

IDTECK iCON100 **IDTECK** iCON100SR

Single Door Access Control Panel

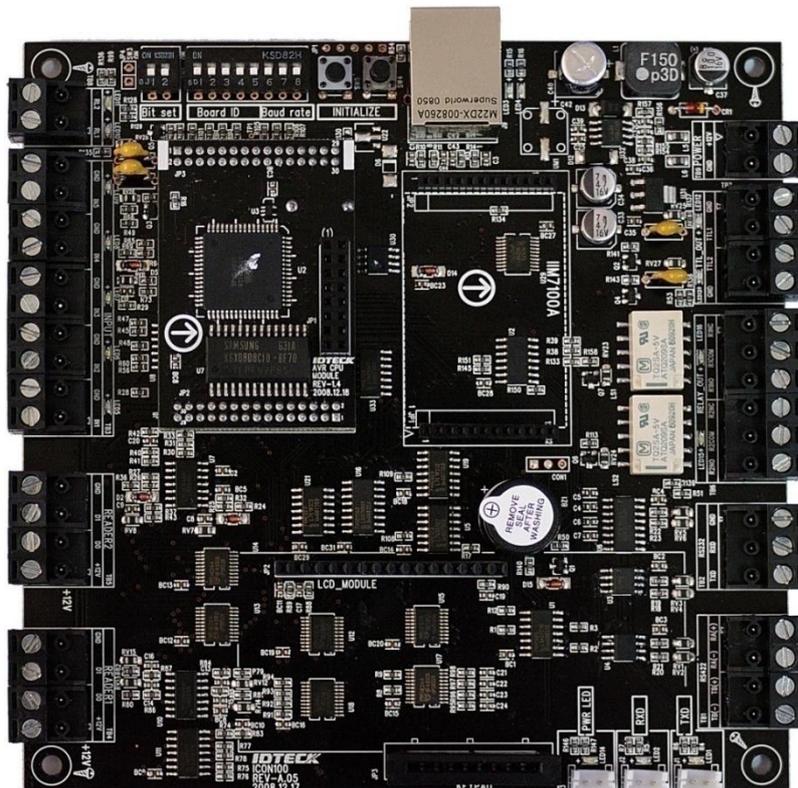


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1. IDENTIFYING SUPPLIED PARTS

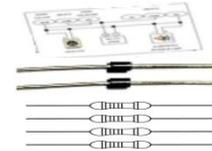
Unpack and check the contents. If any of these parts are missing, contact your distributor.



Main Unit (1ea)



Quick Guide (1copy)



Door Lock & ALARM Guide (1Sheet)
Diode (2ea) Resistor2.2k(4ea)



Keypad(Optional)



LCD Module(Optional)



TCP/IP Module(Optional)

2. RECOMMEND CABLE TYPE AND PERMISSIBLE LENGTH

Reference	Description	Cable Specification	Maximum Distance
①	iCON100 Power (DC12V) DC Power -> iCON100	Belden #9409, 18 AWG 2 conductor, unshielded	3m
②*	Reader (Power and Data) Extra Reader	Belden #9512, 22 AWG 4 conductor, shielded	150m
		Belden #9514, 22 AWG 8 conductor, shielded	
③	Door Contact Exit Button Sensor Input Input -> iCON100	Belden #9512, 22 AWG 4 conductor, shielded	300m
		Belden #9514, 22 AWG 8 conductor, shielded	
④	Door Lock, Alarm Device Lock (Alarm) -> iCON100	Belden #9409, 18AWG 2 conductor, unshielded	300m
⑤	RS232 Cable Converter -> Host P.C.	Belden #9829, 24 AWG 2-twisted pair, shielded	15m
⑥	RS422 Cable iCON100 -> iCON100 iCON100 -> Converter	Belden #9830, 24 AWG 3-twisted pair, shielded	1,200m

* Requires thicker wire if you connect the reader with high current consumption.

3. CHECK POINTS DURING INSTALLATION

3.1 Termination Resistor

Termination resistors are used to match impedance of the network to the impedance of the transmission line being used. When impedance is mismatched, the transmitted signal is not completely absorbed by the receiver and a portion of signal is reflected back into the transmission line.

The decision whether or not to use termination resistors should be based on the cable length and data rate used by the communication system.

For example, if you use 9,600 baud rate and 1,200m length of cable, the propagation velocity of cable is 0.66 x speed of light (This value is specified by the cable manufacturer), if we assume the reflections will damp out in three round trip up and down the cable length, the transmitted signal will stabilize 18.6us after the leading edge of a bit. Since the data bit is captured in the middle of the bit which is approximately 52us after the leading edge of a bit. The reflection stabilizing time 18.6us is much before the center of the bit therefore the termination resistors are not required.

However, if you install the cable to maximum length, the impedance of cable and network is mismatched and the transmitted signal is overlapped by the reflected signal. In this case, it is recommended to add termination resistors to the end of the receiver lines. A 120Ω resistor can be used for termination resistor in parallel between the receiver lines "A" and "B" for 4 wires RS422 system. A termination resistor of less than 90Ω should not be used and no more than 2 terminations should be used in one networking system.

3.2 How to Connect Termination Resistors

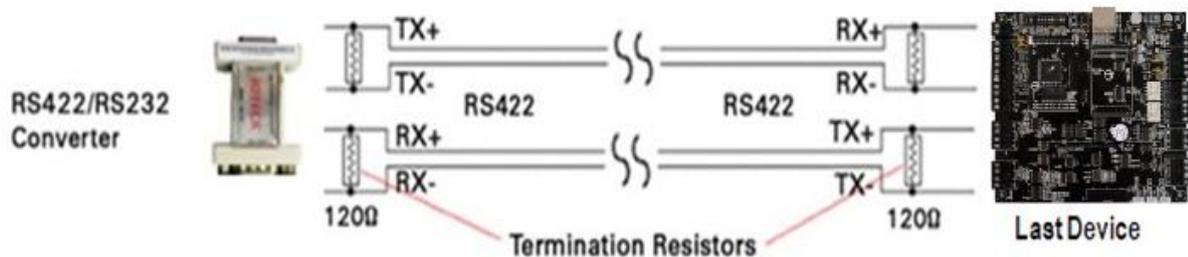


Figure: Termination Resistors for 4 Wire RS422 Communication System

3.3 Grounding System for Communication Cable

We recommend to using proper grounding system on the communication cable. The best method for grounding system is to put the shield wire of the communication cable to the 1st class earth grounding; however it is not so easy to bring the earth ground to the communication cable and also the installation cost is raised.

