1. OUTLINE

COM-ML-1 [For SRZ] (hereafter called COM-ML) is a communication converter to connect the RNC module type controller SRZ to the Ethernet [PLC communication (MAPMAN)]. Temperature control system can be easily achieved by functional modules (Z-TO, Z-DIO and JCT-CT modules) of SRZ, COM-ML, and COM-ML-1. Ethernet communication is also possible. The combination of COM-ML and functional module of SRZ is called an SRZ unit.

2. PARTS DESCRIPTION

- **Mainframe**
  - Communication converter: COM-ML-1
  - Ethernet converter: COM-ML-1

- **Connector**
  - Power supply terminals: Up to 30 modules (normal operation: 160 V, 50 Hz, 100 mA)
  - Major fault: A green lamp is on (PAL)
  - Rechargeable fault: A green lamp is on (PAL)

- **Function module**
  - Communication module (portulator module) and communication converter
    - When joining function modules, use the DI module or Z-DIO-A/B module.
    - The number of the module can be up to 16 modules in total.

3. MOUNTING

3.1 Mounting Conditions

- Use this instrument in the following ambient temperature and ambient humidity.
  - Ambient temperature: 5 to 35 °C
  - Ambient humidity: 95% RH (max.)

- Installation environment conditions
  - Indoor use, Maximum ambient temperature: 55 °C

- Do not mount this instrument directly above equipment that generates large amount of heat (heating器, transformer, semiconductor device, large volume resistors).
  - If the ambient temperature rises above 50 °C, cool the instrument with a forced air cooler, etc.
  - In order to improve safety and the immunity to withstand noise, mount this instrument as far away as possible from the noise source, power lines, and rotating machinery.

3.2 Joining Each Module

Before joining the COM-ML and function modules, use the DP switch to make the setting configurations. For the setting procedure, refer to COM-ML-1 [SRZ] Quick Operation Manual (IMR02E14-E).

- The maximum number of function modules (Z-TO, Z-DIO and JCT-CT) described in the following can be slightly different depending on the function module with the COM-ML-1, the COM-ML-1 instruction manual (MEM01T11-E).

- When power is supplied to any one of the joined modules or COM-ML, all of the joined modules and COM-ML will receive power.

3.3 Dimensions

- 16 Z-TIO-A/B modules
- 12 Z-DIO-A/B modules
- 3 JCT-CT modules

4. WIRING

4.1 Wiring Cautions

- To avoid noise induction, keep communication wire away from instrument power lines, rotating machinery, or high-voltage connections.
- If there is electrical noise in the vicinity of the instrument that could affect operation, use a noise filter output and the instrument power supply terminals to achieve the most effective noise reduction.
- Power supply wiring must be twisted and have a low voltage drop.
- For an instrument with 24 V power supply input, supply power from "SELV" circuit defined as IEC 60950-1.
- An available power supply should be considered in the use- environment.
- The power must be supplied in a limited-energy circuit (maximum available energy: 265 J).
- Supply the power to only one of the joined modules.
- Select the power supply capacity which is appropriate for the total power consumption of all joined modules (including power supply terminals to achieve the most effective noise reduction). Power consumption (maximum value)
  - Current: 1.2 A or less
- When connecting the COM-ML-1 to the equipment, use the specified sockets terminals. Only these specified sockets terminals can be used due to the insulation between the terminals.

- When the COM-ML-1 is used with a computer, connect the COM-ML-1 to the computer with the specified output terminals. Only these specified output terminals can be used due to the insulation between the terminals.
- Communication wire size: 22-26 AWG (0.127-0.254 mm²)

4.2 Terminal Configuration

- Connecting power supply lines to any of the joined modules or COM-ML-1 is prohibited.
- Supply the power to only one of the joined modules or COM-ML-1.
- Make sure to connect the COM-ML-1 to the computer via the specified output terminals. Only these specified output terminals can be used due to the insulation between the terminals.

