Application Note **Fifth Light**

MechoSystems Shade Integration

Background

MechoSystems® provides automated solar-shading and room-darkening solutions for residential and commercial buildings. The Fifth Light Shade Interface, FLT-SHADE, allows users to easily integrate a Mechosystems shade control system with Fifth Light. The interface allows the use of DALI Wallstations or low voltage switches to simultaneously control the light fixture in relation to the shade position within a space.

Serial Integration with MechoSystems IQ/MLC2

The Fifth Light system has the ability to output custom serial strings to the MechoSystems® IQ / MLC2 RS232 interface using MechoNet RS-232 protocol. The communication is one-way from the Fifth Light system to the MechoSystems IQ / MLC2 RS232 interface with no feedback or return commands. For more information with regards to the Mechonet RS-232, please refer to:
http://mechoshade.com/electroniccontrolsystems/iqmlc2.cfm

The commands to MechoSystems' shades are triggered through button pushes (DALI Wallstation or Low Voltage Switches) and Personal Control Override commands sent from the Lighting Management Software (LMS) application. The following MechoNet commands are supported:

Device Type	Supported Commands
DALI Wallstations	UP/DOWN/GO TO SCENE /STOP
Low Voltage Switches	UP/DOWN/GO TO SCENE /STOP
Personal Control Override	Go to Level 0 (open), Go to Level 100 (close)

The DALI commands are received by the Local Controller which then converts the commands into MechoNet protocol based commands. The Fifth Light Local Controller does not have any serial ports. The commands are therefore sent via the Ethernet. The IQ/MLC2 controller offers a serial port for third party integration. An Ethernet to RS232 converter is used to convert the signal from Ethernet to serial.

Note: Occupancy sensors, time clock or daylight events are not supported.

