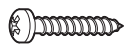
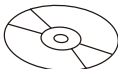


3-7. Modbus converter for VRF (UTY-VMGX)



The convertor for connecting VRF network system to the BMS system built by Modbus open network, for manage small to medium sized BMS and VRF network system.

■ Accessory

Name and shape	Q'ty	Application
 Cable tie	7	For mounting the power supply cable and transmission cable
 Screw (M4 × 16 mm)	4	For mounting the Modbus converter
 DVD	1	For initial setting
 Modbus connector	1	For connecting the cable and attaching the board connector
 USB cable	1	For initial setting tool
 Installation manual	1	

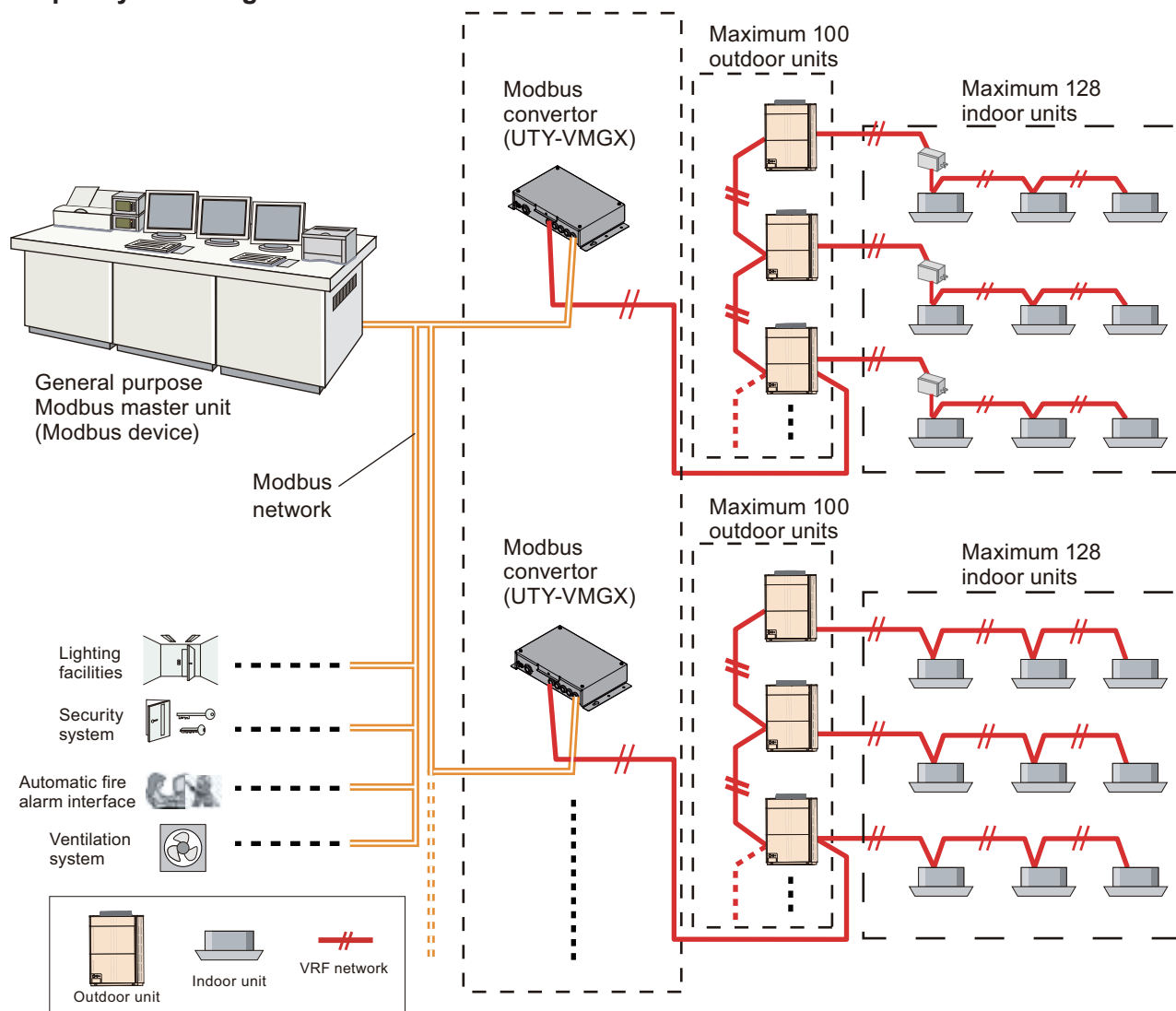
■ Other required devices (Locally purchased)

- To install tool for convertor, personal computer that satisfies the following system requirements is necessary.

