

INSTRUCTION MANUAL

MULTI POWER MONITOR (4 digital displays)	MODEL 53U
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BEFORE USE

Thank you for choosing M-System. Before use, please check contents of the package you received as outlined below. If you have any problems or questions with the product, please contact M-System's Sales Office or representatives.

■ PACKAGE INCLUDES:

Multi power monitor..... (1)

■ MODEL NO.

Confirm Model No. marking on the product to be exactly what you ordered.

■ INSTRUCTION MANUAL

This manual describes necessary points of caution when you use this product, including installation, connection and basic maintenance procedures.

For detailed explanations to operate and program the module, please refer to Model 53U Operating Manual (EM-6485-B).

The 53U is programmable either by using the front control buttons or the PC Configurator Software. For detailed information on the PC configuration, refer to the 53UCFG users manual.

Software and manuals are downloadable at M-System's web site: <http://www.m-system.co.jp>.

POINTS OF CAUTION

■ CONFORMITY WITH EC DIRECTIVES

- This equipment is suitable for use in a Pollution Degree 2 environment and in Installation Category III, with the maximum operating voltage of 550V between signal input and output or power and 300V between output and power.

Prior to installation, check that the insulation class of this unit satisfies the system requirements.

- Altitude up to 2000 meters
- The equipment must be mounted inside a panel.
- Insert a noise filter for the power source connected to the unit. Cosel Noise Filter Model NAC-06-472 or equivalent is recommended.

■ POWER INPUT RATING & OPERATIONAL RANGE

- Locate the power input rating marked on the product and confirm its operational range as indicated below.
100 – 240V AC rating: 85 – 264V AC, 47 – 66 Hz, <8VA
110 – 240V DC rating: 99 – 264V DC, <4W

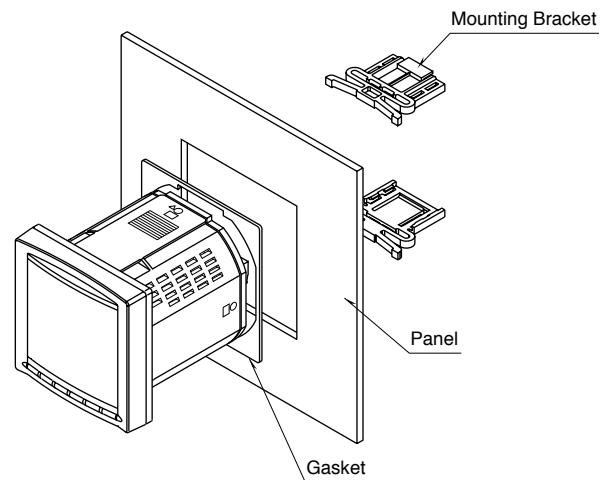
■ GENERAL PRECAUTION

- Before you remove or mount the unit, turn off the power supply and input signal for safety.

■ ENVIRONMENT

- Indoor use
- Do not install the unit where it is directly exposed to rain, water droplets or sunlight.

- When heavy dust or metal particles are present in the air, install the unit inside proper housing with sufficient ventilation.
- Do not install the unit where it is subjected to continuous vibration. Do not apply physical impact to the unit.
- Environmental temperature must be within -10 to +55°C (14 to 131°F) with relative humidity within 90% RH in order to ensure adequate life span and operation.
- Contrast of the LCD screen depends upon viewing angles. Choose the height and angle where it is the most legible.
- Do not apply physical impact to the front face.
- To ensure the designated ingress protection, insert the gasket as shown below before attaching the mounting brackets.



■ WIRING

- Wiring to the unit must be conducted by qualified service personnel.
- Do not install cables (power supply, input and output) close to noise sources (relay drive cable, high frequency line, etc.).
- Do not bind these cables together with those in which noises are present. Do not install them in the same duct.

