

Autonics INTELLIGENT DISPLAY UNIT (Parallel Input) DS/DA-P 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.
- ※Safety considerations are categorized as follows.
 - 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.
- ※The symbols used on the product and instruction manual represent the following
 - ⚠ symbol represents caution due to special circumstances in which hazards may occur.

Warning

- 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.
- Install on a device panel to use. Failure to follow this instruction may result in fire.
- Do not connect, repair, or inspect the unit while connected to a power source. Failure to follow this instruction may result in fire.
- Check 'Unit description and function setting' before wiring. Failure to follow this instruction may result in fire.
- Do not disassemble or modify the unit. Failure to follow this instruction may result in fire.

Caution

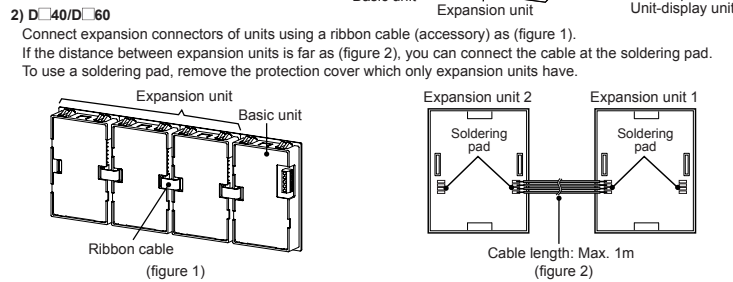
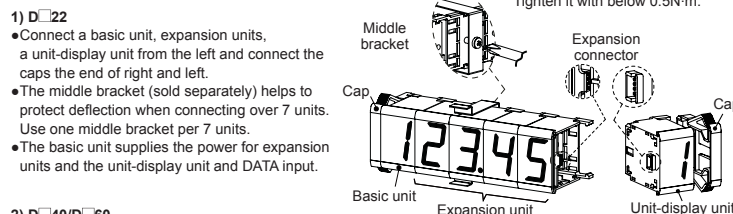
- Use the unit within the rated specifications. Failure to follow this instruction may result in fire or product damage.
- Use dry cloth to clean the unit, and do not use water or organic solvent. Failure to follow this instruction may result in fire.
- Do not use the unit in the place where flammable/explosive/corrosive gas, humidity, direct sunlight, radiant heat, vibration, impact, or salinity may be present. Failure to follow this instruction may result in fire or explosion.
- 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

1) Basic unit					
Model	Display method	Size	Model	Display method	Size
DS22-P	7 Segment	W20×H33mm	DA22-P	16 Segment	W20×H33mm
DS40-P		W40×H60mm	DA40-P		W40×H60mm
DS60-P		W60×H96mm	DA60-P		W60×H96mm
2) Expansion unit					
Model	Display method	Size	Model	Display method	Size
DS22-E	7 Segment	W20×H33mm	DA22-E	16 Segment	W20×H33mm
DS40-E		W40×H60mm	DA40-E		W40×H60mm
DS60-E		W60×H96mm	DA60-E		W60×H96mm

※□ indicates color: R(Red), G(Green)

Connection of Units



Remove of 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 points) of the protection cover at the top/bottom of the product with a flat-head screwdriver and the protection cover is removed.

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

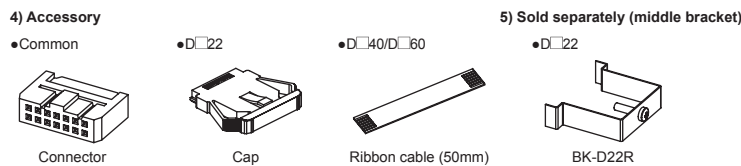
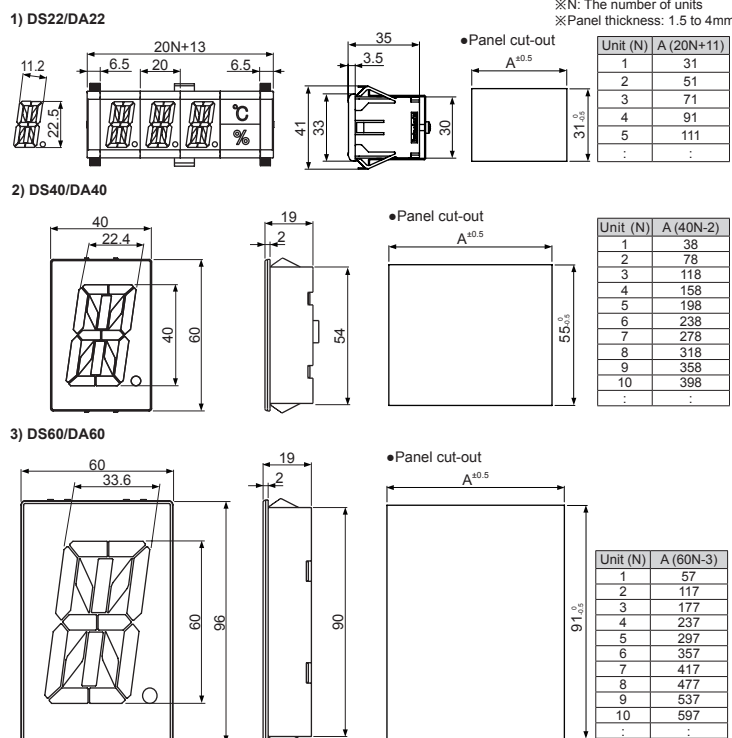
※The above specifications are subject to change and some models may be discontinued without notice. ※Be sure to follow cautions written in the instruction manual and the technical descriptions (catalog, homepage).

