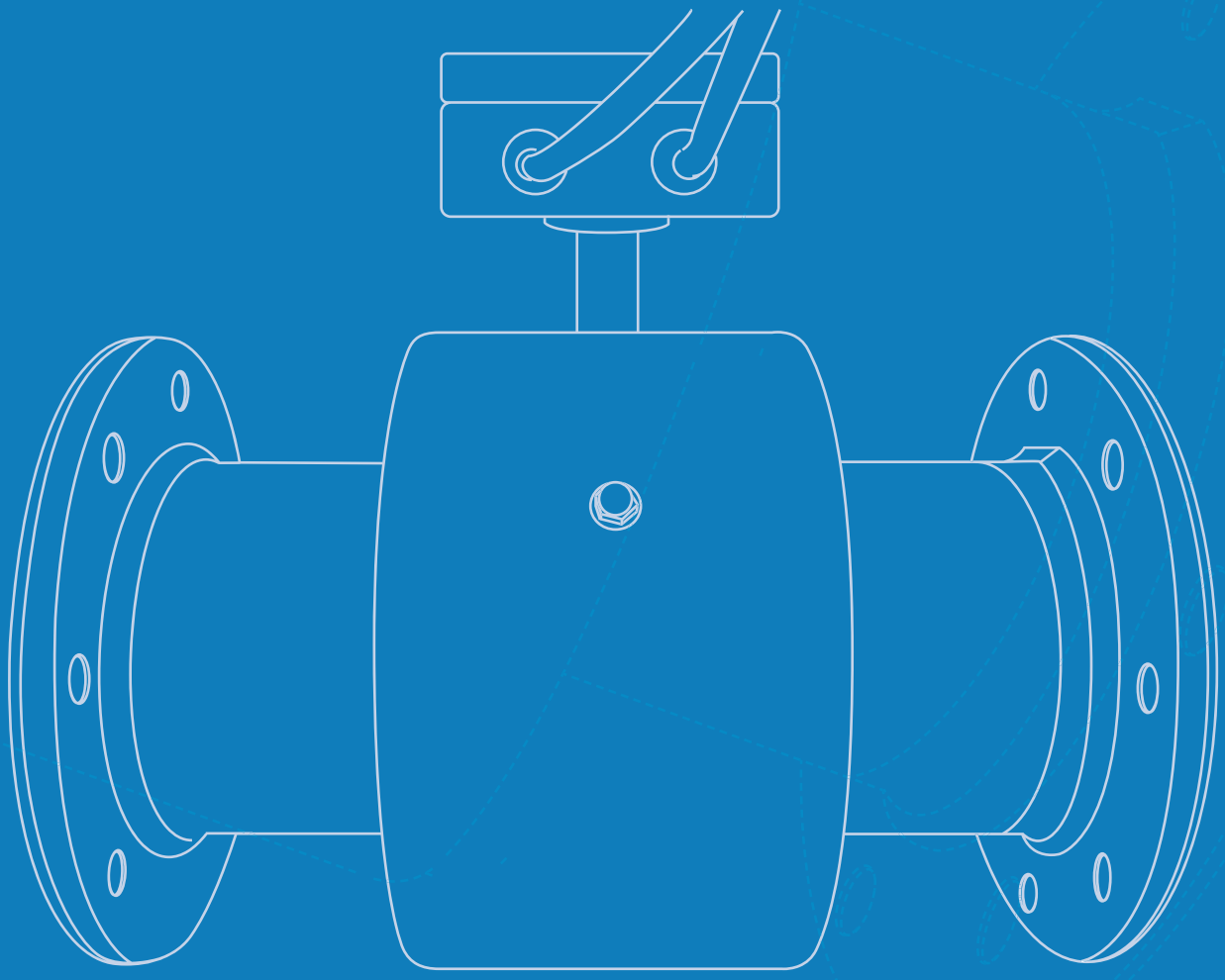
AQUAMONIX
Measure. Monitor. Master.

# EMFLUX FLOWMETERS



AUSTRALIAN MADE
Licence ID: 15075

IRRIGATION AUTOMATION

WATER MEASUREMENT

REMOTE MONITORING

CLOUD BASED DATA


TRINITY
GW125

# **EMFLUX1060** Steel Body Flowmeter

The **EMFLUX1060** steel body flowmeter is a full bore type electromagnetic flowmeter for use in a wide range of applications. It accurately measures the flow rate of conductive liquids and slurries in closed pipes. Due to its simple and rigid design, the **EMFLUX1060** is an obstruction-less and maintenance free instrument that can be used in place of conventional mechanical flow measuring devices.