There will be three grounding point where you can find during installation;

- 1) Earth Ground
- 2) Chassis Ground
- 3) Power Ground

The most important point for grounding system is not to connect both ends of shield wires to the grounding system; in this case there will be a current flow through the shield wire when the voltage level of both ends of shield wire is not equal and this current flow will create noise and interfere to communications.

For the good grounding, we recommend to connecting Only one end of shield wire of communication cable to grounding system; If you find earth ground nearby, then connect one end of shield wire to earth ground; If you do not have earth ground nearby, then find chassis ground and connect one end of shield wire to chassis ground; If you do not find both earth ground and chassis ground, then connect one end of shield wire to power ground. (GND of iCON100)

Note that if the chassis ground is not properly connected to the earth and floated from the ground level, then grounding to the chassis ground will give the worst communication; in this case we recommend to using power ground instead of chassis ground.

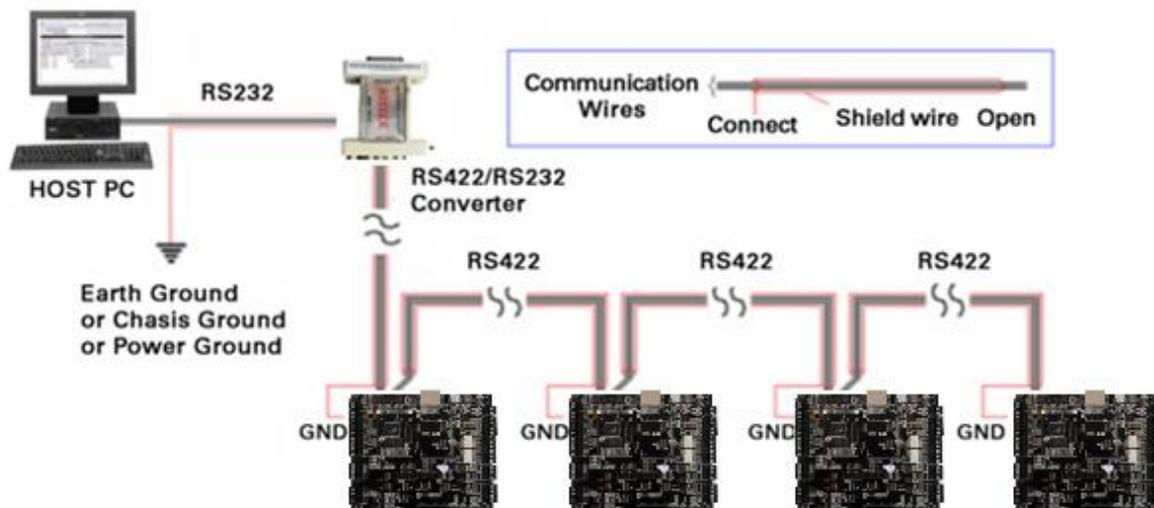


Figure: Grounding System

4. REVERSE DIODE CONNECTION

If you connect an inductor (Door Locks or Alarm device) to the output relays, there will be a high surge voltage created while the inductor is turning on and off. To protect this problem, connect the reverse diode as the figure below.

▪ **Caution**

It is strongly recommended to add a reverse diode between the inductor coils to absorb this surge voltage. If you do not connect a reverse diode, the surge voltage will transfer and damage the electronic circuit of the controller. 1N4004 – 1N4007 or equality efficiency diode is included in gift box.

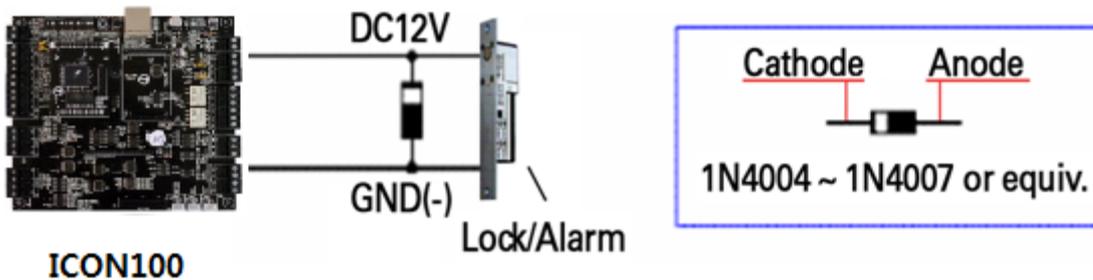


Figure: Reverse Diode Connection

5. SYSTEM INITIALIZATION

Initialization must be performed before first installation of iCON100. Press down the two initialization switches simultaneously then keep pressing more than 2 seconds. Once buzzer sound is generated, release the switches then initialization is done and system restarts automatically.



Figure: Switches Location



Figure: Magnification of Switches

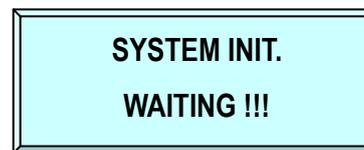


Figure: LCD Display

▪ **Caution**

If you initialize the iCON100, all data such as user ID, baud rate, door setting, time schedule and event information stored in the controller will be cleared and the default values (factory setting values) will be reloaded. Therefore, the Initialization should be performed by authorized person only. It is recommended to upload all events data before initialization in case you use events data for time and attendance purpose.

