FloPro XCi Specifications

GENERAL

Weight	Approx. 5kg (11lbs)
Dimensions	36.5cm (H) x 26cm (W) x 17cm (D) 14.4″ (H) x 10.2″ (W) x 6.7″ (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. Minimum system requirements - Windows® XP
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	4m (13ft) 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	1mm (0.04″)
Overrange	60m (200ft) without damage
Min. operating depth	17mm (0.67″)

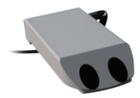
VELOCITY MEASUREMENT

Method	Submerged Ultrasonic Doppler
Range	±0.025 to ± 8.0 m/s (±0.08 to ± 26ft/s)
Resolution	1mm at 1.0 m/s (0.04″ at 3.3ft/s)
Accuracy	±1% up to 3.0 m/s (±1% up to 10ft/s)
Urethane sensor cable	9mm (D) up to 50m (L) (0.35″ (D) up to 164ft (L))
Min. operating depth	40mm (1.57″)
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)

Patents	US Patent No. D544,803 AUS Patent No. AU 301464 S
Pipe size	0.1 to 2.54m (4″ to 100″) diameter
Process fitting	2″ BSP or 2″ NPT
Max. process fitting pressure[1]	1034 kPa (150psi)
Max. operating pressure[2]	253kPa (37psi)
Shaft dimensions	33cm (L) x 2cm (D) 13″ (L) x 0.8″ (D)
Head dimensions	4.5cm (D) x 2.5cm (H) 1.8″ (D) x 1″ (H)
Wetted materials	Nickel plated brass and epoxy
Pipe intrusion area	11.25cm² (1.75 sq.″)



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 2.54m (6″ to 100″) diameter
Max. channel width *	3m (10ft.)
Dimensions	12.5cm (L) x 5cm (W) x 1.6cm (H) 5″ (L) x 2″ (W) x 0.63″ (H)
Wetted materials	PVC, Alumina ceramic and epoxy
Pipe intrusion area	8cm² (1.25 sq.″)

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 2.54m (6″ to 100″) diameter
Max. channel width *	3m (10ft.)
Dimensions	12.5cm (L) x 5cm (W) x 1.6cm (H) 5″ (L) x 2″ (W) x 0.63″ (H)
Wetted materials	PVC and epoxy
Pipe intrusion area	8cm² (1.25 sq.″)

*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.*

** MACE Doppler ultrasonic sensors **will** operate in wider channels, but a reliable stream gauging **must** be performed for best system accuracy.*

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:

Authorised distributor

In Australia:
For customer service, call 1300-735-292
To fax an order, use 1800-067-639
To email an order, ordersau@thermofisher.com