## Features

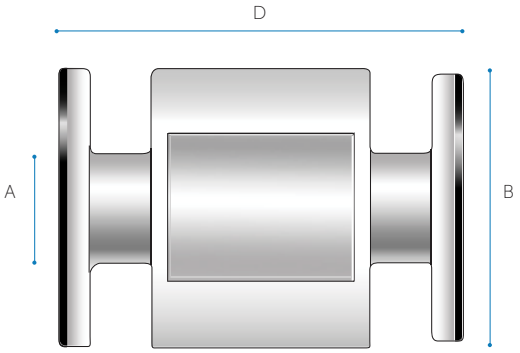
- Uses the proven electromagnetic method of flow measurement, which applies Faraday's law as the principle of operation
- No moving parts
- High accuracy
- Wide operating range
- No obstruction to the flow
- Little to no pressure loss
- Robust welded steel construction
- Minimal straight pipe installation requirements
- Remotely mounted electronics•

Used with the **EMFLUX i500** flowmeter Transmitter on remote sites

- Used with the **EMFLUX M500** Flowmeter Transmitter on 240VAC powered sites

## Service and support

Aquamonix, through its Service Division, offers a full suite of service products for the EMFLUX flowmeter range aimed at minimising downtime and cost, while maintaining confidence in the measurement.




## General Aplications

- Water production and distribution
- Irrigation flow measurement
- Waste water monitoring and treatment
- Above ground inline flow mounting
- Industrial processing plants

Aquamonix has also achieved an extension of their pattern approval to DN 1500 meters, includes the **EMFLUX1060** (small dia flanged) meter.

## Product dimensions

| ØA (Inside Diameter) | 'B' (Outside Diameter) | 'D' (Length) | Min Flow (L/s) | Max Flow L/s |
|---|---|---|---|---|
| 50 | 150 | 200 | 0.735 | 14.7 |
| 100 | 215 | 250 | 2.945 | 58.9 |
| 150 | 280 | 300 | 6.625 | 132.5 |
| 200 | 335 | 350 | 11.78 | 235.6 |
| 250 | 405 | 450 | 18.41 | 368.2 |
| 300 | 455 | 500 | 26.505 | 530.1 |
| 450* | 640 | 600 | 59.64 | 1192.8 |
| 600* | 825 | 600 | 97.67 | 1953.4 |

Note: Dimensions are ±1mm. *Sizes under development.

# **EMFLUX2020** ABS Body Flowmeter

The **EMFLUX2020** ABS body flowmeter used with either an **EMFLUX M500** or **EMFLUX i500** flowmeter transmitter is ideally suited to the accurate measurement of the flow rate of a wide variety of conductive process liquids, water and wastewater.

## Features

- Uses the proven electromagnetic method of flow measurement, which applies Faraday's law as the principle of operation
- ABS tube and housing
- No moving parts
- High accuracy
- No obstruction to the flow
- Little to no pressure loss
- A choice of electrodes to suit the process
- Variety of flange types available
- Submersible to 1.5 metres
- Suitable for buried service
- Minimal straight pipe installation requirements
- Remotely mounted electronics
- Used with the **EMFLUX i500** flowmeter Transmitter on remote sites
- Used with the **EMFLUX M500** Flowmeter Transmitter on 240VAC powered sites

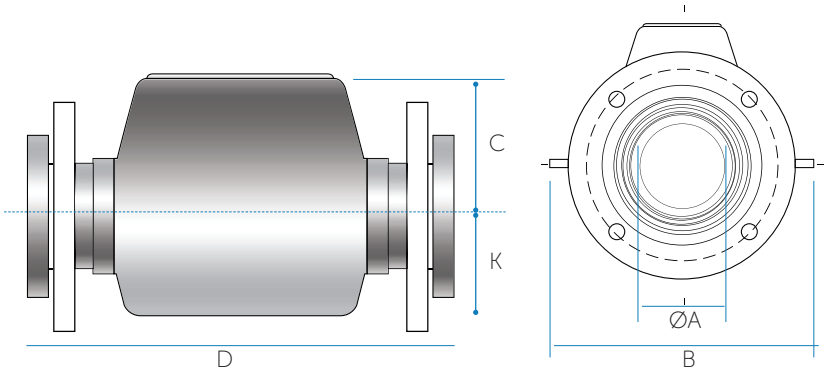
## General applications

- Water production and distribution
- Irrigation flow measurement
- Waste water monitoring and treatment
- Industrial processing plants

Aquamonix has also achieved pattern approval to DN1500 meters, which includes the **EMFLUX2020** series.

