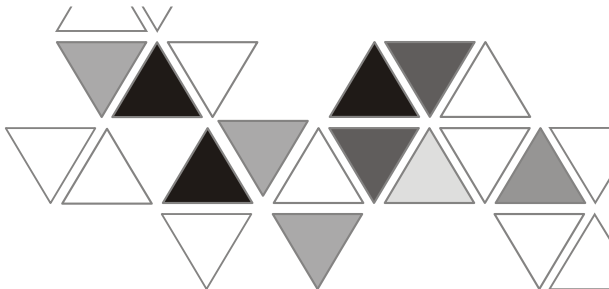


2010-06-15



5011699700-S2S0



DVP-SS2

INSTRUCTION SHEET

安裝說明

安装说明

BİLGİ DÖKÜMANI

- ▲ *Programmable Logic Controller*
- ▲ 可程式控制器
- ▲ 可编程控制器
- ▲ *Programlanabilir Lojik Kontrolör*

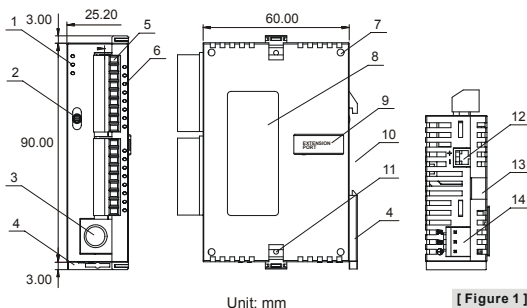


<http://www.delta.com.tw/industrialautomation>

Thank you for choosing Delta DVP-SS2. DVP-SS2 is a 14-point (8DI + 6DO) PLC MPU, offering various instructions and with 8k steps program memory, able to connect to all DVP-S series extension models, including digital I/O (max. 480 I/O points) and analog modules (for A/D, D/A conversion and temperature measurement). 4 groups of high-speed (10kHz) pulse output satisfy all kinds of applications. DVP-SS2 is small in size and easy to install.

- ✦ This instruction sheet only provides introductory information on electrical specifications, general specifications, installation and wiring. For detailed information on programming and instructions, please refer to *"DVP-SS2 Operation Manual: Programming"*. For information about optional peripherals, please see individual product instruction sheet enclosed with DVP-SS2.
- ✦ This is an OPEN TYPE device and therefore should be installed in an enclosure free of airborne dust, humidity, electric shock and vibration. The enclosure should prevent non-maintenance staff from operating the device (e.g. key or specific tools are required to open the enclosure) in case danger and damage on the device may occur.
- ✦ DO NOT connect input AC power supply to any of the I/O terminals; otherwise serious damage may occur. Check all the wiring again before switching on the power. Make sure the ground terminal (⓪) is correctly grounded in order to prevent electromagnetic interference. DO NOT touch any terminals when the power is switched on.

■ Product Profile



[Figure 1]

1. POWER, RUN, ERROR indicator	8. Nameplate
2. RUN/STOP switch	9. Extension port
3. I/O port for program communication (RS-232)	10. DIN rail mounting slot (35mm)
4. DIN rail clip	11. Extension unit clip
5. I/O terminals	12. RS-485 communication port
6. I/O point indicator	13. Mounting rail for extension module
7. Mounting hole for extension module	14. DC power input

■ Electrical Specifications

Model	DVP14SS211R	DVP14SS211T
Item		
Power supply voltage	24VDC (-15% ~ 20%) (with counter-connection protection on the polarity of DC input power) DVPPS01(PS02): input 100-240VAC, output 24VDC/1A(PS02: 2A)	
Inrush current	Max. 7.5A@24VDC	

