

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 5 alignment points and 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. of industry standard CAT-5 or CAT-6 cable.
- Each Motor Port possesses nine (9) MechoNet™ group control addresses which enables flexible multilevel control options.
- Flexible power options can eliminate the need for a dedicated 24VDC supply.
- Five 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. 427-92.

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 Electronic Drive Unit (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 nine (9) 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 view. PC-based tools support field configuration and troubleshooting from anywhere on the control network.



MechoSystems
Corporate Headquarters
42-03 35th Street
Long Island City, NY 11101

T: +1 (718) 729-2020
F: +1 (718) 729-2941
E: info@mechosystems.com
W: mechosystems.com

Electrical Specifications

Power Port

Power Input (+,-)	12-28VDC, 1A Max
Connector	2-position 3.5mm pluggable terminal block (See <i>Right & Fig. 1</i>)
Wiring	2-conductor UTP, 18 AWG, stranded, 500' 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
Power Input (PWR-M1, PWR-M2, etc.)	12-28VDC @ 75mA Max per Port
Feedback Signal (FB-IN)	28VDC Max, 2KΩ Source Impedance
Connector	RJ45, USOC Crimp (See <i>Right & Fig. 1</i>)
IMNI 0001 / IMNI 0004	4-position 3.5mm pluggable terminal block (See <i>Right & Fig. 1</i>)
IMNI 0002 / IMNI 0005	
Wiring	8-conductor 4UTP, Cat-5/6, 400 ft. Max (See <i>Fig. 1</i>)
IMNI 0001 / IMNI 0004	4-conductor, 18-24 AWG, stranded, 400' Max (See <i>Fig. 1</i>)
IMNI 0002 / IMNI 0005	



Switch Ports (S1, S2, S3, S4)

Switch Port Power (PWR – SW)	12-28VDC, 25mA Max
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>)
Wiring	8-conductor 4UTP, Cat-5/6, 400' Max (See <i>Fig. 1</i>)



MechoNet™ Ports (IN*)

MechoNet™ Power Input (PWR or V+)	12-28VDC, 1A Max
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' 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
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' Max (See <i>Fig. 1</i>)



IR Port

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



MechoSystems
Corporate Headquarters
42-03 35th Street
Long Island City, NY 11101

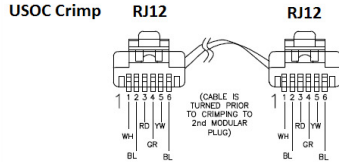
T: +1 (718) 729-2020
F: +1 (718) 729-2941
E: info@mechosystems.com
W: mechosystems.com

Connections:

Serial Port: (RS232/RS485)

6-conductor, 26 AWG Silver Satin Cable or 3UTP Cat-3/5/6 25 ft Max

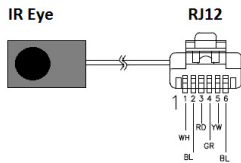
pin	color	connection
1	White	RS485_A (A)
2	Black	Common (COM - RS/IR)
3	Red	RS232 - TXD (TXD)
4	Green	Common (COM - RS/IR)
5	Yellow	RS232 - RXD (RXD)
6	Blue	RS485_B (B)



IR Port:

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

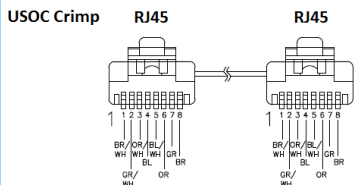
pin	color	connection
1	White	Signal Input - (IR)
2	Black	Common - (COM - RS/IR)
3	Red	X - no connect
4	Green	X - no connect
5	Yellow	Power Output - (PWR - IR)
6	Blue	X - no connect



Switch Ports (S1, S2, S3, S4)

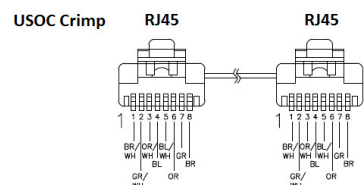
4UTP Cat-5/6(8-conductor, 24 AWG, stranded, unshielded twisted pair) 400 ft cumulative max

