Intelligent Universal I/O (Thermocouple/Voltage/Current) Control System by Web(PC/ Mobile)

EXPERT DAQ

Intelligent Universal I/O Control System by Web(PC/ Mobile)

Features

User can easy to install the Remote I/O Controller in the Harsh environment . The Remote I/O Controller was one of engineering level devices. Now we make User easy to install & control by Web. Application for sensor Thermocouple(J/K/T/E/R/S/B/N...(-270 ~ +1820 degree Celsius)) / Transmitter(+/-4 ~ 20mA; +/-500mV ~ +/-1V) by Web control thru Wi-Fi/ Ethernet/ RS485 of RS485 bus of EX9019-M(Individual Channel)

Specification

THE SYSTEM FUNCTIONS(DEFAULT: K TYPE)

. 全自動化溫度/Transmitter(+/-4 ~ 20mA; +/-500mV ~ +/-1V)監控系統.

. **Wi-Fi/ Ethernet/ RS485** 溫控箱 .

. 即時監控設備的溫度/Transmitter(+/-4 ~ 20mA; +/-500mV ~ +/-1V)變化：
單一地點：同建築內同區域 / 自設群組：可自訂配置區域群組/ 即時監控：即時讀取群組內溫度. **as Fig. A/ F/ G**

. 可擴充監控至少 10 個 I/O Controller.: 可單一 I/O Controller 運作; 也可同時多台**(>8** 台**)I/O Controller** 運作. **as Fig. B**

. 操作介面簡單好上手：使用者登入後，即可選擇群組進行即時監控與基本設定。**(**基本設定：溫度安全範圍、警報開關/ 即時監控：即時讀取群組內溫度**) . as Fig. D**

. 自動發送 **Email**、簡訊及電話通知: 可觀看即時溫度與警報通知/可進階設定警報延遲時間/可選擇指定的連絡人. **as Fig. E/ H**

. 安全性高：設置具有不同權限的使用者帳號: 查看**(User);** 警報設定與校正**(Mgr);** 使用者管理**(Admin)/** 符合美國聯邦法規 **21** 章第 **11** 條**(FDA Title 21 CFR Part 11)**標準 /自動將記錄備份於主監控端電腦，以維護資料安全. **as Fig. C/ I**

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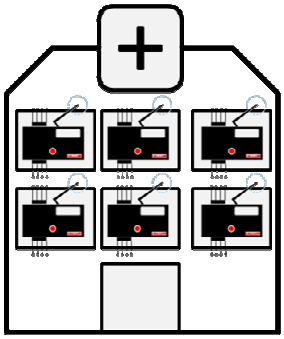
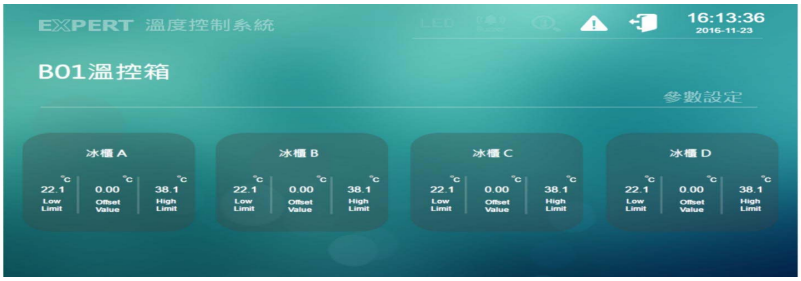


Fig. A

Fig. B

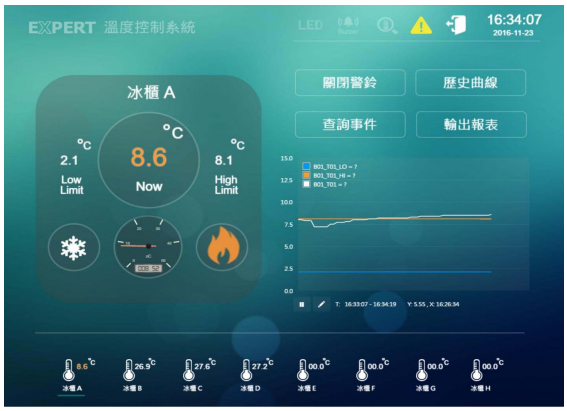
Fig. C

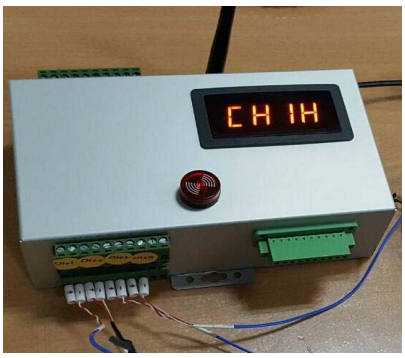
Fig. D



. 用戶可依需求設定溫度安全範圍(High/Low)。

. 一旦超過溫度範圍，自動彈出警報並發送警報通知 (Email/簡訊)。





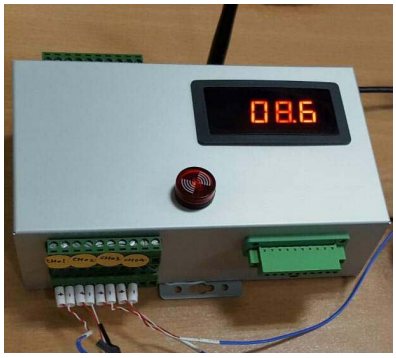


Fig. F

. 曲線圖可直接觀看即時溫度變化。

. 移動游標顯示溫度異常的讀值與時間點。

. 一旦超過溫度範圍，自動主畫面顯示警報，並有真人語音與警鈴。

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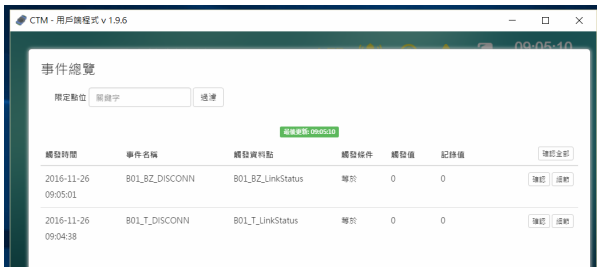


