

# MechoNet UPoE+ Motor Hub

## Data Sheet

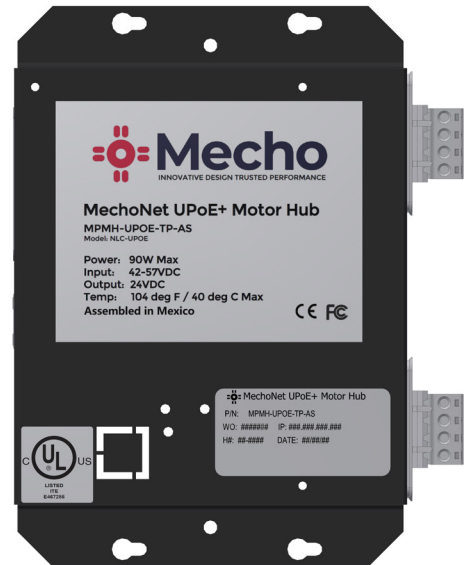
**Model Number**  
MPMH-UPOE-TP-AS

### Description

The MechoNet UPoE+ Motor Hub is an IoT interface that brings MechoNet-equipped shade motors and controls to PoE. This motor hub attaches to IEEE 802.3 AF/AT/BT Type 3 or Type 4 PoE Network Switches and provides up to 90W of 24VDC power and Ethernet communication for devices attached to MechoNet. It works directly with Mecho's ElectroShade® iQ2-DC and iQ3-DC motorized shade solutions forming a single network solution for the various shading needs across the entire project. It also provides access to MechoNet Wireless sensors and switches to offer industry-leading shade control and automation flexibility for optimizing today's intelligent buildings and embracing a healthy and productive building experience for the occupant.

The Motor Hub employs CoAP (Constrained Application Protocol) messaging and MUD (Manufacturer Usage Description) partnering with Cisco's Smart Building Solutions to provide industry-leading open and secure communication across all building systems. Together with Mecho's SolarLinc and SolarTrac 4.0 automation solutions this device is uniquely positioned to support various levels of automation strategies covering solar penetration, solar heat gain control, occupancy, glare, 3D reflection and 3D shadow. This provides unprecedented control of daylight and view which can be used to maximize building performance and sustainability while promoting best-in-class occupant comfort, productivity and wellness.

Furthermore, operational and environmental data can be securely shared with other building systems over a future-proofed PoE network allowing the owner to customize and optimize their investment as their needs and budget require.



### Features

- UPoE+ (90W) Shade Controller and MechoNet Hub
- Supports IEEE 802.3af, 802.3at, 802.3bt Type 3 or Type 4 PoE Network Switches with LLDP. (PoE, PoE+, UPoE, UPoE+ compliant)
- Single cable pull for power and data on both the PoE side and on the MechoNet side.
- Provides Ethernet-to-MechoNet routing and 90W of 24VDC continuous power for MechoNet shade motors (ElectroShade iQ2-DC, and iQ3-DC) and controls.
- Offers the industry's greatest window area to PoE port power ratios by supporting simultaneous group control of multiple iQ2-DC or iQ3-DC motors over one (1) hub.
- Controls virtually unlimited line voltage AC/DC powered ElectroShade iQ2, iQ2+, and iQ3 motorized shades from one (1) hub.
- Single network solution across the building for windows of all sizes using DC motorized shades.
- Provides PoE access to MechoNet Wireless sensors and keypads through MechoNet MWC+ controllers.
- Cisco DNA/Smart Building Solutions Partner - Employs CoAP (Constrained Application Protocol) messaging and MUD (Manufacturer Usage Description) for secure, open communication across sub-systems.
- SolarLinc and SolarTrac 4.0 compliant for industry leading automation strategy efficacy and flexibility.
- UL Listed, FCC Class A, and CE compliant.



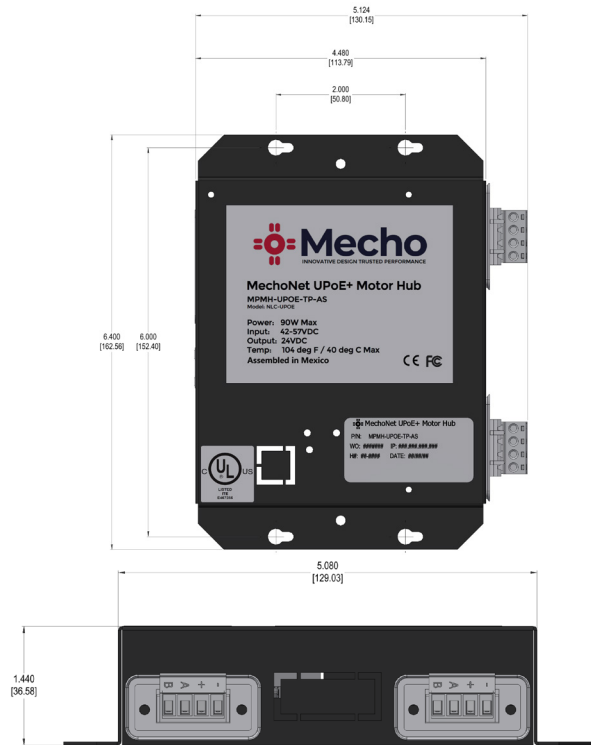
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# MechoNet UPoE+ Motor Hub

