

## Power Transducer Series

**MULTI POWER MONITOR**  
(4 digital displays)MODEL **53U****MODEL & SUFFIX CODE SELECTION**

53U-1□□□-AD4□

MODEL

CONFIGURATION

1 : Single-phase / 2-wire and 3-wire,  
3-phase / 3-wire and 4-wire

INPUT

1 : 480V AC / 1A

2 : 480V AC / 5A

CONTACT INPUT

0 : None \*1

1 : 24V DC \*2

2 : 110V DC \*2

\*1. 'External Interface' codes 1, 4 and 5 Not selectable.

\*2. 'External Interface' codes 2, 3, 6, 7, 8 and 9 Not selectable.

EXTERNAL INTERFACE

1 : Modbus, Do × 1, Di × 1

2 : 4 – 20mA DC × 4

3 : 1 – 5V DC × 4

4 : 4 – 20mA DC × 2, Do × 1, Di × 1

5 : 1 – 5V DC × 2, Do × 1, Di × 1

6 : 4 – 20mA DC × 2, Do × 2

7 : 1 – 5V DC × 2, Do × 2

8 : Modbus, Do × 3

9 : Do × 4

AUXILIARY POWER SUPPLY

AD4 : 100 – 240V AC / 110 – 240V DC (universal)

OPTIONS

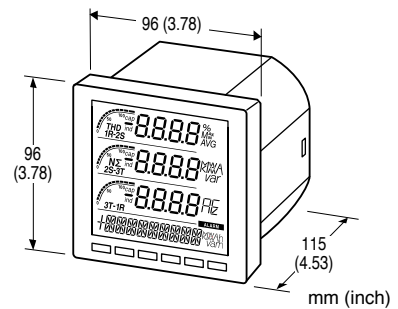
/H : High accuracy (voltage/current: ±0.2%, energy: ±0.5%)

**ORDERING INFORMATION**

Specify code number. (e.g. 53U-1211-AD4)

**RELATED PRODUCTS**

- PC configurator software (model: 53UCFG)
- PC Recorder Light software for the 53U  
(model: MSR128LUx)

Software downloadable at M-System's web  
site: <http://www.m-system.co.jp>A dedicated cable is required to connect the module to  
the PC. Please refer to the internet software download  
site or the users manual for the PC configurator for ap-  
plicable cable types.**Functions & Features**

- Measures simultaneously several variables of a heavy-current power system: current, voltage, active, reactive and apparent power, active and reactive energy, power factor, frequency, etc.
- All measured values, counter values, display mode, setting data are stored in the non-volatile memory at the power off
- Conversion factors, system configuration, interval times are programmable using the front keys
- Open collector output for alarm or energy count

**Typical Applications**

- Multi-functional power monitor incorporated in an electric device: saves space, wiring works, and cost

**GENERAL SPECIFICATIONS****Construction:** 96-mm square (1/4 DIN size) panel flush mounted**Degree of protection****Front panel:** IP 50**Terminal block, housing:** IP 30**Connection****Voltage input:** Connector type terminal block  
(applicable wire size ≤ 2.5 dia, 0.5 – 3.5 mm<sup>2</sup>)**Current input:** Screw terminal block  
(applicable wire size ≤ 2.4 dia, 0.5 – 3.5 mm<sup>2</sup>)**Output, power:** Connector type terminal block  
(applicable wire size ≤ 2.4 dia, 0.5 – 2.5 mm<sup>2</sup>)**Configuration:** Single phase/2-wire and 3-wire, 3-phase/3-wire balanced/unbalanced load, 3-phase/4-wire balanced/unbalanced load**Housing material:** Flame-resistant resin (gray)**Isolation:** Voltage input to current input to contact input to network interface or configurator jack or analog output to contact output\* to power

\*Between each contact output except for External Interface code 8.