. 可觀看即時溫度與警報通知

. 可進階設定警報延遲時間

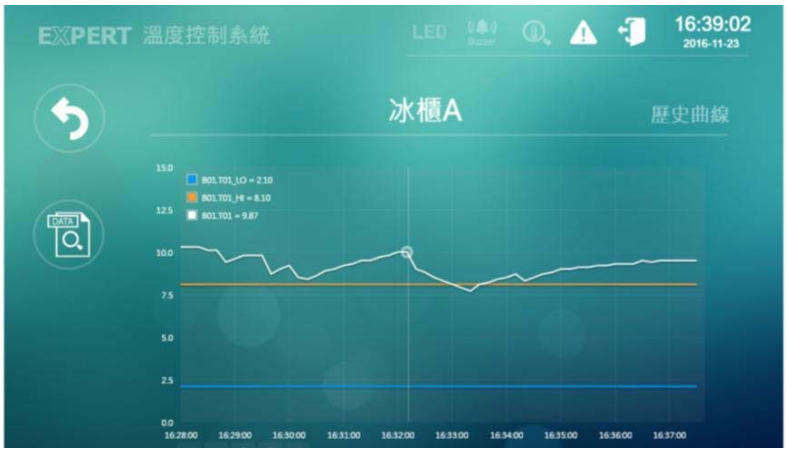
. 可選擇指定的連絡人

Fig. E

. 區網內的用戶可透過網頁登入進行即時溫度監控。

Fig. G

Intelligent Universal I/O (Thermocouple/Voltage/Current) Control System by Web(PC/ Mobile)

