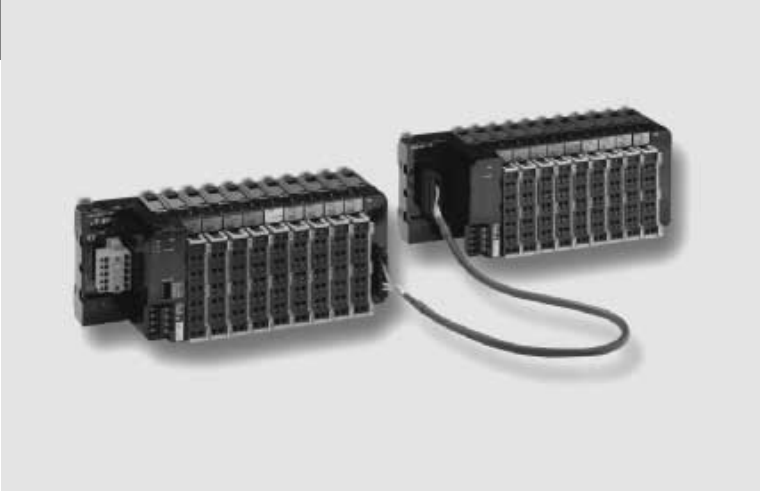


SmartSlice

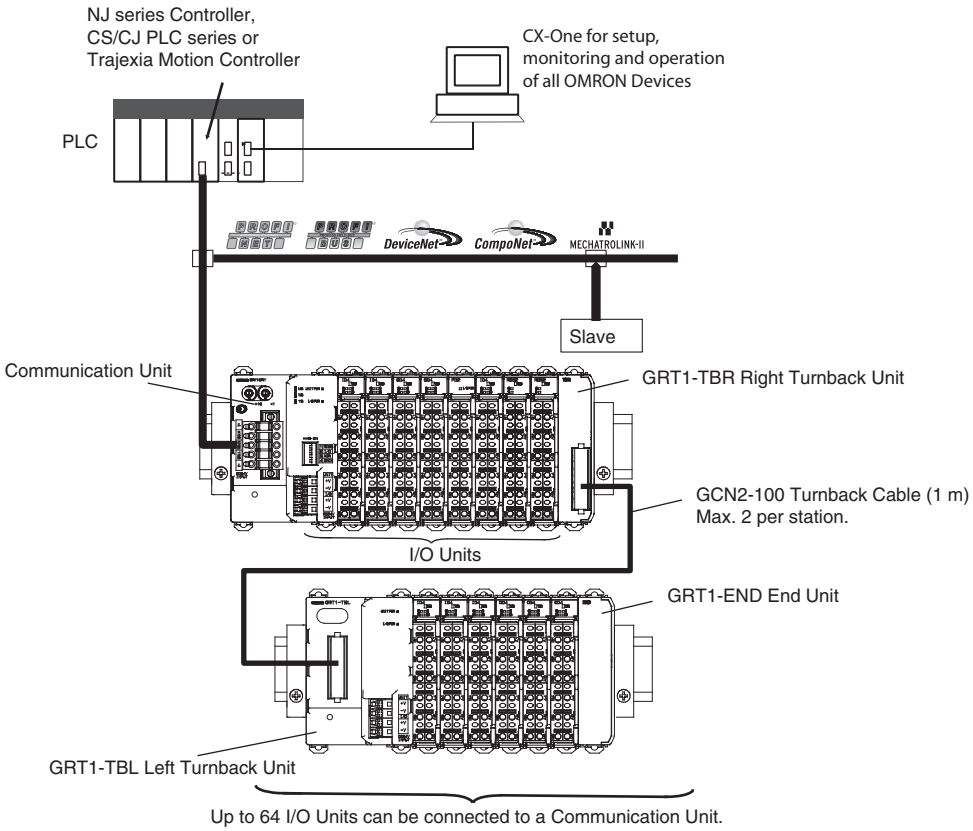
The smartest modular I/O system

OMRON's SmartSlice I/O system is compact, intelligent and easy. When used with OMRON's CS1/CJ1 DeviceNet or CompoNet master units, no configuration tool is required. By using built-in functions such as pre-scaling, totalising, differentiation and alarming in analog I/O units, PLC programming can be minimised. Preventive maintenance data collected by all I/O units can be accessed using CX-Integrator or NS-series Smart Active Parts.

