

# MASTERLOAD II™

ELECTRONIC METER CONTROLLER FOR AVIATION FUELING APPLICATIONS



EASY MULTI-POINT  
CALIBRATION

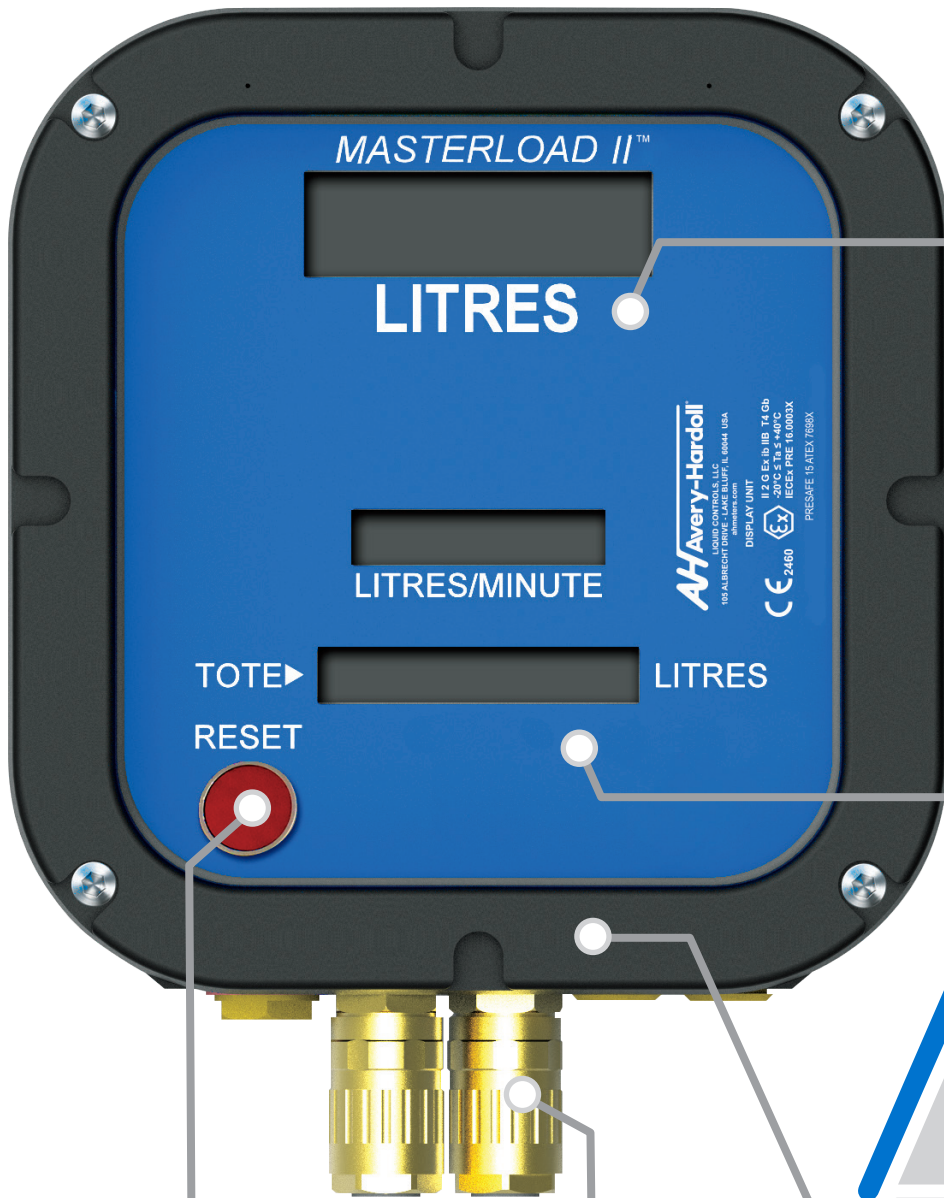
SUITABLE FOR  
ZONE 1 INSTALLATIONS

SINGLE BUTTON  
OPERATION

# FEATURES & BENEFITS

A HIGHLY ACCURATE & VERSATILE MICROPROCESSOR-BASED ELECTRONIC METER CONTROLLER

The system consists of a pulse transmitter (mounted on the meter), a display unit, and a power supply unit. A platinum resistance thermometer (PRT), printers, and any additional displays are optional and available.



