

DVP01PU-H2 INSTRUCTION SHEET

安裝說明 安装说明

- ▲ **Position Control Module**
- ▲ 定位控制模組
- ▲ 定位控制模块



Warning

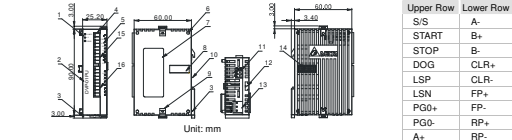
- ✓ This instruction sheet only provides descriptions for installation, wiring and trial run. For further information, please refer to special module of PLC Application Manual.
- ✓ DO NOT touch terminals when power on. Please must power OFF before wiring.
- ✓ This is an OPEN TYPE PLC. The PLC should be kept in an enclosure away from airborne dust, humidity, electric shock risk and vibration. Also, it is equipped with protective methods such as some special tools or keys to open the enclosure in order to prevent hazard to users or damage the PLC.
- ✓ DO NOT connect the AC input power to any of the input/output terminals, or it may damage the PLC. Check all the wiring prior to power up.

Introduction

Model Explanation & and Peripherals

DVP01PU-S (positioning unit) is mainly applied to the speed/position control of step/servo driven system. The maximum output pulse can be up to 200 kPPS, and built-in various route control modes. The DVP-PLC SS/SA/SC/SX/SV series can read/write DVP01PU-S via FROM/TO instructions. There are 49 CRs (Control Register) with 16-bit for each register in DVP01PU-S. The 32-bit data is composed of 2 continuous CR number.

Product Profile & Outline (LED Indicator and Terminal Block)



- Status Indicator (Power, LV and ERROR)
- Terminal
- Mounting hole
- Terminal indicator
- Extension port to connect extension module
- Extension port to connect extension module
- Extension port to connect extension module
- Extension port to connect extension module
- DIN rail track (35mm)
- Clip for combining extension modules
- Clip for combining extension modules
- Clip for combining extension modules
- Lower row terminals

LED Display

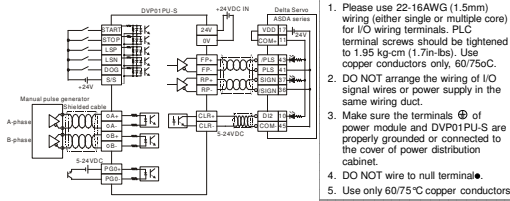
POWER	: Power indicator	+5V internal power	START	: Start input
LV	: Low voltage indicator	STOP	: Stop input	
		lit when external input power is lower than 19.5V	DOG	: DOG (near point signal) input
ERROR	: Error indicator (ON/OFF blinking).	FP	: CW pulse output	
		RP	: CCW pulse output	
LSP	: Right limit input indicator	PA	: A-phase input of manual pulse generator	
LSN	: Left limit input indicator	PB	: B-phase input of manual pulse generator	
PGO	: Zero signal input indicator	CLR	: Output clear signal	

Input/Output Terminal

Description	Terminal name	Content	Response
Power supply	+24V, 0V	Power input/24V DC (-15% ~ +20%) Current consumption 70±10mA; Startup peak current 1.3 A	-

Description	Terminal name	Content	Response	
Input	START	Start input terminal	4ms/12ms	
	STOP	Stop input terminal	4ms	
	LSP/LSN	Limit Stroke of right/left limit	1ms	
	PA-, PA-	A-phase terminal (+, -) of manual pulse generator input (line driver input)	200kHz	
	PB-, PB-	B-phase terminal (+, -) of manual pulse generator input (line driver input)	200kHz	
	PGO+, PGO-	Zero signal input terminal (+, -) (line driver input)	4ms	
	DOG	Offers two different functions depending on operation mode. (1) It is near-point signal in zero return mode. (2) It is start signal on interrupt 1st or interrupt 2nd speed mode.	1ms	
Output	S/S	Signal common terminal of these inputs (START, STOP, DOG, LSP, LSN)	-	
	CLR+, CLR-	Clear signal (clear signal of internal error counter for Servo drive)	4ms	
	FP+, FP-	FP/FP mode: CW pulse output AB-phase mode: A-phase output	I/O mode: Output pulse	200kHz
	RP+, RP-	FP/FP mode: CCW pulse output AB-phase mode: B-phase output	I/O mode: direction output	200kHz