Specifications

Model	Basic unit	D□22-P	D□40-P	D□60-P
Expansion unit	D□22-E	D□40-E	D□60-E	
Input method	Parallel (Dynamic Parallel 1, Dynamic Parallel 2)			
Display color	Red, Green (selectable by model)			
Power supply	12-24VDC=			
Allowable voltage range	90 to 110% of rated voltage			
Current consumption	Red type	Max. 25mA	Max. 55mA	Max. 65mA
	Green type	Max. 20mA	Max. 40mA	Max. 45mA
Character size	W11.2×H22.5mm		W22.4×H40mm	
Max. clock ^{※1}	Dynamic Parallel 1: Max. 3kHz Dynamic Parallel 2: Max. 1.5kHz			
Input logic	Selectable positive logic (PNP), negative logic (NPN) (change by function set switch)			
Input resistance	20kΩ			
Input level	High: 4.5-24VDC=, Low: 0-1.2VDC=			
Display character	Displays 64 types of character and sign (0 to 9, A to Z, 27 signs, dot)			
The number of max. multi-stage connection	Dynamic Parallel 1: 6 units (4-bit), 4 units (6-bit) Dynamic Parallel 2: 24 units (6-bit)			
Noise resistance	±500V the square wave noise (pulse width: 1μs) by the noise simulator			
Environment	Ambient temp.	-10 to 55°C, storage: -25 to 65°C		
	Ambient humi.	35 to 85%RH, storage: 35 to 85%RH		
Accessory	Basic unit	Right/Left cap: 1 Connector: 1	Ribbon cable (50mm) : 1	
Protection structure	IP40 (front part)			
Approval	CE			
Weight ^{※2}	Basic unit	Approx. 58g (approx. 17g)	Approx. 63g (approx. 28g)	Approx. 110g (approx. 60g)
	Expansion unit	Approx. 92g (approx. 17g) ^{※3}	Approx. 63g (approx. 28g)	Approx. 110g (approx. 60g)

※1: Max. Clock is for 1:1 of duty ratio (ON, OFF ratio).
 ※2: The weight includes packaging. The weight in parentheses is for unit only.
 ※3: This is 3 units' weight as packaging unit and the weight in parentheses is only unit weight.
 ※Environment resistance is rated at no freezing or condensation.

Dimensions



Unit-display Unit

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

1) Unit name plate type

It 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)

Single-stage unit name plate: C, °F, sec, min, h, g, kg, mm, cm, m, rpm, %, ppm, pcs, pH, A, V, W, VA

Dual-stage unit name plate: C, °F, %

2) Unit name plate insertion

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

Caution: Be sure about the correct insert direction.

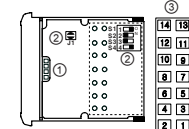
Unit Description and Function Setting

Only the basic unit has the function set switch and the input terminal. The D□22 models have them at the side, and the D□40, D□60 models have them at the rear.

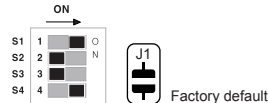
Expansion connector

Using for connecting units. Refer to 'Connection Of Units'.