■ AND

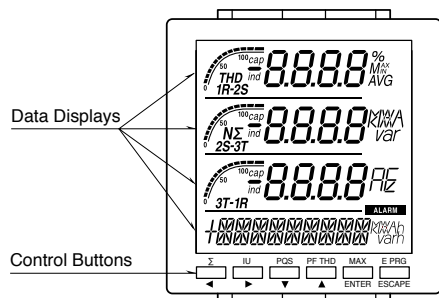
- The unit is designed to function as soon as power is supplied, however, a warm up for 30 minutes is required for satisfying complete performance described in the data sheet.

LIGHTNING SURGE PROTECTION

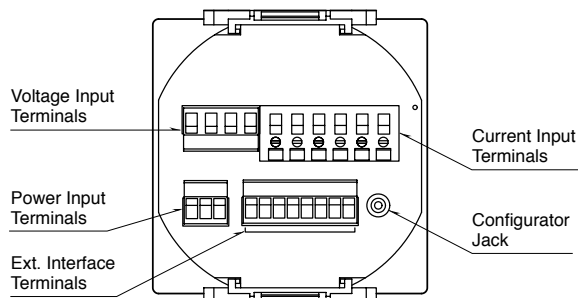
In order to protect the unit from lightning surges entering through signal and power supply cables, use of appropriate lightning surge protectors are recommended. Please contact M-System.

COMPONENT IDENTIFICATION

FRONT VIEW



REAR VIEW

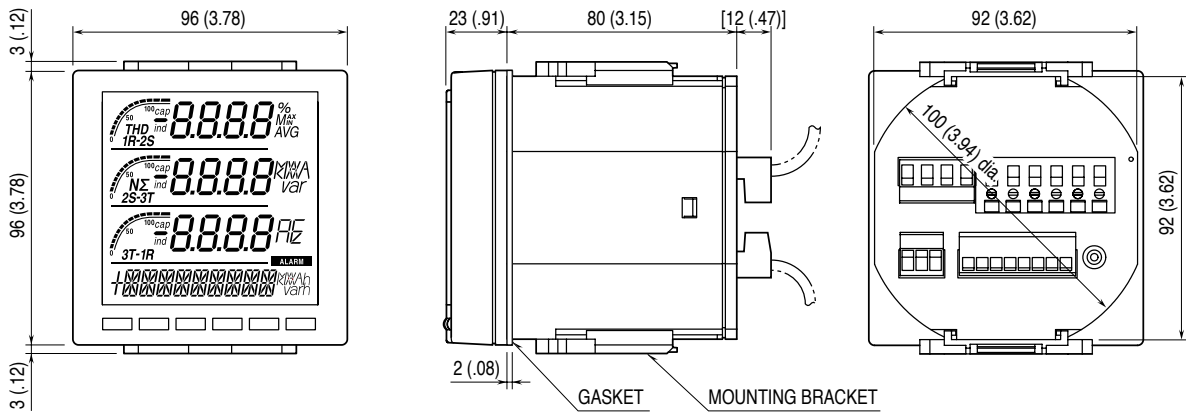


CONTROL BUTTON OPERATIONS

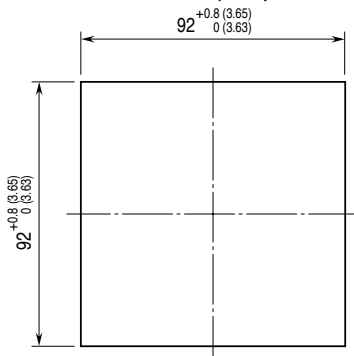
BUTTON OPERATION	FUNCTIONS	
	NORMAL MODE	SETTING MODE
Σ ◀	Indicates Σ values	Go Left
IU ▶	Indicates Voltage or Current	Go Right
PQS ▼	Indicates Power	Go Down
PF THD ▲	Indicates Power Factor or THD	Go Up
MAX ENTER	Indicates totalized values (max., min., average/demand)	Selects menu; Enables setting changes
E PRG ESCAPE	Switches Energy readings	Cancels setting changes
Σ ◀ Hold down	Switches to My Default mode	----
IU ▶ Hold down	Switches to PC Configuration mode	----
E PRG ESCAPE Hold down	Switches to Setting mode	----
IU ▶ + PF THD ▲ Hold down	Indicates Harmonics by degrees	----
Σ ◀ + E PRG ESCAPE Hold down	Switches Energy reading units	----
PQS ▼ Hold down	Indicates the shortcut menu	----

