

DVP01PU-H2 Position Control Module

Instruction Sheet

Warning

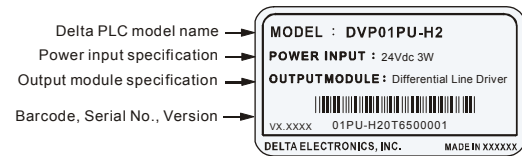
- ✓ This instruction sheet provides information on the installation, wiring and trial operation of DVP01PU-H2. For more detailed information, see "DVP-PLC Application Manual".
- ✓ DO NOT touch any terminal when the power is switched on. Switch off the power before wiring.
- ✓ DVP01PU-H2 is an OPEN-TYPE 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.

1 Introduction

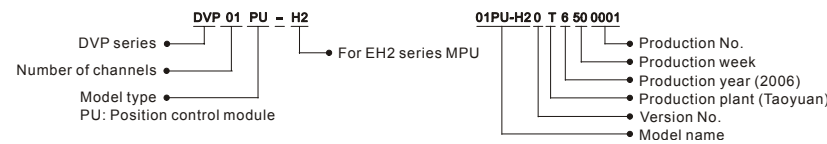
1.1 Model Explanation & Peripherals

❖ DVP01PU-H2 pulse generation unit is mainly applied to the speed or position control of set or servo drive system. The maximum output pulse of DVP01PU-H2 can be up to 200 KPPS and DVP01PU-H2 is built in with various route control modes. Through FROM/TO instructions in DVP-EH2 MPU program, DVP01PU-H2 is able to read and write the data in the module. There are 54 16-bit control registers (CR) in DVP01PU-H2. The 32-bit parameters are composed of 2 continuous CR No.

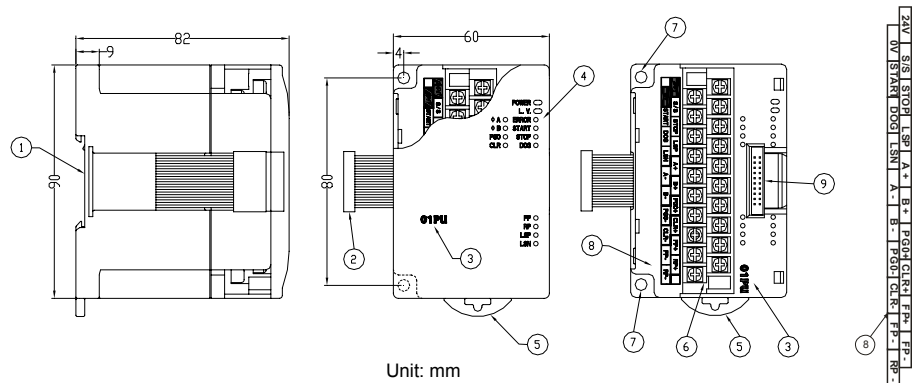
❖ Nameplate Explanation



❖ Model/Serial No. Explanation



1.2 Product Profile (Indicators, Terminal Block, I/O Terminals)



- | | |
|---|---|
| ① DIN rail (35mm) | ⑥ Terminals |
| ② Connection port for extension unit/module | ⑦ Mounting hole |
| ③ Model name | ⑧ I/O terminals |
| ④ Status indicators | ⑨ Connection port for extension unit/module |
| ⑤ DIN rail clip | |

❖ LED Indicators

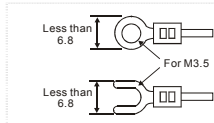
POWER : Power indicator, +5V internal power is normal	START : Starting input indicator
LV : Low voltage indicator (on when the external power supply is less than 19.5V)	STOP : Stopping input indicator
ERROR : Error indicator (On/Off/flash). Flashes when CR#44 is not 0.	DOG : DOG input indicator
	FP : Forward pulse output indicator
	RP : Reverse pulse output indicator

LSP : Right limit input indicator	ΦA : MPG A-phase pulse input indicator
LSN : Left limit input indicator	ΦB : MPG A-phase pulse input indicator
PG0 : Zero signal input indicator	CLR : Clearing signal output indicator