Personal computer system requirement	
Operating system	- Microsoft Windows 7 Home Premium (32-bit or 64-bit) SP1 - Microsoft Windows 7 Professional (32-bit or 64-bit) SP1 - Microsoft Windows 8.1 (32-bit or 64-bit) - Microsoft Windows 8.1 Pro (32-bit or 64-bit) - Microsoft Windows 10 Home (32-bit or 64-bit) - Microsoft Windows 10 Pro (32-bit or 64-bit) Supported languages: English, Chinese, French, German, Russian, Spanish, and Polish
Memory	1 GB or more
Display	1,366 × 768 or higher resolution
Interface	USB port (× 1)
Software	Adobe Reader 11.0 or later
Optical drive	DVD drive

■ System diagram

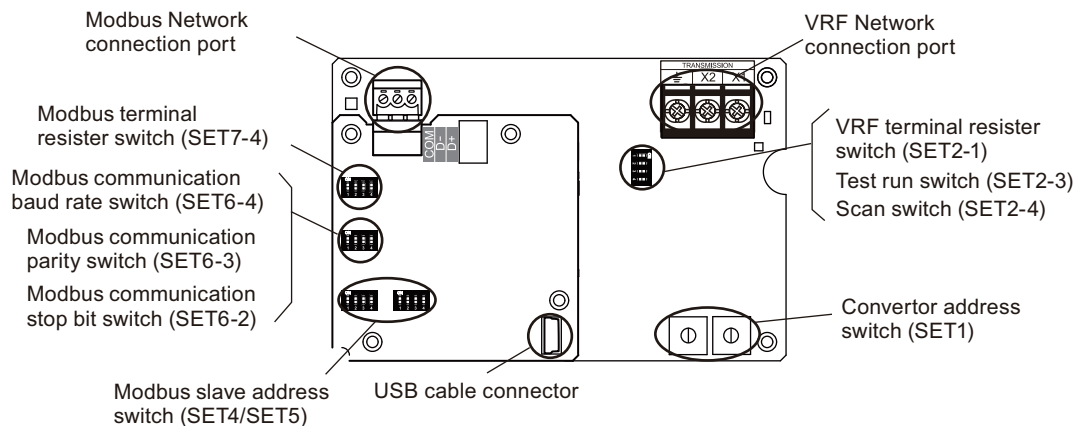
• Proper system diagram



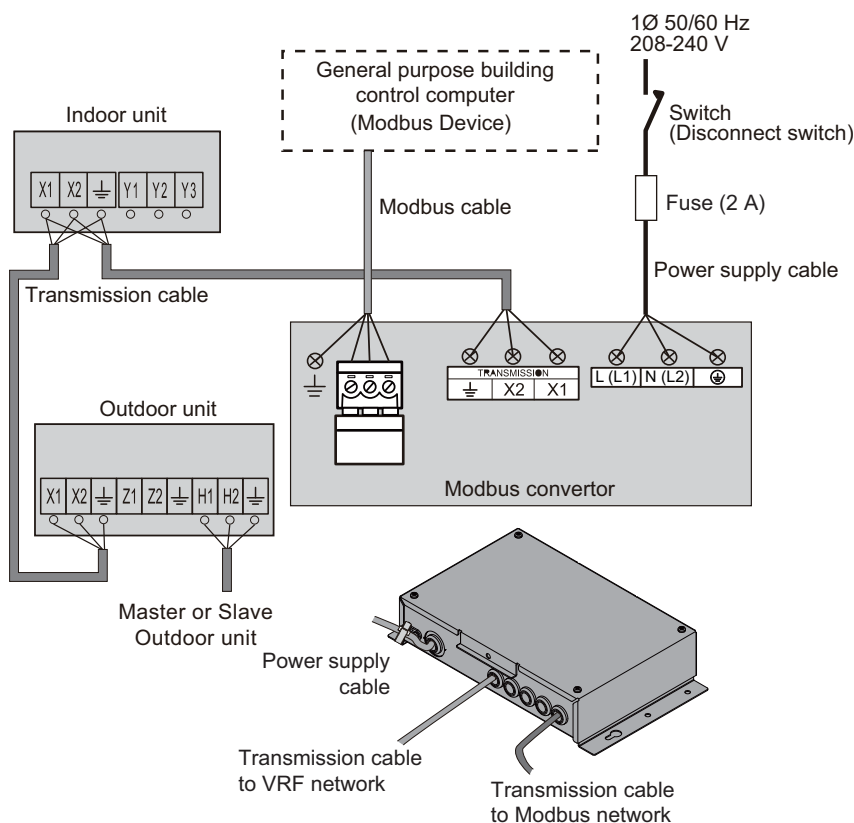
• Connected unit

Maximum controllable indoor units number per 1 Modbus converter		128
Maximum controllable outdoor units number per 1 Modbus converter		100
Maximum connectable Modbus converter number per 1 VRF network system		9
Maximum number of connected Modbus converter units to one Modbus master unit	Without repeater	31
	With repeater	247

■ Component location of PCB



■ Electrical wiring



■ Functions

• Indoor unit control

– Individual control

Commands from Modbus network are sent to the respective indoor units.
(Modbus network → respective indoor units of VRF network)

– Batch control

Commands from Modbus network are sent to all indoor units connected to VRF network.
(Modbus network → All indoor units of VRF network)

• Indoor unit status monitoring

Indoor unit status is communicated to the Modbus network in the form of Lon network variables.
(Modbus network ← All indoor units of VRF network)

● Control and monitoring items

Item	Function	Description
Indoor unit control (Individual/Batch)	On/Off Command* ¹	Start/Stop operation
	Operation mode setting	Cooling/Heating/Auto/Fan/Dry
	Temperature setting	Set room temperature
	Airflow mode setting	Set airflow
	Set point temperature limit Setting	Set room temperature lower limit & room temperature upper limit
	Thermostat off setting* ^{1*2}	Thermostat off (Only one controller in VRF network system can do this.)
	Centrally control (Filter reset)	Prohibition of filter sign reset of remote controller
	Centrally control (All mode)	Prohibition of all mode of remote controller
	Centrally control (Timer mode)	Prohibition of timer mode of remote controller
