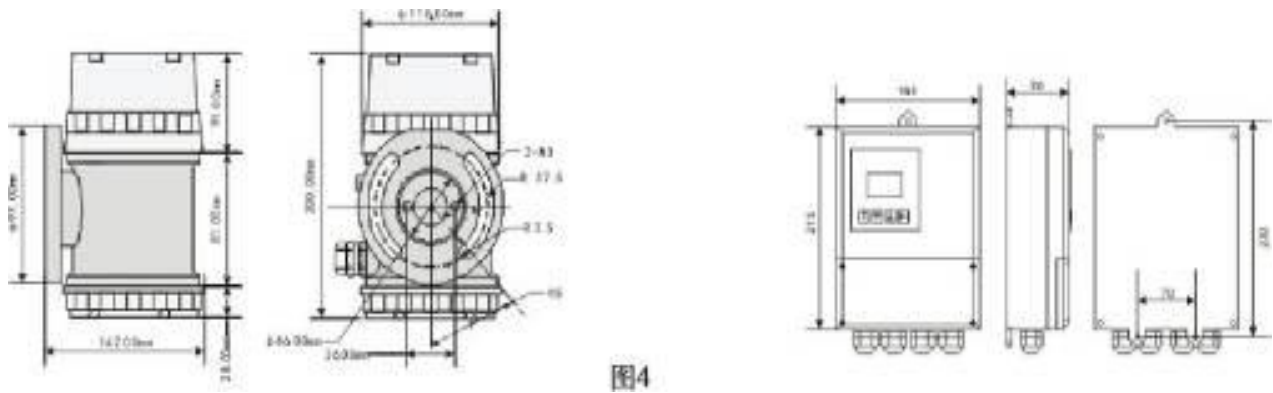
TekMag TM03 Dimensional Details

| DN | Rated Pressure (Mpa) | Physical external dimension of instrument (mm) | | | | | Flanged Details (mm) | | | Weight kg |
|------|----------------------|--|------|------|-----|------|----------------------|---------|---------|-----------|
| | | a | bf | c | d | e | D | Do | n x A | |
| 10 | 4.0 | 150 | 308 | 156 | 107 | 72 | 90 | 60 | 4 x 14 | 7 |
| 15 | | 150 | 308 | 156 | 107 | 72 | 95 | 65 | 4 x 14 | 7.5 |
| 20 | | 200 | 308 | 156 | 107 | 72 | 105 | 75 | 4 x 14 | 8 |
| 25 | | 200 | 313 | 115 | | 78 | 115 | 85 | 4 x 14 | 9 |
| 32 | | 200 | 319 | 140 | | 78 | 140 | 100 | 4 x 18 | 9.5 |
| 40 | | 200 | 332 | 150 | | 63 | 150 | 110 | 4 x 18 | 11.8 |
| 50 | | 200 | 346 | 165 | | 109 | 165 | 125 | 4 x 18 | 13.5 |
| 65 | | 200 | 367 | 185 | | 105 | 185 | 145 | 8 x 18 | 15.5 |
| 80 | | 200 | 382 | 200 | | 101 | 200 | 160 | 8 x 18 | 17.25 |
| 100 | | 1.6 | 250 | 397 | 220 | | 150 | 220 | 180 | 8 x 18 |
| 125 | 250 | | 429 | 250 | | 150 | 250 | 210 | 8 x 18 | 28.9 |
| 150 | 300 | | 459 | 285 | | 180 | 285 | 240 | 8 x 22 | 35 |
| 200 | 1.0 | 350 | 517 | 340 | | 222 | 340 | 295 | 8 x 22 | 47.5 |
| 250 | | 400 | 570 | 395 | | 254 | 395 | 350 | 8 x 22 | 67.8 |
| 300 | | 500 | 617 | 445 | | 316 | 445 | 400 | 12 x 22 | 85 |
| 350 | | 600 | 668 | 505 | | 305 | 505 | 460 | 12 x 22 | 127 |
| 400 | | 600 | 723 | 565 | | 380 | 565 | 515 | 16 x 22 | 183.5 |
| 450 | | 600 | 773 | 615 | | 380 | 615 | 565 | 16 x 26 | 194.5 |
| 500 | | 600 | 825 | 670 | | 400 | 670 | 620 | 20 x 26 | 210 |
| 600 | | 600 | 930 | 780 | | 456 | 780 | 725 | 20 x 26 | 303 |
| 700 | | 700 | 1038 | 895 | | 545 | 895 | 840 | 20 x 30 | 470 |
| 800 | | 800 | 1148 | 1015 | | 580 | 1015 | 950 | 24 x 30 | 500 |
| 900 | 900 | 1248 | 1115 | | 690 | 1115 | 1050 | 24 x 33 | 700 | |
| 1000 | 1000 | 1355 | 1230 | | 750 | 1230 | 1160 | 28 x 36 | 921 | |
| 1200 | 0.6 | 1200 | 1674 | 1405 | | 1206 | 1405 | 1340 | 32 x 33 | |
| 1400 | | 1400 | 1874 | 1630 | | 1406 | 1630 | 1560 | 36 x 36 | |
| 1600 | | 1600 | 2084 | 1830 | | 1606 | 1830 | 1760 | 40 x 36 | |
| 1800 | | 1800 | 2304 | 2045 | | 1806 | 2045 | 1970 | 44 x 39 | |
| 2000 | | 2000 | 2540 | 2265 | | 2006 | 2265 | 2180 | 48 x 42 | |
| 2200 | 0.25 | 2200 | 2704 | 2405 | | 2206 | 2405 | 2315 | 52 x 45 | |