Wiring Instructions

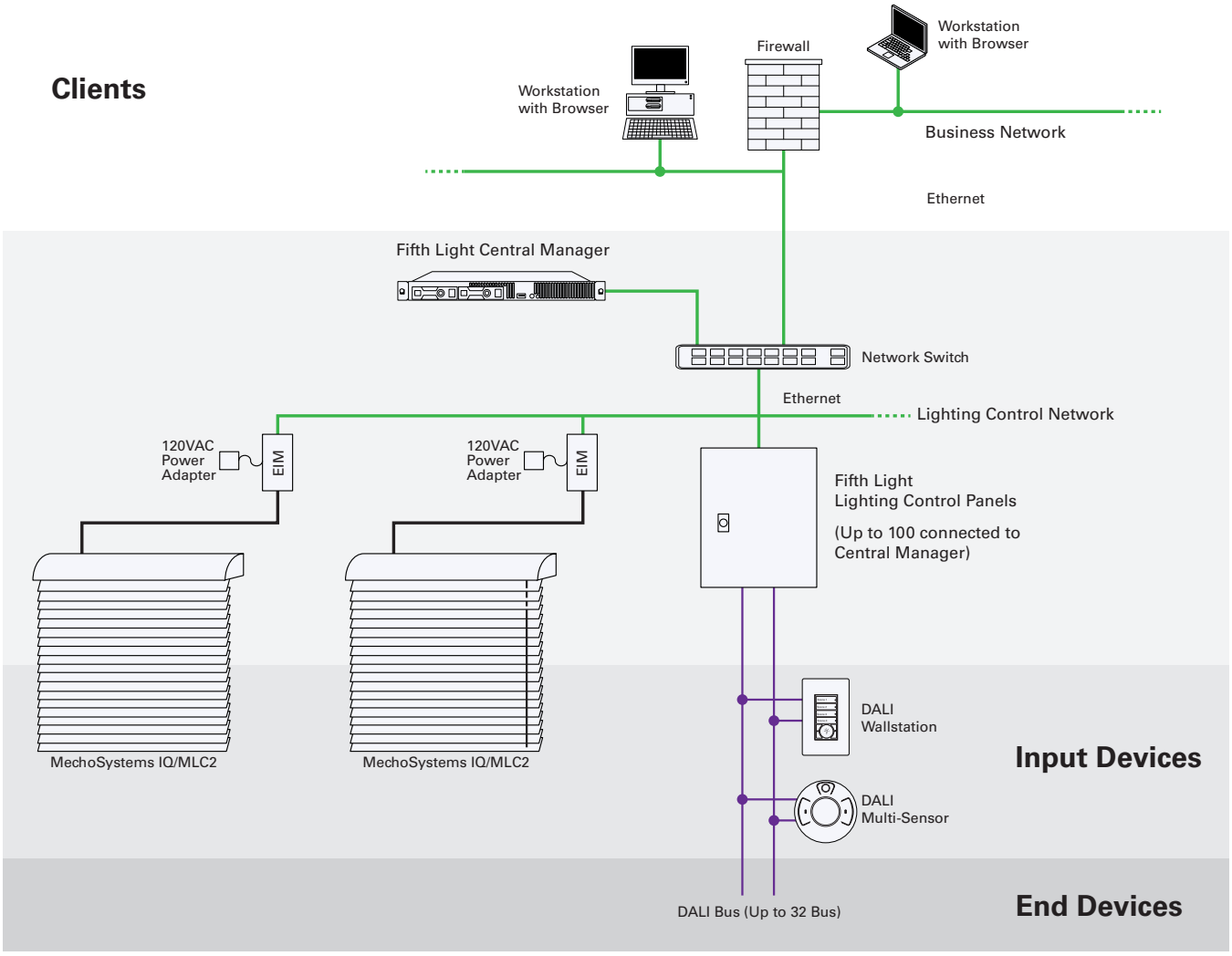


Figure 1. Illustrates how the Fifth Light system communicates with the IQ/MLC2 controller

The MechoSystems IQ/MLC2 Controller is connected to the Local Controller using an Ethernet Interface Module, EIM. The EIM converts data packets sent over TCP/IP to RS-232 communication. The EIM is shipped with a 120VAC power adapter. For more information, please visit:

http://www.cooperindustries.com/content/public/en/lighting/controls/products/lighting_relay_metering_panels/com_int/eim.ssd.html

The EIM serial interface is connected to the MechoSystems IQ/MLC2 Controller's RS232 port as illustrated in Figure 2 while the adaptor's Ethernet interface is connected to the network switch located in the Fifth Light Lighting Control Panel.

In case of a single LCP system, the adaptor's Ethernet interface can be connected to the Fifth Light Local Controller's Ethernet port. The adaptor must be setup with the IQ/MLC2 serial properties.

In the case of a distributed LCP system, the adaptor's Ethernet interface should be connected to the network switch managing the lighting control network.

Figure 2. RS232 inside the MechoSystems IQ/MCL2 Controller

The serial cable connecting the EIM adaptor to the IQ/MLC2 should be provided by the MechoSystems' integrator but can be purchased from MechoSystems. The Cable name is IQ485-RS232 adaptor and its product ID is MSBS R2Q4 AD_AS.

Restrictions

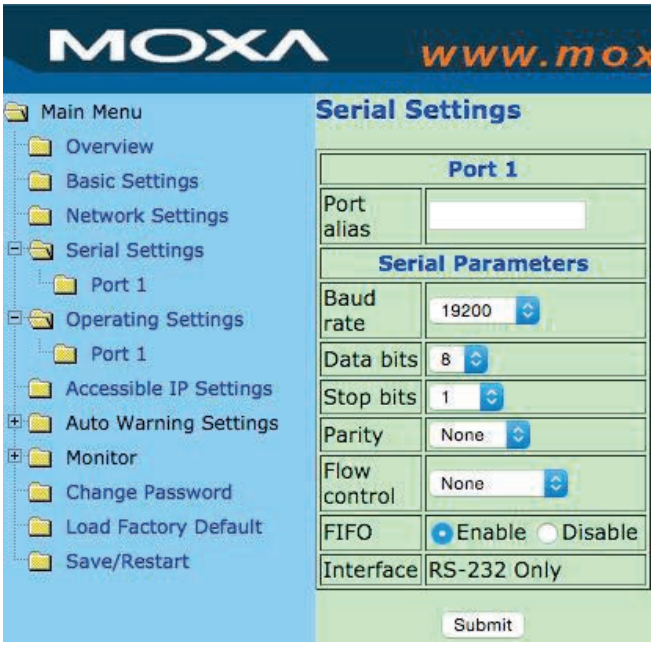
1. Wall Mount Control (WMC): There are no "Go to Level" or "Toggle" options for the shading systems.
2. Other than Personal Control & WMC modules, no other modules support the MechoSystems (i.e. user cannot associate a schedule to shade system).
3. The MechoSystems IO Terminal Zone ID (Zone Number) cannot be the same as a DALI Bus ID (Bus Number) and must be unique. For example; you cannot have a MechoSystems Terminal Zone 1 and a Fifth Light DALI Bus 1 on the same system. Although the Zone Controller Application is not capable of handling duplicate Bus IDs for MechoSystems Controller and DALI Buses, the MCA is capable of handling it.
4. The MechoSystems technicians shall commission the MechoSystems and provide the zone, group and addresses to the Eaton's Application specialist so that they can input the information into the Fifth Light system. The current mapping is bus to zone and DALI short address to group.
5. The MechoSystems Group Address is entered as the Node Address in the LMS.
6. The system can be overridden by any commands sent directly from the MechoSystems.

