




K&K 3-Line-Display (3LD) Installation and Troubleshooting for FMPlus

Overview

This product bulletin guides installers through the installation process of a K&K 3-Line-Display (Kit Number: 191F0280) and troubleshooting the process for FMPlus.

- IMPORTANT** If your unit is currently using the I/O Silver Board with a Tekinno 3LD, you will need to replace the I/O Silver Board with the Citel Surge Protector in your unit prior to installing a K&K 3LD.
- For instructions on how to remove the I/O Silver, read “Remove the I/O Silver Board” in PB-015: I/O Silver Board Replacement Procedure.
 - For instructions on how to install the Citel SPD, read PB-263: Installation of the Citel Network Surge Protection Device.

3LD Components

Part	Image
Solar Panel	
3LD	
Solar Panel Mounting Bracket STS# 266810	
QUAD UART to Surge Protector Cable 191F0234-30	N/A
Quad UART Board 941B0107	N/A

LED Panels 267355	N/A
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Mounting the 3LD

Assumptions

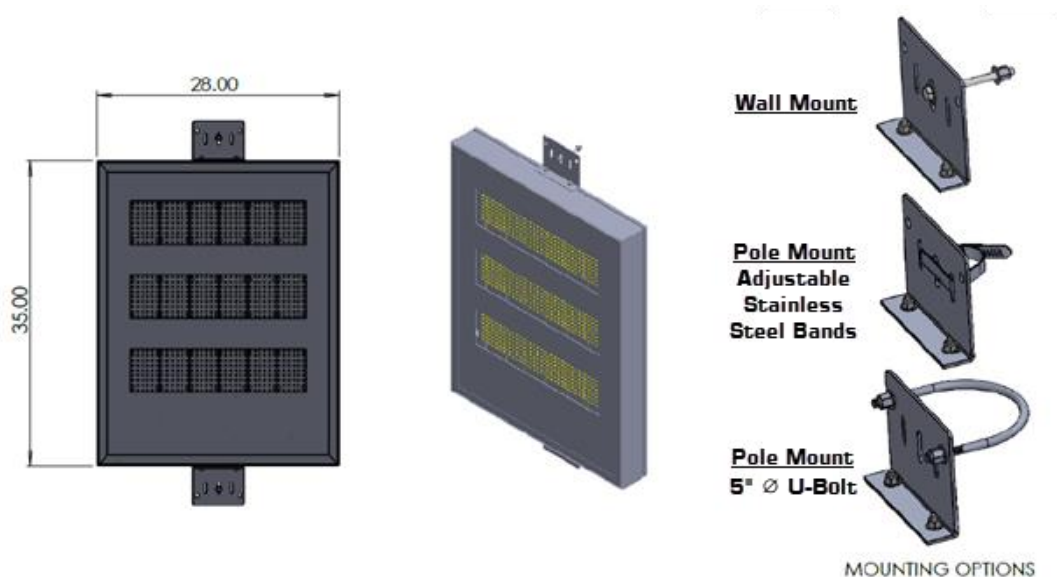
This tutorial assumes:

- A K&K 3LD is not currently installed.
- You are working with an FMPlus Unit.
- You have a Citel Surge Protector installed in the unit.

Mounting Options

Syntech does not offer a mount with the K&K 3LD. Mounting the 3LD will depend on the distributor/installer for the facility.

- The K&K 3LD comes with universal mounting brackets, so installers can mount the display in the following ways:
 - a. Wall Mount
 - b. Pole Mount
 - i. Adjustable Stainless-Steel Bands
 - ii. 5" \varnothing U-Bolt



Syntech provides a mounting bracket and hardware to mount the solar panel to the mounted 3LD.

Mounting Example

NOTE Installers do not have to match this example, as mounting for the 3LD varies by facility.

1. Find a mounting location within range of the FMU.
2. Measure and mark four holes needed to mount 3LD to the desired mounting location.
3. Drill out the holes.
4. Secure the bottom of the 3LD to the desired mounting location with 2 hex bolts ($\frac{3}{4}$ -16" x 1") and self-screw nuts.



5. Locate the solar panel mounting bracket.
6. Align and secure the solar panel to the solar panel mounting bracket with self-tapping screws (1/2").



- a. Verify the Solar Panel is placed in a way it can receive direct sunlight.
 - b. For steps on how to test solar panel voltage, see [Display Voltage for Solar Panel](#).
7. Secure the top of the 3LD to the desired mounting location with 2 hex bolts ($\frac{3}{4}$ -16" x 1") and self-screw nuts.



Cable Configuration

1. Turn off the FMU.
2. Install the Quad UART board into an empty expansion slot of the mainboard.

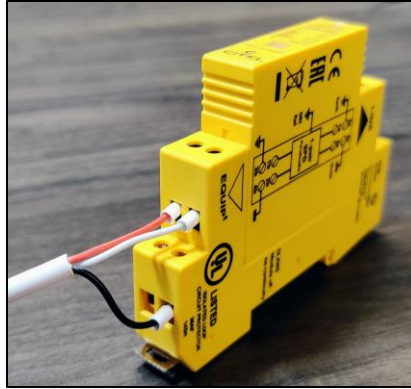


3. Plug the connector end of the QUAD to Surge Protector Cable (191F0234-30) into Ser Port A (J14) of the Quad UART Board, inside of the unit head.



