

NEW

AH Avery-Hardoll MASTERLOAD Series

THE NEXT GENERATION ELECTRONIC REGISTER



PART OF
CENTRILOGiQ[®]
by **LC** LIQUID CONTROLS[®]

MASTERLOAD.iQ[™]
MASTERLOADx.iQ[™]

Same Smarts, Different Enclosures

At the center of the CENTRiLOGiQ® platform is the MASTERLOAD.iQ™ and MASTERLOADx.iQ™, built from the ground up by Liquid Controls' Engineering team with close collaboration with customers who use it!

Each provide the same electronics, software, and capabilities, with different ATEX approved enclosures.

HIGH-RES DISPLAY WITH DAY/NIGHT MODES

7" ultra bright video display designed for extreme climates and rigorous fueling environments.

LARGE SCALABLE DIGITS FOR EASY VIEWING

Large digits provide easy viewing, day or night, up to 100 feet (30 m) away.

CONFIGURABLE FUELING DATA

The MASTERLOAD.iQ™ allows users complete control over the fueling data fields displayed on the detailed delivery screen.

FUNCTION KEYS FOR GUIDED OPERATION

Function keys guide the operator through each step of the operation to minimize risk of error.

LARGE KEYS FOR EASY OPERATION

Large, petroleum and UV resistant elastomeric keys provide confident feel and consistent operation.

ATEX APPROVED ZONE 1 ENCLOSURE

MASTERLOADx.iQ provides an Hazardous Zone 1 ATEX approved enclosure.



MASTERLOADx.iQ shown



MASTERLOAD.iQ shown

ATEX APPROVED DIV 2 / ZONE 2 ENCLOSURE

MASTERLOAD.iQ offers hazardous Zone 2 rated enclosure.

ACTIVE FUELING FULL SCREEN MODE

Yellow background indicates active fueling mode improving safety and fueling status awareness of operators.

METER MOUNT BASE (MASTERLOAD.iQ only)

The MASTERLOAD.iQ offers Liquid Controls standard meter-mount design with integrated pulser to allow easy mount field retrofit for legacy mechanical registers.

CENTRILOGiQ[®] Adaptive Sensing

The Liquid Controls **CENTRILOGiQ[®]** platform provides sensing and communication that is scalable to adapt to future decades of new technology. Sensors and accessories bearing the "CENTRILOGiQ CERTIFIED" seal of approval have been certified for use with the **CENTRILOGiQ[®]** family of registers.

Adaptive Sensing

MASTERLOAD.iQ[™] ties together critical sensing devices in aviation fueling systems that reduces complexity, improves efficiency, and safeguards critical fueling data.



LC's electronic **differential pressure (dP) transducer** provides configurable control and reporting of dP across the filter system.

Electronic Differential Pressure **US Patent: #7765978**

Water Detection per EI 1598 directive assures monitoring, reporting, and safeguarding from potential negative impact of the presence of free-water in fuel.



LC's **Slipstream[®] Densitometer** provides automatic fuel density and preset by weight* (or mass) fuel deliveries and reporting.

***Patent Pending**

FUELiQ App and LCP Software Developers Kit (SDK) allows remote fueling setup and operation with cloud reporting of fuel data.



MASTERLOAD.iQ shown with Avery-Hardoll BM 950 meter and LC POD pulser.

It's just that simple.

Our engineers took an aggressive approach by first designing the MASTERLOAD.iQ™ from the operator's perspective as though no training* should be required. The result is a user-guided, configurable interface that steps the operator through the fueling operation, maximizing efficiency and minimizing risk of error.

COMMON FUELING PROCESSES COMPLETED IN 3 STEPS OR LESS

User-configurable fueling processes control the number of steps required for the operator to complete his or her delivery. Pump and print operations are complete in two steps, using one smart-key!



OPERATOR FRIENDLY SCREENS WITH DAY / NIGHT MODES AND BRIGHTNESS CONTROL

MASTERLOAD.iQ™ screens adapt to the operator. Idle screen shows the last delivery data, changing to full screen, active fueling mode with yellow background when "Start" is pressed. Operators have the option to see fueling details during active fueling and can easily toggle between day or night modes for reduced eye strain.