System Configuration

EIM Configuration

The following settings must be used with MechoShades. These are the recommended settings from MechoSystems and should not be adjusted.

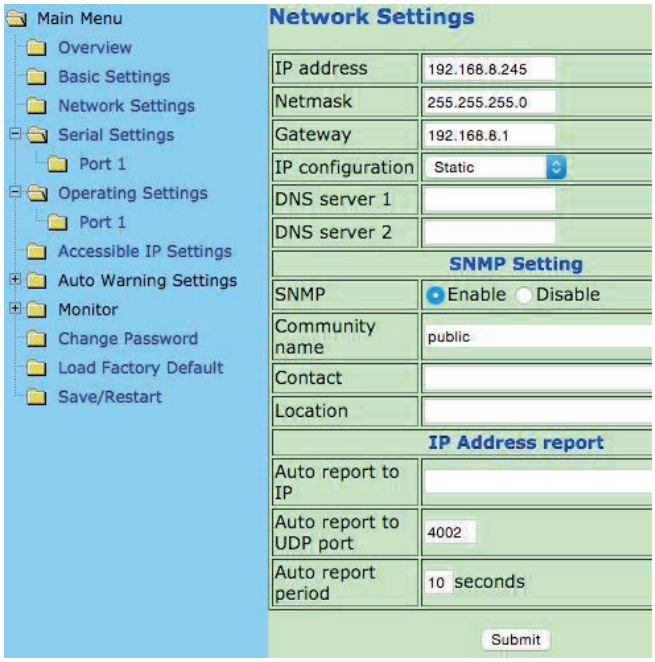
Serial Settings	
Baud Rate	19200
Data Bits	8
Start Bits (if listed)	1
Stop Bits	1
Parity	None
Flow Control	None
FIFO	Enable



Network Settings

Configure the IP as a Static IP.

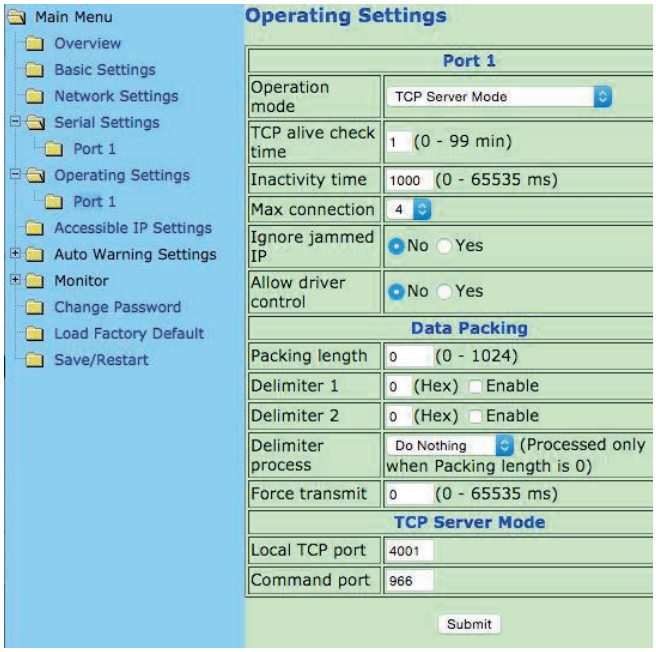
Use IP, Netmask and Gateway as appropriate for your network. Consult with IT if necessary.



