

DVP08TC-H2

Instruction Sheet
Bilgi Dökümanı

安 裝 說 明
安 装 说 明

Temperature Measurement Module

Sıcaklık Ölçüm Modülü

溫度量測模組

温度測量模块

2017-04-24

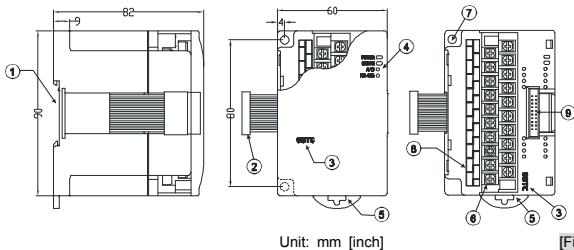


5011687304-8T04

Thank you for choosing DELTA DVP PLC Series. DVP08TC-H2 is able to receive 8 points 0~150mV voltage input of thermocouple temperature sensors (J-type, K-type, R-type, S-type, T-type, E-type, N-type) and convert them into 24-bit digital signals. Besides, through FROM/TO instructions in DVP-EH2 MPU program, the data in DVP08TC-H2 can be read or written. There are 49 16-bit control registers (CR) in it. DVP08TC-H2 displays temperatures in Celsius (resolution: 0.1°C) and Fahrenheit (resolution: 0.1°F).

- EN ✘ DVP08TC-H2 is an OPEN-TYPE device. It should be installed in a control cabinet free of airborne dust, humidity, electric shock and vibration. To prevent non-maintenance staff from operating DVP08TC-H2, or to prevent an accident from damaging DVP08TC-H2, the control cabinet in which DVP08TC-H2 is installed should be equipped with a safeguard. For example, the control cabinet in which DVP08TC-H2 is installed can be unlocked with a special tool or key.
- EN ✘ DO NOT connect AC power to any of I/O terminals, otherwise serious damage may occur. Please check all wiring again before DVP08TC-H2 is powered up. After DVP08TC-H2 is disconnected, Do NOT touch any terminals in a minute. Make sure that the ground terminal (Ⓛ) on DVP08TC-H2 is correctly grounded in order to prevent electromagnetic interference.
- FR ✘ DVP08TC-H2 est un module OUVERT. Il doit être installé que dans une enceinte protectrice (boîtier, armoire, etc.) saine, dépourvue de poussière, d'humidité, de vibrations et hors d'atteinte des chocs électriques. La protection doit éviter que les personnes non habilitées à la maintenance puissent accéder à l'appareil (par exemple, une clé ou un outil doivent être nécessaire pour ouvrir a protection).
- FR ✘ Ne pas appliquer la tension secteur sur les bornes d'entrées/Sorties, ou l'appareil DVP08TC-H2 pourra être endommagé. Merci de vérifier encore une fois le câblage avant la mise sous tension du DVP08TC-H2. Lors de la déconnection de l'appareil, ne pas toucher les connecteurs dans la minute suivante. Vérifier que la terre est bien reliée au connecteur de terre (Ⓛ) afin d'éviter toute interférence électromagnétique.

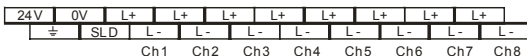
■ Product Profile & Dimension



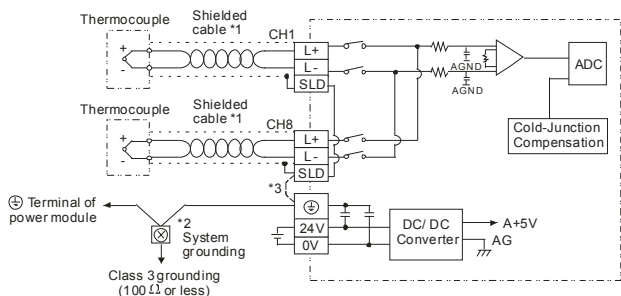
[Figure 1]

1. DIN rail (35mm)	6. Terminals
2. Connection port for extension module	7. Mounting hole
3. Model name	8. I/O terminals
4. POWER, ERROR, A/D indicator	9. Mounting port for extension module
5. DIN rail clip	

■ I/O Terminal Layout



External Wiring



[Figure 2]

*1: The wiring used for analog input should adopt the connection cable or shielding cable of thermocouple temperature sensor J-type / K-type / R-type / S-type / T-type / E-type / N-type and should be separated from other power cable or wirings that may cause interference. The screw torque of the terminal should be 1.95 kg-cm (1.7 in-lbs).

*2: Please connect the ⊕ terminal on both the power module and DVP08TC-H2 to the system earth point and ground the system contact or connect it to the cover of power distribution cabinet.

*3: Terminal SLD is a grounding location for noise suppression.

Note: DO NOT wire empty terminal. Use 60/75°C copper conductor only.

Specifications

Temperature measurement module	Explanation
Power supply voltage	24VDC (20.4VDC ~ 28.8VDC) (-15% ~ +20%)
Analog output channel	8 channels/module
Applicable sensor types	J-type, K-type, R-type, S-type, T-type, E-type, N-type Floating thermocouple sensor, 0~150mV, ±150mV voltage input.
Range of input temp.	See the table in section Temperature / Digital Curve
Range of digital conversion	See the table in section Temperature / Digital Curve
Resolution	24 bits (0.1°C/0.1°F)
Overall accuracy	±0.6% when in full scale within the range of 0 ~ 55°C, 32 ~ 131°F
Response time	200ms × the number of channels
Isolation	Isolation between digital circuits and analog circuits. Isolation between channels. 500VDC between digital circuits and Ground 500VDC between analog circuits and Ground 500VDC between analog circuits and digital circuits 500VDC between 24VDC and Ground
Digital data format	15 significant bits out of 16 bits are available; in 2's complement
Average function	Yes; available for setting up in CR#10 ~ CR#17; range: K1 ~ K100
Self-diagnosis	Upper and lower bound detection/channel
Communication mode (RS-485)	Supported, including ASCII/RTU mode. Default communication format: 9600, 7, E, 1, ASCII; refer to CR#36 for details on the communication format. Note1: RS-485 cannot be used when connected to CPU series PLCs. Note2: The communication format can only be changed via RS-485

Temperature measurement module	Explanation
	and cannot be changed via the instruction TO while connected to CPU series PLCs. Refer to Communication Format Setup in the appendix of the DVP programming manual for more details.
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.

■ Other Specifications

Power supply	
Max. rated power consumption	24VDC (20.4VDC ~ 28.8VDC) (-15% ~ +20%), 2.5W supplied by external power.
Environment	
Operation/storage	1. Operation: -10°C~ 60°C (Temperature), 5 ~ 95% (Humidity), pollution degree 2 2. Storage: -25°C~ 70°C (Temperature), 5 ~ 95% (Humidity)
Vibration/shock immunity	Standard: IEC61131-2, IEC 68-2-6 (TEST Fc)/IEC61131-2 & IEC 68-2-27 (TEST Ea)

■ Control Register

CR#	Attrib.		Register name	Explanation
#0	O	R	Model name	Set up by the system. DVP08TC-H2 model code = H'6804 User can read the model name from the program and see if the extension module exists.
#1	O	R	Firmware version	Displaying the current firmware version in hex; e.g. version 1.01 is indicated as H'0101
#2	O	R/W	CH1 thermocouple type	There are 10 setting options for the thermocouple type, shown in hexadecimal digits: H0000: J-type; H0001: K-type; H0002: R-type; H0003: S-type; H0004: T-type; H0005: E-type; H0006: N-type; H0007: 0~150mV; H0008: ±150mV; HFFFF: channel closed; Default value: H'0000; For options not listed above are reserved for system use.
#3	O	R/W	CH2 thermocouple type	
#4	O	R/W	CH3 thermocouple type	
#5	O	R/W	CH4 thermocouple type	
#6	O	R/W	CH5 thermocouple type	
#7	O	R/W	CH6 thermocouple type	
#8	O	R/W	CH7 thermocouple type	
#9	O	R/W	CH8 thermocouple type	
#10	O	R/W	CH1 average time	
#11	O	R/W	CH2 average time	
#12	O	R/W	CH3 average time	
#13	O	R/W	CH4 average time	
#14	O	R/W	CH5 average time	
#15	O	R/W	CH6 average time	
#16	O	R/W	CH7 average time	
#17	O	R/W	CH8 average time	
#18	O	R/W	Temperature unit	K0 = centigrade, K1 = Fahrenheit. Default =K0
#19	X	R	Average temp. measured at CH1	Average temperature measured at

