Techsphere

VP-II X

Hand Vascular Pattern Recognition System

The Second Generation

Installation guide

Ver 1.0

VP-II X Hand Vascular Pattern Recognition System Installation Guide

Preface: Read this section before starting.

Thank you for choosing Techsphere VP-II, Hand Vascular Pattern Recognition System. This installation guide describes how to install and setup the VP-II X accordingly and it is strongly recommended that you read this guide in its entirety before installing the VP-II X.

It is also recommended that a trained technician perform the installation. Please contact your local Techsphere sales representative for an installation visit. Only a Techsphere technical specialist or local sales representative should access the components of a VP-II system in order to perform repairs or expand the system.

The VP-II X provides various external interfaces. A Wiegand interface is provided in order for the system to be connected to an external card system, and the connection to the external system or network can be made using the RS-232 interface.

Also, operating the VP-II X with the VP-II NetControl-X application in the host PC will make the system even more useful.

To add or extend the configuration of installed products or need repairs and maintenance, please contact installer or product supplier for help from professional technician. For more information or technical support, or other service, please contact your local Techsphere sales representative or Techsphere customer support (customerservice@tech-sphere.com).

Table of Contents

Chapter 1 Before installing the VP-II X

1.1 Installation environment

The VP-II X should be installed indoors and it is strongly recommended that no cabling be left exposed when installation is complete. If concealment of all cables is not possible, the purchaser of the VP-II system should be informed of this fact before installation proceeds. Power should be applied only after finishing all necessary connections. Do not perform any disconnection or connection during the power is applied to the system. Input power for VP-II X is AC 100V-250V at 50/60Hz.

The contents of this guide are subject to change in order to reflect improvements in product performance. Please leave all setting adjustments to an installer or technician.

CAUTION
RISK OF EXPLOSION IF BATTERY IS REPLACED BY AN INCORRECT TYPE. DISPOSE OF USED BATTERIES ACCORDING TO THE INSTRUCTIONS

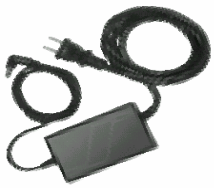
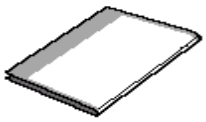
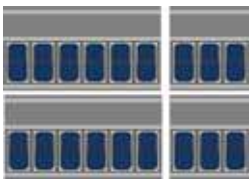
1.2 Required cables

The types and thickness of cables used in VP-II S installation should conform to the specifications in the following table. Failure to use cables that meet these specifications may result in poor system performance. In this guide, RS-232 cable connections are depicted as dotted lines, and UTP cable connections are depicted as two lines.

Cable type	Specification	용 도
RS-232 ▪▪▪▪▪▪	(UL) style 2464-shield AWG20 4C	VP-II X – VP-II XC
LAN ═══	CAT.5 UTP/STP	VP-II X - Server

1.3 Included items

Before installing the system, verify that all of the items pictured below are included in your VP-II X package. If any part should be missing, contact your sales representative for a replacement.

 VP-II X	 Bracket	 SMPS
 Warranty& User's guide	 Installation guide	 Connector (6x2, 3x6)
 Five anchors	 5 screws	

1.4 VP-II X specification

The specifications of VP-II X are as follows: If you have any questions about our product, please contact Techsphere or a local representative.

Power voltage	AC 100 ~ 250V, 50Hz/60Hz
Power consumption	18[W] (DC 12[V], 1.5[A])
Host PC interface	RS-232
Wiegand input	Wiegand 26bits
Wiegand output	Wiegand 26bits, Wiegand 37bits
External system interface	RS-232
Server interface	Ethernet
Other interface	External LED signal output
Operating temperature	-5 ~ 50°C
Operating humidity	10% ~ 90%
Number of users	Depends on the specification of external system
Application(Optional)	VP-II NetControl-X (Windows 98/2000/XP)
SDK (Optional)	VP-II SDK(Windows 98/2000/XP)

1.5 VP-II X Radio specification

The radio specifications of VP-II X are as follows.

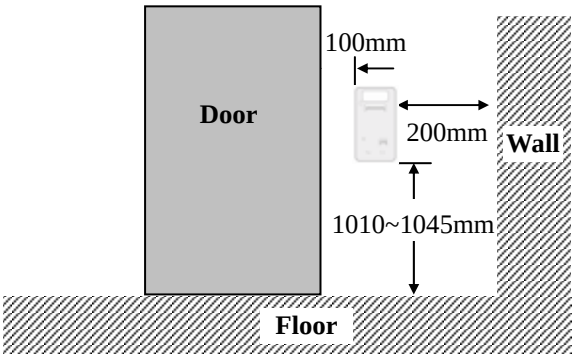
Emission frequency	13.5597MHz
Receiver frequency	13.5597MHz
Keying type1	ASK
Oscillation type1	X-Tal
Communication mode	Half Duplex
Number of channel	1
Antenna power (Electric field intensity)	Less than 200uV/m
Antenna type	Pattern Loop Ant
Terminal amplification type	MFRC531

