
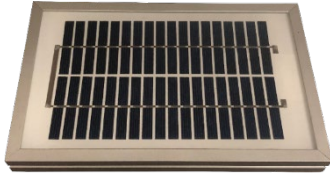




K&K 3-Line-Display (3LD) Installation and Troubleshooting for FM*Live*

Overview

This product bulletin guides installers to install a 3-Line-Display (Kit Number: 191F0280) and troubleshoot the process.

3 Line Display Components

Part	Image
3LD	
Solar Panel	
Solar Panel Mounting Bracket STS# 266810	
USB to RS232 Cable Part# 191F0224-60	
3-Pin Connector/Conduit Cable STS# 255114	N/A
LED Panels 267355	N/A

Mounting the 3LD

Assumptions

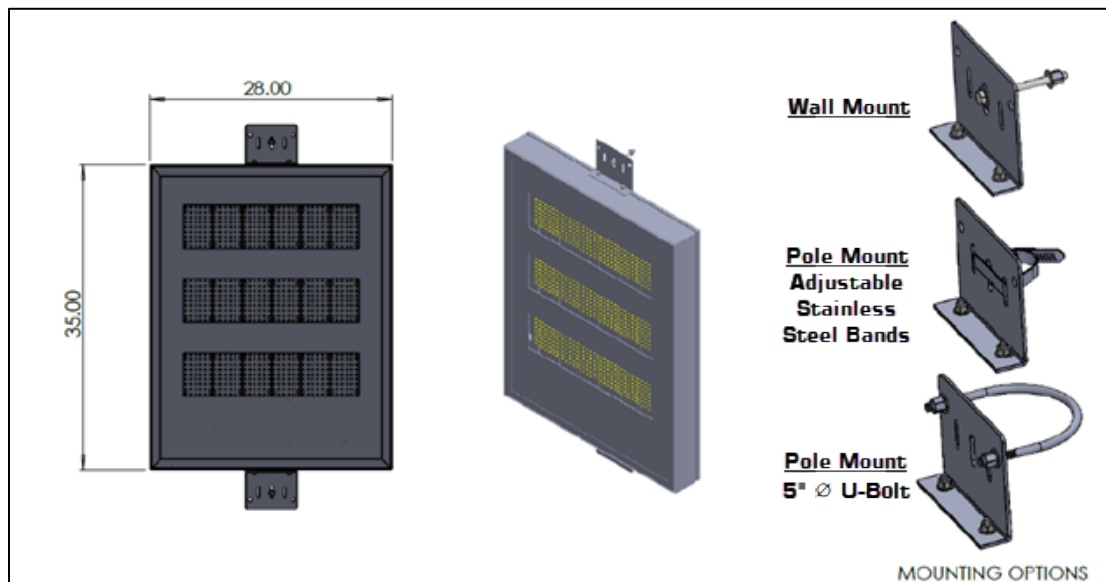
This tutorial assumes:

- A K&K 3LD is not currently installed
- You are working with an FMU-4500 or newer
- The unit is configured to work with FMLive 10.5 or newer

Mounting Options

Syntech does not offer a mount with the K&K 3-Line-Display. 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 K&K 3LD 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 in) 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 ($\frac{1}{2}$ ").



- a. Verify the Solar Panel is placed in a way it can receive direct sun radiation.
- b. For steps on how to test solar panel voltage, see [Display Voltage for Solar Panel](#).

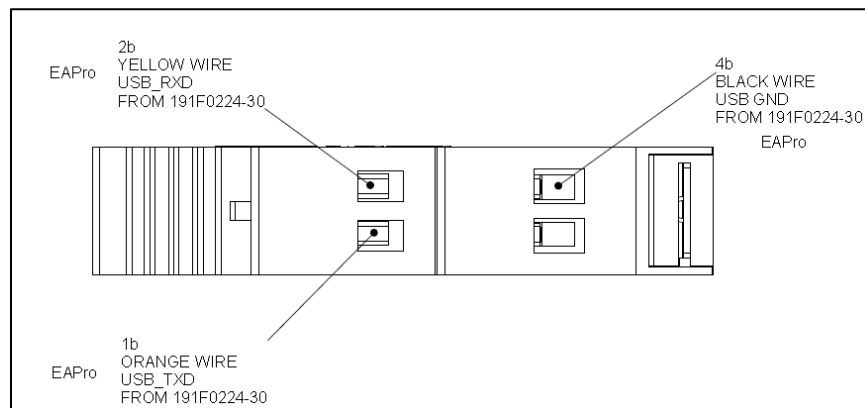
7. Secure the top of the 3LD to the desired mounting location with 2 hex bolts ($\frac{3}{4}$ -16 x 1 in) and self-screw nuts.



