

# PL-ATS AI TO RS485 Converter

## DESCRIPTION

PL-ATS is an I/O controller product with Serial Port on its data communication and makes data acquisition easier through ModBus Protocol of RTU mode on Serial Bus.

It use the 8051's family microprocessor for implementing the whole framework. Basically, it equips 8 channels of single-ended analog input and two digital outputs in a set.

## FEATURE

- Support ModBus Protocol
  - ▶ Auto Detect ModBus RTU and ASCII Mode
  - ▶ Supported Modbus Function 01, 02, 03, 04, 05, 06, 10, 0F
- Configurable Parameters with Device ID Control
  - ▶ Configurable under Console Mode
  - ▶ Enable / Disable: When Device ID Control is enabled, it will reply the modbus requests only when the Device ID is correct
- Input abnormal Detection: Flag will be set while the input voltage or current got lower than low range or higher than high range.
- 8 single ended input channels with 16bits A/D converter with optical isolation
- Four models for Voltage: 0~10V/1~5V or Current: 0~20mA/4~20mA by dip-switch changeable

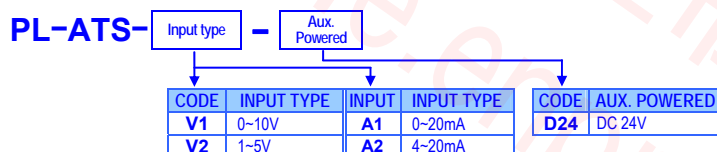


## APPLICATIONS

It is easy to convert AI and DO control to RS485 in IA, Factory Automation, Security or any other low data rate data transmission by using it as the intermediate converter.

- Data collection
- Remote Sensors and Various Meters
- Access control terminals
- Environmental monitors
- Data loggers

## ORDERING INFORMATION



## TECHNICAL SPECIFICATION

<b>CPU:</b>	8051's family microprocessor
<b>Network interface:</b>	RS485,
<b>Protocol:</b>	Modbus/RTU, Modbus/ASCII, Console Mode
<b>Reset:</b>	Built-in reset key to restore the defaults
<b>Watch dog timer:</b>	Built-in hardware auto reset function

<b>Analogue Input</b>	8 channels input <i>available</i>
<b>Input ranges:</b>	Voltage and Current changeable by dip-switch Voltage: 0~10V / 1~5V; input impedance 10MΩ Current: 0~20mA / 4~20mA; input impedance 250Ω

<b>Resolution:</b>	16 bits ADC
<b>Accuracy:</b>	± 0.2% at 25 °C
<b>Channels isolation:</b>	Non-isolated (one common)
<b>Temp. coefficient:</b>	≤ 50PPM/ °C (at 25 °C)
<b>Sampling time:</b>	800 ms / 8 channels

<b>Digital output</b>	<i>Open collect, 24V±10%, 0.5A</i> Type: NPN/Sink ON status: 15V or less voltage drop OFF status: 0.1mA or 1 less voltage drop Response: 8 msec or less External supply: 24V +/- 10%, 100mA
-----------------------	--

<b>LED indication:</b>	SYS: Red high bright round LED Link: Green high bright round LED RX: Green high bright round LED TX: Red high bright round LED DO: 2 Red high bright round LED
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<b>Configuration:</b>	Configure by Hardware DIP Switch or Console (When DIP Device ID=0) Serial port: Baud Rate: 2400 ~ 115200 bps Data bits: 8 bits Parity: None Stop Bit: 1 bits
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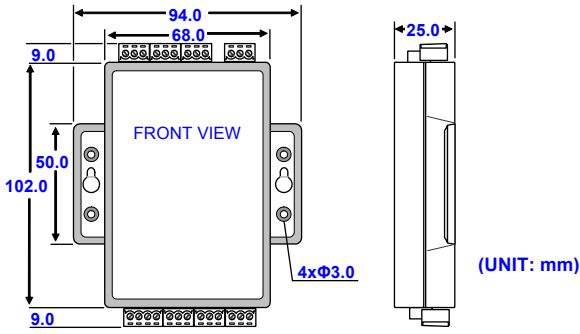
<b>Power</b>	
<b>Power Supply:</b>	DC 24V
<b>Power consumption:</b>	≤ 1W

<b>Electrical</b>	
<b>Isolation:</b>	Isolated between AI, DO, Serial port and Power
<b>Dielectric Strength:</b>	3 KV, 1 minute; between AI / DO / Serial port / Power
<b>Insulation resistance:</b>	≥ 100MΩ at 500Vdc, Between AI / DO / Serial port / Power

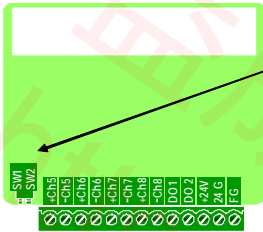
<b>Environmental</b>	
<b>Operating temp.:</b>	0~60 °C
<b>Operating humidity:</b>	20~95 %RH, non-condensing
<b>Storage temp.:</b>	-10~70 °C

<b>Mechanical</b>	
<b>Case Material:</b>	ABS fire-protection (UL 94V-0)
<b>Mounting:</b>	Surface mounting
<b>Terminal block:</b>	Plastic NYLON 66 (UL 94V-0)
<b>Weight:</b>	150g

## ■ DIMENSIONS



## ■ INPUT RANGE & MODE SELECTION



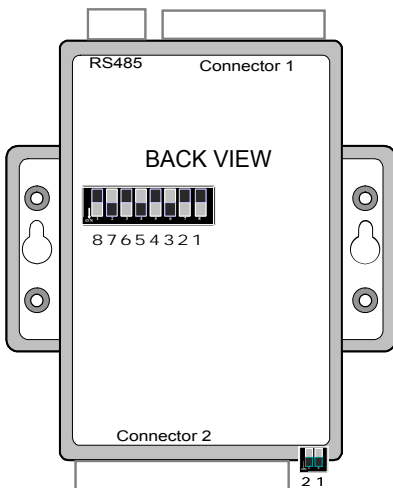
INPUT RANGE & MODE SELECTION		
DIP-SW	SW1	SW2
ON	Console Mode	1~5V
OFF	Operation/Modbus Mode	4~20mA
		0~10V
		0~20mA

SW1 is used in Mode Selection while SW2 is used to change the range. And the selections for Voltage or Current needs to cooperate with J13 as below,



Just like the red circle on the picture, if the Jumpers were on (short circuit, closed circuit), PL-ATS will work in Current Mode; else it will work under Voltage mode. Once the Input Mode was selected, the SW1 and SW2 must be adjusted with the corresponded setting.

## ■ DEVICE ID SELECTION

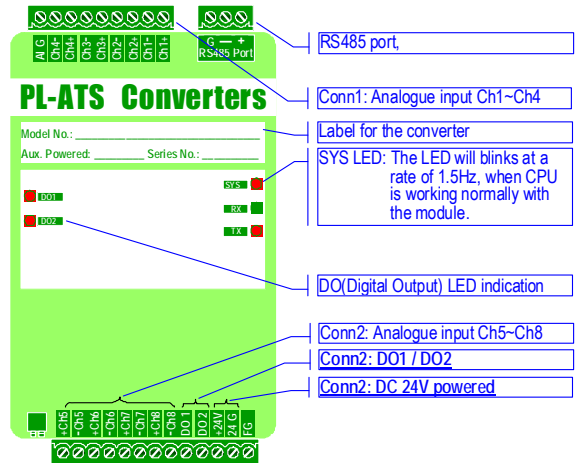


PIN Def.	PIN1	PIN2	PIN3	PIN4	PIN5	PIN6	PIN7	PIN8
Status Value	1	0	1	0	1	0	1	0
ON	1	0	1	0	1	0	1	0
Exp. Value	2 <sup>0</sup>	2 <sup>1</sup>	2 <sup>2</sup>	2 <sup>3</sup>	2 <sup>4</sup>	2 <sup>5</sup>	2 <sup>6</sup>	2 <sup>7</sup>

Device ID = Sum of Corresponded Entry Value (Status Value x Exp. Value).  
 Example: PIN1, PIN2 ON, PIN3~PIN8 OFF -->  
 Device ID = 2<sup>0</sup>x1+2<sup>1</sup>x1 = 3

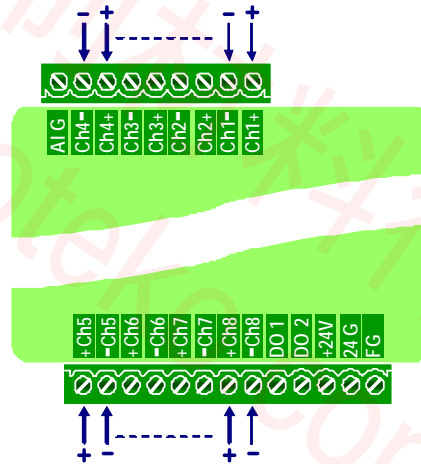
## ■ FRONT PANEL & CONNECTION

Please check the voltage of power supplied first, and then connect to the specified terminals.

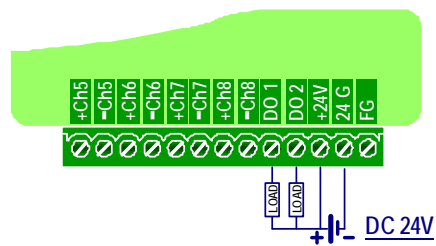


Users may refer to the following diagram to connect the external wiring for the PL-ATS module. (Wires for analog input signals are recommended to have the shielding protection)

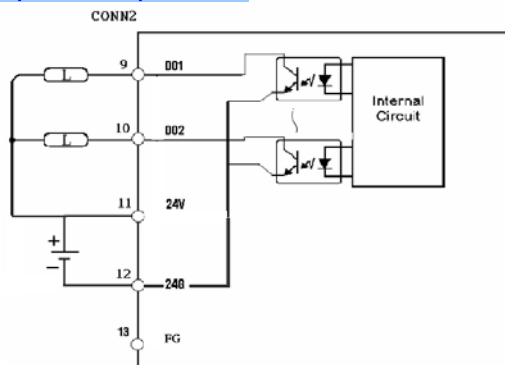
### Analogue Input



### Digital Output



**Equivalent Output Circuit**



**MODBUS ADDRESS FOR I/O**

The I/O points of the PL-ATS can easily be controlled and monitored through Modbus protocol. The Modbus address mapping with I/O is described as the followings.

**Output Status for Digital Output**

NAME	ADDRESS	EXPLAN	Write/Read
DO1	00001	<b>DO1 status</b> 0 = off 1 = on	01 function: Read Coil Status 05 function: Write Single Coil
DO2	00002	<b>DO2 status</b> 0 = off 1 = on	0F function: Write Multiple Coil

**Analogue Input status**

Every analog input signal of PL-ATS is read only and is used by two ways, Input Status and Holding Registers. In Input Status functions, it is acceptable using 0x02 (Read Input Status) to check the status of inputs. According to the Input Status, Bit0 ~ Bit7 (**10001 ~ 10008**) indicates the underflow of the input of Mode2(1~5V) and Mode4(4~2mA), which means when the input voltage is lower than 1V under Mode2 or input current is lower than 4mA under Mode4 then corresponded bit will be set to '1'. Bit8 ~ Bit15 (**10009 ~ 10016**) indicates the overflow of the input of all modes, which means when the input voltage is higher than 10V in Mode1, and 5V in Mode2 or the input current is higher than 20mA in Mode3 and Mode4, the corresponded bit will be set to '1'. All the 16 bit will be mapped onto the holding register of **40012** (Line Broken Detection Flags).