Chapter 2 Installing the VP-II X

2.1 Basic installation of the VP-II X

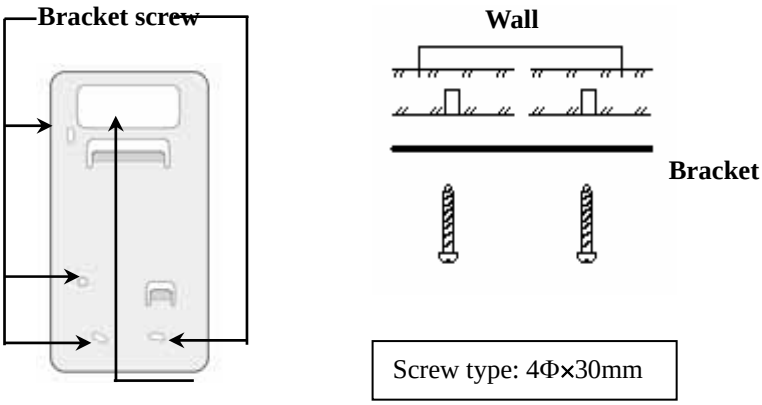
The VP-II X must be installed in a place where it will not be exposed to direct sunlight. Moreover, reflected sunlight may interfere with the functioning of the system, as will high humidity, rain and excessive dust. Install the VP-II X away from such elements.

Do not install the VP-II X where the floor is inclined. Install the VP-II X at a height of 1,010-1,045mm from the floor and 100mm from the doorframe. If there is a nearby wall perpendicular to the door, the VP-II S should be at least 200mm away from the wall.



Put the bracket on the place for installing the VP-II S and make a hole after checking the hole location for cabling. Fix the bracket on the wall using the bracket screws.

Power must be applied only after finishing all connections. Do not perform any disconnection or connection after power is applied.

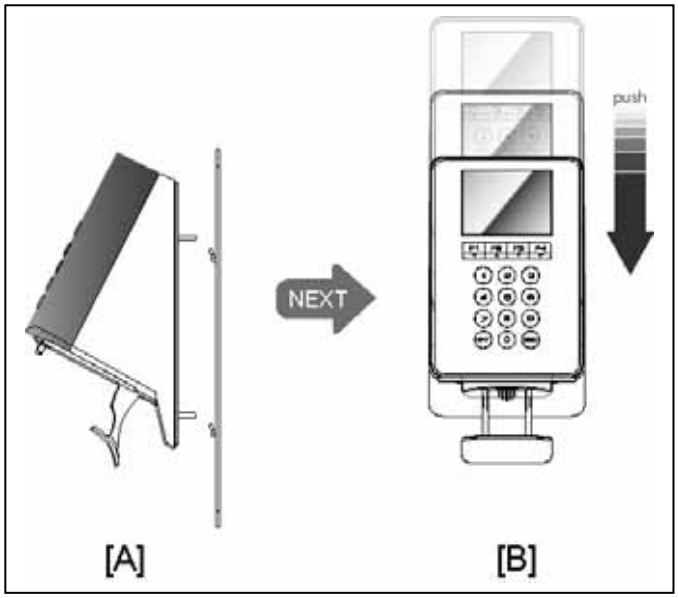


Hole location for cabling

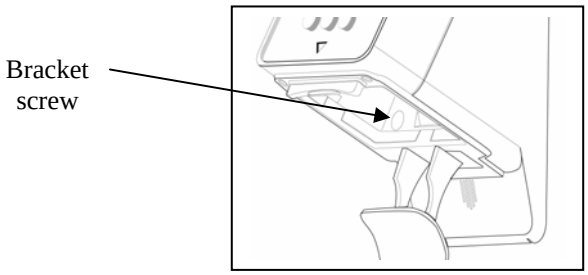
2.2 VP-II X installation

1. Put the VP-II X on the bracket. [A]

2. Push the VP-II X all the way down with some force from the upper-right part to the lower-left part direction as the VP-II X slides down. If the VP-II X is pushed down only from the upper part to the lower part, the scanner will not be installed properly. [B]