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



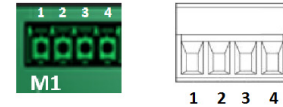
Motor Ports (M1, M2, M3, M4): MNI-RJ

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

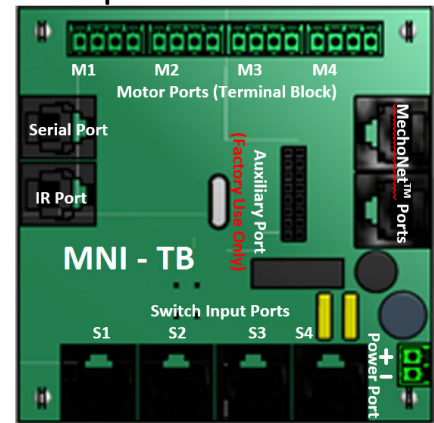
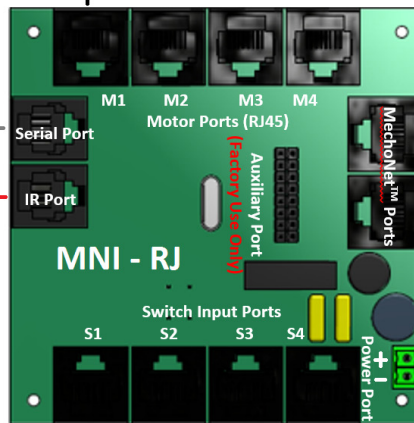


Motor Ports (M1, M2, M3, M4): MNI-TB

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.

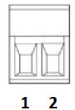


Power Port

UTP, 2-conductor, 18 AWG, stranded, unshielded

*Cabling to be specified based on wiring distance and voltage drop concerns

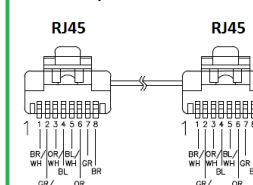
pin	color	connection
1	Rd or Wh	Power (+)
2	Bk	Common (COM)



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)

Figure 1: MNI Connection Diagram



MechoSystems
Corporate Headquarters
42-03 35th Street
Long Island City, NY 11101

T: +1 (718) 729-2020
F: +1 (718) 729-2941
E: info@mechosystems.com
W: mechosystems.com

Mechanical Specifications

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

PCB Assembly Size: 3.5" (88.9mm) x 3.5" (88.9mm)
Packaging: Mounts within a 4-11/16" X 3" Steel JBox (provided by others)
Size: 4.75" (120.65mm) X 4.75" (120.65mm) X 1.006" (25.51mm) (see Fig.2)
Weight: 0.5 lbs. (0.23kg)

MNI-RJ/MNI-TB (US Form)