LCD Displays for Volume, flow Rate, and Totaliser

Volume to Mass (or Weight) Conversion

Toughened Glass Fascia

Temperature Compensation (Optional)

Single Button Control

Intrinsically Safe Display Unit

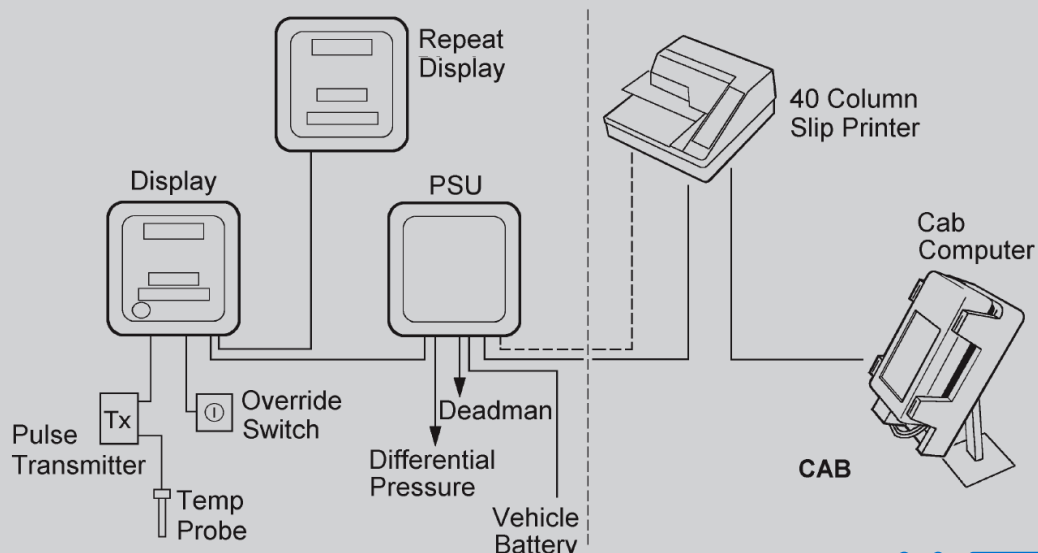
Durable Cast Aluminium Case Sealed to IP65 Specification

- Dynamic multi-point calibration up to 8 points of flow
- MASTERLOAD II™ is approved for use in Zone 1 hazardous areas
- Flexible mounting of display and power supply with up to three optional remote displays
- Configurable as a non-preset system or preset system
- Detailed transaction receipt printout in the driver's cab (if equipped with printer)
- Interlock with the vehicle deadman system and optional timer feature
- Temperature correction to IP/ASTM tables
- MASTERLOAD II™ can deliver data from four additional external transducers on 4-20 mA signals such as differential pressure, water detection, and fuel density
- Constant monitoring of vehicle fueling status, including alarms for differential pressure and overspeeding flow rates
- External control of the refueling process can be achieved by linking MASTERLOAD II™ to an in-cab computer



## FLEXIBLE INSTALLATION AND DATA REPORTING

MASTERLOAD II™ allows the flowmeter to be installed in any location to best suit the system design and the display unit to be mounted elsewhere on the vehicle to best suit operator ergonomics. Two-way data Interchange allows connection to most cab mounted information and data capture systems.





