Software release bulletin
including features from previous releases

v1.10

TANKiQ™ (pat. pending)
Auto-calibrating tank level measurement

SENSEiQ™
Expansion board for increased connectivity

Digital Valve Control
Fully configurable digital valve control

Water Detection
Configurable H2O sensing and safety controls

Large Digit Total Sale and Flow Rate
Dual screen / large digit sales and volume data

Large Digit Total Sale and Flow Rate
Dual screen / large digit flow rate and volume data

Remote Start/Stop
Configurable wired or wireless start / stop

Multi-Language
Multiple languages selectable
LCR.iQ® Designed by those who use it

Built from the ground up by Liquid Controls’ Research & Development team with close collaboration with customers who benefit from it, fueler safety, ease of use, and data management are the highest priorities in the design of the LCR.iQ®.

**HIGH-RESOLUTION 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 LCR.iQ® allows users complete control over the fueling data fields displayed on the detailed delivery screen.

**SMART KEYS FOR GUIDED OPERATION**
Smart keys guide the operator through the next available steps in 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.

**METER MOUNT BASE**
Liquid Controls standard meter-mount base with integrated pulser allows easy mount-and-connect retrofit.

**CONFIGURABLE SCREEN DETAILS**
Easily configure the idle and active fueling screens the operator sees before, during, and after fueling. Features like tank level gauge, flow rate, totalizers, and any other field the register measures can be displayed on the main screen.

**PANEL MOUNT ENCLOSURE OPTION**
New panel mount design allows convenient remote mounting, providing OEMs greater design flexibility.

**ACTIVE FUELING FULL SCREEN MODE**
Yellow background indicates active fueling mode to improving safety and fueling status awareness of operators.

**MULTI-LANGUAGE FUNCTIONALITY**
Operator level languages include: English, Spanish, German, French, Portuguese, Chinese, Korean
Configurability

It's just that simple.

LC engineers designed the LCR.iQ® from the user's perspective. The result is a user-guided, configurable interface that walks the operator through the complete fueling operation, minimizing chance for error.

COMMON FUELING PROCESSES COMPLETED IN 3 STEPS OR LESS!

1. CONFIGURABLE DELIVERY PROCESSES
Guide the operator through the fueling process of your choosing. From basic pump and print to preset by volume, total price, or product weight*, the operator can also select product type, multiple deliveries, or other options.

2. OPERATOR FRIENDLY SCREENS WITH DAY / NIGHT MODES AND BRIGHTNESS CONTROL
LCR.iQ® screens adapt to the operator. Full, active fueling screen with yellow background when "Start" is pressed with day/night mode and brightness control options.

<table>
<thead>
<tr>
<th>Day mode idle screen</th>
<th>Night mode idle screen</th>
<th>Active fueling mode full screen</th>
<th>Active night mode detail screen</th>
</tr>
</thead>
</table>

<table>
<thead>
<tr>
<th>LCR.iQ® User Configuration and Setup Features</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>User Configuration Features</strong></td>
</tr>
<tr>
<td>Configurable idle screen - Design the fueling screen the way you want it.</td>
</tr>
<tr>
<td>Configurable fuel delivery process - Step by step on-screen instructions guide the operator through the fueling process you specify.</td>
</tr>
<tr>
<td>Configurable Languages - English, Spanish, French, German, Portuguese, Chinese, Korean</td>
</tr>
<tr>
<td>Configurable date, time, and units of measure formats - Set local units of measure and date/time formats to eliminate unit conversions</td>
</tr>
<tr>
<td>Configurable product types - Configure product types and terms based on local terminology</td>
</tr>
<tr>
<td>Configurable flow rate min/max thresholds - Set alerts to notify user if flow rates exceed thresholds</td>
</tr>
<tr>
<td>Configurable I/O settings - Define what each input and output is assigned to and how they are utilized</td>
</tr>
<tr>
<td>Configurable tickets and printer settings - Easily tailor ticket header text, fields, and printer type</td>
</tr>
<tr>
<td>Configurable product pricing and taxes - Either fixed or user definable pricing and taxes at the delivery level</td>
</tr>
<tr>
<td>Configurable data logging and retention period - Define how long to retain fueling transactional data on-board the LCR.iQ®</td>
</tr>
<tr>
<td>Configurable electronic temperature volume compensation - Available with optional temperature probe and thermowell kit</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Setup, Calibration and Security</th>
</tr>
</thead>
<tbody>
<tr>
<td>I/O settings and preferences transferable to multiple registers - Set up once, then backup and install configuration across multiple units</td>
</tr>
<tr>
<td>Intuitive Calibration - Easy to follow meter calibration and linearization process.</td>
</tr>
</tbody>
</table>

*Preset fueling by weight is patent pending intellectual property of Liquid Controls LLC
New Features

MEASURED AND MANUAL TANK INVENTORY
The LCR.iQ provides highly accurate tank level measurement and inventory management for up to 12 tanks and products. Each tank can be configured according to product type, tank size, or measurement method to be used (either automatic or manual level control).

TANKiq™ (patent pending)
Auto-Calibrating Tank Measurement
The LCR.iQ offers the first ever continuously calibrated tank profile that does not require entering tank strapping charts.
- When combined with an approved tank level gauge with 4-20 mA output, it auto-generates a precise tank strapping profile.
- Delivers highly accurate measured tank inventory and controls without the need of middleware or third party control devices.