ADDRESS	EXPLAN	SET	Write/Read
10001	Analogue Input 1 lower than 1V or 4 mA	1	02 function.:R
10002	Analogue Input 2 lower than 1V or 4 mA	1	02 function.:R
10003	Analogue Input 3 lower than 1V or 4 mA	1	02 function.:R
10004	Analogue Input 4 lower than 1V or 4 mA	1	02 function.:R
10005	Analogue Input 5 lower than 1V or 4 mA	1	02 function.:R
10006	Analogue Input 6 lower than 1V or 4 mA	1	02 function.:R
10007	Analogue Input 7 lower than 1V or 4 mA	1	02 function.:R
10008	Analogue Input 8 lower than 1V or 4 mA	1	02 function.:R
10009	Analogue Input 1 higher than 5V or 20 mA	1	02 function.:R
10010	Analogue Input 2 higher than 5V or 20 mA	1	02 function.:R
10011	Analogue Input 3 higher than 5V or 20 mA	1	02 function.:R
10012	Analogue Input 4 higher than 5V or 20 mA	1	02 function.:R
10013	Analogue Input 5 higher than 5V or 20 mA	1	02 function.:R
10014	Analogue Input 6 higher than 5V or 20 mA	1	02 function.:R
10015	Analogue Input 7 higher than 5V or 20 mA	1	02 function.:R
10016	Analogue Input 8 higher than 5V or 20 mA	1	02 function.:R

**Analogue Input Signal**

Besides Input Status, Input Registers stand for the value of the analog input. Using 0x04 (Read Input Registers) function could let the user grab the input value of the channels. The address is at **30001 ~ 30008**. The same we can use Holding Register to obtain the information. The Holding Register Address is at **40001 ~ 40008**. All these registers are 2 byte long in length. The Input Registers show the raw data on each channel, however, Holding Register of **40013** is a "Conversion Data Type" which controls the display type of the channels. Bit0~Bit7 of 40013 control the corresponded channel, so that the channel will show an engineering data or a raw data.

ADDRESS	EXPLAN	RANGE	Write/Read
30001	The data of Analogue Input 1	0~65535	04 function:R
30002	The data of Analogue Input 2	0~65535	04 function:R
30003	The data of Analogue Input 3	0~65535	04 function:R
30004	The data of Analogue Input 4	0~65535	04 function:R
30005	The data of Analogue Input 5	0~65535	04 function:R
30006	The data of Analogue Input 6	0~65535	04 function:R

30007	The data of Analogue Input 7	0~65536	04 function:R
30008	The data of Analogue Input 8	0~65536	04 function:R

**Holding Register**

ADDRESS	EXPLAN	RANGE	Write/Read
40001	Engineer Value of AI1		03 function: R
40002	Engineer Value of AI2		03 function: R
40003	Engineer Value of AI3		03 function: R
40004	Engineer Value of AI4		03 function: R
40005	Engineer Value of AI5		03 function: R
40006	Engineer Value of AI6		03 function: R
40007	Engineer Value of AI7		03 function: R
40008	Engineer Value of AI8		03 function: R
40009	Limitation Status <sup>(1)</sup>		03 function: R
40010	Function Status <sup>(7)</sup>		03 function: R
40011	Input Mode <sup>(9)</sup>		03 function: R
40012	Exceed Input Range		03 function: R
40013	Conversion Data Type control <sup>(5)</sup>		03 fun.: R 06 fun.: Single R 10 fun.: Multiple W
40014	Limitation Control Flag <sup>(2)</sup>		W/R
40015	Digital Output		W/R
40016	Device ID <sup>(10)</sup>		R
40017	Baud Rate		R
40018	Function Execution <sup>(8)</sup>		W/R
40019	User Defined Register		W/R
40020	User Defined Register		W/R
40021	CH1 Low Limitation <sup>(3)</sup>		W/R
40022	CH2 Low Limitation <sup>(3)</sup>		W/R
40023	CH3 Low Limitation <sup>(3)</sup>		W/R
40024	CH4 Low Limitation <sup>(3)</sup>		W/R
40025	CH5 Low Limitation <sup>(3)</sup>		W/R
40026	CH6 Low Limitation <sup>(3)</sup>		W/R
40027	CH7 Low Limitation <sup>(3)</sup>		W/R
40028	CH8 Low Limitation <sup>(3)</sup>		W/R
40029	User Defined Register		W/R
40030	User Defined Register		W/R
40031	CH1 High Limitation <sup>(4)</sup>		W/R
40032	CH2 High Limitation <sup>(4)</sup>		W/R
40033	CH3 High Limitation <sup>(4)</sup>		W/R
40034	CH4 High Limitation <sup>(4)</sup>		W/R
40035	CH5 High Limitation <sup>(4)</sup>		W/R
40036	CH6 High Limitation <sup>(4)</sup>		W/R
40037	CH7 High Limitation <sup>(4)</sup>		W/R
40038	CH8 High Limitation <sup>(4)</sup>		W/R
40039	User Defined Register		W/R
40040	User Defined Register		W/R
40041	CH1 Engineering Low <sup>(6)</sup>		W/R
40042	CH2 Engineering Low <sup>(6)</sup>		W/R
40043	CH3 Engineering Low <sup>(6)</sup>		W/R
40044	CH4 Engineering Low <sup>(6)</sup>		W/R
40045	CH5 Engineering Low <sup>(6)</sup>		W/R
40046	CH6 Engineering Low <sup>(6)</sup>		W/R
40047	CH7 Engineering Low <sup>(6)</sup>		W/R
40048	CH8 Engineering Low <sup>(6)</sup>		W/R
40049	User Defined Register		W/R
40050	User Defined Register		W/R
40051	CH1 Engineering High <sup>(6)</sup>		W/R
40052	CH2 Engineering High <sup>(6)</sup>		W/R
40053	CH3 Engineering High <sup>(6)</sup>		W/R
40054	CH4 Engineering High <sup>(6)</sup>		W/R
40055	CH5 Engineering High <sup>(6)</sup>		W/R
40056	CH6 Engineering High <sup>(6)</sup>		W/R
40057	CH7 Engineering High <sup>(6)</sup>		W/R
40058	CH8 Engineering High <sup>(6)</sup>		W/R
40059	User Defined Register		W/R
40060	User Defined Register		W/R

\*1

**40009:** The limitation indicator of the whole limitation control. (Limitation Status)  
 Bit0 ~ Bit7 indicate if the input value is lower than the lower limitation to the corresponded channels.  
 Bit8 ~ Bit15 indicate if the input value is higher than the upper limitation to the corresponded channels.  
 If the condition matched, the corresponded bit of 40009 is set to '1'.  
 Bit 0: low limitation flag of channel 1  
 Bit 1: high limitation flag of channel 1  
 Bit 2: low limitation flag of channel 2  
 Bit 3: high limitation flag of channel 2  
 Bit 4: low limitation flag of channel 3  
 Bit 5: high limitation flag of channel 3  
 Bit 6: low limitation flag of channel 4  
 Bit 7: high limitation flag of channel 4  
 Bit 8: low limitation flag of channel 5  
 Bit 9: high limitation flag of channel 5  
 Bit 10: low limitation flag of channel 6  
 Bit 11: high limitation flag of channel 6  
 Bit 12: low limitation flag of channel 7  
 Bit 13: high limitation flag of channel 7  
 Bit 14: low limitation flag of channel 8  
 Bit 15: high limitation flag of channel 8

\*2

**40014:** The Limitation Control Register. (High/Low Limitation Control Flags)  
 If Bit0 ~ Bit7 is set to '1', Holding Register of 40009 will be enabled to check the part of low limitation comparison on each corresponded channel. If not, it is disabled.  
 If Bit8 ~ Bit15 is set to '1', Holding Register of 40009 will be enabled to check the part of high limitation comparison on each corresponded channel. If not, it is disabled.  
 Bit 0: low limitation control bit for CH1  
 Bit 1: high limitation control bit for CH1  
 Bit 2: low limitation control bit for CH2  
 Bit 3: high limitation control bit for CH2  
 Bit 4: low limitation control bit for CH3  
 Bit 5: high limitation control bit for CH3  
 Bit 6: low limitation control bit for CH4  
 Bit 7: high limitation control bit for CH4  
 Bit 8: low limitation control bit for CH5  
 Bit 9: high limitation control bit for CH5  
 Bit 10: low limitation control bit for CH6  
 Bit 11: high limitation control bit for CH6  
 Bit 12: low limitation control bit for CH7  
 Bit 13: high limitation control bit for CH7  
 Bit 14: low limitation control bit for CH8  
 Bit 15: high limitation control bit for CH8

\*3

**40021 ~ 40028** refers to the low limitation of the corresponded channels.  
 40021 is Limitation Lower Bound of Channel 1  
 40022 is Limitation Lower Bound of Channel 2  
 40023 is Limitation Lower Bound of Channel 3  
 40024 is Limitation Lower Bound of Channel 4  
 40025 is Limitation Lower Bound of Channel 5  
 40026 is Limitation Lower Bound of Channel 6  
 40027 is Limitation Lower Bound of Channel 7  
 40028 is Limitation Lower Bound of Channel 8

\*4

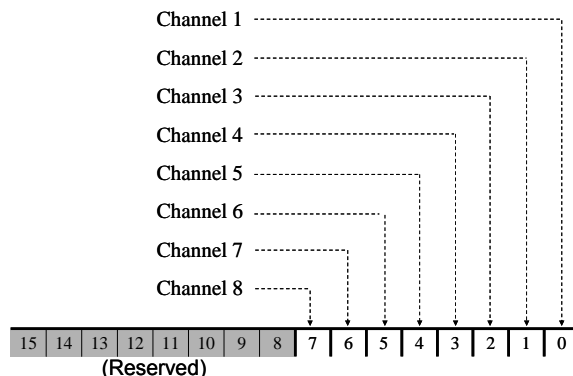
**40031 ~ 40038** refers to the high limitation of the corresponded channels.  
 40031 is Limitation Upper Bound of Channel 1  
 40032 is Limitation Upper Bound of Channel 2  
 40033 is Limitation Upper Bound of Channel 3  
 40034 is Limitation Upper Bound of Channel 4  
 40035 is Limitation Upper Bound of Channel 5  
 40036 is Limitation Upper Bound of Channel 6  
 40037 is Limitation Upper Bound of Channel 7  
 40038 is Limitation Upper Bound of Channel 8

\*5 Conversion Data Type Control

Engineering Data Mapping:

Every channel of PL-ATS could make an engineering mapping, so that the input value of each channel could be transformed onto the interval of the engineering mapping. Holding Register **40013** decides such the control to enable or disable this kind of engineering mapping in bit level. It means that Bit0~Bit7 enable the mapping by setting to '1' to the corresponded channel, and Bit8~Bit15 is now reserved. The low scale of the interval to each channel is set by Holding Registers **40041 ~ 40048**, while the high scale of the

interval to each channel is set by Holding Registers **40051 ~ 40058**. User could define the low and high scale by themselves so the engineering data could make the conversion complete.  
 Bit0 ~ Bit7 are Engineering Mapping Control Flags.  
 '0': Disable Engineering Mapping.  
 '1': Enable Engineering Mapping.  
 Bit8 ~ Bit15 is reserved.



\*6 Conversion Data Type Control

**40041 ~ 40048** refers to the lower bound of the engineering mapping to the corresponded channels.  
 40041 is Engineering Mapping Low Scale of Channel 1  
 40042 is Engineering Mapping Low Scale of Channel 2  
 40043 is Engineering Mapping Low Scale of Channel 3  
 40044 is Engineering Mapping Low Scale of Channel 4  
 40045 is Engineering Mapping Low Scale of Channel 5  
 40046 is Engineering Mapping Low Scale of Channel 6  
 40047 is Engineering Mapping Low Scale of Channel 7  
 40048 is Engineering Mapping Low Scale of Channel 8

**40051 ~ 40058** refers to the upper bound of the engineering mapping to the corresponded channels.  
 40051 is Engineering Mapping High Scale of Channel 1  
 40052 is Engineering Mapping High Scale of Channel 2  
 40053 is Engineering Mapping High Scale of Channel 3  
 40054 is Engineering Mapping High Scale of Channel 4  
 40055 is Engineering Mapping High Scale of Channel 5  
 40056 is Engineering Mapping High Scale of Channel 6  
 40057 is Engineering Mapping High Scale of Channel 7  
 40058 is Engineering Mapping High Scale of Channel 8

Saving Data:

User can use Holding Register **40018** to save the value. All the data of address from **40013** to **40060** could save into flash and got back after the next power reset if we write **0xAAAA** a hex number to **40018**. The Holding Register **40010** will show the status for the **0xAAAA** writing. It will show in a loop from **0xAAAA**, **0xB BBB**, **0xC CCC**, **0xD DDD**, and **0xE EEE**, and then go back to **0xAAAA** after the next **0xAAAA** command written again to **40018**. A hex number of **0xFFFF** written to **40018** will restore all the default factory value of Holding Registers from **40013** to **40060** and **40010** will be reset 0.

