

MechoNet™ Network Interface (MNI) Specification Submittal

Models

MechoNet Network Interface: MNI-RJ

(RJ45 Motor Ports):

Stock No.: IMNI 0001 TP AS (US version)

Stock No.: IMNI 0004 TP AS (UK version)

MechoNet Network Interface: MNI-TB

(Terminal Block Motor Ports):

Stock No.: IMNI 0002 TP AS (US version)

Stock No.: IMNI 0005 TP AS (UK version)



Front View (MNI-RJ, US)

Rear View (MNI-RJ, US)

Features

- Low voltage controller expands window covering control over MechoNet.
- Four (4) optically-isolated, low voltage Motor / Electronic Drive Unit (EDU) ports control shades, blinds and draperies.
- Each Motor Port is configurable to support:
 - WhisperShade® IQ® roller shades and blinds
 - Somfy® ILT2, FTS, DCT or RTS roller shades and blinds.
 - WhisperTrac® 1000 or 3000 series drapery tracks.
 - Somfy Glydea™ DCT or RTS drapery tracks.
- Two models (MNI-RJ, MNI-TB) simplify motor wiring options.
- Configurable port personalities enable virtually any company's User Interface (UI) to operate window coverings.
- Four (4) optically-isolated Switch Ports expand dry contact control options to keypads, sensors and third-party controls.
- Each Switch Port and Motor Port supports up to five (5) alignment points and three (3) customizable presets.
- Uniform Mode setting maintains an architect's design intent at all times.
- One (1) IR remote control port supports various wireless IR remotes.
- One (1) configurable Serial Port for two-way RS232 or RS485 communication facilitates third party integration.
- Two (2) MechoNet Ports facilitate cost effective daisy chain wiring over MechoNet.
- MechoNet expands group control options across up to 250 nodes over 4000 ft. (1219.2m) of standard CAT-5 or CAT-6 cable.
- Each Motor Port possesses ten (10) MechoNet group control addresses which enable flexible, multilevel control options.
- Flexible power options can eliminate the need for a dedicated 24VDC supply.
- Five (5) diagnostic LEDs aid in troubleshooting configuration and wiring issues.
- Firmware and port configurations are upgradable from any point on the network without climbing a ladder!
- Settings are stored in non-volatile memory with a minimum ten year life which recalls settings even in case of power failure.
- The MechoNet Network Interface is a listed solution to UL325 and CSA 22.2 No. 247.

Description

The MechoNet Network Interface (MNI) serves as a communication and control hub for motorized window coverings. Managing control for up to four (4) window-covering motor or EDU connections, its low voltage Motor Ports can control a variety of roller shade, blind, and drapery solutions via dry contact. Its complementary four (4) Switch Ports, IR Port and Serial RS232/485 Port provide expansive control options to a variety of dry contact, wireless, and third-party controls. Virtually any company's switch, keypad, touchscreen, remote, or app can be applied to control window coverings attached to the MNI or MechoNet. MechoSystems' award-winning MechoNet network is a bidirectional communication bus that provides flexibility, reliability, and scalability from single-office to whole-building control. Each MNI Motor Port possesses ten (10) MechoNet control addresses in order to support complex overlapping, multilevel control schemes (individual, group, master, and others). In addition, control can also be extended to MechoSystems' SolarTrac® and SunDialer® automated WindowManagement® Systems bringing the ultimate in energy efficiency combined with optimized comfort, exposure to natural daylight, and views. PC-based tools support field configuration and troubleshooting from anywhere on the control network.