Operating Settings

Non-Default Settings	
Operation Mode	TCP Server Mode
TCP alive check time	1 min
Inactivity time	1000
Max connection	4

Default Settings	
Ignore jammed IP	No
Allow driver control	No
Packing length	0
Delimiter 1	not enabled
Delimiter 2	not enabled
Delimiter process	Do Nothing
Force transmit	0
Local TCP port	4001
Command port	966



Note: Ports 4001 and 966 must be opened on any corporate firewalls if the device is not on the same local network as the NUC.

Fifth Light System Setup

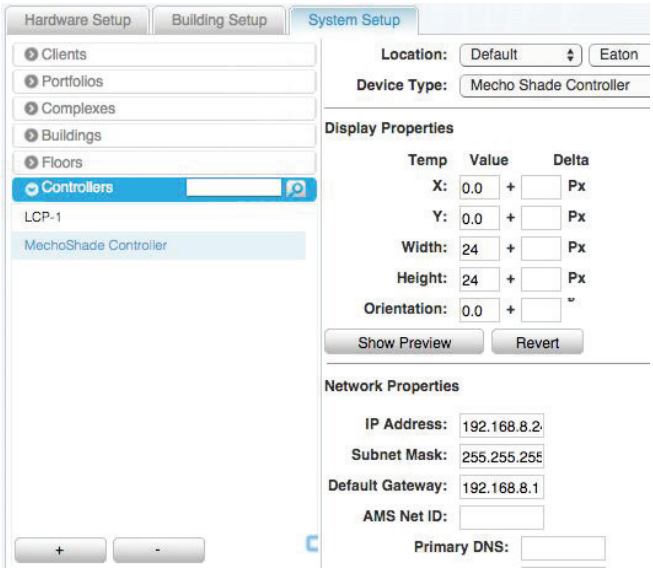
There are three components that need to be configured in the LMS. The Mechoshade Controller, the Mechoshade Terminal, and the Mechoshade.

The Mechoshade Controller is the device connected to the Serial / Ethernet converter. It supports multiple Mechoshade terminals, and each terminal can have multiple Mechoshades.

The following configuration should be done by a Fifthlight technician.

