Autonics

INTELLIGENT DISPLAY UNIT (RS485 Communication Input)

DS/DA-T Series

INSTRUCTION MANUAL



Thank you for choosing our Autonics products. Please read the following safety considerations before use

Safety Considerations

%Please observe all safety considerations for safe and proper product operation to avoid hazards.

※ ↑ symbol represents caution due to special circumstances in which hazards may occur.

∆Warning Failure to follow these instructions may result in serious injury or death.

▲Caution Failure to follow these instructions may result in personal injury or product damage

- 1. 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 fire, personal injury, or economic loss.
- 2. Install on a device panel to use.
- 2. Install on a device panel to use. Failure to follow this instruction may result in fire.
 3. Do not connect, repair, or inspect the unit while connected to a power source. Failure to follow this instruction may result in fire.
 4. Check 'Unit description and function settling' before wiring. Failure to follow this instruction may result in fire.
 5. Do not disassemble or modify the unit.
 Failure to follow this instruction may result in fire.

⚠ Caution

6.7

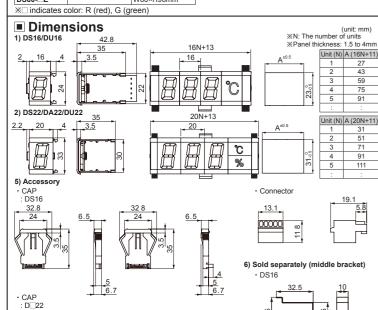
· Ribbon cable

: D_40/D_60

- 1. Use the unit within the rated specifications.
 Failure to follow this instruction may result in fire or product damage.
 2. Use dry cloth to clean the unit, and do not use water or organic solvent.
 Failure to follow this instruction may result in fire.
 3. Do not use the unit in the place where flammable/explosive/corrosive gas, humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present.
 Failure to follow this instruction may result in fire or explosion.
 4. Keep metal chip, dust, and wire residue from flowing into the unit.
 Failure to follow this instruction may result in fire or product damage.

Model

Model	Display method	Size	Model	Model Display method Siz	
DS16-□T		W16×H24mm	DA22-□T		W20×H33mm
DS22-□T	7-segment	W20×H33mm	DA40-□T	16-segment	W40×H60mm
DS40-□T		W40×H60mm	DA60-□T		W60×H96mm
DS60-□T		W60×H96mm			
2) Expansion	unit				
Model	Display method	Size	Model	Display method	Size
DS16-□E		W16×H24mm	DA22-□E		W20×H33mm
DS22-□E	7	W20×H33mm	DA40-□E	16-segment	W40×H60mm
DS40-□E	7-segment	W40×H60mm	DA60-□E		W60×H96mm
DS60_F	7	W60xH06mm		*	



XThe above specifications are subject to change and some models may be discontinued without notice XBe sure to follow cautions written in the instruction manual and the technical descriptions (catalog, ho

• D 22

Specifications

Model	Basic unit	DS16-T	D 22- T	D_40T	D_60T			
iviouei	Expansion unit	DS 16-□E	D 22- E	D□40-□E	D□60-□E			
Input method		RS485 communication (Modbus protocol)						
Display color	r	Red, green (selectable by model)						
Power supply		12-24VDC						
Allowable vo	Itage range	90 to 110% of rated voltage						
Current	Red type	Max. 20mA	Max. 25mA	Max. 55mA	Max. 65mA			
consumption	Green type	Max. 15mA	Max. 20mA	Max. 40mA	Max. 45mA			
Character siz	ze	W9×H16mm	W11.2×H22.5mm	W22.4×H40mm W33 6×H60r				
Display character		Displays 64 types of character and sign (0 to 9, A to Z, 27 signs, dot)						
Max. connection		24 units						
Noise immunity		±500V the square wave noise (pulse width: 1μs) by the noise simulator						
Environ-	Ambient temp.	-10 to 55°C, storage: -25 to 65°C						
ment	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH						
Accessory	Basic unit	Right/Left cap: 1	Right/Left cap: 1 Connector: 1	_				
	Expansion unit	_		Ribbon cable (50mm): 1				
Approval		(E						
Weight ^{**1}	Basic unit	Approx. 52g (approx.12g)	Approx. 58g (approx. 17g)	Approx. 63g (approx. 28g)	Approx. 110g (approx. 60g)			
vveigrit	Expansion unit	Approx. 77g (approx.12g) ^{×2}	Approx. 92g (approx. 17g)**2	Approx. 63g (approx. 28g)	Approx. 110g (approx. 60g)			

- ※1: The weight includes packaging. The weight in parenthesis is for unit only.