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Electrical Specifications



Power Port

Power Input (+,-)	12-28VDC, 200mA Max	 Power Connector
Connector	2-position 3.5mm pluggable terminal block (See <i>Right & Fig. 1</i>)	
Wiring	2-conductor UTP, 18 AWG, stranded, 500 ft. (152.4m) Max (See <i>Fig. 1</i>)	


Motor Ports (M1, M2, M3, M4)

Dry Contact Outputs (B1, B2, B3)	12-28VDC, 25mA Max (sink) per Output, 330Ω	 RJ45 Connector
Power Input (PWR-M1, PWR-M2, etc.)	12-28VDC @ 75mA Max per Port	
Feedback Signal (FB-IN)	28VDC Max, 2KΩ Source Impedance	 TB Motor Connector
Connector	RJ45, USOC Crimp (See <i>Right & Fig. 1</i>)	
Wiring	4-position 3.5mm pluggable terminal block (See <i>Right & Fig. 1</i>)	
	8-conductor 4UTP, Cat-5/6, 400 ft. Max (See <i>Fig. 1</i>)	 RJ45 Connector
	4-conductor, 18-24 AWG, stranded, 400 ft. (121.9m) Max (See <i>Fig. 1</i>)	


Switch Ports (S1, S2, S3, S4)

Switch Port Power (PWR – SW)	12-28VDC, 25mA Max	 RJ45 Connector
Dry Contact Inputs (B1, B2, B3)	12-28VDC, 2KΩ (Source)	
Feedback Signal Output (FB-OUT)	12-28VDC, 2KΩ (Sink)	
Connector	RJ45, USOC Crimp (See <i>Right & Fig. 1</i>)	 RJ45 Connector
Wiring	8-conductor 4UTP, Cat-5/6, 400 ft. (121.9m) Max (See <i>Fig. 1</i>)	


MechoNet Ports (IN*)

MechoNet Power Input (PWR or V+)	12-28VDC, 1A Max	 RJ45 Connector
MechoNet (NET A, NET B)	+13.0VDC Max/-8.0VDC Min, 60mA Max	
Connector	RJ45, USOC Crimp (See <i>Right & Fig. 1</i>)	
Wiring	8-conductor, Cat-5/6 - 4UTP, 4000 ft. (1219.2m) Max, Max Nodes 250 (See <i>Fig. 1</i>)	

Serial Port (RS232/RS485)

RS485_A, RS485_B (A, B)	+13.0VDC Max/-8.0VDC Min, 60mA Max	 RJ12 Connector
RS232 TXD/RXD (TXD, RXD)	+13.2VDC Max/-13.2VDC Min, 2mA Max	
Connector	RJ12 (See <i>Right & Fig. 1</i>)	
Wiring	Cat-3/5/6 - 3UTP, 25 ft. (7.6m) Max (See <i>Fig. 1</i>)	

IR Port

IR Port Power Output (PWR-IR)	Configurable 5.0/3.3VDC, 100mA Max	 RJ12 Connector
IR Port Signal Input (IR)	3.3VDC, 300uA (Sink)	
Connector	R12 (See <i>Right & Fig. 1</i>)	
Wiring	6-conductor, 26 AWG Silver Satin Cable or UTP Cat-3/5/6, 5 ft. (1.5m) (See <i>Fig. 1</i>)	

Connections:

Figure 1: MNI Connection Diagram

Serial Port: (RS232/RS485)
6-conductor, 26 AWG Silver Satin Cable or 3UTP Cat-3/5/6
25 ft Max

pin	color	connection
1	White	RS485_A (A)
2	Black	Common (COM - RS/IR)
3	Red	RS232 - TXD (TXD)
4	Green	Common (COM - RS/IR)
5	Yellow	RS232 - RXD (RXD)
6	Blue	RS485_B (B)

USOC Crimp RJ12 RJ12

IR Port:
6-conductor, 26 AWG Silver Satin Cable or 3UTP Cat-3/5/6
5 ft Max

pin	color	connection
1	White	Signal Input - (IR)
2	Black	Common - (COM - RS/IR)
3	Red	X - no connect
4	Green	X - no connect
5	Yellow	Power Output - (PWR - IR)
6	Blue	X - no connect

IR Eye RJ12

Switch Ports (S1, S2, S3, S4)
4UTP Cat-5/6(8-conductor, 24 AWG, stranded, unshielded twisted pair)
400 ft cumulative max

pin	color	connection
1	Br/Wh	X - no connect
2	Gr/Wh	Power Output (PWR - SW)
3	Or/Wh	Common (COM - SW)
4	Bl	Dry Contact Input - B1 (UP)
5	Bl/Wh	Dry Contact Input - B2 (MID)
6	Or	Dry Contact Input - B3 (DN)
7	Gr	Feedback (FB - OUT)
8	Br	X - no connect