## Service and support

Aquamonix, through its Service Division, offers a full suite of service products for the EMFLUX flowmeter range aimed at minimising downtime and cost, while maintaining confidence in the measurement.




## Dimensions(mm)

| Nominal Bore | | | | | | |
|---|---|---|---|---|---|---|
| ØA | B | K | D | C | Min Flow L/Sec | Max Flow L/Sec |
| 50 | 240 | 100 | 360 | 130 | 1.0 | 20 |
| 80 | 240 | 100) | 400 | 130 | 2.5 | 50 |
| 100 | 260 | 105 | 420 | 145 | 4.0 | 78 |
| 150 | 325 | 135 | 520 | 175 | 8.9 | 176 |
| 200 | 364 | 152 | 610 | 201 | 15.7 | 314 |
| 250 | 417 | 179 | 750 | 228 | 24.5 | 491 |
| 300 | 456 | 199 | 818 | 251 | 35.3 | 707 |
| 375 | 500 | 235 | 900 | NA | 50 | 2475 |

Note: Dimensions are nominal to ± 2mm

# **EMFLUX2030** Irrigation Flowmeter

Designed for replacement of older non-compliant metering systems such as Dethridge Wheels, Propellor Meters and ultrasonic meters to meet the new national irrigation metering requirements for water under AS4747. The **EMFLUX2030** is a high performance flowmeter for farm offtakes. This stainless steel bodied, electromagnetic flowmeter can be paired with either Solar or 240VAC electronics, including the i500 and M500 transmitters. The **EMFLUX2030** is also compatible with legacy i300 and M300 transmitters.

**System accuracy**

- Better than ±2.5%
- Flow range 0.5ML/day – 450 ML/day

## Features

- Operates on batteries with solar power recharge
- No obstruction in flow path, no moving parts
- Extremely low headloss
- Broad operating range
- Simple installation
- Tamper proof design
- Supplied with a 3 point calibration certificate, traceable to national standards
- Pit Mount – attached to headwall with Meter ID matching pipework – no headloss
- Insert/End Mount – Insert inside existing pipework – minimal headloss

## System configuration

The **EMFLUX2030** series of meters comprise 2 main components, the Flow Tube and the Flow Transmitter.

The Flow tube installs into the pipework or pit and provides measurement of the velocity of the flowing water.

The Transmitter comprises the electronics and data logger unit and mounts remotely on a pole or wall and connects to flow tube via cable.

To conserve power the system samples the flow rate periodically on a sleep / wake basis.

The flow readings and totalisers update continuously and are displayed on the LCD screen

Live readings can be updated by simple button press on LCD screen.

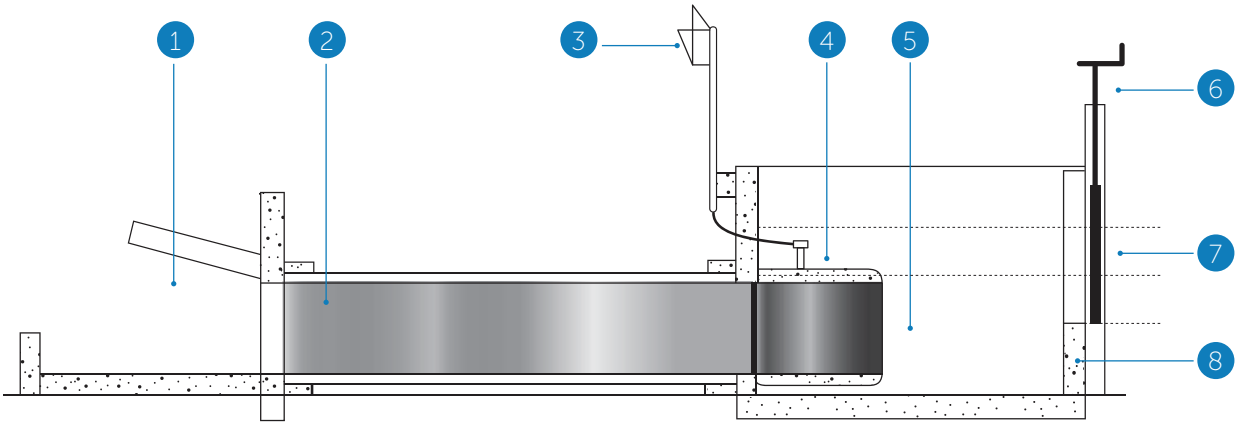
## Installation requirements

The **EMFLUX** irrigation flowmeter performs best with a short run of 5 diameters pipework upstream of the meter and pipework or open discharge at the downstream end. The meters must flow full pipe in all operating situations.