- Most compact in the market (84 mm high)
- Easy set-up, backup and restore functions
- Diagnostics and preventive maintenance data at I/O level
- Detachable terminal blocks allow hot-swapping without re-wiring
- 3-wire I/O connection with 'push-in' technology, no screw-driver required



System Configuration



Specifications

General Specifications

| Common SmartSlice Specifications | |
|----------------------------------|--|
| Unit power supply voltage | 24 VDC (20.4 to 26.4 VDC) |
| I/O power supply voltage | 24 VDC (20.4 to 26.4 VDC) |
| I/O connection | Screwless push-in technology |
| Noise immunity | Conforms to IEC61000-4-4, 2.0 kV (power supply line) |
| Vibration resistance | 10 to 60 Hz: 0.7 mm double amplitude 60 to 150 Hz: 50 m/s ² |
| Shock resistance | 150 m/s ² , 3 times in each direction |
| Dielectric strength | 500 VAC (between isolated circuits) |
| Insulation resistance | 20 MΩ min. (between isolated circuits) |
| Ambient operating temperature | -10 to 55°C (with no icing or condensation) |
| Ambient operating humidity | 25% to 85% |
| Operating environment | No corrosive gases |
| Ambient storage temperature | -25 to 65°C (with no icing or condensation) |
| Mounting | 35 mm DIN rail |

Communication Units

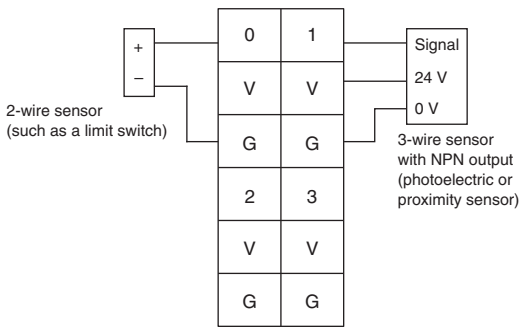
| Model name | GRT1-PNT | GRT1-PRT | GRT1-DRT | GRT1-CRT | GRT1-ML2 | GRT1-ECT |
|--------------------------------|--|---------------|--|---------------------------------------|---|---|
| Network Specification | PROFINET-IO | PROFIBUS-DPV1 | DeviceNet | CompoNet | MECHATROLINK-II for Trajexia | EtherCAT for Trajexia and Sysmac (NJ) |
| Network connector | 2 x RJ45, built-in switch with support for MRP redundancy. | 9-pin D-Sub | Open-style DeviceNet connector, dual screwless push-in dual connections. | 4-pin CompoNet | 2 x ML-II | 2 x RJ45 |
| Network interface power supply | Internal | | External, 11 to 25 VDC, 22 mA | Internal | | External 24 VDC (+10% - 15%) |
| Number of I/O points | 1,024 inputs and outputs max. (128 bytes each) | | | 32 bytes input + 32 bytes output max. | 1,024 inputs and outputs max. (128 bytes total) | 1,024 inputs and outputs max. (128 bytes total) |
| Number of connectable Units | 64 SmartSlice I/O Units max. | | | | | |
| I/O power supply | 24 VDC, 4 A max. | | | | | |
| Status flags | 1 word for Communications Unit status flags | | | | | |
| Parameter backup and restore | up to 2 KB of data per I/O Unit. | | | | | |

Digital Input Units

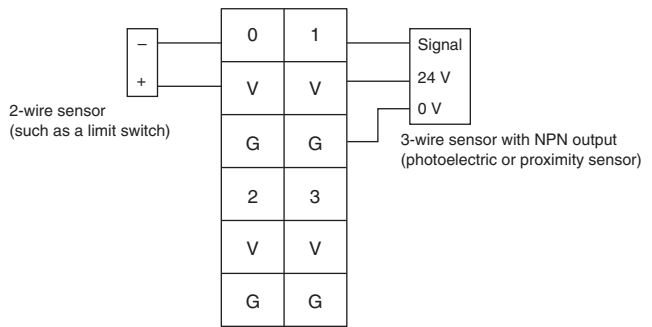
| Model name | GRT1-ID4 | GRT1-ID4-1 | GRT1-ID8 | GRT1-ID8-1 |
|------------------------|--|---|--|---|
| Signal type | DC input (for sinking outputs, NPN type) | DC input (for sourcing outputs, PNP type) | DC input (for sinking outputs, NPN type) | DC input (for sourcing outputs, PNP type) |
| Number of input points | 4 inputs | | 8 inputs | |
| Power terminals | 4 x V (24 V) + 4 x G (0 V) | | 4 x G (0 V) | 4 x V (24 V) |
| ON voltage | 15 VDC min. | | | |
| ON current | 6 mA max./point (at 24 VDC) | | 4 mA max./point (at 24 VDC) | |
| OFF voltage | 5 VDC max. | | | |
| OFF current | 1 mA max. | | | |
| ON delay / OFF delay | 1.5 ms max. | | | |

| Model name | GRT1-IA4-1 | GRT1-IA4-2 |
|------------------------|--|--|
| Signal type | AC input, 110 V | AC input, 230 V |
| Number of input points | 4 inputs | |
| Power terminals | None | |
| Input voltage | 100 to 120 VAC -15% to +10%, 50/60 Hz | 200 to 240 VAC -15% to +10%, 50/60 Hz |
| ON voltage | 70 VAC min. | 120 VAC min. |
| ON current | 4 mA min. | |
| OFF voltage | 20 VAC max. | |
| OFF current | 2 mA max. | |
| ON delay / OFF delay | 10 ms max./55 ms max. | 10 ms max./40 ms max. |