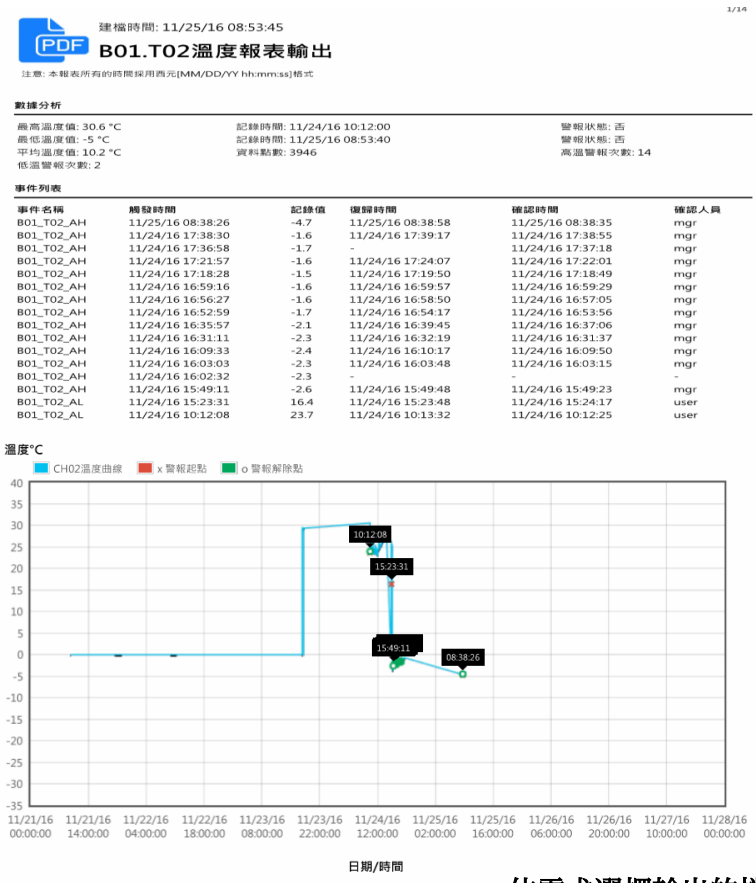


. 用戶可依需求自行調整歷史紀錄的時間長度。

. 曲線圖可直接觀看即時溫度變化。

. 移動游標顯示溫度曾經異常的讀值與時間點

Fig. H



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建檔時間: 11/25/16 08:53:45

B01.T02溫度報表輸出

注意: 本報表所有的時間採用西元[MM/DD/YY hh:mm:ss]格式

數據分析

最高溫度值: 30.6 °C
最低溫度值: -5 °C
平均溫度值: 10.2 °C
低溫警報次數: 2

記錄時間: 11/24/16 10:12:00
記錄時間: 11/25/16 08:53:40
資料點數: 3946

警報狀態: 否
警報狀態: 否
高溫警報次數: 14

事件列表

事件名稱	觸發時間	記錄值	復歸時間	確認時間	確認人員
B01_T02_AH	11/25/16 08:38:26	-4.7	11/25/16 08:38:58	11/25/16 08:38:35	mgr
B01_T02_AH	11/24/16 17:38:30	-1.6	11/24/16 17:39:17	11/24/16 17:38:55	mgr
B01_T02_AH	11/24/16 17:36:58	-1.7	-	11/24/16 17:37:18	mgr
B01_T02_AH	11/24/16 17:21:57	-1.6	11/24/16 17:24:07	11/24/16 17:22:01	mgr
B01_T02_AH	11/24/16 17:18:28	-1.5	11/24/16 17:19:50	11/24/16 17:18:49	mgr
B01_T02_AH	11/24/16 16:59:16	-1.6	11/24/16 16:59:57	11/24/16 16:59:29	mgr
B01_T02_AH	11/24/16 16:56:27	-1.6	11/24/16 16:58:50	11/24/16 16:57:05	mgr
B01_T02_AH	11/24/16 16:52:59	-1.7	11/24/16 16:54:17	11/24/16 16:53:56	mgr
B01_T02_AH	11/24/16 16:35:57	-2.1	11/24/16 16:39:45	11/24/16 16:37:06	mgr
B01_T02_AH	11/24/16 16:31:11	-2.3	11/24/16 16:32:19	11/24/16 16:31:37	mgr
B01_T02_AH	11/24/16 16:09:33	-2.4	11/24/16 16:10:17	11/24/16 16:09:50	mgr
B01_T02_AH	11/24/16 16:03:03	-2.3	11/24/16 16:03:48	11/24/16 16:03:15	mgr
B01_T02_AH	11/24/16 16:02:32	-2.3	-	-	-
B01_T02_AH	11/24/16 15:49:11	-2.6	11/24/16 15:49:48	11/24/16 15:49:23	mgr
B01_T02_AL	11/24/16 15:23:31	16.4	11/24/16 15:23:48	11/24/16 15:24:17	user
B01_T02_AL	11/24/16 10:12:08	23.7	11/24/16 10:13:32	11/24/16 10:12:25	user

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Date Time °C	Date Time °C	Date Time °C	Date Time °C	Date Time °C	Date Time °C
11/21/16 09:39:50 0.0	11/21/16 09:40:00 0.0	11/21/16 09:40:10 0.0	11/21/16 09:40:20 0.0	11/21/16 09:40:30 0.0	11/21/16 09:40:40 0.0
11/21/16 09:40:50 0.0	11/21/16 09:41:00 0.0	11/21/16 09:41:10 0.0	11/21/16 09:41:20 0.0	11/21/16 09:41:30 0.0	11/21/16 09:41:40 0.0
11/21/16 09:41:50 0.0	11/21/16 09:42:00 0.0	11/21/16 09:42:10 0.0	11/21/16 09:42:20 0.0	11/21/16 09:42:50 0.0	11/21/16 09:43:00 0.0
11/21/16 09:43:20 0.0	11/21/16 09:43:30 0.0	11/21/16 09:43:40 0.0	11/21/16 09:43:50 0.0	11/21/16 09:44:00 0.0	11/21/16 09:44:10 0.0
11/21/16 20:19:10 0.0	11/21/16 20:19:20 0.0	11/21/16 20:19:30 0.0	11/21/16 20:19:40 0.0	11/21/16 20:19:50 0.0	11/21/16 20:20:00 0.0
11/21/16 20:20:10 0.0	11/21/16 20:20:20 0.0	11/21/16 20:20:30 0.0	11/21/16 20:20:40 0.0	11/21/16 20:21:00 0.0	11/21/16 20:21:10 0.0
11/21/16 20:21:20 0.0	11/21/16 20:21:40 0.0	11/21/16 20:21:50 0.0	11/21/16 20:22:00 0.0	11/21/16 20:22:10 0.0	11/21/16 20:22:20 0.0
11/21/16 20:22:30 0.0	11/21/16 20:22:40 0.0	11/21/16 20:22:50 0.0	11/21/16 20:23:00 0.0	11/21/16 20:23:10 0.0	11/21/16 20:23:20 0.0
11/21/16 20:23:30 0.0	11/21/16 20:23:40 0.0	11/21/16 20:23:50 0.0	11/21/16 20:24:00 0.0	11/21/16 20:24:10 0.0	11/21/16 20:24:20 0.0
11/21/16 20:24:30 0.0	11/21/16 20:24:40 0.0	11/21/16 20:24:50 0.0	11/21/16 20:25:00 0.0	11/21/16 20:25:10 0.0	11/21/16 20:25:20 0.0
11/21/16 20:25:30 0.0	11/21/16 20:25:40 0.0	11/21/16 20:25:50 0.0	11/21/16 20:26:00 0.0	11/21/16 20:26:10 0.0	11/21/16 20:26:20 0.0
11/21/16 20:26:30 0.0	11/21/16 20:26:40 0.0	11/21/16 20:26:50 0.0	11/21/16 20:27:00 0.0	11/21/16 20:27:10 0.0	11/21/16 20:27:20 0.0
11/21/16 20:27:30 0.0	11/21/16 20:27:40 0.0	11/21/16 20:27:50 0.0	11/21/16 20:28:00 0.0	11/21/16 20:28:10 0.0	11/21/16 20:28:20 0.0
11/21/16 20:28:30 0.0	11/21/16 20:28:40 0.0	11/21/16 20:29:10 0.0	11/21/16 20:29:20 0.0	11/21/16 20:29:30 0.0	11/21/16 20:29:40 0.0
11/21/16 20:29:50 0.0	11/21/16 20:30:00 0.0	11/21/16 20:30:10 0.0	11/21/16 20:30:20 0.0	11/21/16 20:30:30 0.0	11/21/16 20:30:40 0.0
11/21/16 20:40:50 0.0	11/21/16 20:41:00 0.0	11/21/16 20:41:10 0.0	11/21/16 20:41:20 0.0	11/21/16 20:41:30 0.0	11/21/16 20:41:40 0.0
11/21/16 20:41:50 0.0	11/21/16 20:42:00 0.0	11/21/16 20:42:10 0.0	11/21/16 20:42:20 0.0	11/21/16 20:42:30 0.0	11/21/16 20:42:40 0.0
11/21/16 20:42:50 0.0	11/21/16 20:43:00 0.0	11/21/16 20:43:10 0.0	11/21/16 20:43:20 0.0	11/21/16 20:43:30 0.0	11/21/16 20:43:40 0.0
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11/21/16 20:52:50 0.0	11/21/16 20:53:00 0.0	11/21/16 20:53:10 0.0	11/21/16 20:53:20 0.0	11/21/16 20:53:30 0.0	11/21/16 20:53:40 0.0
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11/21/16 21:02:50 0.0	11/21/16 21:03:00 0.0	11/21/16 21:03:20 0.0	11/21/16 21:03:30 0.0	11/21/16 21:03:40 0.0	11/21/16 21:03:50 0.0
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11/21/16 21:05:00 0.0	11/21/16 21:05:10 0.0	11/21/16 21:05:20 0.0	11/21/16 21:05:30 0.0	11/21/16 21:05:40 0.0	11/21/16 21:05:50 0.0
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11/21/16 21:10:00 0.0	11/21/16 21:10:10 0.0	11/21/16 21:10:20 0.0	11/21/16 21:10:30 0.0	11/21/16 21:10:40 0.0	11/21/16 21:10:50 0.0
11/21/16 21:11:00 0.0	11/21/16 21:11:10 0.0	11/21/16 21:11:20 0.0	11/21/16 21:11:30 0.0	11/21/16 21:11:40 0.0	11/21/16 21:11:50 0.0
11/21/16 21:12:00 0.0	11/21/16 21:12:10 0.0	11/21/16 21:12:20 0.0	11/21/16 21:12:30 0.0	11/21/16 21:12:40 0.0	11/21/16 21:12:50 0.0
11/21/16 21:13:00 0.0	11/21/16 21:13:10 0.0	11/21/16 21:13:20 0.0	11/21/16 21:13:30 0.0	11/21/16 21:13:40 0.0	11/21/16 21:13:50 0.0
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11/21/16 21:16:30 0.0	11/21/16 21:16:40 0.0	11/21/16 21:16:50 0.0	11/21/16 21:17:00 0.0	11/21/16 21:17:10 0.0	11/21/16 21:17:20 0.0
11/21/16 21:17:30 0.0	11/21/16 21:17:50 0.0	11/21/16 21:18:00 0.0	11/21/16 21:18:10 0.0	11/21/16 21:18:20 0.0	11/21/16 21:18:30 0.0
11/21/16 21:18:40 0.0	11/21/16 21:18:50 0.0	11/21/16 21:19:00 0.0	11/21/16 21:19:10 0.0	11/21/16 21:19:20 0.0	11/21/16 21:19:30 0.0