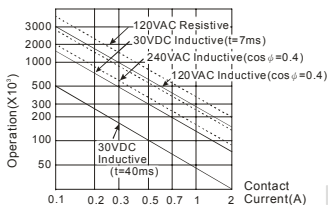
Model Item	DVP14SS211R		DVP14SS211T	
Fuse capacity	1.85A/30VDC, Polyswitch			
Power consumption	1.8W		1.5W	
Power protection	With counter-connection protection on the polarity of DC input power			
Insulation resistance	> 5MΩ (all I/O point-to-ground: 500VDC)			
Noise immunity	ESD: 8kV Air Discharge EFT: Power Line: 2kV, Digital I/O: 1kV, Analog & Comm. I/O: 250kV RS: 26MHz ~ 1GHz, 10V/m			
Grounding	The diameter of grounding wire cannot be smaller than the wire diameter of terminals L and N (All DVP units should be grounded directly to the ground pole).			
Operation / storage	Operation: 0°C ~ 55°C (temp.), 50 ~ 95% (humidity), Pollution degree2 Storage: -25°C ~ 70°C (temp.), 5 ~ 95% (humidity)			
Vibration / shock resistance	International standards: IEC61131-2, IEC 68-2-6 (TEST Fc)/IEC61131-2 & IEC 68-2-27 (TEST Ea)			
Weight (g)	97g		82.5g	

Spec.		Input Point	
Items		24VDC (-15% ~ 20%) single common port input	
Input No.		X0 ~ X3	X4 ~ X7
Input type		DC (SINK or SOURCE)	
Input Current (± 10%)		24VDC, 5mA	
Input impedance		4.7kΩ	
Max. frequency		20kHz	10kHz
Action level	Off→On	> 15VDC	
	On→Off	< 5VDC	
Response time	Off→On	< 10μs	< 20μs
	On→Off	< 20μs	< 50μs
Filter time		Adjustable within 0 ~ 20ms by D1020 (Default: 10ms)	

Spec.		Output Point		
Items		Relay	Transistor	
Output No.		Y0 ~ Y5	Y0 ~ Y3	Y4, Y5
Max. frequency		1Hz	10kHz	1kHz
Working voltage		250VAC, < 30VDC	5 ~ 30VDC ^{#1}	
Max. load	Resistive	1.5A/1 point (5A/COM)	0.5A/1 point (3A/COM)	
	Inductive	^{#2}	15W (30VDC)	
	Lamp	20WDC/100WAC	2.5W (30VDC)	
Response time	Off→On	Approx. 10ms	20μs	100μs
	On→Off		30μs	100μs

#1: UP, ZP must work with external auxiliary power supply 24VDC (-15% ~ +20%), rated consumption approx. 1mA/point.

#2: Life curves



[Figure 2]

■ I/O Configuration

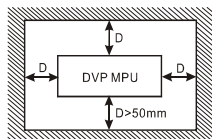
Model	Input		Output		I/O Configuration	
	Point	Type	Point	Type	Relay	Transistor
14SS211R	8	DC (Sink Or Source)	6	Relay	S/S X0 X1 X2 X3 X4 X5 X6 X7	S/S X0 X1 X2 X3 X4 X5 X6 X7
14SS211T				Transistor	C0 Y0 Y1 Y2 ● C1 Y3 Y4 Y5	UP ZP ● Y0 Y1 Y2 Y3 Y4 Y5

Note: The layout of output terminals on DVP-SS2 is different from that on DVP-SS.

■ Dimension & Installation

Please install the PLC in an enclosure with sufficient space around it to allow heat dissipation, See [Figure 3].

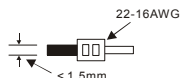
- **Direct Mounting:** Use M4 screw according to the dimension of the product.
- **DIN Rail Mounting:** When mounting the PLC to 35mm DIN rail, be sure to use the retaining clip to stop any side-to-side movement of the PLC and reduce the chance of wires being loose. The retaining clip is at the bottom of the PLC. To secure the PLC to DIN rail, pull down the clip, place it onto the rail and gently push it up. To remove the PLC, pull the retaining clip down with a flat screwdriver and gently remove the PLC from DIN rail.