NOTICE

- This manual assumes that the reader has a fundamental knowledge of the principles of electricity, process control, computer technology and control devices.
- This product is intended to be used with industrial machines, test and measuring equipment.
- The user may be required to take additional measures.
- Please refer to the appropriate section for the instrument power supply and power sources. Failure to do so may result in equipment failure or damage.
- Do not touch high-voltage connections such as power supply terminals, etc. to avoid electric shock.
- COM-ML is not responsible if this instrument is repaired, modified or disassembled by other than factory-approved personnel. Malfunction may occur and warranty is void under these conditions.
- To prevent electric shock or damage to the instrument, always turn off the power before mounting or removing the instrument.
- Before mounting or removing the instrument, make sure that all power and signal lines within the building are disconnected.
- If a circuit breaker or fuse is required, make sure that it is in close proximity to the equipment and within easy reach.
- To prevent instrument damage as a result of failure, protect the power line and the high-voltage connections such as power supply terminals must be enclosed in the noise filter output and the instrument power supply terminals to achieve the most effective noise reduction.
- For an instrument with 24 V power supply input, supply power from "SELV" circuit defined as IEC 60950-1.
4.3 Connection to Ethernet

Connect the USB communication converter between the host computer and the COM-ML.

Connect a USB communication converter between the personal computer and the COM-ML.

For the COM-K2, refer to the COM-K2 Instruction Manual.

5. SPECIFICATIONS

- **Ethernet communication**
  - Physical layer: 10BASE-T/100BASE-TX automatic recognition
  - User layer: Modbus/TCP
  - Communication data: Based on host communication (Modbus) map
  - Connector type: RJ-45 (2 ports)

- **PLC communication (MAPMAN)**
  - Physical layer: 10BASE-T/100BASE-TX automatic recognition
  - User layer: MAPMAN (MITSUBISHI PLC: QnA-compatible 3E fame /SLMP binary)
  - Protocol: MAPMAN (MITSUBISHI PLC: QnA-compatible 3E fame /SLMP binary)

- **Host communication**
  - Interface: Based on RS-422A, EIA standard
  - Based on RS-485, EIA standard
  - Connector: RJ-45 (2 ports)
  - Communication speed: 38400 bps
  - Maximum connections: 16 SRZ units per communication port of host computer

- **Loader communication**
  - Connection method: Connect with a loader communication cable for our USB converter
  - Synchronous method: SRZ unit
  - Protocol: RKC communication (ANSI X3.28-1976 subcategories 2.5 and B1) or Modbus RTU
  - Communication speed: 38400 bps
  - Maximum connections: One SRZ unit

**General specifications**

- Power supply voltage: 20.4 V DC to 26.4 V DC (including power supply voltage variation: Rated 24 V DC)
- Power consumption (at maximum load): 120 mA max. (24 V DC)
- Voltage current: 12 A or less
- Ambient temperature: -10°C to +50°C
- Ambient humidity: 5% to 95%RH
- Installation environment: Indoors use, Altitude up to 2000 m
- Weight: Approx. 130 g

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**Connection Example**

The Ethernet cable (LAN cable) which is marketed can be connected. The Ethernet cable (LAN cable) must be provided by the customer.

**RS-485**

Up to 16 SRZ units can be connected to a host computer communication port. COM-ML (COM PORT)

**RS-422A**

Up to 16 SRZ units can be connected to a host computer communication port. COM-ML (COM PORT)

**6. MODEL CODE**

- **COM-ML**
  - 2: G2
  - 3: G2
  - 4: G2
  - 5: G2 (RS-485)
  - 6: G2
  - 7: G2
  - 8: G2
  - 9: G2

- **Options for COM-K2**
  - SRZ: 02: SRZ
  - No code: No need to specify when the factory setting is not required.

**Files**

- Factory setting when "No need to factory preset a communication protocol" is specified.

**Host communication protocol**

- **RKC communication**
  - Protocol: RKC communication (ANSI X3.28-1976 subcategories 2.5 and B1)
  - Communication speed: 38400 bps
  - Maximum connections: One SRZ unit