. 依需求選擇輸出的檔案格式(PDF, Excel, etc.)。

Fig. I

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Appendix:

HARDWARE SPECIFICATION

Certificate(optional) : ISPE ’s GAMP4(essential)、FDA ’s CFR 21 Part 11、domestic ’s cGMP、CE ROHS meet FCC Part 15。

Maximum monitoring devices: 10+ .

Temperature measurement range : -100℃~100℃(change the probe to extend the temperature measurement range as -200~200℃).

Temperature accuracy : ±0.1% .

Probe reaction time: Within 30 seconds Reaction at least 63% of temperature different .

Probe types: External thermocouple(K Type:default) .

Probe length: At least 1.2 meters .

Number of probes: 1~ 8 probes can be connected .

Audible alarm: Sensor with buzzer alarm .

Alarm mute: The alarm mute button (optioal: automatically restart time) .

Wireless transmission: Regularly detects temperature and sends the data back to the Server(PC/ Notebook).

Transmission mode: Through Wi-Fi/ Ethernet/ RS485 to transmit the refrigerator/devices conditions(Temperature/ + - 4~20mA) to the central monitoring system(PC/ Notebook).

Transmission range : Wi-Fi 100 meters (open area) / Ethernet over 100 meters / RS485 over 1.2Km~2Km

Data Capacity: 32,000 T values above .

Wired Downloads: From PC(Web Page) .

Display: 1 x 2 inch”4 Digits LED .

Installation options: Stand-alone or wall-mounted (there are keyhole) .

Power cord: At least 2 meters .

Power Input : DC24V, 1.87A or above .

Intelligent Universal I/O (Thermocouple/Voltage/Current) Control System by Web(PC/ Mobile)

EXPERT DAQ

SOFTWARE SPECIFICATION

(Temperature/ Thermocouple:default)

Software Language: English

Personnel management: It can set the account password to management.

Eelectronic Approved(optional): To prevent data tampering, data movement need to have the record by FDA CFR21 PART 11.

Sensor settings: It can set the time intervals of temperature record, alert type, high and low temperature threshold.

Data information: Data can be distinquished between normal and abnormal.

Alert types: Temperature anomalies, lack of electricity, the correction maturity & signal interruption.

Software Alert: Central monitoring system will pop up a warning with an alarm sound on Windows and send Email (required); SMS(optional) to the administrator for notify why.

Email Alert: It can set multiple sets of accounts (> 4) to send and incidental cause of the alarm.

Chart features: Historical data and real-time data displays by Graphical and automatic corresponding to monitoring device.

Create groups: Simultaneously monitoring all devices and device groups..

Historical data query: It can query historical data by graphic and reading by listing..

Report Output: Need to report a variety of formats as PDF from Web Page(optional: Excel,Html will soon).

Print function: Historical data printing or instant printing..

Data Backup: Data Backup by automatic or manual (optional: year / month / week / day).

Data Acquisition: A minimum sampling rate is 10 seconds and a maximum is 59 minutes.

Remote monitoring: Can be Wi-Fi / Ethernet/ RS485 by a web page monitoring the devices(optional: wired).

Password protection: Central monitoring system can set different levels of user password (local and remote).

Temperature Calibration: It need internal calibration features to ensure the temperature/ Voltage/ Current are correct.