## Data Sheet Specifications

Equipment Kit	
<b>Includes</b>	MechoNet UPoE+ Motor Hub
Hardware	
<b>Standby Power</b>	3W
<b>Output Power</b>	24VDC, 90W
<b>Input Voltage</b>	IEEE 802.3af, 802.3at, 802.3bt, Complies with PoE, PoE+, UPoE or UPoE+
<b>Power Input</b>	1 x PoE Port, RJ45 CoAP, MUD, LLDP, NuSPICE™
<b>Input</b>	<ul style="list-style-type: none"> <li><b>Power:</b> 24VDC +/- 20%, 4A Max or up to 2x fully loaded iQ2-DC or iQ3-DC motorized shades.</li> <li><b>Network:</b> +13V/-8VDC</li> <li><b>Optional:</b> 1 x Color Beacon Output</li> <li><b>Optional:</b> 1 x PoE Voltage Output Tap</li> </ul>
<b>Output</b>	<ul style="list-style-type: none"> <li>1 x MechoNet Port, 4-position term block</li> <li><b>Power:</b> 24VDC +/- 20%, 4A Max or up to 2x fully loaded iQ2-DC or iQ3-DC motorized shades.</li> <li><b>Network:</b> +13V/-8VDC</li> <li><b>Optional:</b> 1 x Color Beacon Output</li> <li><b>Optional:</b> 1 x PoE Voltage Output Tap</li> </ul>
<b>Immunity</b>	<b>IEC/EN61000</b> <ul style="list-style-type: none"> <li>IEC/EN61000-4-2 (ESD): +/-6kV direct contact, +/-8kV air discharge</li> <li>IEC/EN61000-4-3 (RF Radiated): 3V/m</li> <li>IEC/EN61000-4-4 (Fast Transient): 0.5kV (I/O)</li> <li>IEC/EN61000-4-5 (Surge): 1kV</li> <li>IEC/EN61000-4-6 (RF Conducted): 3V/m</li> <li>IEC/EN61000-4-8 (Magnetic Field): 1A/m</li> <li>IEC/EN61000-4-11 (Voltage Dips): per requirements</li> </ul>
<b>Wiring</b>	PoE: CAT5e or CAT6 - 328ft (100m) Max
<b>Maximum Wiring Distance</b>	<ul style="list-style-type: none"> <li>230ft (70m) max to iQ2-DC or iQ3-DC (Liberty 9020127)</li> <li>4,000ft (1219m) Cumulative MechoNet Max</li> </ul>
Mechanical	
<b>Dimensions</b>	6.5 in. (165mm) x 4.5 in. (114mm) x 1.5 in. (38mm)
<b>Mounting</b>	Screw mounted flange, Surface or Stand-alone  <b>Caution:</b> When mounting Motor Hub to metal surfaces or pockets. Gateway must be isolated from possible earth or building electrical grounding, as well as from other gateways.
Environmental	
<b>Operating Temperature</b>	32° to 104°F (0° to 40°C) ambient
<b>Humidity</b>	10-80% Non-Condensing
Agency Listings and Compliance	
UL Listed UL60950-1, FCC Class A, and CE Compliant	

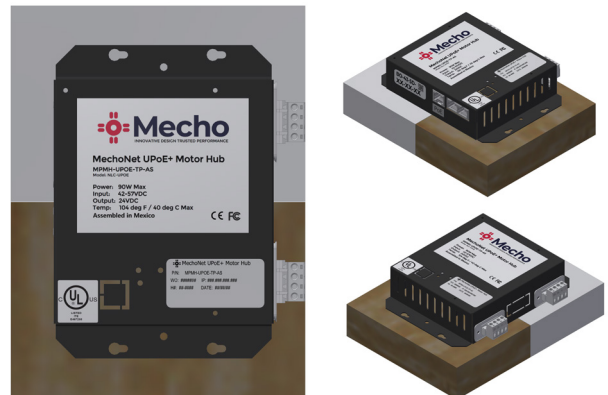
## Dimensions



## Mounting

Should be mounted to wood or drywall backing via mounting tabs.

**Caution:** When mounting Motor Hub to metal surfaces or pockets. Gateway must be isolated from possible earth or building electrical grounding, as well as from other gateways.



## Warning

- Caution:** Observe precautions for handling electrostatic sensitive devices.
- Case to the hub should not be earth grounded.
- Do not use outdoors.
- Warning:** Risk of Electric Shock. Do not handle energized module with wet hands or when standing on wet or damp surfaces.
- Use only with Class 2 Power Unit - 60VDC maximum.
- Conforms to UL60950-1, CE, FCC standards.
- Warranty:** Voided if device has been modified from its original configuration



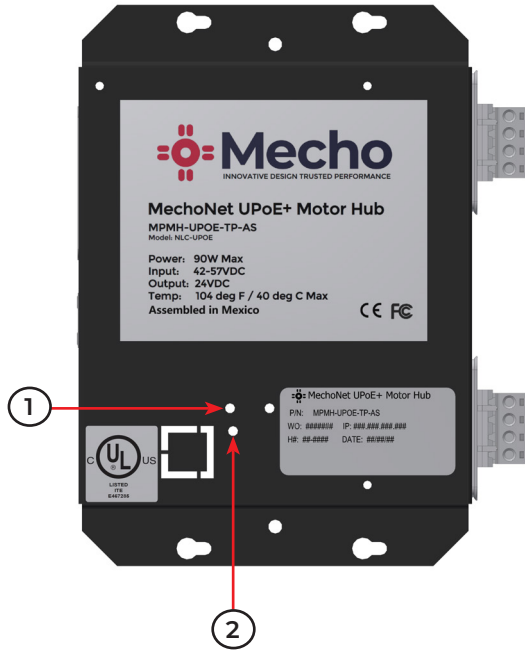
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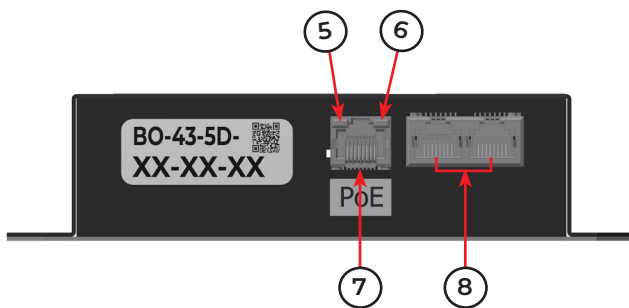
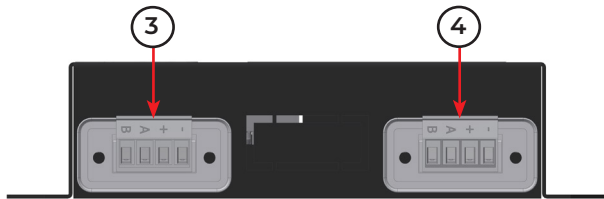
## Data Sheet

### Connections and Indicators

Supports both ANSI/TIA/EIA 568 A & B Standards



No.	Description	Function
1	Reset Button	Factory Reset
2	Power LED	Power Indication
3	Motor Port 1	Power and Data to ElectroShade iQ2-DC-EDU or ElectroShade iQ3-DC-EDU
4	Motor Port 2	
5	Ethernet Port Green LED	Function ON - Ethernet Active
6	Ethernet Port Amber LED	Network Traffic
7	Ethernet Port	Power and Data Input from PoE system
8	RJ45 Ports	Not Available

