

High Performance Display Units: RS485 Input



DS / DA Series PRODUCT MANUAL

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)

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 Character 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≒			
Permissible voltage range	90 to 110 % of rated voltage			
Current consumption (red)	≤ 20 mA	≤ 25 mA	≤ 55 mA	≤ 65 mA
Current consumption (green)	≤ 15 mA	≤ 20 mA	≤ 40 mA	≤ 45 mA
Character 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)			
Certification	CE UK 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

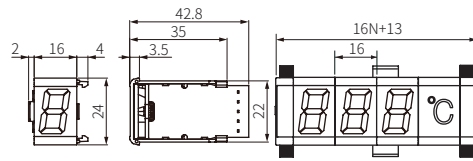
■ RS485

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)	

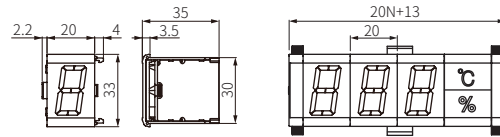
Dimensions

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

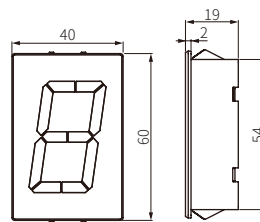
■ 16 mm size



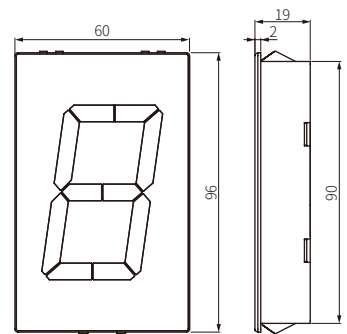
■ 22 mm size



■ 40 mm size

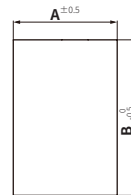


■ 60 mm size



■ Panel cut-out

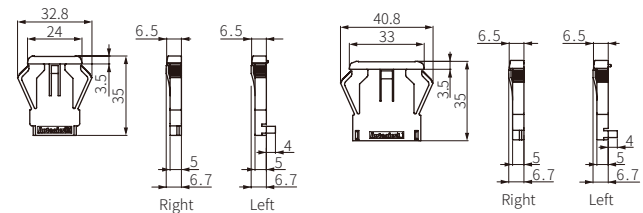
- Panel thickness: 1.5 to 4 mm



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

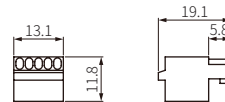
■ Cap

- 16 mm size
- 22 mm size



■ Connector

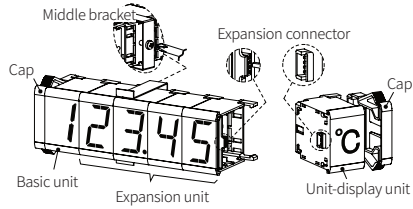
- 22 mm size



Connection of Units

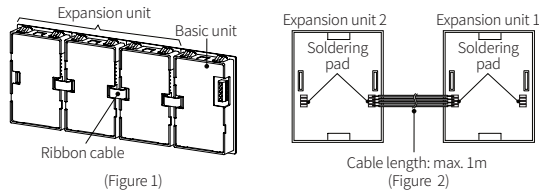
■ 16 / 22 mm size

- 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: $\leq 0.5 \text{ N m}$)



■ 40 / 60 mm size

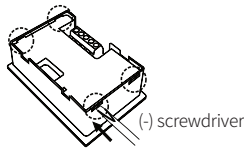
- Connect expansion connectors of units using a ribbon cable. (Figure 1)
- If the distance between expansion units is far as (Figure 2), you can connect the cable at the soldering pad. To use a soldering pad, remove the protection cover which only expansion units have.
- See 'Removing Protection Cover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

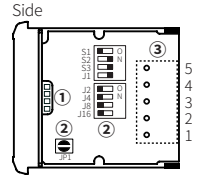
- DAQMaster is the comprehensive device management program for Autonics' products, providing parameter setting, monitoring and data management.

Example Programs

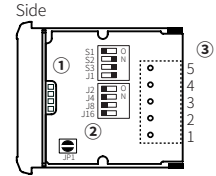
Download the various example programs from the Autonics website.