D□22-P

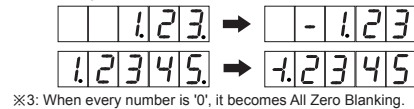


Function set switches

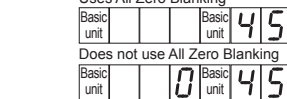


No.	Switch	OFF ()	ON ()	Function
S1	Pos. logic (PNP)	Neg. logic (NPN)	Input logic	
S2	Not used	Used	Zero Blanking	
S3	6-bit	4-bit ^{※1,※2}	Data input bit	
S4	Dynamic 1	Dynamic 2	Dynamic 1/2 selection	
J1			All Zero Blanking ^{※3}	

※1: 4-bit data input is compatible with Autonics pulse meter (MPSY, MPSW) and panel meter (MT4Y, MT4W).
 ※2: 4-bit data input displays "-" or "-"1" when dot display data at the lowest display unit.
 (Minus display function is available when Zero Blanking, or All Zero Blanking is set as ON)



※3: When every number is '0', it becomes All Zero Blanking. E.g.) When displaying 000045 using two basic units,



Input terminals

No.	Dynamic Parallel 1		Dynamic Parallel 2 ^{※1}	
	4-bit data input	6-bit data input	6-bit data input	6-bit data input
1	VCC 12-24VDC	VCC 12-24VDC	VCC 12-24VDC	VCC 12-24VDC
2	GND 0V	GND 0V	GND 0V	GND 0V
3	LE5 LATCH 5	LE3 LATCH 3	LATCH LATCH input	LATCH LATCH input
4	LE4 LATCH 4	LE2 LATCH 2	CLOCK CLOCK input	CLOCK CLOCK input
5	LE3 LATCH 3	LE1 LATCH 1	-	-
6	LE2 LATCH 2	LE0 LATCH 0	UNIT Unit	UNIT Unit
7	LE1 LATCH 1	DP Decimal point	DP Decimal point	DP Decimal point
8	LE0 LATCH 0	D5 2 ² data	D5 2 ² data	D5 2 ² data
9	DP Decimal point	D4 2 ² data	D4 2 ² data	D4 2 ² data
10	D3 2 ² data	D3 2 ² data	D3 2 ² data	D3 2 ² data
11	D2 2 ² data	D2 2 ² data	D2 2 ² data	D2 2 ² data
12	D1 2 ² data	D1 2 ² data	D1 2 ² data	D1 2 ² data
13	D0 2 ² data	D0 2 ² data	D0 2 ² data	D0 2 ² data
14	GND 0V	GND 0V	GND 0V	GND 0V

※1: When selecting Dynamic Parallel 2, 6-bit data input, All Zero blanking OFF are fixed.

Input DATA Chart

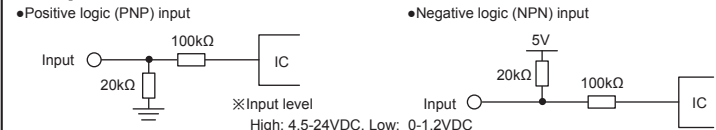
When selecting 4-bit data input, it displays only shaded part (0 to 9, A to F). If there is no input data after supplying the power, the basic unit displays 'P'.

※This chart is for positive logic (PNP).

DS Series (7 Segment)	DA series (16 Segment)				DU Series (unit)				High 2-bit				Low 4-bit				
	D5	D4	D5	D4	D5	D4	D5	D4	D5	D4	D5	D4	D3	D2	D1	D0	
0	0	G	W	0	0	0	G	W	No unit	L	L	L	L	L	L	L	L
1	1	H	X	0	1	1	H	X	Upper-Lower OFF	L	L	L	H	L	L	L	H
2	2	I	Y	0	2	2	I	Y	Upper-Lower ON	L	L	H	L	L	L	H	L
3	3	J	Z	0	3	3	J	Z	Upper ON	L	L	H	H	L	L	H	H
4	4	K	-1	0	4	4	K	-1	Lower ON	L	H	L	L	L	H	L	L
5	5	L	(	0	5	5	L	(	Upper-Lower flashes	L	H	L	H	L	H	L	H
6	6	M	)	0	6	6	M	)	Upper flashes	L	H	H	L	L	H	H	L
7	7	N	.	0	7	7	N	.	Lower flashes	L	H	H	H	L	H	H	H
8	8	O	-	0	8	8	O	-		H	L	L	L	H	L	L	L
9	9	P	^	0	9	9	P	^		H	L	L	H	H	L	L	H
A	A	Q	/	0	A	A	Q	/		H	L	H	L	H	L	H	L
B	B	R	/	0	B	B	R	/		H	L	H	L	H	L	H	L
C	C	S	?	0	C	C	S	?		H	H	L	L	H	H	L	L
D	D	T	-	0	D	D	T	-		H	H	L	H	H	H	L	H
E	E	U	-	0	E	E	U	-		H	H	H	L	H	H	H	L
F	F	V	=	0	F	F	V	=		H	H	H	H	H	H	H	H

※1: If this data is not for the unit-display unit, it maintains former state.