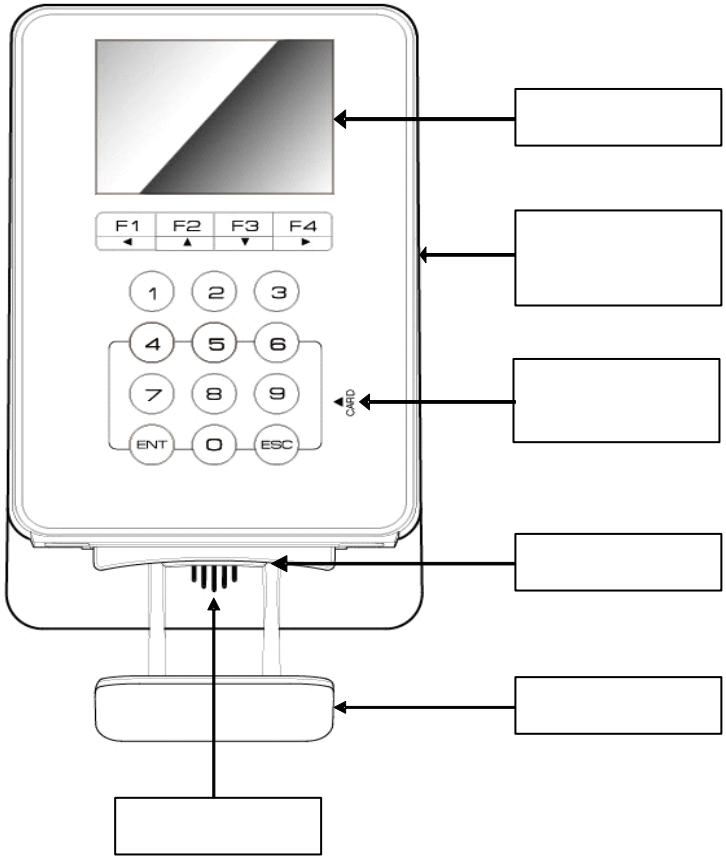


3. When the VP-II X is fixed on the bracket, fix the bracket using the bracket screw located in the sensor module hosing.



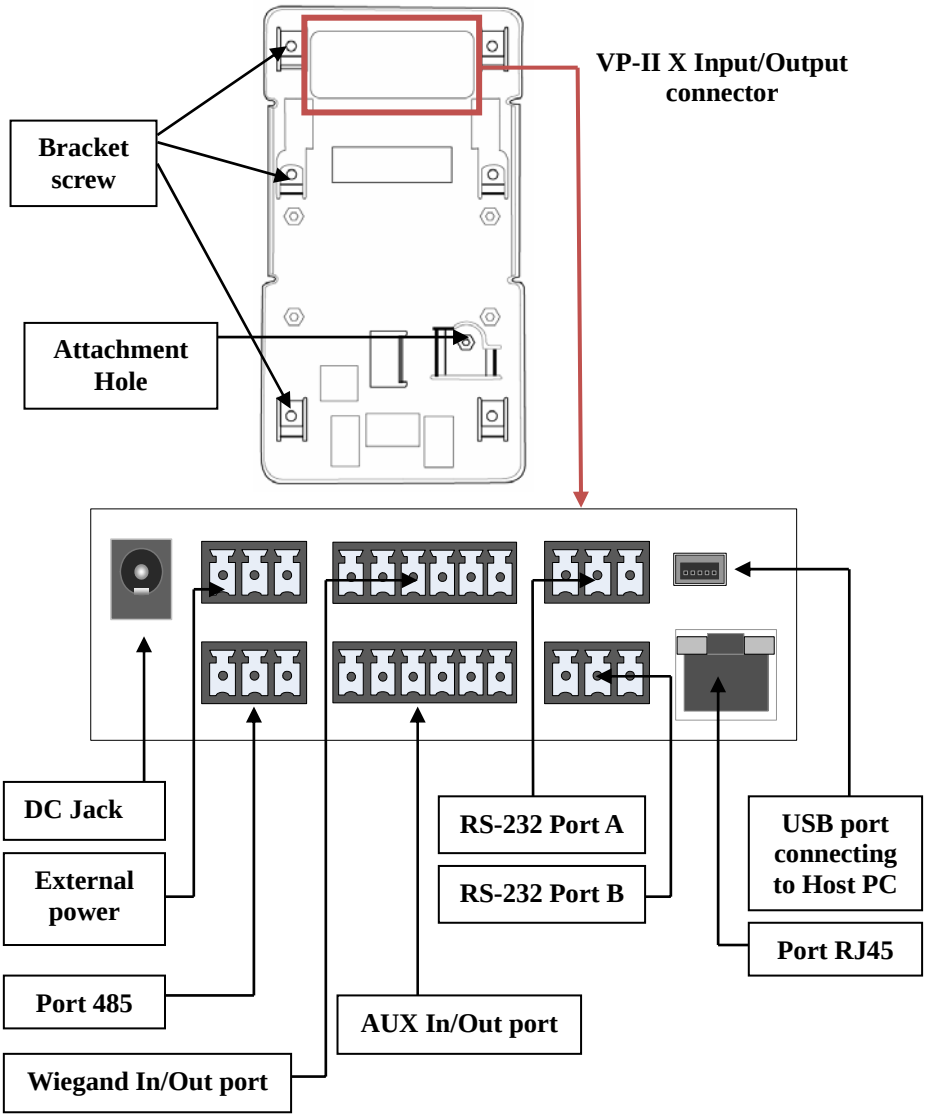
2.3 Front view

The front view consists of the LCD which displays the system information and the antenna area which reads the RF card.