6. DEVICE SETTING

6.1 26Bit / 34Bit Wiegand Setting

Select the data format (26bit/34bit) input to reader port. There is a switch for bit setting on the upper left side of iCON100 board. The switch is set to 'OFF' position as the default (26Bit Wiegand setting). If the switch is set to 'ON' position as shown below table, the system is set to 34Bit Wiegand.

- **26bit Wiegand type format: Using 26bit Wiegand format reader**
- **34bit Wiegand type format: Using 34bit Wiegand format reader**

If DIP switch turns from 'ON' to 'OFF' or 'OFF' to 'ON', buzzer is generated. If the buzzer doesn't stop after the DIP switch is changed, it means ID information or event is stored in the memory. In this case, delete existing ID and event by initialization then you can change data type of reader port.

Switch for 26/34Bit Wiegand Setting

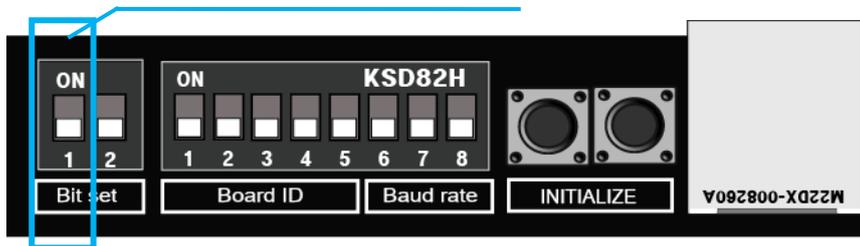


Figure: Position of 26/34Bit Wiegand Setting Switch

<p>ON</p> <p>1</p> <p>Bit set</p>	<p>ON</p> <p>1</p> <p>Bit set</p>
<p>26Bit Wiegand (Default) iCON100</p>	<p>34Bit Wiegand iCON100SR</p>

Figure: 26Bit/34Bit Wiegand Setting Example

6.2 Board ID(Communication ID) Setting

Board ID is the unique address to communicate with PC. There is 5 channel DIP switch on the upper left side of the iCON100 board for board ID setting. Each DIP switch has assigned address value and the board ID is calculated by the sum value of each switch set to “ON” position. Board ID can be set from ‘0’ to ‘31’. The default value of board ID is ‘0’ (5 channel DIP switch is set to ‘OFF’ position). Refer to the example below.

▪ **Caution**

Each Board ID on the same communication loop must be not duplicated. If the same Board IDs are on the same loop, the communication error will occur.

Board ID Setting Switches

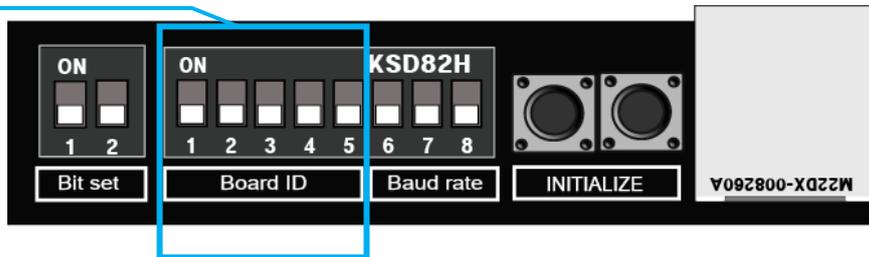


Figure: Position of Board ID Setting Switch

<p>Communication ID= 0 (Default)</p>	<p>Communication ID=14 (2+4+8 = 14)</p>	<p>Communication= ID (1+16 = 17)</p>

Figure: Board ID Setting Example

6.3 Baud Rate Setting

Baud rate is the speed rate during communication with host PC. The 3 DIP switches are assigned for baud rate setting on the upper left side of the iCON100 board. You can select one of 4800bps, 9600bps, 19200bps, 38400bps, 57600bps and 115200bps. You have to set applicable baud rate according to communication environment, and the connected devices on one loop must have the same baud rate. If DIP switch turns from 'ON' to 'OFF' or 'OFF' to 'ON', buzzer is generated. Also under TCP/IP communication, the baud rate has to be matched with TCP/IP module.

▪ **Caution**

Baud rate must be the same as the values set by application software and the baud rate of all products on the same loop must be same.

If you use ver. 6.0 and lower with ver. A1.0 and higher together, set the baud rate to 9600bps only. When you only use ver. A.1.0 and higher, you can set other baud rate including 9600bps.

If you set high baud rate in bad environment for communication, communication may not properly operate. In this case, let baud rate lower.

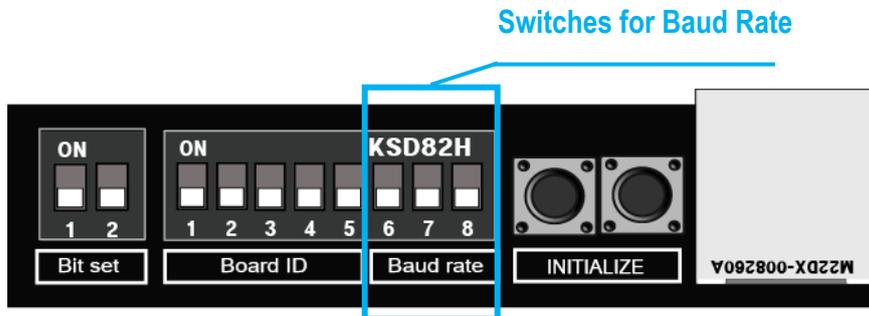


Figure: Position of Baud Rate Setting Switches

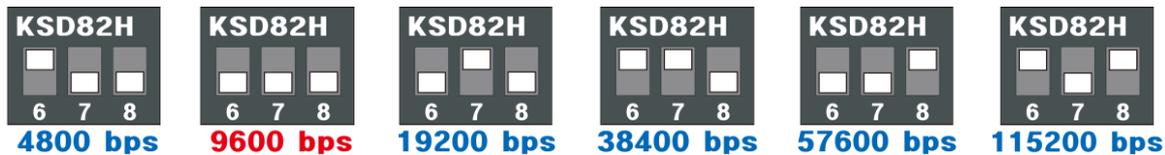


Figure: Baud Rate Setting Example

7. Wiring

7.1 Power

Connect (+) wire of DC 12V power to +12V terminal
 Connect GND (-) wire of DC 12V power to GND terminal

