# Installation manual UTY-XDZX

This product is intended for controlling Fujitsu General Limited split-type outdoor units for use in conjunction with heat exchangers of AHU from other manufacturers.

| |
|---|
| ・Conformity of regulations and laws must be conformed on the whole system (including outdoor unit) by your side. |
| ・Fujitsu General Limited does NOT take any responsibility on the system design at field or the failure caused by the system design at the field including our outdoor unit. |
| ・Please check our technical manual and this installation manual when designing the local system. |
| ・R32 is flammable refrigerant. Please make sure to read the original IEC 60335 and IEC 60335 2-40 (Edition 6.0). The fire safety warranty for the whole system (including outdoor unit) must be done by your side when using R32 refrigerant. |
| ・When using R32 refrigerant please check the following items.<br>Requirements for charge limits and ventilation (IEC 60335 2-40 Annex GG) shall be satisfied.<br>Requirements for marking (e.g. flame symbol) and information in the manual shall be satisfied.<br>Requirements for constructions (e.g. location of the refrigerant detection sensor) shall be satisfied. |
| ・Please make sure to check technical manual, this installation manual and outdoor unit installation manual for correct use and installation. Also, for safety, make sure to read the installation manual for the outdoor unit, especially when using R32 refrigerant. |

## Contents



## 1. Safety precautions

・Be sure to read this Manual thoroughly before installation.

・The warnings and precautions indicated in this Manual contain important information pertaining to your safety. Be sure to observe them.

・Hand this Manual, to the customer. Request the customer to keep them on hand for future use, such as for relocation or repairing the unit.

・For installation of the air handling unit (heat exchanger), refer to the installation manual for the air handling unit.

|  WARNING | This mark indicates procedures which, if improperly performed, might lead to the death or serious injury of the user. |
|---|---|
| Request your dealer or a professional installer to install this product in accordance with this Installation Manual. An improperly installed unit can cause serious accidents such as water leakage, electric shock, or fire. If this product is installed in disregard of the instructions in the Installation Manual, it will void the manufacturer's warranty. | |
| Do not turn ON the power until all work has been completed. Turning ON the power before the work is completed can cause serious accidents such as electric shock or fire. Do not touch this product after turning ON the power. | |
| When service, maintenance and cleaning around the unit, make sure to do turn off the power supply. | |
| If refrigerant leaks while work is being carried out, ventilate the area. If the refrigerant comes in contact with a flame, it produces a toxic gas. | |
| Installation work must be performed in accordance with national wiring standards by authorized personnel only. Please do not work with wet hands. | |
| Except for EMERGENCY, never turn off main breaker of this products during operation. It will cause compressor failure as well as water leakage. First, stop this product by operating the any control unit. Then cut the breaker. | |

| |
|---|
| Make sure to operate through the any control unit. When the breaker is designed, locate it at a place where the users cannot start and stop in the daily work. |

| ⚠ CAUTION | This mark indicates procedures which, if improperly performed, might possibly result in personal harm to the user, or damage to property. |
|---|---|

| |
|---|
| Read carefully all security information before use or install this product. |
| The installation must be carried out in compliance with regulations in force in the place of installation and the installation instructions of the manufacturer. This unit must be installed by qualified personnel with a capacity certificate for handling refrigerant fluids. Refer to regulation and laws in use on installation place. |
| The units are not explosion proof and therefore should not be installed in explosive atmosphere. |
| Always use a separate power supply line protected by a circuit breaker operating on all wires with a distance between contacts of 3mm for this unit. |
| The unit must be correctly earthed (grounded) and the supply line must be equipped with a differential breaker to protect the persons. |
| Never touch electrical components immediately after the power supply has been turned off. Electric shock may occur. After turning off the power, always wait 5 minutes before touching electrical components. If it caused the problem and error, turn off the power supply immediately and never use it. |
| This unit contains no user-serviceable parts. Always consult authorized service personnel to repairs. |
| When moving, consult authorized service personnel for disconnection and installation of the unit. |

# 2. About this product

The module has optional cloud connectivity for remote control and diagnostics. For setup of cloud connection go to https://ecosmart.cloud and follow the instructions there.