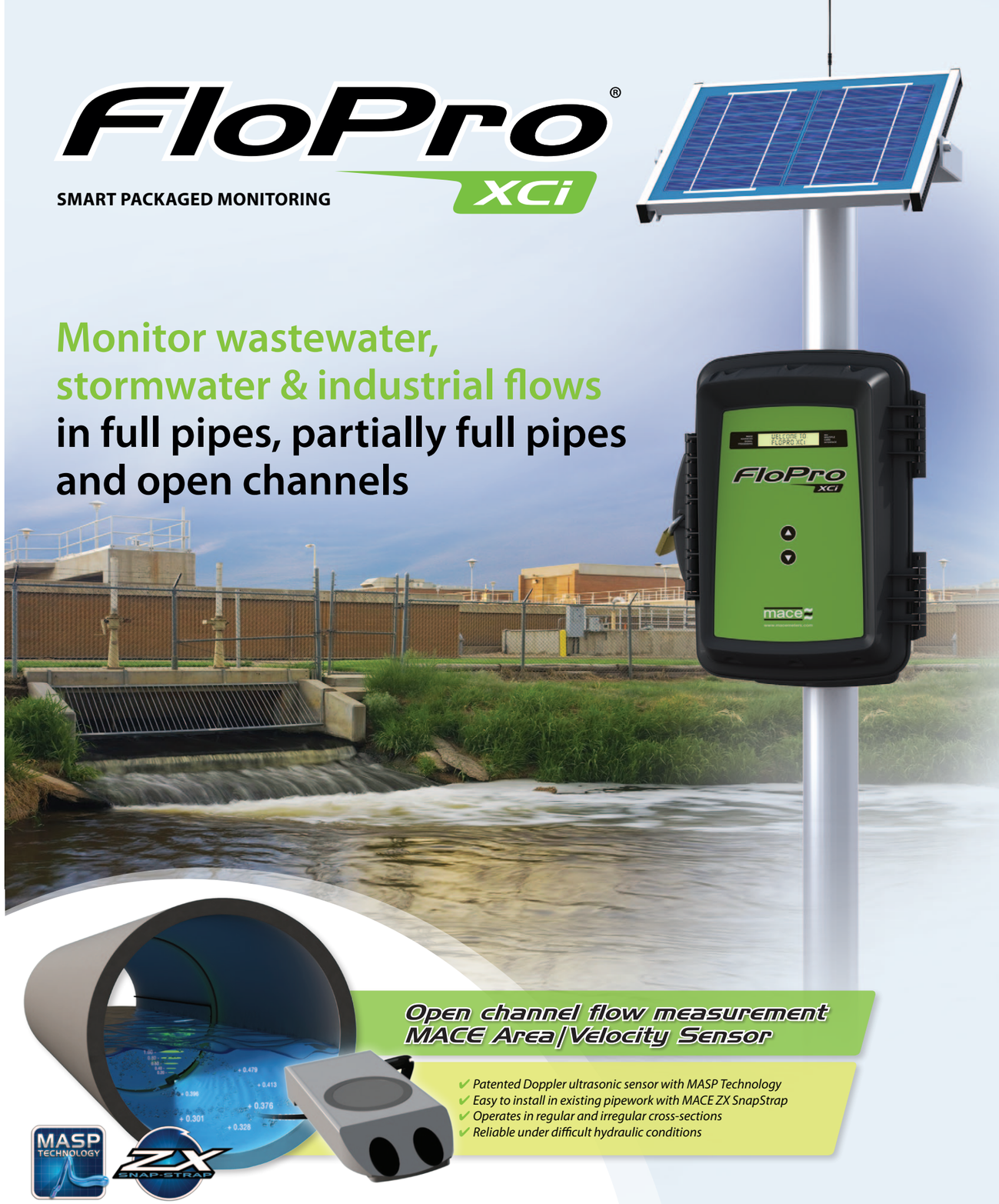
In New Zealand:
For customer service, call 0800-933-966
To fax an order, use 0800-329-246
To email an order, ordersnz@thermofisher.com

ThermoFisher SCIENTIFIC

FloPro® XCi

SMART PACKAGED MONITORING

Monitor wastewater, stormwater & industrial flows in full pipes, partially full pipes and open channels



Open channel flow measurement
MACE Area/Velocity Sensor

- ✔ *Patented Doppler ultrasonic sensor with MASP Technology*
- ✔ *Easy to install in existing pipework with MACE ZX SnapStrap*
- ✔ *Operates in regular and irregular cross-sections*
- ✔ *Reliable under difficult hydraulic conditions*

ThermoFisher SCIENTIFIC

FloPro XCi - Smart packaged monitoring

The FloPro XCi can be used to monitor just about any water quantity and quality sensor together with vital mining, municipal and industrial equipment and assets. Whether you need to measure flow as well as conductivity, pH and rainfall or utilize a downward looking ultrasonic depth sensor to measure pond levels the FloPro is fully expandable to your needs. Furthermore, FloPro is easily interfaced to SCADA/telemetry systems.