\*7

**40010:** Function Execution Status Register.  
 Read Only  
 Value: **0x0000**, **0xAAAA**, **0xB BBB**, **0xC CCC**, **0xD DDD**, **0xE EEE**

\*8

**40018:** Function Execution Register.  
**0xAAAA:** Save the Data.  
**0xFFFF:** Restore Default Factory Value from **40013** to **40060**.

\*9

**40011:** Input Range Mode  
 Mode1: **0V ~ 10V**                      Mode2: **1V ~ 5V**  
 Mode3: **0mA ~ 20mA**                    Mode4: **4mA ~ 20mA**

\*10

**40016:** Device ID for Modbus  
 If DIP Device ID is not 0, it won't do any effect of Device ID.  
 If DIP Device ID is 0, than **40016** could be set and saved.

\*11

**40017:** Device ID Control for Modbus  
 Enable: **1**; PL-ATS will reply the request only when the Device ID is correct.  
 Disable: **0**; PL-ATS will reply all valid request without Device ID check.

## ■ Console Mode Description

### – HyperTerminal Connection Screen Shot 1 –

#### Note:

Console Mode is statically configured as 38400, 8, N, 1, and Flow Control is none.  
The Connection of HyperTerminal is as the following:

Default Password is 【1234】

```

COM2 38400 8N1 - 超級終端機
檔案(F) 編輯(E) 檢視(V) 呼叫(C) 轉送(T) 說明(H)
>>>Product Infomation<<<
Product Name: SI0-A-310M(RS485 Analog I/O)
Firmware Version: SI0-A-310M v1.02
*****
* Copyright (c) 2006, Infosystem Technology Co., Ltd. *
* http://www.infosystem.com.tw *
* email: <service at infosystem.com.tw> *
*****
Password: ****

```

[Figure. Main Menu]

### – HyperTerminal Connection Screen Shot 2 –

```

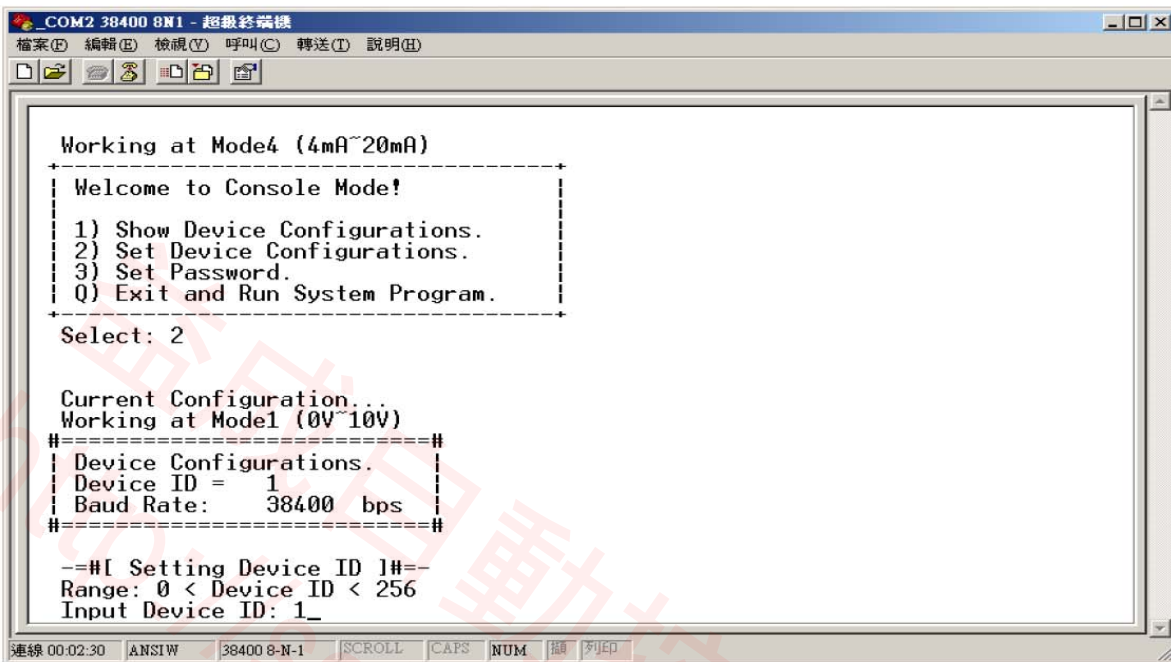
COM2 38400 8N1 - 超級終端機
檔案(F) 編輯(E) 檢視(V) 呼叫(C) 轉送(T) 說明(H)
*****
Password: ****
Authentication Succeed.
Working at Mode4 (4mA~20mA)
-----
Welcome to Console Mode!
1) Show Device Configurations.
2) Set Device Configurations.
3) Set Password.
Q) Exit and Run System Program.
-----
Select: 1
Working at Mode1 (0V~10V)
#####
Device Configurations.
Device ID = 1
Baud Rate: 38400 bps
#####
Press any key to continue.....

```

[Figure. Show Device Configurations.]



## - HyperTerminal Connection Screen Shot 3 -



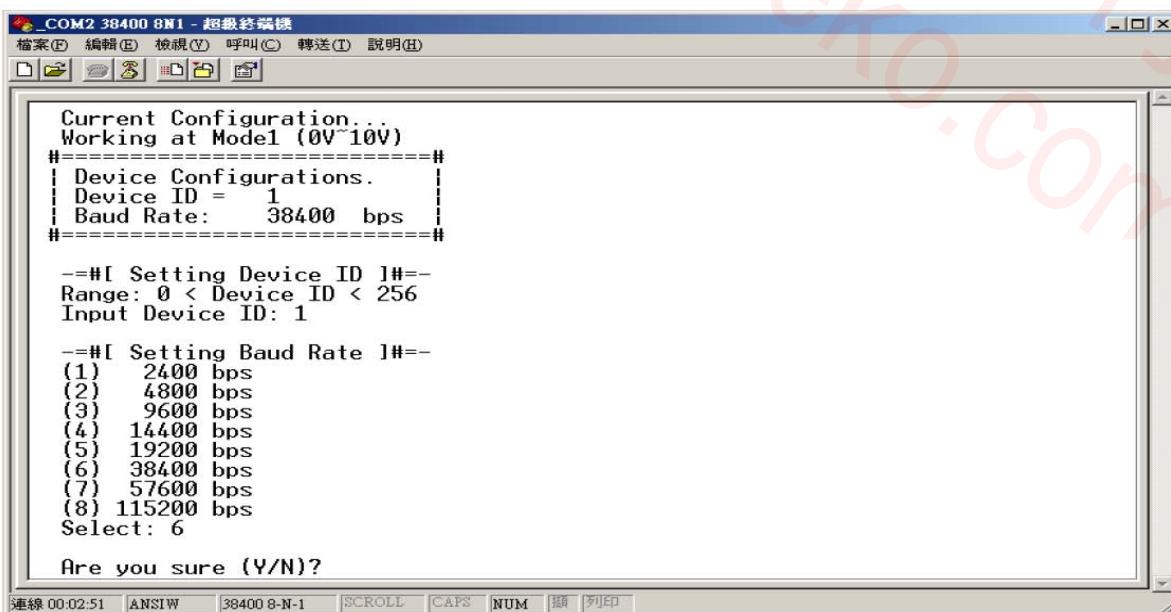
```
COM2 38400 8N1 - 超級終端機
檔案(F) 編輯(E) 檢視(V) 呼叫(C) 轉送(T) 說明(H)
Working at Mode4 (4mA~20mA)
+-----+
| Welcome to Console Mode!                |
| 1) Show Device Configurations.          |
| 2) Set Device Configurations.           |
| 3) Set Password.                       |
| Q) Exit and Run System Program.         |
+-----+
Select: 2

Current Configuration...
Working at Mode1 (0V~10V)
#-----#
| Device Configurations.                  |
| Device ID = 1                           |
| Baud Rate: 38400 bps                    |
#-----#

--#I Setting Device ID I#--
Range: 0 < Device ID < 256
Input Device ID: 1_
連線 00:02:30 ANSIW 38400 8-N-1 SCROLL CAPS NUM 顯示 列印
```

[Figure. Set Device Configuration 1.]

## - HyperTerminal Connection Screen Shot 4 -



```
COM2 38400 8N1 - 超級終端機
檔案(F) 編輯(E) 檢視(V) 呼叫(C) 轉送(T) 說明(H)
Current Configuration...
Working at Mode1 (0V~10V)
#-----#
| Device Configurations.                  |
| Device ID = 1                           |
| Baud Rate: 38400 bps                    |
#-----#

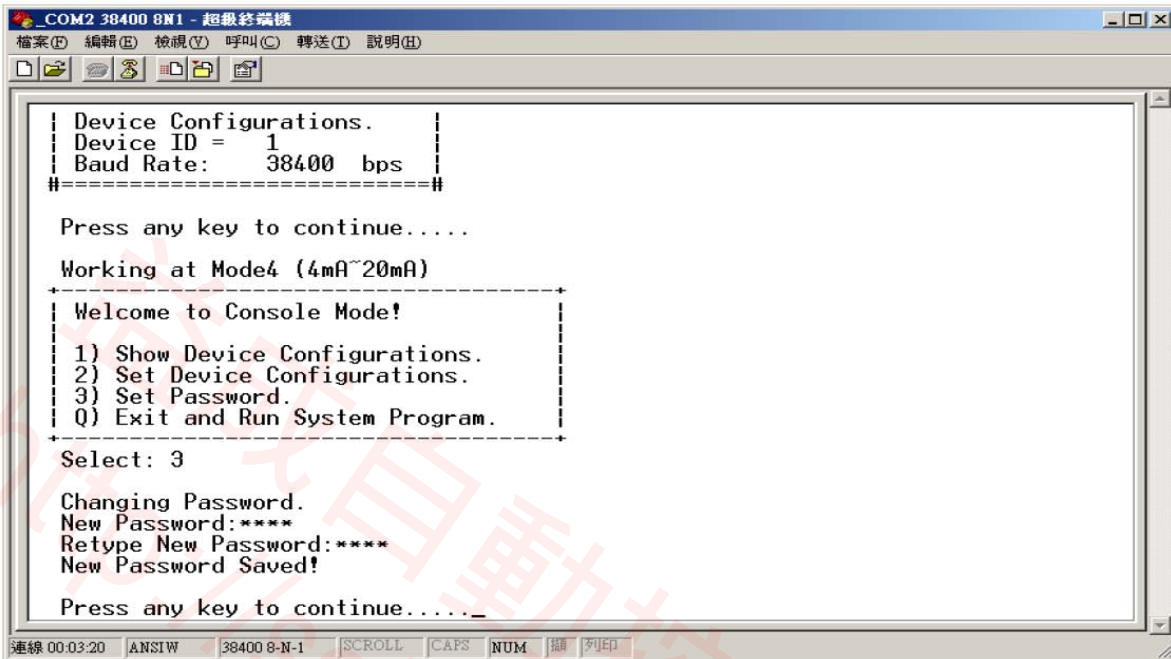
--#I Setting Device ID I#--
Range: 0 < Device ID < 256
Input Device ID: 1

--#I Setting Baud Rate I#--
(1) 2400 bps
(2) 4800 bps
(3) 9600 bps
(4) 14400 bps
(5) 19200 bps
(6) 38400 bps
(7) 57600 bps
(8) 115200 bps
Select: 6

Are you sure (Y/N)?
連線 00:02:51 ANSIW 38400 8-N-1 SCROLL CAPS NUM 顯示 列印
```