## Service and support

Aquamonix, through its Service Division, offers a full suite of service products for the **EMFLUX** flowmeter range aimed at minimising downtime and cost, while maintaining confidence in the measurement.

## System components




1. Upstream entry Pit
2. Connecting Pipe - RCP
3. Irriflow Solar Powered Transmitter
4. Flowmeter Model 2030
5. Downstream Exit Pit
6. Flow Control Gate or Penstock
7. Operating Head Loss
8. Downstream Sill

# **EMFLUX2060** Steel Body Flowmeter

The **EMFLUX2060** offers the strength and durability of steel with a choice of chemical or abrasive resistant liners, selection of wide range of flanges and electrodes.

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Licence ID: 15075

## Features

- Uses the proven electromagnetic method of flow measurement
- No moving parts
- High accuracy
- Choice of electrodes and liners
- Variety of flange types available
- Robust welded steel construction
- Submersible to 10 metres of water
- Suitable for buried service
- Minimal straight pipe requirements
- Used with the **EMFLUX i500** or **EMFLUX M500** Transmitter

## Installation Requirements

**Detector**
Mounts directly into the process pipeline and can be installed in horizontal, vertical or sloped pipelines.

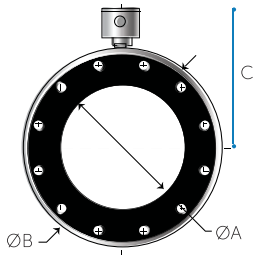
**Note:** For accurate flow measurement the flow detector must always be full.

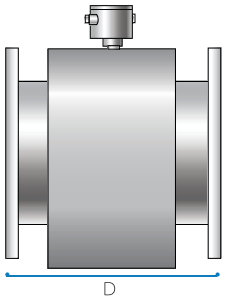
**Associated Flow Transmitter**
Can be located up to 30m for **i500** and 100m for **M500**.

## General Applications

- Water production and distribution
- Irrigation flow measurement
- Waste water monitoring
- Mining and industrial

Aquamonix has pattern approval to DN1500 meters, which includes the EMFLUX2060 flowmeter.




## How to Order

**Typical specifying sequence**

**Example: EM2060** D1 1 pS X S F

**EM = M500 or IR = 500**

**Size (mm)**
50
80
100
150 to 1500

**Flanged**
AD = AS2129 Table D
AE = AS2129 Table E
C1 = ANSI 150
C2 = ANSI 300
D1 = AS4087-16
D2 = AS4087-21
D3 = AS4087-35

**Lining Material**
1 = 6mm Rubberflex (alternative to hard ebonite rubber)
C = 3mm Rubberflex (Irrigation)
3 = Neoprene
5 = Polyurethane
6 = 12mm Rubberflex (Tailings spec/alternative to Linatex)
B = Basalt