FloPro XCi is easy to install, easy to use and virtually maintenance free. Utilizing state of the art MACE Doppler ultrasonic velocity sensors, FloPro has no moving parts and provides minimal obstruction to the flow. MACE Doppler ultrasonic velocity sensors produce superior results under a wide range of hydraulic operating conditions such as those encountered in wastewater and stormwater flows. Even when the pipe slope is unknown, in surcharge, or flowing in reverse, the FloPro produces accurate repeatable data every time.

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.

Ready-to-Go straight out of the box

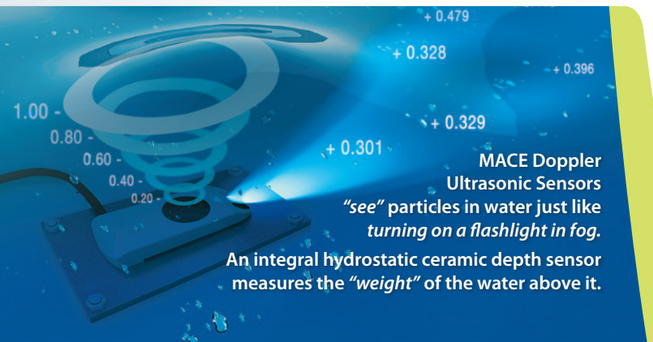
The MACE FloPro XCi includes a data logger, LCD display, solar regulator, battery, multiple cards (application dependent) all in one ruggedized weatherproof enclosure. No more hunting around for bits and pieces. In most cases you can be up and monitoring in just a couple of hours.

Easily configure with MACE FloCom+

- Free configuration and diagnostic software
- Powerful, easy to use Windows® interface
- Painless point 'n' click channel calibration
- No proprietary coding knowledge required

Access data remotely with WebComm

- MACE WebComm card for GSM/3G gives remote access to your data
- Card is powered by and housed in the FloPro XCi
- Data is pushed from your FloPro XCi device to the MACE Data Server where it is available for retrieval on your PC or smartphone
- SMS/Email alert subscription service available



MACE Doppler Ultrasonic Sensors *"see"* particles in water just like *turning on a flashlight in fog.*

An integral hydrostatic ceramic depth sensor measures the *"weight"* of the water above it.

Multiple cards for multiple sensor applications

The FloPro XCi (multiple card interface) allows the user to efficiently monitor a vast array of water quantity and quality sensors plus vital mining, municipal and industrial equipment and assets. 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 five available card slots.

Choose the right card/s for your application to tailor the FloPro to your exact monitoring requirements now and in the future.

Doppler Card

This card supports one MACE Doppler ultrasonic sensor.

I/O Card

This card supports seven sensor inputs and four control outputs including 4-20mA, voltage and digital.

The card also supplies 12V to power your add-on sensors.

Pulse I/O Card

This card powers (+5VDC or + 12VDC) a single pulsing flow sensor and provides a pulse output.

This allows FloPro XCi the ability to sense pulses from non-MACE flow sensors.

SDI-12 Master Card

This card provides FloPro XCi with the ability to control and log SDI-12 sensors.