[RS485 Input Model] Unit Descriptions

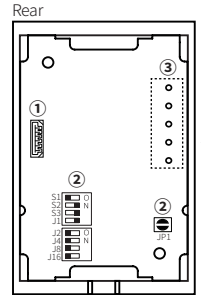
■ 16 mm size



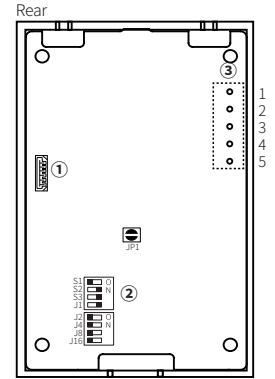
■ 22 mm size



■ 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  ON )				Function	Default
	5 ms	20 ms			Comm. response time	5 ms (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		
	1	2	...	31	32	
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	
					Comm. address	1 (J1: ON / J2 to 16: 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 Input Model] Directly Connected Autonics Series

- Connecting to a device which supports Master mode displays current value or current value and setting value without PC / PLC.
- Only for RS485 communication output model supports it among the directly connected Autonics Series. Connect input terminal 4 (A+) and 5 (B-) of display unit to RS485 communication output terminal of the dedicated device.

	CT6	CT4	MP5	MT4	TK/TX	TM2	TM4	THD
J1	OFF	ON	OFF	ON	OFF	ON	OFF	ON
J2	OFF	OFF	ON	ON	OFF	OFF	ON	ON
J4	OFF	OFF	OFF	OFF	ON	ON	ON	ON
J8	OFF	OFF	OFF	OFF	OFF	OFF	OFF	OFF

■ Not using the highest digit (using manual setting)

	CT6	MP5	MT4	TK/TX
J1	OFF	ON	OFF	ON
J2	OFF	OFF	ON	ON
J4	OFF	OFF	OFF	OFF
J8	ON	ON	ON	ON

[RS485 Input Model] Example of Display

- In case of manual setting, the highest digit may be not used.
[Refer to CT6(5digit), MP5(4digit), MT4(3digit), TK/TX(3digit, using unit-display unit)]
- To display the set value (PRESET or SV), connect the same number of units as the current value.
- CT Series: Displayed in the PRESET 2 position when using the 1-state PRESET model.

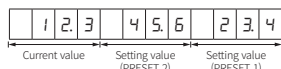
■ CT6



■ CT6 (5-digit)



■ CT4



■ MP5



■ MP5 (4-digit)



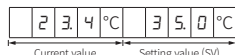
■ MT4



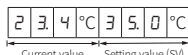
■ MT4 (3-digit)



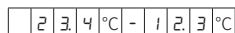
■ TK / TX (using unit-display unit)



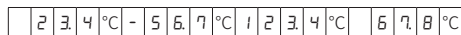
■ TK / TX (3-digit, using unit-display unit)



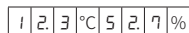
■ TM2 (using unit-display unit)



■ TM4 (using unit-display unit)



■ THD (using unit-display unit)



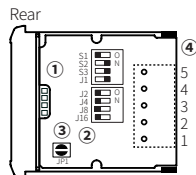
[RS485 Input Model] Input Data Chart

- Based on the Slave mode.
- If there is no input data after supplying the power, the basic unit displays input method character (T).

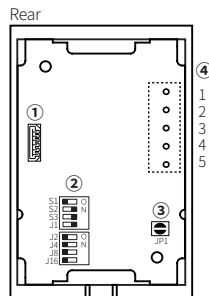
7-segment								16-segment								High 2-bit			
D5	D4	D5	D4	D5	D4	D5	D4	D5	D4	D5	D4	D5	D4	D5	D4	D3	D2	D1	D0
L	L	L	H	H	L	H	H	L	L	L	H	H	L	H	H	L	L	L	L
0	0	G	W	0	0	G	W	0	0	G	W	0	0	G	W	L	L	L	L
1	H	H	X	1	H	H	X	1	H	H	X	1	H	H	X	L	L	L	H
2	I	Y	2	I	Y	2	I	Y	2	I	Y	2	I	Y	2	L	L	H	L
3	J	Z	3	J	Z	3	J	Z	3	J	Z	3	J	Z	3	L	L	H	H
4	K	-1	4	K	-1	4	K	-1	4	K	-1	4	K	-1	4	L	H	L	L
5	L	(	5	L	(	5	L	(	5	L	(	5	L	(	5	L	H	L	H
6	M	)	6	M	)	6	M	)	6	M	)	6	M	)	6	L	H	H	L
7	N	'	7	N	'	7	N	'	7	N	'	7	N	'	7	L	H	H	H
8	O	"	8	O	"	8	O	"	8	O	"	8	O	"	8	H	L	L	L
9	P	^	9	P	^	9	P	^	9	P	^	9	P	^	9	H	L	L	H
A	Q	.	A	Q	.	A	Q	.	A	Q	.	A	Q	.	A	H	L	H	L
B	R	/	B	R	/	B	R	/	B	R	/	B	R	/	B	H	L	H	H
C	S	?	C	S	?	C	S	?	C	S	?	C	S	?	C	H	H	L	L
D	T	-	D	T	-	D	T	-	D	T	-	D	T	-	D	H	H	L	H
E	U	_	E	U	_	E	U	_	E	U	_	E	U	_	E	H	H	H	L
F	V	=	F	V	=	F	V	=	F	V	=	F	V	=	F	H	H	H	H