CR#	Attrib.		Register name	Explanation
#20	X	R	Average temp. measured at CH2	CH1~CH8. The average temperature measured at CH1~CH8 obtained from the average time settings in CR#10 ~ CR#17.
#21	X	R	Average temp. measured at CH3	
#22	X	R	Average temp. measured at CH4	
#23	X	R	Average temp. measured at CH5	
#24	X	R	Average temp. measured at CH6	
#25	X	R	Average temp. measured at CH7	
#26	X	R	Average temp. measured at CH8	
#27	O	R/W	OFFSET value of CH1	
#28	O	R/W	OFFSET value of CH2	
#29	O	R/W	OFFSET value of CH3	
#30	O	R/W	OFFSET value of CH4	
#31	O	R/W	OFFSET value of CH5	
#32	O	R/W	OFFSET value of CH6	
#33	O	R/W	OFFSET value of CH7	
#34	O	R/W	OFFSET value of CH8	
#35	O	R/W	Communication address setting	For setting RS-485 communication address. Range: 01 ~ 254, Default = K1.
#36	O	R/W	Communication speed (baud rate) setting	For setting up communication speed: 9,600/19,200/ 38,400/57,600/115,200 bps. ASCII data format: 7-bit, even bit, 1 stop bit (7, E, 1). RTU data format: 8-bit, even bit, 1 stop bit (8, E, 1). Default: H'0002. b0: reserved b1: 9,600 bps (default). b2: 19,200 bps. b3: 38,400 bps. b4: 57,600 bps. b5: 115,200 bps. b14: High/low bit exchange of CRC checksum (only valid in RTU mode) b15: Switch between ASCII/RTU modes; 0 = ASCII mode (default)
#37	X	R	Error status	Register for storing all error status. See the table of error status for more information.
#38~47	X	R	Reserved	—
Symbols: O: Latched. X: Non-latched. R: Able to read data by FROM instruction or RS-485 communication. W: Able to write data by TO instruction or RS-485 communication.				

※ The corresponding parameter address H'4200 ~ H'4232 are for users to read/write data by RS-485 communication. When using RS-485, the user has to separate the module with MPU first.

- Function: H'03 (read register data); H'06 (write 1 word datum into register); H'10 (write many word data into register).
- Latched CR should be written by RS-485 communication to stay latched. CR will not be latched if written by MPU through TO/DTO instruction.

CR#37: Error status (see the table below)

Error status	Value	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Abnormal power supply	K1 (H'1)	0	0	0	0	Reserved		0	0	0	0	0	0	0	0	0	1
Abnormal module	K2 (H'2)	0	0	0	0			0	0	0	0	0	0	0	0	0	1

Error status	Value	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0
Abnormal digital range of Ch1	K4 (H'4)	0	0	0	0			0	0	0	0	0	0	0	1	0	0
Abnormal digital range of Ch2	K8 (H'8)	0	0	0	0			0	0	0	0	0	0	1	0	0	0
Abnormal digital range of Ch3	K16 (H'10)	0	0	0	0			0	0	0	0	0	1	0	0	0	0
Abnormal digital range of Ch4	K32 (H'20)	0	0	0	0			0	0	0	0	1	0	0	0	0	0
Abnormal digital range of Ch5	K64 (H'40)	0	0	0	0			0	0	0	1	0	0	0	0	0	0
Abnormal digital range of Ch6	K128 (H'80)	0	0	0	0	Reserved		0	0	1	0	0	0	0	0	0	0
Abnormal digital range of Ch7	K256 (H'100)	0	0	0	0			0	1	0	0	0	0	0	0	0	0
Abnormal digital range of Ch8	K512 (H'200)	0	0	0	0			1	0	0	0	0	0	0	0	0	0

Note: Each error status is determined by the corresponding bit (b0 ~ b11) and there may be more than 2 errors occurring at the same time. 0 = normal; 1 = error.

[Table 1]

■ Adjust D/A Conversion Curve

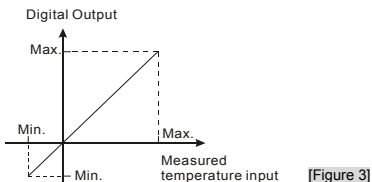
CR#								Latched		Register content	Explanation
CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8				
#100	#115	#130	#145	#160	#175	#190	#205	O	R/W	Temperature SV	Default = K0.
#101	#116	#131	#146	#161	#176	#191	#206	O	R/W	Sampling time (s)	Range: K1 ~ K30 (s). Default = K2.
#102	#117	#132	#147	#162	#177	#192	#207	O	R/W	K _p	Default = K121.
#103	#118	#133	#148	#163	#178	#193	#208	O	R/W	K _i	Integral constant, Default = K2,098.
#104	#119	#134	#149	#164	#179	#194	#209	O	R/W	K _d	Derivative constant, Default = K-29.
#105	#120	#135	#150	#165	#180	#195	#210	O	R/W	Default I value	Range: K-32768 ~ K32767. Default = K0. Only valid when PID Stop->Run.
#106	#121	#136	#151	#166	#181	#196	#211	X	R	limit of I value (Low word)	Current accumulated offset value. Default = K0.
#107	#122	#137	#152	#167	#182	#197	#212	X	R	limit of I value (High word)	
#108	#123	#138	#153	#168	#183	#198	#213	O	R/W	Preheating temperature setting	Range: K-32768 ~ K32767. Default = K0.
#109	#124	#139	#154	#169	#184	#199	#214	O	R/W	Preheating output setting	Range: K0 ~ K1,000 (unit: 0.1%). Default= K500.
#110	#125	#140	#155	#170	#185	#200	#215	O	R/W	Output percentage (%)	Range: K0 ~ K1,000 (Unit: 0.1%). Default = K0.
#111	#126	#141	#156	#171	#186	#201	#216	X	R	Output width (ms)	Width of control output, Default = K0.
#112	#127	#142	#157	#172	#187	#202	#217	X	R	Output cycle (ms)	Cycle of control output, Default = K0.

CR#								Latched	Register content	Explanation	
CH1	CH2	CH3	Ch4	Ch5	Ch6	Ch7	Ch8				
#220								X	R/W	Temperature control _Run/Stop	b0: Ch1 b3: Ch4 b6: Ch7 b1: Ch2 b4: Ch5 b7: Ch8 b2: Ch3 b5: Ch6 0: Stop, 1: Run, Default = K0
#221								X	R/W	PID Auto Tune	b0: Ch1 b3: Ch4 b6: Ch7 b1: Ch2 b4: Ch5 b7: Ch8 b2: Ch3 b5: Ch6 0: Disabled, 1: Auto-tuning Default = K0
#222								X	R/W	Heating/cooling control	b0: Ch1 b3: Ch4 b6: Ch7 b1: Ch2 b4: Ch5 b7: Ch8 b2: Ch3 b5: Ch6 0: Heater, 1: Cooler Default = K0
#223								X	R/W	Preheating function	b1: Ch2 b4: Ch5 b7: Ch8 b2: Ch3 b5: Ch6 b3: Ch4 b6: Ch7 0: Disable, 1: Enable Default = K0

※ The CR# listed above do not support RS-485 read/write .