По вопросам продаж и поддержки обращайтесь:

Тел./факс: +7(843)206-01-48 (факс доб.0)

fxu@nt-rt.ru

www.fuji.nt-rt.ru

**Measured variables****Voltage:** 1 – N, 2 – N, 3 – N, 1 – 2, 2 – 3, 3 – 1**Current:** 1, 2, 3, N**Average current:** 1, 2, 3**Active / reactive / apparent power:** 1, 2, 3,  $\Sigma$ **Power factor:** 1, 2, 3,  $\Sigma$ **Frequency****Active energy incoming / outgoing:**  $\Sigma$ **Reactive energy inductive / capacitive:**  $\Sigma$ **Apparent energy:**  $\Sigma$ **Active / reactive / apparent power intervals (demand)****Other demands****Harmonic contents:** 2nd to 31st**Max. and min. values**

- **DISPLAY:** LCD with LED backlight  
(LED OFF timer available)  
Signed: 4 digits, 3 lines  
Energy: 9 digits, 1 line  
Bargraph: 3 points

**INPUT****Frequency:** 50 / 60 Hz (45 – 65 Hz)• **Voltage Input****Rated voltage****Line-to-line (delta voltage):** 480V**Line-neutral (phase voltage):** 277V**Consumption VA:**  $\leq U_{LN}^2 / 300k\Omega$  / phase**Overload capacity:** 200% of rating for 10 sec.,  
120% continuous**Selectable primary voltage range:** 50 – 400 000 V• **Current Input****Rated current:** 1A or 5A**Consumption VA:**  $\leq I^2 \cdot 0.01\Omega$  / phase**Overload capacity:** 4000% of rating for 1 sec., 2000% for 4  
sec., 120% continuous**Selectable primary current range:** 1 – 20 000 A**Operational range****Voltage, current, apparent power:**  $\leq 120\%$  of the rating**Active/reactive power:**  $\leq \pm 120\%$  of the rating**Frequency:** 45 – 65 Hz**Power factor:**  $\leq \pm 1$ ■ **CONTACT INPUT:** 24V DC or 110V DC  
(input resistance 6k $\Omega$ )**Contact detecting voltage:** External 24V DC  $\pm 10\%$  or  
110V DC  $\pm 10\%$ **ON current:**  $\geq 1mA$  ( $\leq 24k\Omega$  @24V,  $\leq 110k\Omega$  @110V)**OFF current:**  $\leq 0.1mA$  ( $\geq 240k\Omega$  @24V,  $\geq 1.1M\Omega$  @110V)**Contact detecting time:** 10 – 1000 msec.Contact status can be monitored on the Modbus; usable to  
reset energy count or to update average (demand) value**OUTPUT**■ **NETWORK INTERFACE****Transmission:** Half-duplex, asynchronous, no procedure**Interface:** Conforms to EIA RS-485**Max. transmission distance:** 500 meters**Baud rate:** 1.2 – 38.4 kbps**Max. number of nodes:** 31 (except the master)**Protocol:** Modbus RTU**Media:** Shielded twisted-pair cable (CPEV-S 0.9  
dia.)■ **DC CURRENT OUTPUT:** 4 – 20mA DC**Load resistance:** 270 $\Omega$  maximum\*\*■ **DC VOLTAGE OUTPUT:** 1 – 5V DC**Load resistance:** 5000 $\Omega$  minimum\*\*\*\*Measurands converted into analog output: Voltage,  
Current, Active / reactive / apparent power, Power factor,  
Frequency, Harmonic contents■ **OPEN COLLECTOR**

Programmable for either alarm or energy count.