INSTALLATION

■ EXTERNAL DIMENSIONS unit: mm (inch)

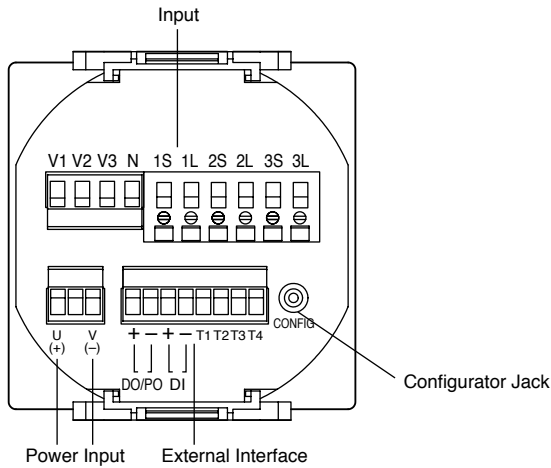


■ PANEL CUTOUT unit: mm (inch)



Panel thickness : 2 to 15 mm (0.08 to 0.59 inch)

TERMINAL CONNECTIONS

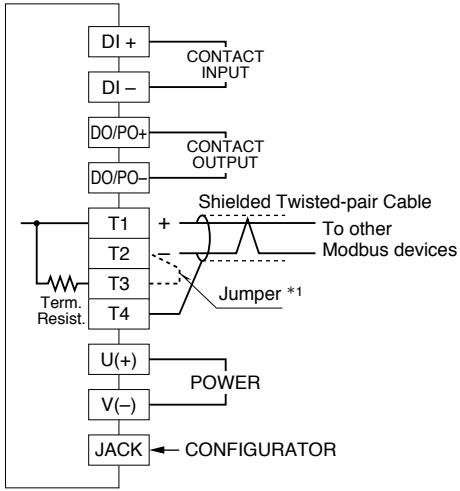


CONNECTING CURRENT INPUTS

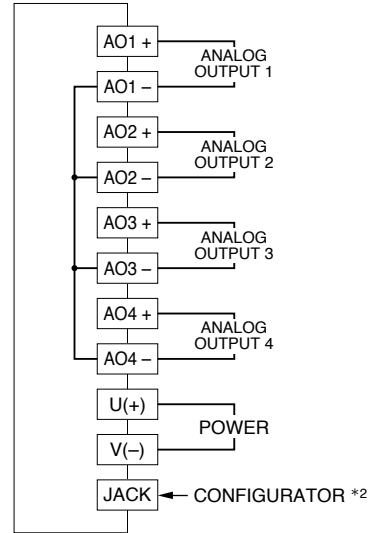
Applicable wire size: Max. 2.4 (0.09") dia., 0.5 – 3.5 mm²
Expose the tip of wires by 11 mm (0.43").