SCADA

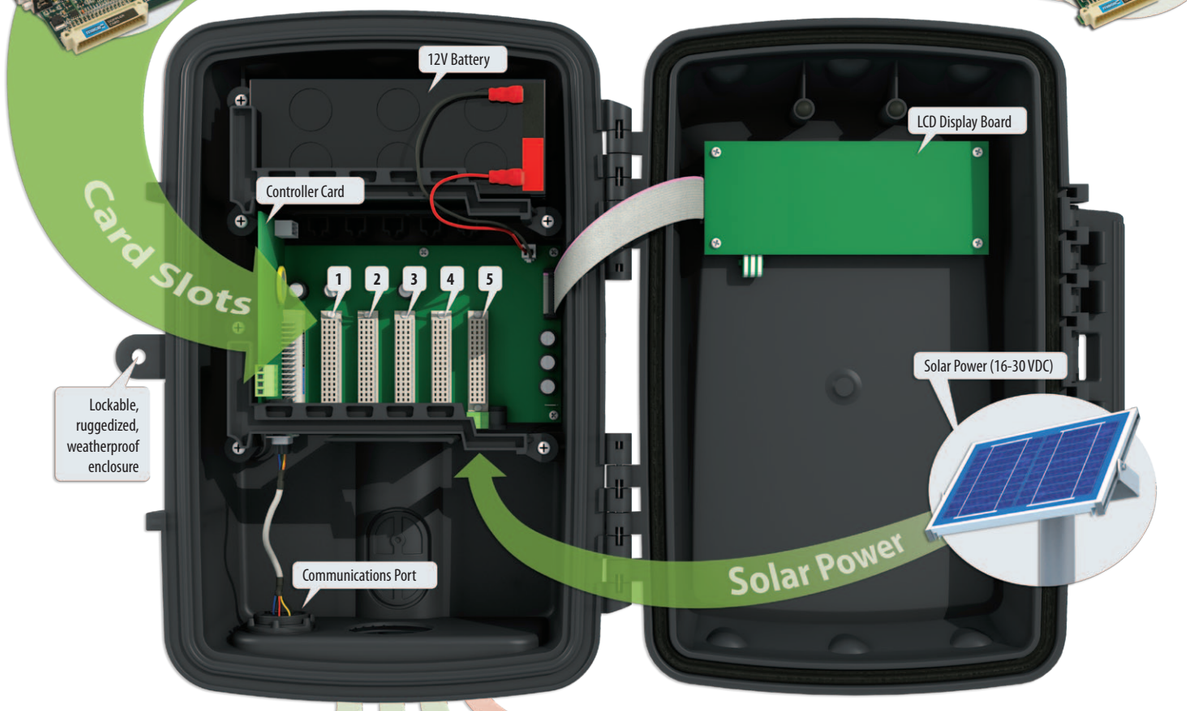
FloSI Card

This card provides an SDI-12 or ModBus output to interface FloPro XCi to SCADA systems.

Remote Access

WebComm Card

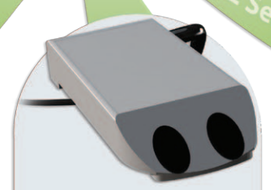
This card provides FloPro XCi the ability to automatically upload internal logged data to the web-based MACE Data Server via mobile telephone networks.



Doppler Ultrasonic Insert Velocity Sensor

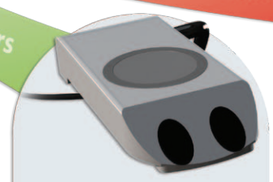
For use in full pipes or partially full pipes (when used in conjunction with an EchoFlo depth sensor).

MACE Sensors



Doppler Ultrasonic Velocity Sensor

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



Doppler Ultrasonic Area/Velocity Sensor

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

Add-on Sensors

Add-on Sensors

FloPro XCi can be configured to monitor a diverse range of water quantity and quality sensors and devices.
For example:

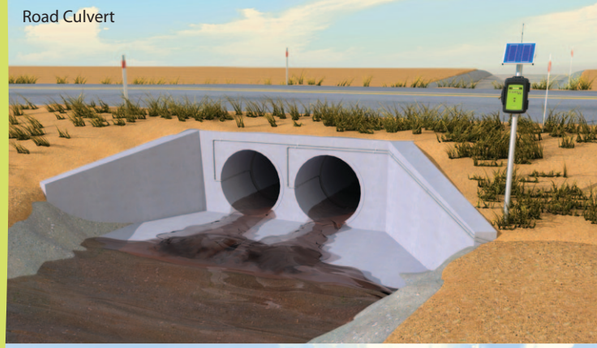
- Water quality multi-sondes
- Water quality sensors (eg. pH,DO/EC)
- Water sampler
- Pond/dam/tank level measurement
- Pumps/engines (RPM, pressure, temperature)

Solutions using FloPro XCi

Stormwater Monitoring

Sewer Monitoring

Road Culvert



Lift Station Monitoring

Partially Full Pipe Flow Measurement