[Figure 3]

■ Wiring

1. Use 22-16AWG (1.5mm) single or multiple core wire on I/O wiring terminals. See the figure in the right hand side for its specification. PLC terminal screws should be tightened to 1.90 kg-cm (1.65 in-lbs) and please use only 60/75°C copper conductor.
2. DO NOT wire empty terminal. DO NOT place the I/O signal cable in the same wiring circuit.
3. DO NOT drop tiny metallic conductor into the PLC while screwing and wiring. Tear off the sticker on the heat dissipation hole for preventing alien substances from dropping in to ensure normal heat dissipation of the PLC.



◆ Power Supply

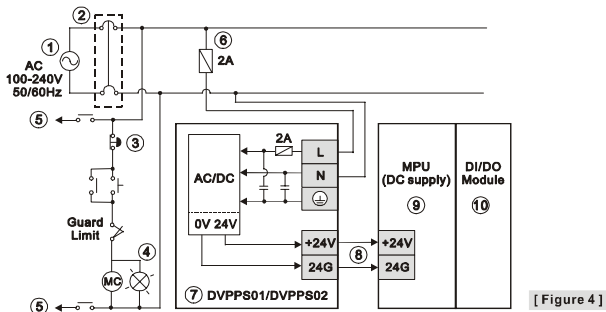
The power input of DVP-SS2 is DC. When operating DVP-SS2, please note the following points:

1. The power is connected to two terminals, 24VDC and 0V, and the range of power is 20.4 ~ 28.8VDC. If the power voltage is less than 20.4VDC, the PLC will stop running, all outputs will go "Off", and the ERROR indicator will start to blink continuously.
2. The power shutdown for less than 10ms will not affect the operation of the PLC. However, the shutdown time that is too long or the drop of power voltage will stop the operation of the PLC, and all outputs will go off. When the power returns to normal

status, the PLC will automatically resume the operation. (Please take care of the latched auxiliary relays and registers inside the PLC when doing the programming).

◆ Safety Wiring

Since DVP-SS2 is only compatible with DC power supply, Delta's power supply modules (DVPPS01/DVPPS02) are the suitable power supplies for DVP-SS2. We suggest you install the protection circuit at the power supply terminal to protect DVPPS01 or DVPPS02. See the figure below.



[Figure 4]

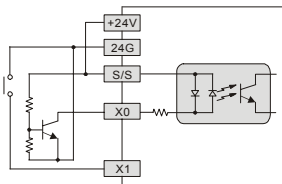
- | | |
|---|----------------------------------|
| ① AC power supply:100 ~ 240VAC, 50/60Hz | ② Breaker |
| ③ Emergency stop: This button cuts off the system power supply when accidental emergency takes place. | |
| ④ Power indicator | ⑤ AC power supply load |
| ⑥ Power supply circuit protection fuse (2A) | ⑦ DVPPS01/DVPPS02 |
| ⑧ DC power supply output: 24VDC, 500mA | ⑨ DVP-PLC (main processing unit) |
| ⑩ Digital I/O module | |

◆ Input Point Wiring

There are 2 types of DC inputs, SINK and SOURCE. (See the example below. For detailed point configuration, please refer to the specification of each model.)

• DC Signal IN – SINK mode

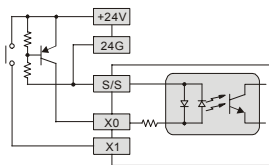
Input point loop equivalent circuit



[Figure 5]

• DC Signal IN – SOURCE mode

Input point loop equivalent circuit

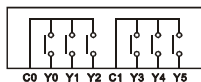


[Figure 6]

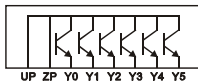
◆ Output Point Wiring

1. DVP-SS2 has two output modules on it, relay and transistor. Be aware of the connection of shared terminals when wiring output terminals.
2. Output terminals, Y0, Y1, and Y2, of relay models use C0 common port; Y3, Y4, and Y5 use C1 common port. See [Figure 7]. When the output points are enabled, their corresponding indicators on the front panel will be on.