[RS485 (synchronous time display) Model] Unit Descriptions

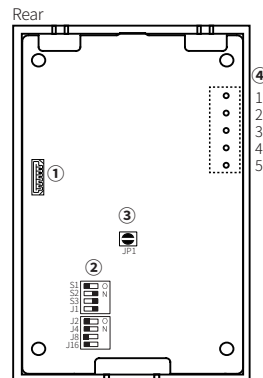
■ 22 mm size



■ 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
S1	24-hour		12-hour ⁰¹⁾		Time display	24-hour (OFF)
	OFF	ON	OFF	ON		
S2	4800	9600	19200	38400	Comm. speed (bps)	38400 (S2 / S3: ON)
	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 J16: 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.

[RS485 (synchronous time display) Model] World Time Zone

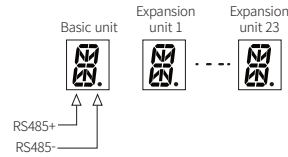
- Display the switch setting OFF=0, ON=1.

J1	J2	J4	J8	J16	Time zone	Region
0	0	0	0	0	UTC-12:00	International Date Line West
1	0	0	0	0	UTC-11:00	Coordinated Universal Time -11
0	1	0	0	0	UTC-10:00	Hawaii
1	1	0	0	0	UTC-09:00	Alaska
0	0	1	0	0	UTC-08:00	Pacific Time(US&Canada), Baja California
1	0	1	0	0	UTC-07:00	Mountain Time(US&Canada), Arizona, Chihuahua, La Paz, Mazatlan
0	1	1	0	0	UTC-06:00	Guadalajara, Mexico City, Monterrey, Saskatchewan, Central America, Central Time(US&Canada)
1	1	1	0	0	UTC-05:00	Eastern Time(US&Canada), Indiana(East), Bogota, Lima, Quito, Rio Branco, Chetumal
0	0	0	1	0	UTC-04:00	Atlantic Time(Canada), Asuncion, Georgetown, La Paz, Manaus, San Juan, Cuiaba
1	0	0	1	0	UTC-03:30	Newfoundland
0	1	0	1	0	UTC-03:00	Greenland, Montevideo, Buenos Aires, Brasilia, Santiago, Salvador, Cayenne, Fortaleza
1	1	0	1	0	UTC-02:00	Coordinated Universal Time -02
0	0	1	1	0	UTC-01:00	Cabo Verde Is., Azores
1	0	1	1	0	UTC 00:00	Coordinated Universal Time, Dublin, Edinburgh, Lisbon, London, Monrovia, Reykjavik, Casablanca
0	1	1	1	0	UTC+01:00	Belgrade, Bratislava, Budapest, Ljubljana, Prague, Brussels, Copenhagen, Madrid, Paris, Windhoek, Sarajevo, Skopje, Warsaw, Zagreb, West Central Africa, Amsterdam, Berlin, Bern, Rome, Stockholm, Vienna
1	1	1	1	0	UTC+02:00	Damascus, E.Europe, Beirut, Athens, Bucharest, Amman, Jerusalem, Istanbul, Cairo, Kaliningrad, Tripoli, Harare, Pretoria, Helsinki, Kyiv, Riga, Sofia, Tallinn, Vilnius
0	0	0	0	1	UTC+03:00	Nairobi, Moscow, St. Petersburg, Volgograd, Minsk, Baghdad, Kuwait, Riyadh
1	0	0	0	1	UTC+03:30	Tehran
0	1	0	0	1	UTC+04:00	Baku, Abu Dhabi, Muscat, Yerevan, Izhevsk, Samara, Tbilisi, Port Louis
1	1	0	0	1	UTC+04:30	Kabul
0	0	1	0	1	UTC+05:00	Ashgabat, Tashkent, Ekaterinburg, Islamabad, Karachi
1	0	1	0	1	UTC+05:30	Sri Jayawardenepura, Chennai, Kolkata, Mumbai, New Delhi
0	1	1	0	1	UTC+05:45	Kathmandu
1	1	1	0	1	UTC+06:00	Novosibirsk, Dhaka, Astana
0	0	0	1	1	UTC+06:30	Yangon(Rangoon)
1	0	0	1	1	UTC+07:00	Bangkok, Hanoi, Jakarta, Krasnoyarsk
0	1	0	1	1	UTC+08:00	Beijing, Chongqing, Hong Kong, Urumqi, Ulaanbaatar, Irkutsk, Kuala Lumpur, Singapore, Taipei, Perth
1	1	0	1	1	UTC+09:00	Seoul, Yakutsk, Osaka, Sapporo, Tokyo
0	0	1	1	1	UTC+09:30	Darwin, Adelaide
1	0	1	1	1	UTC+10:00	Guam, Port Moresby, Magadan, Brisbane, Vladivostok, Canberra, Melbourne, Sydney, Hobart
0	1	1	1	1	UTC+11:00	Solomon Is., New Caledonia, Chokurdakh
1	1	1	1	1	UTC+12:00	Coordinated Universal Time +12, Anadyr, Petropavlovsk-Kamchatsky, Auckland, Wellington, Fiji

