MechoNet™ Network Interface (MNI) Specification Submittal

Models

**MechoNet Network Interface: MNI-RJ (RU45 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)

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 upgradeable 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.
Electrical Specifications

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

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 IMNI 0001 / IMNI 0004 RJ45, USOC Crimp (See Right & Fig. 1)
  IMNI 0002 / IMNI 0005 4-position 3.5mm pluggable terminal block (See Right & Fig. 1)
- Wiring IMNI 0001 / IMNI 0004 8-conductor 4UTF, Cat-5/6, 400 ft. Max (See Fig. 1)
  IMNI 0002 / IMNI 0005 4-conductor, 18-24 AWG, stranded, 400 ft. (121.9m) Max (See Fig. 1)

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 Right & Fig. 1)
- Wiring 8-conductor 4UTF, Cat-5/6, 400 ft. (121.9m) Max (See Fig. 1)

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 Right & Fig. 1)
- Wiring 8-conductor, Cat-5/6 - 4UTF, 4000 ft. (1219.2m) Max, Max Nodes 250 (See Fig. 1)

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 Right & Fig. 1)
- Wiring Cat-3/5/6 - 3UTF, 25 ft. (7.6m) Max (See Fig. 1)

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 Right & Fig. 1)
- Wiring 6-conductor, 26 AWG Silver Satin Cable or UTP Cat-3/5/6, 5 ft. (1.5m) (See Fig. 1)
Connections:

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

<table>
<thead>
<tr>
<th>Pin</th>
<th>Color</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>White</td>
<td>RS485_A (A)</td>
</tr>
<tr>
<td>2</td>
<td>Black</td>
<td>Common (COM - RS/IR)</td>
</tr>
<tr>
<td>3</td>
<td>Red</td>
<td>RS232 - TXD (TXD)</td>
</tr>
<tr>
<td>4</td>
<td>Green</td>
<td>Common (COM - RS/IR)</td>
</tr>
<tr>
<td>5</td>
<td>Yellow</td>
<td>RS485 - RXD (RXD)</td>
</tr>
<tr>
<td>6</td>
<td>Blue</td>
<td>RS485_B (B)</td>
</tr>
</tbody>
</table>

USOC Crimp RJ12 RJ12

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

<table>
<thead>
<tr>
<th>Pin</th>
<th>Color</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>White</td>
<td>Signal Input - (IR)</td>
</tr>
<tr>
<td>2</td>
<td>Black</td>
<td>Common - (COM - RS/IR)</td>
</tr>
<tr>
<td>3</td>
<td>Red</td>
<td>X - no connect</td>
</tr>
<tr>
<td>4</td>
<td>Green</td>
<td>Power Output - (PWR - IR)</td>
</tr>
<tr>
<td>5</td>
<td>Yellow</td>
<td>Power Output - (PWR - IR)</td>
</tr>
<tr>
<td>6</td>
<td>Blue</td>
<td>X - no connect</td>
</tr>
</tbody>
</table>

IR Eye RJ12

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

<table>
<thead>
<tr>
<th>Pin</th>
<th>Color</th>
<th>Connection</th>
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<tbody>
<tr>
<td>1</td>
<td>Br/Wh</td>
<td>X - no connect</td>
</tr>
<tr>
<td>2</td>
<td>Gr/Wh</td>
<td>Power Output (PWR - SW)</td>
</tr>
<tr>
<td>3</td>
<td>Or/Wh</td>
<td>Common (COM - SW)</td>
</tr>
<tr>
<td>4</td>
<td>Bl</td>
<td>Dry Contact Input - B1 (UP)</td>
</tr>
<tr>
<td>5</td>
<td>Bl/Wh</td>
<td>Dry Contact Input - B1 (UP)</td>
</tr>
<tr>
<td>6</td>
<td>Or</td>
<td>Dry Contact Input - B3 (DN)</td>
</tr>
<tr>
<td>7</td>
<td>Gr</td>
<td>Feedback (FB - OUT)</td>
</tr>
<tr>
<td>8</td>
<td>Br</td>
<td>X - no connect</td>
</tr>
</tbody>
</table>