**Electrodes**
S = 316SS
H = Hastelloy 'C'
T = Tungsten Tipped

**Earthing**
X = None
S = 316SS
H = Hastelloy 'C'
T = Tungsten Tipped
D = 304SS Discs

**Pipe Not Full**
X = None
S = 316SS
H = Hastelloy 'C'
T = Tungsten Tipped

**Potting**
X = No Potting
F = Potting (Cable must be ordered separately)

## Dimensions(mm)

| Nominal Bore | | | | | |
|---|---|---|---|---|---|
| ØA | B | C | D | Min Flow L/s | Max Flow L/s |
| 50 | 231 | 216 | 360 | 1 | 20 |
| 80 | 231 | 216 | 360 | 2.5 | 50 |
| 100 | 231 | 216 | 360 | 4 | 78 |
| 150 | 316 | 258 | 429 | 8 | 176 |
| 200 | 373 | 287 | 429 | 15.7 | 314 |
| 225 | 400 | 300 | 429 | 20 | 397 |
| 250 | 421 | 311 | 429 | 25 | 490 |
| 300 | 479 | 340 | 471 | 35 | 707 |
| 350 | 582 | 391 | 543 | 49 | 962 |
| 375 | 607 | 417 | 582 | 56 | 1104 |
| 400 | 634 | 417 | 582 | 63 | 1256 |
| 450 | 685 | 443 | 607 | 80 | 1590 |
| 500 | 736 | 468 | 683 | 100 | 1963 |
| 600 | 838 | 520 | 785 | 141 | 2827 |
| 700 | 940) | 570 | 937 | 193 | 3848 |
| 800 | 1040 | 620 | 1050 | 251 | 5026 |
| 900 | 1140 | 670 | 1180 | 318 | 6362 |
| 1000 | 1245 | 723 | 1310 | 393 | 7854 |

Note: Dimensions are nominal to ± 1 mm. For other liner materials, consult the factory.
Dimension D is based on Standard Hard Ebonite Rubber Lining

# **EMFLUX i500** Flowmeter Transmitter

The **i500** Electromagnetic Flowmeter is a high accuracy, bullet-proof water and wastewater measurement device. It complies with the new Australian Standard AS/NZS 4747:2013 – Meters for Non-Urban Water Supply and is fully pattern approved. The meter will meet the demanding requirements for accurate metering of irrigation supplies but is equally at home in other applications including urban water, waste water, mining and environmental monitoring.

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## More than just metering

The **i500** flowmeter transmitter is more than just a transmitter. It is a remote communication, control and analytics hub. It can be an integral part of your flowmeter data capture, data storage and day to day network operations. The increased capabilities of the **i500** will help you to minimise capital cost when building an irrigation network and can save you time and maintenance costs across the lifetime of the scheme operation.

### Applications

- Irrigation off-takes
- Basic control functions e.g. local off-take gates and valves and a variety of communications
- Surface Water or Groundwater Metering
- Gravity or Pumped Systems
- Backwards compatible with the **i300** transmitter to facilitate a seamless upgrade to the **i500**

### Features

- Use the well established electromagnetic measurement method
- No moving parts or restriction of flow during measurement
- Enhanced diagnostic and alarm functions, completely configurable
- Removable SD card allowing easy upgrade of transmitter and logging
- Large multi-line backlit LCD display
- User configurable logging interval for flow data and diagnostic tables
- Optional 4-20mA output
- User configurable digital frequency and pulse outputs
- Full serial Modbus multidrop support
- 3x expansion slots allowing additional IO
- Serial support for modems, RTUs and PLCs
- Ability to calibrate and operate flow tubes up to 1500mm in diameter
- Capacitance style keypad with no moving parts
- Cable entry via IP68 rated glands
- Multi-level password protection
- Designed for outdoor environments

### Magmate

- State of the art flowmeter commissioning software based on open source protocols
- Provided free of charge
- Compatible with all versions of Windows up to and including Windows 10
- Advanced diagnostics to support commissioning
- PC compatible directory structure with individual files for:
  - Flow data records (CSV format)
  - Diagnostic results records (CSV format)
  - System event records (CSV format)
  - Alarms records (CSV format)
  - Configuration data (binary format)

### Diagnostics

The i500 incorporates advanced diagnostics which monitor the integrity of the system, including:

- Coil voltage check
- Coil current check
- Electrode check
- Pipe Not Full detection
- Signal voltage check
- A/D Converter operation and self calibration
- Real Time Clock operation
- Battery voltage
- Battery current
- Solar voltage

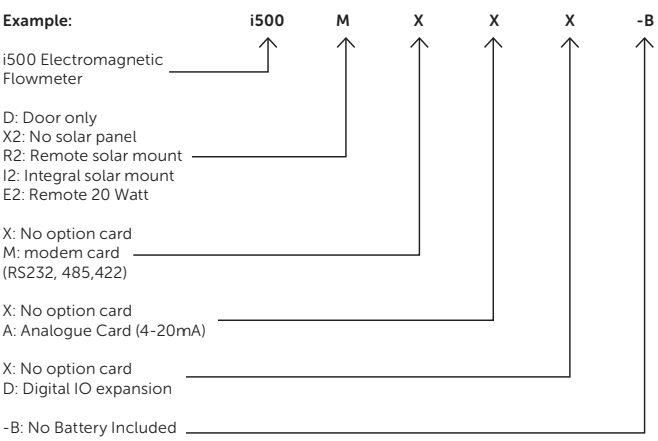
Other diagnostic functions included as standard.