❖ I/O Terminal Signals

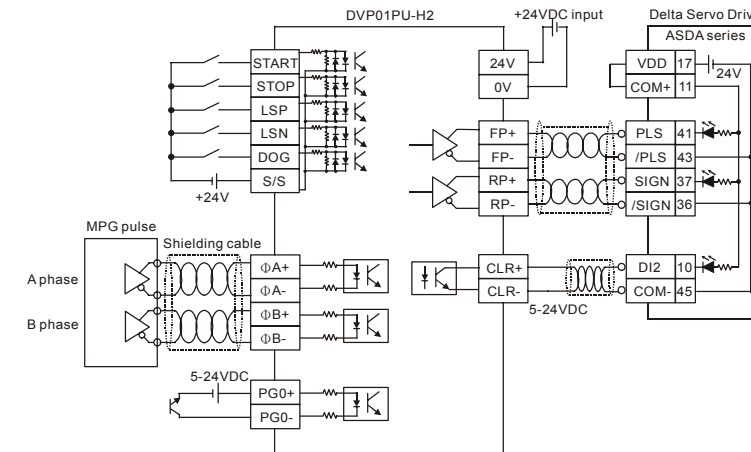
Type	Terminal	Description	Response feature
Power supply	+24V, 0V	Power input: DC24V (-15 ~ +20%) Current consumption: 100mA	-
	START	Starting input	15ms/50ms
Input	STOP	Stopping input	15ms
	LSP/LSN	Right/left limit input	1ms
	ΦA+, ΦA-	MPG A-phase pulse input +, - (differential signal input)	200KHz
	ΦB+, ΦB-	MPG B-phase pulse input +, - (differential signal input)	200KHz
	PG0+, PG0-	Zero signal input +, - (differential signal input)	1ms
	DOG	2 variations according to different operation modes: 1. DOG signal when in zero return 2. Interruption signal inserted in signal-speed or 2-speed sections	1ms
	START	Starting input	15ms/50ms
Output	CLR+, CLR-	Clearing signal (clearing signals in the error counter in servo drive)	130ms
	FP+, FP-	FP/RP mode: forward pulse output; pulse/direction: pulse output; A/B phase: A phase output	200KHz
	RP+, RP-	FP/RP mode: reverse pulse output; pulse/direction: direction output; A/B phase: B phase output	200KHz

1.3 Wiring



1. Use O-type or Y-type terminals for the I/O wiring as shown in the figure. The torque of screw at the PLC terminal should be 5 ~ 8 kg-cm (4.3 ~ 6.9 in-lbs).
2. DO NOT place the wirings of input signals, output signals and power supply in the same wire conduit.
3. Use only 60/75°C copper conductors.

❖ I/O Circuit



2 Specifications

2.1 Functions

Item	Description
Power supply	DC24V (-15% ~ +20%); Current consumption: 140 ± 30mA, supplied by EH2 MPU or other self-prepared power supplier
Max. number of connected modules/axes	8 modules (axes), which will not occupy any I/O points. EH2 series MPU is able to connect to max. a total of 8 extension modules.
Distance	Set up by CR. Range: -2,147,483,648 ~ +2,147,483,647; unit: um, mdeg, 10-4 inch, Pulse; multiplications: 10 ⁰ , 10 ¹ , 10 ² , 10 ³ ; options: absolute position or relative displacement
Speed	Set up by CR. Range: -2,147,483,648 ~ +2,147,483,647 (10 ~ 200KPPS pulse conversion); unit: Pulse/s, cm/min, 10deg/min, inch/min
External output points	Isolated by photocoupler. LED indicators for all I/O signals. Output points FP and RP are differential signal (5V) Output point CLR is transistor NPN open collector (5 ~ 24VDC, less than 20mA)
External input points	Isolated by photocoupler. LED indicators for all I/O signals. Input points START, STOP, LSP, LSN, DOG are contacts or transistor open collector (24VDC ± 10%, 5 ± 1mA) Input points ΦA and ΦB are differential or transistor open collector (5 ~ 24VDC, 6 ~ 15mA) Input points PG0 is differential or transistor open collector (5 ~ 24VDC, 6 ~ 15mA)
Pulse output methods	In 3 modes: Pulse/Dir, FP(CW)/RP(CCW), A/B; by differential output
Position control program & data exchange with MPU	Through FROM/TO instructions in DVP-EH2 MPU program, DVP01PU-H2 is able to read and write the data in the CR. If the data are 32-bit, 2 CRs will be required to process the data. CR#0 ~ CR#53 are the built-in 16-bit control registers.
When connected to DVP-PLC MPU in series	The modules are numbered from 0 to 7 automatically by their distance from MPU. No. 0 is the closest to MPU and No. 7 is the furthest. Maximum 8 modules are allowed to connect to MPU and will not occupy any digital I/O points.