7.2 Input Connections

- **Exit Button Connection (Input #1)**
 - Connect one wire from an Exit Button to Input #1
 - Connect the other wire from the Exit Button to the GND
- **Door Contact Sensor Connection (Input #2)**
 - Connect one wire from a Door Contact Sensor to Input #2
 - Connect the other wire from the Door Contact Sensor to GND
- **Auxiliary Input Connection (Applied to Input #3, Input #4 and Input #5)**
 - Connect one wire from an Auxiliary Input Device to one of the Input #3, #4 and #5.
 - Connect the other wire from the Auxiliary Input Device to GND

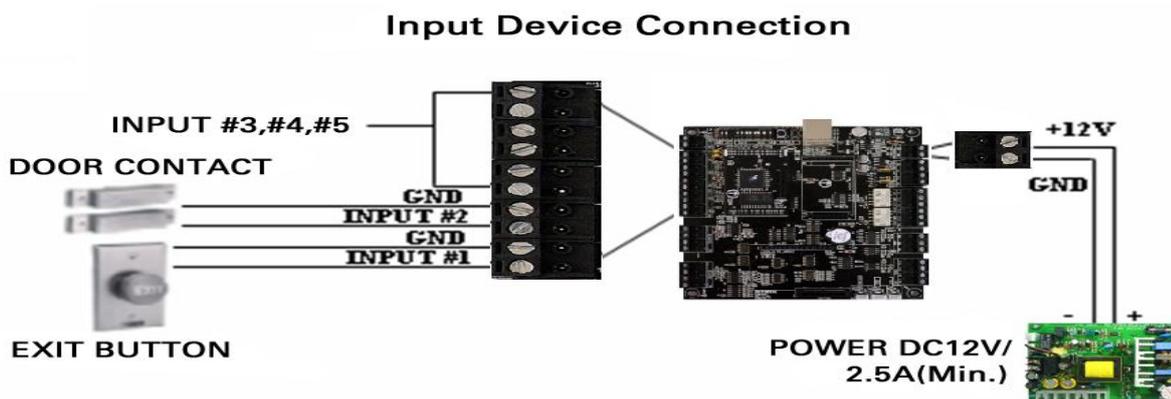


Figure: Input Devices Connection

▪ 2.2K Resistance Connection for 'Cut Off Check'

To use the 'Cut Off Check' function, you have to connect 2.2K resistance between Input wire (ex. Orange) and GND. Firstly you choose to use 'Cut Off Check'. Follow the process as [F2 SETUP MENU] ->"5. IN/OUT DEFINE" → "21.CUT OFF CHECK". For setting of output, follow the process as [F2 SETUP MENU]->"5. IN/OUT DEFINE" → "18. CUT OFF ALARM".

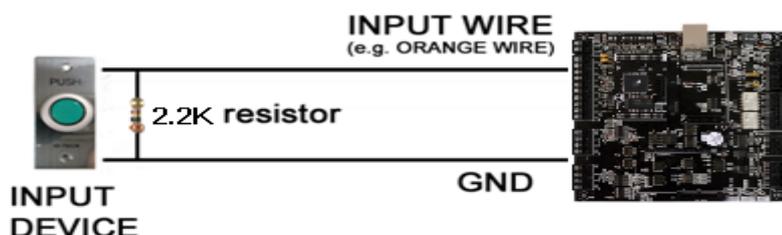


Figure: 2.2K Resistance Connection for 'Cut Off Check'

7.3 Output Connections

▪ Door Lock (Power Fail Safe) Connection (Relay #1)

- Connect COM port of Relay #1 to DC+12V
- Connect NC port of Relay #1 to (+) wire of door lock device
- Connect GND port to (-) wire of door lock devices

▪ Door Lock (Power Fail Secure) Connection (Relay #1)

- Connect COM port of Relay #1 to DC+12V
- Connect NO port of Relay #1 to (+) wire of door lock device
- Connect GND port to (-) wire of door lock devices

▪ Alarm Device Connection (Relay #2)

- Connect COM port of Relay #2 to DC+12V
- Connect NO port of Relay #2 to (+) wire of Alarm devices
- Connect GND port to (-) wire of Alarm devices