■ Temperature / Digital Curve

°C/°F Temperature Measurement Mode:



Thermo-couple	Range of input temperature		Range of digital conversion	
	Min. (°C / °F)	Max. (°C / °F)	Min. (°C / °F)	Max. (°C / °F)
J type	-100°C / -148°F	1,150°C / 2,102°F	K-1,000 / K-1,480	K11,500 / K21,020
K type	-100°C / -148°F	1,350°C / 2,462°F	K-1,000 / K-1,480	K13,500 / K24,620
R type	0°C / 32°F	1,750°C / 3,182°F	K0 / K320	K17,500 / K31,820
S type	0°C / 32°F	1,750°C / 3,182°F	K0 / K320	K17,500 / K 31,820
T type	-150°C / -238°F	390°C / 734°F	K-1,500 / K-2,380	K3,900 / K7,340
E type	-150°C / -238°F	980°C / 1,796°F	K-1,500 / K-2,380	K9,800 / K17,960
N type	-150°C / -238°F	1,280 °C / 2,336°F	K-1,500 / K-2,380	K12,800 / K23,360
0 ~ 150mV	0mV	150mV	H0	HFFFF
±150mV	-150mV	150mV	K-30000	K30000

DVP08TC-H2 溫度量測模組可接受外部 8 點 0~150mV 電壓輸入(熱電耦溫度感測器 J, K, R, S, T, E, N 型)，將之轉換成 24 位元之數位信號。透過 DVP-PLC EH2 主機程式以指令 FROM/TO 來讀寫模組內之資料，模組內具有 49 個 CR (Control Register) 暫存器，每個暫存器有 16 bits。使用者可選擇攝氏溫度或華氏溫度，攝氏溫度輸入解析度為 0.1°C，華氏溫度輸入解析度為 0.1°F。

- ✦ 本使用說明書僅提供電氣規格、功能規格、安裝配線部份說明，其它詳細之程式設計及指令說明請見 DVP-PLC 應用技術手冊【程式篇】，選購之週邊裝置詳細說明請見該產品隨機手冊或 DVP-PLC 應用技術手冊【特殊模組篇】。
- ✦ 本機為開放型 (OPEN TYPE) 機殼，因此使用者使用本機時，必須將之安裝於具防塵、防潮及免於電擊/衝擊意外之外殼配線箱內。另必須具備保護措施(如：特殊之工具或鑰匙才可打開)防止非維護人員操作或意外衝擊本體，造成危險及損壞。
- ✦ 交流輸入電源不可連接於輸入/出信號端，否則可能造成嚴重損壞，請在上電之前再次確認電源配線。請勿在上電時觸摸任何端子。本體上之接地端子 Ⓣ 務必正確的接地，可提高產品抗雜訊能力。
- ✦ 由測溫體到溫調本體的配線路請用最短距離配線，為了避免雜訊及誘導的影響儘可能將電源線和負載配線分開。
- ✦ 感測器熱電耦型式設定 CR#2~CR#9，如設定錯誤會造成量測重大誤差。

■ 產品外觀尺寸與部位介紹

詳細圖示請參閱英文版 Figure1，單位：mm [inch]。

1. DIN 軌槽 (35mm)	6. 端子
2. 擴充模組連接口	7. 固定孔
3. 機種名稱	8. 端子配置
4. 電源、錯誤及轉換指示燈	9. 擴充模組連接座
5. DIN 軌固定扣	

■ 輸入/輸出端子台配置

請參閱英文版之端子配置圖，在此語言版本省略說明。

■ 外部配線

詳細圖示請參閱英文版 Figure 2，在此語言版本省略說明。

- 註 1：使用於類比輸入的配線應採用 J / K / R / S / T / E / N 型熱電耦溫度感測器之連接線或隔離線且應與其他電源線或可能引起雜訊之接線分開。端子螺絲扭力為 1.95 kg-cm (1.7 in-lbs)。
- 註 2：請將電源模組之 Ⓣ 端及 DVP08TC-H2 溫度量測模組之 Ⓣ 端連接到系統接地點，再將系統接點作第三種接地或接到配電箱之機殼上。
- 註 3：如果雜訊過大，請將 SLD 及接地端子連接。
- 注意：空端子請勿配線。只能使用 60/75°C 的銅導線。

■ 電氣規格

溫度量測模組	規格說明
電源電壓	24VDC (20.4VDC ~ 28.8VDC) (-15% ~ +20%)
類比訊號輸出通道	8 通道/台
適合感測器形式	J-type, K-type, R-type, S-type, T-type, E-type, N-type 熱電耦感測器，0~150mV, ±150mV 電壓輸入
輸入溫度範圍	請參閱溫度數位特性曲線附表
數位轉換範圍	請參閱溫度數位特性曲線附表
解析度	24 bits (0.1°C/0.1°F)

溫度量測模組	規格說明
總和精密度	±0.6% 在 (0 ~ 55°C, 32 ~ 131°F) 範圍內滿刻度時
響應時間	200ms × 通道數
隔離方式	類比電路與數位電路之間隔離，通道間隔離 數位電路與接地之間：500VDC 類比電路與接地之間：500VDC 類比電路與數位電路之間：500VDC 24VDC 與接地之間：500VDC
數位資料格式	16 位元二補數，有效位 15 bits。
平均功能	有 (CR#10 ~ CR#17 可設定，範圍 K1 ~ K100)
自我診斷功能	上下極限偵測/通道
通訊模式 (RS-485)	有，包含 ASCII/RTU 模式，預設通訊格式為 9600, 7, E, 1, ASCII，詳細通訊格式請參考 CR#36 說明。 備註 1：當與 PLC 主機串接時，RS-485 通訊無法使用。 備註 2：其通訊格式只可採用 RS-485 通訊修改，無法由主機連接模組方式，下達 TO 指令修改，詳細內容請參考 DVP 程式篇手冊之附錄“模組通訊設定”篇。
與 DVP-PLC 主機串接說明	模組編號以靠近主機之順序自動編號由 0 到 7，最大可連接 8 台且不佔用數位 I/O 點數

■ 其他規格

電源規格	
額定最大消耗功率	直流 24VDC (20.4VDC ~ 28.8VDC) (-15% ~ +20%), 2.5W, 由外部電源供應
環境規格	
操作/儲存環境	1. 操作：-10°C ~ 60°C (溫度)，5 ~ 95% (濕度)，污染等級 2 2. 儲存：-25°C ~ 70°C (溫度)，5 ~ 95% (濕度)
耐振動衝擊	國際標準規範 IEC61131-2, IEC 68-2-6 (TEST Fc)/IEC61131-2 & IEC 68-2-27 (TEST Ea)

■ 控制暫存器 CR

CR#	保持型	暫存器名稱	說明
#0	O R	機種型號	系統內定，DVP08TC-H2 機種編碼 = H'6804 使用者可在程式中將此機種型號讀出，以判斷擴充模組是否存在。
#1	O R	韌體版本	16 進制，顯示目前韌體版本，如 1.01 則 H'0101
#2	O R/W	CH1 熱電耦型式	此設定值為熱電耦型式選擇參數，其支援的設定值共有 10 種，詳細說明如下(以 16 進制數值表示)： H0000：J-type。H0001：K-type。 H0002：R-type。H0003：S-type。 H0004：T-type。H0005：E-type。 H0006：N-type。H0007：0~150mV。 H0008：±150mV。HFFFF：關閉通道。 出廠設定值為 H'0000。 以上未被列出之設定值為系統保留參數，使用者不可使用。
#3	O R/W	CH2 熱電耦型式	
#4	O R/W	CH3 熱電耦型式	
#5	O R/W	CH4 熱電耦型式	
#6	O R/W	CH5 熱電耦型式	
#7	O R/W	CH6 熱電耦型式	
#8	O R/W	CH7 熱電耦型式	
#9	O R/W	CH8 熱電耦型式	
#10	O R/W	CH1 平均次數	通道 CH1 ~ CH8 訊號的平均次數設定，可設定範圍 K1 ~ K100。 出廠設定值為 K10。
#11	O R/W	CH2 平均次數	
#12	O R/W	CH3 平均次數	
#13	O R/W	CH4 平均次數	