Day mode idle screen

Night mode idle screen

Active mode full screen

Active night mode detail screen

Wireless Connectivity

BLUETOOTH AND WIFI ON-BOARD

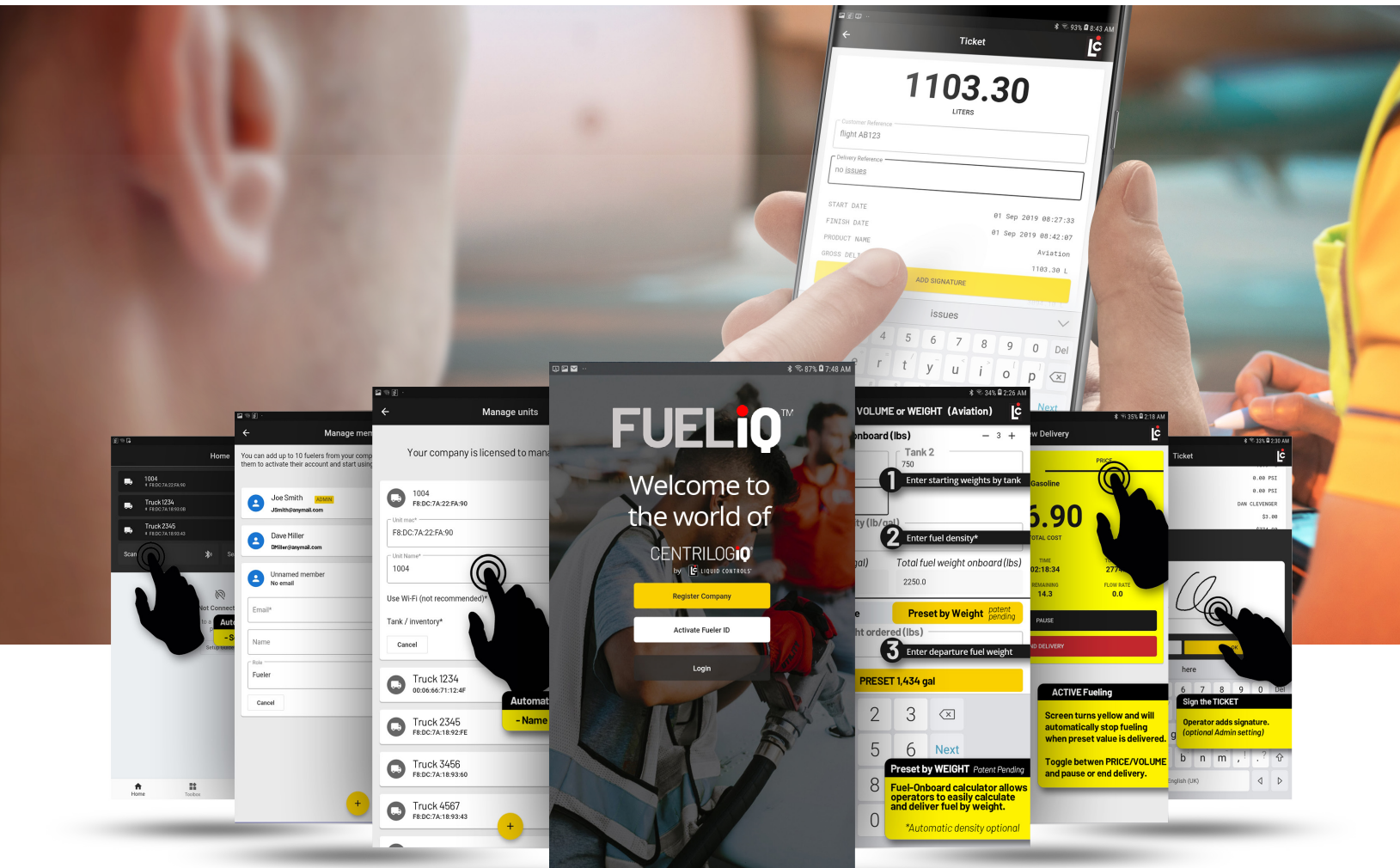
MASTERLOAD.iQ offers embedded bluetooth and WiFi for wireless printing as well as data communication for hand-held devices and tablets that utilize supported iQ Android apps.