**Max. rated load:** 130V DC @50mA**Continuous rated load:** 130V DC @30mA**Saturation voltage:** 1.5V DCFor maximum contact life and noise quenching with induc-  
tive loads, external protection is recommended.**Measurands applicable to alarm:** Voltage, current, current  
intervals, neutral current, frequency, energy,  
energy intervals  
(ON delay, deadband and other parameters  
are selectable)**Measurands applicable to count:** Energy;  
Pulse rate selectable within  
0.1 – 10 000.0 kWh/p, kvarh/p, kWh/p**INSTALLATION****Power input****AC:** Operational voltage range 85 – 264V  
47 – 66 Hz; <8VA**DC:** Operational voltage range 99 – 264V  
<4W; ripple 10% p-p max.**Operating temperature:** -10 to +55°C (14 to 131°F)**Storage temperature:** -20 to +80°C (-4 to +176°F)**Operating humidity:** 90% RH max. (non-condensing)**Mounting:** Panel flush mounting**Dimensions:** W96×H96×D115 mm (3.78"×3.78"×4.53")**Weight:** 300 g (0.66 lbs)

## PERFORMANCE

**Accuracy** (at 23°C ±10°C or 73.4°F ±18°F, 45 – 65 Hz)

**Voltage:** ±0.3% (±0.2% for Option /H)\*\*\*

**Current:** ±0.3% (±0.2% for Option /H)\*\*\*

**Power:** ±0.5%\*\*\*

**Power factor:** ±0.5%

**Frequency:** ±0.1%\*\*\*

**Energy:** ±1% (±0.5% for Option /H)

**Harmonic contents:** ±1%\*\*\*

**Analog output:** Accuracy of assigned measurand or ±0.2%, whichever is greater.

**Response time:** ≤2 seconds (0 – 99%)  
≤3 seconds for frequency and harmonic contents

**Insulation resistance:** ≥100MΩ with 500V DC  
(voltage input to current input to contact input to network interface or configurator jack or analog output to contact output\*\*\*\* to power)

**Dielectric strength:** 4000V AC @1 minute  
(voltage input or current input or contact input or network interface or configurator jack or analog output or contact output to power)  
2500V AC @1 minute  
(voltage input to current input to contact input to contact output to network interface or configurator jack or analog output)  
2000V AC @1 minute (between each contact output except for External Interface code 8)

\*\*\*In percentage of the spans: 480V for voltage, 1A or 5A for current, 4155W (5A) or 831W (1A) for active power. The described accuracy levels are ensured at the input 1% or more for phase 2 current with 3-phase/3-wire unbalanced load, for neutral current with 3-phase/4-wire unbalanced load, and neutral current with 1-phase/3-wire.

\*\*\*\*Between each contact output except for External Interface code 8.

## STANDARDS & APPROVALS

**CE conformity:** EMC Directive (2004/108/EC)

EN 61000-6-4 (EMI)

EN 61000-6-2 (EMS)

Low Voltage Directive (2006/95/EC)

EN 61010-1

Installation category III

Pollution degree 2

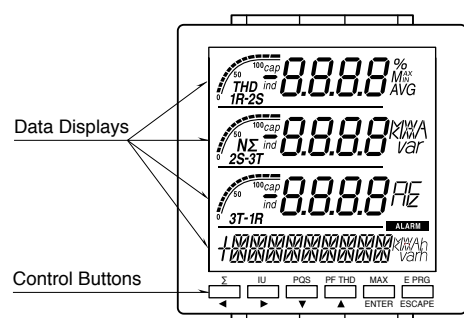
**IEC standard:** IEC 62053-22 class 0.5s

IEC 62053-23 class 2

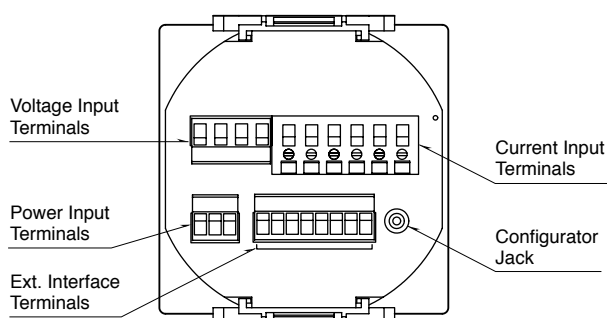
(IEC standards are applicable with Option/H only)