### Communications Capabilities

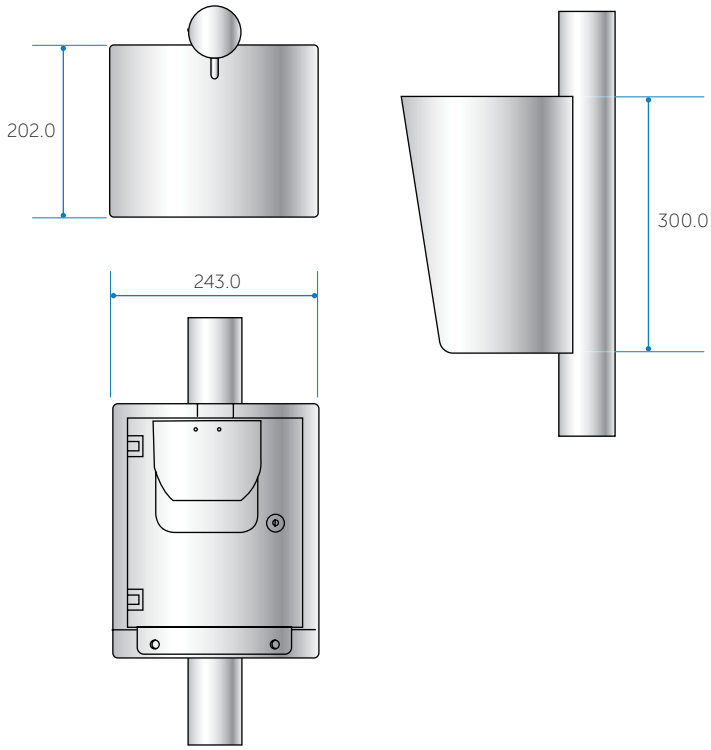
- DNP3 ready and tested
- Radio telemetry ready and tested
- 3G/4G ready and tested
- 3G/4G communications can be linked to Aquamonix's CloudBurst secure cloud data platform
- Compatible with Aquamonix GateKeeper and Rubicon™ TCC® systems

| | i500 |
|---|---|
| **Performance** | |
| Flow Velocity Range | 0.01-10m/sec |
| Accuracy | < ±0.5% of indicated flow rate, or ±1mm/sec |
| Full Scale Flow Rate | Programmable range: 0.01-10m/sec |
| Low Flow Cutoff | Programmable down to 0.01m/sec |
| Measurement Type | Flow velocity, flow rate, mass flow |
| Totaliser Units | Litres, kilolitres, megalitres, gigalitres and others |
| Flow Time Units | Seconds, hours, days |
| Flow Simulation Mode | Simulated DC current out, simulated flow rate. |
| Temperature | -20°C to 55°C |
| **Outputs** | |
| Digital Pulse | Yes, 2 standard (up to 4 with optional expansion card) 100mA maximium each |
| Frequency | Up to 1000Hz |
| Analogue | Yes (with optional expansion card) Up to 2 outputs, 4 - 20mA, internally or externally powered |
| Serial RS232 | Yes (with optional expansion card) |
| Serial RS485 | Yes (with optional expansion card) |
| Serial RS422 | Yes (with optional expansion card) |
| Modbus | Yes (with optional expansion card) |
| **Inputs** | |
| Type | 1 x digital input for controls (with optional expansion card) |
| Maximum Current | 100mA |
| Power supply | 12 - 24VDC with solar charging. |
| **Data Logging** | |
| Paramaters Logged | Diagnostic, flow, alarm |
| Logging Interval | Configurable, 1 to 720 minutes |
| Comms Connection | Mini USB (standard) RS232, RS485, RS422 (with optional expansion card) |
| File Format | CSV |
| Capacity | 2 Gigabyte |
| **Power Supply** | |
| Power Supply | 12V DC with solar charging. |
| Maximum Cable Length | 30m |
| **Enclosure Specifications** | |
| Construction | Grade 304 stainless steel, double skinned |
| Rating | IP65 |
| Dimensions | H: 300mm W: 240mm D: 200mm |
| Weight | 7.0 kg without battery and solar panel |
| Display | 128 x 64 pixel configurable monochrome graphic with LED backlighting |
| Data Entry | Four button capacitive touch keypad with additional con-nectivity via USB |
| Cable Entries | 4 x M16 (solar, flow detector signal, flow detector coil), 1 x M8 (serial or antenna) |