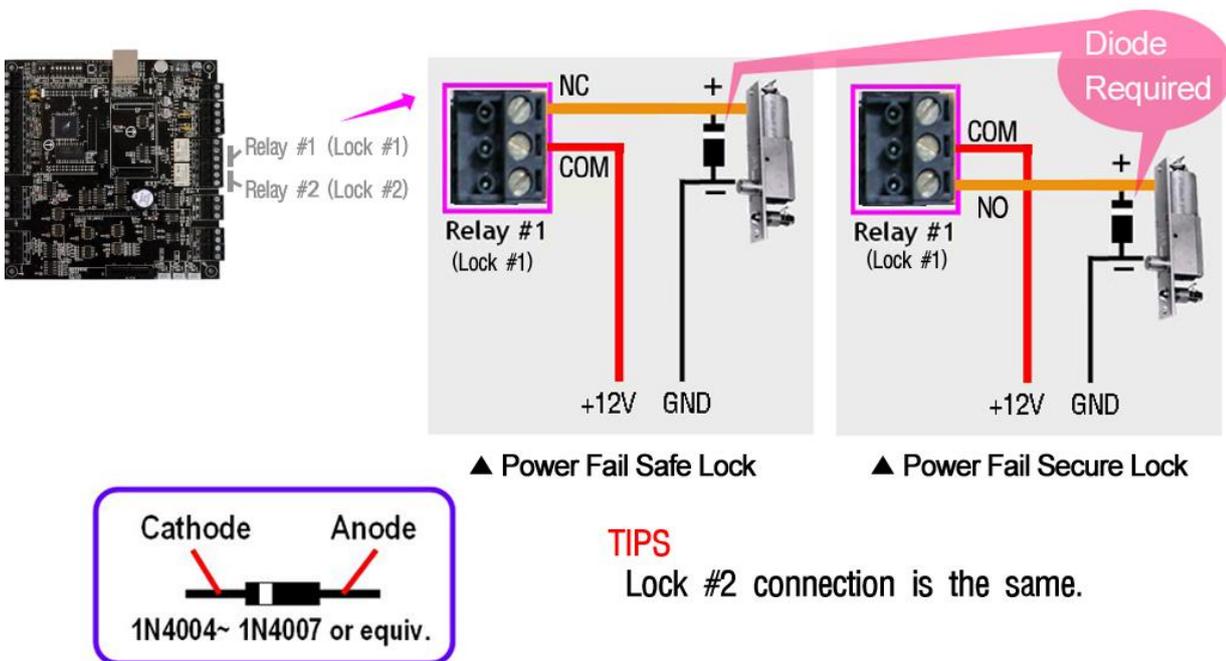


Figure: Door Lock, Alarm Device Connection

Caution: You need to connect the diode (1N4001 ~ 1N4007 or Similar) when connecting external devices to relay.

7.4 Reader Connections

■ Proximity Reader Connection

- Connect (+) wire of the Proximity Reader to DC+12V of Reader port
- Connect (-) wire of the Proximity Reader to GND of Reader port
- Connect Data-0 wire of the Proximity Reader to D0 of Reader Port
- Connect Data-1 wire of the Proximity Reader to D1 of Reader Port

■ Compatible Readers:

- **iCON100:** Standard 26bit Wiegand Format Proximity Readers,
Standard 26bit Wiegand + 8bit Burst Format Proximity and Keypad Readers.
- **iCON100SR:** Standard 34bit Wiegand Format Proximity Readers,
Standard 34bit Wiegand + 8bit Burst Format Proximity and Keypad Readers.

Reader Connection

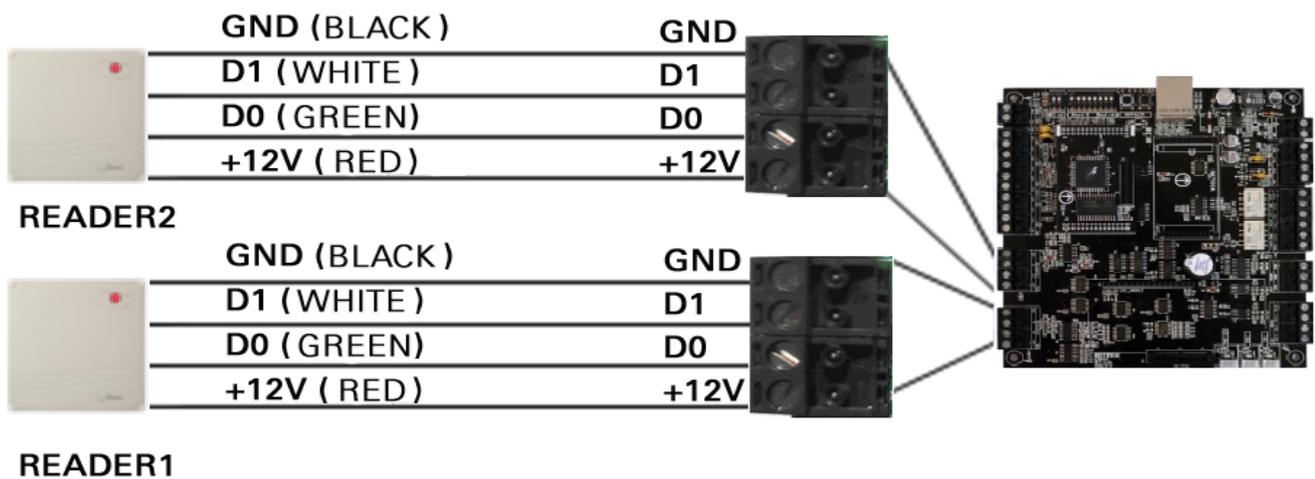


Figure: Reader Connection

8. COMMUNICATION

8.1 RS232 Communication Port Connection

A 9-pin connector (Serial communication connector, female) is required to connect the iCON100 to a host computer via RS232 communication. Please follow the instructions.

- Connect RS232-TX port of iCON100 to the pin #2(RX) of the 9-pin connector.
- Connect RS232-RX port of iCON100 to the pin #3(TX) of the 9-pin connector.
- Connect RS232-GND of iCON100 to the pin #5 of the 9-pin connector.
- Plug in the 9-pin connector to COM1 or COM2 Port of the host PC.
- Install and run iCON100 Application Software.