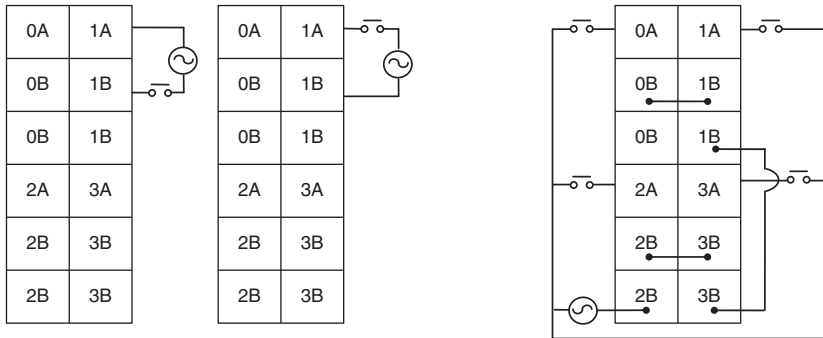
GRT1-ID4 (NPN)



GRT1-ID4 -1 (PNP)



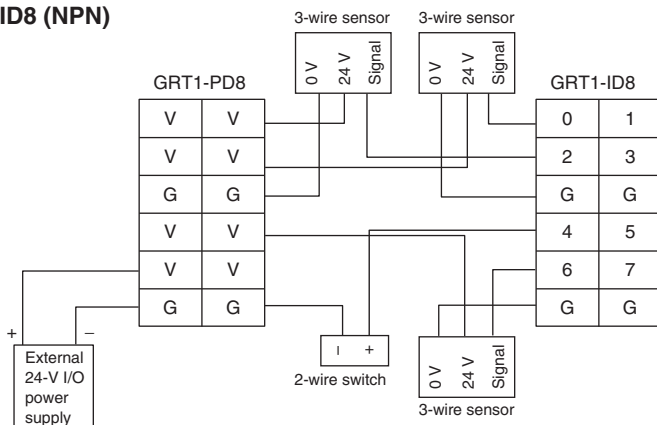
GRT1-IA4-1/GRT1-IA4-2



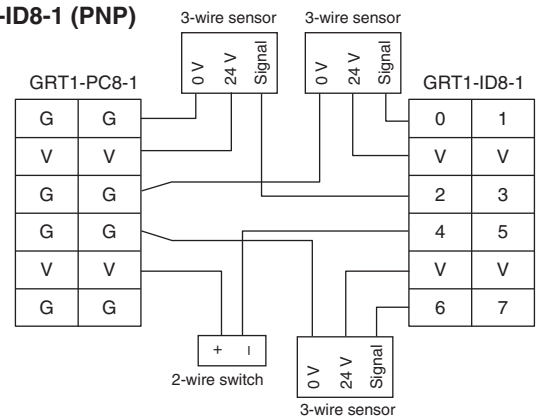
Note: No common signal for inputs.

Note: Common signal for four inputs.

GRT1-ID8 (NPN)



GRT1-ID8-1 (PNP)