3. Output terminals, Y0 ~Y5 of transistor models use UP, ZP common port. See [Figure 8].



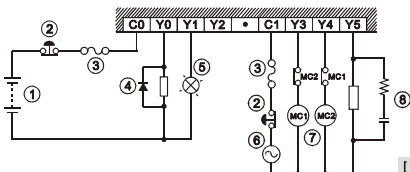
[Figure 7]



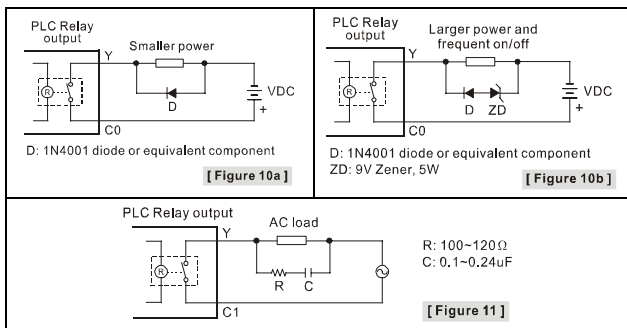
[Figure 8]

4. Isolation circuit: The optical coupler is used to isolate signals between the circuit inside PLC and input modules.

• Relay (R) output circuit wiring



[Figure 9]



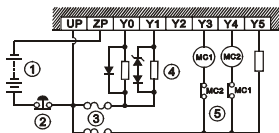
[Figure 10a]

[Figure 10b]

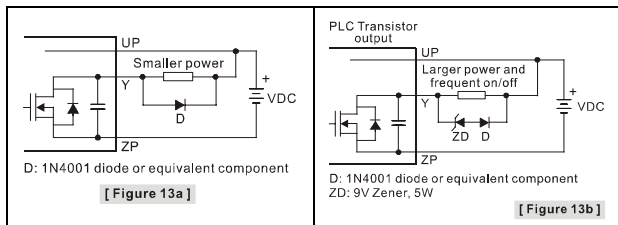
[Figure 11]

- ① DC power supply ② Emergency stop: Uses external switch
- ③ Fuse: Uses 5~10A fuse at the shared terminal of output contacts to protect the output circuit
- ④ Transient voltage suppressor (SB360 3A 60V): Extends the life span of contact.
1. Diode suppression of DC load: Used when in smaller power [Figure 10a]
 2. Diode + Zener suppression of DC load: Used when in larger power and frequent On/Off [Figure 10b]
- ⑤ Incandescent light (resistive load) ⑥ AC power supply
- ⑦ Manually exclusive output: For example, Y3 and Y4 control the forward running and reverse running of the motor, forming an interlock for the external circuit, together with the PLC internal program, to ensure safe protection in case of any unexpected errors.
- ⑧ Absorber: Reduces the interference on AC load [Figure 11]

• Transistor (T) output circuit wiring



[Figure 12]



- ① DC power supply
 - ② Emergency stop
 - ③ Circuit protection fuse
- ④ The output of the transistor model is "open collector". If Y0/Y1 is set to pulse output, the output current has to be bigger than 0.1A to ensure normal operation of the model.
 1. Diode suppression: Used when in smaller power [Figure 13a]
 2. Diode + Zener suppression: Used when in larger power and frequent On/Off [Figure 13b]
 - ⑤ Manually exclusive output: For example, Y3 and Y4 control the forward running and reverse running of the motor, forming an interlock for the external circuit, together with the PLC internal program, to ensure safe protection in case of any unexpected errors.

◆ RS-485 Wiring



- ① Master node
- ② Slave node
- ③ Terminal resistor

Note: 1. Terminal resistors are suggested to be connected to master and the last slave with resistor value of 120Ω.

2. To ensure communication quality, please apply double shielded twisted pair cable (20AWG) for wiring.