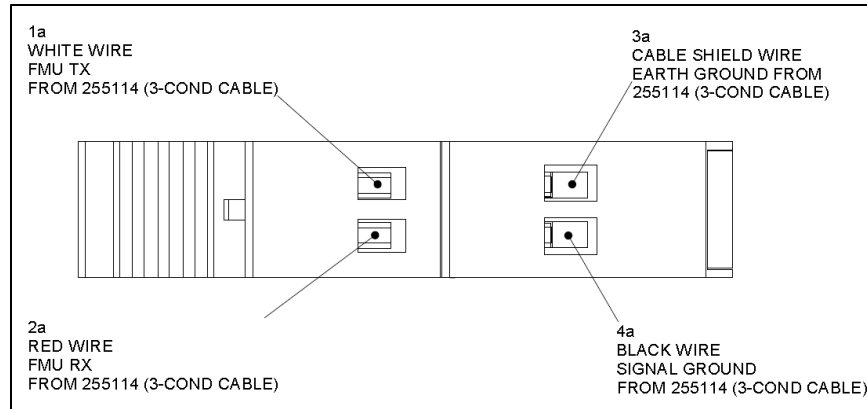
Cable Configuration

NOTE This section will also go over how to wire the 3LD to the Citel SPD.

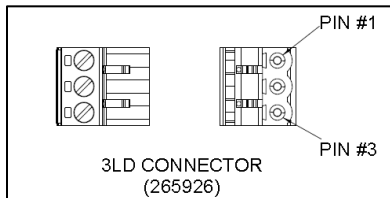
1. Power off the FMU.
2. Open the door unit head door.
3. Plug the USB end of the USB to RS-232 cable (191F0224-60) into an available USB port on the EAPro, inside of the unit head.
4. Locate the other end of the USB to RS-232 cable. This end will wire into the EQUIP side of the Citel SPD.
 - a. Insert the black conductor to the 4b terminal, the yellow conductor to the 2b terminal, and the orange conductor to the 1b terminal.



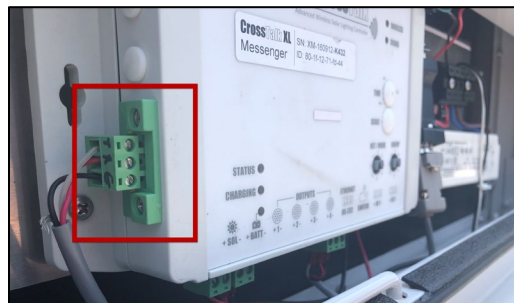
5. Locate the 3-conduit cable (STS# 255114). with the pigtailed wires (white, red, and black). This will wire into the LINE side of the Citel SPD.
 - a. Insert the black conductor to the 4a terminal, the red conductor to the 2a terminal, the white conductor to the 1a terminal, and the cable shield wire into the 3a terminal.



6. Connect the 3-pin connector side of the three-conduit cable into the CrossTalk Controller inside of the 3LD housing. The wire order should be the following:
 - b. Pin 1 (FMU TX): White
 - c. Pin 2 (FMU RX): Red
 - a. Pin 3 (Ground): Black



NOTE The 3-conduit 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.
8. Power on the FMU.

Troubleshooting

Users can troubleshoot their 3LD following installation as long as they have access to the supervisor menu or the special function menu on the FMU.

Users with access to the supervisor menu will have the option to:

- View the current solar voltage coming from the solar panel
- Test the solar voltage changes
- Test the performance of the 3LD LEDs
- Change the brightness of the 3LD LEDs
- Reset brightness to default values for the 3LD LEDs

Assumptions

The tutorials below assume:

- A K&K 3LD is currently installed
- The unit must be registered
- You have [added the configuration for a 3LD to your unit in FMLive](#)
- You have a supervisor key to access the supervisor menu on the FMU
- You have navigated to the Diagnostics section of the supervisor or special function menu

View Current Solar Voltage

1. Select '**3 = 3LD**'.

The user will be taken to the 3LD Management Menu.

2. Select '**S=SOLAR**'.

The current voltage of the solar panel will display. This value is periodically updated about once per second.



3LD THREE_LINE_DISPLAY_ONE: 4.2v

Verify Solar Voltage Changes

1. Select '**3 = 3LD**'.
2. Select '**S=SOLAR**'.

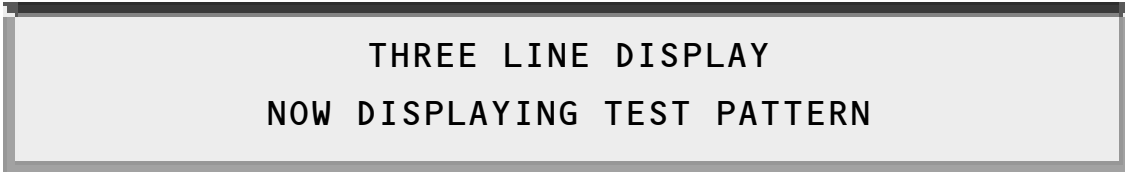
TIP

You can cover the solar panel to verify the solar voltage decreases or shine a flashlight on the solar panel to verify the solar voltage increases.