Operating System: Windows 7 or Windows 10 (including the above)

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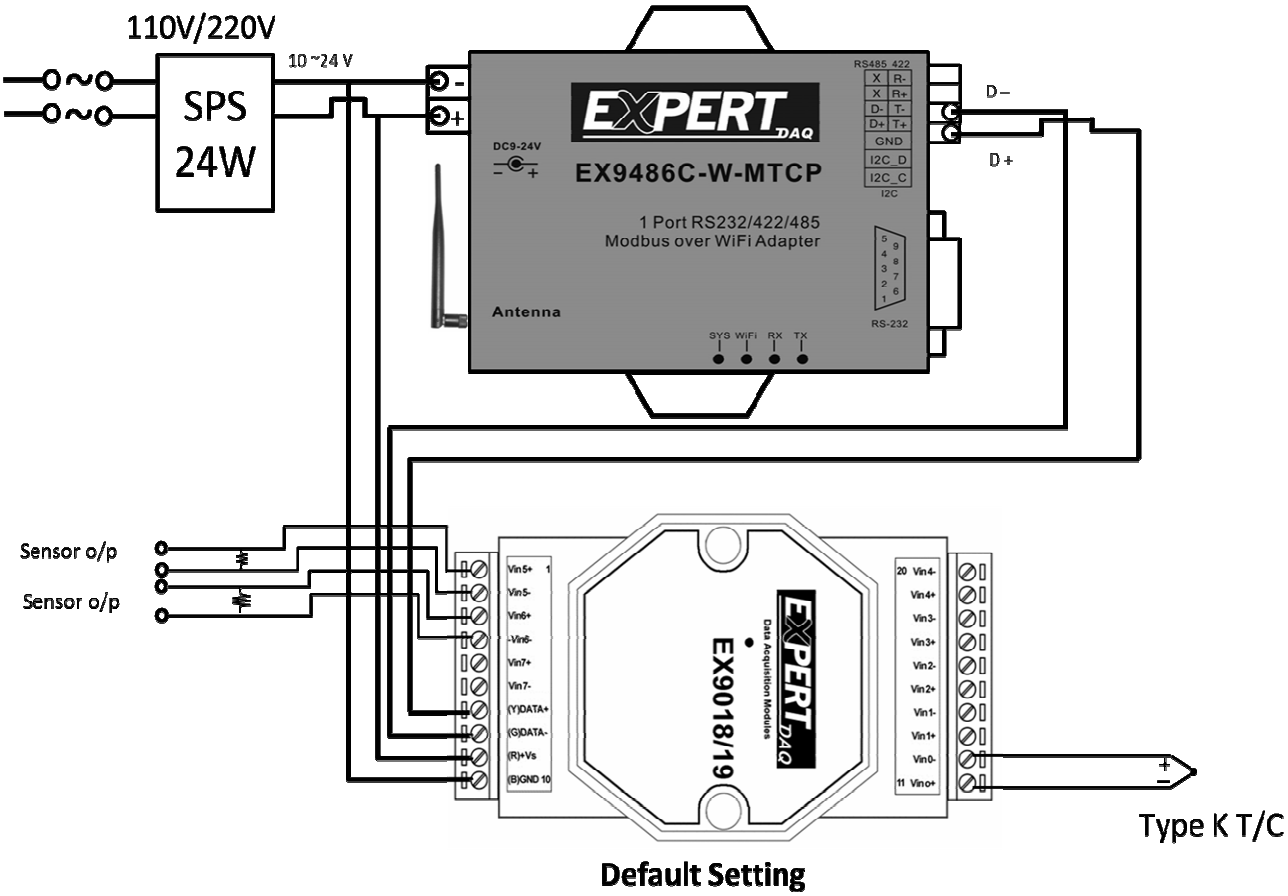
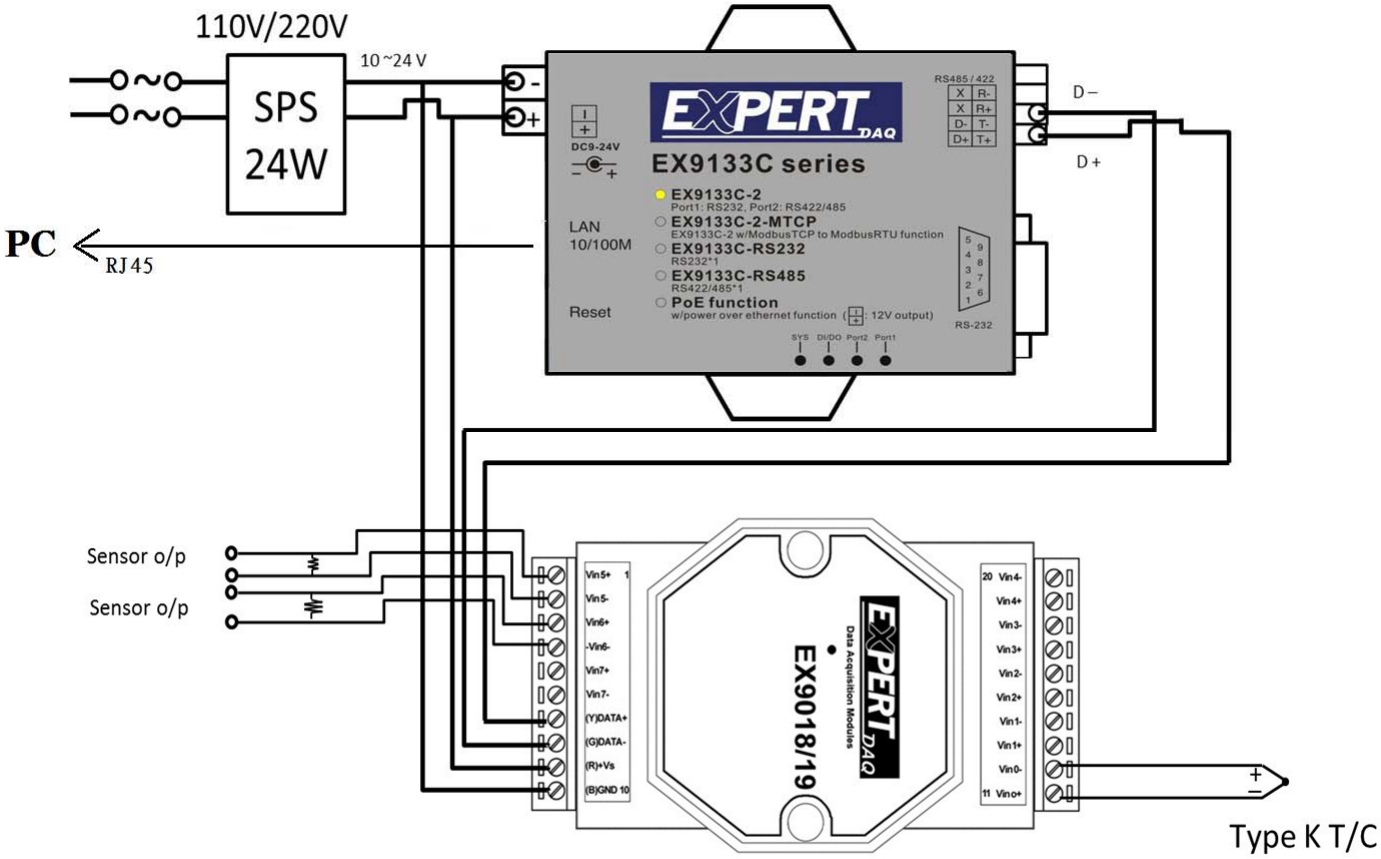
Wire Connection of EX9019-M & Wi-Fi(MTCP)/ EX9133C-2-MTCP/ RS485 :