MASTERLOAD.iQ has an internal antenna for close range connectivity. For longer range needs, an optional external antenna that integrates directly with the MASTERLOAD.iQ is available.



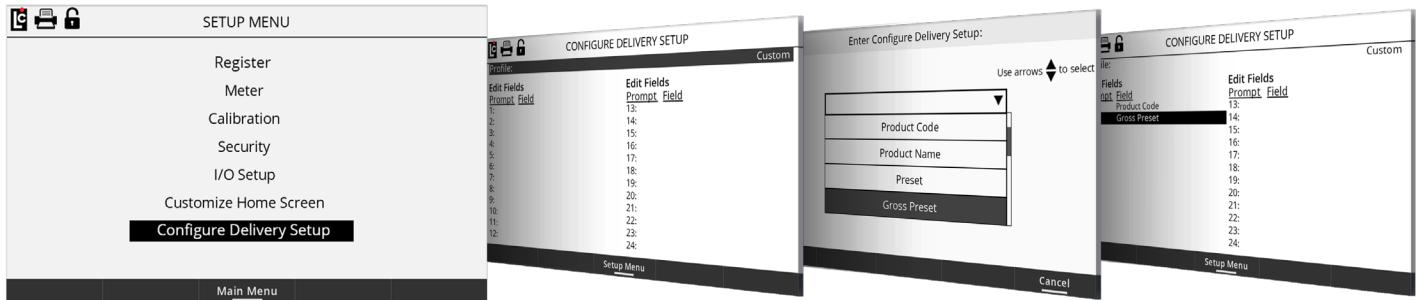
FUELiQ™ Android Application

Liquid Controls' new FUELiQ Android application provides a wireless pathway for fuelers and third-party data providers to gain read-write access to pre-settable data fields on the MASTERLOAD.iQ for operational mobility, efficiency, and full control of transactional data. Whether you need it printed, emailed, in the cloud, or passed through API, FUELiQ will provide you the data you need, when you need it, and where you need it.



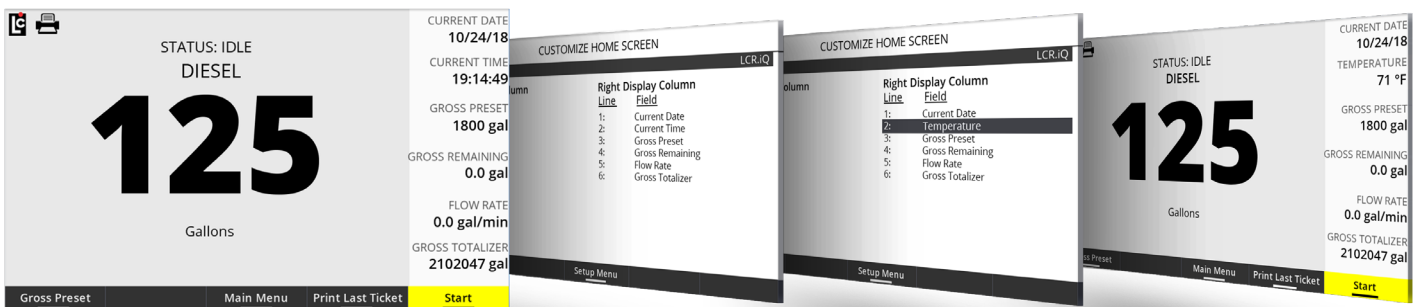
CONFIGURABLE DELIVERY SETUP

Guide the operator through the fueling process of your choosing. From basic pump and print, to preset by volume or product weight, you can also adjust price per gallon, percent tax, or select multiple deliveries on a single ticket.



CONFIGURABLE IDLE SCREEN

Easily configure the idle screen fields the operator sees before, during, and after fueling. All units of measure including date and time formats are also configurable to comply with local standards.