USOC Crimp RJ45 RJ45

Power Port
UTP, 2-conductor, 18 AWG, stranded, unshielded
*Cabling to be specified based on wiring distance and voltage drop concerns

pin	color	connection
1	Rd or Wh	Power (+)
2	Bk	Common (COM)

MechoNet Ports (IN*)
4UTP Cat-5/6(8-conductor, 24 AWG, stranded, unshielded twisted pair)
4000 ft cumulative, 250 nodes max
USOC Crimp

pin	color	connection
1	Br/Wh	MechoNet - Net A (NET A)
2	Gr/Wh	Power - Motor/Controller (PWR)
3	Or/Wh	Common (COM)
4	Bl	Power - Bus Supply (V+)
5	Bl/Wh	Common (COM)
6	Or	Power - Bus Supply (V+)
7	Gr	Common (COM)
8	Br	MechoNet - Net B (NET B)

Motor Ports (M1, M2, M3, M4): MNI-RJ
4UTP Cat-5/6(8-conductor, 24 AWG, stranded)
400 ft cumulative max

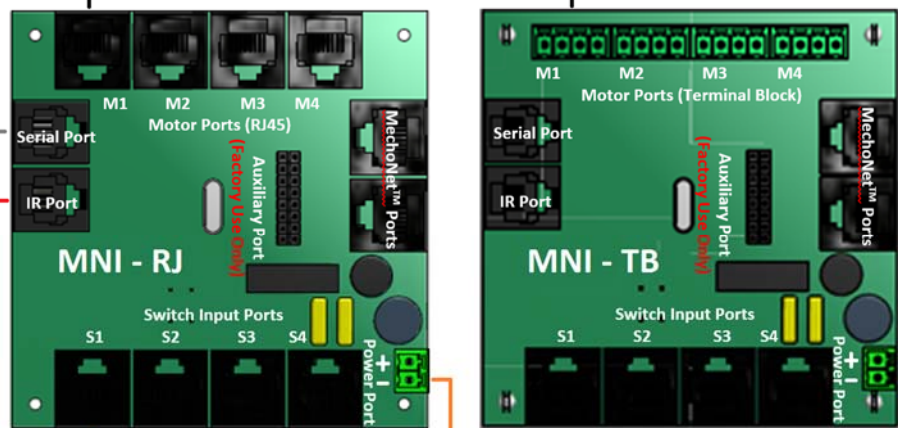
pin	color	connection
1	Br/Wh	X - no connect
2	Gr/Wh	Power (PWR - M1, etc.)
3	Or/Wh	Common (COM - M1, etc.)
4	Bl	Dry Contact Output - B1 (UP)
5	Bl/Wh	Dry Contact Output - B2 (MID)
6	Or	Dry Contact Output - B3 (DN)
7	Gr	Feedback (FB - IN)
8	Br	X - no connect

USOC Crimp RJ45 RJ45

Motor Ports (M1, M2, M3, M4): MNI-TB
18 AWG, 4-conductor, stranded
400 ft cumulative max

pin	color	connection
1	Wh	Dry Contact Output - B1 (UP)
2	Bk	Dry Contact Output - B2 (MID)
3	Rd	Dry Contact Output - B3 (DN)
4	Gr	Common - (COM)

NOTE: For connection to the WhisperTrac 3000 series drapery tracks there exists an adapter that plugs into the terminal block called the "MNI-TB to WT3000 Adapter". This way the wiring from the MNI to the adapter is the same USOC Crimp and wiring as that for the MNI-RJ.