**Note : DN3, DN6 and DN8 flanges have the similar standard as DN10 flange
For all other Flanges details ANSI, JIS etc – please refer to the appropriate flange specifications.**



Compact **tekMag TM03** with Integral Flow Converter



Compact **TMC3A** Flow Converter

Remote **TMC4A** Flow Converter

| | | | | | | | | | | | | | |
|--------------------------------------|---|-----------------|----------|----------|-----------|------------|----------|----------|----------|----------|----------|----------------|----------|
| Basic type Example : | tekMag TM03 | C3 | 6 | A | LN | 250 | 1 | A | 1 | B | 0 | 5000gpm | 1 |
| tekMag Converter | TMC3A Compact +/-0.5% o.r | C1 | | | | | | | | | | | |
| | TMC3A Compact +/-0.25%o.r | C2 | | | | | | | | | | | |
| | TMC4A Compact +/-0.5% o.r | C3 | | | | | | | | | | | |
| | TMC4A Compact +/-0.25%o.r | C4 | | | | | | | | | | | |
| Flanged Connections | DIN 2633 PN6 | | 1 | | | | | | | | | | |
| | DIN 2633 PN10 | | 2 | | | | | | | | | | |
| | DIN 2633 PN16 | | 3 | | | | | | | | | | |
| | DIN 2633 PN25 | | 4 | | | | | | | | | | |
| | DIN 2633 PN40 | | 5 | | | | | | | | | | |
| | ANSI 150 rf | | 6 | | | | | | | | | | |
| | ANSI 300 rf | | 7 | | | | | | | | | | |
| | JIS 10k | | 8 | | | | | | | | | | |
| | JIS 16k | | 9 | | | | | | | | | | |
| | JIS 25k | | 10 | | | | | | | | | | |
| | JIS 40K | | 11 | | | | | | | | | | |
| | AWWA ff.Class D | | 12 | | | | | | | | | | |
| Flange Material | Epoxy Coated Carbon Steel | | | A | | | | | | | | | |
| | AISI 304 stainless steel | | | B | | | | | | | | | |
| | AISI 316 stainless steel | | | C | | | | | | | | | |
| Electrode Materials and Seals | AISI 316L = L | Hastelloy C = H | | L | | | | | | | | | |
| | Tantalum = A | Titanium = T | | | | | | | | | | | |
| | Tungsten Carbide = U | Platinum = P | | | | | | | | | | | |
| | Add N for Nitrile rubber (Buna N) | | | N | | | | | | | | | |
| | Add K for Kalrez | | | | | | | | | | | | |
| | Add O for no seals with PTFE liners only | | | | | | | | | | | | |
| Sensor Nominal Diameter mm | 3mm (1/8") = 0003, 10mm (1/2") = 0010 | | | | | | | | | | | | |
| | 250mm (10") = 0250, 1000mm (40") = 1000 | | | | | 250 | | | | | | | |
| Liner Materials | Neoprene rubber (3 - 2000mm) 1/16" - 80" | | | | | | 1 | | | | | | |
| | PTFE (25mm - 2000mm) 1" - 80" | | | | | | 2 | | | | | | |
| | Other (specify at end of code) | | | | | | 3 | | | | | | |
| Protection | IP65 (NEMA 4X) | | | | | | | A | | | | | |
| | IP68 (NEMA6P) | | | | | | | B | | | | | |
| Outputs - Both Converter type | 4-20mA with scaled pulse output | | | | | | | | 1 | | | | |