Input/Output Circuit



- Please use 22-16AWG (1.5mm) wiring (single wire or multiple core) for I/O wiring terminals. PLC terminal screws should be tightened to 1.95 kg-cm (1.7in-lbs). Use copper conductors only, 60/75°C.
- DO NOT arrange the wiring of I/O signal wires or power ground connected to the cover of power distribution cabinet.
- Make sure the terminals of power module and DVP01PU-S are properly grounded or connected to the cover of power distribution cabinet.
- DO NOT wire to null terminal.
- Use only 60/75°C copper conductors.

Specifications

Functions

Item	Content
Power supply	24V DC (-15% ~ +20%); Current consumption 70±10mA; Startup peak current 1.3 A
Max. number of connected axes	8 units; (SS/SA/SX/SC/SV series MPU can connect up to 8 extension modules without occupying any I/O)
Distance instruction	Distance value is set by CR 1. Setting range: -2,147,483,648 ~ +2,147,483,647; 2. Selectable unit: um, mdeg, 10" inch, Pulse; 3. Selectable rate: 10", 10", 10", 10"; 4. Selectable position: absolute and relative position instruction
Speed instruction	Speed value is set by CR 1. Setting range: -2,147,483,648 ~ +2,147,483,647 (conversion value of 10 ~ 200 kPPS pulse) 2. Selectable unit: pulses/s, cm/min, 10deg/min, inch/min
External output	Photo coupler is for insulation and there are LED indications for all output/input signals Outputs: FP and RP (line driver output SV) Output: CLR is the type of NPN open collector transistor output (5 ~ 24V DC, less than 20mA) Photo coupler is for insulation and there are LED indications for all output/input signals. Input point: START, STOP, LSP, LSN, DOG/contact or open collector transistor, 24V DC \geq 10%, 5 \pm 1mA Inputs: PA, PB (line driver or open collector transistor, 5 ~ 24V DC, 6 ~ 15mA) Input: PGO (line driver or open collector transistor, 5 ~ 24V DC, 6 ~ 15mA)
External input	Input: PGO (line driver or open collector transistor, 5 ~ 24V DC, 6 ~ 15mA)
Pulse output format	Three selectable modes: Pulse/DF, (FP)CW/RP (CCW), A/B (all modes are line driver output).

Position program & data transmission	CR data can be read/write via FROM/TO instruction of PLC MPU. The 32-bit data is composed of 2 continuous CR number. The range of 16-bit CR is CR#0 ~ CR#48.
Connect to DVP-PLC series	Modules are numbered from 0 ~ 7 with 0 closest and 7 farthest to the MPU. Up to 8 modules can be connected without occupying any digital I/O.

Others

Operation / Storage / Vibration / Shock / Immunity	Environmental specifications
Operation	1. Operation: 0°C ~ 55°C (Temperature), 50 ~ 95% (Humidity), pollution degree 2
Storage	2. Storage: -25°C ~ 70°C (Temperature), 5 ~ 95% (Humidity)
Standard	IEC 61131-2, IEC 68-2-6 (TEST F)/IEC 61131-2 & IEC 68-2-27 (TEST Ea)
Approvals	CE, UL, RoHS

CR (Control Register)