MASTERLOAD.iQ™ User Configuration and Setup Features

User Configuration Features

- Configurable idle screen** - Design the fueling screen the way you want it. (See fig. 5)
- Configurable fuel delivery process** - Step by step on-screen instructions guide the operator through the fueling process you specify. (See fig. 4)
- Configurable date, time, and units of measure formats** - Set local units of measure (US Gal, Liters) and date/time formats to eliminate unit conversions
- Configurable product types** - Configure product types and terms based on local terminology
- Configurable units resolution** - Set batch totalizer resolution in whole numbers, tenths, hundredths, or thousands, up to 11 digits
- Configurable flow rate min/max thresholds** - Set alerts to notify user if flow rates exceed thresholds
- Configurable I/O settings** - Define what each input and output is assigned to and how they are utilized
- Configurable tickets and printer settings** - Easily tailor ticket header text, fields, and printer type
- Configurable product pricing and taxes** - Either fixed or user definable pricing and taxes at the delivery level
- Configurable data logging and retention period** - Define how long to retain fueling transactional data on-board the MASTERLOAD.iQ™
- Configurable languages** - Select your local language for operator screens and functions (consult LC for available languages)

Setup, Calibration and Security

- iQ settings and preferences transferable to multiple registers** - Set up once, then backup and install configuration across multiple units
- Intuitive Calibration** - Easy to follow meter calibration and linearization process. (See fig. 2)

Technical Features and Benefits

The **MASTERLOAD.iQ™** is built on a foundation of hardware and software designed to support decades of future innovation, regulatory requirements, and wireless technologies.

| MASTERLOAD.iQ™ Features | | | |
|---|---------------------|--|---|
| User Input & Display Features | | | |
| Large 7" high definition, full color video display - High clarity and easy visibility | | | |
| Customizable home screen and delivery setup prompts - Streamline driver interface | | | |
| Full alpha-numeric keypad and arrow selection keys - Quick, intuitive navigation | | | |
| Instant on-board diagnostics and help screens - Quickly troubleshoot & resolve issues to minimize downtime | | | |
| Full screen active delivery mode - Largest readable digits in the industry, viewable from up to 100' | | | |
| Day/night mode and brightness adjustment - Operator can select preferred viewing mode for conditions | | | |
| Customizable printed tickets - Easily tailor ticket formats without software updates | | | |
| Transaction history logs store 10,000+ records - No more lost tickets; Easily access and print historical tickets | | | |
| Weights & measures historical audit log and event log - Search and download by date range or field | | | |
| Large LED back lit keypad - Easy to operate with gloved hands, easy to read in daylight or at night | | | |
| Control Features | | | |
| Remote control (E-Stop) compatible to third party systems - Seamless retrofit into existing systems | | | |
| 3rd party fleet automation connectivity and data management - Seamless retrofit into existing systems | | | |
| Toggle flow - Optimizes fuel flow rate without driver intervention in refined fuels delivery systems | | | |
| Wireless Printing - Operator can print from hand-held remote printer | | | |
| General | | | |
| Standard meter mount base - Drop-in retrofit for all conventionally mounted registers | | | |
| Panel mount enclosure option - For remote panel mounting of MASTERLOAD.iQ | | | |
| Preset delivery by volume or weight - Provides highest accuracy of fuel delivery to prevent over-fueling <i>(Preset by Weight Patent Pending)</i> | | | |
| 4-Bolt even seal o-ring design - Water-tight, weather-proof seal protects internal components | | | |
| Die-cast aluminum housing - Chromate and powder coated for long term corrosion resistance | | | |
| 11 Conduit Ports (1/2" NPT) - To accommodate many I/O and control options | | | |
| Multi-point calibration up to 16 points - Maximize accuracy over entire flow range | | | |
| Internal telescoping hinges - Eliminates seizing and corrosion of external door hinges | | | |
| Serial accessibility to LCP data communication protocol - Compatible with major in-cab/back office systems | | | |
| Electronic temperature volume compensation - Available with optional probe and thermowell kit | | | |
| MASTERLOAD.iQ™ Specifications | | | |
| Enclosure | | | |
| Waterproof, corrosion resistant and dust-proof - meets IP66 and UL Type 4X requirements | | | |
| Display | | | |
| 7 inch, 800 x 480 high-resolution, Full Color | | | |
| Temperature Range | | Input Voltage | |
| -40°F (-40°C) to 140°F (60°C) | | 9-28 VDC | |
| Keypad | | I/O | |
| LED Back-lit | | Petroleum-resistant | |
| Non-conductive, UV resistant elastomer | | Field Replaceable | |
| Communication | | I/O | |
| RS232/485 Comm Ports | 2 | Solenoid Outputs (high current) | 4 |
| RS485 Dedicated Comm Ports | 2 | Programmable Digital Outputs | 6 |
| WiFi | Internal antenna | Digital Inputs | 6 |
| Bluetooth | Internal antenna | RTD Probe Input | 1 |
| Extended range antenna (externally mounted) | Optional accessory | Optical Sensor Input | 1 |
| 4-20 mA input | 1 (expandable to 7) | Scalable Pulse Output (Additive inj, display, PLC) | 1 |
| Processor & Storage | | | |
| Dual-Core Processor Speed | | 800 MHz | |
| Internal RAM | | 1GB | |
| Internal Storage | | 128MB Flash NAND 8GB eMMC Flash drive | |
| External Storage via Removable USB | | | |

