

PRODUCTS - Measurement

MASTERLOAD II ELECTRONIC METER CONTROLLER FOR LOADING DEPOTS



The Avery-Hardoll **MASTERLOAD II** is a powerful and versatile microprocessor based electronic meter controller. The unit is capable of enhancing the performance of most makes of positive displacement meters.

- Accurate, dynamic meter calibration
- Precise, programmable preset and flow control
- Flexible low cost entry to depot automation
- Two way data interchange to a range of office based terminal automation systems
- Additive injector control
- Temperature compensation to ASTM tables
- Automatic calibration

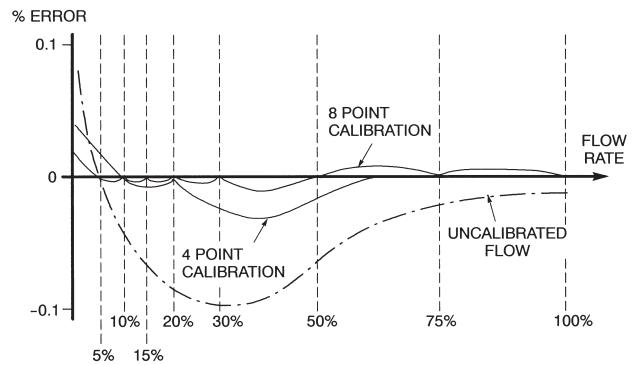
MASTERLOAD II is an intrinsically safe system ideal for use in category two hazardous areas. The system is comprised of a pulse transmitter mounted on the meter, a display unit giving readouts of batch volume, flow rate and a totaliser.



PULSE TRANSMITTERS

DISPLAYS of batch delivery, rate of flow and totaliser are given on large figure liquid crystal displays (LCD's). These displays may easily be configured at site to show a range of alternative values such as volume corrected to reference temperature. Additional display enclosures, with either repeat or supplementary information can be installed at convenient locations.

DYNAMIC CALIBRATION provides accurate error correction across the entire flow range. Most meters are calibrated at only one flow rate - generally 100%. In reality, meters operate at a variety of flow rates. Masterload calibration is corrected at all flow rates to provide the highest level of accuracy. With a choice of 1, 2, 4 or 8 calibration points across the flow range - the system allows the user the flexibility to configure each Masterload to suit the requirements of his own application. Masterload performs a curve fitting exercise to provide the required correction.



TYPICAL ERROR CURVES

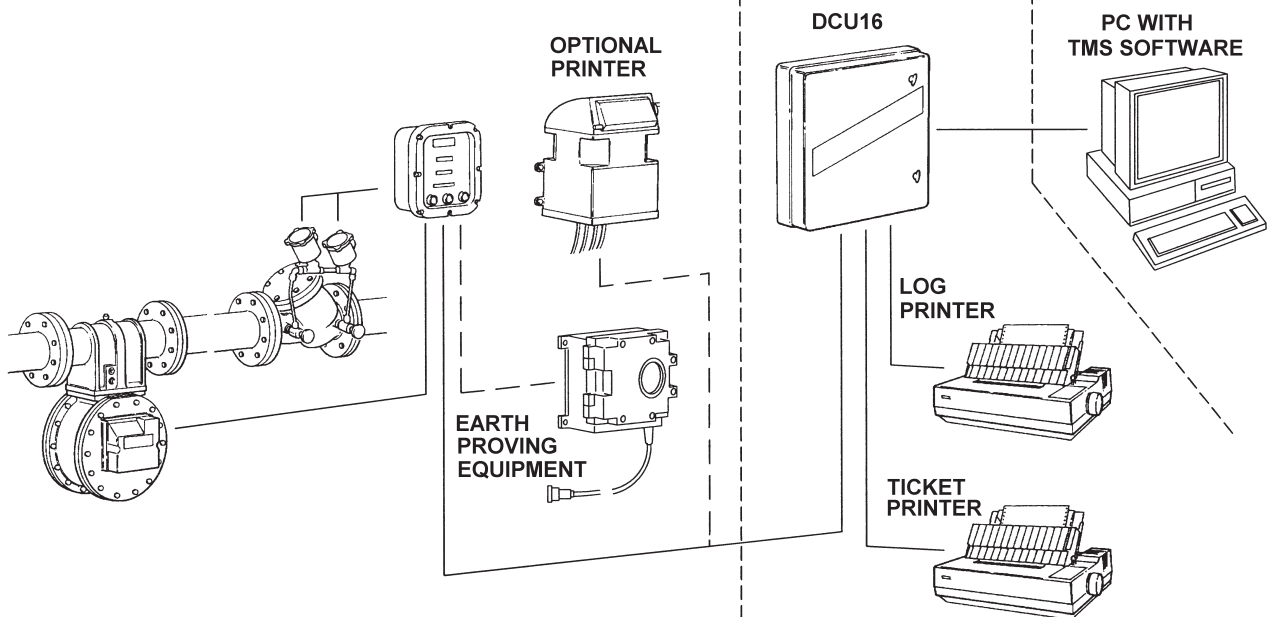
Retro fit: Masterload has been widely used to enhance the performance of most makes of positive displacement meters and can be supplied as a retrofit to existing meters.