### 2.1 Precaution for using this product

When operating the unit from other source than IO a new command must be received by the device every 5 min to keep the unit operating. If no command is received within timeout the unit will stop.

### 2.2 Package Content

UTY-XDZX Module

This installation manual

### 2.3 Field supplied material (This is mandatory.)

NTC Temperature sensor type: 10KOhm +/-1% @ 25-degree C - characteristics 3950K

(Recommend wire length is 2m. If you extend more wire length, please select the proper wire type, shielded wire with proper decoupling of shielding is recommended, and ground current loops should be avoided.)

# 3. Product selection

Please be sure to follow the technical manual concerning selection of outdoor unit.

※Regarding pipe size, pipe length and so on, please follow technical manual of product and manuals of outdoor unit.

### 3.1 Product lineup

Model name: UTY-XDZX

# 4. Installation work

### 4.1 Selecting an installation location

| ⚠ WARNING |
|---|
| Select installation locations that can properly fix this product. Select a location where there is no water intrusion, such as along the wire, rain water and so on. Install the units securely so that they do not topple or fall. Please select the installation location that a person except installation worker and service personal don't touch this product. |
| Install this product in a location which can withstand a load of at least 3 times the weight of the main unit and which will not amplify sound or vibration. If the installation location is not strong enough, this product may fall and cause injuries. |

| |
|---|
| This appliance is not intended for use by persons (including children) with reduced physical, sensory or mental capabilities, or lack of experience and knowledge, unless they have been given supervision or instruction concerning use of the appliance by a person responsible for their safety. |
| Make sure to be careful when handling the tool when installing (for example, stumbling over a tool or falling of the tool) |
| If children under 10 years old may approach the unit, take preventive measures so that they cannot reach the unit. |
| ⚠ CAUTION - Installation |
| Do not use the unit for special purposes, such as storing food, raising animals, growing plants, or preserving precision devices or art objects. It can degrade the quality of the preserved or stored objects. |
| Do not install where there is the danger of combustible gas leakage. |
| Do not install the unit near a source of heat, steam, or flammable gas. |
| Install this product, power supply cable at least 1 m away from a television or radio receivers. The purpose of this is to prevent TV reception interference or radio noise. (Even if they are installed more than 1 m apart, you could still receive noise under some signal conditions.) |
| Do not install this product in the following areas:<br>Area with high salt content, such as at the seaside. It will deteriorate metal parts, causing the parts to fail or the unit to leak water.<br>Area filled with mineral oil or containing a large amount of splashed oil or steam, such as a kitchen. It will deteriorate plastic parts, causing the parts to fail or the unit to leak water.<br>Area affected by a place where dew condensation occurs. It will cause shorting of the circuit board that may cause fire or the parts to fail.<br>Area where there is no mold, or where mold may occur in a high humid place. It may cause parts to fail.<br>Area that generates substances that adversely affect the equipment, such as sulfuric gas, chlorine gas, acid, or alkali. It will cause the copper pipes and brazed joints to corrode, which can cause refrigerant leakage.<br>Area that can cause combustible gas to leak, contains suspended carbon fibers or flammable dust, or volatile inflammables such as paint thinner or gasoline. If gas leaks and settles around the unit, it can cause a fire.<br>Area where animals may urinate on the unit or ammonia may be generated.<br>Select a place where insects and small animals do not invade. Area where insects and small animals do not invade. |