## FRONT & REAR VIEWS

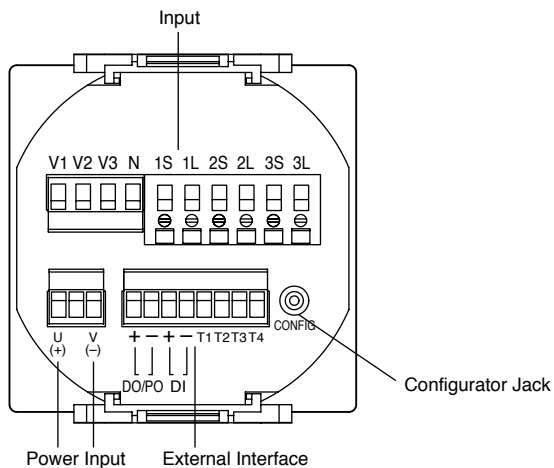
### FRONT VIEW



### REAR VIEW

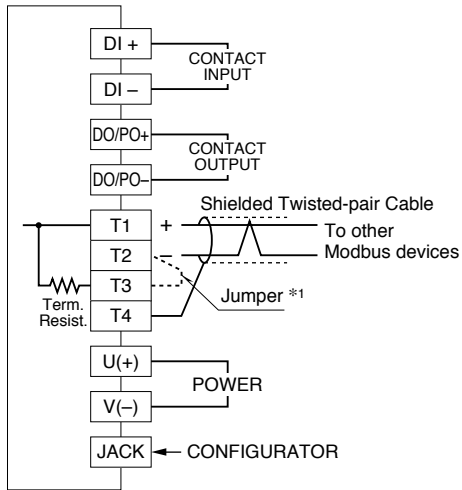


# TERMINAL CONNECTIONS

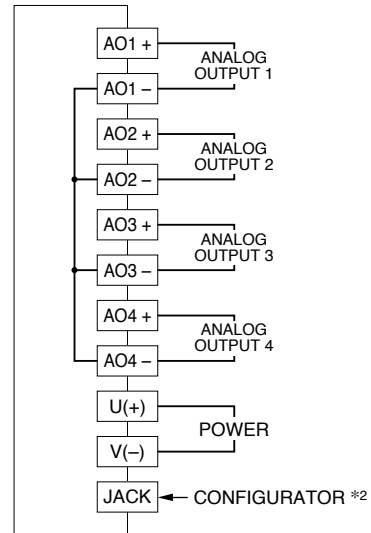


System / Application	Terminal
Three phase / 3-wire, unbalanced load	
Single phase / 2-wire	
Three phase / 4-wire, balanced load	
Three phase / 3-wire, balanced load	
Three phase / 4-wire, unbalanced load	
Single phase / 3-wire	

