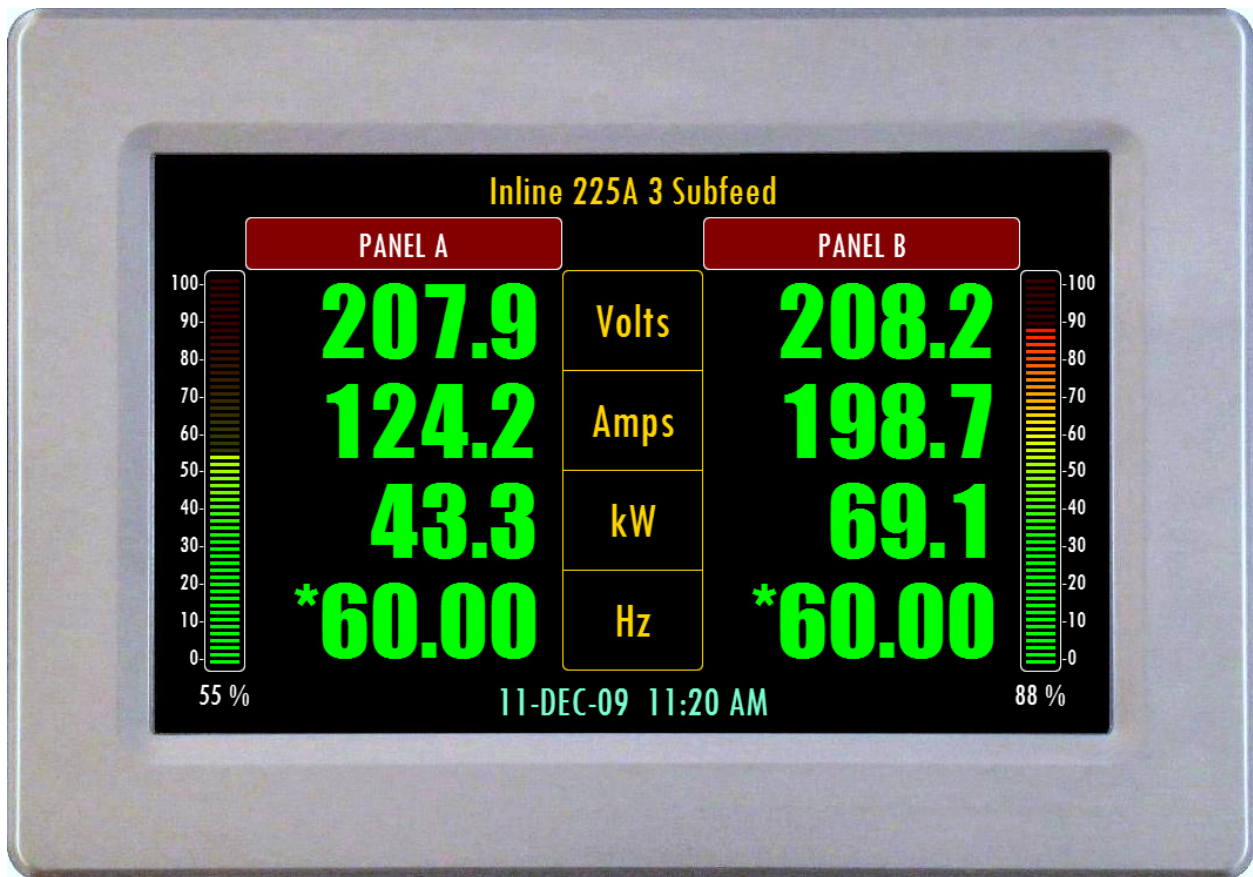


Get the whole picture from your distribution monitoring system

Color Touchscreen HMI
Remote/Local Display and Monitor



A Versatile Display Platform

BY **ESTG**

Embedded Systems Technology Group

Introduction

Our Versatile Display Platform (VDP) is a Linux-based LCD color touchscreen that has been adapted to work with Liebert's Distribution Monitoring system (LDM/LDMF) and Power Monitoring Panel (VPMP) to provide:

- Best-in-Class Display
- Full-Featured Monitoring Platform
- Gateway for Remote Management