 ※2: The weight represents a pack of 3 units. The weight in parenthesis is for 1 unit only.
- ronment resistance is rated at no freezing or condensation.

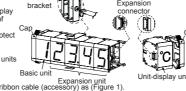
Mode	Slave	Master	Mode	Slave	Master	
Comm. protocol	Modbus RTU with	16-bit CRC	Comm. distance	Max. 800m		
Connection type	RS485		Comm. speed	4800, 9600, 19	200, 38400bps	
Application	Compliance with EIA RS485		Comm. response time	5ms, 20ms	I <i>—</i>	
standard			Start bit	1-bit (fixed)		
Max. connection	31 units (address:	1 unit (address:	Data bit	8-bit (fixed)		
IVIAX. COTTIECTION	01 to 32)	01(fixed))	Parity bit	None (fixed)		
Comm. type	Two-wire half dup	lex	Stop bit	1-bit (fixed)		

Connection of Units

- Connect a basic
- unit from the left and connect the caps the end of right and left. The middle bracket (sold separately) helps to protect
- deflection when connecting over 7 units.

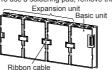
 Use one middle bracket per 7 units.

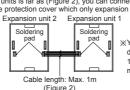
 The basic unit supplies the power for expansion units and the unit-display unit and DATA input.



2) D_40/D_60

) D=40/D=60 Expansion unit
Connect expansion connectors of units using a ribbon cable (accessory) as (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.





You can use both the 7-segment display method model and the 16-segment display method

DU16-G

DU22-G

Tighten it with below 0.5N m.

Removing Protection Cover

To operate the function set switch of the D□40, D□60 models, you should remove the protection cover. Press the connection parts (4-point) of the protection cover at the top/bottom of the

product with a flat-head screwdriver and the protection cover is removed.



Unit-display Unit

This unit is for displaying unit by inserting a name plate. It has only 16, 22 sizes. (sold separately)

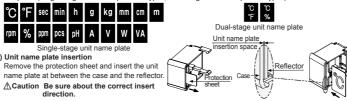
22mm t provides unit-printed name plates as an accessory. You can select the desired unit name plate and insert this plate. (Single-stage unit name plate: 19 types, Dual-stage unit name plate: 2 types)

16mm



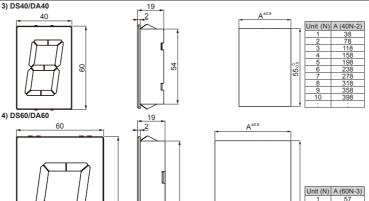
2) Unit name plate insertion Remove the protection sheet and insert the unit

∆Caution Be sure about the correct insert



DU16-R

DU22-R



Unit Description and Function Setting

Only the basic unit model has the function set switch and the input terminal.

The DS16, D\[
\] 22 models have them at the side, and the D\[
\] 40, D\[
\] 60 models have them at the rear.

※Functions are varied by JP1 setting (RS485 Master mode/RS485 Slave mode). • RS485 Slave mode (JP1 = (Open)) No. Switch OFF(■)/ON(■)

RS485 Master mode (JP1 (Short))

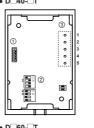
No. Switch OFF(■)/ON(■)

 Expansion connector
 Using for connecting units. ② Function set switches

Refer to ' Connection of units'.



• D 22- T



• D

60T

method Comm.speed selection (bps) Series selection manual setting) Series selection (manual setting) Not using the highest digit J16 No Yes Unit-display unit XRefer to "■ RS485 Master Mode

JP1

Factory default

Comm. response time

Comm. speed

selection (bps)

Comm. address

Function Series setting

(3)Input terminal

No. Code Function

※For D□22-□T connect the connector to input terminal

RS485 Master Mode

Connect the unit and the specified Autonics device which supports Master mode for displaying current value without PC/PLC.

The specified Autonics devices are connected by auto or manual setting.