2.4 External connection

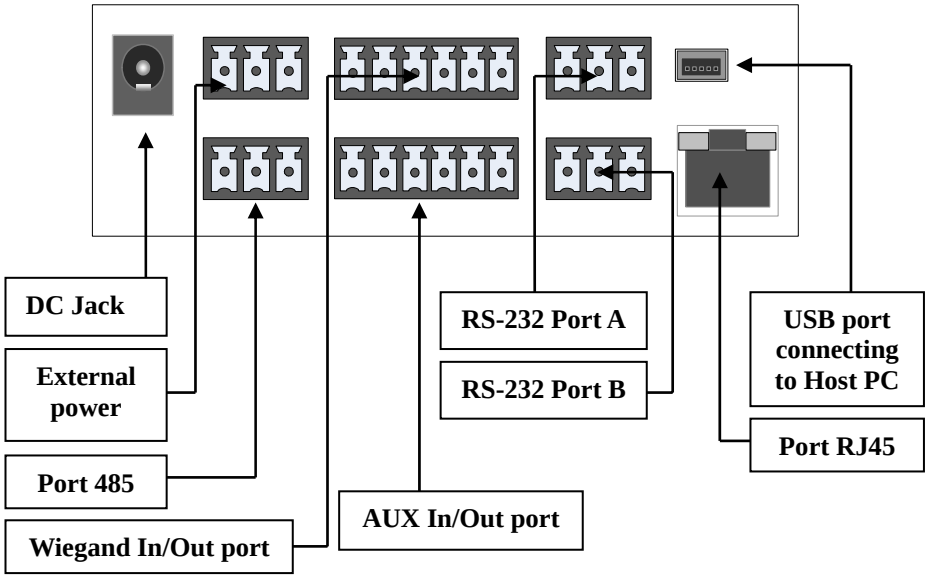
The VP-II X provides various interfaces through the external connection port.



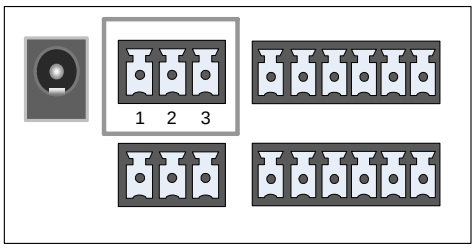
Chapter 3 Connecting VP-II X

3.1 VP-II X port configuration

VP-II X porvides various external connection port as follows.



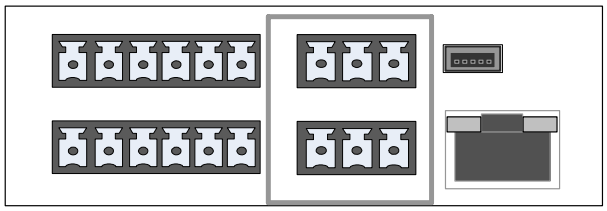
3.2 Power input port



External power	
1	DC +12 [V] 1.5[A]
2	GND
3	GND

3.3 RS-232 Port A and Port B

The following is the RS-232 port that is connected with the external system.



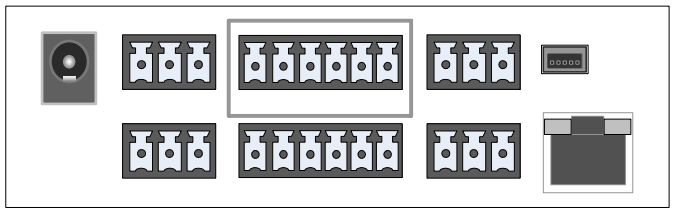
RS-232 A, B	
1	TX
2	RX
3	GND

Port A is the RS-232 communication port which connects between VP-II X and the external system.

Port B is the RS-232 communication port which connects between VP-II X and the Host PC.

3.4 Wiegand Input and Output port

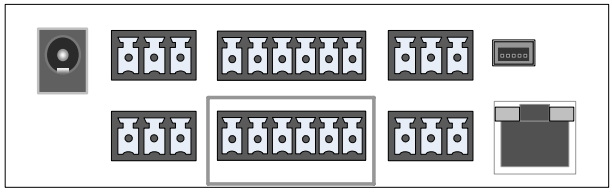
VP-II S supports the input (Wiegand 26 bits) and the output (Wiegand 37 bits) through the Wiegand port.