	Centrally control (Set temperature mode)	Prohibition of set temperature mode of remote controller
	Centrally control (On/Off mode)	Prohibition of On/Off mode of remote controller
	Centrally control (On mode)	Prohibition of On mode of remote controller
	Centrally control (Operation mode)	Prohibition of operation mode of remote control
Indoor unit control (Individual)	Filter sign reset	Set filter sign reset command
	Anti-freeze setting	Set anti-freeze command
	Energy save mode setting	Set energy save command
	Vertical/Horizontal airflow direction louver	Set Vertical/Horizontal airflow direction louver
Indoor unit control (Batch)	Time setting	Set time setting command (The controllers those are connected in VRF network system are an object.)
	Emergency stop setting	Set emergency stop command
Outdoor unit control (Individual)	Outdoor unit low noise	Outdoor unit low noise level setting
	Outdoor unit capacity save	Outdoor unit capacity save setting
Indoor unit monitoring (Individual)	On/Off Status* ¹	The indoor unit which is now operating can be monitored in all indoor units
	Operation mode setting status	Cooling/Heating/Auto/Fan/Dry mode status
	Temperature setting status	Room set temperature status
	Airflow mode setting status	Airflow mode status
	Set point temperature limit status	Room set temperature limit status
	Thermostat off setting status* ^{1*2}	Thermostat off set value status
	Centrally control (Filter reset) status	Remote controller filter reset prohibition status
	Centrally control (All mode) status	Remote controller all mode prohibition status
	Centrally control (Timer mode) status	Remote controller timer mode prohibition status
	Centrally control (Set temperature) status	Remote controller set temp. prohibition status
	Centrally control (On/Off) status	Remote controller On/Off prohibition status
	Centrally control (On) status	Remote controller On prohibition status
	Centrally control (Operation) status	Remote controller operation prohibition status
	Anti-freeze setting status	Anti-freeze set status
	Energy save mode setting status	Energy save mode set status
	Filter sign reset status	Filter sign reset status
	Room temperature status	Room temperature status
	Error code status	Error code status can be monitored.
	Vertical/Horizontal airflow direction louver status	Vertical/Horizontal airflow direction louver status
	Indoor unit status	Defrost/oil recovery/pump down can be monitored.