### Typical specifying sequence




| Part number table for i500 flowmeter | |
|---|---|
| i500 – X2XXX – B | i500 with no solar panel, no battery and no option cards |
| i500 – R2MXX | i500 with remote solar panel, 9Ah battery and modem option card. |
| i500 – I2MAX | i500 with integral solar panel, 9 Ah battery, modem and 4 – 20 mA option cards |
| **Part numbers for optional expansion cards:** | |
| Modem card: | Aquamonix part number G625056-PUR |
| Analogue card: | Aquamonix part number G625054-PUR |
| Digital I/O card: | Aquamonix part number G625057-PUR |



# EMFLUX M500 Flowmeter Transmitter

The M500 Electromagnetic Flowmeter has been developed to meet the demanding requirements for accurate metering of process and mining fluid supplies but is equally at home in other water supply applications including urban water waste water, irrigation and environmental monitoring.

## Applications

- For accurate flow measurement of any conductive fluid.
- Ideally suited to water and waste water treatment plants, mining and general industry.
- Mains Powered or 12-24V DC Power.
- Forward and Reveerse flow measurement.

## Features

- Use the well established electromagnetic measurement method
- No moving parts or restriction of flow during measurement
- Enhanced diagnostic and alarm functions, completely configurable
- Removable SD card allowing easy upgrade of transmitter and logging
- Large multi-line backlit LCD display
- User configurable logging interval for flow data and diagnostic tables
- Optional 4-20mA output
- User configurable digital frequency and pulse outputs
- Full serial Modbus multidrop support
- 3x expansion slots allowing additional IO
- Serial support for modems, RTUs and PLCs
- Ability to calibrate and operate flow tubes up to 1500mm in diameter
- Capacitance style keypad with no moving parts
- Cable entry via IP68 rated glands
- Multi-level password protection
- Designed for outdoor environments

## Technical Data

**Display:**
128 x 64 pixel monochrome graphic type with LED backlighting. Backlight can be enabled or disabled, includes auto-off mode when enabled and after 30 seconds of keypad inactivity.

**Configuration:**
Four button capacitive touch with adjacent key suppression, self-calibrating, with wake function and press or hold discrimination. Two-level menu hierarchy: menu and submenu with numerical index to each menu item for ease of cross referencing

Programmable meter codes are configurable. Access remotely via Magmate utility or via the onboard USB port.

## Set-up and Operation

The operation and set-up of the system are broken into two main areas:

**Operations Menu**

- Power up display (self-test status and firmware version indication).
- Display of flow variables and alarms.
- Passcode entry.
- Read only display of settings and diagnostic information.
- Configuration of user settings (configuration menus).

**Diagnostics**
The M500 incorporates advanced diagnostics which monitor the integrity of the system, including:

- Coil voltage check
- Coil current check
- Electrode check
- Pipe Not Full detection
- Signal voltage check
- A/D Converter operation and self calibration
- Real Time Clock operation
- Battery voltage
- Battery current
- Solar voltage

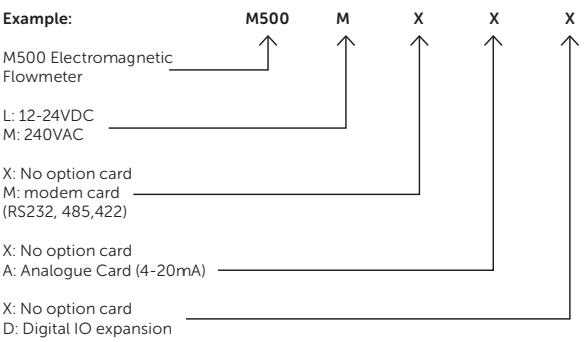
## Data Logging

**Records**
PC compatible directory structure with individual files for:

- Flow data records (CSV)
- Diagnostic results records (CSV)
- System event records (CSV)
- Alarms records (CSV)
- Configuration data (binary format)