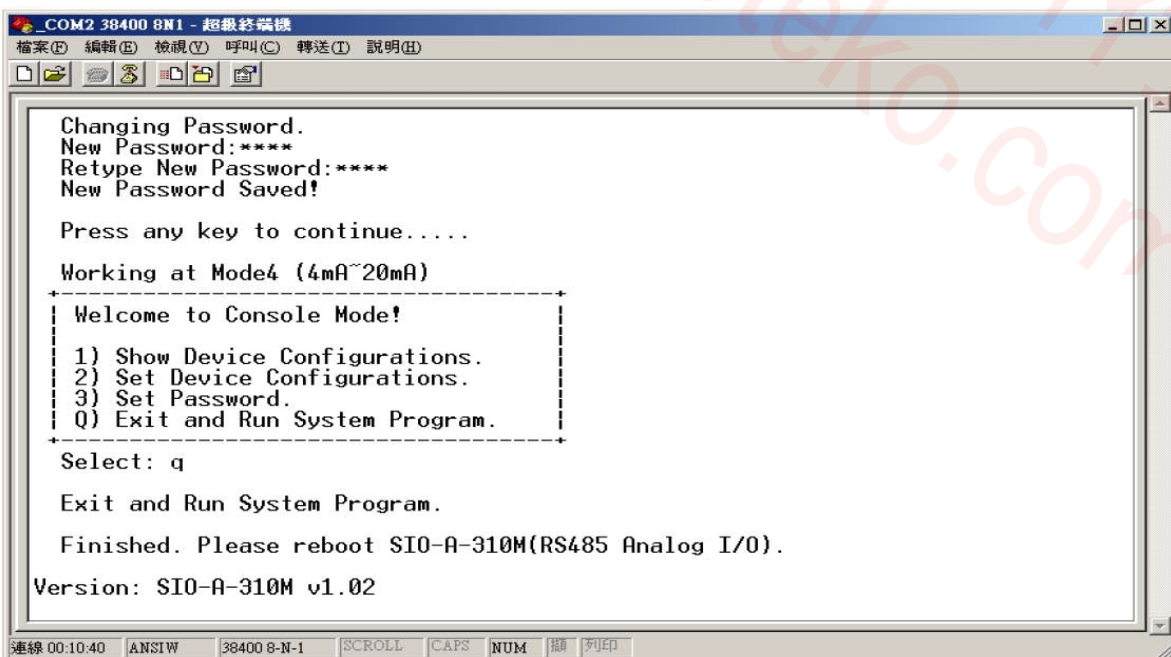
[Figure. Set Device Configurations 2.]

## - HyperTerminal Connection Screen Shot 5 -



[Figure. Set Password.]

## - HyperTerminal Connection Screen Shot 6 -



[Figure. Exit and Run System Program.]

# PL-DNet DI/DO TO ETHERNET CONVERTER

## DESCRIPTION

PL-DNet uses 8051's family microprocessor for implementing Ethernet functions. It uses the state machine to handle TCP/IP stack with most but limited functions because of the limited resources.

It supports ARP, ICMP, TCP, UDP, IP, DHCP-Client and even HTTP protocols. You can use any browsers to set the parameters, or just use the commands in console mode.

## FEATURE

- Supports ARP, ICMP, TCP, UDP, IP, DHCP, HTTP, Modbus/TCP, and 10Base-T Ethernet standard
- Supports Web Based interface for fast configuration without special software, also command mode for parameters setting by application software.
- Supports Modbus/TCP for easy integration with HMI/SCADA or OPC server
- Supports Winsock networking and optional "Virtual serial ports" driver for windows application program

## APPLICATIONS

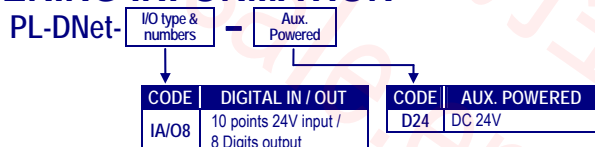
It is easy to convert DI status and DO control to Ethernet in IA, Factory Automation, Security or any other low data rate data transmission by using it as the intermediate converter.

- Security devices
- Warehouse terminals
- Access control terminals
- Time recorders
- Shop floor automation terminals

## Low Cost Solution



## ORDERING INFORMATION



## TECHNICAL SPECIFICATION

**CPU:** 8051  
**Network interface:** 10 BASE-T, RJ-45 connector  
**Protocol:** ARP, ICMP, TCP, UDP, IP, DHCP Client, HTTP, Modbus/TCP Slave,  
**Reset:** Built-in reset key to restore the defaults  
**Watch dog timer:** Built-in hardware auto reset function

**DI & DO** *10 DI & 8 DO available*  
**Digital input:** photo-couple, 24V±10%, 7mA  
 ON status: 12V/2.0mA or higher  
 OFF status: 4V/1.0mA or lower  
 Response: 8 msec or less

**Digital output:** *Open collect, 24V±10%, 0.5A*  
 Type: NPN/Sink  
 ON status: 15V or less voltage drop  
 OFF status: 0.1mA or less voltage drop  
 Response: 8 msec or less  
 External supply: 24V +/- 10%, 100mA  
 SYS: Red high bright round LED  
 Link: Green high bright round LED

**LED indication:**  
**Configuration:** *Web Browser, Windows utility via Ethernet*  
 Set up password & Access password settable

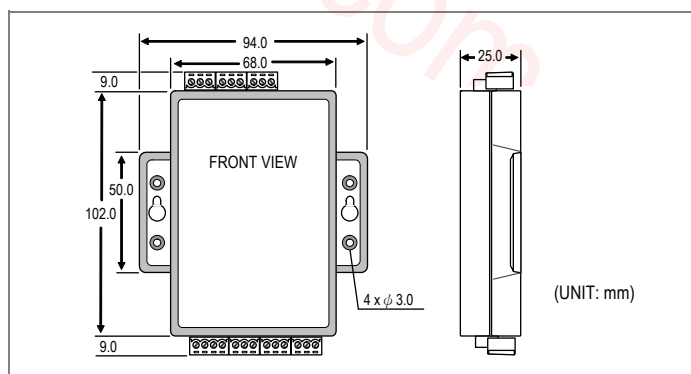
**Power**  
**Power Supply:** DC 24V  
**Power consumption:** ≤ 1W

**Electrical**  
**Isolation:** Isolated between DI, DO and Ethernet (RJ45)  
**Dielectric Strength:** 3 KV, 1 minute; between Serial ports / RJ45 / Power  
**Insulation resistance:** ≥100MΩ at 500Vdc, Between Serial ports / RJ45 / Power

**Environmental**  
**Operating temp.:** 0~60 °C  
**Operating humidity:** 20~95 %RH, non-condensing  
**Storage temperature:** -10~70 °C

**Mechanical**  
**Case Material:** ABS fire-protection (UL 94V-0)  
**Mounting:** Surface mounting  
**Terminal block:** Plastic NYLON 66 (UL 94V-0)  
**Weight:** 150g

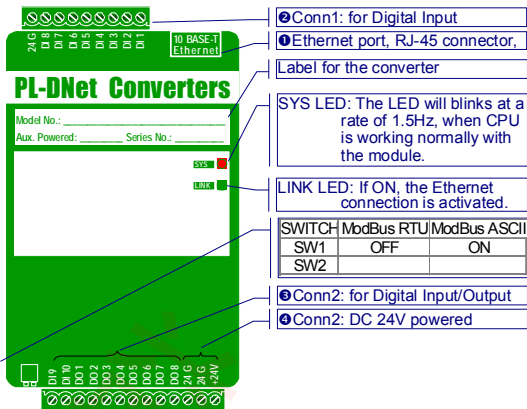
## DIMENSIONS



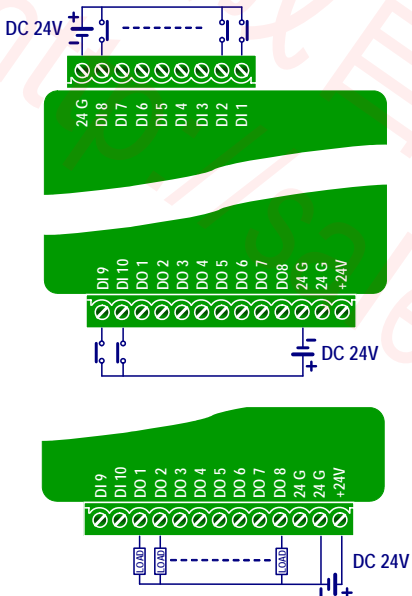


## FRONT PANEL & CONNECTION

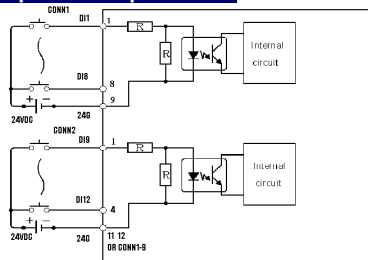
Please check the voltage of power supplied first, and then connect to the specified terminals.



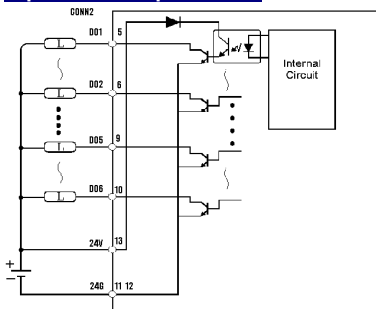
### Digital Input / Output



### Equivalent Input Circuit



### Equivalent Output Circuit



## SET UP & CONFIGURATION

Please refer to the operating manual for detail.

### By set up tool

Step 1: Execute the Setup.exe file of CDR enclosure with product. Execute the Setup.exe file and you will get the following screen



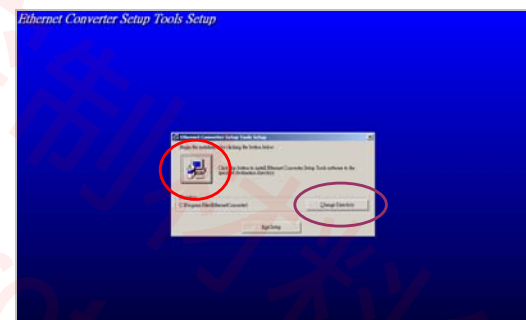
Step 2: Welcome Messages

Wait until the Welcome Message shows. Select OK Button to continue installation.



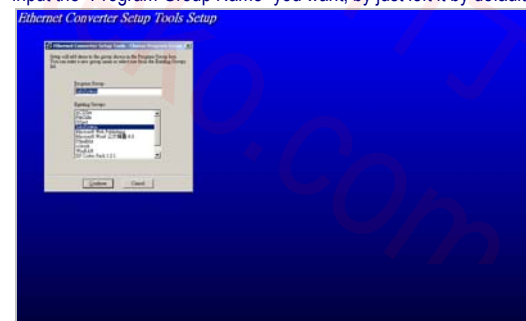
Step 3: Decide Directory

Choose "Change Directory" to change which directory you want to put files in if needed. And press red circle button to start installation.



Step 4: Decide Program Group Name

Input the "Program Group Name" you want, by just left it by default.

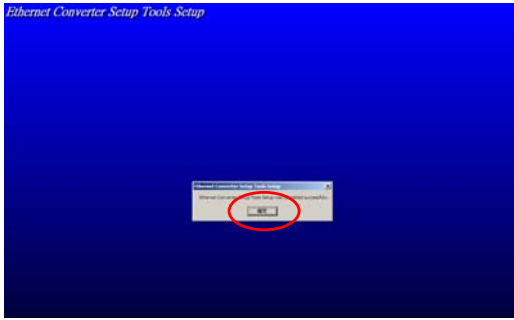


Step 5: Processing

Start installation process.



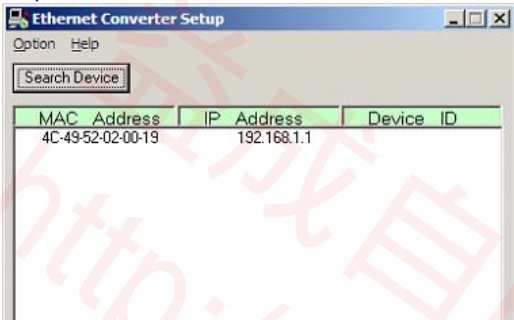
Step 6: Finished  
Press Button to finish installation.



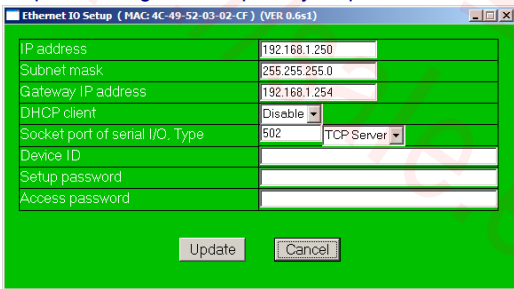
Connect the converter and Ethernet port of PC, then configure the converter

Step 1: Searching the devices.