[RS485 Input Model] Data Input Method

■ Slave mode (e.g.: DA16)

Communication address	Communication speed	Data bit	Start / Stop bit	Parity bit
1	9600 bps	8 bit	1 bit	None



Byte Counter (no. of data byte)	Data (400001)		Data (400002)		Data (400003)		Error Check (CRC16)	
	High	Low	High	Low	High	Low	Low	High
06 [H]	00 [H]	01 [H]	0D [H]	0A [H]	01 [H]	06 [H]	78 [H]	7C [H]

↓ Zero Blanking ON ↓ ↓ ↓ ↓

- Query (master)

Slave Address	Function	Starting Address		No. of Register	
		High	Low	High	Low
01 [H]	10 [H]	00 [H]	00 [H]	00 [H]	03 [H]

- Response (slave)

Slave Address	Function	Starting Address		No. of Register		Error Check (CRC16)	
		High	Low	High	Low	Low	High
01 [H]	10 [H]	00 [H]	00 [H]	00 [H]	03 [H]	80 [H]	08 [H]

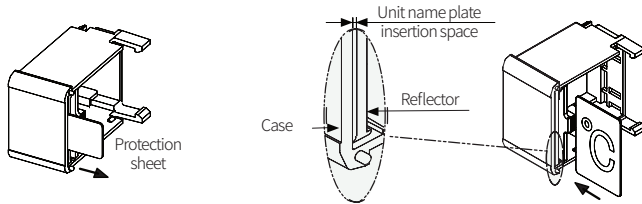
Sold Separately: 16 / 22 mm Unit-display Unit (DU Series)

- 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			
D5	D4	Low 4-bit			
X	X	D3	D2	D1	D0
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 (HXXXXLLL) 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
--	--	---	---	---	--	--	--	---	---	---	---

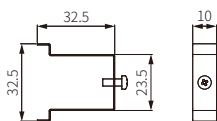
If it does not send no-unit data, it displays data 1 (00123) and data 2 (04567) as one data. Zero Blanking function is applied to data 1 only.

		1	2	3	0	4	5	6	7
--	--	---	---	---	---	---	---	---	---

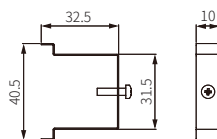
Sold Separately: 16 / 22 mm Middle Bracket (BK-D□R)

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

■ BK-D16R (16 mm)



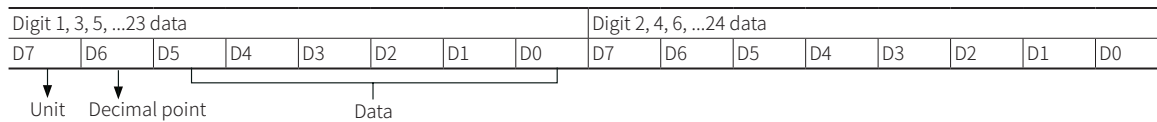
■ BK-D22R (22 mm)



RS485 Communication Modbus Address Mapping

■ Data format

- Decimal point, unit are displayed when 'H'.