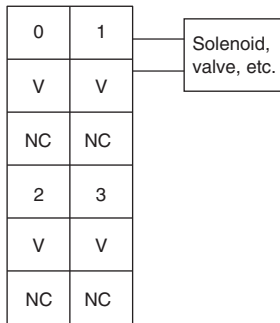


Digital Output Units

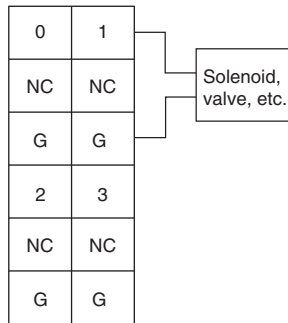
| Model name | GRT1-OD4 | GRT1-OD4-1 | GRT1-OD4G-1 | GRT1-OD4G-3 |
|-------------------------|---------------------------------------|--|---|---|
| Signal type | Transistor output (NPN type, sinking) | Transistor output (PNP type, sourcing) | Transistor output (PNP type, sourcing), with short-circuit protection | |
| Number of output points | 4 outputs | | | |
| Power terminals | 4 x V (24 V) | 4 x G (0 V) | 4 x V (24 V) + 4 x G (0 V) | |
| Rated voltage | 24 VDC (20.4 to 26.4 VDC) | | | 24 V I/O power supply via the front terminal of the unit. |
| Rated output current | 500 mA max./point | | | from 4 x 2.0 A at 30 °C to 4 x 1.0 A at 55 °C |
| Residual voltage | 1.2 VDC max. (at 500 mA) | | | 1.2 VDC max. (at 2 A) |
| Leakage current | 0.1 mA max. | | | |
| ON delay / Off delay | 0.5 / 1.5 ms max. | | | |

| Model name | GRT1-OD8 | GRT1-OD8-1 | GRT1-OD8G-1 | GRT1-ROS2 |
|----------------------------|---------------------------------------|--|---|---|
| Signal type | Transistor output (NPN type, sinking) | Transistor output (PNP type, sourcing) | Transistor output (PNP type, sourcing), with short-circuit protection | Relay output (normally open) |
| Number of output points | 8 outputs | | | 2 outputs (with 2 terminals per connection) |
| Power terminals | 4 x V (24 V) | 4 x G (0 V) | n.a. | |
| Rated voltage | 24 VDC (20.4 to 26.4 VDC) | | | 250 VAC / 24 VDC |
| Rated output current | 500 mA max./point | | | 2 A (min. 1 mA @ 5 VDC) |
| Residual voltage | 1.2 VDC max. (at 500 mA) | | | - |
| Leakage current | 0.1 mA max. | | | - |
| ON delay / Off delay | 0.5 / 1.5 ms max. | | | 15 ms max. |
| Mechanical life expectancy | - | | | 20,000,000 times min. |
| Electrical life expectancy | - | | | 100,000 times min. |

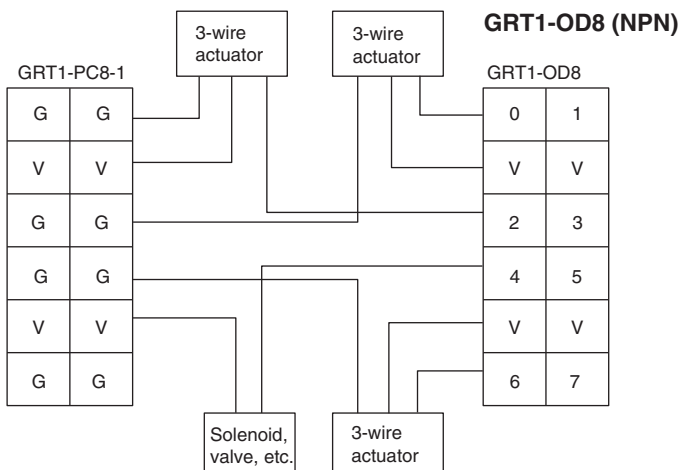
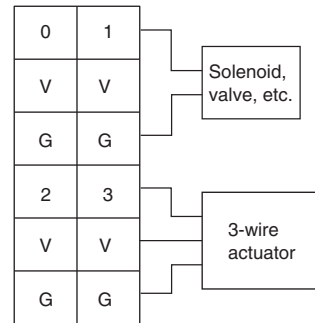
GRT1-OD4



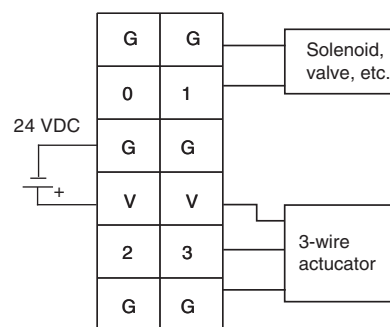
GRT1-OD4-1

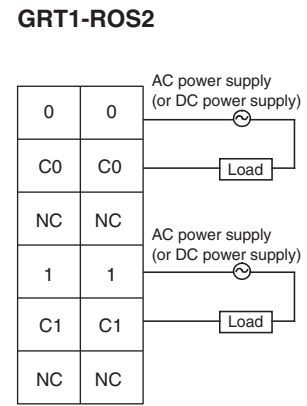
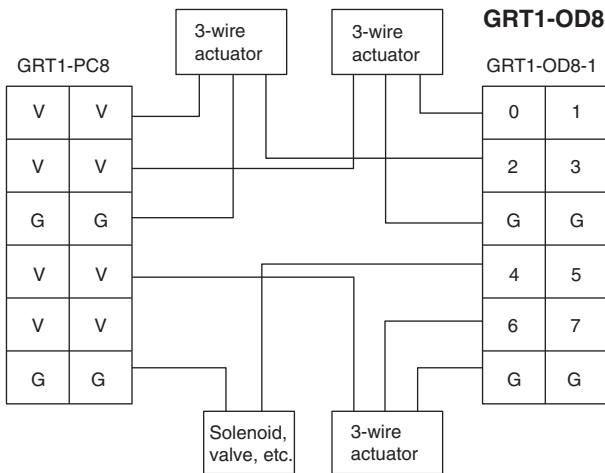


