Measure agricultural water and wastewater flows plus monitor vital farm operations

- Doppler ultrasonic insert sensor with MASP Technology
- Easy to install in existing pipework through a 2” ball valve
- Works great in dirty water and animal waste
- No moving parts, no blockages, no worries
- Minimal straight run requirements
- Completely submersible design (IP68)

Full pipe flow measurement: MACE Insert Velocity Sensor

www.macemeters.com
AgriFlo XCi

The AgriFlo XCi can be used to monitor vital farm equipment and on-farm sensors. Use the versatility of AgriFlo XCi to monitor inputs as diverse as irrigation flows, farm wastewater flows, water quality, dam levels, soil moisture, pump and engine management systems.

AgriFlo XCi is easy to install, easy to use and virtually maintenance free. Utilizing state of the art MACE Doppler ultrasonic velocity sensors, AgriFlo XCi has no moving parts and provides minimal obstruction to the flow. MACE Doppler ultrasonic velocity sensors excel in trash laden water and animal waste which means that the meter stays in service longer without time-consuming repairs.

Cost effective flow metering

MACE offers the flexible, true value metering solution. When comparing flow meters, consider the TOTAL COST of the flow meter, installation & ongoing maintenance.

- In similar sized pipes, AgriFlo XCi is significantly cheaper than other comparable high quality solutions.
- AgriFlo XCi is easily installed into existing pipework whether above or below ground - no expensive fittings or re-routing.
- A typical single pipe installation can be completed by two people in under two hours.
- Because AgriFlo XCi has no moving parts and the sensor cannot foul, there are virtually no ongoing maintenance costs.
- Connect up to flow sensors to a single AgriFlo XCi to reduce your cost per measuring point even further.
- Significant savings for pump stations with more than one pipe.

Ready-to-Go straight out of the box

The MACE AgriFlo XCi includes a data logger, LCD display, solar regulator, battery, multi cards (application dependent) all in one ruggedized weatherproof enclosure. No more hunting around for bits and pieces. In most cases you can be up and monitoring in just a couple of hours.

Remote configuration, diagnostics and data retrieval with MACE WebComm

- The MACE WebComm card provides AgriFlo XCi the ability to be remotely configured and diagnosed in the field.
- Internal logged data is automatically uploaded to MACE or HydroVu data servers.
- SMS/Email alert subscription service available.
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True average velocity measurement

MACE velocity sensors use continuous wave Doppler ultrasound to measure the speed of dirt, bubbles and other particles in the stream flow. MACE Doppler ultrasonic sensors “see” particles in water just like turning on a flashlight in fog.

- In a full pipe, electromagnetic or mechanical insertion devices “see” a golf ball sized velocity profile and then use complex algorithms to calculate velocity. By contrast, MACE Doppler ultrasonic velocity sensors utilizing MACE Advanced Signal Processing (MASP) technology “see” across the entire stream profile to give a true average velocity.

Multiple cards for multiple sensor applications

The AgriFlo XCi multiple card interface allows the user to efficiently monitor an array of irrigation flow and on-farm sensors. It’s a smart packaged monitoring solution that provides remote data access with alerts and alarms. It’s also telemetry-ready for effective low cost control and rapid response. Users can install any combination of the MACE cards shown, in the flow available card slots.

Choose the right cards for your application to tailor the AgriFlo to your exact farm requirements now and in the future.

1/0 Card

- This card supports seven sensor inputs and four control outputs including 4-20mA, relay and digital.
- The card also supplies 12V to power your add on sensors.

Pulse 1/0 Card

- This card powers +10VDC or +12VDC a single pulsing flow sensor and provides a pulse output.
- This allows AgriFlo XCi the ability to sense pulses from non-MACE flow sensors.

SDI-12 Master Card

- This card provides AgriFlo XCi with the ability to control Log-Data and 3rd party SDI-12 compliant sensors.

FloSI Card

- The card provides an SDI-12 or ModBus output to interface AgriFlo XCi to SCADA systems.

WebComm Card

- Provides AgriFlo XCi the ability to remotely configure the device and run diagnostics as well as upload external logged data to a web-based data server or MACE SCADA networks.