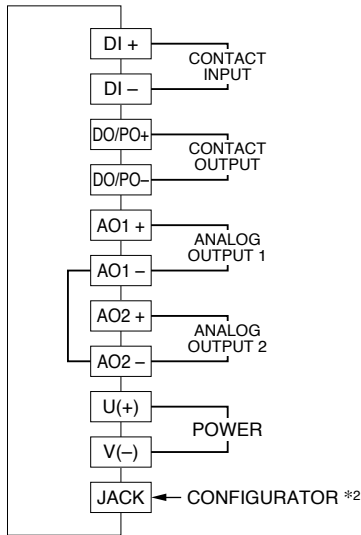
■ EXTERNAL INTERFACE CODE: 1



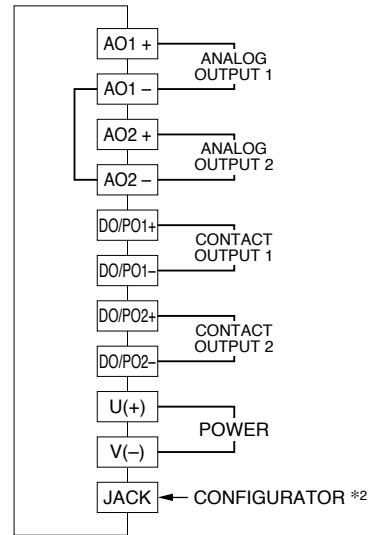
■ EXTERNAL INTERFACE CODE: 2



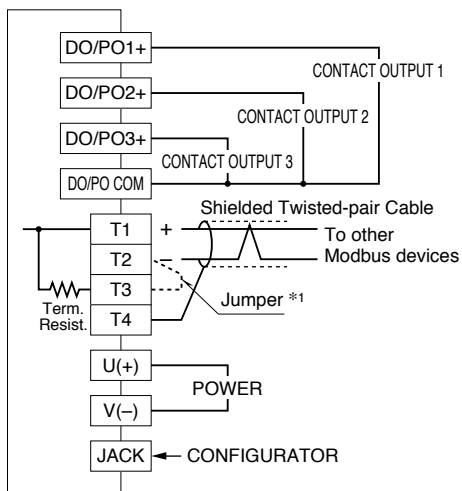
■ EXTERNAL INTERFACE CODE: 4, 5



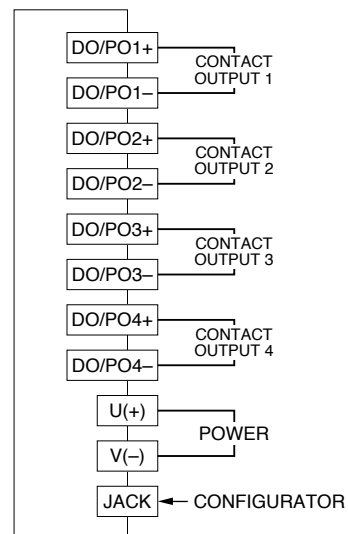
■ EXTERNAL INTERFACE CODE: 6, 7



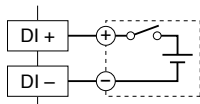
■ EXTERNAL INTERFACE CODE: 8



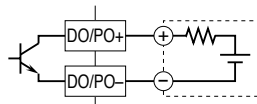
■ EXTERNAL INTERFACE CODE: 9



• Contact Input Connection E.g.

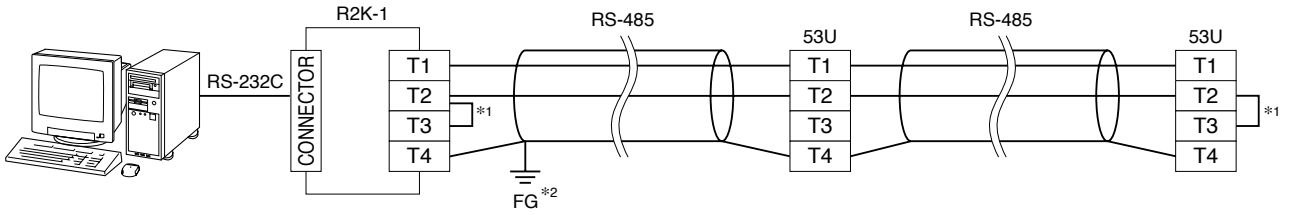


• Contact Output Connection E.g.