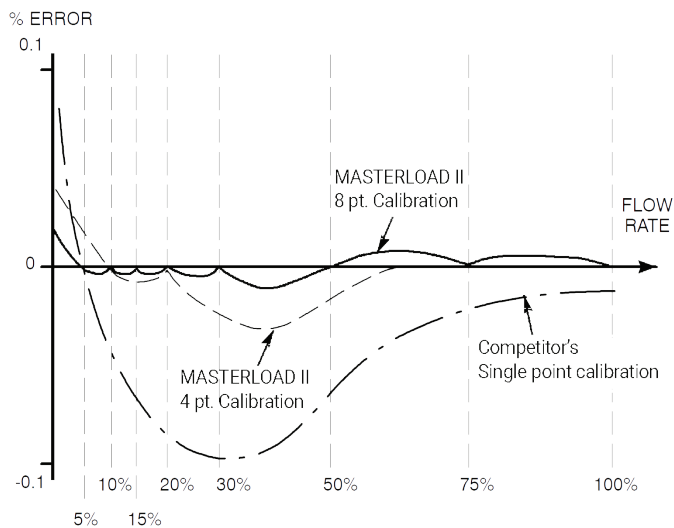
# MASTERLOAD II™ SPECS

ELECTRONIC METER CONTROLLER FOR AVIATION FUELING APPLICATIONS

## MULTI-POINT CALIBRATION

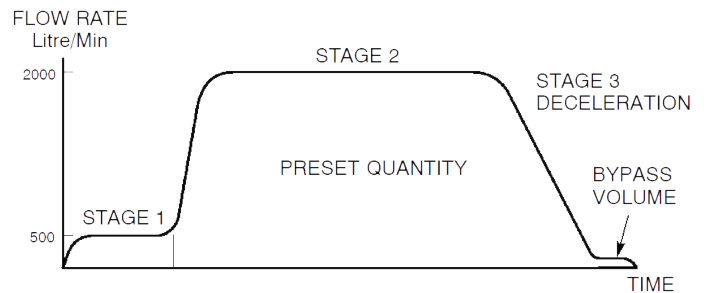
While conventional competitive meters are calibrated at only one flow rate, MASTERLOAD II™ is calibrated to a range of flow rates to provide the highest level of accuracy.

With a choice of 1, 2, 4 or 8 calibration points across the full flow range, the user has the flexibility to configure each MASTERLOAD II™ to suit their specific application.

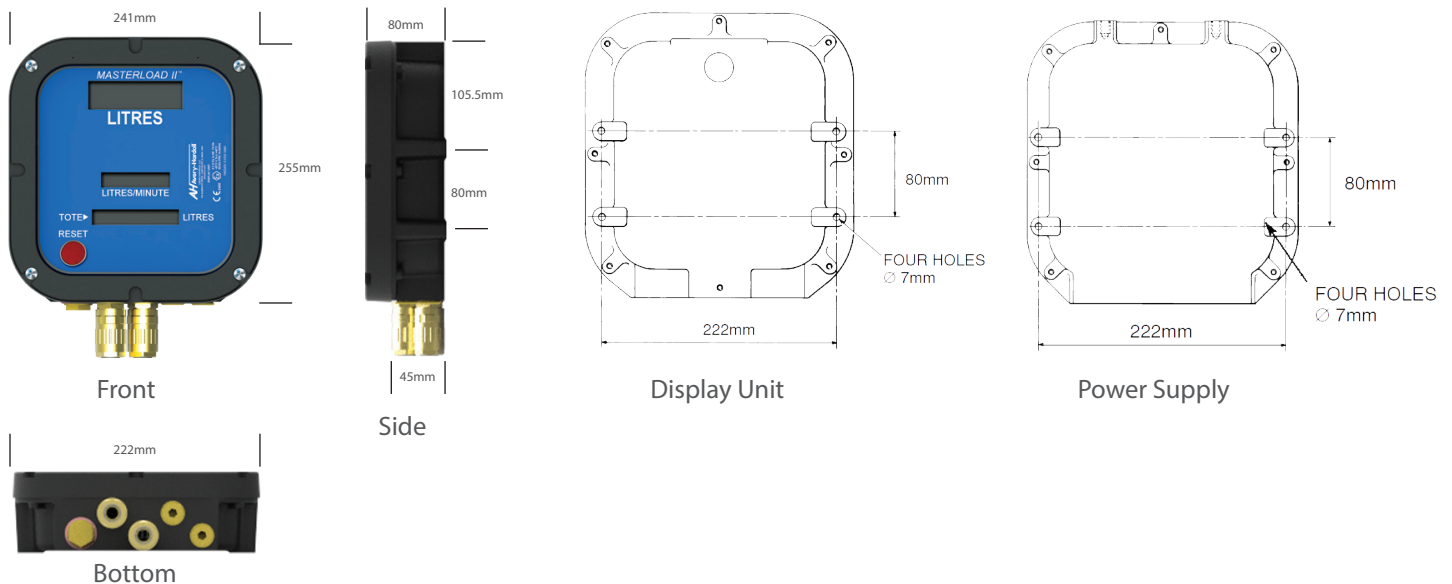


## PRESET BATCH CONTROL

- The ability of MASTERLOAD II™ to control a preset valve ensures that batch delivery matches a programmable flow profile with a highly accurate cut-off, within +0.05/-0 litres of target
- Programmable flow profile with optional two stage opening
- Programmable deceleration rate with extremely accurate cut-off
- Full reset and preset operations are also available on additional display units