CR No.	Content	Setting Range
#0 H4190	Model No.	System setting, Read-only (The model number of DVP01PU-S is H0110).
#2 #1 H4191	Pulse rate (A)	Range: 1 ~ +2,147,483,647 PPS/REV, factory setting: 2000 Pulse/Revolution (PLS/REV)
#4 #3 H4193	Feed rate (B)	Range: 1 ~ +2,147,483,647 unit/REV, factory setting: 1,000 (unit ¹ /REV) b15 b14 b13 b12 b11 b10 b9 b8 b7 b6 b5 b4 b3 b2 b1 b0
#5 #4 H4195	Parameter Factory setting: H0000	Parameter setting STOP; input polarity START response Acceleration curve options DOG polarity DOG trigger time Pulse direction Zero return direction LSP input polarity LSN input polarity Pulse output format Position rate setting Unit setting
#7 #6 H4196	Maximum speed V _{max}	Range: 0 ~ +2,147,483,647 unit ¹ (10 ~ 200 kPPS) *2 Factory setting: 200,000 unit ¹
#9 #8 H4198	Bias speed	Range: 0 ~ +2,147,483,647 unit ¹ (0 ~ 200 kPPS pulse transfer value) *2 Factory setting: 0 unit ¹
#11 #10 H419A	JOG speed V _{JOG}	Range: 0 ~ +2,147,483,647 unit ¹ (10 ~ 200 kPPS pulse transfer value) *2 Factory setting: 5,000 unit ¹
#13 #12 H419C	Zero return speed V _{RT}	Range: 0 ~ +2,147,483,647 unit ¹ (10 ~ 200 kPPS pulse transfer value) *2 Factory setting: 50,000 unit ¹
#15 #14 H419E	Zero return deceleration speed V _{DR}	Range: 0 ~ +2,147,483,647 unit ¹ (10 ~ 200 kPPS pulse transfer value) *2 Factory setting: 1,000 unit ¹
#16 #14 H41A0	PGO in zero return mode N	Range: 0 ~ +32,767 PLS Factory setting: 0 PLS
#17 #14 H41A1	The number of pulse in zero return mode P	Range: 32~768 ~ +32,767 PLS Factory setting: 0 PLS
#18 #14 H41A2	Zero return mode H Mode	b0: zero return mode b1: enable DOG falling-edge in zero return mode
#20 #19 #14 H41A3	Zero point setting (HP)	Range: 0 ~ -599,999 unit ¹ Factory setting: 0 unit ¹
#21 #14 H41A5	Acceleration time T _{acc}	Range: 10 ~ -32,767 ms Factory setting: 100 ms