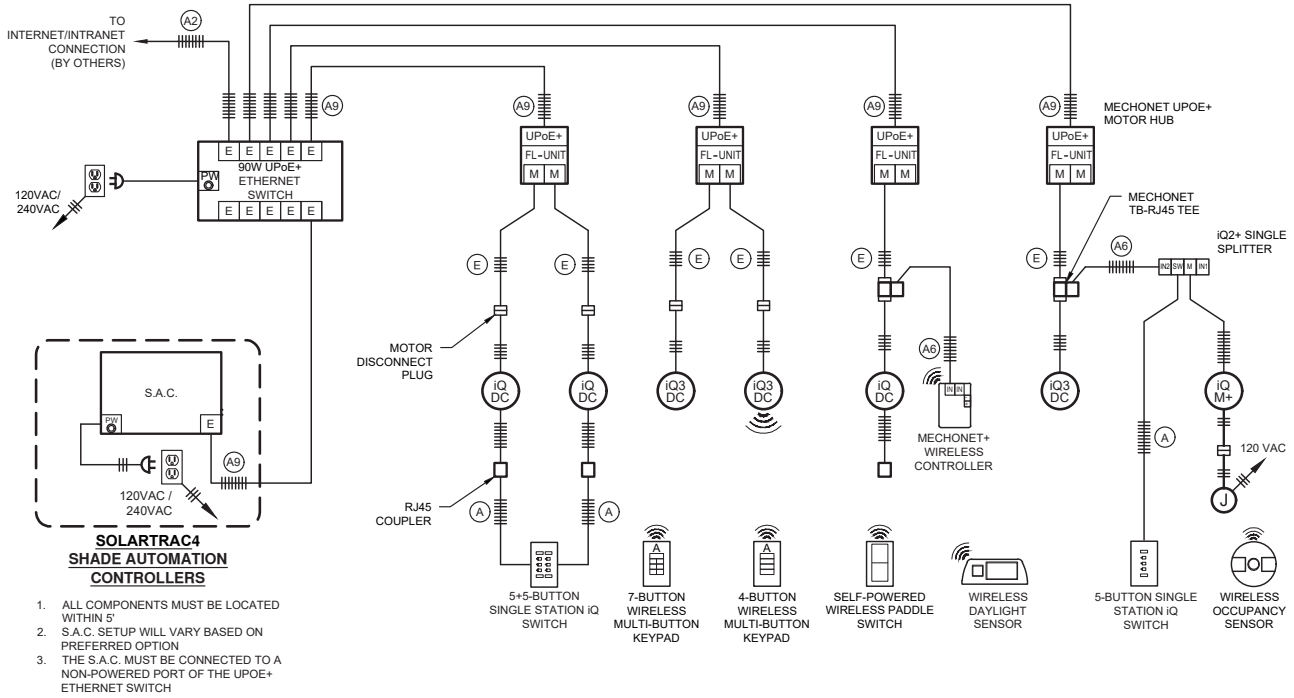


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## Data Sheet

### Wiring Details Diagram

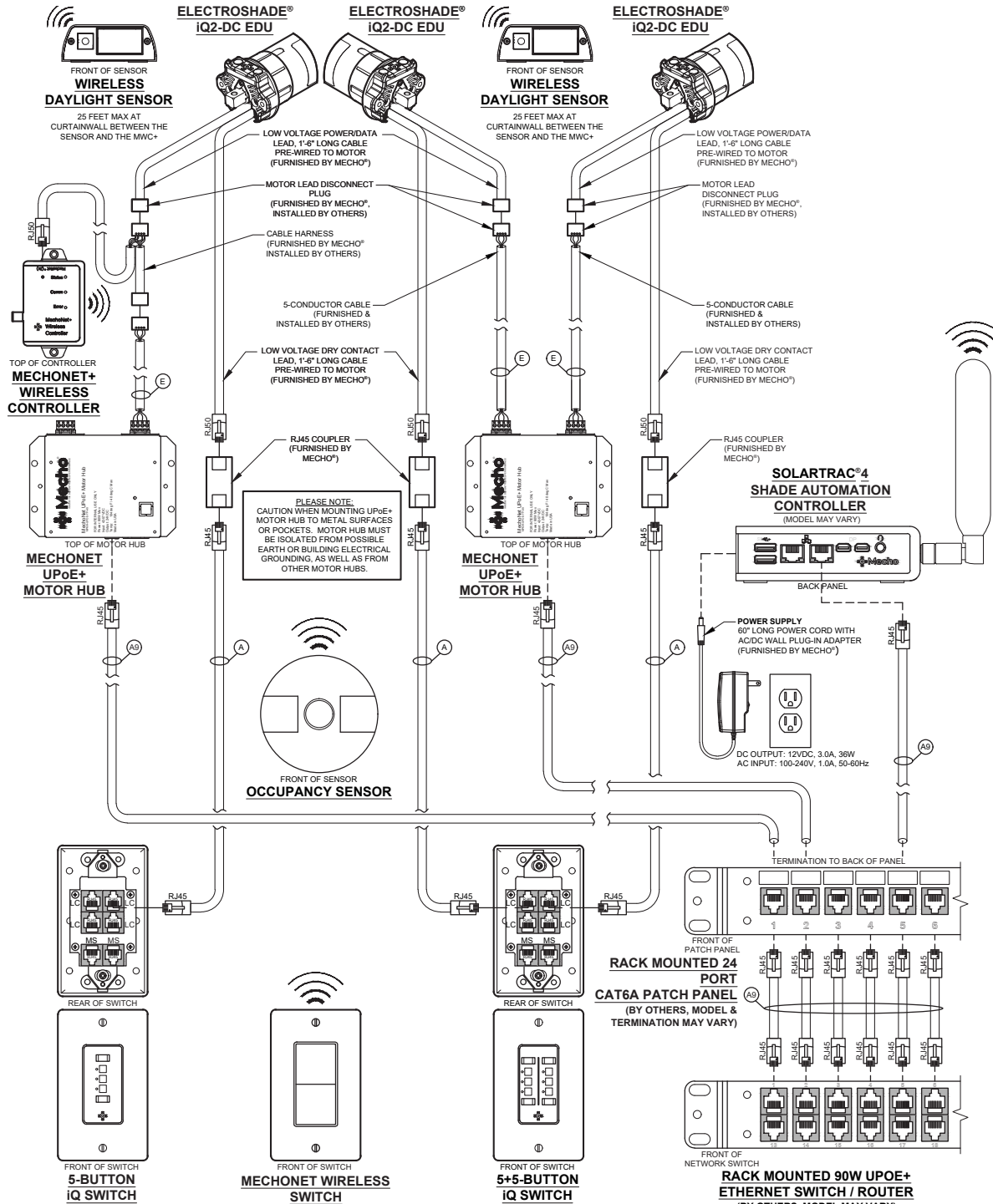


**NOTE:** Refer to pages 12 and 13 for the Low Voltage Cable Legend and crimping instructions.

# MechoNet UPoE+ Motor Hub

## Data Sheet

### Point-to-Point Diagram ElectroShade® IQ2-DC



**NOTE:** Refer to pages 12 and 13 for the Low Voltage Cable Legend and Crimping Instructions.

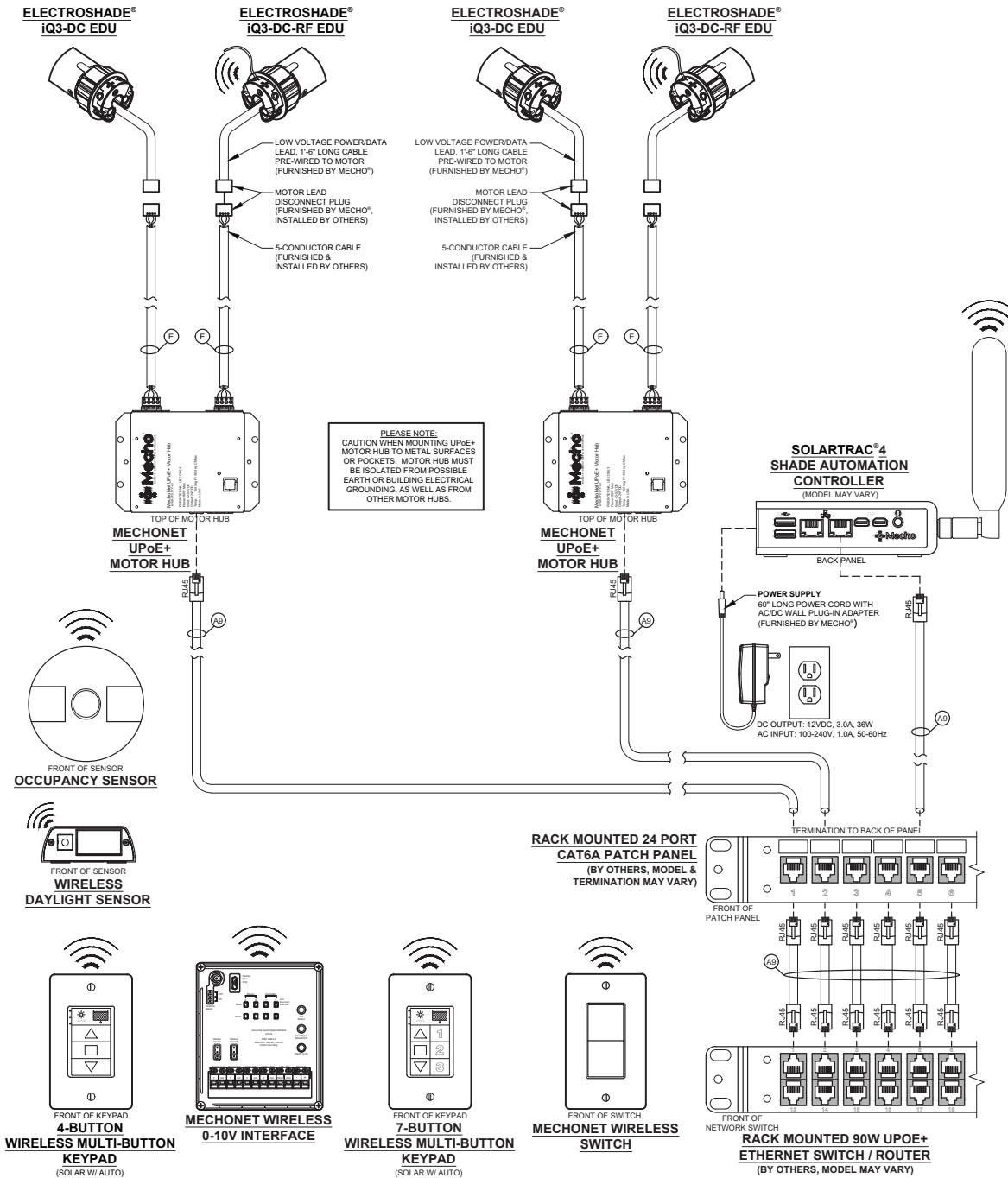