CR#	保持型	暫存器名稱	說明
#14	O	R/W	CH5 平均次數
#15	O	R/W	CH6 平均次數
#16	O	R/W	CH7 平均次數
#17	O	R/W	CH8 平均次數
#18	O	R/W	溫度單位設定 K0 = 攝氏, K1 = 華氏。出廠設定值為 K0
#19	X	R	CH1 量測平均值
#20	X	R	CH2 量測平均值
#21	X	R	CH3 量測平均值
#22	X	R	CH4 量測平均值
#23	X	R	CH5 量測平均值
#24	X	R	CH6 量測平均值
#25	X	R	CH7 量測平均值
#26	X	R	CH8 量測平均值
#27	O	R/W	CH1 OFFSET 值
#28	O	R/W	CH2 OFFSET 值
#29	O	R/W	CH3 OFFSET 值
#30	O	R/W	CH4 OFFSET 值
#31	O	R/W	CH5 OFFSET 值
#32	O	R/W	CH6 OFFSET 值
#33	O	R/W	CH7 OFFSET 值
#34	O	R/W	CH8 OFFSET 值
#35	O	R/W	通訊位址設定 設定 RS-485 通訊位址, 設定範圍 1 ~ 254。 出廠設定值為 K1。
#36	O	R/W	通訊速率設定 設定通訊速率, 共有 9,600/19,200 bps/38,400 bps/57,600 bps/115,200 bps 五種。ASCII 模式資料格式固定為 7-bit、偶位元、1 stop bit (7, E, 1), RTU 模式資料格式固定為 8-bit、偶位元、1 stop bit (8, E, 1)。出廠設定值為 H'0002。 b0: 保留。 b1: 9,600 bps (位元/秒) (出廠設定值)。 b2: 19,200 bps (位元/秒)。 b3: 38,400 bps (位元/秒)。 b4: 57,600 bps (位元/秒)。 b5: 115,200 bps (位元/秒)。 b14: CRC 檢查碼高低位交換(僅 RTU 模式有效)。 b15: ASCII/RTU 模式切換, 0 為 ASCII (出廠設定值)。
#37	X	R	錯誤狀態 儲存所有錯誤狀態的資料暫存器, 詳細內容請參照錯誤信息表。
#38~47	X	R	保留 —

符號定義: O: 停電保持型。X: 非停電保持型。
R: 可使用 FROM 指令讀取資料, 或利用 RS-485 通訊讀取資料。
W: 可使用 TO 指令寫入資料, 或利用 RS-485 通訊寫入資料。

- ※ CR#0 ~ CR#34: 對應之參數位址 H'4200 ~ H'4232 可提供使用者利用 RS-485 通訊來讀寫資料。由 RS-485 通訊時須先將模組與主機分離。
1. 功能碼 (Function): H'03 讀出暫存器資料。H'06 寫入一個 word 資料至暫存器。H'10 寫入多筆 word 資料至暫存器。
 2. 停電保持型的 CR 須由 RS-485 通訊來寫入才有停電保持的功能, 如果是由主機以 TO/DTO 指令寫入則不會有停電保持的功能。

■ PID 控制暫存器範圍

CR#								保持型	暫存器名稱	說明	
CH1	CH2	CH3	CH4	Ch5	Ch6	Ch7	Ch8				
#100	#115	#130	#145	#160	#175	#190	#205	O	R/W	溫度設定值	出廠值為 K0
#101	#116	#131	#146	#161	#176	#191	#206	O	R/W	取樣時間 (s)	可設定範圍 K1 ~ K30。出廠值為 K2。
#102	#117	#132	#147	#162	#177	#192	#207	O	R/W	K_p	出廠值為 K121
#103	#118	#133	#148	#163	#178	#193	#208	O	R/W	K_i	積分常數，出廠值為 K2,098。
#104	#119	#134	#149	#164	#179	#194	#209	O	R/W	K_d	微分常數，出廠值為 K-29。
#105	#120	#135	#150	#165	#180	#195	#210	O	R/W	積分量預設值	可設定範圍 K-32768 ~ K32767。出廠值為 K0。PID Stop->Run 有效
#106	#121	#136	#151	#166	#181	#196	#211	X	R	積分量 (Low word)	目前累積的偏差量。出廠值為 K0。
#107	#122	#137	#152	#167	#182	#197	#212	X	R	積分量 (High word)	
#108	#123	#138	#153	#168	#183	#198	#213	O	R/W	預熱溫度設定	可設定範圍 K-32768 ~ K32767。出廠值為 K0。
#109	#124	#139	#154	#169	#184	#199	#214	O	R/W	預熱輸出設定	可設定範圍 K0 ~ K1,000 (單位：0.1%)。出廠值為 K500。
#110	#125	#140	#155	#170	#185	#200	#215	O	R/W	輸出%	可設定範圍 K0 ~ K1,000 (單位：0.1%)。出廠值為 K0。
#111	#126	#141	#156	#171	#186	#201	#216	X	R	輸出寬度(ms)	控制輸出寬度。出廠值為 K0。
#112	#127	#142	#157	#172	#187	#202	#217	X	R	輸出周期(ms)	控制輸出周期。出廠值為 K0。
#220								X	R/W	溫度控制_Run/Stop	b0: Ch1 b3: Ch4 b6: Ch7 b1: Ch2 b4: Ch5 b7: Ch8 b2: Ch3 b5: Ch6 0 : Stop, 1 : Run 出廠值為 K0
#221								X	R/W	PID Auto Tune	b0: Ch1 b3: Ch4 b6: Ch7 b1: Ch2 b4: Ch5 b7: Ch8 b2: Ch3 b5: Ch6 0 : 不動作, 1 : Auto-tuning。 出廠值為 K0
#222								X	R/W	加熱器/ 冷卻器	b0: Ch1 b3: Ch4 b6: Ch7 b1: Ch2 b4: Ch5 b7: Ch8 b2: Ch3 b5: Ch6 0 : 加熱器, 1 : 冷卻器。 出廠值為 K0
#223								X	R/W	預熱功能	b1: Ch2 b4: Ch5 b7: Ch8 b2: Ch3 b5: Ch6 b3: Ch4 b6: Ch7 0 : Disable, 1 : Enable。 出廠值為 K0

※CR#100~ CR#223 不支援 RS-485 通訊讀寫。

■ 溫度/數位特性曲線

請參閱英文版說明。

DVP08TC-H2 温度测量模块可接受外部 8 点 0~150mV 电压输入(热电偶温度传感器 J, K, R, S, T, E, N 型), 将之转换成 24 位的数字信号。透过 DVP-PLC EH2 主机程序以指令 FROM/TO 来读写模块内的数据, 模块内具有 49 个 CR (Control Register) 寄存器, 每个寄存器有 16 bits。使用者可选择摄氏温度或华氏温度, 摄氏温度输入分辨率为 0.1°C, 华氏温度输入分辨率为 0.1°F。

