

High Performance Display Units: RS485 Input



DS / DA Series CATALOG

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

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

Features

- Simple wiring without soldering
 - multi-stage connection using expansion connectors or ribbon cables.
 - power supply and data wiring required on base unit only.
- Various input options
 - Serial input
 - Dynamic Parallel input
 - RS485 communication (Modbus) input (Master, Slave)
 - RS485 communication (Modbus) time sync display
 - PT temperature sensor input
 - PT temperature sensor + RS485 communication input
- Expandable up to 24-units with multi-stage connection
- Available in various sizes: 16 mm, 22.5 mm, 40 mm, 60 mm
- High luminance LED display
- Various unit display plates (switchable) with flashing or ON/OFF options
- Various display types
 - 7-segment display and 16-segment
 - Red and green display types
 - Display 64 characters (0 to 9, A to Z, 27 symbols, decimal point)

Ordering Information

This is only for reference, the actual product does not support all combinations. For selecting the specified model, follow the Autonics website.

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

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.

■ World Clock

- World Clock is time synchronization program for RS485 communication input (synchronous time display) model.

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) ⁰¹⁾	≈ 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

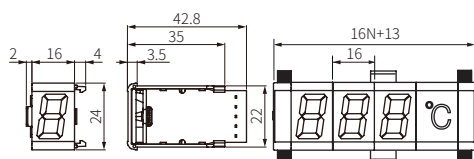
■ RS485

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)	

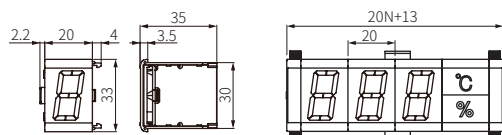
Dimensions

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

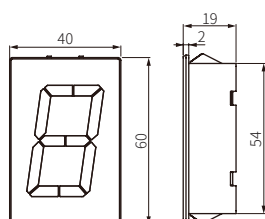
16 mm size



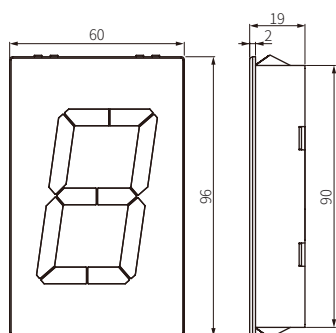
22 mm size



40 mm size

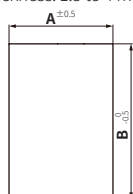


60 mm size



Panel cut-out

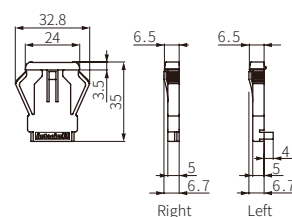
- Panel thickness: 1.5 to 4 mm



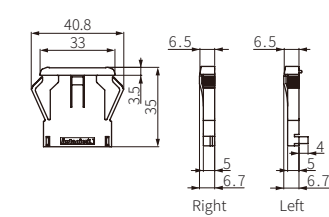
Model	A	B
16 mm	16N+11	23
22 mm	20N+11	31
40 mm	40N-2	55
60 mm	60N-3	91

Cap

- 16 mm size

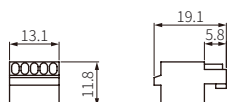


- 22 mm size



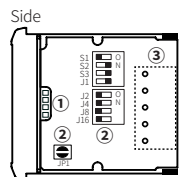
Connector

- 22 mm size

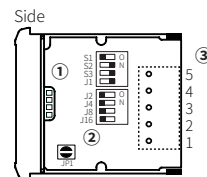


[RS485 Input Model] Unit Descriptions

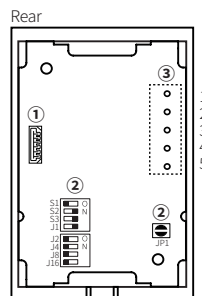
16 mm size



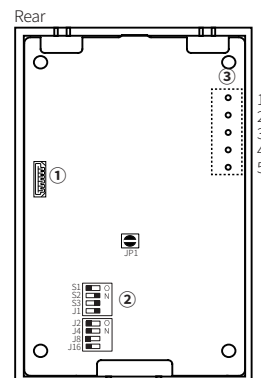
22 mm size



40 mm size




60 mm size



① **Expansion connector** Using for connecting expansion unit. See 'Connection of Units.'