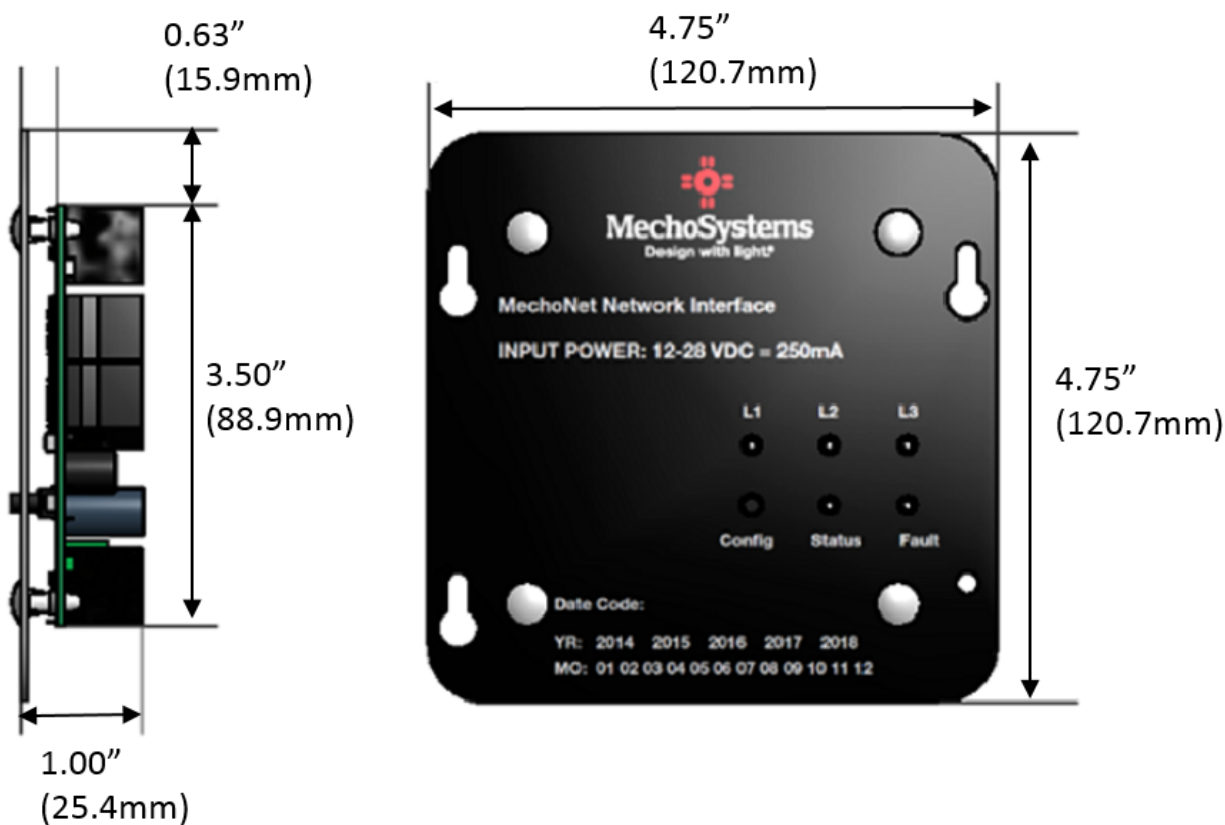


Figure 2: Dimensional View – US version

Environmental Specifications

Temperature: Operating: 32 to 131°F (0 to 500°C)
Humidity: Operating: < 90% relative humidity, non-condensing



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42-03 35th Street
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W: mechosystems.com