Solving a Big Problem

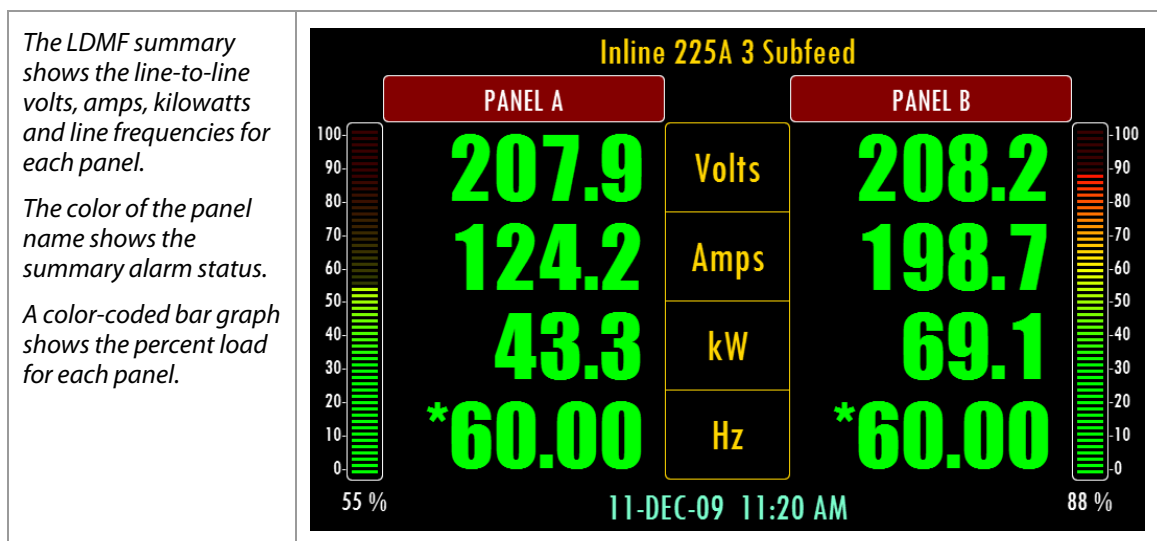
In addition to providing a vivid, responsive graphical user interface and a flexible monitoring platform, the VDP solves a big problem that has no clear solution in sight: Remote Management. The VDP acts as a network gateway that allows the user to remotely configure LDM units and upgrade firmware using the existing configuration and flash update tools.

As it stands now, the user needs to go into the data center and walk from unit to unit with his laptop, opening the cabinet doors and fumbling with cables every time he needs to make a configuration change or update the firmware. But with the VDP's remote management capabilities, a user can make changes from the other side of the building or half-way around the world. He can easily change the alarm set-point for a single breaker or simultaneously update the firmware on 100 units without getting up from his desk or waiting for scheduled downtime.

Best-In-Class Display

The VDP provides a high-impact graphical interface featuring:

- 7" color wide-screen LCD with 16-bit color and 800 x 480 resolution
- Responsive touchscreen input
- An intuitive interface with a familiar windowing model
- Live waveform voltage and current signals for every breaker
- A visual alarm summary for the entire panel
- Complete, scrollable event logs with detailed history



Inline 225A 3 Subfeed | PANEL A

Readings Signals **Branches** Subfeeds Events Alarms

| No. | Type | Load | Pct | Branch Name |
|-----|------------|------|-----|-------------|
| 1 | 1-Pole 20A | 0A | 0% | BREAKER #01 |
| 2 | 1-Pole 20A | 0A | 0% | BREAKER #02 |
| 3 | 1-Pole 20A | 0A | 0% | BREAKER #03 |
| 4 | 1-Pole 20A | 0A | 0% | BREAKER #04 |
| 5 | 1-Pole 20A | 0A | 0% | BREAKER #05 |
| 6 | 1-Pole 20A | 0A | 0% | BREAKER #06 |
| 7 | 1-Pole 20A | 0A | 0% | BREAKER #07 |
| 8 | 1-Pole 20A | 0A | 0% | BREAKER #08 |
| 9 | 1-Pole 20A | 0A | 0% | BREAKER #09 |