② **Function set switches** Basic unit only

- Slave mode (JP1 OFF: Open )

No.	Setting value (OFF <input type="checkbox"/> ON <input checked="" type="checkbox"/>)				Function	Default
S1	5 ms	20 ms			Comm. response time	5 ms (OFF)
	OFF	ON				
S2	4800	9600	19200	38400	Comm. speed (bps)	38400 (S2 / S3: ON)
	OFF	ON	OFF	ON		
S3	OFF	OFF	ON	ON		
	1	2	...	31	32	Comm. address 1 (J1: ON / J2 to 16: OFF)
J1	ON	OFF		ON	OFF	
J2	OFF	ON		ON	OFF	
J4	OFF	OFF	...	ON	OFF	
J8	OFF	OFF		ON	OFF	
J16	OFF	OFF		ON	OFF	

- Master mode (JP1 ON: Short )

No.	Setting value				Function	Default
	Manual	Auto			Connection setting method	Manual (OFF)
S1	OFF	ON				
	4800	9600	19200	38400	Comm. speed (bps)	38400 (S2 / S3: ON)
S2	OFF	ON	OFF	ON		
S3	OFF	OFF	ON	ON		
J1 to J8	• If the connection setting method (S1) is the manual (OFF), see the 'Directly Connected Autonics Series.'				Directly connected Autonics Series	CT 4 (J1: ON / J2 to 8: OFF)
J16	Not used		Use		Unit-display unit	Not used (OFF)

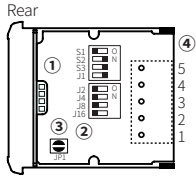
③ **Input terminal** Basic unit only

No.	Code	Function
1	VCC	12 - 24 VDC=
2	GND	0 V
3	-	-
4	A (+)	RS485 A (+)
5	B (-)	RS485 B (-)

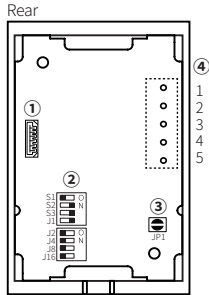
- The basic unit supplies the power for expansion unit and the unit-display unit and DATA input.
- For the 22 mm size model, connect the connector to the input terminal.

[RS485 (synchronous time display) Model] Unit Descriptions

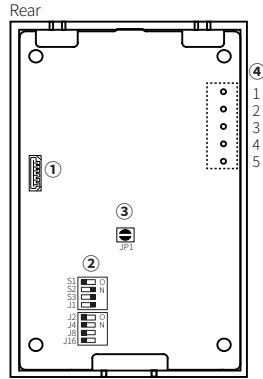
■ 22 mm size



■ 40 mm size



■ 60 mm size



① **Expansion connector** Using for connecting expansion unit. See 'Connection of Units.'

② **Function set switches** Basic unit only

No.	Setting value (OFF <input type="checkbox"/> ON <input checked="" type="checkbox"/>)		Function	Default
	24-hour	12-hour ⁰¹⁾		
S1	OFF	ON	Time display	24-hour (OFF)
01) When setting the 12-hour display, use 16-segment expansion unit for displaying 'M' of AM/PM.				
	4800	9600	19200	38400
S2	OFF	ON	OFF	ON
S3	OFF	OFF	ON	ON
J1 to J16	• See the 'World Time Zone.'		Select world time zone	UTC-11:00 (J1: ON / J2 to 16: OFF)

③ **Delimiter for hour/min/sec** Basic unit only

JP1	Setting value	Expansion unit	Display e.g.: PM 6 hour 60 min 15 sec (based on 12-hour display)
Open	Sign [.]	DA Series (16-segment)	
Short	Decimal point [.]	DS Series (7-segment)	

④ **Input terminal** Basic unit only

No.	Code	Function
1	VCC	12 - 24 VDC=
2	GND	0V
3	-	-
4	A (+)	RS485 A (+)
5	B (-)	RS485 B (-)

- The basic unit supplies the power for expansion unit and the unit-display unit and DATA input.
- For the 22 mm size model, connect the connector to the input terminal.