3.2 Others

Environment	
Operation/storage	Operation: 0°C ~ 55°C (temperature); 50 ~ 95% (humidity); pollution degree 2 Storage: -40°C ~ 70°C (temperature); 5 ~ 95% (humidity)
Vibration/shock immunity	International standards: IEC1131-2, IEC 68-2-6 (TEST Fc)/IEC1131-2 & IEC 68-2-27 (TEST Ea)

3 Control Register

DVP01PU-H2 high-speed pulse output/position module																																							
HW	LW	CR#	Address	Latched	Attribute	Content	Setup range																																
	#0	H'4190	✓	R		Model name	Set up by the system. DVP01PU-H2 model code = H'6110																																
	#2	H'4191	✓	R/W		Number of pulses required for rotate motor for 1 revolution (A)	Range: 1 ~ +2,147,483,647 PPS/REV Default = 2,000 pulses/revolution (PLS/REV)																																
	#4	H'4193	✓	R/W		Distance the motor rotates for 1 revolution (B)	Range: 1 ~ +2,147,483,647 unit/REV Default = 1,000 (unit*/REV)																																
	#5	H'4195	✓	R/W		Parameter setting Default = H'0000	<table border="1"> <tr> <td>b15</td><td>b14</td><td>b13</td><td>b12</td><td>b11</td><td>b10</td><td>b9</td><td>b8</td><td>b7</td><td>b6</td><td>b5</td><td>b4</td><td>b3</td><td>b2</td><td>b1</td><td>b0</td> </tr> <tr> <td>STOP input polarity</td><td>START input polarity</td><td>START response time</td><td>Acceleration curve options</td><td>DOG polarity</td><td>DOG trigger mode</td><td>Revolution direction</td><td>Zero return direction</td><td>LSN input polarity</td><td>LSP input polarity</td><td>Pulse output methods</td><td>Multiplication of position data</td><td>Unit setting</td><td></td><td></td><td></td> </tr> </table>	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	STOP input polarity	START input polarity	START response time	Acceleration curve options	DOG polarity	DOG trigger mode	Revolution direction	Zero return direction	LSN input polarity	LSP input polarity	Pulse output methods	Multiplication of position data	Unit setting			
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b1	b0	Unit	Motor unit	Combined unit	Machine unit	b3	b2	Multiplication of position data	b5	b4	Description
0	0	motor	pulse	um		0	0	10 ⁰	0	0	FP + RP
0	1	machine	pulse	m deg		0	1	10 ¹	0	1	Pulse + direction
1	0	Combined	pulse	10 ⁴ inch		1	0	10 ²	1	0	A/B phase pulse
1	1		pulse/sec	cm/min		1	1	10 ³	1	1	
			pulse/sec	10deg/min							
			pulse/sec	inch/min							