Item	Function	Description
Indoor unit monitoring (Batch)	On/Off status*1	The indoor unit which is now operating can be monitored in all indoor units.
	Maintenance mode status	Maintenance status
	Emergency stop setting status	Emergency stop setting status
	Error status	The indoor unit which is now error can be monitored in all indoor units.
Outdoor unit monitoring (Individual)	Outdoor unit low noise	Outdoor unit low noise level can be monitored.
	Outdoor unit capacity save	Outdoor unit capacity save can be monitored.
Convertor unit monitoring (Individual)	Error code Status	Error code status
	Modbus communication setting Information	Baud rate/slave address can be monitored.
	Model name	Convertor model name can be confirmed.
	Software version	Convertor software version can be confirmed.

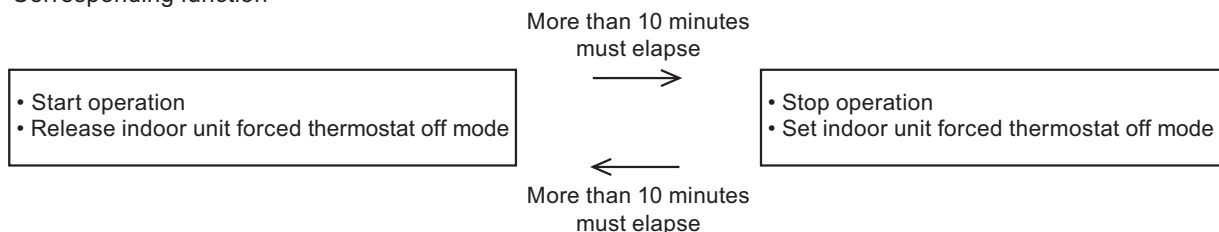
NOTES:

- For detailed information, refer to the interface specification posted on “Service & Supports” page of the web site.
<https://www.fujitsu-general.com/global/support/>
- *1: To protect the compressor of the outdoor unit, carefully read and understand the following caution that may affect the operation of compressor before executing the setting.

⚠ CAUTION

When performing periodical settings like schedule settings for the following functions, perform the setting to all indoor units in the same refrigerant system simultaneously, conforming to the timing restriction described below.

<Corresponding function>



- *2: Forced thermostat off instruction
 - Only one equipment can send these instructions for each refrigerant system.
 - When these instructions are sent by multiple equipment, the system may not respond as instructed or may cause malfunction.

CONTROL SYSTEM

CONTROL SYSTEM



CONTROL SYSTEM

CONTROL SYSTEM

CONTROL SYSTEM

CONTROL SYSTEM

CONTROL SYSTEM

CONTROL SYSTEM

■ Simple procedure for register data to Modbus converter for VRF

! Important

Modbus converter for VRF will not operate, if VRF network system address (outdoor and indoor units address) allocation information are not registered to Modbus converter for VRF.

Address initial settings are 3 methods as follows:

● Default addresses of indoor unit and outdoor unit are used (Initial setting is not necessary)

Default address value ([Ref No.—Node No.]

Indoor unit: [00—00] [00—01] ... [00—63]

[01—00] [01—01] ... [01—63]

Outdoor unit: [00—00] [00—01] ... [00—03]

[01—00] [01—01] ... [01—03]

● Scan of connected indoor units address

Scan procedure is as follows:

1. Turn on the switch of scan setting.
2. “Scan display” by LED (Address is registering inside the convertor).
3. “Number of connected indoor unit display” by LED (Scan is complete).
4. Turn off the switch of scan setting.
5. “Address update display” by LED
6. Turn on the main power again.
7. “Address rewriting display” by LED (Address are synchronized among boards).

If scan error is generated, perform the scan again.

● Setting from PC

NOTE: For detailed information, refer to the application manual included inside packaged DVD.

1. Install tool for convertor (software) in PC.
Tool for convertor is the accessory item of this product.
2. Connect the PC and this product.
Connection will be done by the connector cable provided as an accessory item of this product.
3. Set this product to USB mode.
4. Initial setting of indoor unit and outdoor unit addresses by using the tool for convertor.
5. Register the initial setting data to this product. Click “Register” dialog.
In this stage, this product is ready for binding and commissioning.