■ Product information

No (Address)	Func	R/W	Parameter	Description	Default		Note	
					D□□-□T	DS□-RRT	D□□-□T	DS□-RRT
300001 to 300100	04	R		Reserved				
300101 (0064)	04	R	–	Product number H	–		–	
300102 (0065)	04	R	–	Product number L	–		–	
300103 (0066)	04	R	–	Hardware version	–		–	
300104 (0067)	04	R	–	Software version	–		–	
300105 (0068)	04	R	–	Model name 1	'DS'		DS (A)xx-xT	DSxx-RRT
300106 (0069)	04	R	–	Model name 2	' (A'	'xx'		
300107 (006A)	04	R	–	Model name 3	')x'	'-R'		
300108 (006B)	04	R	–	Model name 4	'x-'	'RT'		
300109 (006C)	04	R	–	Model name 5	'xT'	0		
300110 (006D) to 300114 (0071)	04	R	–	Model name 6 to 10	0		–	

- The below Series are automatically recognized RS485 master mode.

No (Address)	Func	R/W	Parameter	Description	Default							Note
					CT	MP5	MT4	TK	TX	TM	THD	
300105 (0068)	04	R	–	Model name 1	'CT'	'MP'	'MT'	'TK'	'TX'	'TM'	'TH'	Series name
300106 (0069)	04	R	–	Model name 2	'6M'	'5W'	'4W'	'4M'	'4'	'2'	'D'	
300107 (006A)	04	R	–	Model name 3	'-2'	'-4'	'DV'	'14'	'S'	' '	' '	
300108 (006B)	04	R	–	Model name 4	'PT'	'1X'	'-8'	'RR'	'14'	' '	' '	

■ [RS485 communication input model] Display data (Slave mode)

No (Address)	Func	R/W	Parameter	Parameter code	Description	Setting range	Default
400001 (0000)	03/06/16	R/W	–	Zero Blanking	Zero Blanking ON/OFF setting	0: OFF, 1: ON	0
400002 (0001)	03/06/16	R/W	–	Digit 1, 2	1, 2 display data	See the 'Input Data Chart.'	0
400003 (0002)	03/06/16	R/W	–	Digit 3, 4	3, 4 display data		0
400004 (0003)	03/06/16	R/W	–	Digit 5, 6	5, 6 display data		0
400005 (0004)	03/06/16	R/W	–	Digit 7, 8	7, 8 display data		0
400006 (0005)	03/06/16	R/W	–	Digit 9, 10	9, 10 display data		0
400007 (0006)	03/06/16	R/W	–	Digit 11, 12	11, 12 display data		0
400008 (0007)	03/06/16	R/W	–	Digit 13, 14	13, 14 display data		0
400009 (0008)	03/06/16	R/W	–	Digit 15, 16	15, 16 display data		0
400010 (0009)	03/06/16	R/W	–	Digit 17, 18	17, 18 display data		0
400011 (000A)	03/06/16	R/W	–	Digit 19, 20	19, 20 display data		0
400012 (000B)	03/06/16	R/W	–	Digit 21, 22	21, 22 display data		0
400013 (000C)	03/06/16	R/W	–	Digit 23, 24	23, 24 display data		0
400014 to 400050	03/06/16	R/W	Reserved				

■ [RS485 communication input model] Supporting device display data (Master mode)