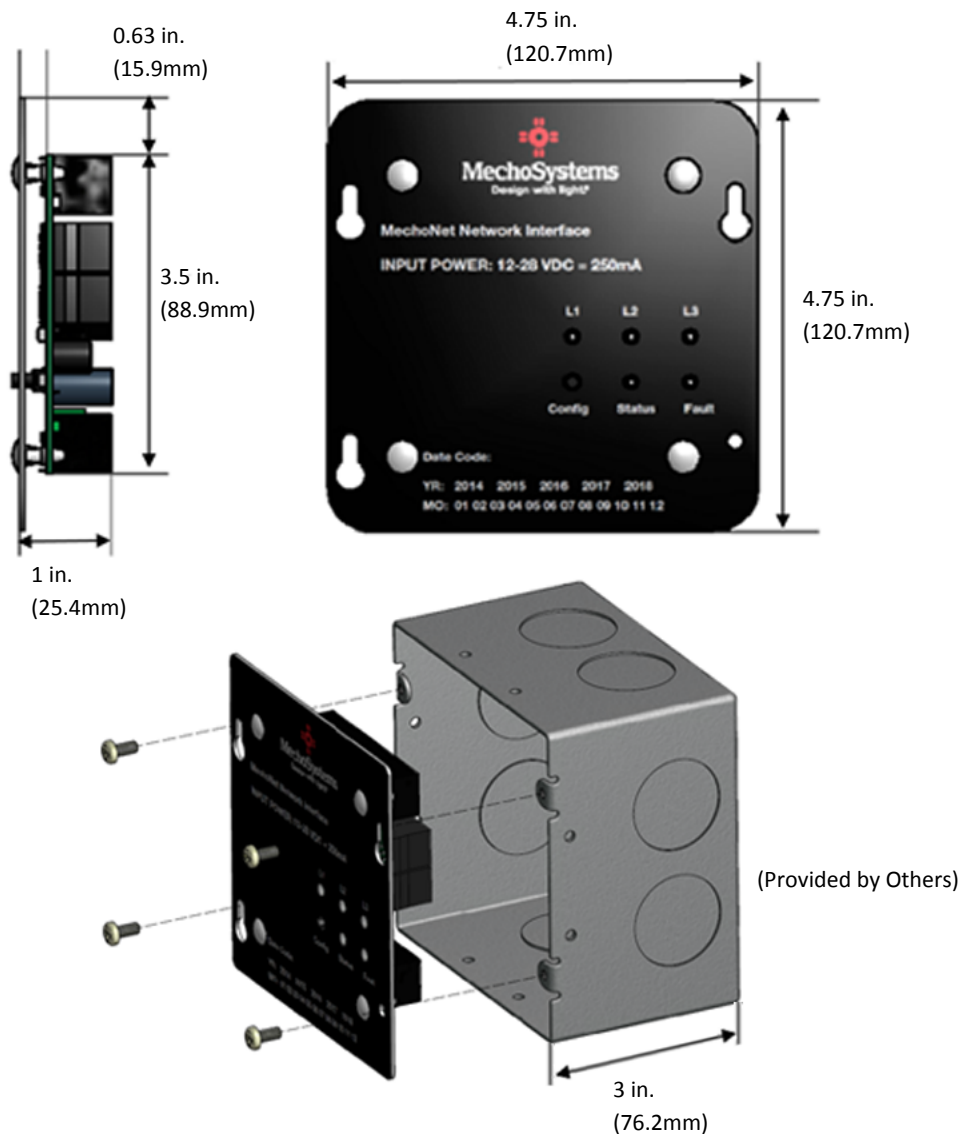
Mechanical Specifications

IMNI 0001 TP AS / IMNI 0002 TP AS (US Form)

PCB Assembly Size: 3.5 in. (88.9mm) x 3.5 in. (88.9mm)
Packaging: Mounts within a 4-11/16 in. (120.7mm) X 3 in. (76.2mm) Steel JBox (provided by others)
Size: 4.75 in. (120.7mm) X 4.75 in. (120.7mm) X 1 in. (25.4mm) (see Fig.2)
Weight: 0.5 lbs. (0.23kg)

MNI-RJ/MNI-TB (US Form)

Figure 2: Dimensional View – US version



Environmental Specifications

Temperature Operating: 32 to 131°F (0 to 55°C)
 Humidity Operating: < 90% relative humidity, non-condensing

Warranty & Technical Support

Limited warranty on motors and electronics to be free of manufacturing defects in factory materials or workmanship for five years from the date of shipment.