Masterload Flexibility

Stage One: a low cost entry to depot automation. Each meter can be converted to give all the benefits of electronic meter control with minimum disruption.

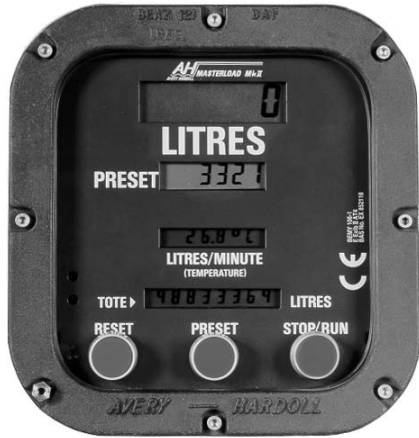
Stage Two: introduces simple communication to the depot office providing local printing of delivery tickets and a meter log.

Stage Three: the site can be up graded to a PC bases automation system such as the Avery-Hardoll Terminal Management System (TMS).



TEMPERATURE COMPENSATION is an optional facility providing a range of temperature related displays. Using a platinum resistance thermometer (PRT), the display may be configured to show product temperature or mean batch temperature. Alternatively, full temperature correction to standard temperature or to the IP/ASTM tables 53 and 54 may be configured.

AUTOMATIC CALIBRATION when calibrated against a Masterload reference meter. A simple infra-red connection links any Masterload meter to a Masterload reference meter. This allows calibration to be carried out completely automatically thus reducing down time, volume of product passed and the potential for human error. Calibration certificates are computer generated to the IP or customer's own specification.



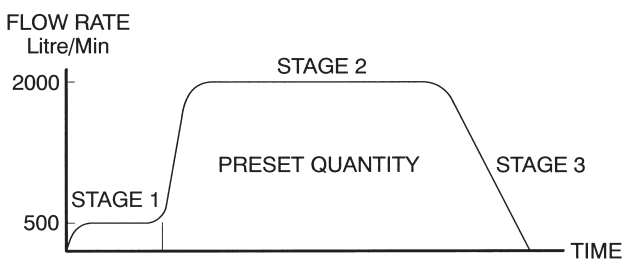
PRESET DISPLAY UNIT



PRESET DISPLAY UNIT
FITTED WITH AUTOCAL LINK

PRESET BATCH CONTROL is provided by a solenoid operated flow control valve. Masterload controls the valve for slow start to prevent the build up of static, opens to a programmable maximum flow rate and provides a ramped closure to eliminate hydraulic shock. Final closure is accurate to within 0.05 of a litre when used with an Avery-Hardoll preset valve.

VOLUME TO WEIGHT CONVERSION provides a reading in weight. Available as either a simple manually entered density figure for low cost batch conversion or a dynamic input from an in-line densitometer which when linked to temperature correction offers the highest level of accuracy.



PRESET BATCH DELIVERY

ADDITIVE INJECTION CONTROL provides a relay output to control piston injectors.