Drawing of Wire Connection for Thermocouple(Default):



Wire connection example of Thermocouple(CH 0: K Type) Sensor
Fig. 1-1



Wire connection example of Ethernet port withThermocouple(CH 0: K Type) Sensor

Fig. 1-2

Note:

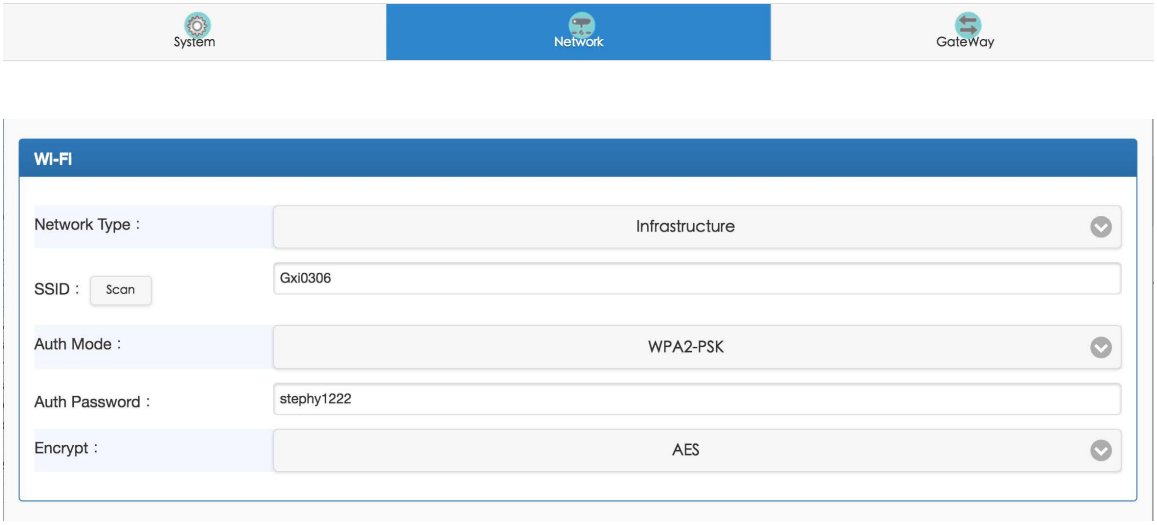
1. Default setting of EX9019-M: Baud Rate: 9600bps ; CheckSum: Non; 8, N , 1; Address: 1; Modbus Mode; Channel 0 ~7 Type: K (-270 ~ +1372 degree Celsius).

2. Please refer the individual Manual of EX9019-M series for channel Type setting :Thermocouple(K type).

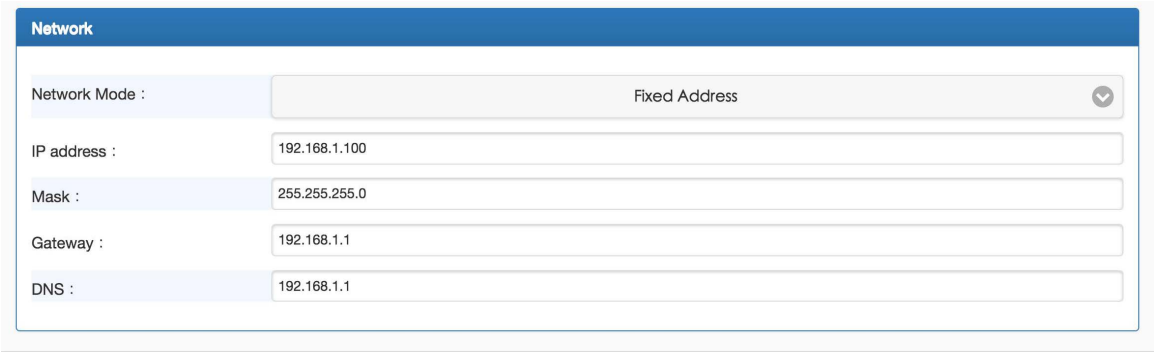
3. Default Setting of Wi-Fi(MTCP): Router IP Setting & Server(PC/ Notebook) Setting ... that please refer Fig. 2-2; 3-3 ; 4-4

4. Please refer the Fig. 1-2 for EX9133C-2-MTCP for Ethernet wire connection & refer the Manual of EX9133C-2-MTCP for Router IP Setting & Server(PC/Notebook)Setting .