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# MechoNet UPoE+ Motor Hub

## Data Sheet

### Point-to-Point Diagram ElectroShade® iQ3-DC



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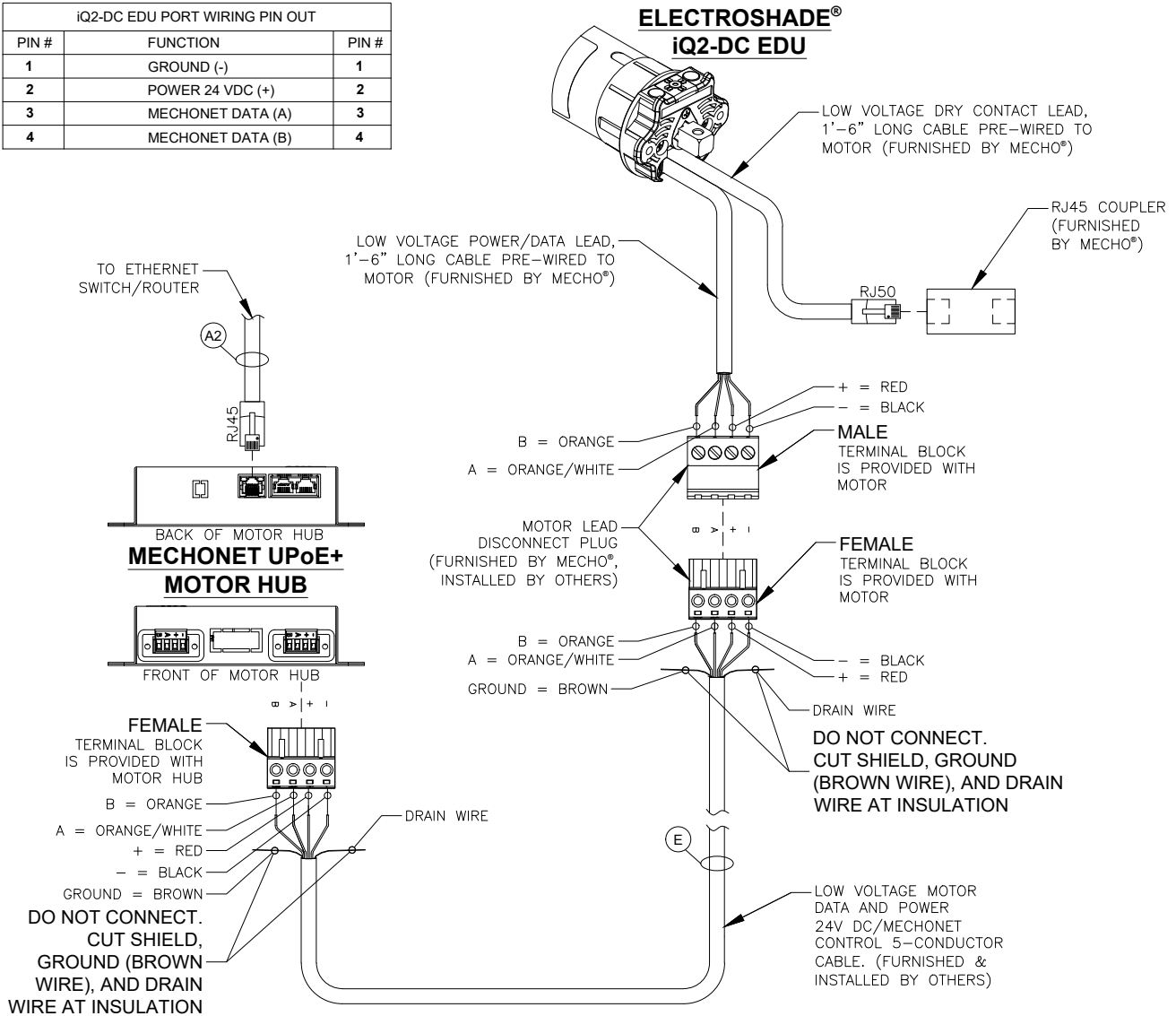
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# MechoNet UPoE+ Motor Hub

## Data Sheet

### Point-to-Point Diagram ElectroShade® iQ2-DC

iQ2-DC EDU PORT WIRING PIN OUT		
PIN #	FUNCTION	PIN #
1	GROUND (-)	1
2	POWER 24 VDC (+)	2