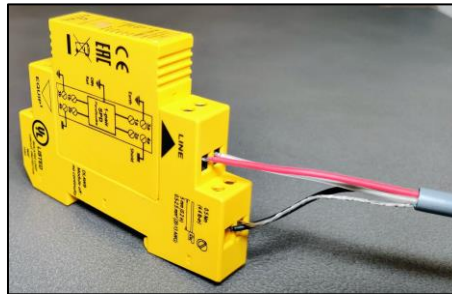
4. Connect the pigtailed end of the cable to the EQUIP side of the Citel.

Wire Color	Terminal
Red	1b
White	2b
Black	4b



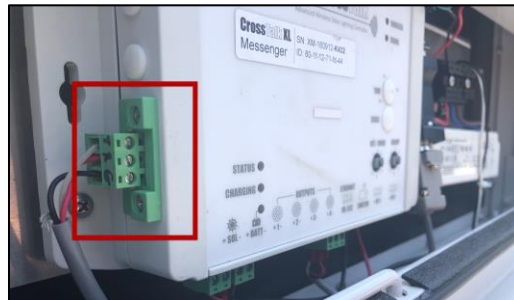
5. Connect the pigtailed end of the 3LD serial cable (STS# 255114) to the other side of the Citel.

Wire Color	Terminal
White	1a
Red	2a
Cable Shield Wire	3a
Black	4a



6. Connect the 3-pin connector side of the three-conductor cable into the CrossTalk Controller inside of the 3LD housing.

NOTE The 3-conductor cable comes with a length of 75ft. Installers can cut the cable to their desired length depending on how far the 3LD is from the unit.



7. Power the display using an input power source of 100-240 VAC 50-60 Hz.

Configure 3LD on FMPlus Unit

Assumptions

The tutorials below assume:

- A K&K 3LD is currently installed.
- The unit is configured with FW v4.13 or newer
- The unit is configured to work with FMPlus v5.8.3.0 or newer
- You are connected to the FMU that has a K&K installed.

1. Enter command "E1". The 3LD Menu should display. "IN TEST MODE" message should display on the 3LD.
2. Enter '1' to configure a K&K display.

```
Jor>e1

Three Line Display Menu:

    1. Configure K&K Display
    2. Switch to Tekinno Display

ENTER SELECTION [<ESC> Exits]: |
```

3. Enter '1' to enable the K&K 3LD.

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K&K Three Line Display Menu (enabling requires reboot/disables bluetooth):

    1. Enable K&K Display
    2. Diagnostic Test Pattern
    3. Display Solar Panel Voltage

ENTER SELECTION [<ESC> Exits]: 3
```

4. Reboot the unit.

Troubleshooting

Users can troubleshoot their 3LD following installation by accessing the 3LD menu.

Users with access to the 3LD menu will have the option to:

- View the current voltage coming from the solar panel.
- Test the performance of the 3LD LEDs.

Assumptions

The tutorials below assume:

- A K&K 3LD is currently installed.
- The unit is configured with FW v4.13.
- The unit is configured to work with FMPlus v5.8.3.0 or newer.
- You have [added the configuration for a 3LD to your unit.](#)
- You are connected to the FMU and have [navigated to the K&K 3LD Menu.](#)

View Current Solar Voltage

1. Enter 3 to display the current solar voltage coming through the solar panel, on the 3LD.

```
K&K Three Line Display Menu (enabling requires reboot/disables bluetooth):
1. Enable K&K Display
2. Diagnostic Test Pattern
3. Display Solar Panel Voltage
ENTER SELECTION [<ESC> Exits]: 3
Display Shows Solar Panel Voltage:
Voltage Value Changes with Light Intensity as Loop Executes
<ESC> Exits
SOLAR = 9.7 V_
```



TIP Test the solar voltage decreases by covering the solar panel or test the solar voltage increases by shining a light on the solar panel.

2. Press *ESC* key to exit 3LD Menu.

Test performance of LEDs

1. Enter 2 to display the LED test pattern on the 3LD.

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K&K Three Line Display Menu (enabling requires reboot/disables bluetooth):
1. Enable K&K Display
2. Diagnostic Test Pattern
3. Display Solar Panel Voltage

ENTER SELECTION [<ESC> Exits]: 2

Display Cycles This Pattern:
  All LEDs On -> Alphabet -> All LEDs OFF
<ESC> Exits
```



NOTE The TEST pattern follows the following cadence:

1. All LEDs on
2. Alphabet
3. All LEDs off

2. Press *ESC* key to exit 3LD Menu.

Document Version History

Version	Date	Description
1.0	8/17/2023	Initial draft <ul style="list-style-type: none"> ● Added Mounting Example ● Added cable configuration section for FMPlus Units, including Citel SPD wiring. ● Added Section for configuring FMPlus Unit to add K&K 3LD. ● Added section for troubleshooting 3LD after SW and HW configuration.
2.0	10/10/2023	Added Part # for LED Panels to 3LD Components .