Step 2: Double click the selected item



Step 3: Configure and update your parameters

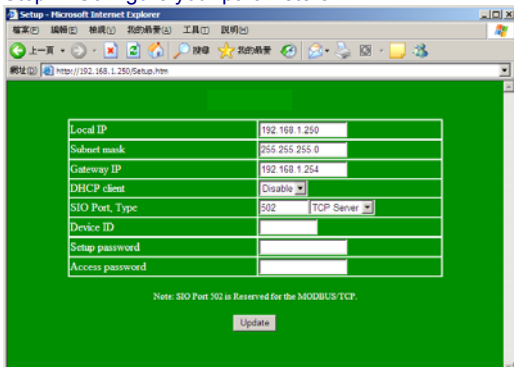


**By browser**

Step 1: Ready to login



Step 2: Configure your parameters



Step 3: Finish and reboot



**MODBUS ADDRESS FOR DI/DO**

The DI/DO points of the PL-DNet can easily be controlled and monitored through Modbus protocol. The Modbus address mapping with discrete I/O is described as the followings.

**Digital Output**

The 6-points or 8-points digital output of PL-DNet is mapped with the Modbus holding register "40001". The following table describes the exact bit-mapping for Modbus holding register "40001".

NAME	ADDRESS	EXPLAN	Write/Read
DO	40001	DO status bit0~bit6(bits8): DO1~DO6(DO8) 0 = off 1 = on	W/R

**Digital Input**

The 12-points or 10-points digital input of PL-DNet is mapped with the Modbus holding register "40002". The following table describes the exact bit-mapping for Modbus holding register "40002".

NAME	ADDRESS	EXPLAN	Write/Read
DI	40002	DI status bit0~bit11(bits09): DI1~DI2(DI10) 0 = off 1 = on	W/R

# PL-DTS DI/DO TO RS485 Converter

## DESCRIPTION

PL-DTS is an I/O controller product with Serial Port on its data communication and makes data acquisition easier through ModBus Protocol of RTU mode on Serial Bus.

It uses the MSP430 microprocessor family for implementing the whole framework. Basically, it supports up to 10 inputs and 8 outputs or 18 inputs and 0 outputs. Moreover, it equips the counter function in each input channels, and is also designed for friendly use and convenience concerns.



## FEATURE

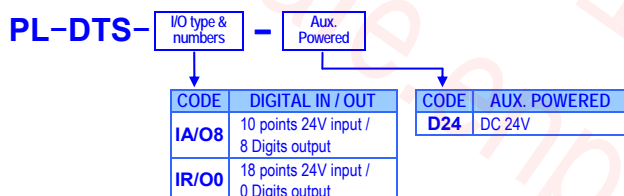
- Support ModBus Protocol
  - ▶ Auto Detect ModBus RTU and ASCII Mode
  - ▶ Supported Modbus Function 01, 02, 03, 04, 05, 06, 10, 0F
- Configurable Parameters with Device ID Control
  - ▶ Configurable under Console Mode
  - ▶ Enable / Disable: When Device ID Control is enabled, it will reply the modbus requests only when the Device ID is correct
- Each Input will enable Counter Function simultaneously when DIP Switch select to enable Counter Function.

## APPLICATIONS

It is easy to convert DI status and DO control to RS485 in IA, Factory Automation, Security or any other low data rate data transmission by using it as the intermediate converter.

- Security devices
- Warehouse terminals
- Access control terminals
- Time recorders
- Shop floor automation terminals

## ORDERING INFORMATION



## TECHNICAL SPECIFICATION

<b>CPU:</b>	MSP430
<b>Network interface:</b>	RS485,
<b>Protocol:</b>	Modbus/RTU, Modbus/ASCII, Console Mode
<b>Reset:</b>	Built-in reset key to restore the defaults
<b>Watch dog timer:</b>	Built-in hardware auto reset function

<b>DI &amp; DO</b>	10 DI & 8 DO or 18 DI & 0 DO available
<b>Digital input:</b>	photo-couple, 24V±10%, 7mA ON status: 12V/2.0mA or higher OFF status: 4V/1.0mA or lower Response: 8 msec or less
<b>Digital output:</b>	Open collect, 24V±10%, 0.5A Type: NPN/Sink ON status: 15V or less voltage drop OFF status: 0.1mA or I less voltage drop Response: 8 msec or less External supply: 24V +/- 10%, 100mA

<b>LED indication:</b>	SYS: Red high bright round LED RX: Green high bright round LED TX: Green high bright round LED DI/DO: Red high bright round LED
------------------------	--

<b>Configuration:</b>	Configure by Hardware DIP Switch, Console or ModBus (When DIP Device ID=0) Serial port: Baud Rate: 300 ~ 115200 bps (57600 bps with counter function enabled.)
-----------------------	--

<b>Data bits:</b>	7 or 8 bits
<b>Parity:</b>	None, even or odd
<b>Stop Bit:</b>	1 or 2 bits

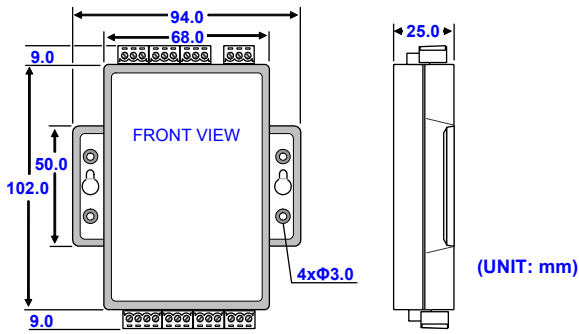
<b>Power</b>	
<b>Power Supply:</b>	DC 24V
<b>Power consumption:</b>	≤ 1W

<b>Electrical</b>	
<b>Isolation:</b>	Isolated between DI, DO and Ethernet (RJ45)
<b>Dielectric Strength:</b>	3 KV, 1 minute; between Serial ports / RJ45 / Power
<b>Insulation resistance:</b>	≥ 100MΩ at 500Vdc, Between Serial ports / RJ45 / Power

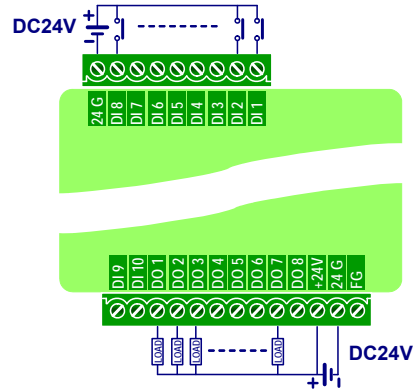
<b>Environmental</b>	
<b>Operating temp.:</b>	0~60 °C
<b>Operating humidity:</b>	20~95 %RH, non-condensing
<b>Storage temperature:</b>	-10~70 °C

<b>Mechanical</b>	
<b>Case Material:</b>	ABS fire-protection (UL 94V-0)
<b>Mounting:</b>	Surface mounting
<b>Terminal block:</b>	Plastic NYLON 66 (UL 94V-0)
<b>Weight:</b>	110g

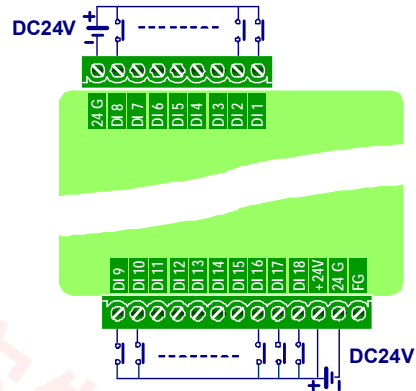
## DIMENSIONS



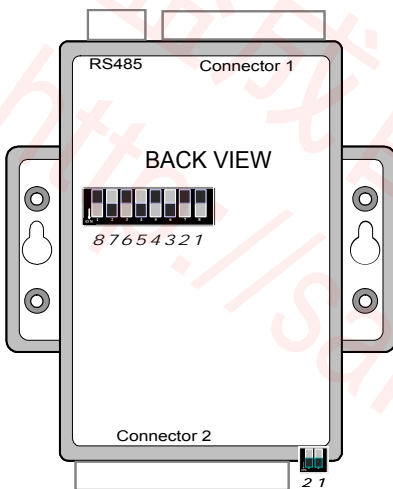
### Digital Input / Output – 10 DI & 8 DO



### Digital Input / Output – 18 DI & without DO



## DEVICE ID SELECTION

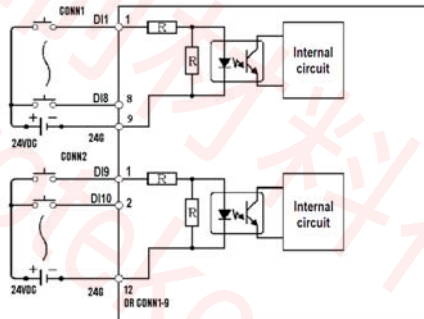


PIN Def.	PIN1	PIN2	PIN3	PIN4	PIN5	PIN6	PIN7	PIN8
Status Value	1	0	1	0	1	0	1	0
ON	1	0	1	0	1	0	1	0
Exp. Value	2 <sup>0</sup>	2 <sup>1</sup>	2 <sup>2</sup>	2 <sup>3</sup>	2 <sup>4</sup>	2 <sup>5</sup>	2 <sup>6</sup>	2 <sup>7</sup>

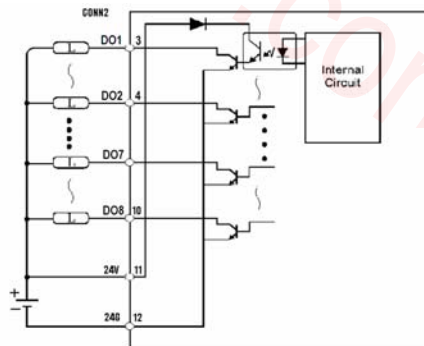
Device ID = Sum of Corresponded Entry Value (Status Value x Exp. Value).

Example: PIN1, PIN2 ON, PIN3~PIN8 OFF -->  
 Device ID = 2<sup>0</sup>x1+2<sup>1</sup>x1 = 3

### Equivalent Digital Input Circuit

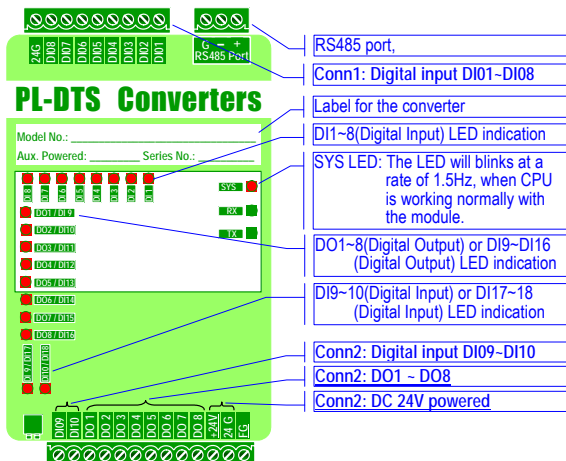


### Equivalent Digital Output Circuit



## FRONT PANEL & CONNECTION

Please check the voltage of power supplied first, and then connect to the specified terminals.



## MODBUS ADDRESS FOR I/O

The I/O points of the PL-DTS can easily be controlled and monitored through Modbus protocol. The Modbus address mapping with I/O is described as the followings.