3	MECHONET DATA (A)	3
4	MECHONET DATA (B)	4



## D1 ENLARGED WIRING DETAIL

SCALE: N.T.S.

**NOTE:** Refer to pages 12 and 13 for the Low Voltage Cable Legend and Crimping Instructions.

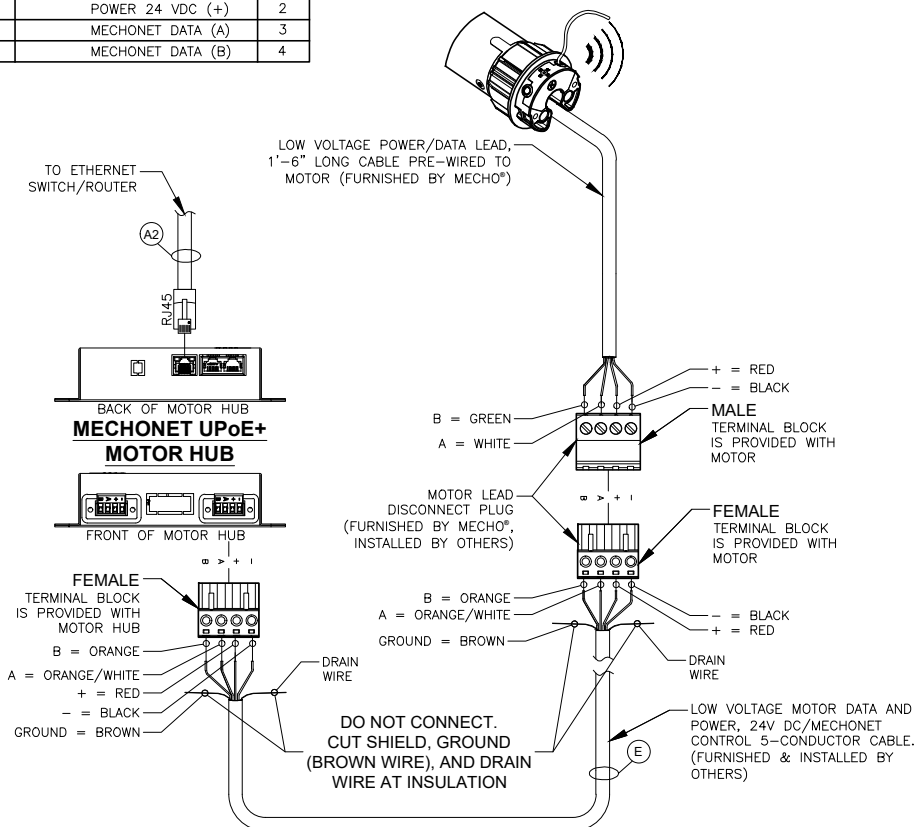
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## Data Sheet

### Point-to-Point Diagram ElectroShade® iQ3-DC

IQ3-DC EDU PORT WIRING PIN OUT		
PIN #	FUNCTION	PIN #
1	GROUND (-)	1
2	POWER 24 VDC (+)	2
3	MECHONET DATA (A)	3
4	MECHONET DATA (B)	4