GRT1-OD4G-1 (PNP)



GRT1-OD4G-3 (PNP)





Pulse I/O Units

| Model name | GRT1-CT1 | GRT1-CT1-1 | GRT1-CP1-L |
|--------------------------|---|---|---|
| Counter input | A/B incremental encoder, or pulse/direction, or pulse up/down | A/B incremental encoder, or pulse/direction, or pulse up/down | A/B/Z incremental encoder, or pulse/direction/reset |
| Counter signal type | 24 VDC, NPN type | 24 VDC, PNP type | 24 VDC, PNP type, or RS422 Line driver levels |
| Max. frequency | 60 kHz | | 100 kHz |
| Counter range | 32 bit double signed integer | | |
| Comparison values | 1 range (2 comparison values) | | 2 independent ranges |
| Control Input | IN0, DC input (NPN type) IN0, DC input (PNP type) | | |
| Control Input functions | Capture, Preset, Reset | | Capture, Preset, Reset, Z enable |
| Control Outputs | OUT0, Transistor Output (NPN, sinking) | OUT0, Transistor Output (PNP, sourcing) | OUT0, OUT1, Transistor Output (PNP, sourcing) |
| Control Output functions | Range comparison, manual override | | |
| Additional functions | On-the-fly reconfiguration, Frequency measurement | | |

Note: Pulse I/O Units are not supported by GRT1-ML2 and GRT1-ECT.

GRT1-CT1(-1)

GRT1-CT1 (NPN)

| | |
|------|------|
| A | OUT |
| B | V |
| Z/IN | N.C. |
| N.C. | N.C. |
| V | V |
| G | G |

GRT1-CT1-1 (PNP)

| | |
|------|------|
| A | OUT |
| B | N.C. |
| Z/IN | G |
| N.C. | N.C. |
| V | V |
| G | G |

GRT1-CP1-L

24-V rotary encoder (all DIP switch pins ON)

| | |
|----|------|
| A | N.C. |
| B | N.C. |
| Z | N.C. |
| IN | OUT0 |
| V | OUT1 |
| G | G |

Line driver rotary encoder (all DIP switch pins OFF)

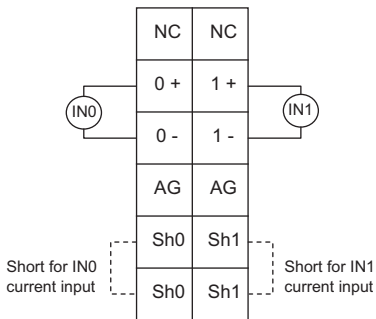
| | |
|----|------|
| A+ | A- |
| B+ | B- |
| Z+ | Z- |
| IN | OUT0 |
| V | OUT1 |
| G | G |

Analog I/O Units

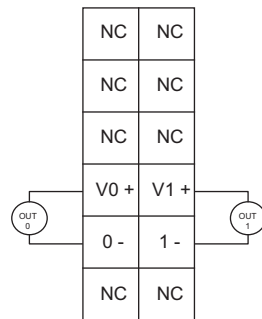
| Model name | GRT1-AD2 | GRT1-DA2V | GRT1-DA2C |
|------------------|---|--|--------------------------------|
| Signal type | Analog Input: 0-20mA, 4-20mA, ±10V, 0-10V, 0-5V, 1-5V | Analog Output: ±10V, 0-10V, 0-5V, 1-5V | Analog Output: 0-20mA, 4-20mA, |
| Number of points | 2 inputs | | 2 outputs |
| Resolution | 1/6000 full scale | | |
| Conversion time | 2ms / 2points | | |

| Model name | GRT1-TS2P | GRT1-TS2PK | GRT1-TS2T |
|------------------|--|---|---|
| Signal type | Temperature input, Pt100, (2-wire, 3-wire) | Temperature input, Pt1000, (2-wire, 3-wire) | Thermocouple, R, S, K, J, T, E, B, N, L, U, W, or PL2 |
| Number of points | 2 inputs | | |
| Indication range | -200 to +200 °C / -200 to +850 °C | | Depends on thremocouple type |
| Accuracy | ±0.3% of PV or ±0.8 °C* (whichever is larger) ±1 digit max. * (or ±0.5 °C for -200 °C to +200 °C input range) | | ±2°C ±1 digit max. Mounting restrictions apply. See Operation Manual W455 |
| Resolution | 0.1 °C, 16-bit signed integer, or 0.01 °C, 32-bit signed double integer | | |
| Conversion time | 250 ms / 2 points | | |