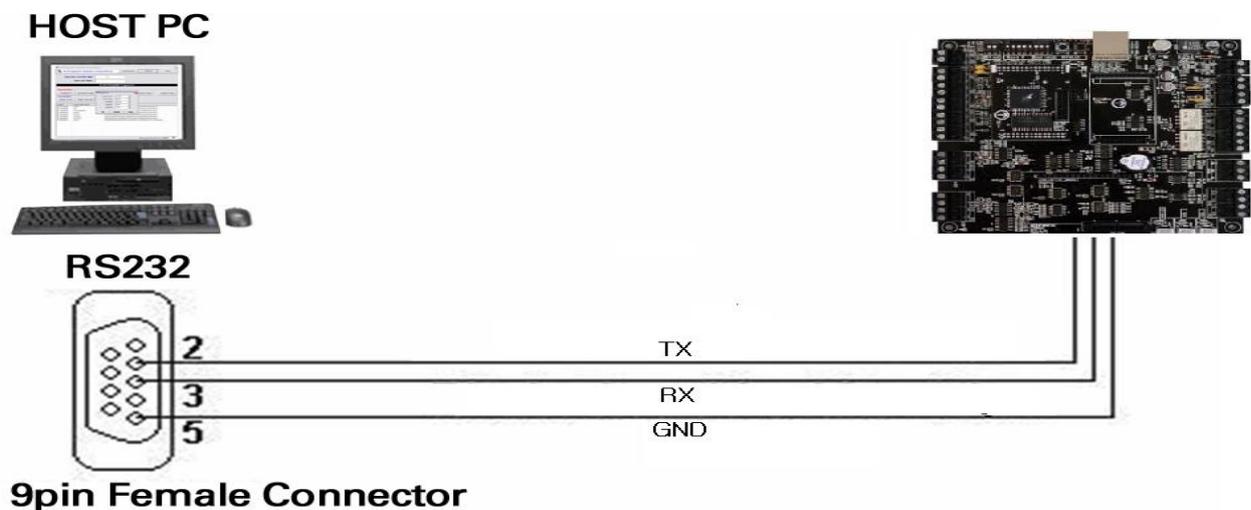


Figure: RS232 Communication

8.2 RS-422 Communication Port Connection

8.2.1 RS-422 Connection (Single iCON100 Connection)

An RS422/RS232 converter is required to use RS422 communication between the **iCON100** and the PC.

CAUTION: The INC400 converter is recommended for stable communication when the distance between the converter and the device is too far.

Please follow the instructions below;

- Connect RS422-TX (+) of iCON100 to RS422-RX (+) port of converter.
- Connect RS422-TX (-) of iCON100 to RS422-RX (-) port of converter.
- Connect RS422-RX (+) of iCON100 to RS422-TX (+) port of converter.
- Connect RS422-RX (-) of iCON100 to RS422-TX (-) port of converter.
- Plug in the RS232 9PIN connector of the converter to the COM1 or COM2 port of the PC.
- Install and run iCON100 Application Software.

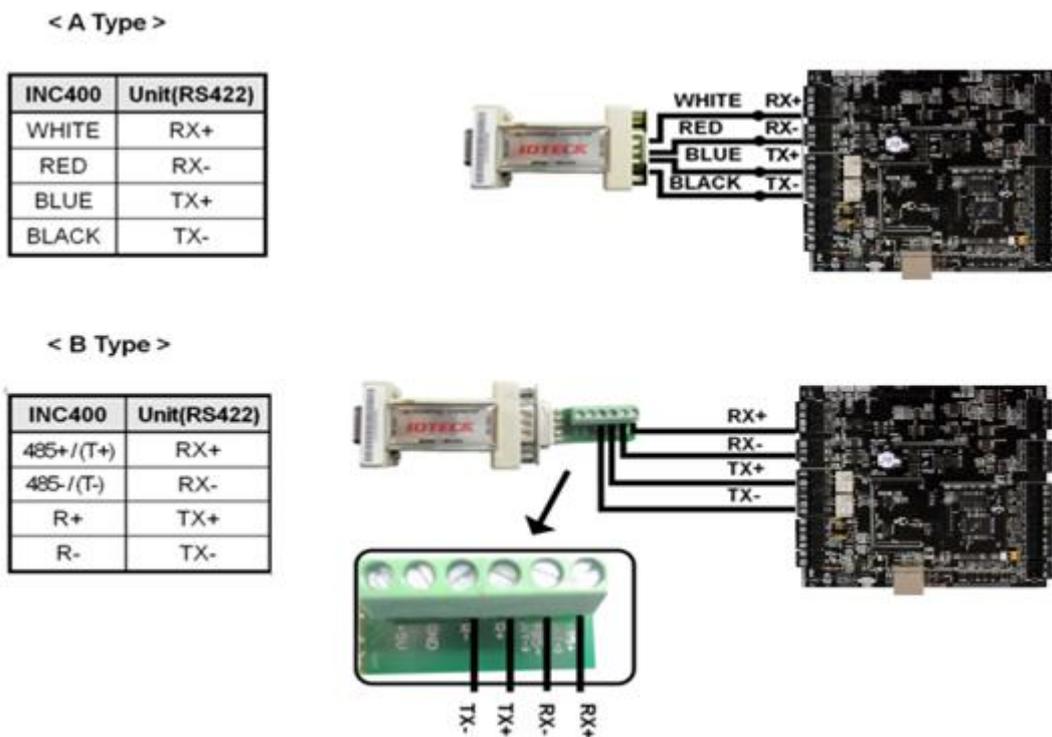


Figure: RS422 Communication between iCON100 and the PC

8.2.2 RS-422 Connection (Multiple iCON100 Connections)

RS422/RS232 converter is required to use RS422 communication between multiple iCON100 and a host computer. Please follow the following instructions.

First, you have to connect all RS422 port of all iCON100 in parallel.

- Connect RS422-TX(-) of one iCON100 to RS422-TX(-) of another iCON100.
- Connect RS422-TX(+) of one iCON100 to RS422-TX(+) of another iCON100.
- Connect RS422-RX(-) of one iCON100 to RS422-RX(-) of another iCON100.
- Connect RS422-RX(+) of one iCON100 to RS422-RX(+) of another iCON100.

Second, you have to connect one of RS422 port of iCON100 to RS422/RS232 converter.

- Connect RS422-TX(-) of the one iCON100 to RX(-) port of the converter.
- Connect RS422-TX(+) of the one iCON100 to RX(+) port of the converter.
- Connect RS422-RX(-) of the one iCON100 to TX(-) port of the converter.
- Connect RS422-RX(+) of the one iCON100 to TX(+) port of the converter.
- Plug in the RS232 9-pin connector of the converter to the COM1 or COM2 Port of the PC.
- Install and run iCON100 Application Software.