#### ELECTROSHADE® iQ3-DC-RF EDU



#### D8 ENLARGED DETAIL SCALE: N.T.S.

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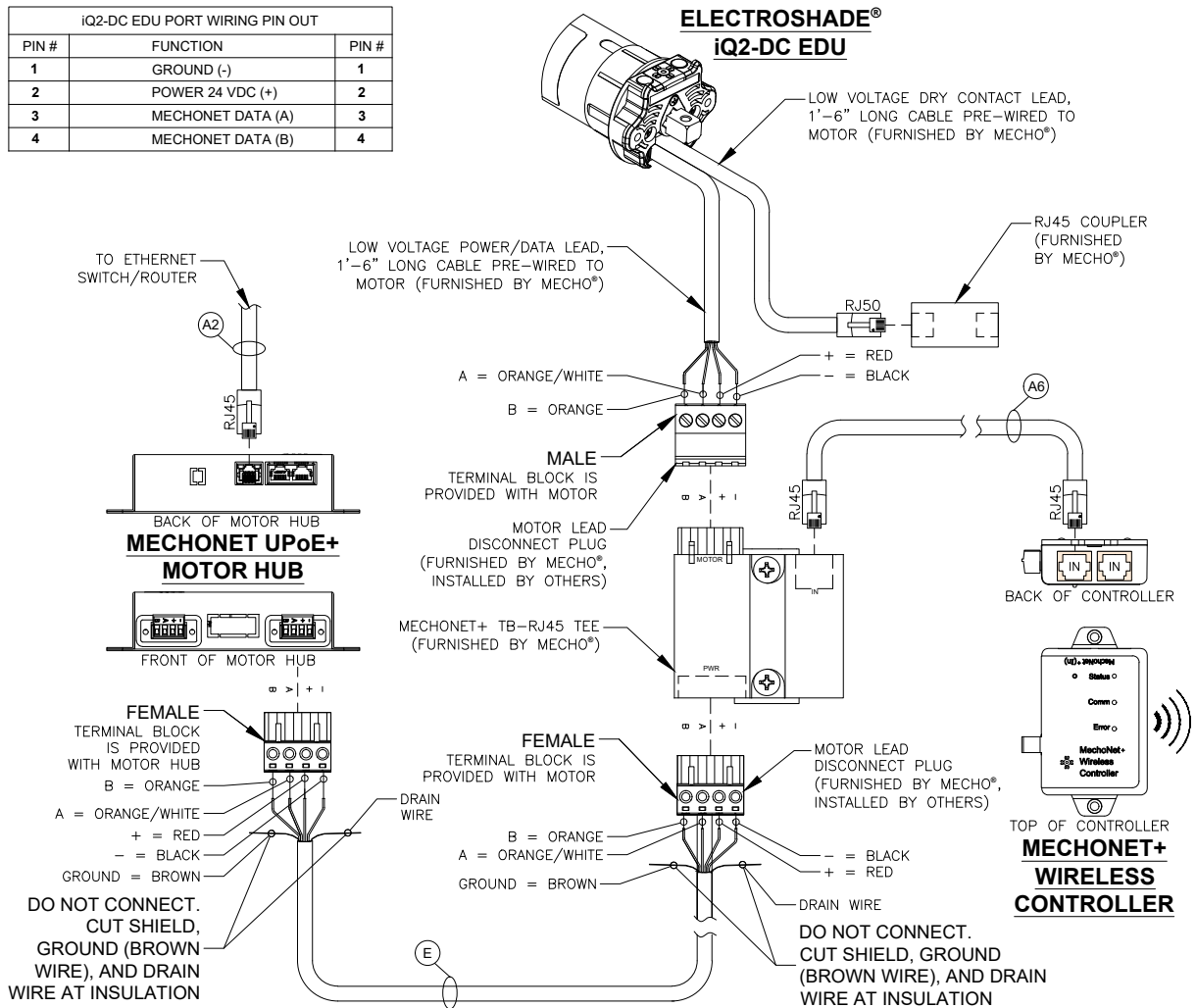


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## Data Sheet

### Point-to-Point Diagram ElectroShade® iQ2-DC

iQ2-DC EDU PORT WIRING PIN OUT		
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1	GROUND (-)	1
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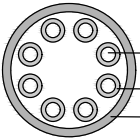


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# MechoNet UPoE+ Motor Hub

## Data Sheet

### System Drawing Wiring Legend

CABLE A REFERENCE DRAWING																																																																
 <p>Solid Annealed Copper Conductor Thermoplastic Insulation Flame Retardant PVC Jacket</p> <p>Drawing not to scale</p>																																																																
<p><b>OLYMPIC WIRE AND CABLE (www.olympicwire.com 1-800-526-2269) PART No. 3078M5F-8 (NON-PLENUM)</b></p> <p>Category 5E</p> <p><b>SPECIFICATIONS (STRANDED):</b></p> <table border="0"> <tr> <td>PAIR COUNT:</td> <td>4</td> <td>MAX. DC RESISTANCE:</td> <td>26 OHMS PER KFT</td> </tr> <tr> <td>CONDUCTOR:</td> <td>TINNED COPPER</td> <td>NOM. CAPACITANCE:</td> <td>13.5 PF PER KFT</td> </tr> <tr> <td>AWG (mm):</td> <td>24 (0.51)</td> <td>IMPEDANCE:</td> <td>100 OHMS ±15% FROM 1-20 MHZ</td> </tr> <tr> <td>STRANDING:</td> <td>STRANDED BARE COPPER 7/32</td> <td>NOMINAL VEL OF PROP:</td> <td>67%</td> </tr> <tr> <td>INSULATION:</td> <td>HIGH-DENSITY POLYETHYLENE (HDPE)</td> <td>NOMINAL O.D.:</td> <td>0.220 IN</td> </tr> <tr> <td>INSULATION THICKNESS:</td> <td>.007in</td> <td>NEC TYPE:</td> <td>800</td> </tr> <tr> <td>INSULATION COLORS:</td> <td>PAIR 1: COLORTIP LIGHT BLUE, BLUE</td> <td>CSA STYLE:</td> <td>C(UL)</td> </tr> <tr> <td></td> <td>PAIR 2: COLORTIP LIGHT ORANGE, ORANGE</td> <td>UL STYLE:</td> <td>CM</td> </tr> <tr> <td></td> <td>PAIR 3: COLORTIP LIGHT GREEN, GREEN</td> <td>COLOR CODE:</td> <td>CHART 9</td> </tr> <tr> <td></td> <td>PAIR 4: COLORTIP LIGHT BROWN, BROWN</td> <td>VOLTAGE:</td> <td>300</td> </tr> <tr> <td>JACKET MATERIAL:</td> <td>POLYVINYL CHLORIDE (PVC)</td> <td>RoHS COMPLIANT:</td> <td>YES</td> </tr> <tr> <td>JACKET THICKNESS:</td> <td>.020</td> <td>OPERATING TEMP:</td> <td>75°C</td> </tr> <tr> <td>JACKET COLOR:</td> <td>GRAY</td> <td></td> <td></td> </tr> </table>		PAIR COUNT:	4	MAX. DC RESISTANCE:	26 OHMS PER KFT	CONDUCTOR:	TINNED COPPER	NOM. CAPACITANCE:	13.5 PF PER KFT	AWG (mm):	24 (0.51)	IMPEDANCE:	100 OHMS ±15% FROM 1-20 MHZ	STRANDING:	STRANDED BARE COPPER 7/32	NOMINAL VEL OF PROP:	67%	INSULATION:	HIGH-DENSITY POLYETHYLENE (HDPE)	NOMINAL O.D.:	0.220 IN	INSULATION THICKNESS:	.007in	NEC TYPE:	800	INSULATION COLORS:	PAIR 1: COLORTIP LIGHT BLUE, BLUE	CSA STYLE:	C(UL)		PAIR 2: COLORTIP LIGHT ORANGE, ORANGE	UL STYLE:	CM		PAIR 3: COLORTIP LIGHT GREEN, GREEN	COLOR CODE:	CHART 9		PAIR 4: COLORTIP LIGHT BROWN, BROWN	VOLTAGE:	300	JACKET MATERIAL:	POLYVINYL CHLORIDE (PVC)	RoHS COMPLIANT:	YES	JACKET THICKNESS:	.020	OPERATING TEMP:	75°C	JACKET COLOR:	GRAY													
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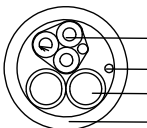