Warranty

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

Technical Support

MechoSystems
www.mechosystems.com

T: +1 (718) 729-2020 (x2006)
 E: techsupport@mechosystems.com

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

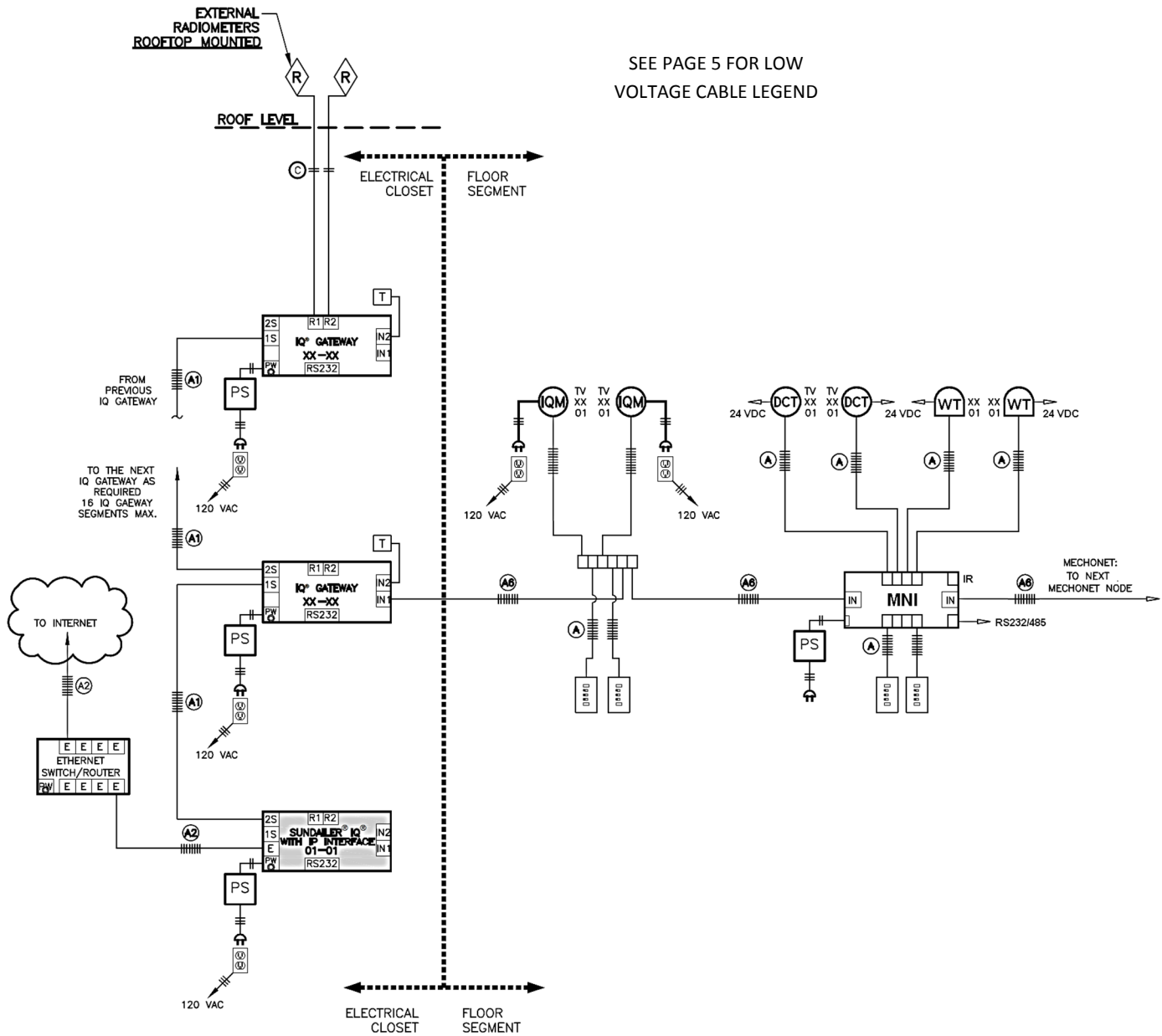
<p>(A) CAT/6E - FOR LOW VOLTAGE DRY CONTACT CONNECTIONS 24AWG 4UTP (8-CONDUCTOR STRANDED UNSHIELDED TWISTED PAIR) OLYMPIC WIRE AND CABLE (WWW.OLYMPICWIRE.COM 1-800-526-2269) PART No. 3078M5FH. TERMINATION: RJ45 MODULAR PLUG CRIMPED (USOC) ON BOTH ENDS</p> <p>CAT5/6E - FOR LOW VOLTAGE DRY CONTACT CONNECTIONS IN PLENUM AREAS 24AWG 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 24AWG 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>(A6) CAT5/6E - CABLE FOR MECHONET™ 24AWG 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>(C) BELDEN TYPE 82760 18AWG 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>(A1) CAT56E - CABLE FOR SDNET 24AWG 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>NOTES</p> <p>1. PARALLEL WIRING TO NEXT DEVICE PER BRANCH CIRCUIT CAPACITY. ALL CONNECTIONS MUST MEET NATIONAL AND LOCAL CODES AND REGULATIONS.</p> <p>2. ADDRESS SCHEDULES REQUIRED.</p> <p>3. MAXIMUM VOLTAGE FOR ALL UNMARKED CABLE IS 43.5 VDC.</p> <p>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.</p>
<p>(A2) CAT5/6E - CABLE FOR ETHERNET CONNECTIONS 24AWG 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>	