Wiegand Input/Output	
1	Input D0
2	Input D1
3	GND
4	Output D0
5	Output D1
6	GND

3.5 AUX Input and Output port

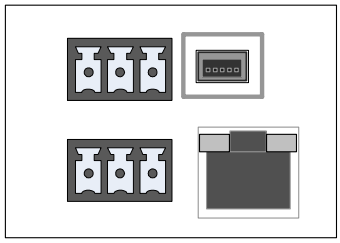
VP-II X provides the Aux ports to input/output TTL level(+5V) with the external system.



AUX Input/Output	
1	Input D0
2	Input D1
3	GND
4	Output D0
5	Output D1
6	GND

3.6 Internal USB port

The following port is necessary for the production process or the maintenance use.

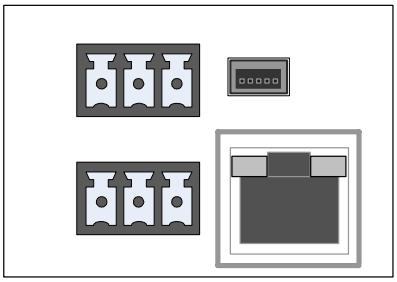


External power	
1	VBUS
2	D-
3	D+
4	N.C.
5	GND

3.7 Server connection port

VP-II X provides the LAN port to connect the server.

The Cable must conform the CAT.5 UTP/STP standard and the maximum length should be within100m.



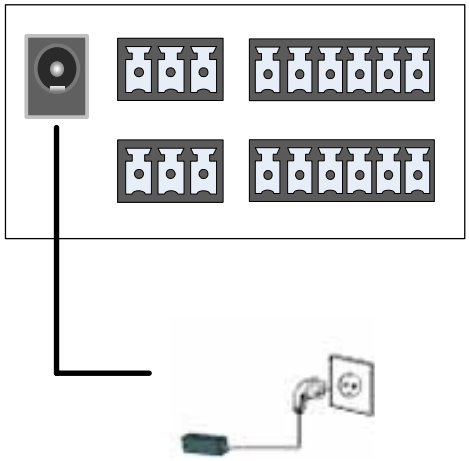
3.8 External USB port

The USB port placing on the left of VP-II X is necessary for the maintenance use.

Chapter 4 VP-II X connection and cabling

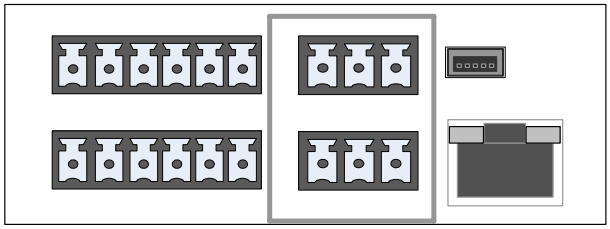
4.1 VP-II X Power connection

The power must be supplied by using the SMPS provided with the product. The improper power supply may affect the operation of the products.



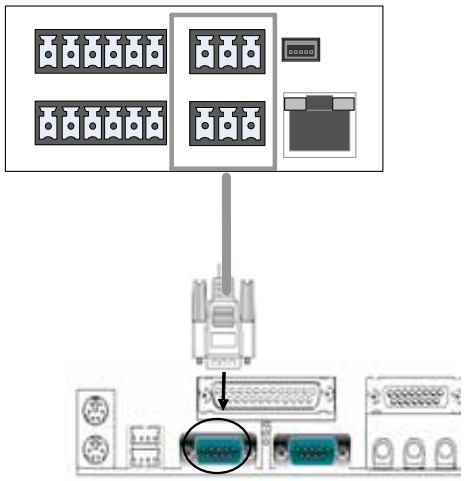
4.2 RS-232 port configuration of VP-II X

VP-II X provides port A and port B for RS-232 communication.



RS-232 A, B	
1	TX
2	RX
3	GND

The following picture shows how to connect a host PC to the VP-II X.



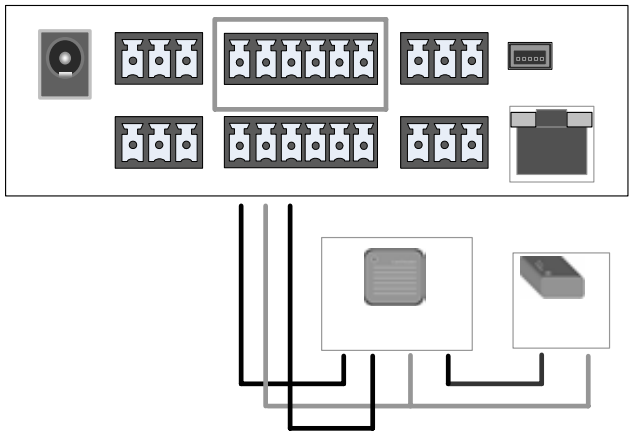
VP-II X		Host PC
TX	**1** ⟷ **5**	GND
RX	**2** ⟷ **3**	TX
GND	**3** ⟷ **2**	RX

4.3 Wiegand Input connection

VP-II X provides a Wiegand input port with which to connect a Wiegand input device. Only Wiegand 26bit is supported for input.