| | 4-20mA with scaled pulse output + RS485 | | | | | | | | 2 | | | | |
| | 4-20mA with scaled pulse output + HART | | | | | | | | 3 | | | | |
| Power Supply | 85 -265 Vac = A | 24 Vdc = B | | | | | | | | B | | | |
| Cable Lengths | TMC3A Compact converter, no cable supplied | | | | | | | | | | 0 | | |
| | TMC4A with standard 5m (16 feet) cables | | | | | | | | | | 5 | | |
| | TMC4A with non standard cable length >5m (16feet) | | | | | | | | | | X | | |
| Max Flow Rate | Select between 0 and min and max flow ranges with units eg. 0-5000gpm | | | | | | | | | | 5000gpm | | |
| Grounding | 1 grounding electrode in AISI 316 stainless steel | | | | | | | | | | | | 1 |
| | PTFE protection sleeve | | | | | | | | | | | | S |

tekMag TM03 with TMC3A or TMC4A Flow Ranges

| Nominal Diameter | | Min / Max Flow Range m3/hr | Min / Max Flow Range gpm |
|------------------|---------|----------------------------|--------------------------|
| mm | inches | | |
| 3 | 1/8 | 0 - 0.025 to 0.30 | 0 - 0.11 to 1.30 |
| 6 | 1/4 | 0 - 0.10 to 1.20 | 0 - 0.45 to 5.30 |
| 8 | 5/16 | 0 - 0.20 to 2.20 | 0 - 0.90 to 9.70 |
| 10 | 1/2 | 0 - 3.0 to 3.40 | 0 - 1.30 to 15.0 |
| 15 | 3/4 | 0 - 0.65 to 7.70 | 0 - 2.90 to 34.0 |
| 20 | 3/4 | 0 - 1.15 to 13.5 | 0 - 5.00 to 60.0 |
| 25 | 1 | 0 - 1.80 to 21.0 | 0 - 8.00 to 90.0 |
| 32 | 1 ¼ | 0 - 2.90 to 35.0 | 0 - 13.0 to 150 |
| 40 | 1 ½ | 0 - 4.50 to 54.0 | 0 - 20.0 to 240 |
| 50 | 2 | 0 - 7.10 to 85.0 | 0 - 30.0 to 370 |
| 65 | 2 ½ | 0 - 12.0 to 145 | 0 - 50.0 to 640 |
| 80 | 3 | 0 - 18.0 to 220 | 0 - 80.0 to 970 |
| 100 | 4 | 0 - 28.0 to 340 | 0 - 125 to 1500 |
| 125 | 5 | 0 - 44.0 to 530 | 0 - 200 to 2330 |
| 150 | 6 | 0 - 64.0 to 760 | 0 - 280 to 3340 |
| 200 | 8 | 0 - 120 to 1360 | 0 - 530 to 5600 |
| 250 | 10 | 0 - 180 to 2120 | 0 - 800 to 9330 |
| 300 | 12 | 0 - 260 to 3050 | 0 - 1150 to 13400 |
| 350 | 14 | 0 - 350 to 4150 | 0 - 1540 to 18300 |
| 400 | 16 | 0 - 450 to 5430 | 0 - 1980 to 23900 |
| 450 | 18 | 0 - 580 to 6870 | 0 - 2550 to 30200 |
| 500 | 20 | 0 - 710 to 8480 | 0 - 3120 to 37300 |
| 600 | 24 | 0 - 1020 to 12200 | 0 - 4490 to 53700 |
| 700 | 28 | 0 - 1390 to 16600 | 0 - 6120 to 73000 |
| 800 | 30 & 32 | 0 - 1810 to 21700 | 0 - 7960 to 95500 |
| 900 | 36 | 0 - 2290 to 27500 | 0 - 10000 to 121000 |
| 1000 | 40 | 0 - 2830 to 33900 | 0 - 12500 to 149000 |
| 1200 | 48 | 0 - 4070 to 48900 | 0 - 17900 to 215000 |
| 1400 | 56 | 0 - 5540 to 66500 | 0 - 24400 to 293000 |
| 1600 | 60 | 0 - 7240 to 86800 | 0 - 31900 to 382000 |
| 1800 | 72 | 0 - 9160 to 10900 | 0 - 40300 to 480000 |
| 2000 | 80 | 0 - 11300 to 13600 | 0 - 49700 to 598000 |