### Digital Output Status & Control

ADDRESS	EXPLAN	Write/Read
00001	DO1, OUT1 Status; 0 = off 1 = on	0x01 Read Coil Status 0x05 Force Single Coil 0x0F Force Multiple Coil
00002	DO2, OUT2 Status; 0 = off 1 = on	
00003	DO3, OUT3 Status; 0 = off 1 = on	
00004	DO4, OUT4 Status; 0 = off 1 = on	
00005	DO5, OUT5 Status; 0 = off 1 = on	
00006	DO6, OUT6 Status; 0 = off 1 = on	
00007	DO7, OUT7 Status; 0 = off 1 = on	
00008	DO8, OUT8 Status; 0 = off 1 = on	

### Digital Input Status

ADDRESS	EXPLAN	Write/Read
10001	DI1, IN1 Status; 0 = Low 1 = High	0x02 Read Input Status
10002	DI2, IN2 Status; 0 = Low 1 = High	
10003	DI3, IN3 Status; 0 = Low 1 = High	
10004	DI4, IN4 Status; 0 = Low 1 = High	
10005	DI5, IN5 Status; 0 = Low 1 = High	
10006	DI6, IN6 Status; 0 = Low 1 = High	
10007	DI7, IN7 Status; 0 = Low 1 = High	
10008	DI8, IN8 Status; 0 = Low 1 = High	
10009	DI9, IN9 Status; 0 = Low 1 = High	
10010	DI10, IN10 Status; 0 = Low 1 = High	

### Input Register

ADDRESS	EXPLAN	Write/Read
30001	DI1 Pulse Frequency mode	Read Only 0x04 Read Input Registers
30002	DI2 Pulse Frequency mode	
30003	DI3 Pulse Frequency mode	
30004	DI4 Pulse Frequency mode	
30005	DI5 Pulse Frequency mode	
30006	DI6 Pulse Frequency mode	
30007	DI7 Pulse Frequency mode	
30008	DI8 Pulse Frequency mode	
30009	DI9 Pulse Frequency mode	
30010	DI10 Pulse Frequency mode	
30011	DI1 Count; Low Byte	0x04 Read Input Registers * Counter Value for DI Odd Address (Low Byte) Even Address (High Byte)
30012	DI1 Count mode; High Byte	
30013	DI2 Count mode; Low Byte	
30014	DI2 Count mode; High Byte	
30015	DI3 Count mode; Low Byte	
30016	DI3 Count mode; High Byte	
30017	DI4 Count mode; Low Byte	
30018	DI4 Count mode; High Byte	
30019	DI5 Count mode; Low Byte	
30020	DI5 Count mode; High Byte	
30021	DI6 Count mode; Low Byte	
30022	DI6 Count mode; High Byte	
30023	DI7 Count mode; Low Byte	
30024	DI7 Count mode; High Byte	
30025	DI8 Count mode; Low Byte	
30026	DI8 Count mode; High Byte	
30027	DI9 Count mode; Low Byte	
30028	DI9 Count mode; High Byte	
30029	DI10 Count mode; Low Byte	
30030	DI10 Count mode; High Byte	

### Holding Register

ADDRESS	EXPLAN	Write/Read
40001	Output Register	0x03 Read Holding Registers 0x06 Preset Single Register 0x10 Preset Multiple Registers
40002	Input Register DI1 ~ DI10 High / Low Status BIT0=DI1,...BIT10=DO10 ON=1, OFF=0	Read Only 0x03 Read Holding Registers
40003	Device ID; 0 < Device ID < 256 Enable while Hardware Device ID = 0	0x03 Read Holding Registers 0x06 Preset Single Register 0x10 Preset Multiple Registers
40004	Baud Rate( x 100); 3, 12, 24, 48, 96, 192, 384, 576, 1152	
40005	Word Length; (8bit and 7bit)	
40006	Parity Check; 0: None, 1: Odd, 2: Even	
40007	Stop Bit; 1: 1 stop bit 2: 2 stop bits	
40008	Write Data Command 0xAAAA: Save Device ID and RS485 Configuration Setting. 0xBBBB: Save User Defined Registers 0xCCCC: Save DI Counter Registers 0xFFFF: Restore the Default Value(40009=0)	
40009	Write Data Status: Show Status of 40008	
40010	RS485 Change on-line	
40011	User Defined Register	
40012	User Defined Register	
40013	User Defined Register	
40014	User Defined Register	
40015	User Defined Register	
40016	User Defined Register	
40017	User Defined Register	
40018	User Defined Register	
40019	User Defined Register	
40020	User Defined Register	
40021	DI1 Input Frequency	Read Only 0x03 Read Holding Registers
40022	DI2 Input Frequency	
40023	DI3 Input Frequency	Read Only 0x03 Read Holding Registers
40024	DI4 Input Frequency	
40025	DI5 Input Frequency	
40026	DI6 Input Frequency	
40027	DI7 Input Frequency	
40028	DI8 Input Frequency	
40029	DI9 Input Frequency	
40030	DI10 Input Frequency	
40031	DI1 Count (Low Byte)	
40032	DI1 Count (High Byte)	
40033	DI2 Count (Low Byte)	
40034	DI2 Count (High Byte)	
40035	DI3 Count (Low Byte)	
40036	DI3 Count (High Byte)	
40037	DI4 Count (Low Byte)	
40038	DI4 Count (High Byte)	
40039	DI5 Count (Low Byte)	
40040	DI5 Count (High Byte)	
40041	DI6 Count (Low Byte)	
40042	DI6 Count (High Byte)	
40043	DI7 Count (Low Byte)	
40044	DI7 Count (High Byte)	
40045	DI8 Count (Low Byte)	
40046	DI8 Count (High Byte)	
40047	DI9 Count (Low Byte)	
40048	DI9 Count (High Byte)	
40049	DI10 Count (Low Byte)	
40050	DI10 Count (High Byte)	



# PL-RTS DI/RO TO RS485 CONVERTER

## DESCRIPTION

PL-RTS is an I/O controller product with Serial Port on its data communication and Relay control easier through ModBus Protocol of RTU mode on Serial Bus.

It uses the MSP430 microprocessor family for implementing the whole framework. Basically, it supports up to 8 inputs and 6 outputs. Moreover, it equips the counter function in each input channels, and is also designed for friendly use and convenience concerns.

## FEATURE

- Support ModBus Protocol
  - Auto Detect ModBus RTU and ASCII Mode
  - Supported Modbus Function 01, 02, 03, 04, 05, 06, 10, 0F
- Configurable Parameters with Device ID Control
  - Configurable under Console Mode
  - Enable / Disable: When Device ID Control is enabled, it will reply the modbus requests only when the Device ID is correct
- Each Input will enable Counter Function simultaneously when DIP Switch select to enable Counter Function.

## APPLICATIONS

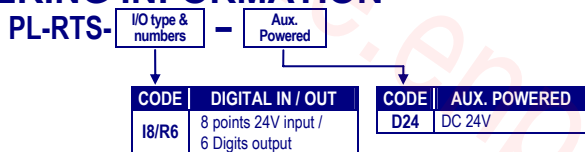
It is easy to convert DI status and RO control to RS485 in IA, Factory Automation, Security or any other low data rate data transmission by using it as the intermediate converter.

- Security devices
- Warehouse terminals
- Access control terminals
- Time recorders
- Shop floor automation terminals

## Low Cost Solution



## ORDERING INFORMATION

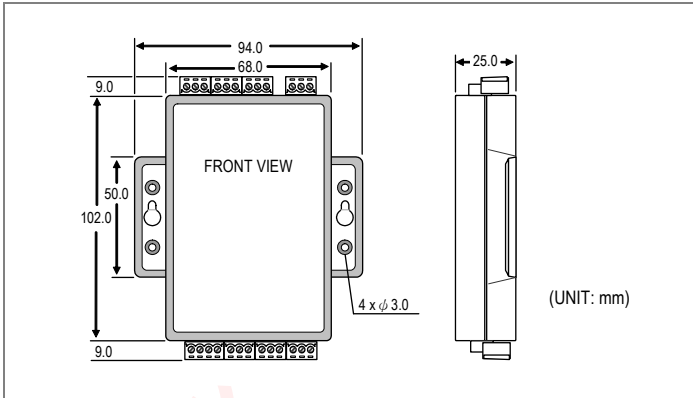


## TECHNICAL SPECIFICATION

- CPU:** MSP430
- Network interface:** RS485,
- Protocol:** Modbus/RTU, Modbus/ASCII, Console Mode
- Reset:** Built-in reset key to restore the defaults
- Watch dog timer:** Built-in hardware auto reset function
- DI & RO** 8 DI & 6 RO available
- Digital input:** photo-couple, 24V±10%, 7mA  
ON status: 12V/2.0mA or higher  
OFF status: 4V/1.0mA or lower  
Response: 8 msec or less
- Relay output:** Relay, Form A; 3A/250V  
photo-couple Isolation with CPU  
**Max. switching freq.:** 3600 times/hour
- LED indication:** SYS: Red high bright round LED  
Link: Green high bright round LED  
RX: Green high bright round LED  
TX: Red high bright round LED  
DI(Digital input): 8 Red high bright round LED  
RO(Relay output): 6 Red high bright round LED
- Configuration:** Configure by Hardware DIP Switch, Console or ModBus (When DIP Device ID=0)  
Serial port:  
**Baud Rate:** 300 ~ 115200 bps (57600 bps with counter function enabled.)  
**Data bits:** 7 or 8 bits  
**Parity:** None, even or odd  
**Stop Bit:** 1 or 2 bits

- Power**
- Power Supply:** DC 24V
- Power consumption:** ≤ 1W
- Electrical**
- Isolation:** Isolated between DI, DO and Ethernet (RJ45)
- Dielectric Strength:** 3 KV, 1 minute; between Serial ports / RJ45 / Power
- Insulation resistance:** ≥100MΩ at 500Vdc, Between Serial ports / RJ45 / Power
- Environmental**
- Operating temp.:** 0~60 °C
- Operating humidity:** 20~95 %RH, non-condensing
- Storage temperature:** -10~70 °C
- Mechanical**
- Case Materiel:** ABS fire-protection (UL 94V-0)
- Mounting:** Surface mounting
- Terminal block:** Plastic NYLON 66 (UL 94V-0)
- Weight:** 150g

## DIMENSIONS



## DEVICE ID SELECTION

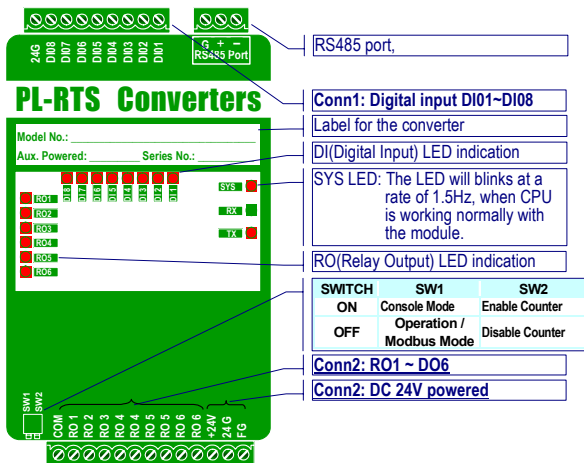
PIN Def.	PIN1	PIN2	PIN3	PIN4	PIN5	PIN6	PIN7	PIN8
Status Value	1	0	1	0	1	0	1	0
ON OFF	1	0	1	0	1	0	1	0
Exp. Value	2 <sup>0</sup>	2 <sup>1</sup>	2 <sup>2</sup>	2 <sup>3</sup>	2 <sup>4</sup>	2 <sup>5</sup>	2 <sup>6</sup>	2 <sup>7</sup>

Device ID = Sum of Corresponded Entry Value (Status Value x Exp. Value).

Example: PIN1, PIN2 ON, PIN3~PIN8 OFF -->  
Device ID = 2<sup>0</sup> × 1 + 2<sup>1</sup> × 1 = 3

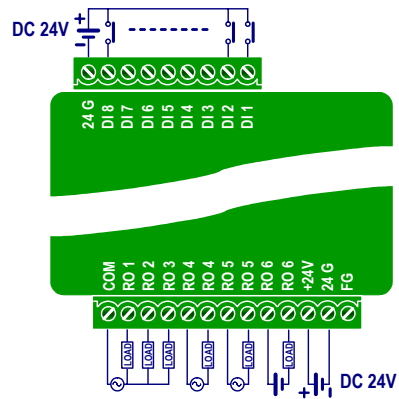
## FRONT PANEL & CONNECTION

Please check the voltage of power supplied first, and then connect to the specified terminals.

