

## High Performance Display Units : RS485 Input

# DS / DA Series

## INSTRUCTION MANUAL

TCD210084AD

**Autonics**

Thank you for choosing our Autonics product.

**Read and understand the instruction manual and manual thoroughly before using the product.**

**For your safety, read and follow the below safety considerations before using.**

**For your safety, read and follow the considerations written in the instruction manual, other manuals and Autonics website.**

Keep this instruction manual in a place where you can find easily.

The specifications, dimensions, etc. are subject to change without notice for product improvement. Some models may be discontinued without notice.

Follow Autonics website for the latest information.

### Safety Considerations

- Observe all 'Safety Considerations' for safe and proper operation to avoid hazards.
- ⚠ symbol indicates caution due to special circumstances in which hazards may occur.

**⚠ Warning** Failure to follow instructions may result in serious injury or death.

**01. Fail-safe device must be installed when using the unit with machinery that may cause serious injury or substantial economic loss. (e.g. nuclear power control, medical equipment, ships, vehicles, railways, aircraft, combustion apparatus, safety equipment, crime/disaster prevention devices, etc.)**  
Failure to follow this instruction may result in personal injury, economic loss or fire.

**02. Do not use the unit in the place where flammable/explosive/corrosive gas, high humidity, direct sunlight, radiant heat, vibration, impact or salinity may be present.**

Failure to follow this instruction may result in explosion or fire.

**03. Install on a device panel to use.**

Failure to follow this instruction may result in fire.

**04. Do not connect, repair, or inspect the unit while connected to a power source.**

Failure to follow this instruction may result in fire.

**05. Check 'Unit Descriptions' before wiring.**

Failure to follow this instruction may result in fire.

**06. Do not disassemble or modify the unit.**

Failure to follow this instruction may result in fire.

**⚠ Caution** Failure to follow instructions may result in injury or product damage.

**01. Use the unit within the rated specifications.**

Failure to follow this instruction may result in fire or product damage.

**02. Use a dry cloth to clean the unit, and do not use water or organic solvent.**

Failure to follow this instruction may result in fire.

**03. Keep the product away from metal chip, dust, and wire residue which flow into the unit.**

Failure to follow this instruction may result in fire or product damage.

### Cautions during Use

- Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
- 12 - 24 VDC≒ model power supply should be insulated and limited voltage/current or Class 2, SELV power supply device.
- Install a power switch or circuit breaker in the easily accessible place for supplying or disconnecting the power.
- Keep away from high voltage lines or power lines to prevent inductive noise. In case installing power line and input signal line closely, use line filter or varistor at power line and shielded wire at input signal line.
- Do not use near the equipment which generates strong magnetic force or high frequency noise.

This unit may be used in the following environments.

- Indoors (in the environment condition rated in 'Specifications')
- Altitude max. 2,000 m
- Pollution degree 2
- Installation category I

### Ordering Information

This is only for reference.

For selecting the specific model, follow the Autonics web site.

**D**   **①**   **②**   -   **③**   **④**

#### ① Display method

S: 7-segment

A: 16-segment

#### ② Size

16 : W 16 × H 24 mm

22 : W 20 × H 33 mm

40 : W 40 × H 60 mm

60 : W 60 × H 96 mm

#### ③ Display color

R: Red

G: Green

#### ④ Input method (basic unit)

T: RS485 communication input

C: RS485 communication input

(synchronous time display)

### Product Components

- Product
- 16 / 22 mm Cap (left-right 1 set) × 1
- Instruction manual
- 22 mm Connector × 1

### Sold Separately

- Expansion unit (DS□-□E / DA□-□E)  
: select the same size/display color of basic unit (available to mix the display method)
- 16 / 22 mm Middle bracket (BK-D□R)
- 16 / 22 mm Unit-display unit (DU□-□)

### Specifications

Model	DS16-□□	D□22-□□	D□40-□□	D□60-□□
Display color	Red / green model			
Power supply	12 - 24 VDC≒			
Allowable voltage range	90 to 110 % of power supply			
Current consumption (red)	≤ 20 mA	≤ 25 mA	≤ 55 mA	≤ 65 mA
Current consumption (green)	≤ 15 mA	≤ 20 mA	≤ 40 mA	≤ 45 mA
Size (W×H)	9 × 16 mm	11.2 × 22.5 mm	22.4 × 40 mm	33.6 × 60 mm
Noise immunity	±500 V the square wave noise (pulse width: 1 μs) by the noise simulator			
Ambient temperature	-10 to 55 °C, storage: -25 to 65 °C (non freezing or condensation)			
Ambient humidity	35 to 85%RH, storage: 35 to 85%RH (non freezing or condensation)			
Protection rating	IP40 (front part)			
Approval	CE ENEC			
Weight (packaged) <sup>01)</sup>	≈ 12 g (≈ 52 g)	≈ 17 g (≈ 58 g)	≈ 28 g (≈ 63 g)	≈ 60 g (≈ 110 g)

01) The package weight of 16 mm / 22 mm expansion unit varies, it based on 3 packages.  
16 mm: ≈ 77 g / 22 mm: ≈ 92 g