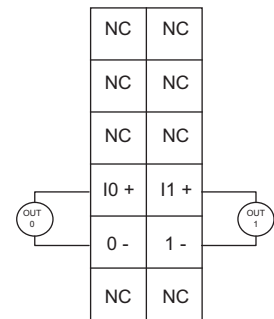
GRT1-AD2



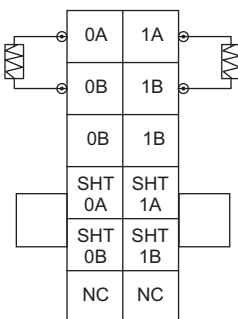
GRT1-DA2V



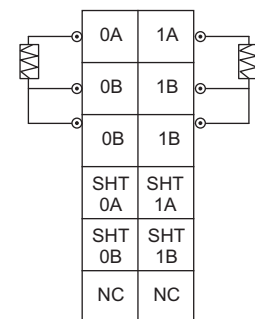
GRT1-DA2C



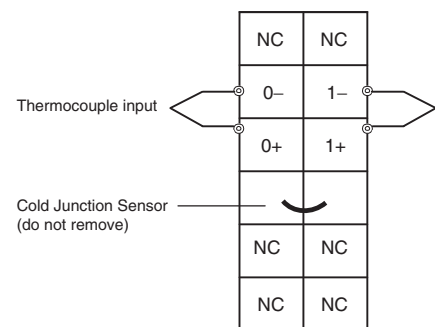
GRT1-TS2P/PK (2-wire)



GRT1-TS2P/PK (3-wire)