System / Application	Terminal
Single phase / 2-wire	<p>Two diagrams show connections for terminals V1, N, 1S, 1L. The first shows a source with L1 and N connected to V1 and N, and a load connected to 1S and 1L. The second shows a source with U_s and V_s connected to V1 and N, and a load connected to 1S and 1L.</p>
Three phase / 3-wire, balanced load	<p>Two diagrams show connections for terminals V1, V2, V3, 1S, 1L. The first shows a source with L1, L2, L3 connected to V1, V2, V3, and a load connected to 1S and 1L. The second shows a source with U_s, V_s, W_s connected to V1, V2, V3, and a load connected to 1S and 1L.</p>
Three phase / 3-wire, unbalanced load	<p>Two diagrams show connections for terminals V1, V2, V3, N, 1S, 1L, 2S, 2L, 3S, 3L. The first shows a source with L1, L2, L3 connected to V1, V2, V3, and a load connected to 1S, 1L, 2S, 2L, 3S, 3L. The second shows a source with U_s, V_s, W_s connected to V1, V2, V3, and a load connected to 1S, 1L, 2S, 2L, 3S, 3L.</p>
Single phase / 3-wire	<p>Two diagrams show connections for terminals V1, N, V2, 1S, 1L, 2S, 2L. The first shows a source with L1 and N connected to V1 and N, and a load connected to 1S, 1L, 2S, 2L. The second shows a source with U_s and V_s connected to V1 and N, and a load connected to 1S, 1L, 2S, 2L.</p>
Three phase / 4-wire, unbalanced load	<p>Two diagrams show connections for terminals V1, V2, V3, N, 1S, 1L, 2S, 2L, 3S, 3L. The first shows a source with L1, L2, L3, N connected to V1, V2, V3, N, and a load connected to 1S, 1L, 2S, 2L, 3S, 3L. The second shows a source with U_s, V_s, W_s, N connected to V1, V2, V3, N, and a load connected to 1S, 1L, 2S, 2L, 3S, 3L.</p>