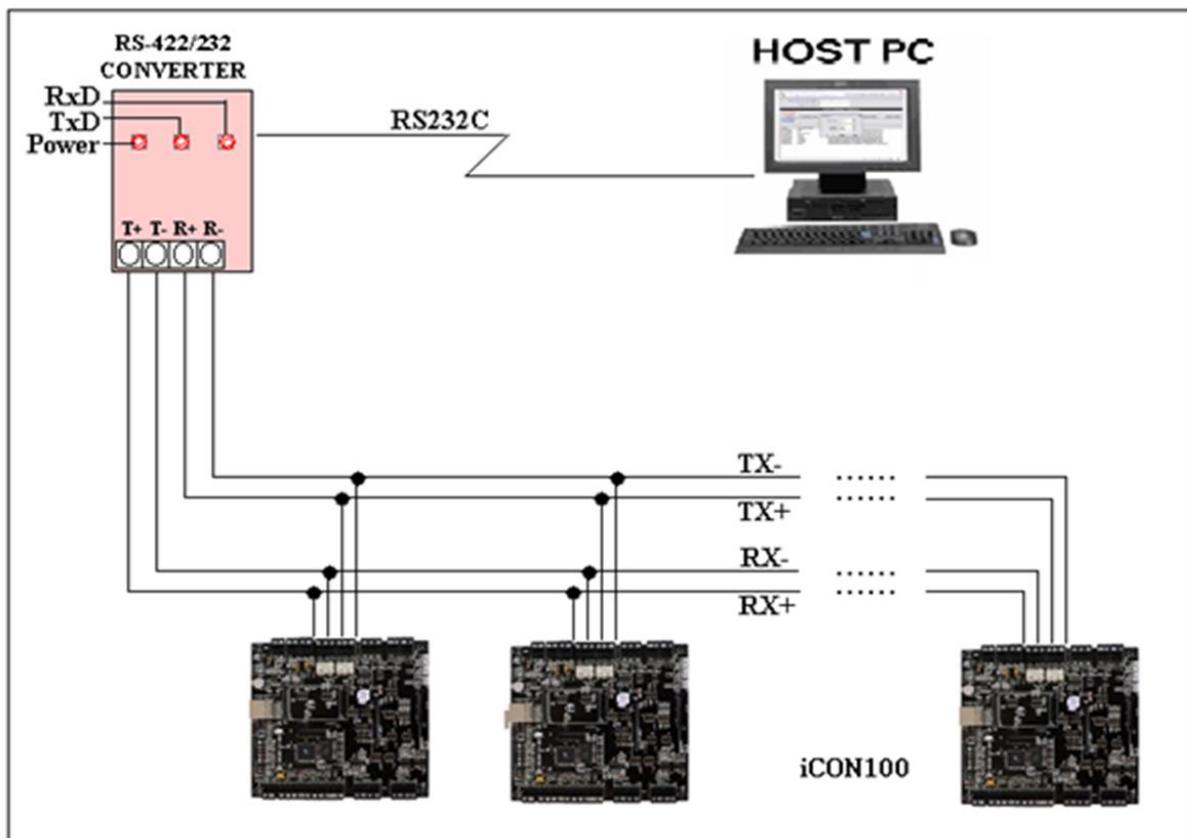


Figure: RS422 Communication between iCON100 and Host Computer

8.3 TCP/IP Communication Port Connection (Optional)

8.3.1 How to Connect TCP/IP Module to iCON100

1) As below figure, Insert TCP/IP module to iCON100 in right direction. Direction of TCP/IP module have to be matched between iCON100 (JP1) and TCP/IP (JP1) module.

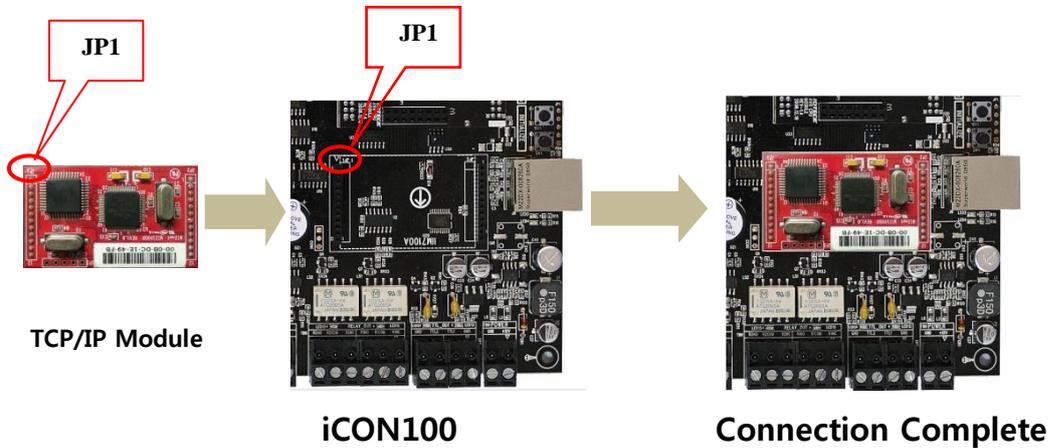


Figure: TCP/IP module Connection

2) As below figure, connect LAN cable to TCP/IP RJ-45 jack.

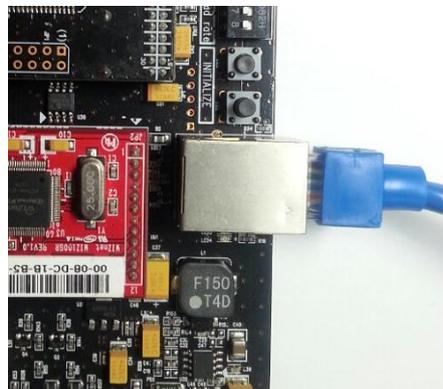


Figure: LAN Connection

8.3.2 How to wire TCP/IP Communication

Optional TCP/IP module is required for TCP/IP communication between the iCON100 and the PC. Please follow the instructions below;

1. Connect the LAN cable of the network system to the RJ45 jack of the iCON100.
2. Set the board ID of the iCON100.
3. Install and run the iCON100 application software.