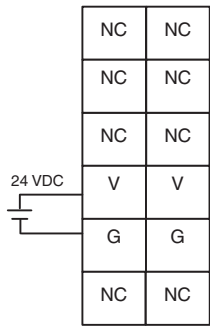


GRT1-TS2T

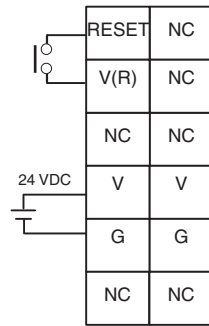


Power Feed and Distribution Units

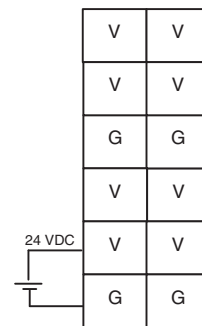
GRT1-PD2



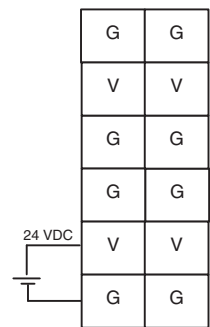
GRT1-PD2G



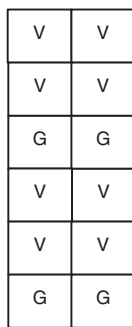
GRT1-PD8



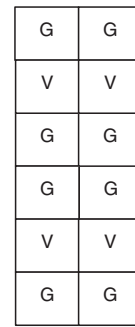
GRT1-PD8-1



GRT1-PC8

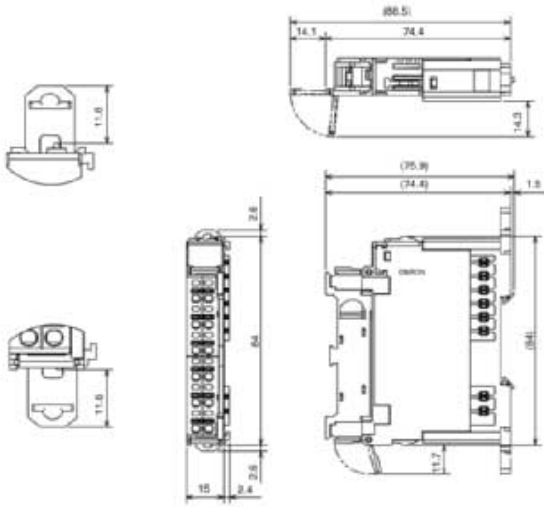


GRT1-PC8-1



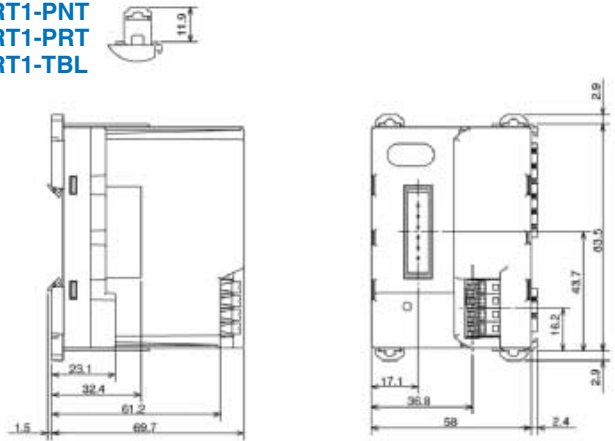
Dimensions

I/O-units



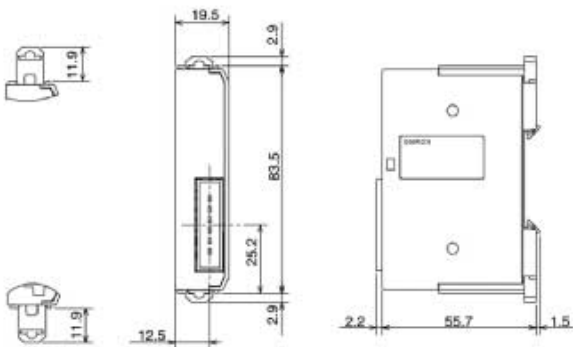
Communication Units

- GRT1-CRT
- GRT1-DRT
- GRT1-ECT
- GRT1-ML2
- GRT1-PNT
- GRT1-PRT
- GRT1-TBL



End units

- GRT1-END
- GRT1-END-M
- GRT1-TBR



Ordering Information

Communication Units

| Function | Specification | | Model code |
|--------------------------------|---|----------|------------|
| DeviceNet interface unit | For up to 64 I/O units | 84x58x70 | GRT1-DRT |
| CompoNet interface unit | For up to 64 I/O units (limited to 32 byte in + 32 byte out) | 84x58x70 | GRT1-CRT |
| PROFIBUS-DP interface unit | For up to 64 I/O units | 84x58x70 | GRT1-PRT |
| PROFINET-IO interface unit | For up to 64 I/O units | 84x58x70 | GRT1-PNT |
| MECHATROLINK-II interface unit | For up to 64 I/O units (slave to Trajexia motion controller) | 84x58x70 | GRT1-ML2 |
| EtherCAT interface unit | For up to 64 I/O units (slave to Trajexia and Sysmac controllers) | 84x58x70 | GRT1-ECT |
| End plate | One unit required per bus interface | 84x20x58 | GRT1-END |
| End plate with memory function | Supports toolless replacement of PROFINET-IO interface unit | 84x20x58 | GRT1-END-M |

I/O units

| Function | Specification | | Model code |
|---|--|----------|-------------|
| 4 NPN inputs | 24 VDC, 6 mA, 3-wire connection | 84x15x74 | GRT1-ID4 |
| 4 PNP inputs | 24 VDC, 6 mA, 3-wire connection | 84x15x74 | GRT1-ID4-1 |
| 8 NPN inputs | 24 VDC, 4 mA, 1-wire connection + 4xG | 84x15x74 | GRT1-ID8 |
| 8 PNP inputs | 24 VDC, 4 mA, 1-wire connection + 4xV | 84x15x74 | GRT1-ID8-1 |
| 4 AC inputs | 110 VAC, 2-wire connection | 84x15x74 | GRT1-IA4-1 |
| 4 AC inputs | 230 VAC, 2-wire connection | 84x15x74 | GRT1-IA4-2 |
| 4 NPN outputs | 24 VDC, 500 mA, 2-wire connection | 84x15x74 | GRT1-OD4 |
| 4 PNP outputs | 24 VDC, 500 mA, 2-wire connection | 84x15x74 | GRT1-OD4-1 |
| 4 PNP outputs with short-circuit protection | 24 VDC, 500 mA, 3-wire connection | 84x15x74 | GRT1-OD4G-1 |
| 4 PNP outputs with short-circuit protection | 24 VDC, 2 A, 2-wire connection | 84x15x74 | GRT1-OD4G-3 |
| 8 NPN outputs | 24 VDC, 500 mA, 1-wire connection + 4xV | 84x15x74 | GRT1-OD8 |
| 8 PNP outputs | 24 VDC, 500 mA, 1-wire connection + 4xG | 84x15x74 | GRT1-OD8-1 |
| 8 PNP outputs with short-circuit protection | 24 VDC, 500 mA, 1-wire connection + 4xG | 84x15x74 | GRT1-OD8G-1 |
| 2 relay outputs | 240 VAC, 2A, normally-open contacts | 84x15x74 | GRT1-ROS2 |
| 60 kHz Counter unit, NPN | A+B encoder inputs + 1 Z/control input + 1 output (NPN-type) | 84x15x74 | GRT1-CT1 |
| 60 kHz Counter unit, PNP | A+B encoder inputs + 1 Z/control input + 1 output (PNP-type) | 84x15x74 | GRT1-CT1-1 |
| 100 kHz Counter / Positioner unit | A+B+Z encoder inputs (line driver or 24 V selectable) + 1 control input + 2 outputs (PNP-type) | 84x15x74 | GRT1-CP1-L |
| 2 analog inputs, current/voltage | ±10 V, 0-10 V, 0-5 V, 1-5 V, 0-20 mA, 4-20 mA | 84x15x74 | GRT1-AD2 |
| 2 analog outputs, voltage | ±10 V, 0-10 V, 0-5 V, 1-5 V | 84x15x74 | GRT1-DA2V |
| 2 analog outputs, current | 0-20 mA, 4-20 mA | 84x15x74 | GRT1-DA2C |
| 2 Pt100 inputs | Pt100, 2-wire or 3-wire connection | 84x15x74 | GRT1-TS2P |
| 2 Pt1000 inputs | Pt1000, 2-wire or 3-wire connection | 84x15x74 | GRT1-TS2PK |
| 2 Thermocouple inputs | Types B, E, J, K, N, R, S, T, U, W, PL2, with cold junction compensation | 84x15x74 | GRT1-TS2T |