W-LAN and Radio Wave Usage

| |
|---|
| ⚠ CAUTION W-LAN |
| Certain types of wall materials may shut out wireless communications. |
| When you use a wireless LAN, there are precautions that you must follow in relation to radio waves, personal information, and so on. To use this product correctly, be sure to read the following precautions and the operating manual of the wireless LAN equipment you are using. We will assume no responsibility, unless legal liability is recognized, regarding failures, other defects and damages incurred by use of this product that occur through incorrect use or during use by yourself or a third party. |
| Use this product as regular wireless LAN equipment.<br>Do not use this product in hospitals or in/near locations with medical equipment.<br>Do not use this product within aircraft.<br>Do not use this product near electronic equipment that handles high-precision control or weak signals.<br>Examples of electronic equipment to be careful of: Hearing aids, pacemakers, fire alarms, automatic doors and other automatic control equipment |
| This is not a guarantee of wireless connection and performance with all wireless routers and in all residential environments.<br>Radio waves may not reach or may be interrupted in the following situations.<br>Use in buildings made from concrete, rubber or metal<br>Installation near obstacles<br>Interference with wireless communication equipment using the same frequency<br>Places where there are magnetic fields from equipment such as microwave ovens,<br>or static electricity or radio wave interference occurs |
| ⚠ CAUTION - Radio Wave Usage |
| Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment. This transmitter must not be co-located or operated in conjunction with any other antenna or transmitter. Never connect an external antenna to the antenna terminal on the electrical board of product. |

| |
|---|
| Do not use this product in the following locations. Using this product in such locations may cause communications becoming unstable or not possible. Near wireless communication equipment that uses the same frequency band (2.4GHz) as this product. Places where there are magnetic fields from equipment such as microwave ovens, or static electricity or radio wave interference occurs. (Radio waves may not reach depending on the environment.) |

**4.2 Installing the unit**

The module is designed to be placed on a DIN rail in a suitable enclosure.

## 5. Installation of temperature sensor

The temperature sensor must be installed so that it has good thermal contact with the surface of the sensed pipe.
Zip tie, aluminum tape, or equivalent may be used to fix the sensor to the pipe.
The full length of the sensor must be covered with suitable insulation material so that the temperature reading is not influenced by surrounding air temperature.
Recommended length of sensor cable is 2m. If cable length of 2 m or more is necessary, select the proper wire type, such as noise shield wire. Longer cables may be used if proper precautions are taken to avoid electrical noise from influencing the measurement. Cable15m is normally possible as long as shielded cable is used and ground loops in shield are avoided.

**5.1 Placement of temperature sensor**

Optimal sensor placement depends on intended use of the system.
The temperature sensor should be installed where the temperature of condensation and evaporation can be detected securely.

## 6. Electrical wiring

| ⚠ WARNING |
|---|
| Electrical work must be performed in accordance with this Manual by a person certified under the national or regional regulations. Be sure to use a dedicated circuit for the unit. An insufficient power supply circuit or improperly performed electrical work can cause serious accidents such as electric shock or fire. |
| Before starting work, check that power is not being supplied to the all units. |
| Use ones specified by the manufacturer. Improper connections, insufficient insulation, or exceeding the allowable current can cause electric shock or fire. |
| For wiring, use the prescribed type of cables, connect them securely, making sure that there are directly no external forces of the cables applied to the terminal connections. Improperly connected or secured cables can cause serious accidents such as overheating the terminals, electric shock, or fire. |
| Always fasten the outside covering of the connection cable with the cable clamp so that it would satisfy of external force to conform to the regulations and law. (If the insulator is chafed, electric discharge may occur.) |
| Do not modify the power cables, use extension cables, or use any branches in the wiring. Improper connections, insufficient insulation, or exceeding the allowable current can cause electric shock or fire. |
| Match the terminal board numbers and connection cable colors with those of the outdoor unit. Erroneous wiring may cause burning of the electric parts. |
| Securely install the electrical box cover on the unit. An improperly installed electrical box cover can cause serious accidents such as electric shock or fire through exposure to dust or water. |
| If install sleeves into any holes made in the walls for wiring. Otherwise, a short circuit could result. |
| Install an earth leakage breaker. In addition, install the earth leakage breaker so that the entire AC main power supply is cut off at the same time. Otherwise, electric shock or fire could result. If you remove the earth leakage breaker such as safety device when service, make sure to be return it to the original condition. |
| If the supply cable is damaged, it must be replaced by the manufacturer, its service agent or similarly qualified persons to avoid a hazard. |
| Take special precaution for connection to the external controller. Make sure the wiring for the external input and output signals is correct. Miswiring of these cables could damage the entire system. |
| When you push the SW on the PCB, static electricity charged in the body may cause malfunction of the PCB. Please follow the cautions below:<br>Establish an earth (ground). Do not touch terminals of parts and patterns implemented on PCB. Touch metal part for more than 10 seconds to discharge static electricity charged in the body. |