- ✎ 本使用说明书仅提供电气规格、功能规格、安装配线部份说明, 其它详细的程序设计及指令说明请见 DVP-PLC 应用技术手册【程序篇】, 选购之外围装置详细说明请见该产品随机手册或 DVP-PLC 应用技术手册【特殊模块篇】。
- ✎ 本机为开放型 (OPEN TYPE) 机壳, 因此使用者使用本机时, 必须将之安装于具防尘、防潮及免于电击/冲击意外的外壳配线箱内。另必须具备保护措施(如: 特殊的工具或钥匙才可打开)防止非维护人员操作或意外冲击本体, 造成危险及损坏。
- ✎ 交流输入电源不可连接于输入 / 出信号端, 否则可能造成严重损坏, 请在上电之前再次确认电源配线。请勿在上电时触摸任何端子。本体上的接地端子 Ⓧ 务必正确的接地, 可提高产品抗噪声能力。
- ✎ 由测温体到温调本体的配线路请用最短距离配线, 为了避免噪声及诱导的影响尽可能将电源线和负载配线分开。
- ✎ 传感器热电偶型式设定, 请检查 CR#2~CR#9, 如设定错误会造成测量重大误差。

■ 产品外观尺寸与部位介绍

详细图示请参阅英文版 Figure1, 单位: mm [inch]。

1. DIN 轨槽 (35mm)	6. 端子
2. 扩充模块连接口	7. 固定孔
3. 机种名称	8. 端子配置
4. 电源、错误及转换指示灯	9. 扩充模块连接座
5. DIN 轨固定扣	

■ 输入 / 输出端子台配置

详细图示请参阅英文版的端子配置图, 在此语言版本省略说明。

■ 外部配线

详细图示请参阅英文版 Figure2, 在此语言版本省略说明。

注 1: 使用于模拟输入的配线应采用 J / K / R / S / T / E / N 型热电偶温度传感器的连接线或隔离线且应与其它电源线或可能引起噪声的接线分开。端子螺丝扭力为 1.95 kg-cm (1.7 in-lbs)。

注 2: 请将电源模块的 Ⓧ 端及 DVP08TC-H2 温度测量模块的 Ⓧ 端连接到系统接地点, 再将系统接点作第三种接地或接到配电箱的机壳上。

注 3: 如果噪声过大, 请将 SLD 及接地端子连接。

注意: 空端子请勿配线。只能使用 60/75°C 的铜导线。

■ 电气规格

温度测量模块	规格说明
电源电压	24VDC (20.4VDC ~ 28.8VDC) (-15% ~ +20%)
模拟讯号输出信道	8 通道 / 台
适合感应器形式	J-type, K-type, R-type, S-type, T-type, E-type, N-type 热电偶传感器, 0~150mV, ±150mV 电压输入
输入温度范围	请参阅温度/数字特性曲线附表
数字转换范围	请参阅温度/数字特性曲线附表

温度测量模块	规格说明
分辨率	24 bits (0.1°C/0.1°F)
总和精密度	±0.6% 在 (0 ~ 55°C, 32 ~ 131°F) 范围内满刻度时
响应时间	200ms × 通道数
隔离方式	模拟电路与数字电路之间隔离, 信道间隔离 数字电路与接地之间: 500VDC 模拟电路与接地之间: 500VDC 模拟电路与数字电路之间: 500VDC 24VDC 与接地之间: 500VDC
数字数据格式	16 位二补码, 有效位 15 bits。
平均功能	有 (CR#10 ~ CR#17 可设定, 范围 K1 ~ K100)
自我诊断功能	上下极限侦测 / 通道
通讯模式 (RS-485)	有, 包含 ASCII/RTU 模式, 默认通讯格式为 9600, 7, E, 1, ASCII, 详细通讯格式请参考 CR#36 说明。 备注 1: 当与 PLC 主机串接时, RS-485 通讯无法使用。 备注 2: 其通讯格式只可采用 RS-485 通讯修改, 无法由主机连接模块方式, 下达 TO 指令修改, 详细内容请参考 DVP 程序篇手册之附录“模块通信设置”篇。
与 DVP-PLC 主机串接说明	模块编号以靠近主机的顺序自动编号由 0 到 7, 最大可连接 8 台且不占用数字 I/O 点数。

■ 其它规格

电源规格	
额定最大消耗功率	直流 24VDC (20.4VDC ~ 28.8VDC) (-15% ~ +20%), 2.5W, 由外部电源供应
环境规格	
操作/储存环境	1. 操作: -10°C ~ 60°C (温度), 5 ~ 95% (湿度), 污染等级 2 2. 储存: -25°C ~ 70°C (温度), 5 ~ 95% (湿度)
耐振动冲击	国际标准规范 IEC61131-2, IEC 68-2-6 (TEST Fc)/IEC61131-2 & IEC 68-2-27 (TEST Ea)

■ 控制寄存器 CR

CR#	保持型	寄存器名称	说明	
#0	O R	机种型号	系统内定, DVP08TC-H2 机种编码 = H'6804 使用者可在程序中将此机种型号读出, 以判断扩充模块是否存在。	
#1	O R	韧体版本	16 进制, 显示目前韧体版本, 如 1.01 则 H'0101	
#2	O R/W	CH1 热电偶型式	此设定值为热电偶型式选择参数, 其支持的设定值共有 10 种, 详细说明如下 (以 16 进制数值表示): H0000: J-type. H0001: K-type. H0002: R-type. H0003: S-type. H0004: T-type. H0005: E-type. H0006: N-type. H0007: 0~150mV. H0008: ±150mV. HFFFF: 关闭通道。 出厂设定值为 H'0000。 以上未被列出之设定值为系统保留参数, 用户不可使用。	
#3	O R/W	CH2 热电偶型式		
#4	O R/W	CH3 热电偶型式		
#5	O R/W	CH4 热电偶型式		
#6	O R/W	CH5 热电偶型式		
#7	O R/W	CH6 热电偶型式		
#8	O R/W	CH7 热电偶型式		
#9	O R/W	CH8 热电偶型式		
#10	O R/W	CH1 平均次数		信道 CH1 ~ CH8 讯号的平均次数设定, 可设定范围 K1 ~ K100。 出厂设定值为 K10。
#11	O R/W	CH2 平均次数		
#12	O R/W	CH3 平均次数		

CR#	保持型	寄存器名称	说明	
#13	O	R/W	CH4 平均次数	
#14	O	R/W	CH5 平均次数	
#15	O	R/W	CH6 平均次数	
#16	O	R/W	CH7 平均次数	
#17	O	R/W	CH8 平均次数	
#18	O	R/W	温度单位设定	K0 = 摄氏, K1 = 华氏。出厂设定值为 K0
#19	X	R	CH1 测量平均值	信道 CH1 ~ CH8 测量平均值显示。 内容值为通道 CH1 ~ CH8 测量温度信号以 CR#10 ~ CR#17 设定的平均次数所取得的平均值。
#20	X	R	CH2 测量平均值	
#21	X	R	CH3 测量平均值	
#22	X	R	CH4 测量平均值	
#23	X	R	CH5 测量平均值	
#24	X	R	CH6 测量平均值	
#25	X	R	CH7 测量平均值	
#26	X	R	CH8 测量平均值	
#27	O	R/W	CH1 OFFSET 值	通道 CH1 ~ CH8 提供使用者自行调整的 OFFSET 可调范围: -1,000 ~ +1,000 出厂设定值为 K0。 OFFSET 值定义: 模块测量值 - OFFSET 值 = 实际显示值。
#28	O	R/W	CH2 OFFSET 值	
#29	O	R/W	CH3 OFFSET 值	
#30	O	R/W	CH4 OFFSET 值	
#31	O	R/W	CH5 OFFSET 值	
#32	O	R/W	CH6 OFFSET 值	
#33	O	R/W	CH7 OFFSET 值	
#34	O	R/W	CH8 OFFSET 值	
#35	O	R/W	通讯地址设定	设定 RS-485 通讯地址, 设定范围 1 ~ 254。 出厂设定值为 K1。
#36	O	R/W	通讯速率设定	设定通讯速率, 共有 9,600/19,200 bps/38,400 bps/57,600 bps/115,200 bps 五种。ASCII 模式数据格式固定为 7-bit、偶位、1 stop bit (7, E, 1), RTU 模式数据格式固定为 8-bit、偶位、1 stop bit (8, E, 1)。出厂设定值为 H'0002。 b0: 保留。 b1: 9,600 bps (位/秒) (出厂设定值)。 b2: 19,200 bps (位/秒)。 b3: 38,400 bps (位/秒)。 b4: 57,600 bps (位/秒)。 b5: 115,200 bps (位/秒)。 b14: CRC 检查码高低位交换(仅 RTU 模式有效)。 b15: ASCII/RTU 模式切换, 0 为 ASCII (出厂设定值)。
#37	X	R	错误状态	储存所有错误状态的数据寄存器, 详细内容请参照错误信息表。
#38~47	X	R	保留	—
符号定义: O: 停电保持型。X: 非停电保持型。 R: 可使用 FROM 指令读取数据, 或利用 RS-485 通讯读取数据。 W: 可使用 TO 指令写入数据, 或利用 RS-485 通讯写入数据。				