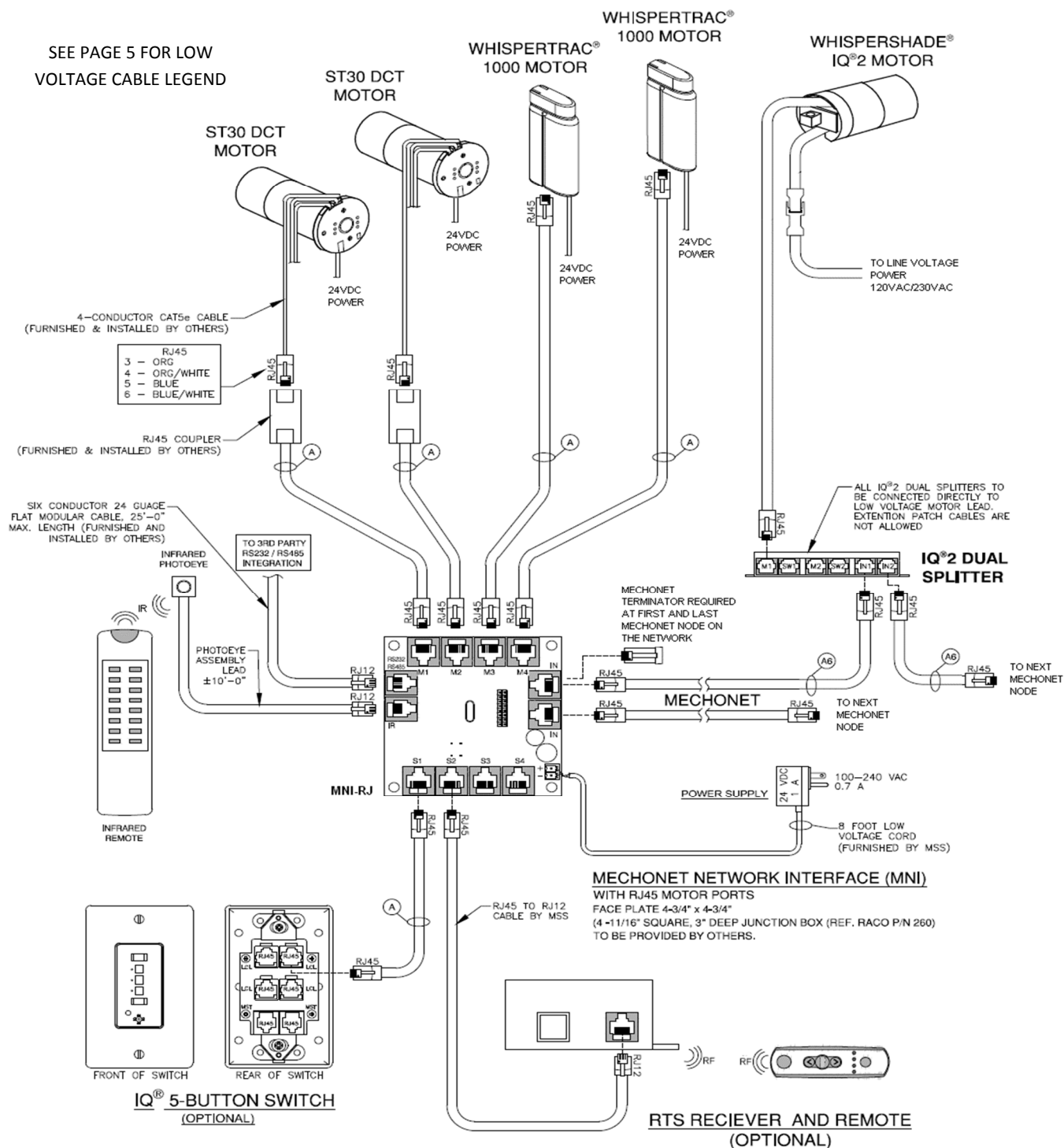
MechoSystems
 Corporate Headquarters
 42-03 35th Street
 Long Island City, NY 11101