The following picture shows how to connect a Wiegand input device to the VP-II X.

Wiegand Input/Output	
1	Input D0
2	Input D1
3	GND
4	Output D0
5	Output D1
6	GND

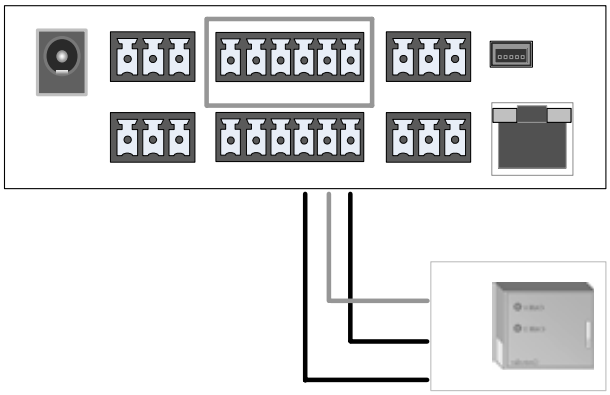


The VP-II X does not supply power to the Wiegand input device. Necessary power for the connected Wiegand device should be separately provided.

4.4 Wiegand output connection

The VP-II X can be interfaced to an external Wiegand device through Wiegand output port. Wiegand 26bit and 37bit are supported for output.

The following picture shows how to connect a Wiegand device to the VP-II X.



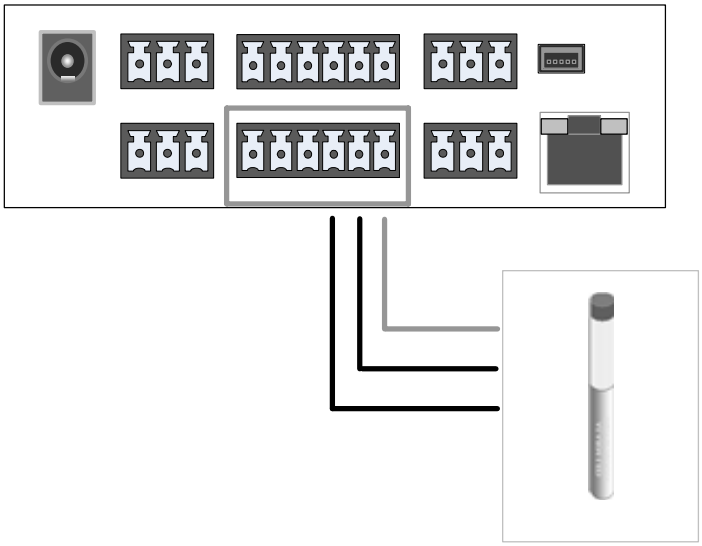
The lengths and types of cables for connecting the VP-II SC and Wiegand controller vary according to the specifications of the Wiegand controller being used.

4.5 AUX output connection

The AUX output port can be used to output the signal(+5[V] level output) for the external lamp.

Please refer to the VP-II X User's guide for the port setting method.

AUX Input/Output	
1	Input D0
2	Input D1
3	GND
4	Output D0
5	Output D1
6	GND

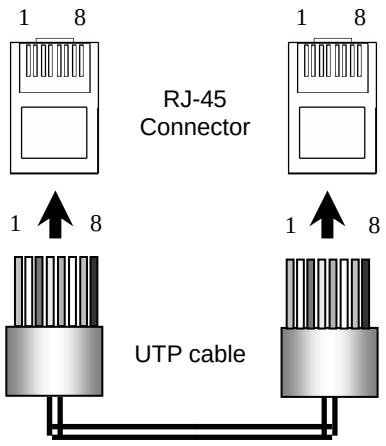


4.6 Cabling between VP-II X and server

Cable connecting the VP-II SC to the server is CAT.5 UTP/STP standard cables; the RJ-45 connectors are used.

To prepare a connection cable, apply connection in a straight-through manner between the two RJ-45 connectors as follows.

P1	Cable color	P2
1	white / orange	1
2	orange	2
3	white / green	3
4	green	4
5	white / blue	5
6	blue	6
7	white / brown	7
8	brown	8



Chapter 5 Checking after installation

After finishing the installation, perform the following steps in order to ensure correct operations of the VP-II X.

① Check the cables to ensure that it is connected as instructed in accordance with the installation guide.

② Confirm the power connection.

③ After look through the VP-II X User's guide, operate the VP-II X accordingly.

④ Confirm whether the verification performance is normal.

⑤ If the system is connected to a door lock, confirm the door lock functions after the verification whether it is operated normally as intended.

⑥ If the system is connected to a host PC, check the communication status after setting up the program.