DRIVER INTERFACE is as simple as setting a digital watch. Using a maximum of three buttons, the operator can easily enter load information from simple menu instructions. When connected to a Data Capture Unit (DCU) or Terminal Management System, the same buttons are used to enter passcodes. PIN numbers and pot numbers which can be verified by the system.

DATA COMMUNICATION to RS422 specification offers comprehensive two-way data communication between the meters and the office system. Approved to EN ISO 6551-1995 Level A, Masterload offers the highest level of data security available.

SPECIFICATION

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 (excluding transmitter)	-20 to 40 deg C	
Transmitter		
Temperature	-30 to 120 deg C	
Fitting	Direct drive available for most makes of meter	
Approval	EN ISO 6551-1995 Level A	
Channels	3 Independent	
Security	Sense line	
Humidity	up to 100%	
Safety classification	Category 2	
Atex Approvals		
Power supply unit (flameproof)	II 2 G EEx d IIB T6	
Certificate No.	ITS04ATEX11903	
Display unit	II 2 G EEx ib IIB T4	
Certificate No.	BAS02ATEX2199	
Temperature probe PRT		
Accuracy	+/-0.1 deg C	
Discrimination	0.1 deg C	
Range	-30 to 120 deg C	
Set up	Factory set (no adjustment required)	
Alarm limits	Programmable	
Display	deg F or deg C selectable	
Compensation	15, 20 or 31.5 deg C	

Location Flexible fitting (max 50 metres between units)

Product correction tables

IP/ASTM Table selection to specification IP65.
Generalised crude (A tables)
Generalised products
Table 54
Table 53

Display	LCD
Batch	Min. volume - one unit 6 figures standard units, (2 decimal places selectable)
Flowrate	Sampled every 0.6 secs
Totaliser	8 figure
Remote display	Max of 3 remote displays (various displayed data)
Interfaces	RS422 7 switch monitoring contacts Auto calibration port
ID Mode	Simple password entry

Delivery override Key Operated IP 65 Box (option)

Power supply	110, 220-240V AC 12/24V DC
Relays	Max of 11 plug-in Typical - 1 Deadman Pulse output
Inputs	4 x (4-20mA)

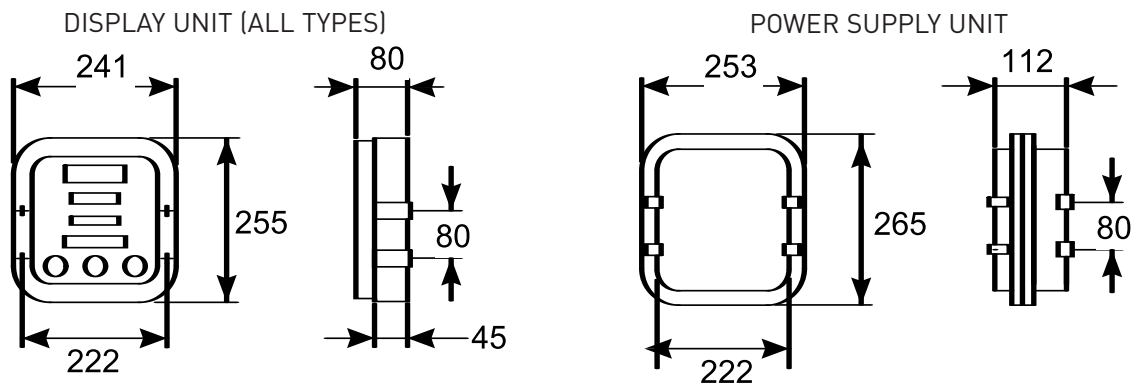
Power consumption 350mA max. (excluding relays)

Linearisation
1, 2, 4 or 8 selectable
Full dynamic interpolation
Accuracy +/- .02 @ measuring condition and 15 deg C if temperature compensation fitted

Manual input Density for weight indication

Non volatile memory Infinite data retention

DIMENSIONS



Avery-Hardoll

Holland Way
Blandford Forum
Dorset DT11 7BJ
UK

Whittaker Controls

12838 Saticoy St
North Hollywood
California 91605-3505
USA

Tel: +44 (0) 1258 486600
Fax: +44 (0) 1258 486601

Telephone: +1 818 765 8160
FAX: +1 818 759 2194