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MechoSystems reserves the right to make improvements or changes in its products without prior notice. However, every attempt is made to ensure the information herein is accurate and up to date. Verify with MechoSystems to confirm the product availability, latest specifications, and suitability for your application

Low Voltage Cable Legend for Wiring Diagrams

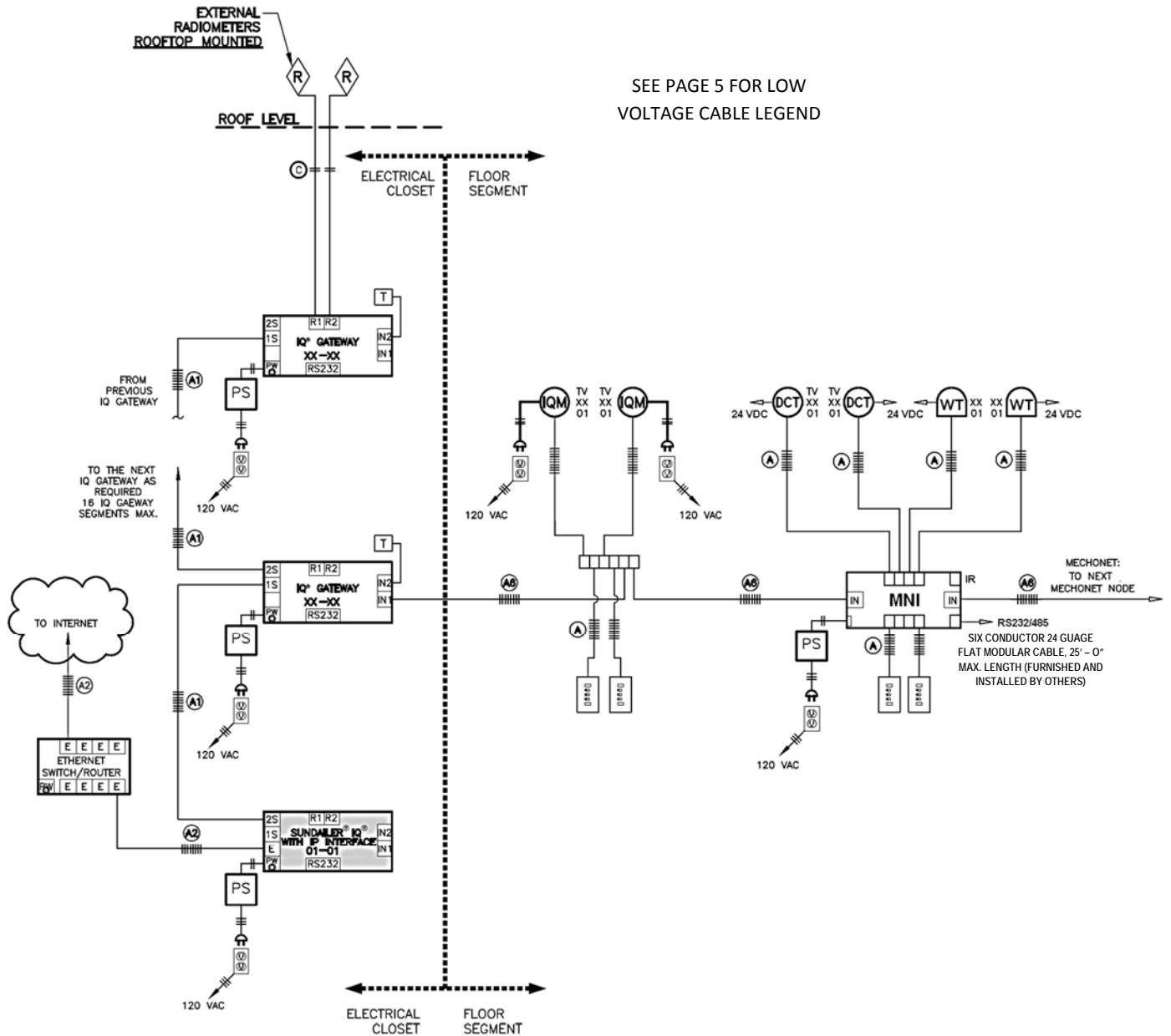
<p>(A) CAT/6E - FOR LOW VOLTAGE DRY CONTACT CONNECTIONS 24 AWG 4UTP (8-CONDUCTOR STRANDED UNSHIELDED TWISTED PAIR) OLYMPIC WIRE AND CABLE (WWW.OLYMPICWIRE.COM 1-800-526-2269) PART No. 3078M5FH. TERMINATION: RJ45 MODULAR PLUG CRIMPED (USOC) ON BOTH ENDS</p> <p>CAT5/6E - FOR LOW VOLTAGE DRY CONTACT CONNECTIONS IN PLENUM AREAS 24 AWG 4UTP (8-CONDUCTOR SOLID UNSHIELDED TWISTED PAIR) OLYMPIC WIRE AND CABLE (WWW.OLYMPICWIRE.COM 1-800-526-2269) PART No. 3604M55 SOLID CONDUCTOR RJ-45 MODULAR PLUGS CRIMPED (USOC) ON BOTH ENDS DISTANCE LIMITATION: 400' CUMULATIVE (FURNISHED & INSTALLED BY OTHERS)</p>	<p>(A4) CAT5/6E - CABLE FOR RS-232 CONNECTIONS 24 AWG 3UTP (6-CONDUCTOR STRANDED UNSHIELDED TWISTED PAIR) TERMINATION: RJ-12 MODULAR PLUG CRIMPED (USOC) ON BOTH ENDS DISTANCE LIMITATION: 25' CUMULATIVE. (FURNISHED & INSTALLED BY OTHERS)</p>