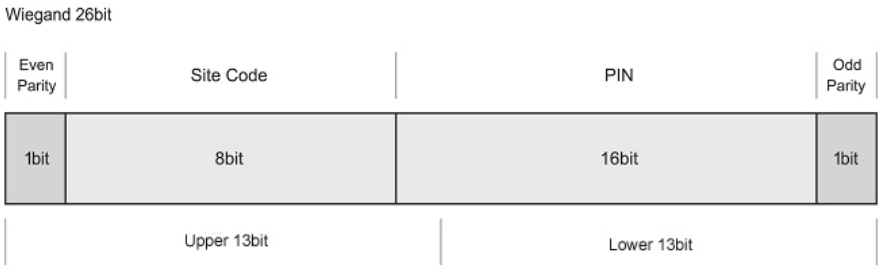
⑦ If the communication is normal, confirm whether the data is normally saved after user enrollment and verification.

Chapter 6 VP-II X Wiegand Input/Output

The following describes the format of VP-II X Wiegand input/output data format and the electrical characteristic.

6.1 Format of Wiegand data

The following figure describes the format of 26-bit data used in the VP-II X Wiegand input/output.



In the above figure, the total data is 26 bits, and the data is composed of 8 bits indicating the site code, 16 bits indicating the PIN, and two parity bits. Wherein each of the two parity bits is applied to the upper 13 bits or the lower 13 bits of the total 26 bit data respectively.

Even parity

Adjusts the upper 13 bits to the "even" format.

For example, if the upper 13 bits is E 0000 0010 0011 (wherein 'E' indicates the even parity bit), then the parity position of ‘E’ is filled with ‘1’.

Odd parity

Adjusts the lower 13 bits to the "odd" format.

For example, if the lower 13 bits is 0011 0001 0000 O (wherein 'O' indicates the odd parity bit), then the parity position of ‘O’ is filled with ‘0’.

Site code

The site code can have the value of 8 bits (0~255).

For the site code setting, refer to the User’s guide.

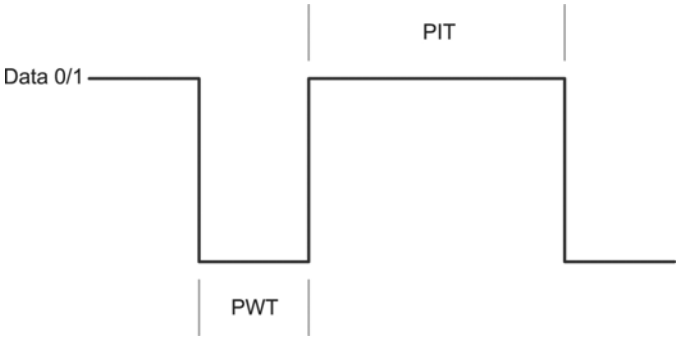
PIN

When the manager assigns the PIN to each user, the possible scope of output is 16 bits (0~65535). For the PIN setting, refer to the User’s guide.

6.2 Wave form of Wiegand signal

In order to ensure the proper input/output in the VP-II X Wiegand system, the following PWT (pulse width time) and PIT (pulse interval time) should be observed.

The following figure shows the PWT and the PIT.



Wherein the wave form of the data 0/1 is the combined wave forms of the data 0 and the data 1.

In case of the Wiegand signal, the signal occurs classified as data 0 or data 1 according to the value of each bit of the data.

If the bit value of the Wiegand data that you want to input/output is '0', then the signal occurs with the data 0,

If the data value is '1', then the signal occurs with the data 1.

In the above figure, the PWT (pulse width time) and the PIT (pulse interval time) are the times that comprise the signal of one bit in the Wiegand data which is generated with the electrical signal.

* Wiegand input

PWT(pulse width time) : 20[us] < PWT < 100[us]

PIT(pulse interval time) : 200[us] < PIT < 100[ms]