※ CR#0 ~ CR#34: 对应的参数地址 H'4200 ~ H'4232 可提供使用者利用 RS-485 通讯来读写数据。由 RS-485 通讯时须先将模块与主机分离。

- 功能码 (Function): H'03 读出寄存器数据。H'06 写入一个 word 数据至寄存器。H'10 写入多笔 word 数据至寄存器。

2. 停电保持型的 CR 须由 RS-485 通讯来写入才有停电保持的功能,如果是由主机以 TO/DTO 指令写入则不会有停电保持的功能。

CR#37: 错误状态值请参照错误状态表 (请参阅英文版 Table 1)

■ PID 控制寄存器范围

CR#								保持型		寄存器名称	说明
CH1	CH2	CH3	CH4	Ch5	Ch6	Ch7	Ch8				
#100	#115	#130	#145	#160	#175	#190	#205	O	R/W	温度设定值	出厂值为 K0
#101	#116	#131	#146	#161	#176	#191	#206	O	R/W	取样时间 (s)	可设定范围 K1 ~ K30。出厂值为 K2。
#102	#117	#132	#147	#162	#177	#192	#207	O	R/W	K _p	出厂值为 K121
#103	#118	#133	#148	#163	#178	#193	#208	O	R/W	K _i	积分常数, 出厂值为 K2,098。
#104	#119	#134	#149	#164	#179	#194	#209	O	R/W	K _d	微分常数, 出厂值为 K-29。
#105	#120	#135	#150	#165	#180	#195	#210	O	R/W	积分量默认值	可设定范围 K-32768 ~ K32767。出厂值为 K0。PID Stop->Run 有效
#106	#121	#136	#151	#166	#181	#196	#211	X	R	积分量 (Low word)	目前累积的偏差量。出厂值为 K0。
#107	#122	#137	#152	#167	#182	#197	#212	X	R	积分量 (High word)	
#108	#123	#138	#153	#168	#183	#198	#213	O	R/W	预热温度设定	可设定范围 K-32768 ~ K32767。出厂值为 K0。
#109	#124	#139	#154	#169	#184	#199	#214	O	R/W	预热输出设定	可设定范围 K0 ~ K1,000 (单位: 0.1%)。出厂值为 K500。
#110	#125	#140	#155	#170	#185	#200	#215	O	R/W	输出%	可设定范围 K0 ~ K1,000 (单位: 0.1%)。出厂值为 K0。
#111	#126	#141	#156	#171	#186	#201	#216	X	R	输出宽度(ms)	控制输出宽度。出厂值为 K0。
#112	#127	#142	#157	#172	#187	#202	#217	X	R	输出周期(ms)	控制输出周期。出厂值为 K0。
#220								X	R/W	温度控制_Run/Stop	b0: Ch1 b3: Ch4 b6: Ch7 b1: Ch2 b4: Ch5 b7: Ch8 b2: Ch3 b5: Ch6 0: Stop, 1: Run 出厂值为 K0
#221								X	R/W	PID Auto Tune	b0: Ch1 b3: Ch4 b6: Ch7 b1: Ch2 b4: Ch5 b7: Ch8 b2: Ch3 b5: Ch6 0: 不动作, 1: Auto-tuning。 出厂值为 K0
#222								X	R/W	加热器 / 冷却器	b0: Ch1 b3: Ch4 b6: Ch7 b1: Ch2 b4: Ch5 b7: Ch8 b2: Ch3 b5: Ch6 0: 加热器, 1: 冷却器。 出厂值为 K0
#223								X	R/W	预热功能	b1: Ch2 b4: Ch5 b7: Ch8 b2: Ch3 b5: Ch6 b3: Ch4 b6: Ch7 0: Disable, 1: Enable。 出厂值为 K0

※CR#100~ CR#223 不支持 RS-485 通讯读写。

■ 温度 / 数字特性曲线

请参阅英文版说明。

DELTA DVP PLC Serisini seçtiğiniz için teşekkürler. DVP08TC-H2 ürünü 8 adet 0~150mV voltaj giriş termokupl sıcaklık sensör (J-tipi, K-tipi, R-tipi, S-tipi, T-tipi, E-tipi, N-tipi) bilgisini alır ve bunları 24-bit dijital sinyallere dönüştürür. Ayrıca, DVP-EH2 MPU programı içindeki FROM/TO komutları ile DVP08TC-H2 içindeki data okunabilir veya yazılabilir. Ürün içinde 49 adet 16-bit kontrol register (CR) vardır. DVP08TC-H2 sıcaklığı Selsius (çözünürlük: 0.1°C) ve Fahrenheit (çözünürlük: 0.1°F) olarak gösterir.

- ✓ Bu bilgi dökümanı sadece ürünün elektriksel özellikleri, genel özellikleri, kurulum ve bağlantısı hakkında bilgiler sağlar. Programlama ve komutlar hakkında detaylı bilgi için "DVP-PLC Application Manual: Programming" kitabına bakınız. Opsiyonel donanımlar ile ilgili daha fazla bilgi için, ilgili ürünün bilgi dökümanını veya "DVP-PLC Application Manual: Special I/O Modules" kitabını inceleyiniz.
- ✓ DVP08TC-H2 ürünü AÇIK-TİP bir ünite olup, kurulumu toz, rutubet, elektrik şoku ve titreşimin olmadığı yerlere yapılmalıdır. Tehlikeleri ve ürünün zarar görmesini önlemek için yetkili olmayan kişilerin ürüne müdahale etmesini önleyecek koruyucu önlemler alınmalıdır. (Örneğin ürünün kurulduğu panoya kilit konulması gibi).
- ✓ Ürünün giriş/çıkış terminallerine AC besleme bağlamayınız, aksi halde PLC zarar görülebilir. Enerji vermeden önce tüm bağlantıları kontrol ediniz. Elektromanyetik gürültüyü önlemek için, PLC'nin doğru topraklandığından emin olunuz ⚡. Enerji varken ürün terminallerine dokunmayınız.
- ✓ Termokupl ve PLC arasındaki kabloyu mümkün olduğunca kısa tutunuz ve elektriksel gürültüyü önlemek için güç kablolarını I/O kablolarından uzak muhafaza ediniz.
- ✓ Termokupl sıcaklık sensör modunu ayarladığınız zaman, lütfen CR#2~ CR#9 ayarlarının doğru olduğuna emin olunuz, aksi halde ciddi zarar meydana gelebilir.

■ Ürün Görünüşü & Ölçüler

Detaylı bilgi için için Sayfa 1'deki Şekil 1'e bakınız. Birim: mm [inch].