Test performance of LEDs

1. Select 'T = TEST'.

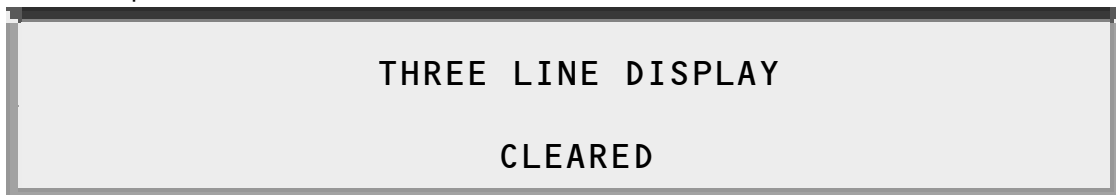
The following message will display on the front panel:



The 3LD will show the letters A - R on the display, then all LEDs will light up.

2. Navigate back to the 3LD section of the Diagnostics Menu.
3. Select 'C= CLEAR'.

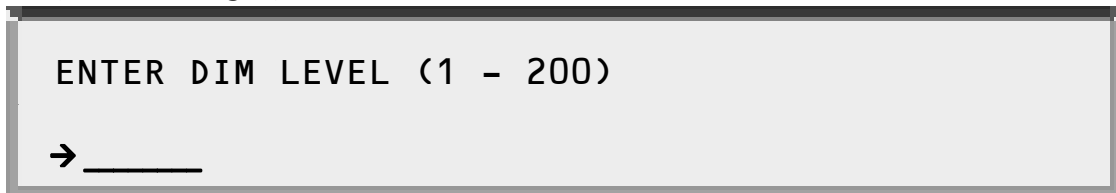
The 3LD will clear the test pattern. The following message will display on the front panel:



Change LED Brightness

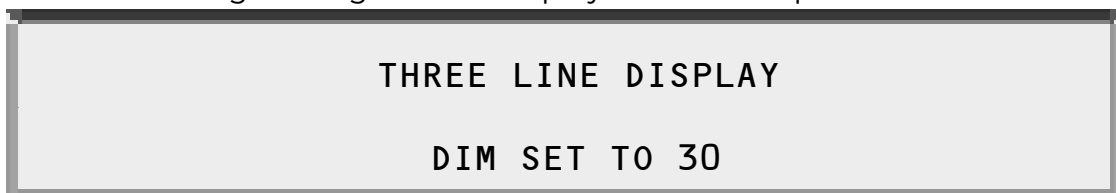
1. Select 'D = DIM TEST'.

The user will be prompted to enter a value ranging from 1 (most dim) to 200 (to most bright).



2. Enter the value you want to set the LED DIM Level (aka brightness) to.

The following message should display on the front panel:



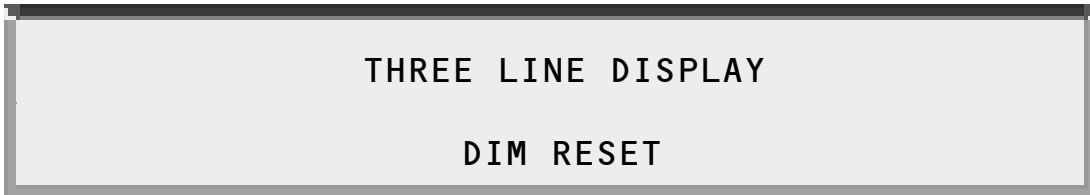
TIP

Syntech recommends that the minimum DIM be 1 and the maximum DIM be 60. The higher the value, the brighter the LEDs will display.

Reset LED Brightness

1. Select 'R= DIM RESET'.

The following message should display on the front panel:



NOTE

Running this command will revert the DIM values to the recommended default values.