## UNIT DIMENSIONS



# SPECS CONTINUED

## **SEALING**

All units are designed for outdoor use and are sealed to specification IP 65

## **SECURITY**

- Full wire sealing
- Automatic error checking
- Alarm reporting
- Data storage for 40 transactions

## **OPERATING TEMPERATURE**

- -20°C to 40°C (-4°F to 105°F)

## **TRANSMITTER**

- Temperature: -30°C to 120°C (-22°F to 250°F)
- Fitting: Direct drive available for most makes of meter
- Channels: 3 independent
- Security: Sense line

## **HUMIDITY**

Resistant up to 100% R.H.

## **TEMPERATURE PROBE**

- Accuracy: +/-0.1°C (0.2°F)
- Discrimination: 0.1°C (0.2°F)
- Range: -30°C to 120°C (-22°F to 250°F)
- Set Up: Factory set
- Alarm Limits: Programmable
- Display: °F or °C
- Compensation: 15°C, 20°C or 31.5°C (60°F, 68°F or 90°F)

## **APPROVALS**

- Global W&M and Ex approvals for Zone 1 installations
- Refer to EU Declaration of Conformity for the most current compliance status

## **LCD DISPLAY**

- Batch: 6 figures (2 decimal places, selectable)
- Flowrate: Sampled every .6 seconds
- Totaliser: 8 figure
- Remote Displays: Up to 3 remote display units
- Interfaces: RS422
  - 7 switch monitoring contacts
  - Auto calibration port
- ID Mode: Simple password entry

## **LOCATIONS**

Flexible mounting:  
(max 50 meters between units)

## **INPUTS**

4-20mA (4)

## **DELIVERY OVERRIDE**

Key operated IP 65 box (optional)

## **NON-VOLATILE MEMORY**

Infinite data retention

## **POWER SUPPLY**

12/24 VDC power supply unit

## **POWER CONSUMPTION**

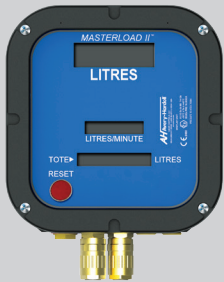
350mA max. (excluding relays)

## **RELAYS**

- Max of 11 plug-in
- Typical - 1 deadman
- Pulse output

# DISPLAY OPTIONS

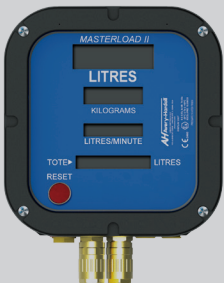
EASY OPERATION AND PROVEN DURABILITY IN EXTREME ENVIRONMENTS



## MASTERLOAD II™ NON-PRESET SYSTEM

Comprises the pulse transmitter, power supply unit and a display unit with a single button and three LCD displays indicating:

- Volume
- Flow rate / temperature
- Non resettable totaliser
- Up to three remote displays may be installed in addition to the main display unit for mounting on a platform of a lift basket



## MASTERLOAD II™ COMBINATION DISPLAY (NON-PRESET ONLY):

The combination display can show both volume and weight with four LCD displays indicating:

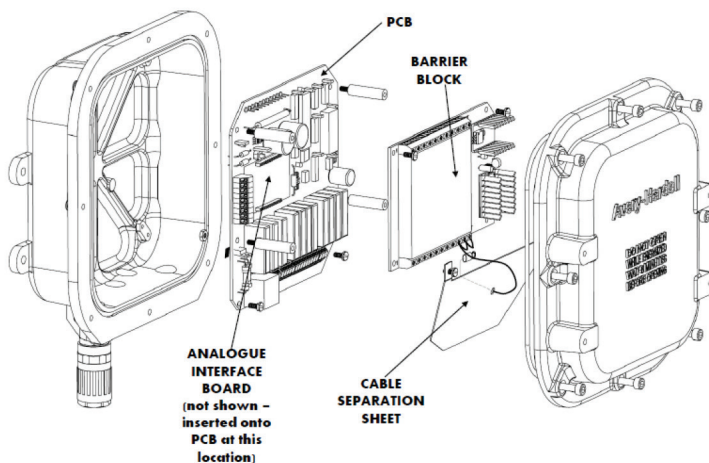
- Batch volume
- Batch weight
- Flow / temperature
- Non resettable totaliser