Figure: TCP/IP Connection between iCON100 and PC

8.4 TCP/IP Converter (External Version)

When using the TCP/IP converter for communication, select either RS232 or RS422.



Figure: TCP/IP Converter between Host PC and iCON100

INTERFACE	iCON100	ILAN422
RS232	TX (CON2)	RX (RS232 DSUB9)
	RX (CON2)	TX (RS232 DSUB9)
	GND(CON2)	GND
RS422	TX+ (CON3)	RX+ (RS422 CONNECTOR)
	TX- (CON3)	RX- (RS422 CONNECTOR)
	RX+ (CON3)	TX+ (RS422 CONNECTOR)
	RX- (CON3)	TX- (RS422 CONNECTOR)

8.5 Bypass Communication Wiring

Internal TCP/IP module is equipped on a iCON100/iCON100-SR then it communicates TCP/IP with Host PC. The iCON100/iCON100-SR communicates RS422 with another iCON100/iCON100-SR.

First, you have to connect iCON100 RS422 port to RS422 port of iCON100(No.1 , TCP/IP communication) as below.

- Connect iCON100(No.1) controller's RS422-TX(-) to iCON100 controller's RS422-RX(-)
- Connect iCON100(No.1) controller's RS422-TX(+) to iCON100 controller's RS422-RX(+)
- Connect iCON100(No.1) controller's RS422-RX(-) to iCON100 controller's RS422-TX(-)
- Connect iCON100(No.1) controller's RS422-RX(+) to iCON100 controller's RS422-TX(+)
- Connect TCP/IP communication between iCON100 and HOST PC.
- Install and run iCON100 Application Software.

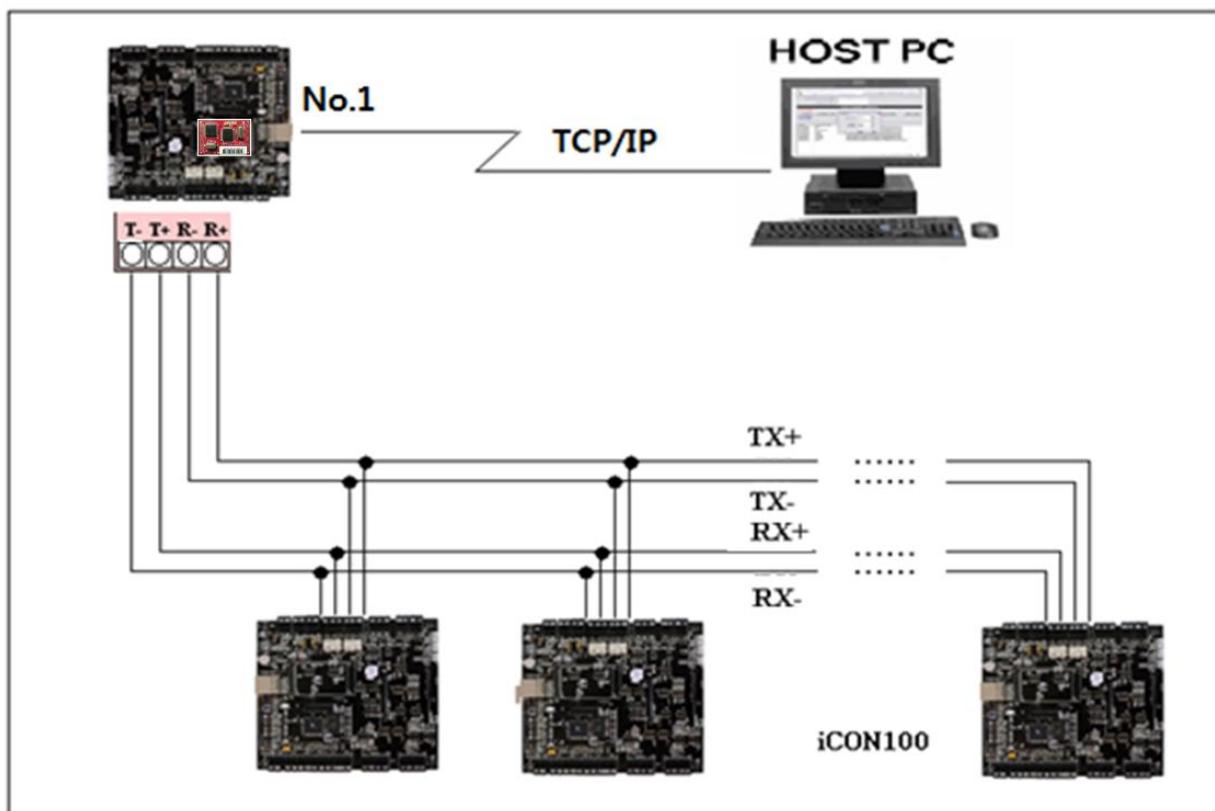


Figure: Bypass communication

Second, you have to connect all RS422 port of iCON100 in parallel except iCON100(No.1, TCP/IP communication).

- Connect RS422-TX(-) of iCON100 to RS422-TX(-) of another iCON100.
- Connect RS422-TX(+) of iCON100 to RS422-TX(+) of another iCON100.
- Connect RS422-RX(-) of iCON100 to RS422-RX(-) of another iCON100.
- Connect RS422-RX(+) of iCON100 to RS422-RX(+) of another iCON100.

9. PRODUCT MANUAL DOWNLOAD INFORMATION

This Quick Installation Guide is a manual to provide product's basic installation information only. If you need all the information of the product, please download detailed manual following the steps specified below.

For registered users of our homepage

1. Visit IDTECK's homepage (www.idteck.com).
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3. You can use your ID and P/W after web administrator approves it. Once it's approved, then please refer to "For registered users of our homepage" above.

Please contact us as below if you have any enquiries or issues arise.

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The specifications contained in this manual are subject to change without notice at any time.

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