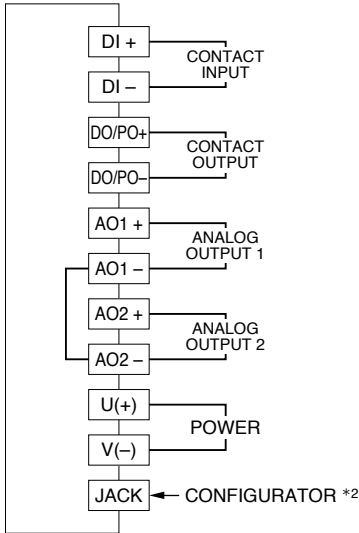
EXTERNAL INTERFACE CODE: 1



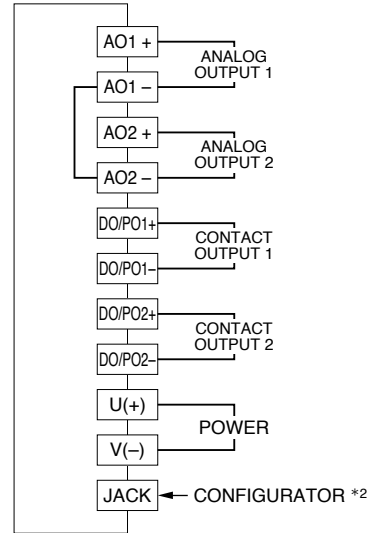
EXTERNAL INTERFACE CODE: 2



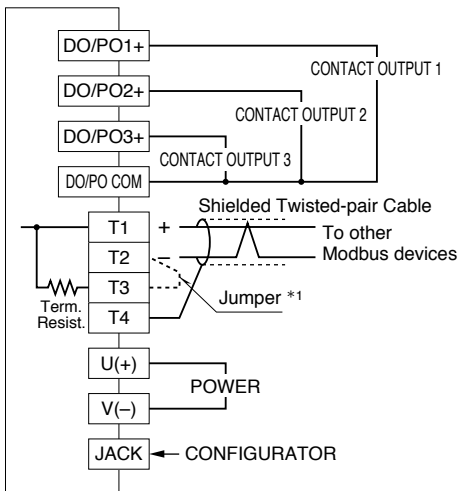
EXTERNAL INTERFACE CODE: 4, 5



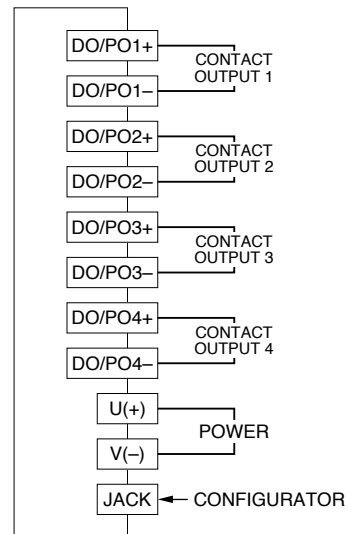
EXTERNAL INTERFACE CODE: 6, 7



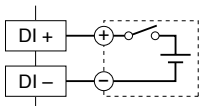
EXTERNAL INTERFACE CODE: 8



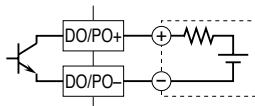
EXTERNAL INTERFACE CODE: 9



Contact Input Connection E.g.

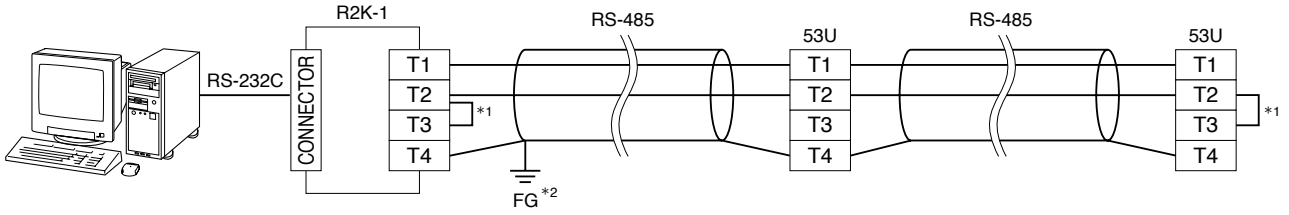


Contact Output Connection E.g.



*1. When the device is located at the end of a transmission line via twisted-pair cable, (when there is no cross-wiring), close across the terminal T2 – T3 with a leadwire. When the device is not at the end, no shortcircuit wire is required.
 *2. Analog output may momentarily fluctuate while the configurator cable is left connected.