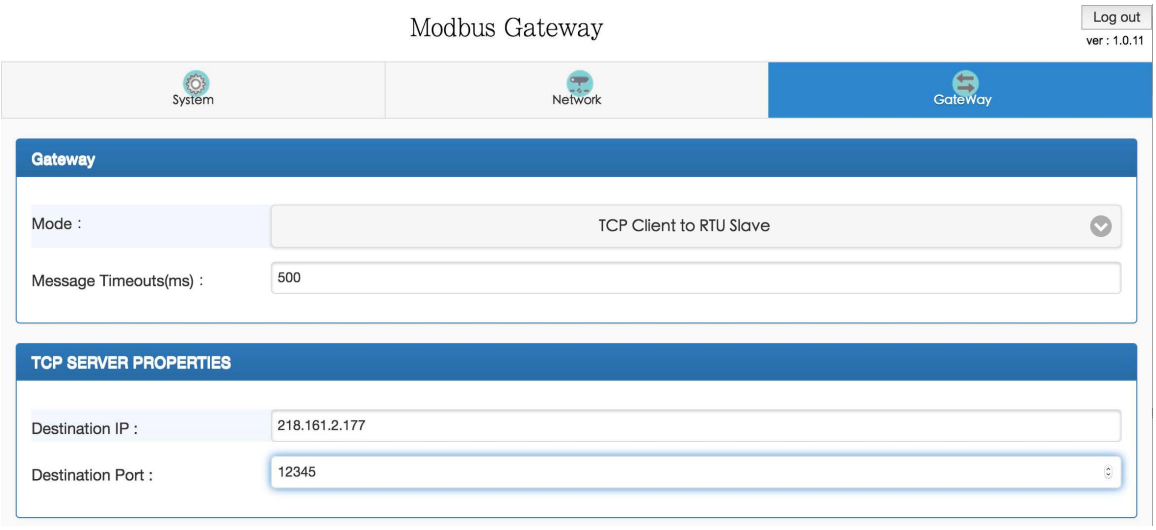
The Default Setting of Wi-Fi(MTCP): Router IP Setting & Server Setting ... that please ref. Fig. 2-2; 3-3 ; 4-4;



Choose Network -> change SSID and password for local wifi Fig.2-2



Choose Network -> change IP address and mask and Gateway for local wifi Fig. 3-3

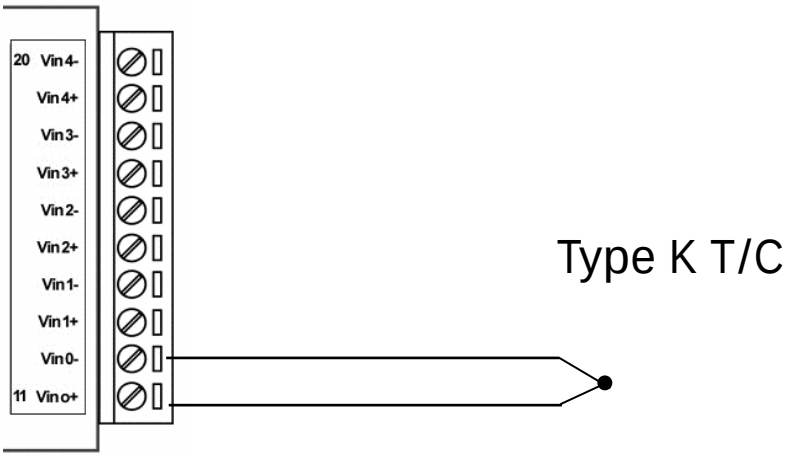


Choose Gateway -> change mode to TCP Client to RTU slave -> change Destination IP to 218.161.2.177 and port to 12345 Fig. 4-4

Wire Connection of Thermocouple:

EX9019-M

Channel1~ Channel 7 wiring same as Channel 0

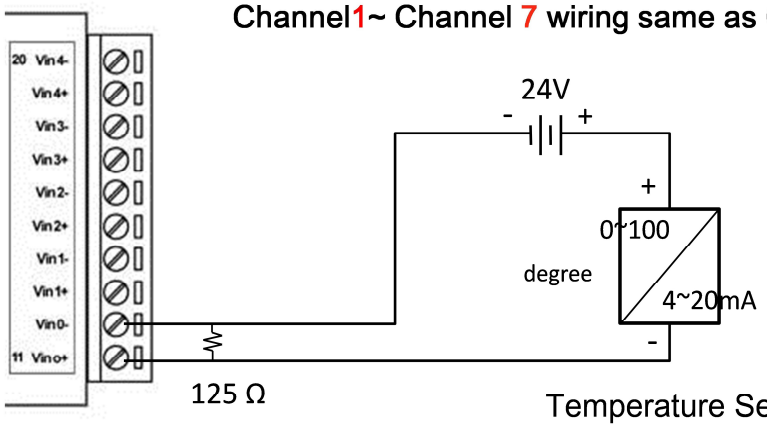


Type **J** T/C -210~+760℃
Type **K** T/C -270~+1372℃
Type **T** T/C -270~+400℃
Type **E** T/C -270~+1000℃
Type **R** T/C 0~+1768℃
Type **S** T/C 0~+1768℃
Type **B** T/C 0~+1820℃

Wire Connection of Transmitter:

EX9018/19-M

Channel1~ Channel 7 wiring same as Channel 0



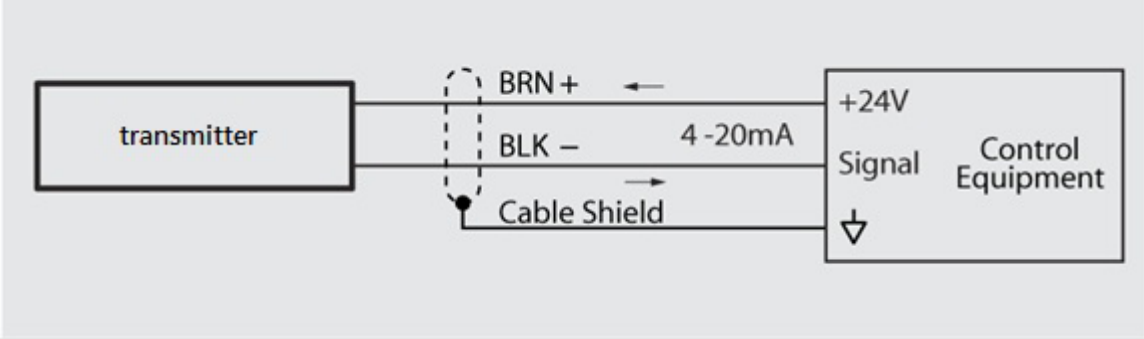
Temperature Sensors/ Transmitters
Pressure Sensors/ Bearing Temperature Sensors
/ Conveyor Belt Alignment Sensors

Reference of Sensors:

Thermocouple sensor

Pressure sensor

Intelligent Universal I/O (Thermocouple/Voltage/Current) Control System by Web(PC/ Mobile)



Temperature Sensor/Transmitters

Functions Expandable of Server (Universal I/O Controller):

Users bought the Universal I/O Controller for Thermocouple(J/K/T/E/R/S/B/N/C(-270 ~ +1820 degree Celsius)) / Transmitter(+/-4~20mA; +/-500mV~+/-1V) sensor to measurement in first step. After some time User hope to expandable the functions of Universal I/O Controller to output control the Harsh enviornmemt.

Users can select EX9060D-M/65D-M to output control the Alam warning or turn-off the Switch/ Valve/ Breaker for Safty situation during the Sensors sense value Higher/ Lower the setting value.

Also, EX9019-M have 8 channels for Input value by Sensors that's mean EX9060D-M/65D-M can output control 4* Alam or turn-off the Switch/ Valve/ Breaker for safety situation during the Sensors sense value Higher/ Lower the setting value.

Note:

1. The Server(PC/ Notebook) of I/O Control System will bundle Output Control functions of EX9060D-M/65D-M for User's Expandable requirement when Users buy EX9060D-M/65D-M .

Wire Connection & Pin Assignment of functions
Expandable :

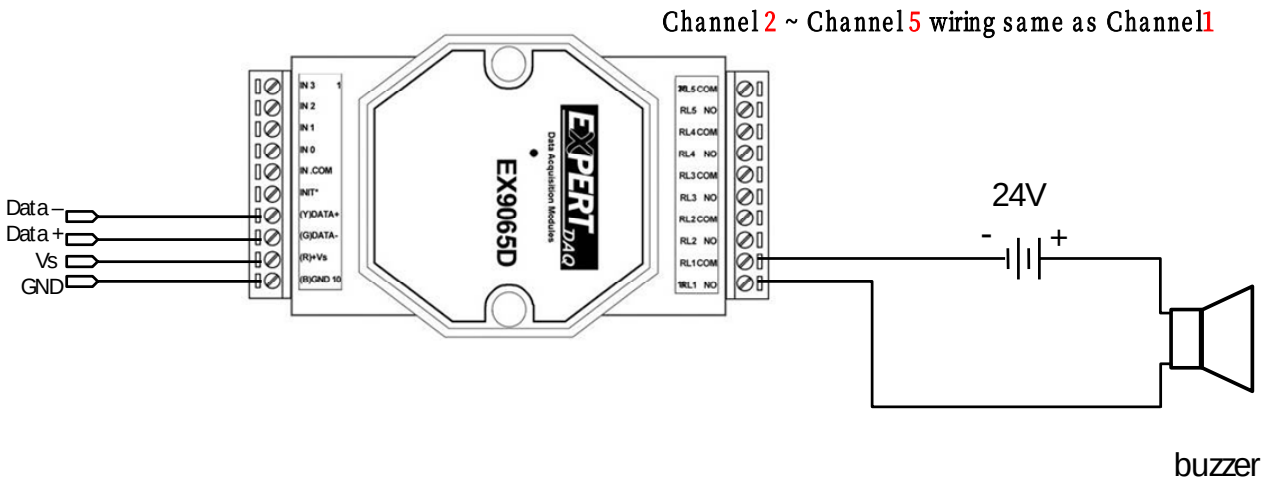


Fig. 6-6

(EX9019-M + Wi-Fi(MTCP)/ Ethernet/ RS485 + EX9060D-M/65D-M)

The Expandable functions of Server(Universal I/O Control System):

1. Read/ set the status of registered digital relay output.

(EX9019-M Input Channel 1~4 for EX9060D-M/65D-M Output Channel 1~4)

(EX9019-M Input Channel 5~8 for new one of EX9060D-M/65D-M Output Channel 1~4 to expandable)

2. Read the status of registered sensors from server.

(EX9019-M Input Channel 1~8)

3. History record for each channels.

(EX9019-M Input Channel 1~8)

Note :

1.User should be create the Expandable Functions for Expandable and the steps & operations same as above mentions

2. User can select the Module name for Expandable after you create the Expandable func.

3. User can select different Remote I/O Modules of EX9000-M to expandable the applications by Server System with www.topsccc.com.tw ; www.devdaq.com.tw