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# MechoNet UPoE+ Motor Hub

## Data Sheet

### System Drawing Wiring Legend

<b>CABLE E REFERENCE DRAWING</b>	
	<ul style="list-style-type: none"> <li>— 22 AWG SHIELDED TRIAD</li> <li>— RIPCORD</li> <li>— 14 AWG COMPONENT (2)</li> <li>— OUTER JACKET</li> </ul>
DRAWING NOTE TO SCALE	
<p><b>BUILD:</b> POWER PAIR AND DATA TRIAD CABLED ON A COMMON AXIS</p> <p><b>ASSEMBLY:</b> 76MM (3.00-INCH) LEFT HAND LAY, 4.0 TWISTS PER FOOT. 100%</p> <p><b>BINDER:</b> POLYESTER TAPE WITH A 25% OVERLAP</p> <p><b>RIPCORD:</b> NYLON</p> <p><b>JACKET:</b> POLYVINYL CHLORIDE (PVC)</p> <p><b>THICKNESS:</b> 0.69MM (0.027-INCH)</p> <p><b>DIAMETER:</b> 7.21MM (0.284-INCH)</p>	<p><b>POWER PAIR:</b></p> <p><b>CONDUCTOR:</b> 2/C BARE COPPER</p> <p><b>AWG:</b> 14</p> <p><b>CONSTRUCTION:</b> 41/0.25MM (41/30 AWG)</p> <p><b>DIAMETER:</b> 1.88MM (0.074-INCH)</p> <p><b>INSULATION:</b> SEMI-RIGID POLYVINYL CHLORIDE (SR-PVC)</p> <p><b>COLOR CODE:</b> RED, BLACK</p> <p><b>THICKNESS:</b> 0.23MM (0.009-INCH)</p> <p><b>DIAMETER:</b> 2.34MM (0.092-INCH)</p>
<p><b>ELECTRICAL SPECIFICATIONS:</b></p> <p>22 AWG TRIAD</p> <p><b>CONDUCTOR DCR:</b> 54.45 C/KM (16.6 Q/1000FT)</p> <p><b>CAPACITANCE:</b> 41.0PF/M (12.5 PF/FT)</p> <p><b>IMPEDANCE:</b> 100 Q</p> <p><b>TEMPERATURE:</b> -20°C TO 75°C</p> <p><b>VOLTAGE:</b> 300V</p>	<p><b>DATA TRIAD:</b></p> <p><b>CONDUCTOR:</b> 3/C BARE COPPER</p> <p><b>AWG:</b> 22</p> <p><b>CONSTRUCTION:</b> 7/0.254MM (7/30 AWG)</p> <p><b>DIAMETER:</b> 0.76MM (0.030-INCH)</p> <p><b>INSULATION:</b> FOAMED POLYETHYLENE (FPE)</p> <p><b>COLOR CODE:</b> ORANGE, ORANGE W/WHITE STRIPE, BROWN</p> <p><b>THICKNESS:</b> 0.48MM (0.019-INCH)</p> <p><b>DIAMETER:</b> 1.73MM (0.068-INCH)</p> <p><b>SHIELD:</b> 100% ALUMINUM/POLY WITH THE FOIL FACING IN</p> <p><b>DRAIN WIRE:</b> 24 AWG 7/32 TINNED COPPER IN CONTACT WITH THE FOIL SIDE OF THE SHIELD</p> <p><b>BUILD:</b> 3 CONDUCTORS AND DRAIN IN A LEFT HAND LAY AND SHIELDED</p>
<p>14 AWG PAIR</p> <p><b>CONDUCTOR DCR:</b> 8.86 Q/KM (2.07 Q/1000FT)</p>	
<p><b>JACKET COLORS:</b> PMS YELLOW</p> <p><b>PACKAGE(S):</b> 305M (1000 FOOT) SPOOL</p> <p><b>WEIGHT:</b> 84KG/KM (56 LBS/1000FT)</p>	
<p><b>REGULATORY CERTIFICATION(S):</b></p> <p>NEC RATED CL3R</p> <p>NOT RATED FOR CANADA</p> <p>EU ROHS-2 2011/65/EU COMPLIANT</p>	
<p><b>DISTANCE LIMITATION:</b></p> <p>(BASED UPON POWER PAIR AWG USED)</p> <p>12 AWG = 360'</p> <p>14 AWG = 230'</p> <p>16 AWG = 145'</p> <p>18 AWG = 90'</p>	