<p>(A1) CAT56E - CABLE FOR SDNET 24 AWG 4UTP (8-CONDUCTOR STRANDED UNSHIELDED TWISTED PAIR) TERMINATION: RJ-45 MODULAR PLUG CRIMPED (USOC) ON BOTH ENDS DISTANCE LIMITATION: 4000' CUMULATIVE. MAX. NETWORK NODES: 16. (FURNISHED & INSTALLED BY OTHERS)</p>	<p>(A6) CAT5/6E - CABLE FOR MECHONET 24 AWG 4UTP (8-CONDUCTOR STRANDED UNSHIELDED TWISTED PAIR) TERMINATION: RJ-45 MODULAR PLUG CRIMPED (USOC) ON BOTH ENDS DISTANCE LIMITATION: 4000' CUMULATIVE. MAX. NETWORK NODES: 250. (FURNISHED & INSTALLED BY OTHERS)</p>
<p>(A2) CAT5/6E - CABLE FOR ETHERNET CONNECTIONS 24 AWG 4UTP (8-CONDUCTOR STRANDED UNSHIELDED TWISTED PAIR) TERMINATION: RJ-45 MODULAR PLUG CRIMPED (EIA568A) ON BOTH ENDS DISTANCE LIMITATION: 325'. MAX. NETWORK NODES: 2. (FURNISHED & INSTALLED BY OTHERS)</p>	<p>(C) BELDEN TYPE 82760 18 AWG 1STP (2-CONDUCTOR SHIELDED TWISTED PAIR) FOR PC INTERFACT/ANALOG I/O TO SENSOR CONNECTIONS PHOENIX CONNECTOR/CONNECTION "+ " = RED "- " = BLACK "+ " = BLUE/RED "- " = GREY/BLACK DISTANCE LIMITATION: 500' CUMULATIVE (FURNISHED & INSTALLED BY OTHERS)</p>
<p>NOTES</p> <ol style="list-style-type: none"> 1. PARALLEL WIRING TO NEXT DEVICE PER BRANCH CIRCUIT CAPACITY. ALL CONNECTIONS MUST MEET NATIONAL AND LOCAL CODES AND REGULATIONS. 2. ADDRESS SCHEDULES REQUIRED. 3. MAXIMUM VOLTAGE FOR ALL UNMARKED CABLE IS 43.5 VDC. 4. LOW VOLTAE 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. 	



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MechoNet Network Interface (MNI) System Diagram



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