CR No.	Content	Setting Range
#22 H41A6	Deceleration time T _{dec}	Range: 10 ~ -32,767 ms ; factory setting: 100 ms
#24 #23 H41A7	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 transfer value) *2; factory setting: 0 unit ¹
#26 #25 H41A9	Running speed (II) V(II)	Range: -2,147,483,648 ~ +2,147,483,647 unit ¹ (10 ~ 200 kPPS pulse transfer value) *2; factory setting: 1,000 unit ¹
#28 #27 H41AB	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 transfer value) *2; factory setting: 0 unit ¹
#30 #29 #14 H41AD	Running speed (III) V(III)	Range: 0 ~ -2,147,483,647 unit ¹ (10 ~ 200 kPPS pulse transfer value) *2 Factory setting: 2,000 unit ¹
#31 H41AF	Running instruction factory setting: H0000	b15 b14 b13 b12 b11 b10 b9 b8 b7 b6 b5 b4 b3 b2 b1 b0 b15: ON/OFF (ON/OFF) b14: ON/OFF (ON/OFF) b13: CLS signal output mode b12: Current position b11: LSP stop mode b10: LSP/LSN stop mode b9: Manual pulse generator range limitation b8: Manual pulse generator mode start b7: LSP/LSN stop mode b6: STDP mode b5: Manual pulse generator input operation b4: Manual pulse generator mode start b3: Interrupt 2 nd speed position mode start b2: Interrupt 1 st speed position mode start b1: Interrupt 1 st speed position mode start
#32 H41B0	Work mode Factory setting: H0001	b15 b14 b13 b12 b11 b10 b9 b8 b7 b6 b5 b4 b3 b2 b1 b0 b15: MASK setting b14: LSP/LSN stop mode b13: Manual pulse generator range limitation b12: Manual pulse generator mode start b11: Interrupt 2 nd speed position mode start b10: Interrupt 1 st speed position mode start b9: Interrupt 1 st speed position mode start b8: MFG input downword b7: MFG input upward b6: Ready passed indication b5: Position specified indication b4: Error occurred flag b3: OP value overflow b2: Zero status is done b1: CW pulse is outputting b0: CCW pulse is outputting
#34 #33 H41B1	Current position CP (PLS)	Range display: -2,147,483,648 ~ +2,147,483,647 PLS Factory setting: 0 PLS
#36 #35 #14 H41B3	Current speed CS (PPS)	Range display: 0 ~ +2,147,483,647 PPS Factory setting: 0 PPS RS-485 communication address setting: setting range 01 ~ 254 Factory setting: K1. Baud rate setting: 4,800, 9,600, 19,200, 38,400, 57,600, and 115,200 bps. ASCII mode data format is 7bit, even bit and 1 stop bit (7 E 1). RTU mode data format is 8bit, even bit and 1 stop bit (8 E 1) b0: 4,800 bps (bit/sec), b1: 9,600 bps (bit/sec) (factory setting) b2: 19,200 bps (bit/sec), b3: 38,400 bps (bit/sec) b4: 57,600 bps (bit/sec), b5: 115,200 bps (bit/sec) b6: reserved; b7: 0 for RTU, 1 for ASCII mode, b8 ~ b15: communication address
#37 H41B5	Communication address and Baud rate setting	b15 b14 b13 b12 b11 b10 b9 b8 b7 b6 b5 b4 b3 b2 b1 b0
#38 H41B6	Execution status factory setting: HXXXX	b15 b14 b13 b12 b11 b10 b9 b8 b7 b6 b5 b4 b3 b2 b1 b0 b15: MFG input downword b14: MFG input upward b13: Ready passed indication b12: Position specified indication b11: Error occurred flag b10: OP value overflow b9: Zero status is done b8: CW pulse is outputting b7: CCW pulse is outputting b6: Status indication
#39 H41B7	Error code	Please refer to "Error Code & Troubleshooting" for detail. Factory setting: H0000
#40 H41B8	Electronic gearing number of MPG input	Please refer to the following explanation Factory setting: H1
#41 H41B9	Electronic gearing denominator of MPG input	Please refer to the following explanation Factory setting: H1
#43 #42 #14 H41BA	Input frequency of manual pulse generator	The input frequency of manual pulse generator Factory setting: 0
#45 #44 H41BC	Accumulated pulse input no. of manual pulse generator	The count value of CW manual pulse input is "+" symbol, on the contrary, the CCW manual pulse input is "-" symbol. And the count value is nothing to do with the ratio setting of manual electronic gearing (CR#40, #41). Factory setting: 0.
#46 #41 H41BE	Response speed of manual pulse generator	Value Response speed ≥ 5 4ms (factory setting) 4 3ms 3 2ms 2 256ms 1 or 0 500ms bit # Status Description b0 START input When START input is On, b0 is On. b1 STOP input When STOP input is On, b1 is On. b2 DOG input When DOG input is On, b2 is On. b3 PGO input When PGO input is On, b3 is On. b4 LSP input When LSP input is On, b4 is On. b5 LSN input When LSN input is On, b5 is On. b6 A phase input When A phase input is On, b6 is On. b7 B phase input When B phase input is On, b7 is On. b8 CLR output When CLR output is On, b8 is On.
#48 #41 H41C0	System version	System version is in hexadecimal. e.g. software V1.00 is H0100.