Input Circuit

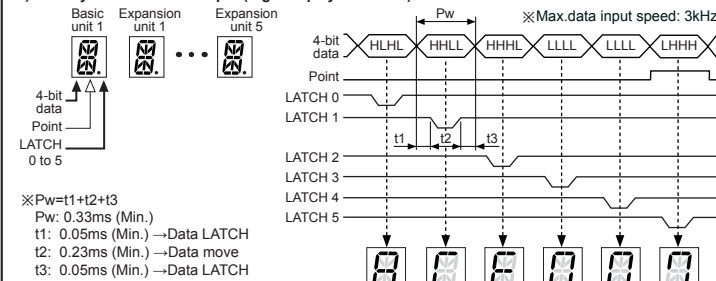


Data Input Method

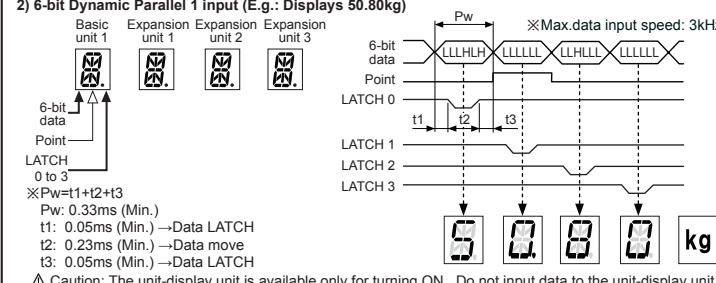
Example of unit organization by data input

Dynamic Parallel 1	4-bit	Connectable 1 basic unit and 5 expansion units (6 digits) E.g.) 10 digits organization: (1 basic unit + 5 expansion units) + (1 basic unit + 3 expansion units)
6-bit	6-bit	Connectable 1 basic unit and 3 expansion units (4 digits) E.g.) 10 digits organization: (1 basic unit + 3 expansion units) × 2 + (1 basic unit + 1 expansion units)
	6-bit	Connectable 1 basic unit and 23 expansion units (24 digits) E.g.) 30 digits organization: (1 basic unit + 23 expansion units) + (1 basic unit + 5 expansion units)

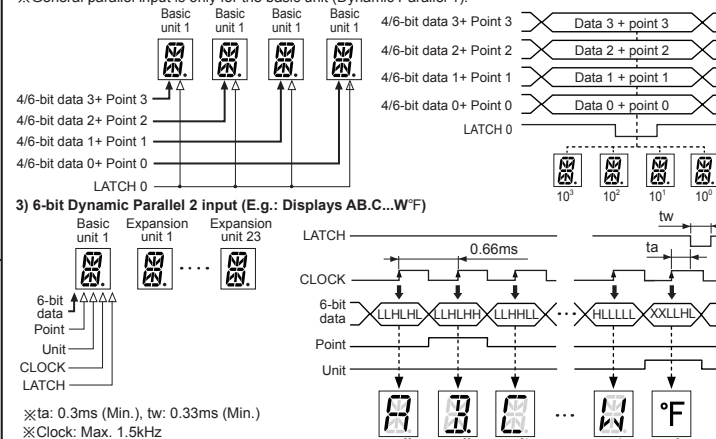
1) 4-bit Dynamic Parallel 1 input (E.g.: Displays ACE000.)



2) 6-bit Dynamic Parallel 1 input (E.g.: Displays 50.80kg)



3) 6-bit Dynamic Parallel 2 input (E.g.: Displays ABC...W°F)



Cautions during Use

- Follow instructions in 'Cautions during Use'. Otherwise, it may cause unexpected accidents.
- 12-24VDC 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.
 - ①Indoors (in the environment condition rated in 'Specifications')
 - ②Altitude max. 2,000m
 - ③Pollution degree 2
 - ④Installation category I

Major Products

- Photoelectric Sensors
- Fiber Optic Sensors
- Door Sensors
- Door Side Sensors
- Area Sensors
- Proximity Sensors
- Pressure Sensors
- Rotary Encoders
- Connectors/Sockets
- Switching Mode Power Supplies
- Control Switches/Lamps/Buzzers
- I/O Terminal Blocks & Cables
- Stepper Motors/Drivers/Motion Controllers
- Graphic/Logic Panels
- Field Network Devices
- Laser Marking System (Fiber, CO₂, Nd: YAG)
- Laser Welding/Cutting System
- Temperature Controllers
- Temperature/Humidity Transducers
- SSRs/Power Controllers
- Counters
- Timers
- Panel Meters
- Tachometer/Pulse (Rate) Meters
- Display Units
- Sensor Controllers

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