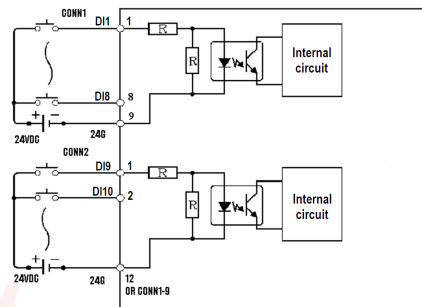


## Digital Input / Relay Output

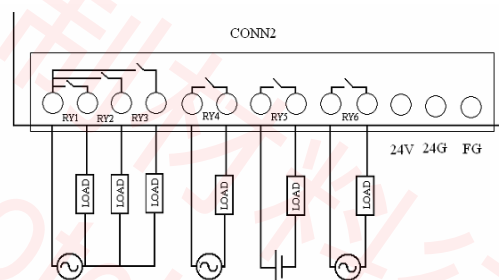
### 8 DI & 6 RO



### Equivalent Digital Input Circuit



### Equivalent Relay Output Circuit



## MODBUS ADDRESS FOR I/O

The I/O points of the PL-RTS can easily be controlled and monitored through Modbus protocol. The Modbus address mapping with I/O is described as the followings.

### Relay Output Status & Control

ADDRESS	EXPLAN	Write/Read
00001	RO1, OUT1 Status; 0 = off 1 = on	0x01 Read Coil Status 0x05 Force Single Coil 0x0F Force Multiple Coil
00002	RO2, OUT2 Status; 0 = off 1 = on	
00003	RO3, OUT3 Status; 0 = off 1 = on	
00004	RO4, OUT4 Status; 0 = off 1 = on	
00005	RO5, OUT5 Status; 0 = off 1 = on	
00006	RO6, OUT6 Status; 0 = off 1 = on	

### Digital Input Status

ADDRESS	EXPLAN	Write/Read
10001	DI1, IN1 Status; 0 = Low 1 = High	0x02 Read Input Status
10002	DI2, IN2 Status; 0 = Low 1 = High	
10003	DI3, IN3 Status; 0 = Low 1 = High	
10004	DI4, IN4 Status; 0 = Low 1 = High	
10005	DI5, IN5 Status; 0 = Low 1 = High	
10006	DI6, IN6 Status; 0 = Low 1 = High	
10007	DI7, IN7 Status; 0 = Low 1 = High	
10008	DI8, IN8 Status; 0 = Low 1 = High	

**Input Register**

ADDRESS	EXPLAN	Write/Read
30001	DI1 Pulse Frequency mode	Read Only 0x04 Read Input Registers
30002	DI2 Pulse Frequency mode	
30003	DI3 Pulse Frequency mode	
30004	DI4 Pulse Frequency mode	
30005	DI5 Pulse Frequency mode	
30006	DI6 Pulse Frequency mode	
30007	DI7 Pulse Frequency mode	
30008	DI8 Pulse Frequency mode	
30009	Reserved	
30010	Reserved	
30011	DI1 Count; Low Byte	0x04 Read Input Registers * Counter Value for DI Odd Address (Low Byte) Even Address (High Byte)
30012	DI1 Count mode; High Byte	
30013	DI2 Count mode; Low Byte	
30014	DI2 Count mode; High Byte	
30015	DI3 Count mode; Low Byte	
30016	DI3 Count mode; High Byte	
30017	DI4 Count mode; Low Byte	
30018	DI4 Count mode; High Byte	
30019	DI5 Count mode; Low Byte	
30020	DI5 Count mode; High Byte	
30021	DI6 Count mode; Low Byte	
30022	DI6 Count mode; High Byte	
30023	DI7 Count mode; Low Byte	
30024	DI7 Count mode; High Byte	
30025	DI8 Count mode; Low Byte	
30026	DI8 Count mode; High Byte	
30027	Reserved	
30028	Reserved	
30029	Reserved	
30030	Reserved	

ADDRESS	EXPLAN	Write/Read
40021	DI1 Input Frequency	Read Only 0x03 Read Holding Registers
40022	DI2 Input Frequency	
40023	DI3 Input Frequency	
40024	DI4 Input Frequency	Read Only 0x03 Read Holding Registers
40025	DI5 Input Frequency	
40026	DI6 Input Frequency	
40027	DI7 Input Frequency	
40028	DI8 Input Frequency	
40029	Reserved	
40030	Reserved	
40031	DI1 Count (Low Byte)	
40032	DI1 Count (High Byte)	
40033	DI2 Count (Low Byte)	
40034	DI2 Count (High Byte)	
40035	DI3 Count (Low Byte)	
40036	DI3 Count (High Byte)	
40037	DI4 Count (Low Byte)	
40038	DI4 Count (High Byte)	
40039	DI5 Count (Low Byte)	
40040	DI5 Count (High Byte)	
40041	DI6 Count (Low Byte)	
40042	DI6 Count (High Byte)	
40043	DI7 Count (Low Byte)	
40044	DI7 Count (High Byte)	
40045	DI8 Count (Low Byte)	
40046	DI8 Count (High Byte)	
40047	Reserved	
40048	Reserved	
40049	Reserved	
40050	Reserved	

**Holding Register**

ADDRESS	EXPLAN	Write/Read
40001	Output Register DO1 ~ DO6 ON / OFF Status Bit0=DO1,...Bit6=DO6 ON=1, OFF=0	0x03 Read Holding Registers 0x06 Preset Single Register 0x10 Preset Multiple Registers
40002	Input Register DI1 ~ DI8 High / Low Status Bit0=DI1,...Bit8=DI8 ON=1, OFF=0	Read Only 0x03 Read Holding Registers
40003	Device ID; 0 < Device ID < 256 Enable while Hardware Device ID = 0	
40004	Baud Rate( x 100); 3, 12, 24, 48, 96, 192, 384, 576, 1152	
40005	Word Length; (8bit and 7bit)	
40006	Parity Check; 0: None, 1: Odd, 2: Even	
40007	Stop Bit; 1: 1 stop bit 2: 2 stop bits	0x03 Read Holding Registers 0x06 Preset Single Register 0x10 Preset Multiple Registers
40008	Write Data Command 0xAAAA: Save Device ID and RS485 Configuration Setting. 0xB BBB: Save User Defined Registers 0xC CCC: Save DI Counter Registers 0xFFFF: Restore the Default Value(40009=0)	
40009	Write Data Status: Show Status of 40008	0x03 Read Holding Registers
40010	RS485 Change on-line	
40011	User Defined Register	
40012	User Defined Register	
40013	User Defined Register	
40014	User Defined Register	0x03 Read Holding Registers
40015	User Defined Register	0x06 Preset Single Register
40016	User Defined Register	0x10 Preset Multiple Registers
40017	User Defined Register	
40018	User Defined Register	
40019	User Defined Register	
40020	User Defined Register	

# PL-SNet SERIAL PORT TO ETHERNET CONVERTER

## DESCRIPTION

PL-SNet uses 8051's family microprocessor for implementing serial ports to Ethernet functions. It uses the state machine to handle TCP/IP stack and brings the user a lower cost TCP/IP stack with limited functions because of the limited resources. It supports ARP, ICMP, TCP, UDP, IP, DHCP-Client and even HTTP protocols. You can use any browsers to set the parameters, or just use the commands in console mode.

## Low Cost Solution



## FEATURE

- Allows RS-232/422/485 serial devices to be connected to Ethernet network via transparent data conversion and operates as an Ethernet node. Serial communication speed is up to 115.2 kbps.
- At most three ports available.(please refer to ordering information)
- Eight Independent Sockets available. Support at most eight independent sockets for SIO, Digital I/O and HTTP and all protocol working independent and concurrently.
- Setup login in password and access password for security.

## APPLICATIONS

It is easy to convert serial port data to Ethernet in IA, Factory Automation, Security or any other low data rate data transmission by using it as the intermediate converter.

- Data collection & security terminals
- Security devices
- Warehouse terminals
- Remote sensors & meters
- Environmental monitors
- Access control terminals
- Time recorders
- Shop floor automation terminals
- Power monitors
- Data loggers

## ORDERING INFORMATION

PL-SNet - Socket No. - Port 1 | Port 2 | Port 3 - DI/DO - Aux. Powered

CODE	SOCKET NO.	CODE	1 PORT	CODE	2 PORTS	CODE	3 PORTS	CODE	DI/DO	CODE	AUX. POWERED
1	1 Socket	1	N N RS 232	1	2 N RS 232+RS422	1	2 2 RS232+2 RS485	NN	None	D24	DC 24V
8	8 sockets(Server) for each port	2	N N RS 422	1	3 N RS 232+RS485						
		3	N N RS 485								

## TECHNICAL SPECIFICATION

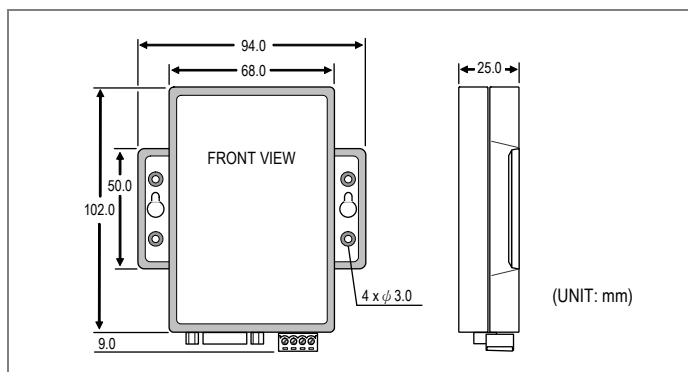
**CPU:** 8051's family microprocessor  
**Network interface:** 10/100 BASE-T, RJ-45 connector  
**Protocol:** ARP, ICMP, TCP, UDP, IP, DHCP Client, HTTP, Modbus/TCP Master/Slave,  
**Multi-socket:** PL-SNet-1: 1 socket (Client/Server)  
 PL-SNet-8: 8 socket (Server only)  
**Serial ports:** RS-232 / RS-422 / RS-485, software selectable  
**Protocol:** Baud rate: 300~115200 bps  
 Data bits: 7, 8  
 Parity: None, Even, Odd Auto-ID scanners  
 Stop bits: 1, 2  
 Flow control: RTS/CTS  
**LED indication:** SYS: Red high bright round LED  
 Link: Green high bright round LED  
 RX: Green high bright round LED  
 TX: Red high bright round LED  
**Configuration:** Web Browser, Windows utility via Ethernet  
 Set up password & Access password settable

**Power**  
**Power Supply:** DC 24V  
**Power consumption:** ≤ 1W

**Electrical**  
**Dielectric Strength:** 3 KV, 1 minute; between Serial ports / RJ45 / Power  
**Insulation resistance:** ≥100MΩ at 500Vdc, Between Serial ports / RJ45 / Power

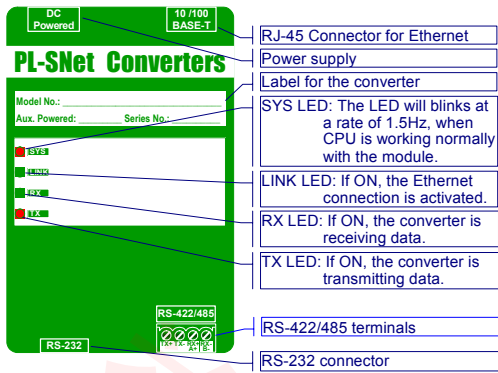
**Environmental**  
**Operating temp.:** 0~60 °C  
**Operating humidity:** 20~95 %RH, non-condensing  
**Storage** -10~70 °C  
**Mechanical**  
**Case Material:** ABS fire-protection (UL 94V-0)  
**Mounting:** Surface mounting  
**Terminal block:** Plastic NYLON 66 (UL 94V-0)  
**Weight:** 110g

## DIMENSIONS

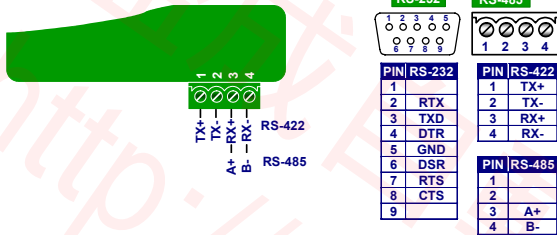


## FRONT PANEL & CONNECTION

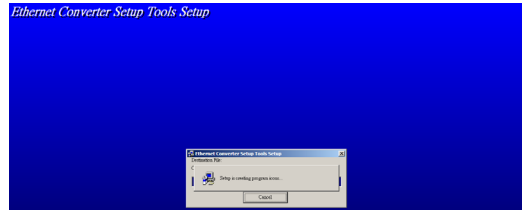
Please check the voltage of power supplied first, and then connect to the specified terminals.