Technical Data Sheet & General Specifications

tekMag TM03 with Converter TMC03 or TMC04 Enquiry Form

| | | | | | | |
|--|-----------------|-----------------|-----------------|-----------------|-----------------|-----------------|
| Customer's Name, Project Name, & Location: | | | | | | |
| Detail | Sensor 1 | Sensor 2 | Sensor 3 | Sensor 4 | Sensor 5 | Sensor 6 |
| Quantity | | | | | | |
| Media Type ADD any special notes, such as Dirty (D), Clean (C), Deionised Water(DW) Note: For energy measurement, solutions of ethylene glycol, propylene glycol, glycol substitutes, or brine, a special flow configuration is necessary. Please provide % solution by weight..... | | | | | | |
| Typical Flow Rate With Units | | | | | | |
| Min & Max Flow Rate With Units | | | | | | |
| Cable Length (8m / 26 feet standard) | | | | | | |
| Bi-directional (B)/ Uni-directional (U) | | | | | | |
| Pressure Range and Units | | | | | | |
| Temperature Range and Units | | | | | | |
| Liquid Viscosity and Units | | | | | | |
| Explosive Atmosphere and Type Required | | | | | | |
| Nominal Pipe Size (N) or ID (I) Specify mm or inches | | | | | | |
| Pipe Schedule or Wall Thickness Specify mm or inches | | | | | | |
| Straight Pipe Runs Available | | | | | | |
| Pipe Material Is Pipe Electrically Isolated (Yes/No) | | | | | | |
| Is the flow sensor to be used in an area of magnetic fields ? Yes or No | | | | | | |
| Electronics Weatherproof (WP), Local (L), or Remote (R) | | | | | | |
| Analog and Pulse Frequency | | | | | | |
| Is Communication Network Required? If yes, specify which | | | | | | |
| Complete Energy System (Yes/No) Requires 2 temperature sensors | | | | | | |
| Mass (M) or Volumetric (V) Flow. | | | | | | |
| Sensor Submersible (Yes/No) If yes, to how many metres w.g. Not available with temperature sensors | | | | | | |

Note: For energy flow applications a separate Energy Flow Computer is necessary, with an integral temperature sensor and remote temperature sensor for supply and return pipes. Both temperature sensors are matched and require 4-20mA outputs and are provided with identical tekprobe protection.

tekflo sensors®

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Specifications are subject to change without notice