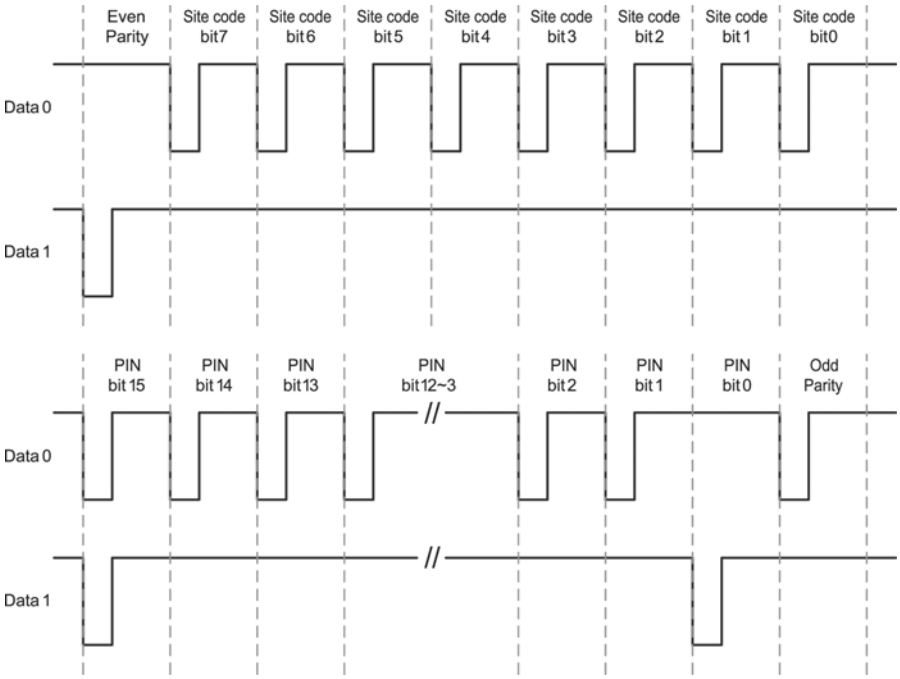
* Wiegand output

PWT(pulse width time) : 20 ~ 100[us] (Initial value 40[us])

PIT(pulse interval time) : 200[us] ~ 100[ms] (Initial value 2[ms])

6.3 Example of Wiegand input/output data format

The following figure shows the format of the Wiegand input/output data when the site code value is ‘001’ and the PIN is '01’ in the Wiegand 26-bit system.



6.4 Electrical characteristic of Wiegand input/output signal

The electrical characteristic of the input/output in the VP-II X Wiegand system is +5[V] at the high level and 0[V] at the low level as shown below.

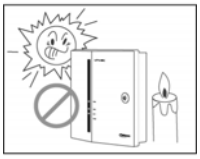
6.5 Wiegand input/output cable and communication distance

The recommended cable is 22AWG which is perfectly shielded or is composed of 5 twisted pairs. The communication distance is 150m (500ft), and the improper cable specifications may cause communication problem.

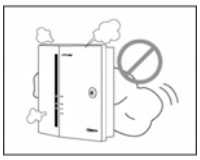
Chapter 7 Safe use and handling

Avoid strong impacts, shocks, or vibrations to components of the VP-II X, since these actions may cause the components to fail.

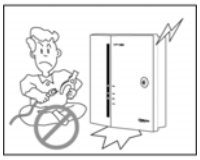
Install the VP-II X in a location that is not exposed to direct sunlight. Exposure to sunlight may cause verification failures by saturating the Scanner or damage by overheating of system components.



To prevent electric shock and fire, immediately switch off the power to the system and contact your Techsphere local sale representative if any component of the VP-II X emits smoke or unusual odors.

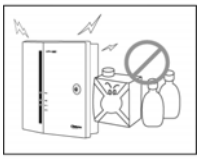


Do not disassemble, repair, or modify the VP-II X. Contact your Techsphere local sale representative for such work.

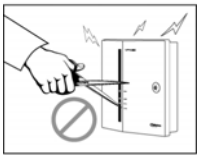


Do not install the VP-II X in an area where humidity is very high or where the system will be exposed to rain or dust. Exposure to excess water or dust may cause electric shock or fire.

Do not clean the VP-II X by directly spraying it with water. Do not use benzene, thinner, alcohol or other volatile chemicals to clean the system.



Do not insert objects such as chopsticks, wires, or drills into the ventilation holes of the system. Especially do not insert metallic objects into the system..



Chapter 8 Service contact information

Customer Service

Do not open components of VP-II systems in order to perform repairs or to expand the system. A Techsphere technical specialist or local sales representative should be contacted for system repairs and hardware expansion.

Please do not hesitate to contact Techsphere and your local Techsphere sales representative. We can help with any matter relating to the evaluation, purchase, and use of VP-II Hand Vascular Pattern Recognition systems, including

- ✓ General information
- ✓ Order procedure
- ✓ Shipping process
- ✓ Technical support
- ✓ Guarantee support
- ✓ Determining your optimal system settings

E-mail

sales@tech-sphere.com
customerservice@tech-sphere.com

Web Page

http://www.tech-sphere.com

FCC Compliance Statement

For Class B digital device

INFORMATION TO THE USER

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures: ·

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

WARNING

Any changes or modifications not expressly approved by the manufacturer could void user's authority to operate the equipment.

CE

CE Compliance Statement

This product was tested by ONETECH, Inc. and found to comply with all the requirements of the EMC Directive 89/336/EEC as amended.

The equipment complies with the standards;

- EN 55 022: 1998 + A1: 2000 + A2: 2003(Class B)
- EN 50 130-4: 1995 + A1: 1998 +A2: 2003
- EN 61 000-3-2: 2000
- EN 61 000-3-3: 1995 + A1: 2001

Memo

Techsphere

Wonil B/D, 980-54 Bangbae
Seocho, Seoul, Korea 137-060
TEL:+82.2.523.4715 Fax:+82.2.523.4765