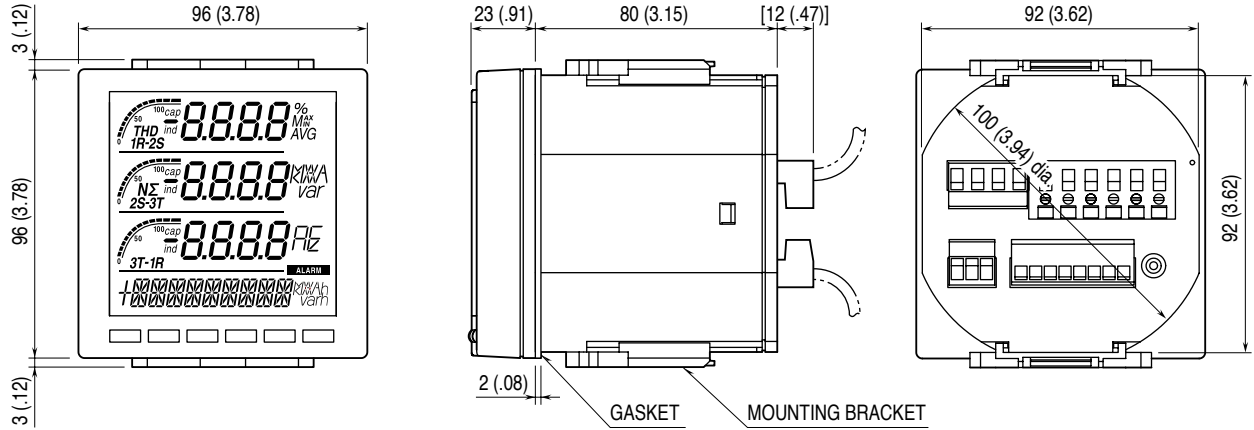
\*1. When the device is located at the end of a transmission line via twisted-pair cable, (when there is no cross-wiring), close across the terminal T2 – T3 with a leadwire. When the device is not at the end, no shortcircuit wire is required.  
 \*2. Analog output may momentarily fluctuate while the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

**MODBUS WIRING CONNECTION**



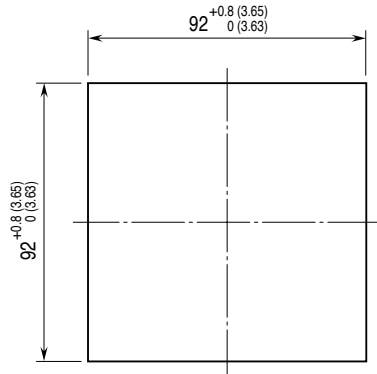
\*1. Internal terminating resistor is used when the device is at the end of a transmission line.  
 \*2. Install shield cables to all sections and ground them at single point.