## MASTERLOAD II™ PRESET SYSTEM

The preset system operates a control valve with three buttons and four LCD displays indicating:

- Volume
- Preset volume
- Flow rate / temperature
- Non resettable totaliser



## POWER SUPPLY UNIT

- All totaliser, calibration factors and set-up data are retained using non-volatile random access memory (NVR) on the processor board in case of power failure
- Optional interface board for inclusion of densitometer or differential pressure (dP) transducer may be added at any time

# ACCESSORIES

FULL OFFERING OF ACCESSORIES AND SYSTEMS FOR MONITORING AND MEASURING



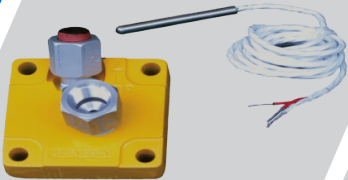
## 3-CHANNEL AVERY-HARDOLL PULSER

Signals from three channels are converted by a microprocessor circuit and displayed in digital form on the front panel of the display unit



## DIFFERENTIAL PRESSURE (dP) TRANSDUCER

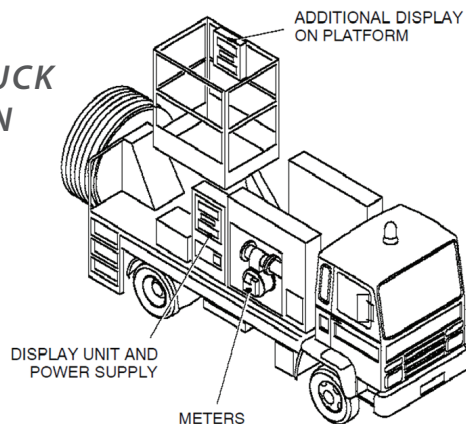
- Provides real time differential pressure readings during the fueling process
- Allows auto shut down of fueling process in the event of non-conforming pressure readings



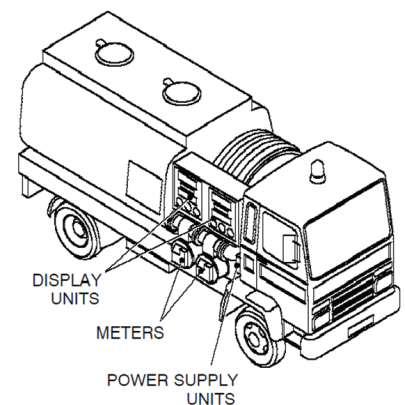
## TEMPERATURE PROBE

- The temperature probe normally locates in a well in the bulkmeter manifold
- The well can be inserted in the pipeline adjacent to the manifold (max. cable length from pulse transmitter is 1 metre)

## TYPICAL HYDRANT TRUCK INSTALLATION



## TYPICAL REFUELLER INSTALLATION





### **BULK FUEL FLOWMETERS**

Avery-Hardoll flowmeters are precision made, positive displacement, liquid measuring instruments; considered the most accurate aviation fuel flowmeters in the world.



### **ELECTRONIC REGISTRATION**

MASTERLOAD II™ is an intrinsically safe microprocessor based electronic controller that enhances the performance and operation of positive displacement and turbine meters.



MASTERLOAD III™ is an advanced dual microprocessor based electronic meter register for Zone 1 hazardous areas that is "FlightConnect Ready" for automated fueling and wireless data reporting.

To learn more about Avery-Hardoll products, visit: [AveryHardoll.com](http://AveryHardoll.com)



Liquid Controls offers a full range of:

- M Series Meters
- MS Series Meters
- Electronic Registration
- Valves
- Air Eliminators & Strainers
- Fueling Accessories
- Wireless Data Management



Liquid Controls proudly manufactures the Avery-Hardoll and LC brand meters and is the leading manufacturer of positive displacement flowmeters and fuel data management systems in the world.

To learn more about what LC can offer you visit: [LCMeter.com](http://LCMeter.com)

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