USOC Crimp RJ45 RJ45

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

<table>
<thead>
<tr>
<th>Pin</th>
<th>Color</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Br/Wh</td>
<td>X - no connect</td>
</tr>
<tr>
<td>2</td>
<td>Gr/Wh</td>
<td>Power (PWR - M1, etc.)</td>
</tr>
<tr>
<td>3</td>
<td>Or/Wh</td>
<td>Common (COM - M1, etc.)</td>
</tr>
<tr>
<td>4</td>
<td>Bl</td>
<td>Dry Contact Output - B1 (UP)</td>
</tr>
<tr>
<td>5</td>
<td>Bl/Wh</td>
<td>Dry Contact Output - B2 (UP)</td>
</tr>
<tr>
<td>6</td>
<td>Or</td>
<td>Dry Contact Output - B3 (DN)</td>
</tr>
<tr>
<td>7</td>
<td>Gr</td>
<td>Feedback (FB - IN)</td>
</tr>
<tr>
<td>8</td>
<td>Br</td>
<td>X - no connect</td>
</tr>
</tbody>
</table>

USOC Crimp RJ45 RJ45

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

<table>
<thead>
<tr>
<th>Pin</th>
<th>Color</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Wh</td>
<td>Dry Contact Output - B1 (UP)</td>
</tr>
<tr>
<td>2</td>
<td>Bs</td>
<td>Dry Contact Output - B2 (UP)</td>
</tr>
<tr>
<td>3</td>
<td>Rd</td>
<td>Dry Contact Output - B3 (DN)</td>
</tr>
<tr>
<td>4</td>
<td>Gr</td>
<td>Common - (COM)</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Pin</th>
<th>Color</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Rd or Wh</td>
<td>Power (+)</td>
</tr>
<tr>
<td>2</td>
<td>Bl</td>
<td>Common (COM)</td>
</tr>
</tbody>
</table>

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

<table>
<thead>
<tr>
<th>Pin</th>
<th>Color</th>
<th>Connection</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Br/Wh</td>
<td>MechoNet - Net A (NET A)</td>
</tr>
<tr>
<td>2</td>
<td>Gr/Wh</td>
<td>Power - Motor/Controller (PWR)</td>
</tr>
<tr>
<td>3</td>
<td>Or/Wh</td>
<td>Common (COM)</td>
</tr>
<tr>
<td>4</td>
<td>Bl</td>
<td>Power - Bus Supply (V+)</td>
</tr>
<tr>
<td>5</td>
<td>Bl/Wh</td>
<td>Common (COM)</td>
</tr>
<tr>
<td>6</td>
<td>Or</td>
<td>Power - Bus Supply (V+)</td>
</tr>
<tr>
<td>7</td>
<td>Gr</td>
<td>Common (COM)</td>
</tr>
<tr>
<td>8</td>
<td>Br</td>
<td>MechoNet - Net B (NET B)</td>
</tr>
</tbody>
</table>

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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*

MechoSystems
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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.

T: +1 (718) 729-2020, x2006
W: mechosystems.com
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

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**CAT5/6E - 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

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**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)

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**CAT5E - 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)

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**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)

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**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)

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**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)

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**BELDEN TYPE 82760 18 AWG 1STP (2-CONDUCTOR SHIELDED TWISTED PAIR) FOR PC INTERFACET/ANALOG I/O TO SENSOR CONNECTIONS**
PHOENIX CONNECTOR/CONNECTION
“+” = RED “-” = BLACK “+” = BLUE/RED “-” = GREY/BLACK
DISTANCE LIMITATION: 500' CUMULATIVE
(FURNISHED & INSTALLED BY OTHERS)

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**NOTES**
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 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.
MechoNet Network Interface (MNI) Sample Point-To-Point Diagram (MNI-RJ)

SEE PAGE 5 FOR LOW VOLTAGE CABLE LEGEND

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*WhisperShade IQ2 or IQ/MLC2 can power a single MNI via their IN1 or M$1 ports respectively.
See page 5 for low voltage cable legend.

*WhisperShade IQ2 or IQ/MLC2 can power a single MNI via their IN1 or M$1 ports respectively.