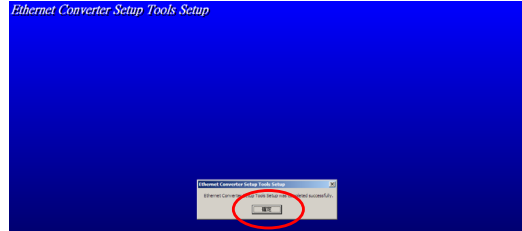
### RS-422/RS-485 CONNECTION



Step 5: Processing  
Start installation process.



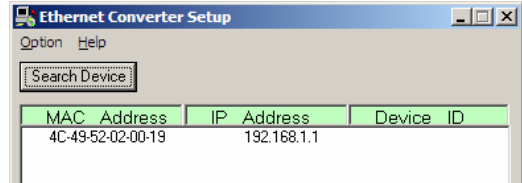
Step 6: Finished  
Press Button to finish installation.



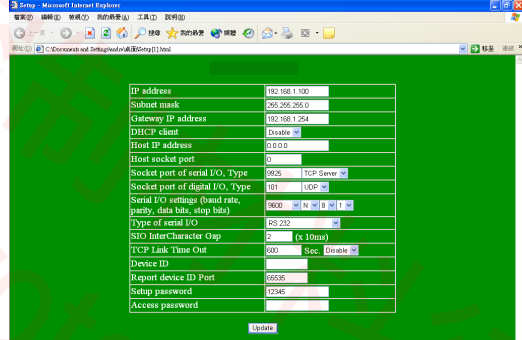
Connect the converter and Ethernet port of PC, then configure the converter

Step 1: Auto-searching the devices.

Step 2: Double click the selected item.



Step 3: Configure and update your parameters.

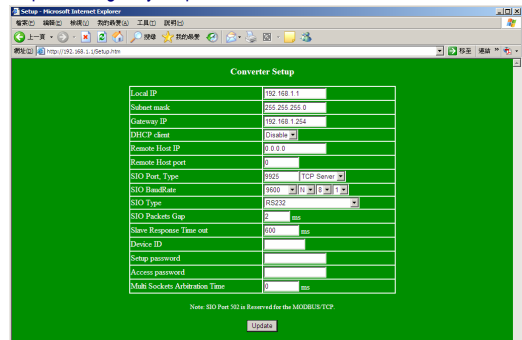


By Browser

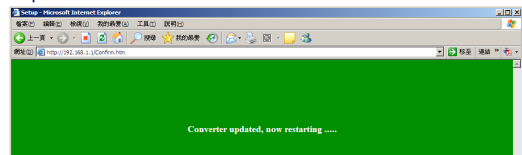
Step 1: Ready to login.



Step 2: Configure your parameters.



Step 3: Finish and reboot.

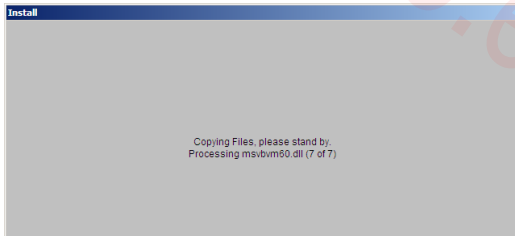


## SET UP & CONFIGURATION

Please refer to the operating manual for detail.

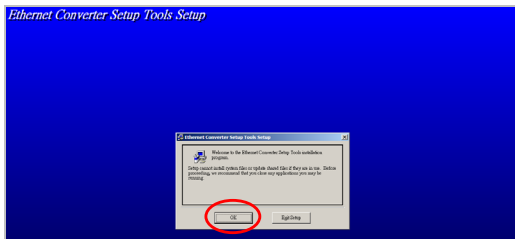
### By set up tool

Step 1: Execute the Setup.exe file of CDR enclosure with product.  
Execute the Setup.exe file and you will get the following screen



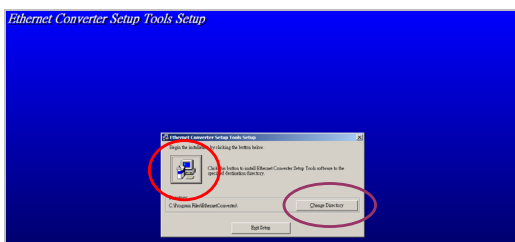
Step 2: Welcome Messages

Wait until the Welcome Message shows. Select OK Button to continue installation.



Step 3: Decide Directory

Choose "Change Directory" to change which directory you want to put files in if needed. And press red circle button to start installation.



Step 4: Decide Program Group Name

Input the "Program Group Name" you want, by just left it by default.





# PL-ST5 SERIAL PORT CONVERTER/REPEATER

## DESCRIPTION

PL-ST5 provide an ideal physical layer solution on serial port communication conversion. It is an isolated RS-232 to RS-485/RS-422 converter. By using PL-ST5, one can find out the truth of full supports on convenience, efficiency, expansibility, robustness, reliability, simplicities and stability.

## Low Cost Solution



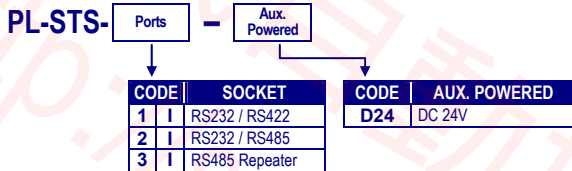
## FEATURE

- Communication speed is up to 115.2 kbps.
- Auto-baud rate of RS-485/RS-422
- Auto Detect RS-485/RS-422, no configuration
- 3KV Power Module and Photo Coupler isolation
- Terminator resistor Inside
- Can be a RS485 repeater in option to extent the system

## APPLICATIONS

It is easy to convert serial port data in IA, Factory Automation, Security or any other low data rate transmission by using it as the intermediate converter.

## ORDERING INFORMATION



## TECHNICAL SPECIFICATION

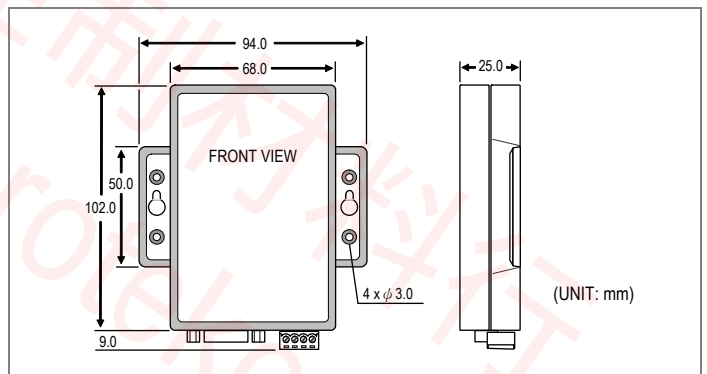
**Serial Communication:** Transmission speeds: 300~115200 bps  
 Data bits: 7, 8  
 Parity: None, Even, Odd  
 Stop bits: 1, 2  
 Flow control: RTS/CTS,  
**LED indication:** SYS: Red high bright round LED  
 TX: Green high bright round LED  
 RX: Green high bright round LED  
**Terminate Resistance:** 120Ω  
**Isolation:** 3KV for 1 minute, Power and port isolated by photo couple  
 Flow control: RTS/CTS

**Power**  
**Power Supply:** DC 10~30V, 220mA  
**Power consumption:** ≤ 1W

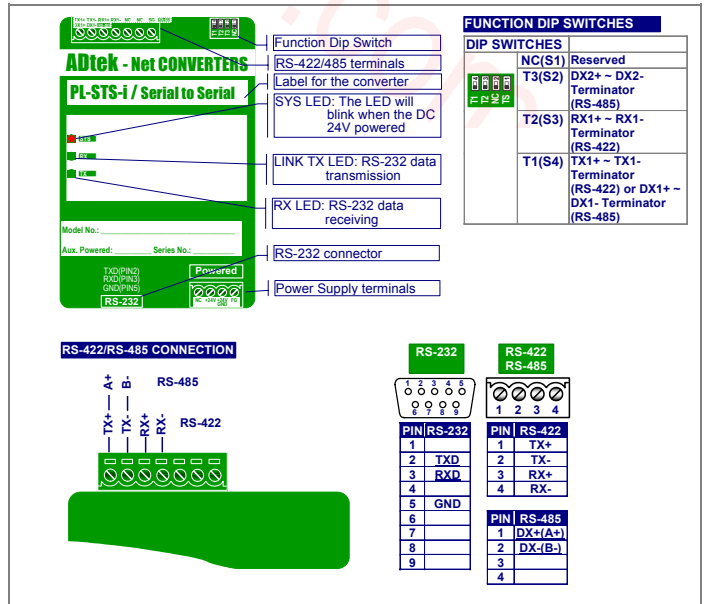
**Environmental**  
**Operating temp.:** 0~60 °C  
**Operating humidity:** 20~95 %RH, non-condensing  
**Storage temperature:** -10~70 °C

**Mechanical**  
**Case Materiel:** ABS fire-protection (UL 94V-0)  
**Mounting:** Surface mounting  
**Terminal block:** Plastic NYLON 66 (UL 94V-0)  
**Weight:** 150g

## DIMENSIONS



## FRONT PANEL & CONNECTION DIAGRAM



# PL-STU USB TO SERIAL PORT CONVERTER

## DESCRIPTION

PL-STU products provide an ideal physical layer solution on serial port communication conversion. It is an isolated USB to RS-232/RS-485/RS-422 converter. By using PL-STU, one can find out the truth of full supports on convenience, efficiency, expansibility, robustness, reliability, simplicities and stability.

## Low Cost Solution



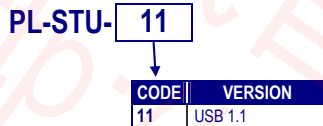
## FEATURE

- USB 1.1 Compatible
- Auto-baud rate of RS-485/RS-422
- Auto Detect RS-485/RS-422, no configuration
- 3KV Power Module and Photo Coupler isolation
- Terminator resistor Inside
- Can be a RS485 repeater in option to extent the system

## APPLICATIONS

It is easy to convert serial port data in IA, Factory Automation, Security or any other low data rate transmission by using it as the intermediate converter.

## ORDERING INFORMATION



## TECHNICAL SPECIFICATION

**Serial Communication:** Transmission speeds: 300~115200 bps

Data bits: 7, 8  
Parity: None, Even, Odd  
Stop bits: 1, 2  
Flow control: RTS/CTS,

**LED indication:**

SYS: Red high bright round LED  
TX: Green high bright round LED  
RX: Green high bright round LED

**Terminate Resistance:** 120Ω

**Isolation:** 3KV for 1 minute, Power and port isolated by photo couple  
Flow control: RTS/CTS

**Power**

**Power Supply:** No external power supply needed

**Power consumption:** ≤ 1W

**Environmental**

**Operating temp.:** 0~60 °C

**Operating humidity:** 20~95 %RH, non-condensing

**Storage:** -10~70 °C

**Mechanical**

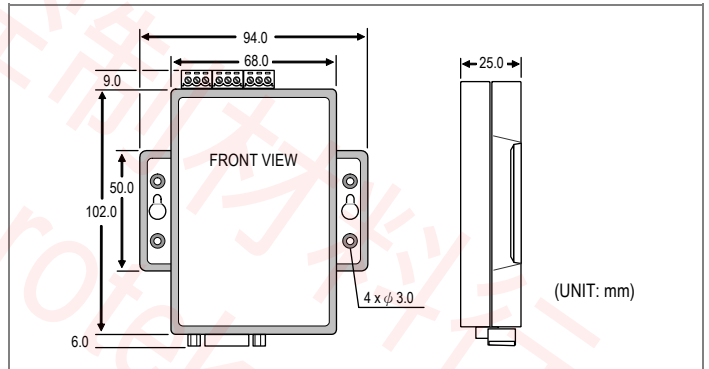
**Case Materiel:** ABS fire-protection (UL 94V-0)

**Mounting:** Surface mounting

**Terminal block:** Plastic NYLON 66 (UL 94V-0)

**Weight:** 150g

## DIMENSIONS



## FRONT PANEL & CONNECTION DIAGRAM