Display may be varied by connection setting. Refer to the below examples

1) Supported Autonics device for RS485 Master mode

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Item	Series
Temperature controller/sensor	TK, TX, TM2, TM4, THD
Counter/Timer	CT4, CT6
Pulse meter	MP5
Panel meter	MT4

*Connect input terminal 4(A+) and 5(B-) of display unit to RS485 communication output terminal of the dedicated device

2) Example of display n case of manual connection setting, the highest digit may be not used

• CT6 Series (using 6-digit) • CT6 Series (using 5-digit) - 12.3

|2|3.4|°|-|5|6.7|°| ||2|3.4|°| ||6|7.8|°|

12.3 052.7 %

RS485 Slave Mode (Data Input Method)

E.g.: Displays 10H38M (10 hour 38 minute)
 Comm. address: 1, Comm. speed: 9600bps, Data bit: 8-bit, Start/Stop bit: 1-bit, Parity bit: None

 Query (Master) **2** Starting Address No. of Register EX. Slave Function Address High Low High Low 01H 10H 00H 00H 00H RS485--

Byte Data (400001)		Data (400002)		Data (4	00003)	Data (400004)		Error Check (CRC16)		
Counter	High	Low	High	Low	High	Low	High	Low	Low	High
08H	00H	01H	01H	00H	11H	03H	08H	16H	D4H	59H
Response (C	lanking N	NA EN.		B	Ė	à	M		
Slave Address Function		Sta	tarting Address		No	No. of Register		Error	Error Check (CRC16)	
Slave Address	Func	Hig	ıh	Low	Hi	gh	Low	Low		High
01H	10H	001	1	00H	00	Н	04H	C1H		CAH

ININIMUM specifications

Memory 256MB+
Hard disk 1GB+ of available hard disk space

System Pentium III or above
Operations Windows 98/NT/XP/Vista/7/8/10

Comprehensive Device Management Program [DAQMaster]

DAQMaster is able to display I/O source value, unit, and user

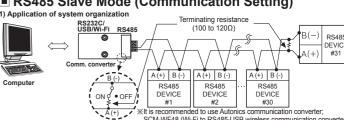
setting value.
For more information, please refer to the DAQMater user
manual.

If there is no input data after supplying the power, the basic unit displays TDU Series High 2-bit Low 4-bit DA Series (16-segment) L H H Upper ON H L ower ON 8 Upper flashes LHHHL b L H H 8 M Ħ, $H \mid L \mid L$ Q H L L H H L H L

RS485 Slave Mode (Input Data Chart)

Blank X1: If this data is not for the unit-display unit, it maintains for

■ RS485 Slave Mode (Communication Setting)



SCM-WF48 (Wi-Fi to RS485-USB wireless communication converter, sold separately), SCM-US481 (USB to RS485 converter, sold separately), SCM-US481 (USB to RS485 converter, sold separately). 2) Modbus Address Mapping Data format Please use twist pair wire for RS485 communication.

No. (Address) Func. , 2 display data B, 4 display data , 6 display data Digit 7, 8 Digit 9, 10 Digit 11, 12 400005 (0004) | 03/06/16 | R/W | ----7. 8 display data 0 display data 12 display data Digit 13, 14
Digit 15, 16
Digit 17, 18
Digit 17, 18
Digit 19 20
Digit 21, 22
Digit 23, 24 16 display data 18 display data 19 20 display data 400012 (000B) 03/06/16 R/W — 400013 (000C) 03/06/16 R/W — 400014 to 400050 03/06/16 R/W Reserve

■ Cautions during Use

- Follow instructions in 'Cautions during Use'.
 Otherwise, It may cause unexpected accidents
- 2. 12-24VDC power supply should be insulated and limited voltage/current or Class 2, SELV power supply
- . Install a power switch or circuit breaker in the easily accessible place for supplying or disconnecting the
- Keen 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.

 Olndoors (in the environment condition rated in 'Specifications')

 Altitude max. 2,000m ③Pollution degree 2 ④Installation category

■ Major Products

Photoelectric Sensors Temperature Controller Temperature/Humidity

Filed Optic Sensors
Joor Sensors
Joor Sensors
Joor Side Sensors
Joor Side Sensors
Sensors
Froximity Sensors
Proximity Sensors
Rotary Encoders
Connector/Sockets
Switching Mode Power Supplic
Control Switches/Lamps/Buzz
I/O Terminal Blocks & Cables
Stepper Motors/Drivers/Motior
Graphio/Logic Panels
Field Network Devices
Lengt Marking System (Fiber

DRW170316AC

H | L | H | H

 $H \mid H \mid L \mid L$ H | H | L | H

| н | н | н |

H | H | H | H