MULTIPLE LANGUAGE SUPPORT
The LCR.iQ provides embedded language files to support operator level language translations easily selectable from the settings menu.

Multi-Language for Operators
LCR.iQ® fully supports multiple languages on operator level screens for increased safety and accuracy in fueling.
- English
- Spanish
- French
- German
- Portuguese
- Chinese
- Korean

CONFIGURABLE LARGE DIGIT DISPLAY
The LCR.iQ now allows users to configure the large digit data displayed to include total retail sale and volume measured to the 1/1000th decimal place or flow rate and volume when real-time of rate of fuel delivery monitoring is required.

Configure Large Digit Details
Certain retail fueling applications require total sale and volume to the 1/1000th place or real-time flow rates on the primary fueling screen.
New Features

EXPANDABLE INPUTS & OUTPUTS
The SENSEiQ expansion board is available for applications with more demanding sensing and control options such as multiple measured tank levels, water detection, remote controls, external display devices, etc.

SENSEiQ™ Sensor Expansion Board
Provides end users the capability to connect and control a multitude of external devices in applications where additional I/O is required.

• 6 Analog inputs: Multiple Tank level sensors, H2O sensor
• 4 Digital inputs: remote start / stop / print. Pulse inputs
• 4 Digital outputs: Large digit external displays, calibrated pulse output, alarms, deadman control alarms.

DIGITAL VALVE CONTROL
The LCR.iQ provides configurable digital valve control to gain higher levels of control over delivery flow rates than conventional registers that are limited to utilizing simple 2-stage block valves for flow control.

Gain Full Flow Control Over Your Deliveries
Gain full control over your fueling application with multi-stage variable control and ramp up and ramp down of flow rates during deliveries.

• Ideal for applications where precise flow-rate control is critical for both safety and fueling accuracy.
• Utilize the same fueling equipment in both high and low flow rate applications.

WATER DETECTION AND SAFETY CONTROLS (Aviation)
When configured with an approved water sensor, LCR.iQ provides boundary controls and safety shut down according to Joint Inspection Group (JIG) and Airlines for America standards.

*FAUDI AFGUARD is a product of FAUDI Aviation
LCR.iQ® Data Connectivity

**BLUETOOTH**
- Wireless printing with compatible Bluetooth enabled printers
- Wireless control and data transfer via FUELiQ app or SDK

**Wi-Fi**
- Wireless control and data transfer via FUELiQ app or SDK
- Transaction details accessible using FTP

**ETHERNET**
- Fueling control and data transfer via LCP protocol
- Transaction details accessible using FTP

**SERIAL CONNECTION**
- Fueling control and data transfer via LCP protocol
- Ticket printing

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**FUELiQ™ Android App**

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 LCR.iQ for operational mobility, efficiency, and transactional data.

[Currently in limited beta testing]
Inspired through LC’s PartnerConnect™ initiative, Liquid Controls’ new CENTRILOGIQ® platform provides adaptive sensing and communication that is scalable to adapt to future decades of new technology.

**LPG & Refined Fuels**

LCR.iQ® is designed to simplify fueling operations with process configurability, intuitive operation, and real-time fueling diagnostics and data connectivity to maximize up-time and daily throughput.

**Aviation**

LCR.iQ® provides an easy to use, intuitive operator interface and ties together critical sensing devices in aviation fueling systems, reducing complexity, improving efficiency and safeguarding all fueling system data.

**New**

- Slipstream® Densitometer with Preset by Weight Patent Pending
- Electronic Differential Pressure (dP) US Patent: #7765978
- Water Detection Per JIG, A4A, IATA and EI 1598

**LCR.iQ® with M7 meter and accessories**

- Security / Preset Valves
- Strainers & Air Eliminators
- Temperature Compensation
- Printers, Mobile App, Large Digit Display

LIQUID CONTROLS An IDEX Energy & Fuels Business
LCR.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 365+ days of data - 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 LCR.iQ®
- Preset delivery by volume or weight - Provides highest accuracy of fuel delivery to prevent over-fueling
- 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

**LCR.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

<table>
<thead>
<tr>
<th>Temperature Range</th>
<th>Input Voltage</th>
</tr>
</thead>
<tbody>
<tr>
<td>-40°F (-40°C) to 140°F (60°C)</td>
<td>9-28 VDC</td>
</tr>
</tbody>
</table>

**Keypad**
- LED Back-lit
- Petroleum-resistant
- Non-conductive, UV resistant elastomer
- Field Replaceable

<table>
<thead>
<tr>
<th>Communication</th>
<th>I/O</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS232/485 Comm Ports</td>
<td>2 Solenoid Outputs (high current) 4</td>
</tr>
<tr>
<td>RS485 Dedicated Comm Ports</td>
<td>2 Programmable Digital Outputs 6</td>
</tr>
<tr>
<td>WiFi</td>
<td>Internal antenna Digital Inputs 6</td>
</tr>
<tr>
<td>Bluetooth</td>
<td>Internal antenna RTD Probe Input 1</td>
</tr>
<tr>
<td>Extended range antenna (externally mounted)</td>
<td>Optional accessory Optical Sensor Input 1</td>
</tr>
<tr>
<td>4-20 mA inputs</td>
<td>1 expandable to 7 Scalable Pulse Output (Additive inj, display, PLC) 1</td>
</tr>
</tbody>
</table>

**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

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