Security, Accuracy, Diagnostics

SECURITY

The **MASTERLOAD.iQ**® has been designed with the highest levels of security according to the Center for Internet Security (CIS) benchmarks.

As an internet enabled device, it is imperative that any weights & measures IOT device meet or exceed CIS benchmarks as well as provide robust user level security to prevent tampering or inadvertent access to protected settings on the device.



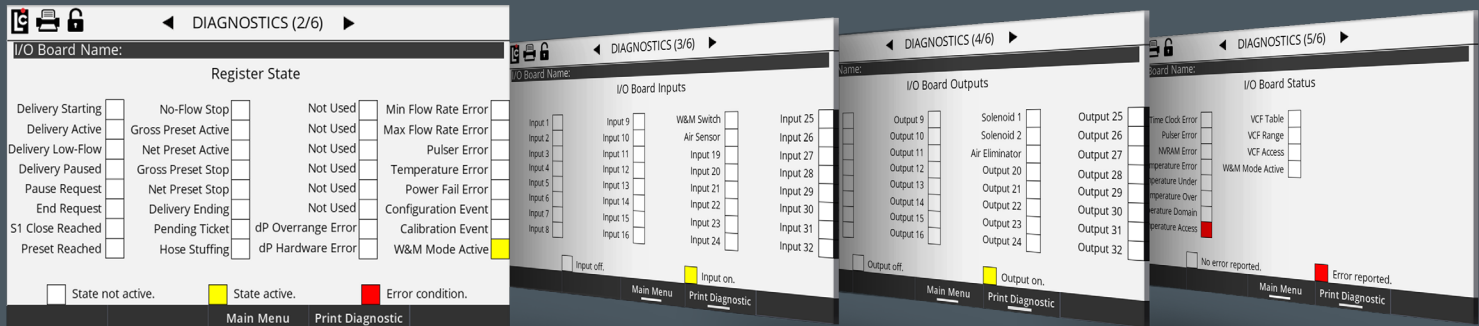
SIMPLE METER CALIBRATION

The **MASTERLOAD.iQ**'s intuitive calibration allows you to simply enter the "corrected prover" or master meter volume, and it will do the rest. With up to 16 points of linearization, the **MASTERLOAD.iQ**® is by far the most precise register ever made.



REAL-TIME ON-SCREEN DIAGNOSTICS

MASTERLOAD.iQ provides the operator real-time diagnostics and messages whenever an error condition exists and conveniently allows the operator to print the report for corrective action.



EU Declaration of Conformity:

MASTERLOAD.iQ is designed, manufactured, and bears CE mark in compliance with the following Directives:

- **ATEX Directive 2014/34/EU by application of the following standards:** EN 60079-0: 2018 and EN 60079-7: 2015 As the following equipment: II 3 G Ex ec IIB T4 Gc -40°C ≤ Tamb ≤ +60°C IP66
- **EMC Directive 2014/30/EU and Radio Equipment Directive 2014/53/EU by application of the following standards:** EN 50498:2010, EN 61326-1, EN 301 489-1 V2.2.0 (2017-03), EN 301 489-17 V3.2.0 (2017-03)



THE CENTER OF FUELING LOGIC



Manufactured by:
LIQUID CONTROLS LLC
 105 Albrecht Drive
 Lake Bluff, IL 60044

MAIN: 847.295.1050
TOLL FREE: 800.458.5262
AveryHardoll.com
LCmeter.com