1. DIN ray (35mm)	6. Terminaller
2. İlave modül bağlantı portu	7. Montaj deliği
3. Model adı	8. I/O terminaller
4. POWER, ERROR, A/D indiktor	9. İlave modül bağlantı portu
5. DIN ray klipsi	

■ I/O Terminal Planı

Detaylı bilgi için Sayfa 1'de Terminal Layout şekline bakınız.

■ Harici Bağlantı

Detaylı bilgi için Sayfa 2'deki Şekil 2'ye bakınız.

*1: Analog giriş için kullanılan bağlantı J-tipi / K-tipi / R-tipi / S-tipi / T-tipi / E-tipi / N-tipi termokupl sıcaklık sensörü ekranlı kablosu veya ona uyumlu bir kablo olmalı ve elektriksel gürültüyü önlemek için bağlantısı diğer güç kablosu ve bağlantılarından uzak yapılmalıdır. Terminal vidaları sıkma torku 1.95 kg-cm (1.7 in-lbs) olmalıdır.

*2: Güç modülü ve DVP08TC-H2 ⚡ terminalini lütfen sistem toprağına bağlayınız ve daha sonra panonun kasasına bağlatınız.

Not: BOŞ terminallere bağlantı yapmayınız. Sadece 60/75°C bakır iletken kullanınız.

■ Özellikler

Sıcaklık Ölçüm Modülü	Açıklama
Besleme Voltajı	24VDC (20.4VDC ~ 28.8VDC) (-15% ~ +20%)
Analog çıkış kanalı	8 kanal/modül
Uygulanabilen sensör tipleri	J-tipi, K-tipi, R-tipi, S-tipi, T-tipi, E-tipi, N-tipi Floating termokupl sensör, 0~150mV, ±150mV voltaj giriş.
Giriş sıcaklık aralığı	Sıcaklık / Dijital Eğrisi tablosuna bakınız
Dijital dönüşüm aralığı	Sıcaklık / Dijital Eğrisi tablosuna bakınız
Çözünürlük	24 bit (0.1°C/0.1°F)
Tam doğruluk	±0.6% tam skala 0 ~ 55°C, 32 ~ 131°F sıcaklık aralığında iken

Sıcaklık Ölçüm Modülü	Açıklama
Cevap zamanı	200ms × kanal sayısı
İzolasyon	Dijital devreler ve analog devreler arası izolasyon. Kanallar arası izolasyon. 500VDC dijital devreler ve Ground arası 500VDC analog devreler ve Ground arası 500VDC analog devreler ve dijital devreler arası 500VDC 24VDC ve Ground arası
Dijital data formatı	16 bit işaretli sayı formatındadır.
Ortalama fonksiyonu	Evet; CR#10 ~ CR#17 içinde ayarlanabilir; ayar aralığı: K1 ~ K100
Self-teşhis	Üst ve alt limit algılama/kanal
Haberleşme modu (RS-485)	Desteklenir. ASCII/RTU mod. Varsayılan haberleşme formatı: 9600, 7, E, 1, ASCII; haberleşme formatı detayları için CR#36 bakınız. Not1: PLC CPU'suna bağlandığında RS-485 kullanılamaz. Not2: Haberleşme formatı sadece RS-485 aracılığı ile değiştirilebilir ve PLC CPU'suna bağlı iken TO komutu ile değiştirilemez. Haberleşme formatı ayarı hakkında daha fazla bilgi için DVP programlama manueli ek bölümüne bakınız.
DVP-PLC MPU'ya bağlanıldığı zaman	MPU'dan uzaklığına göre 0 – 7 arası numaralandırılır. MPU'ya en yakın modülün adresi 0 ve MPU'ya en uzak modülün adresi 7 olur. Maksimum 8 modül bağlanabilir ve modüller dijital I/O işgal etmez.

■ Diğer Özellikler

Güç Kaynağı	
Maksimum güç tüketim oranı	24VDC (20.4VDC ~ 28.8VDC) (-15% ~ +20%), 2.5W harici güç ile beslenir.
Ortam Koşulları	
Çalışma/saklama	1. Çalışma: -10°C~ 60°C (Sıcaklık), 5 ~ 95% (Rutubet), kirlenme derecesi 2 2. Saklama: -25°C~ 70°C (Sıcaklık), 5 ~ 95% (Rutubet)
Titreşim/şok bağışıklığı	Standard: IEC61131-2, IEC 68-2-6 (TEST Fc)/IEC61131-2 & IEC 68-2-27 (TEST Ea)

■ Kontrol Register

CR#	Özellik	Register adı	Açıklama	
#0	O R	Model adı	Sistemden ayarlanır. DVP08TC-H2 model kodu = H'6804 Kullanıcılar sistemden model ismini okuyabilir ve modülünü doğruluğunu ve mevcudiyetini anlayabilir.	
#1	O R	Yazılım versiyonu	Mevcut yazılım versiyonunu hex. olarak gösterir. Örneğin versiyon 1.01 değeri H'0101 olarak gösterilir.	
#2	O R/W	CH1 Termokupl tipi	Termokupl tipi için 10 ayar seçeneği vardır. Hexadecimal basamaklı olarak gösterilmiştir: H0000: J-tip; H0001: K-tip; H0002: R-tip; H0003: S-tip; H0004: T-tip; H0005: E-tip; H0006: N-tip; H0007: 0~150mV; H0008: ±150mV; HFFFF: kanal kapalı; Varsayılan değer: H'0000; Yukarıda listelenmeyen seçenekler sistem kullanımı için ayrılmıştır.	
#3	O R/W	CH2 Termokupl tipi		
#4	O R/W	CH3 Termokupl tipi		
#5	O R/W	CH4 Termokupl tipi		
#6	O R/W	CH5 Termokupl tipi		
#7	O R/W	CH6 Termokupl tipi		
#8	O R/W	CH7 Termokupl tipi		
#9	O R/W	CH8 Termokupl tipi		
#10	O R/W	CH1 ortalama adeti		CH1 ~ CH8 ayar aralığı: K1 ~ K100. Default =K10.
#11	O R/W	CH2 ortalama adeti		

CR#	Özellik	Register adı	Açıklama
#12	O R/W	CH3 ortalama adeti	
#13	O R/W	CH4 ortalama adeti	
#14	O R/W	CH5 ortalama adeti	
#15	O R/W	CH6 ortalama adeti	
#16	O R/W	CH7 ortalama adeti	
#17	O R/W	CH8 ortalama adeti	
#18	O R/W	Sıcaklık birimi	K0 = Santigrad, K1 = Fahrenheit. Default =K0
#19	X R	CH1'de ölçülen Ortalama sıcaklık	CH1~CH8'de ölçülen ortalama sıcaklık. CH1~CH8'de ölçülen ortalama sıcaklık değeri CR#10 ~ CR#17 'deki ortalama adedi ile elde edilir.
#20	X R	CH2'de ölçülen Ortalama sıcaklık	
#21	X R	CH3'de ölçülen Ortalama sıcaklık	
#22	X R	CH4'de ölçülen Ortalama sıcaklık	
#23	X R	CH5'de ölçülen Ortalama sıcaklık	
#24	X R	CH6'da ölçülen Ortalama sıcaklık	
#25	X R	CH7'de ölçülen Ortalama sıcaklık	
#26	X R	CH8'de ölçülen Ortalama sıcaklık	
#27	O R/W	CH1 OFFSET değeri	CH1 ~ CH8 Ayarlanabilir OFFSET ayarı Ayar aralığı: -1,000 ~ +1,000 Default = K0 Birim: 0.1°C OFFSET değeri açıklaması: Modül ölçüm değeri – OFFSET değeri = gerçek gösterge değeri
#28	O R/W	CH2 OFFSET değeri	
#29	O R/W	CH3 OFFSET değeri	
#30	O R/W	CH4 OFFSET değeri	
#31	O R/W	CH5 OFFSET değeri	
#32	O R/W	CH6 OFFSET değeri	
#33	O R/W	CH7 OFFSET değeri	
#34	O R/W	CH8 OFFSET değeri	
#35	O R/W	Haberleşme adresi ayarı	RS-485 haberleşme adresi ayarı. Ayar Aralığı: 01 ~ 254, Default = K1.
#36	O R/W	Haberleşme hızı (baud rate) ayarı	Haberleşme hızı ayarı: 9,600/19,200/ 38,400/57,600/115,200 bps. ASCII data formatı: 7-bit, even bit, 1 stop bit (7, E, 1). RTU data format: 8-bit, even bit, 1 stop bit (8, E, 1). Default: H'0002. b0: rezerve b1: 9,600 bps (default). b2: 19,200 bps. b3: 38,400 bps. b4: 57,600 bps. b5: 115,200 bps. b14: CRC checksum Yüksek/düşük bit değişimi. (Sadece RTU modda) b15: ASCII/RTU mod seçimi; 0 = ASCII mode (default)
#37	X R	Hata durumu	Tüm hata durumlarını kaydeden register. Daha fazla bilgi için hata tablosuna bakınız.
#38~47	X R	Rezerve	—