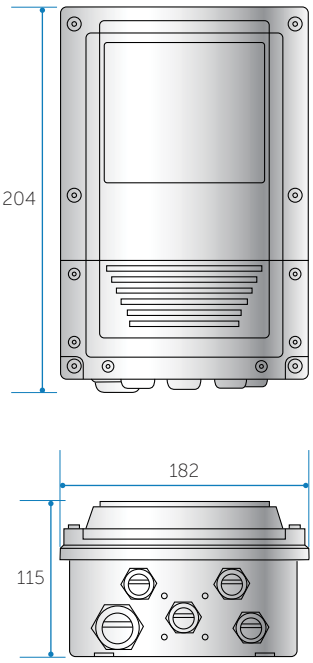
| | M500 |
|---|---|
| **Performance** | |
| Flow Velocity Range | 0.01-10m/sec |
| Accuracy | < ±0.5% of indicated flow rate, or ±1mm/sec |
| Full Scale Flow Rate | Programmable range: 0.01-10m/sec |
| Low Flow Cutoff | Programmable down to 0.01m/sec |
| Measurement Type | Flow velocity, flow rate, mass flow |
| Totaliser Units | Litres, kilolitres, megalitres, gigalitres and others |
| Flow Time Units | Seconds, hours, days |
| Flow Simulation Mode | Simulated DC current out, simulated flow rate. |
| Temperature | -20°C to 55°C |
| **Outputs** | |
| Digital Pulse | Yes, 2 standard (up to 4 with optional expansion card) 100mA maximium each |
| Frequency | Up to 1000Hz |
| Analogue | Yes (with optional expansion card) Up to 2 outputs, 4 - 20mA, internally or externally powered |
| Serial RS232 | Yes (with optional expansion card) |
| Serial RS485 | Yes (with optional expansion card) |
| Serial RS422 | Yes (with optional expansion card) |
| Modbus | Yes (with optional expansion card) |
| **Inputs** | |
| Type | 1 x digital input for controls (with optional expansion card) |
| Maximum Current | 100mA |
| Power supply | 240V AC, 12-24V DC |
| **Data Logging** | |
| Paramaters Logged | Diagnostic, flow, alarm |
| Logging Interval | Configurable, 1 to 720 minutes |
| Comms Connection | Mini USB (standard) RS232, RS485, RS422 (with optional expansion card) |
| File Format | CSV |
| Capacity | 2 Gigabyte |
| **Power Supply** | |
| Power Supply | 240V AC or 12-24V DC options |
| Maximum Cable Length | 100m |
| **Enclosure Specifications** | |
| Construction | Aluminium, polyurethane coated |
| Rating | IP65 |
| Dimensions | H: 282mm W: 182mm D: 115mm |
| Weight | 3.0 kg |
| Display | 128 x 64 pixel configurable monochrome graphic with LED backlighting |
| Data Entry | Four button capacitive touch keypad with additional con-nectivity via USB |
| Cable Entries | 1 x M25 (conduit entry), 1 x M20 (flow detector coil), 3 x M16 (power, flow detector signal) |

### Typical specifying sequence

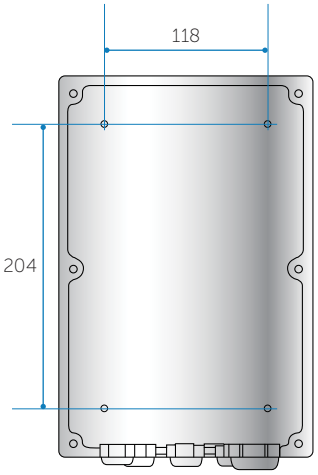



| Part number table for M500 flowmeter | |
|---|---|
| M500-MXXX | M500 with 240VAC supply, no option expansion cards. |
| M500-MXAX | M500 with 240VAC supply, analogue expansion card. |
| M500-LMXX | M500 with 24VDC supply, modem expansion card. |
| **Part numbers for optional expansion cards:** | |
| Modem card: | Aquamonix part number G625056-PUR |
| Analogue card: | Aquamonix part number G625054-PUR |
| Digital I/O card: | Aquamonix part number G625057-PUR |

### Dimensions (mm)




### M5 Bolt Mounting Hole Positions



## About Aquamonix

Aquamonix provides innovative products and services to assist businesses and communities in monitoring critical water resources, managing environmental compliance and mastering remote infrastructure. We are a major supplier of flowmeters, water quality sensors, remote telemetry systems and control solutions for the Australian irrigation market. We are the only Australian manufacturer of full bore flowmeters and have an installed base of more than 40,000 sites and over 40 years of experience in the industry.


Licence ID: 15075

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