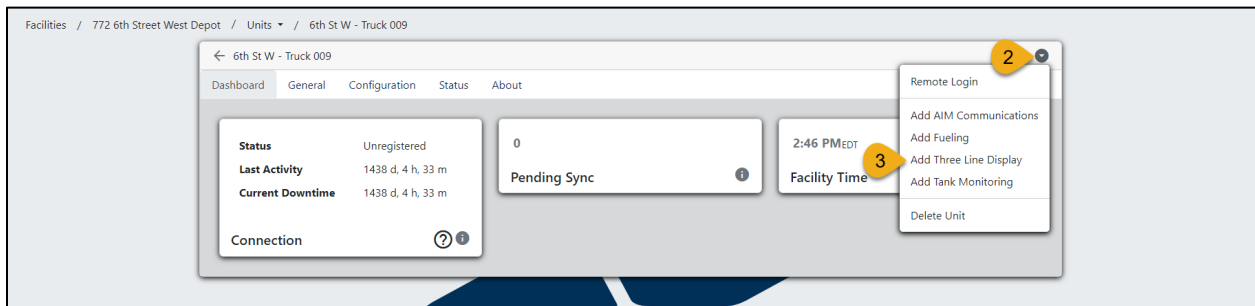
Configure 3LD in FMLive

Assumptions

This tutorial assumes:

- You have installed a 3LD and connected it to your FMU
- Your Organization has been configured
- You have created a Unit in FMLive
- You have added Fueling capability to the Unit
- You have configured fueling positions for the Unit
- You are a Facility Manager

1. Navigate to the unit where you would like to add a 3LD.
2. Select the **dropdown** at the top right corner of the Unit Dashboard.



3. Select **Add Three Line Display**. The Three Line Display configuration modal will display.
4. Select the Wired K&K for the **Display Type** field.

5. Populate the following fields:

Wired K&K 3LD

- a. **Display Type:** the brand of the three-line display you are configuring
- b. **Interface:** the serial device the 3LD will use to communicate with our FMU
- c. **Fuel Position:** the fueling positions authorized to display on the 3LD; users may select more than one fueling position to show on the display
- d. **Min Dim:** the minimum value for how dim (or weak) the LEDs will display on the 3LD, based on voltage coming from the solar panel
- e. **Max Dim:** the maximum value for how bright (or intense) the LEDs will display on the 3LD, based on voltage coming from the solar panel

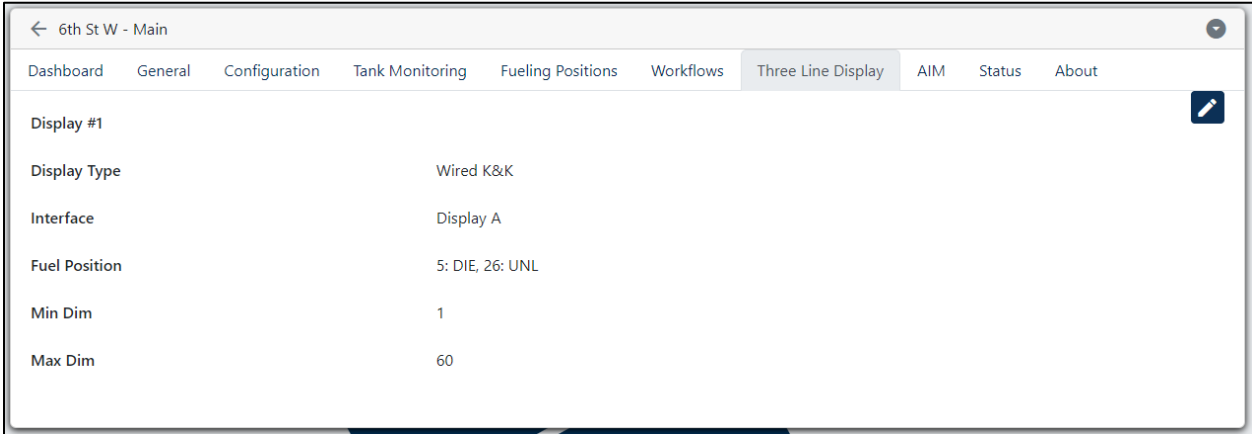
NOTE Users can add up to two 3LDs to be controlled by a single unit.
To add a second 3LD, select **Add Display** and repeat steps 4 and 5.

WARNING If two K&K devices are being used at one FMU, one must use Display A for the Interface fields, and the other must use Display B.

Programmed FTDI USB-to-serial cables are used to uniquely identify our serial devices. Two different cables are needed since we will support up to two 3LD devices for one unit.

Misconfiguring serial cables will result in the 3LD not working.

6. Select **Save**. The *Three Line Display* tab will display on the unit configuration.



TIP If any questions arise, contact Syntech Systems, Inc.'s Customer Satisfaction Center (CSC) at 1-800-888-9136, ext. 2, or email support@myfuelmaster.com.

Document Version History

Version	Date	Description
1.0	8/24/2023	Initial publication.
2.0	9/6/2023	Update Part Numbers for 3-Pin Connector/Conduit Cable and USB to RS232 Cable. Verified Wiring steps for 3LD and Citel SPD.
3.0	10/10/2023	Added Part Number for LED Panels to 3LD Components .