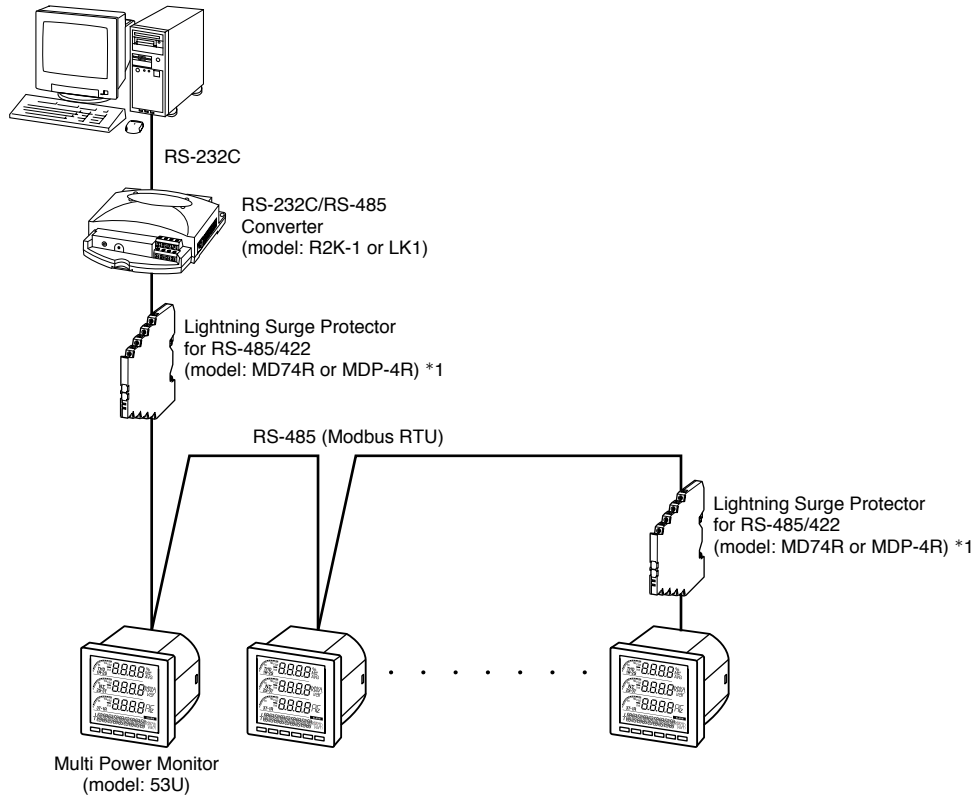
MODBUS WIRING CONNECTION



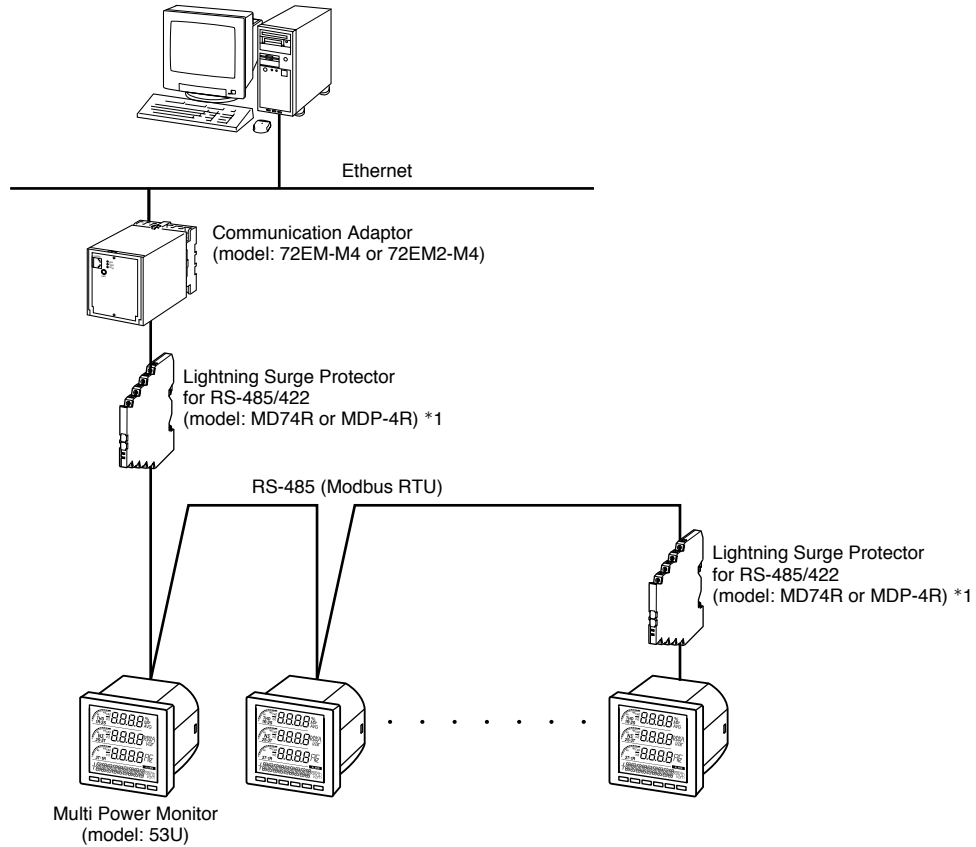
- *1. Internal terminating resistor is used when the device is at the end of a transmission line.
- *2. Install shield cables to all sections and ground them at single point.

SYSTEM CONFIGURATION EXAMPLES

■ RS-485 / RS-232C



■ RS-485 / ETHERNET



*1. Insert lightning surge protectors recommended in this example if necessary.

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Specifications are subject to change without notice.