No (Address)	Func	R/W	Parameter	Series	Description	Setting range		Note		
301004 (03EB)	04	R	—	CT	Current value	Counter: 6-digit -99999 to 99999 / 4-digit -999 to 9999 Timer: within the time range		—		
301005 (03EC)	04	R	—			Decimal point	Counter: Decimal Point Timer: Timer Time_Range			
301006 (03ED)	04	R	—		Setting value (PRESET 2)		Counter: 6-digit -99999 to 99999 / 4-digit -999 to 9999 Timer: within the time range			
301007 (03EE)	04	R	—			Setting value (PRESET 1)	Counter: 6-digit -99999 to 99999 / 4-digit -999 to 9999 Timer: within the time range			
301008 (03EF)	04	R	—		MP5		Current value		-19999 to 99999: normal display > 99999: flashes 99999 < -19999: flashes 19999	
301009 (03F0)	04	R	—			Decimal point			0: 00000, 1: 0000.0, 2: 000.00, 3: 00.000, 4: 0.0000	
301010 (03F1)	04	R	—				MT4		Current value	5 ϵ Rd: -5 to 110 % 5 ϵ RL: -1999 to 9999
301002 (03E9)	04	R	—	Decimal point	In case of 5 ϵ Rd, 0: 0000, 1: 000.0 2: 00.00, 3: 0.000			—		
301003 (03EA)	04	R	—		TK / TX	Current value	-1999 to 9999		—	
301004 (03EB)	04	R	—	Decimal point			0: 0000, 1: 000.0, 2: 00.00, 3: 0.000			
301001 (03E8)	04	R	—			Unit-display	0: °C, 1: °F, 2: %, 3: OFF			
301002 (03E9)	04	R	—	Setting value			-1999 to 9999			
301001 (03E8)	04	R	—		TM	CH1 Current value	-1999 to 9999		—	
301002 (03E9)	04	R	—	CH1 decimal point			0: 0000, 1: 000.0			
301007 (03EE)	04	R	—			CH2 Current value	-1999 to 9999			
301008 (03EF)	04	R	—	CH2 decimal point			0: 0000, 1: 000.0			
301013 (03F4)	04	R	—			CH3 Current value	-1999 to 9999			
301014 (03F5)	04	R	—	CH3 decimal point			0: 0000, 1: 000.0			
301019 (03FA)	04	R	—			CH4 Current value	-1999 to 9999			
301020 (03FB)	04	R	—	CH4 decimal point			0: 0000, 1: 000.0			
300001 (0000)	04	R	—		THD	Temperature value	-1990 to 6000		×100 data	
300002 (0001)	04	R	—	Humidity value		0 to 9990				

• Not using the highest digit

No (Address)	Func	R/W	Parameter	Series	Description	Setting range	Note
301004 (03EB)	04	R	—	CT (use 5-digit)	Current value	5-digit: -19999 to 99999	—
301005 (03EC)	04	R	—		Decimal point	Decimal Point	
301006 (03ED)	04	R	—		Setting value (PRESET 2)	5-digit: -19999 to 99999	
301007 (03EE)	04	R	—		Setting value (PRESET 1)	5-digit: -19999 to 99999	
301008 (03EF)	04	R	—				
301009 (03F0)	04	R	—				
301010 (03F1)	04	R	—	MP5 (use 4-digit)	Current value	4-digit: -1999 to 9999	—
301001 (03E8)	04	R	—		Decimal point	0: 0000, 1: 000.0, 2: 00.00, 3: 0.000	—
301002 (03E9)	04	R	—	MT4 (use 3-digit)	Current value	3-digit: -199 to 999	—
301003 (03EA)	04	R	—		Decimal point	0: 000, 1: 00.0, 2: 0.00	—
301001 (03E8)	04	R	—	TK / TX (use 3-digit)	Current value	3-digit: -199 to 999	—
301002 (03E9)	04	R	—		Decimal point	0: 000, 1: 00.0, 2: 0.00	
301003 (03EA)	04	R	—		Unit-display	0: °C, 1: °F, 2: %, 3: OFF	
301004 (03EB)	04	R	—		Setting value	-1999 to 9999	

■ [RS485 communication input (synchronous time display) model] Time synchronized data

No (Address)	Func	R/W	Parameter	Description	Setting range	Note
400001 (0000)	0x90	W	—	UTC universal time	Hour (High byte), min (Low byte)	—
400002 (0001)	0x90	W	—		Sec (High byte), 1/100 sec (Low byte)	
400003 (0002)	0x90	W	—	Summer time	· Configuration: 1-byte (summer time setting) + 1-byte (summer time setting) · Summer time setting: local code (5-bit)+summer time (3-bit) Summer time +30 min +1 hour -1 hour -30 min 3-bit 001 (1) 010 (2) 011 (3) 100 (4) · Available up to max. 16 locals · For displaying summer time, transfer the local data and summer time data also. E.g.) Seoul +1 hour (0b01001010)	—
400004 (0003)	0x90	W	—			
400005 (0004)	0x90	W	—			
400006 (0005)	0x90	W	—			
400007 (0006)	0x90	W	—			
400008 (0007)	0x90	W	—			
400009 (0008)	0x90	W	—			
400010 (0009)	0x90	W	—			