Other units

| Function | | Model code |
|---|----------|------------|
| I/O power feed unit, separates power supply between groups of I/O units | 84x15x74 | GRT1-PD2 |
| I/O power feed unit with electronic overload protection, separates power supply between groups of I/O units | 84x15x74 | GRT1-PD2G |
| I/O power feed and distribution unit, separates power supply between groups of I/O units, 8xV + 4xG | 84x15x74 | GRT1-PD8 |
| I/O power feed and distribution unit, separates power supply between groups of I/O units, 4xV + 8xG | 84x15x74 | GRT1-PD8-1 |
| I/O power connection unit, 8xV + 4xG | 84x15x74 | GRT1-PC8 |
| I/O power connection unit, 4xV + 8xG | 84x15x74 | GRT1-PC8-1 |
| Turnback Unit, right-hand side | 84x20x58 | GRT1-TBR |
| Turnback Unit, left-hand side | 84x58x70 | GRT1-TBL |
| Turnback cable, one meter | 1 m | GCN2-100 |

Accessories

| Function | Model code |
|--|--------------------------------|
| Replacement front connectors, pack of 5 pcs. | GRT1-BT1-5 |
| PROFIBUS-DP connector, 9-pin D-sub | PROFIBUS Connector 839550 |
| PROFIBUS-DP connector, 9-pin D-sub, with bus termination | PROFIBUS Term. Conn. 846086 |
| CompoNet screw terminal connector (order per 10 pcs) | DCN4-TB4 |
| CompoNet branch line connector (order per 10 pcs) | DCN4-BR4 |
| CompoNet Y-connector (order per 10 pcs) | DCN4-MD4 |

Master Units

| Function | Model code |
|---|-----------------|
| PROFINET-IO Controller for CJ1-series PLCs | CJ1W-PNT21 |
| PROFIBUS-DP Master Unit for CS1-series PLCs | CS1W-PRM21 |
| PROFIBUS-DP Master Unit for CJ1-series PLCs | CJ1W-PRM21 |
| DeviceNet Master Unit for CS1-series PLCs | CS1W-DRM21-V1 |
| DeviceNet Master Unit for CJ1-series PLCs | CJ1W-DRM21 |
| CompoNet Master Unit for CS1-series PLCs | CS1W-CRM21 |
| CompoNet Master Unit for CJ1-series PLCs | CJ1W-CRM21 |
| MECHATROLINK-II Master Unit for Trajexia (4 stations max.) | TJ1-ML04 |
| MECHATROLINK-II Master Unit for Trajexia (16 stations max.) | TJ1-ML16 |
| EtherCAT Master Unit for Trajexia | TJ2-ECT□□ |
| HMI with PLC and DeviceNet Master | NSJxx-T□□□□-G5D |
| HMI with PLC and PROFIBUS-DP Master | NSJxx-T□□□□-G5P |

Software

| Function | Model code |
|---|--|
| CX-One, Omron's integrated software for programming and configuration of all control system components, including PLCs, remote I/O, HMI, servo drives, inverters, temperature controllers and advanced sensors. | CX-ONE-AL□□ C-E □□ = number of licenses (01, 03, 10) |

Cat. No. P15E-EN-03B

In the interest of product improvement, specifications are subject to change without notice.

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