Top Up Select Down Bottom

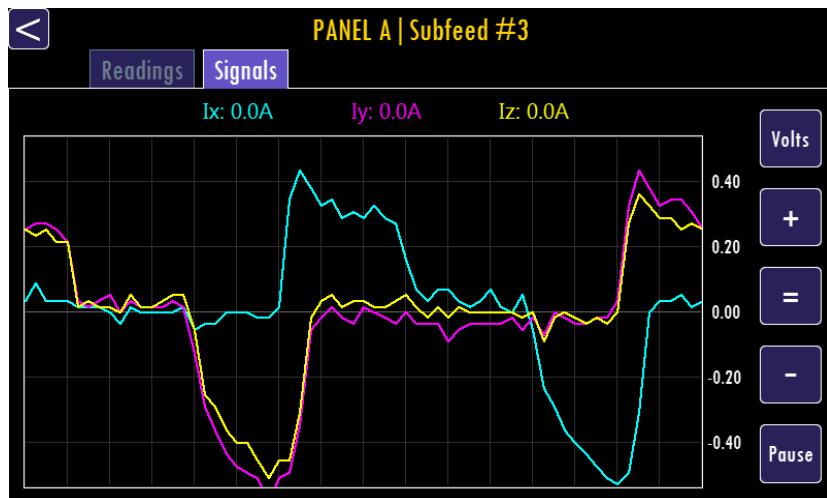
Branches, subfeeds and events are presented as scrollable lists.

Using the navigation buttons or tapping on the list, the user selects the item he wants to inspect.

In addition to configuration information, the list shows live load amps and load percent for each breaker.

Live waveforms are available for every configured branch and subfeed.

Using the buttons on the right, the user can toggle between voltages and currents, zoom in and out or pause and resume the updates.



Inline 225A 3 Subfeed | PANEL A

Readings Signals Branches Subfeeds Events **Alarms**

| Panel | Branches | | | | | | | Subfeeds |
|-------|----------|-----|-----|-----|-----|-----|-----|----------|
| Mains | #1 | #7 | #13 | #19 | #25 | #31 | #37 | #1 |
| | #2 | #8 | #14 | #20 | #26 | #32 | #38 | #2 |
| | #3 | #9 | #15 | #21 | #27 | #33 | #39 | #3 |
| | #4 | #10 | #16 | #22 | #28 | #34 | #40 | |
| | #5 | #11 | #17 | #23 | #29 | #35 | #41 | |
| | #6 | #12 | #18 | #24 | #30 | #36 | #42 | |

Silence Clear

An alarm summary page shows the status of the mains, and each branch and subfeed breaker.

New alarms are shown in flashing red, acknowledged alarms are steady red, warnings are yellow and normal breakers are green.

Buttons allow the user to silence and clear alarms.

Detailed readings for branches and subfeeds show the total load, alarm status, total power and metered kilowatt-hours.

Detailed current readings are provided for each pole or phase including RMS amps and percent load, crest factor, watts, VA and power factor.

<
PANEL A | Subfeed #3

Readings
Signals

| | | | |
|-------------------|---------------------|--------------------|----------------------|
| Total Load | Alarm Status | Total Power | Meter Reading |
| 0.0 A | Phase Normal | 0 W | 0.02 kWh |
| 0.0 % | Neutral Normal | 0 VA | |
| 3-Pole 225A | Ground Normal | 0.00 PF | |

| Phase | Amps | % Load | CF | Watts | VA | PF |
|---------|------|--------|------|-------|----|------|
| X | 0.0A | 0.0% | 0.00 | 0 | 0 | 0.00 |
| Y | 0.0A | 0.0% | 0.00 | 0 | 0 | 0.00 |
| Z | 0.0A | 0.0% | 0.00 | 0 | 0 | 0.00 |
| Neutral | 0.0A | | | | | |
| Ground | 0.0A | | | | | |

By supporting local and remote devices the VDP offers flexibility:

- A single display can be used for multiple devices, e.g. two LDMFs plus a VPMP
- Two displays can monitor the same devices, e.g. one display on each side of a cabinet
- Eliminates the need for a multitude of add-on cards

Full-Featured Monitoring Platform

The VDP includes two 100 Mbps RJ-45 Ethernet connectors that support TCP/IP protocols:

- Modbus/IP
- SNMP
- Web Server
- NTP (Network Time Protocol)

It is also compatible with Liebert's long-term monitoring strategy:

- The Linux 2.6 platform supports Velocity server implementations

Because the VDP connects to the RS-232 port of each LDM/LDMF and VPMP, the remaining RS-485 port on each device remains available for point-to-point or multi-drop serial networking.

Remote Management Gateway

The VDP solves the big problem of remote management by providing a TCP/IP interface that allows users to use toolbox applications over a LAN or over the Internet:

- Remote configuration is performed using the graphical LDM-Config tool. The tool allows the user to upload, download and modify configurations by adding, deleting and modifying breakers.
- Remote firmware is updated using the Flash tool which can simultaneously update multiple devices. The tool shows the status and update progress for each selected device on the network.