In-Situ sensors

- Add-on Sensors
  - AgriFlo XCi can be configured to monitor a diverse range of farm sensors and devices. For example:
  - Engine management systems (e.g. RPM, temperature, pressure)
  - In-Situ Aqua TROLL 400 multiparameter sondes
  - In-Situ and 3rd party SDI-12 compliant sensors
  - Pond/climate level measurement
AgriFlo XCi Specifications

**GENERAL**

**Weight**
Approx. 5 kg (11 lbs)

**Dimensions**
365 mm (H) x 260 mm (W) x 170 mm (D)
14.4 in. (H) x 10.2 in. (W) x 6.7 in. (D)

**Enclosure rating**
IP66

**Enclosure material**
UV stabilized polycarbonate

**Operating temperature** (with internal battery installed)
-15 to +50°C (5 to 122°F)

**Operating temperature** (with internal battery removed and external power used)
-20 to +65°C (-4 to 150°F)

**Backlit display**
16 character x 2 line alphanumeric LCD

**Program memory**
2 Mb flash (sufficient for 600,000 discrete readings)

**Power**
Internal 12Volt 7.2Ah battery with external solar panel or mains charger

**Units of measure**
User definable (metric/US)

**Application software**
FloCom + PC software for system configuration, data downloading and velocity profile testing.

**Factory backup**
24 months - parts and labour guarantee

**DEPTH MEASUREMENT**

**Method**
Ceramic pressure transducer with large flat sensing diaphragm which allows straight, undeflected flow over the sensing area to reduce drawdown effects at high stream velocities and provides for self cleaning with an impervious Alumina ceramic surface.

**Full scale range**
4 m (13 ft.) above the transducer face

**Accuracy**
0.2% of full scale at constant temperature in a static stream.
1% of full scale over a stream 5 to 55°C (41 to 130°F)

**Resolution**
1 mm (0.04 in.)

**Overrange**
60 m (200 ft.) without damage

**Min. operating depth**
20 mm (0.79 in.)

**VELOCITY MEASUREMENT**

**Method**
Submerged Ultrasonic Doppler

**Range**
±0.025 to ± 8.0 m/s (±0.08 to ± 26 ft/s)

**Resolution**
1 mm at 1.0 m/s (0.04 in. at 3.3 ft/s)

**Accuracy**
±1% up to 3.0 m/s (±1% up to 10 ft/s)

**Urethane sensor cable**
9 mm (D) up to 50 m (L) (0.35 in. (D) up to 164 ft. (L))

**Min. operating depth**
40 mm (1.57 in.)

**Max. operating temperature**
60°C (140°F)

**DOPPLER INSERT VELOCITY SENSOR**

For use in full pipes or partially full pipes (when used in conjunction with an EchoFlo depth sensor)

**Pipe size**
0.1 to 2.54 m (4 in. to 100 in.) diameter

**Process fitting**
2” BSP or 2” NPT

**Max. process fitting pressure**
1034 kPa (150psi)

**Max. operating pressure**
253 kPa (37psi)

**Shaft dimensions**
330 mm (L) x 20 mm (D)
13 in. (L) x 0.8 in. (D)

**Head dimensions**
45 mm (D) x 25 mm (H)
1.8 in. (D) x 1 in. (H)

**Wetted materials**
Nickel plated brass and epoxy

**Pipe intrusion area**
11.25 cm² (1.74 in²)

1 The pipe must be de-pressurized prior to insertion or removal
2 The stream flow may be suitable for Doppler ultrasonic flow measurement in pressures >253kPa (37psi) if it contains at least 100 parts per million of suspended solids that are >75 microns in size.

**DOPPLER AREA/VELOCITY SENSOR**

ZX SnapStrap mounted, combined velocity and depth sensor for use in partially full pipes or open channels

**Pipe size**
0.15 to 2.54 m (6 in. to 100 in.) diameter

**Max. channel width**
3 m (10 ft.)

**Dimensions**
125 mm (L) x 50 mm (W) x 20 mm (H)
5 in. (L) x 2 in. (W) x 0.79 in. (H)

**Wetted materials**
PVC, Alumina ceramic and epoxy

**Pipe intrusion area**
8.6 cm² (1.33 in²)

**DOPPLER VELOCITY SENSOR**

ZX SnapStrap mounted, velocity sensor for use in full pipes or open channels (when used in conjunction with a depth sensor)

**Pipe size**
0.15 to 2.54 m (6 in. to 100 in.) diameter

**Max. channel width**
3 m (10 ft.)

**Dimensions**
125 mm (L) x 50 mm (W) x 17 mm (H)
5 in. (L) x 2 in. (W) x 0.67 in. (H)

**Wetted materials**
PVC and epoxy

**Pipe intrusion area**
8 cm² (1.24 in²)

1 The pipe must be de-pressurized prior to insertion or removal
2 The stream flow may be suitable for Doppler ultrasonic flow measurement in pressures >253kPa (37psi) if it contains at least 100 parts per million of suspended solids that are >75 microns in size.

**Note to end users:** These specifications are subject to change at any time without notice. MACE takes no responsibility for the use of these figures. Please consult MACE for the latest specifications before using them in contract submittals or third party quotes etc. MACE reserves the right to change specifications without prior warning. All quoted figures are based on test conditions and are subject to variation due to site conditions.

**DISTRIBUTOR:**