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□-□)

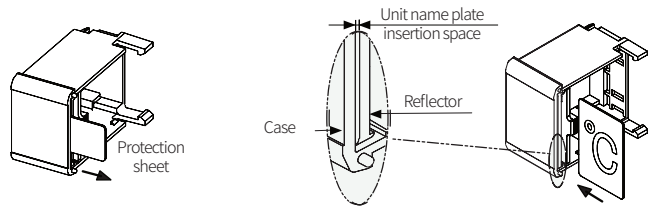
Sold Separately: 16 / 22 mm Unit-display Unit (DU Series)

- This unit is for displaying unit by inserting a name plate.
- Name plate type
 - Single: °C / °F / sec / min / h / g / kg / mm / cm / m / rpm / % / ppm / pcs / pH / A / V / W / VA
 - Dual-stage (top-bottom): °C - °F / °C - %
- Select the same size with the basic/expansion unit.

■ Name plate insertion

Remove the protection sheet and insert the name plate at between the case and the reflector.

⚠ **Caution:** Be sure to insert it with the correct direction.



■ Input data chart

- The unit-display unit does not use the upper bit over D4. (Don't care: X)
- It is only available to use the unit-display unit with Serial 5-bit, Parallel Dynamic 1 input when connecting the unit-display unit at the right side and turning ON. Do not input data to the unit-display unit.

Unit-display unit		High 2-bit				Low 4-bit	
D5	D4	D3	D2	D1	D0		
X	X						
No unit		L	L	L	L		
Top-bottom OFF		L	L	L	H		
Top-bottom ON		L	L	H	L		
Top ON		L	L	H	H		
Bottom ON		L	H	L	L		
Top-bottom flashing		L	H	L	H		
Top flashing		L	H	H	L		
Bottom flashing		L	H	H	H		
If the data is not for the unit-display unit, it maintains former state.		H	L	L	L		
		H	L	L	H		
		H	L	H	L		
		H	L	H	H		
		H	H	L	L		
		H	H	L	H		
		H	H	H	L		
		H	H	H	H		

■ Zero Blanking

• Using the unit-display unit

If sending unit data signal after data 1 (00123), it applies Zero Blanking function when displaying data 2 (04567).

		1	2	3	%		4	5	6	7
--	--	---	---	---	---	--	---	---	---	---

Do not transfer unit data to basic/expansion unit. Unit bit (D7) of unit data is only for unit. If transferring unit data to basic/expansion unit, unit bit (D7) displays the ignored data value. In this case, Zero Blanking does not operate normally.

• Not using the unit-display unit

No-unit data (HXXXLLLL) is used for data delimiter.

If sending no-unit data after data 1 (00123), it applies Zero Blanking function to display data 2. In this case, transmitted data should be added no-unit data to the display digits.

		1	2	3		4	5	6	7
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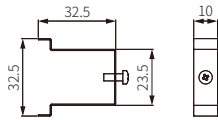
If it does not send no-unit data, it displays data 1 (00123) and data 2 (04567) as one data. Zero Blanking function is applied to data 1 only.

		1	2	3	0	4	5	6	7
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Sold Separately: 16 / 22 mm Middle Bracket (BK-D□R)

- Unit: mm, For the detailed drawings, follow the Autonics website.

■ BK-D16R (16 mm)



■ BK-D22R (22 mm)