- Unit setting varies based on b0 and b1 setting of CR#5.
- Use max. Pulse output if upper limit is exceeded. Use min. pulse output if lower limit is exceeded.
- CR#0 ~ CR#48: user can use the corresponding addresses H4190 ~ 41C0 to read/write data via RS-485 communication.
- Baud rate supportive: 4,800, 9,600, 38,400, 57,600, and 115,200 bps.
- Modbus ASCII/RTU: ASCII mode is 7 bits, even bit and 1 stop bit (7 E, 1). RTU mode is 8 bits, even bit and 1 stop bit (8 E, 1).
- Function code: 03H for read data from CR; 06H for write one word in CR; 10H for write many words in CR. It indicates DVP01PU-S hardware malfunction or error parameter setting when error LED flashes. ERR code is recorded in CR#39.

Error Code & Troubleshooting

Error code	Description	Error code	Description
H0000	No error	H0014	JOG speed (V _{JOG}) setting error
H0001	Target position (I) setting error	H0020	CW pulse is forbidden
H0002	Target address (II) setting error	H0021	CCW pulse is forbidden
H0010	Running speed (II) setting error	H0030	Low voltage
H0011	Running speed (I) setting error	H0080	Hardware error in internal memory
H0012	Zero return deceleration (V _{DR}) setting error	H0081	Data write in error in internal memory
H0013	Zero return (V _{RT}) setting error		

注意事項

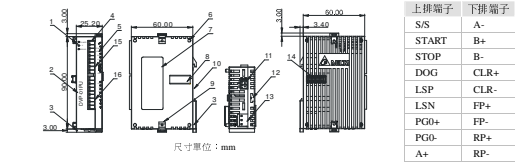
- ✓ 本手冊主要提供 DVP01PU-S 定位模組安裝、配線回路及試機之參考，有關進一步的使用說明，請參考 DVP-PLC 應用技術手冊【特機版組卷】。
- ✓ 請勿在上電時觸碰任何端子，實施配線，務必切斷電源。
- ✓ 本機為開放型 (Open Type) 機殼，因此使用者使用本機時，必須遵守安裝於其防塵、防潮及免受電磁衝擊等意外之配線措施內，另必須具備防護措施 (如: 特殊之工具及防護罩方可打開) 防止非授權人員操作及意外衝擊本體，造成危險及損壞。
- ✓ 交流輸入電源不可直接接輸入/輸出端點，否則將造成嚴重的損壞，請在上電之前再次確認電源配線。

產品簡介

說明及週邊裝置

DVP01PU-S 脈波產生單元主要應用於步進或伺服驅動系統之速度或位置控制，最高 200 kPPS 脈波輸出，內建多種行程控制模式，透過 DVP-PLC SSS/ASX/SC/SV 系列主機數以指令 FROM/TO 來讀寫模組內的資料，模組內含有 49 個 CR 暫存器，每個暫存器為 16 位、32 位元數碼輸出由兩個連續編碼的 CR 所組成。

產品外觀與各部分介紹 (指示燈、端子台)



- 電源、低電壓及運行指示燈
- 機殼型號
- DIN 軌固定扣
- 插子
- 插子指示燈
- 擴充機櫃擴充模組定位孔
- 鉗嘴
- 擴充機櫃擴充模組接口
- 擴充機櫃擴充模組固定扣
- DIN 軌槽 (35mm)
- RS-485 通訊口
- 擴充機櫃擴充模組固定槽
- 電源輸入口
- 擴充機櫃擴充模組接口
- 上排端子
- 下排端子