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 W: mechosystems.com

MechoNet™ Network Interface (MNI) System Diagram

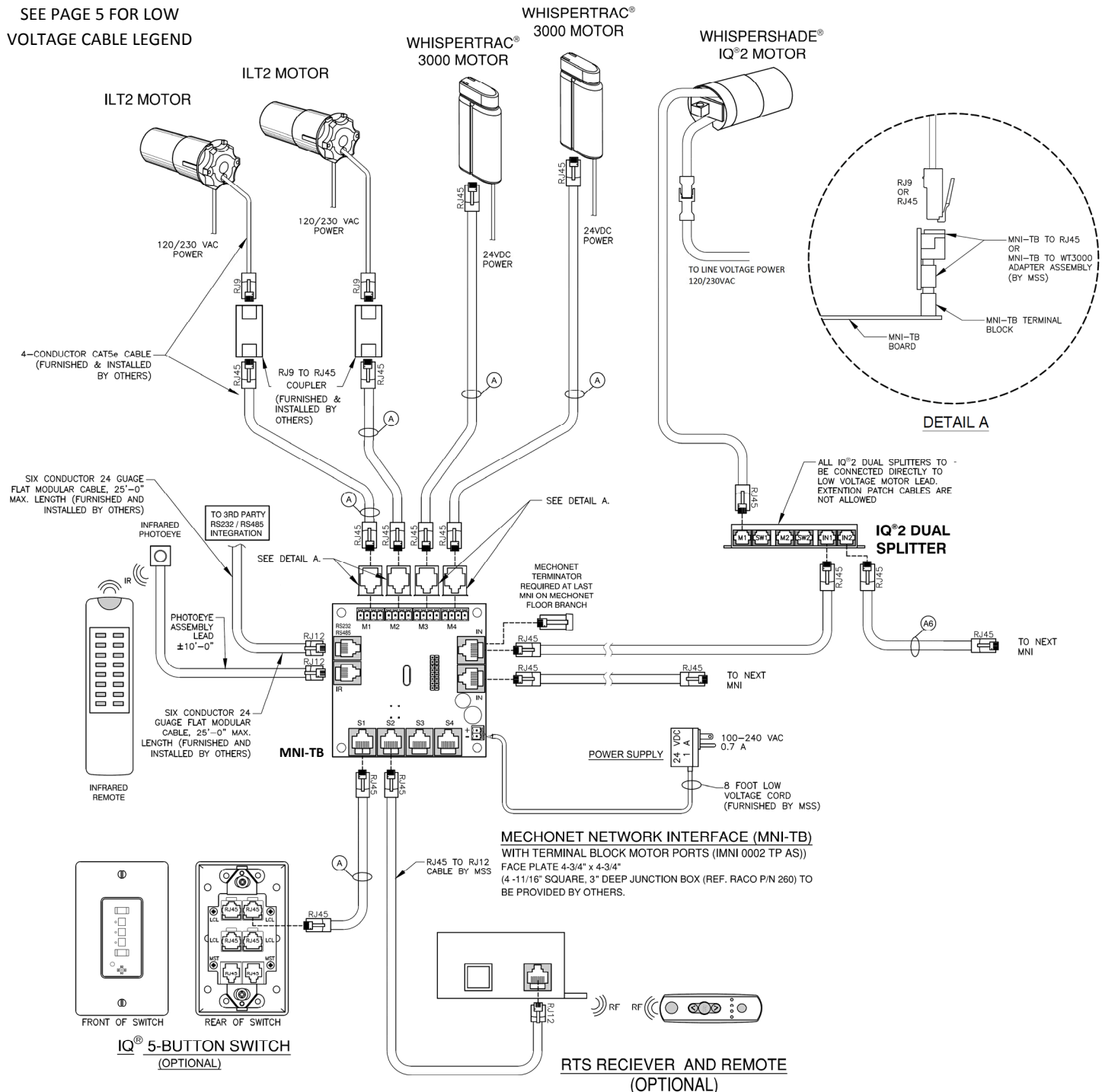


MechoNet™ Network Interface (MNI) Sample Point-To-Point Diagram (MNI-RJ45)



MechoNet™ Network Interface (MNI) Sample Point-To-Point Diagram (MNI-TB)

SEE PAGE 5 FOR LOW
VOLTAGE CABLE LEGEND



MechoNet™ Network Interface Specification Submittal 091014.docx



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42-03 35th Street
Long Island City, NY 11101

T: +1 (718) 729-2020
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W: mechosystems.com