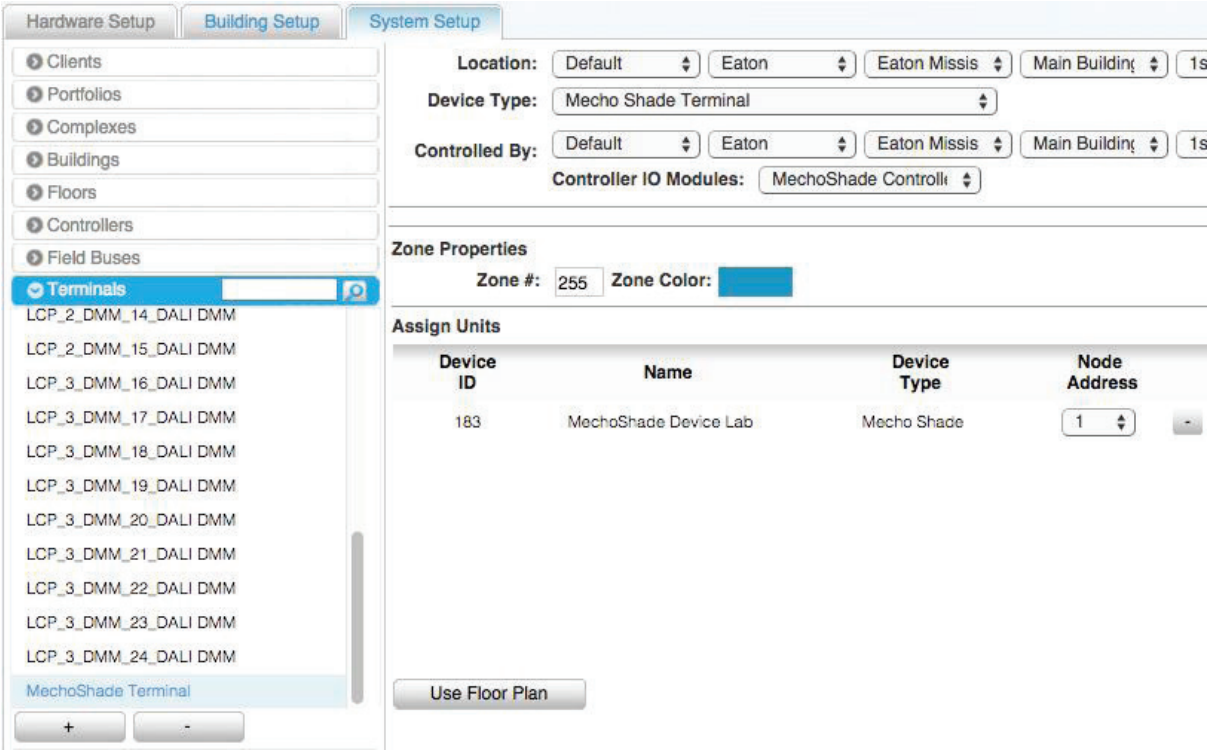
Mechosahde Controller

1. Under the System Setup Module, select the System Setup tab.
2. Select Controllers in the side panel and then click the + button to add a new device.
3. Select the following:
   - The device type as Mecho Shade Controller
   - The floor the device is located on
   - Enter the IP of the serial / Ethernet converter.



Terminals

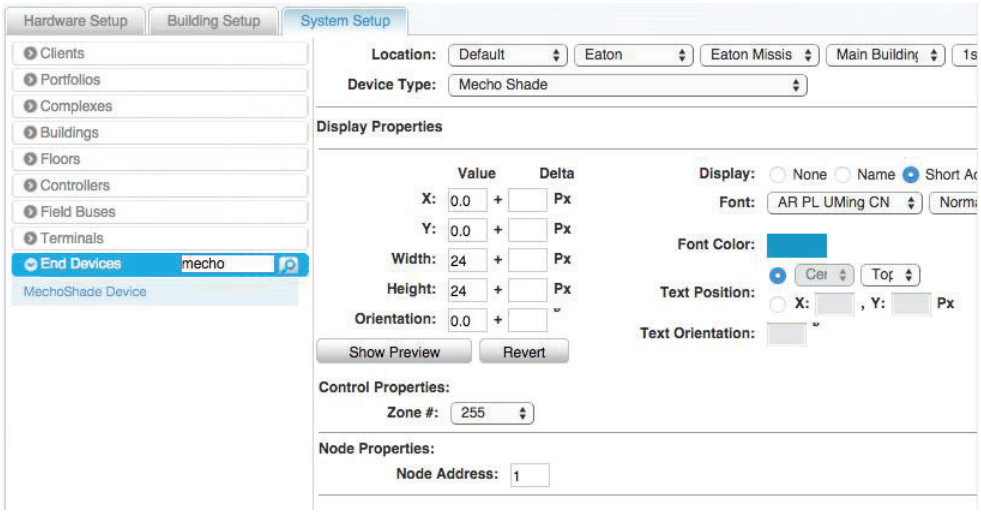
1. Click on Terminals in the side panel and then click the (+) button to add a new device.



2. Select the device type as MechoShade Terminal.
3. Enter the following:
   - The floor the device is located on
   - The Controller it is Controlled by
   - The Zone number. This is a unique identification number given to the terminal and is similar to a DALI Bus number.

Note: The Zone number must be different from any DALI bus number used. You must change either the MechoShade Zone number (consult the MechoShade technician) or the DALI bus number if there is a conflict.

End Devices



1. Click on End Devices in the side panel and then click the (+) button to add a new device.
2. Select the device type as Mecho Shade.
3. Enter the following:
   - The Floor the device is located on
   - The Zone number of the controlling terminal
   - The node address

Note: The node address is the group address used by the shades to be controlled. The LMS does not support individual addresses, although you could make groups containing 1 shade.

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