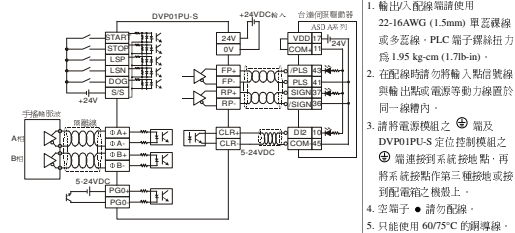
面板指示燈

POWER	: 電源指示燈	內電 +5V 電源正常	START	: 啟動輸入指示燈
LV	: 低電壓指示燈	外電電源輸入小於 19.5V，該指示燈亮	STOP	: 停止輸入指示燈
ERROR	: 錯誤指示燈 (ON/OFF 閃爍)	當 CR#9	DOG	: 近點信號輸入指示燈
		錯誤碼不為零時動作	FP	: 正轉方向的輸出指示燈
LSP	: 右極限輸入指示燈		RP	: 反轉方向的輸出指示燈
LSN	: 左極限輸入指示燈		PA	: 手搖輪 A 相輸入指示燈
PGO	: 零點信號輸入指示燈		PB	: 手搖輪 B 相輸入指示燈
			CLR	: 清除信號輸出指示燈

輸入輸出端子信號

種類	端子	說明	回應特性
電源輸入/供應	+24V, 0V	輸入電源; 24V DC (-15 ~ +20%); 消耗電流 70±10mA, 開關電流 1.3 A	-
輸入	START	啟動輸入	4ms/12ms
	STOP	停止輸入	4ms
	LSP/LSN	右極限輸入/左極限輸入	1ms
	PA-, PA-	手搖輪 A 相輸入 (+, -) (遊戲/信號輸入)	200kHz
	PB-, PB-	手搖輪 B 相輸入 (+, -) (遊戲/信號輸入)	200kHz
	PGO+, PGO-	零點信號輸入 (+, -) (遊戲/信號輸入)	4ms
輸出	DOG	依預設運行模式不同有下列 2 種輸出: 1. 原點復歸時為脈衝信號; 2. 二段速或二段速輸入啟動輸出	1ms
	S/S	輸入點 (START, STOP, DOG, LSP, LSN) 信號共用輸出	4ms
	CLR+, CLR-	清除信號 (Servo 驅動器內部脈衝清除) 清除輸出	-
	FP+, FP-	正轉輸出; 正轉方向脈衝輸出; 脈衝方向; 脈衝輸出; AB 相模式; A 相輸出	200kHz
	RP+, RP-	反轉輸出; 反轉方向脈衝輸出; 脈衝方向; 脈衝輸出; AB 相模式; B 相輸出	200kHz

輸入輸出回路配線



- 輸入/輸出脈衝單線使用 22-16AWG (1.5mm) 單蕊線或更多蕊線，PLC 電子線螺絲扭力為 1.95 kg-cm (1.7in-lb)。
- 在配線時請勿將輸入點信號線與輸出點/電源等導線置於同一線槽內。
- 請將電源線組之 ⑥ 端及 DVP01PU-S 定位控制模組之 ④ 端接接到系統接地點，再將系統接線作第三種接地或接到預設電箱之機殼上。
- 空端子 ● 請勿配線。
- 只能使用 60/75°C 的銅線導線。

規格

功能規格

項目	說明
電源輸入	24V DC (-15% ~ +20%); 消耗電流 70 ±10mA; 開關電流 1.3 A
最大連接軸數	8 台 (軸); (不含任何 I/O 點數, SSS/ASX/SC/SV 系列主機所能直接連接預擴充軸數和為 8 台)
距離設定值由內部暫存器 (CR) 來設定:	
1. 設定值:	-2,147,483,648 ~ +2,147,483,647;
2. 單位可選:	um, mdeg, 10" inch, Pulse;
3. 可選擇倍率:	10", 10", 10", 10";
4. 可選擇絕對位置或相對移動。	
速度值	速度設定值由內部暫存器 (CR) 來設定: 1. 設定值: -2,147,483,648 ~ +2,147,483,647 2. 單位可選: pulses/s, cm/min, 10deg/min, inch/min
全部採用石英晶振作為時鐘; 輸入/輸出信號 LED 為紅、綠及藍等指示	
輸出點:	FP, RP 輸出點脈衝輸出信號 SV 輸出點: CLR 為低電壓 NPN 輸入點 5 ~ 24V DC, 20mA 以下

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