Model	D□□-□T	DS□-□C
Input method	RS485 communication	RS485 communication (time)
Directly connected Autonics Series	CT6, CT4, MP5, MT4, TK / TX, TM2, TM4, THD	-
Display character (range)	64 characters and symbols display: 0 to 9, A to Z, 27 symbols, decimal point	World local time, 12/24-hour, summer time
Max. number of multi-stage	24-unit	10-unit

### Communication Interface

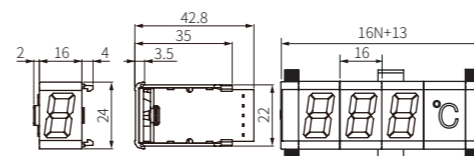
#### ■ RS485

Model	D□□-□T	DS□-□C
Protocol	Modbus RTU	
Application standard	Compliance with EIA RS485	
Max. connections (setting address)	Master 1-unit (01, fixed) / Slave 31-unit (01 to 32)	31-unit (226, fixed)
Comm. type	Two-wire half duplex	
Comm. distance	Max. 800 m	
Comm. speed	4800, 9600, 19200, 38400 bps	
Comm. response time	(Slave) 5 ms, 20 ms	-
Start bit	1-bit (fixed)	
Data bit	8-bit (fixed)	
Parity bit	NONE (fixed)	
Stop bit	1-bit (fixed)	

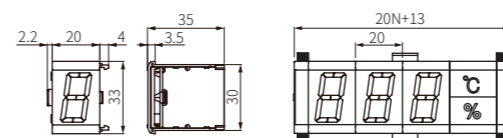
### Dimensions

- Unit: mm, For the detailed drawings, follow the Autonics website.
- N: number of units

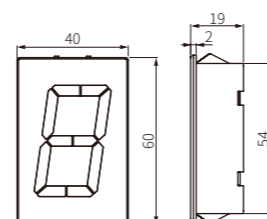
#### ■ 16 mm size



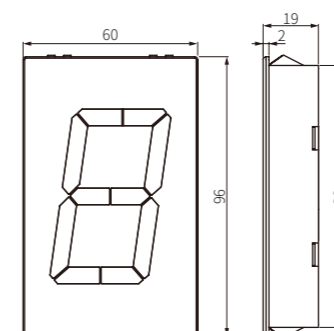
#### ■ 22 mm size



#### ■ 40 mm size



#### ■ 60 mm size



#### ■ Panel cut-out

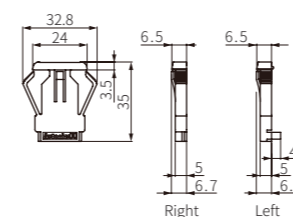
- Panel thickness: 1.5 to 4 mm



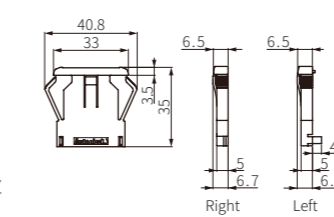
Model	A	B
16 mm	16N+11	23
22 mm	20N+11	31
40 mm	40N-2	55
60 mm	60N-3	91

#### ■ Cap

- 16 mm size

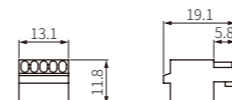


- 22 mm size



#### ■ Connector

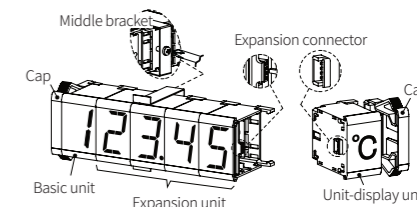
- 22 mm size



### Connection of Units

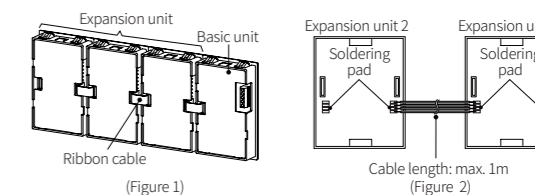
#### ■ 16 / 22 mm size

- Connect a basic unit, expansion units, a unit-display unit from the left and connect the caps the end of right and left.
- Use the middle bracket (sold separately) to protect deflection when connecting over 7 units. Use one middle bracket per 7 units. (tightening torque: ≤ 0.5 N m)



#### ■ 40 / 60 mm size

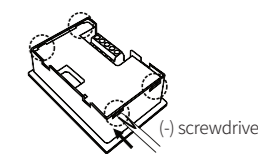
- Connect expansion connectors of units using a ribbon cable. (Figure 1)
- If the distance between expansion units is far as (Figure 2), you can connect the cable at the soldering pad. To use a soldering pad, remove the protection cover which only expansion units have.
- See 'Removing Protection Cover of Expansion Unit' to detach the cover.



### Removing Protection Cover of Expansion Unit

Press the connection parts (4-point) of the protection cover at the top/bottom of the 40 / 60 mm expansion unit with (-) screwdriver and the protection cover is removed. To operate the function set switches, you should remove the protection cover on the rear part.

**⚠ Caution: Before removing the protection cover, power must be turned OFF.**



### Software

- Download the installation file and the manuals from the Autonics website.

#### ■ DAQMaster

- DAQMaster is the comprehensive device management program for Autonics' products, providing parameter setting, monitoring and data management.

### Example Programs

Download the various example programs from the Autonics website.