# MechoNet UPoE+ Motor Hub

## Data Sheet

### Low Voltage Cable Legend

<b><u>LOW VOLTAGE CABLE LEGEND - EIA568B</u></b>	
<p><b>NOTES:</b></p> <ol style="list-style-type: none"> <li>1. PARALLEL WIRING TO NEXT DEVICE PER BRANCH CIRCUIT CAPACITY. ALL CONNECTION MUST MEET NATIONAL AND LOCAL CODES AND REGULATIONS.</li> <li>2. ADDRESS SCHEDULES REQUIRED.</li> <li>3. MAXIMUM VOLTAGE FOR ALL UNMARKED CABLE IS 43.5 VDC.</li> <li>4. LOW VOLTAGE CABLES SHOULD NOT BE ROUTED NEAR POWER LINES OR ELECTRICAL DEVICES SUCH AS LIGHTING BALLASTS, DIMMERS AND LED DRIVERS THAT MAY EXPOSE THE SYSTEM TO EXCESSIVE ELECTRICAL NOISE.</li> </ol>	
(A)	<p><b><u>CAT5E/6 - CABLE FOR LOW VOLTAGE DRY CONTACT WIRING CONNECTIONS:</u></b></p> <p>24AWG 4UTP (8-CONDUCTOR STRANDED UNSHIELDED TWISTED PAIR)  <b>TERMINATION:</b> RJ-45 MODULAR PLUG CRIMPED (EIA568B) ON BOTH ENDS  <b>RECOMMENDED:</b> OLYMPIC WIRE AND CABLE (WWW.OLYMPICWIRE.COM 1-800-526-2269)            PART NO. 3078M5F-8 (NON-PLENUM) OR COMPATIBLE CABLE.            -----OR-----</p> <p>24AWG 4UTP (8-CONDUCTOR SOLID UNSHIELDED TWISTED PAIR)  <b>TERMINATION:</b> RJ-45 MODULAR PLUG CRIMPED (EIA568B) ON BOTH ENDS  <b>RECOMMENDED:</b> OLYMPIC WIRE AND CABLE (WWW.OLYMPICWIRE.COM 1-800-526-2269)            PART NO. 3604M5UC-9 (PLENUM) OR COMPATIBLE CABLE.</p> <p><b>DISTANCE LIMITATION: 400' CUMULATIVE</b>            SEE "CABLE A REFERENCE DRAWING" FOR DETAILED SPECIFICATION.            (FURNISHED &amp; INSTALLED BY OTHERS)</p>
(A2)	<p><b><u>CAT5E/6 - CABLE FOR ETHERNET WIRING CONNECTIONS:</u></b></p> <p>24AWG 4UTP (8-CONDUCTOR STRANDED UNSHIELDED TWISTED PAIR)  <b>TERMINATION:</b> RJ-45 MODULAR PLUG CRIMPED (EIA568B) ON BOTH ENDS  <b>RECOMMENDED:</b> OLYMPIC WIRE AND CABLE (WWW.OLYMPICWIRE.COM 1-800-526-2269)            PART NO. 3078M5F-8 (NON-PLENUM) OR COMPATIBLE CABLE.            -----OR-----</p> <p>24AWG 4UTP (8-CONDUCTOR SOLID UNSHIELDED TWISTED PAIR)  <b>TERMINATION:</b> RJ-45 MODULAR PLUG CRIMPED (EIA568B) ON BOTH ENDS  <b>RECOMMENDED:</b> OLYMPIC WIRE AND CABLE (WWW.OLYMPICWIRE.COM 1-800-526-2269)            PART NO. 3604M5UC-9 (PLENUM) OR COMPATIBLE CABLE.</p> <p><b>DISTANCE LIMITATION: 325'. MAX. NODES: 2.</b>            SEE "CABLE A REFERENCE DRAWING" FOR DETAILED SPECIFICATION.            (FURNISHED &amp; INSTALLED BY OTHERS)</p>
(A9)	<p><b><u>CAT5E/6 - CABLE FOR UPOE NETWORK WIRING CONNECTIONS:</u></b></p> <p>22AWG 4UTP (8-CONDUCTOR SOLID UNSHIELDED TWISTED PAIR)  <b>TERMINATION:</b> RJ-45 MODULAR PLUG CRIMPED (EIA568B) ON BOTH ENDS  <b>RECOMMENDED:</b> SUPERIOR ESSEX (WWW.SUPERIORESSEX.COM) PART NO. PW52-H46-X5            (NON-PLENUM) &amp; PW52-H46-X8 (PLENUM) OR COMPATIBLE CABLE            -----OR-----</p> <p>24AWG 4UTP (8-CONDUCTOR STRANDED UNSHIELDED TWISTED PAIR)  <b>TERMINATION:</b> RJ-45 MODULAR PLUG CRIMPED (EIA568B) ON BOTH ENDS  <b>RECOMMENDED:</b> OLYMPIC WIRE AND CABLE (WWW.OLYMPICWIRE.COM 1-800-526-2269)            PART NO. 3078M5F-8 (NON-PLENUM) &amp; PART NO. 3604M5UC-9 (PLENUM) OR COMPATIBLE CABLE.</p> <p><b>DISTANCE LIMITATION: 325'. MAX. NODES: 2.</b>            SEE "CABLE A REFERENCE DRAWING" FOR DETAILED SPECIFICATION.            (FURNISHED &amp; INSTALLED BY OTHERS)</p>
(E)	<p><b><u>COMPOSITE CONTROL CABLE FOR DC MOTOR POWER AND DATA.</u></b></p> <p>5-CONDUCTOR, (2 X 14AWG UNSHIELDED POWER PAIR AND 3 X 22AWG STRANDED, AND SHIELDED DATA TRIAD)  <b>RECOMMENDED:</b> LIBERTY CABLE (WWW.LIBERTYCABLE.COM 1-800-530-8998)            PART NO. 9020126 (NON-PLENUM) &amp; NO. 9020127 (PLENUM) OR COMPATIBLE CABLE,</p> <p><b>DISTANCE LIMITATION: SEE "CABLE E REFERENCE DRAWING".</b>            (FURNISHED &amp; INSTALLED BY OTHERS)            SEE "CABLE E REFERENCE DRAWING" FOR DETAILED SPECIFICATION.</p>

# MechoNet UPoE+ Motor Hub

## Data Sheet

### Crimping Instructions

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#### Warranty

Mecho's warranty ensures its products against defects in materials and workmanship for up to 25 years. The warranty timeline shall vary for different products. For complete warranty information, please visit <https://www.mechoshade.com/warranty> or contact your Mecho Representative.

#### Technical support

##### Mecho

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E: [techsupport@mechoshade.com](mailto:techsupport@mechoshade.com)

W: [www.mechoshade.com](http://www.mechoshade.com)

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