Semboller: O: Kalıcı. X: Kalıcı değil.

R: FROM komutu veya RS-485 haberleşme ile okunabilen data.

W: TO komutu veya RS-485 haberleşme ile yazılabilen data.

※ Parametre adreslerine karşılık gelen H'4200 ~ H'4232 RS-485 adresleri, haberleşme ile okuma/yazma için kullanılır. RS-485 kullanılacağı zaman ilk önce modül MPU'dan ayrılmalıdır.

1. Fonksiyon: H'03 (register data okuma); H'06 (register içine 1 word yazma); H'10 (register içine çoklu word yazma).

2. Kalıcı CR'nin Kalıcı olabilmesi için RS-485 ile yazılması gerekir. Eğer MPU üzerinden TO/DTO komutları ile yazılırsa CR'ler kalıcı olmaz.

CR#37: Hata durumu (aşağıdaki tabloya bakınız)

Hata durumu	Değer	b15	b14	b13	b12	b11	b10	b9	b8	b7	b6	b5	b4	b3	b2	b1	b0	
Anormal besleme	K1 (H'1)	0	0	0	0	Rezerve		0	0	0	0	0	0	0	0	0	1	
Anormal modül	K2 (H'2)	0	0	0	0			0	0	0	0	0	0	0	0	0	1	0
Ch1 Anormal dijital aralık	K4 (H'4)	0	0	0	0			0	0	0	0	0	0	0	1	0	0	0
Ch2 Anormal dijital aralık	K8 (H'8)	0	0	0	0			0	0	0	0	0	0	1	0	0	0	0
Ch3 Anormal dijital aralık	K16 (H'10)	0	0	0	0			0	0	0	0	0	1	0	0	0	0	0
Ch4 Anormal dijital aralık	K32 (H'20)	0	0	0	0			0	0	0	0	1	0	0	0	0	0	0
Ch5 Anormal dijital aralık	K64 (H'40)	0	0	0	0			0	0	0	1	0	0	0	0	0	0	0
Ch6 Anormal dijital aralık	K128 (H'80)	0	0	0	0			0	0	1	0	0	0	0	0	0	0	0
Ch7 Anormal dijital aralık	K256 (H'100)	0	0	0	0			0	1	0	0	0	0	0	0	0	0	0
Ch8 Anormal dijital aralık	K512 (H'200)	0	0	0	0		1	0	0	0	0	0	0	0	0	0	0	

Not: Her bir hata durumu ona karşılık gelen bit ile belirlenir (b0 ~ b11) ve 2 veya daha fazla hata aynı anda meydana gelebilir. 0 = normal; 1 = hata.

■ D/A Dönüşüm Eğrisi Ayarlama

CR#								Kalıcı	Register içeriği	Açıklama	
CH1	CH2	CH3	CH4	CH5	CH6	CH7	CH8				
#100	#115	#130	#145	#160	#175	#190	#205	O	R/W	Sıcaklık SV	Default = K0.
#101	#116	#131	#146	#161	#176	#191	#206	O	R/W	Örnekleme zamanı (s)	Aralık: K1 ~ K30 (s). Default = K2.
#102	#117	#132	#147	#162	#177	#192	#207	O	R/W	K _o	Default = K121.
#103	#118	#133	#148	#163	#178	#193	#208	O	R/W	K _i	Integral sabiti, Default = K2,098.
#104	#119	#134	#149	#164	#179	#194	#209	O	R/W	K _o	Türev sabiti, Default = K-29.
#105	#120	#135	#150	#165	#180	#195	#210	O	R/W	Default I değeri	Aralık: K-32768 ~ K32767. Default = K0. Sadece PID Stop->Run olunca geçerli.
#106	#121	#136	#151	#166	#181	#196	#211	X	R	I değeri limiti (Düşük word)	Mevcut toplam offset değeri. Default = K0.
#107	#122	#137	#152	#167	#182	#197	#212	X	R	I değeri limiti (Yüksekword)	
#108	#123	#138	#153	#168	#183	#198	#213	O	R/W	Önısıtma sıcaklık değeri	Aralık: K-32768 ~ K32767. Default = K0.
#109	#124	#139	#154	#169	#184	#199	#214	O	R/W	Önısıtma çıkış değeri	Aralık: K0 ~ K1,000 (birim: 0.1%). Default = K500.
#110	#125	#140	#155	#170	#185	#200	#215	O	R/W	Çıkış yüzdesi (%)	Aralık: K0 ~ K1,000 (Birim: 0.1%). Default = K0.
#111	#126	#141	#156	#171	#186	#201	#216	X	R	Çıkış genişliği (ms)	Kontrol çıkışı genişliği, Default = K0.
#112	#127	#142	#157	#172	#187	#202	#217	X	R	Çıkış saykıl (ms)	Kontrol çıkış saykılı, Default = K0.
#220								X	R/W	Sıcaklık kontrol _Run/Stop	b0: Ch1 b3: Ch4 b6: Ch7 b1: Ch2 b4: Ch5 b7: Ch8 b2: Ch3 b5: Ch6 0: Stop, 1: Run, Default = K0

CR#								Kalıcı	Register içeriği	Açıklama	
CH1	CH2	CH3	Ch4	Ch5	Ch6	Ch7	Ch8				
#221								X	R/W	PID Auto Tune	b0: Ch1 b3: Ch4 b6: Ch7 b1: Ch2 b4: Ch5 b7: Ch8 b2: Ch3 b5: Ch6 0: Pasif, 1: Auto-tuning Default = K0
#222								X	R/W	Isıtma / soğutma kontrol	b0: Ch1 b3: Ch4 b6: Ch7 b1: Ch2 b4: Ch5 b7: Ch8 b2: Ch3 b5: Ch6 0: Isıtma, 1: Soğutma Default = K0
#223								X	R/W	Önısıtma fonksiyonu	b1: Ch2 b4: Ch5 b7: Ch8 b2: Ch3 b5: Ch6 b3: Ch4 b6: Ch7 0: Pasif, 1: Aktif Default = K0

※ Yukarıda listelenmiş CR# registerler RS-485 okuma/yazma desteklemez.

■ Sıcaklık / Dijital Eğrisi

°C/°F Sıcaklık Ölçüm Modu: Sayfa 6 içindeki Şekil 3 sıcaklık/dijital eğrisine bakınız.

TÜRKİYE İTHALATÇI FIRMA

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