**EXTERNAL DIMENSIONS unit: mm (inch)**



**MOUNTING REQUIREMENTS**

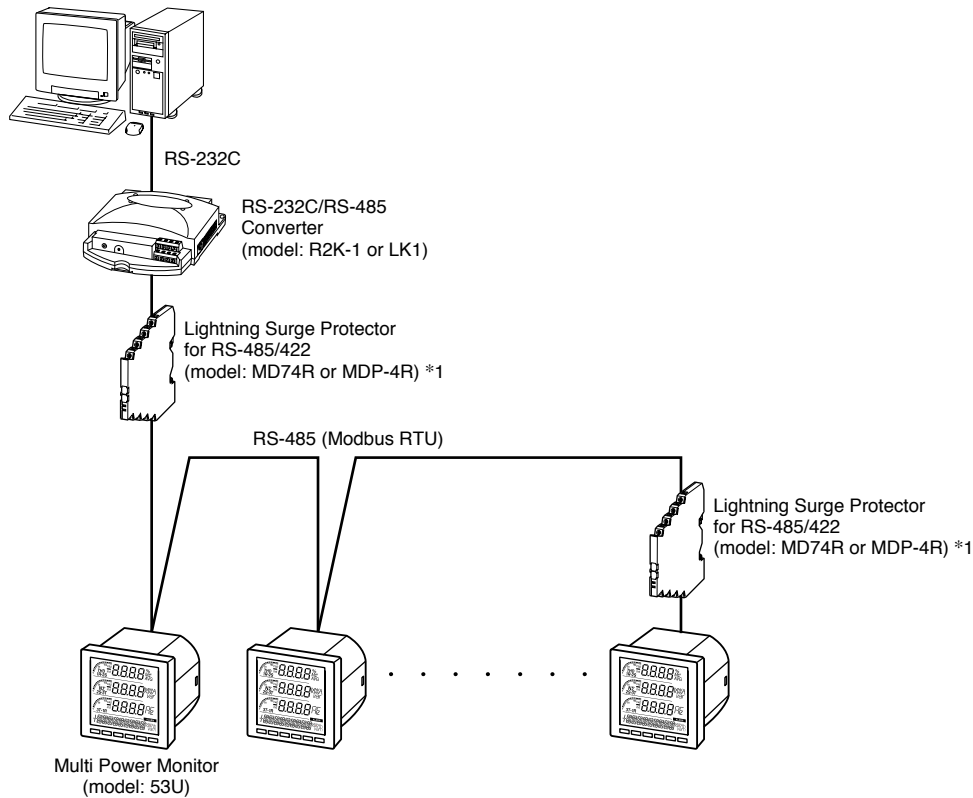
■ **PANEL CUTOUT unit: mm (inch)**



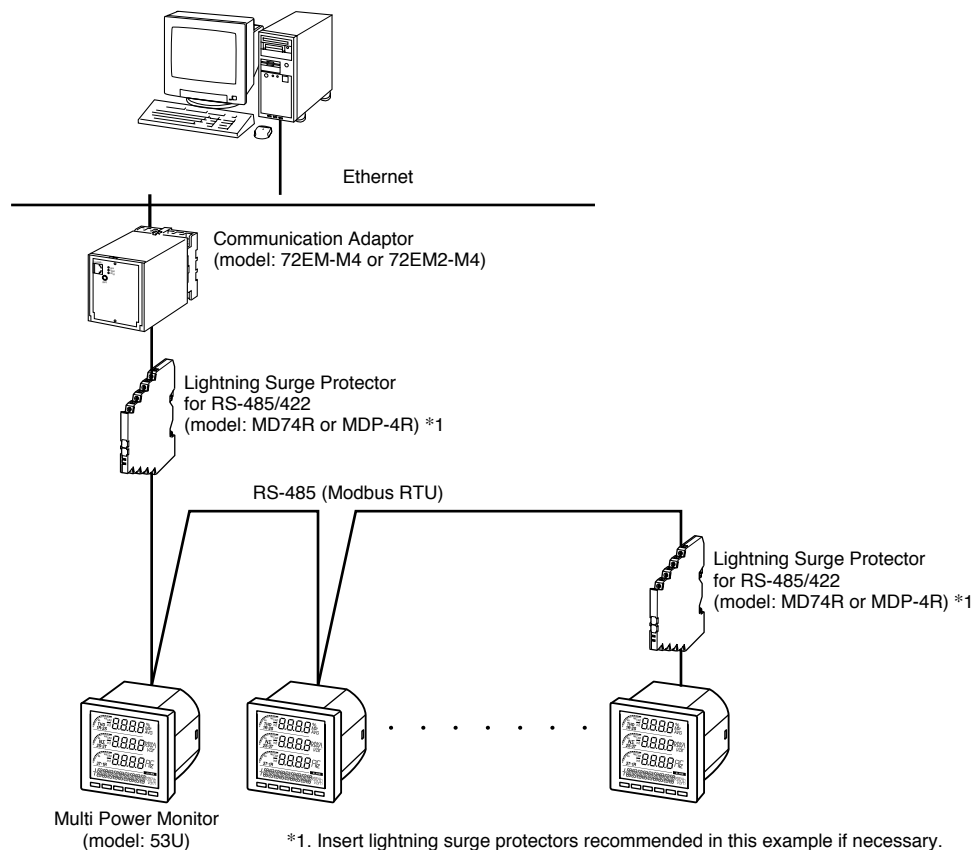
Panel thickness : 2 to 15 mm (0.08 to 0.59 inch)

# SYSTEM CONFIGURATION EXAMPLES

## ■ RS-485 / RS-232C



## ■ RS-485 / ETHERNET



## По вопросам продаж и поддержки обращайтесь:

Архангельск (8182)63-90-72  
Астана +7(7172)727-132  
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Вологда (8172)26-41-59  
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Ижевск (3412)26-03-58  
Казань (843)206-01-48

Калининград (4012)72-03-81  
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Кемерово (3842)65-04-62  
Киров (8332)68-02-04  
Краснодар (861)203-40-90  
Красноярск (391)204-63-61  
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Мурманск (8152)59-64-93  
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Тула (4872)74-02-29  
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