bit #	Description
6	b[6] = 0: positive logic enabled. When LSP input signal is ON, LSP signal will be generated. b[6] = 1: negative logic enabled. When LSP input signal is OFF, LSP signal will be generated.
7	b[7] = 0: positive logic enabled. When LSN input signal is ON, LSN signal will be generated. b[7] = 1: negative logic enabled. When LSN input signal is OFF, LSN signal will be generated.
8	Zero return direction: b[8] = 0: decreasing CP value towards zero; b[8] = 1: increasing CP value towards zero.
9	Rotation direction: b[9] = 0: CP value increasing; b[9] = 1: CP value decreasing.
10	Triggering DOG signal: b[10] = 0: triggering rising-edge; b[10] = 1: triggering falling-edge (valid in interrupt single-speed position motion mode and interrupt 2-speed position motion mode)
11	b[11] = 0: positive logic enabled. When DOG input signal is ON, DOG signal will be generated. b[11] = 1: negative logic enabled. When DOG input signal is OFF, DOG signal will be generated.
12	b[12] = 0: adopting trapezoid acceleration curve; b[12] = 1: adopting S acceleration curve.
13	b[13] = 0: 15ms; b[13] = 1: 50ms (input points noise filter)
14	b[14] = 0: positive logic enabled. When START input signal is ON, output will be enabled. b[14] = 1: negative logic enabled. When START input signal is OFF, output will be enabled.
15	b[15] = 0: positive logic enabled. When STOP input signal is ON, output will be disabled. b[15] = 1: negative logic enabled. When STOP input signal is OFF, output will be disabled.

#7	#6	H'4196	✓	R/W	Maximum speed (V _{max})	Range: 0 ~ +2,147,483,647 unit*1 (10 ~ 200K PPS pulse conversion)*2 Default: 200,000 unit*1
#9	#8	H'4198	✓	R/W	Bias speed (V _{bias})	Range: 0 ~ +2,147,483,647 unit*1 (0 ~ 200K PPS pulse conversion)*2 Default: 0 unit*1
#11	#10	H'419A	✓	R/W	JOG speed (V _{JOG})	Range: 0 ~ +2,147,483,647 unit*1 (10 ~ 200K PPS pulse conversion)*2 Default: 5,000 unit*1
#13	#12	H'419C	✓	R/W	Zero return speed (V _{RT})	Range: 0 ~ +2,147,483,647 unit*1 (10 ~ 200K PPS pulse conversion)*2 Default: 50,000 unit*1
#15	#14	H'419E	✓	R/W	Zero return deceleration speed (V _{CR})	Range: 0 ~ +2,147,483,647 unit*1 (10 ~ 200K PPS pulse conversion)*2 Default: 1,000 unit*1
	#16	H'41A0	✓	R/W	The number of PG0 in zero return mode (N)	Range: 0 ~ +32,767 PLS Default: 0 PLS
	#17	H'41A1	✓	R/W	The number of pulses in zero return mode (P)	Range: -32,768 ~ +32,767 PLS Default: 0 PLS
	#18	H'41A2	✓	R/W	Zero return mode (H MODE)	b0: zero return mode b1: detecting DOG falling edge in zero return mode

bit #	Description					
0	b[0] = 0: normal mode; b[0] = 1: overwrite mode					
1	b[1] = 0: detecting DOG falling edge in zero return mode is ON; b[1] = 1: detecting DOG falling edge in zero return mode is OFF.					
#20	#19	H'41A3	✓	R/W	Setup of zero point (HP)	Range: 0 ~ ±999,999 unit*1; Default: 0 unit*1
	#21	H'41A5	✓	R/W	Acceleration time (T _{acc})	Range: 10 ~ +32,767 ms; Default: 100 ms
	#22	H'41A6	✓	R/W	Deceleration time (T _{dec})	Range: 10 ~ +32,767 ms; Default: 100 ms
#24	#23	H'41A7	×	R/W	Target position (I) (P(I))	Range: -2,147,483,648 ~ +2,147,483,647 unit*1 (-2,147,483,648 ~ +2,147,483,647 pulse conversion)*2; default: 0 unit*1
#26	#25	H'41A9	×	R/W	Operation speed (I) (V(I))	Range: -2,147,483,648 ~ +2,147,483,647 unit*1 (10 ~ 200K PPS pulse conversion)*2; default: 1,000 unit*1
#28	#27	H'41AB	×	R/W	Target position (II) (P(II))	Range: -2,147,483,648 ~ +2,147,483,647 unit*1 (-2,147,483,648 ~ +2,147,483,647 pulse conversion)*2; default: 0 unit*1
#30	#29	H'41AD	×	R/W	Operation speed (II) (V(II))	Range: 0 ~ +2,147,483,647 unit*1 (10 ~ 200K PPS pulse conversion)*2; default: 2,000 unit*1