Do not connect the earth (ground) cable to a gas pipe, water pipe, lightning rod, or a telephone earth (ground) cable. Improper earthing (grounding) may cause electric shock.

**⚠ CAUTION**

Please remove the knockout of cover parts for the part of connecting the wire.
Please use the appropriate tool and handle properly so that the wire may not be scratched. Make sure to be careful not to damage other parts or objects with the removed parts. And make sure to be careful not to leave the removed parts, and be sure to return them to their original position.

### 6.1 Electrical requirement

Input Voltage (Rating): 230V / 50Hz

・The module must be powered from the outdoor unit terminals designed for connection of this unit. Warranty is void if connected to other power source.
Make sure proper interlocks are made so that the unit never operates when there is not adequate air or water flow through the AHU heat exchanger.

・Select the power cable type and size in accordance with relevant local and national regulations.

・Specifications for local wiring power cord and branch wiring are in compliance with local code.

・Maximum wire length : Set a length so that the voltage drop is less than 2%. Increase the wire diameter when the wire length is long.

### 6.2 Connection to outdoor unit

Use suitable cable as specified for the outdoor unit (3*1.5mm^2+GND is recommended. 3*2.5mm^2+GND is maximum). Use confirmed cable with type 60245 IEC57 is recommended. Make sure to terminate ground properly.

### 6.3 Connection of wiring

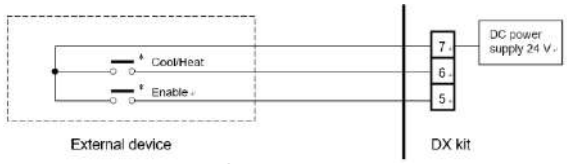
Use suitable isolated wires of (0,25-0,5mm^2). In noisy environments or if length is exceeding 2m a twisted pair cable (0,25-0,5mm^2) with shield is recommended. Especially if used with high impedance inputs.
The wire connection should be separate from the power cable line.

#### 6.3.1 External inputs

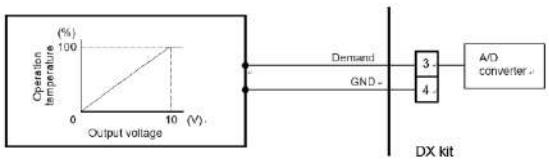
The unit features a galvanically isolated internal power source.
The required control signals are: Enable, Heat/Cool, and Demand 0-10VDC for 0 - 100% compressor demand.
All these signals must be either potential free or refer to a common potential.

| Input name | Command | Terminal No. |
|---|---|---|
| Cool/Heat | Short: Heating mode is set.<br>Open: Cooling mode is set. | 6—7 |
| Enable | Short: Demand input is available<br>Open: Demand input is not available. Compressor does not work. | 5—7 |
| Demand<br>(0-10VDC for 0-100%) | 0V: Compressor off<br>～10V: Prefer the following description. | 3, 4 |
| Temperature sensor | | 1, 2 |

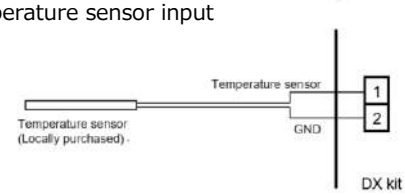
・Cool/Heat, Enable input




・Demand input



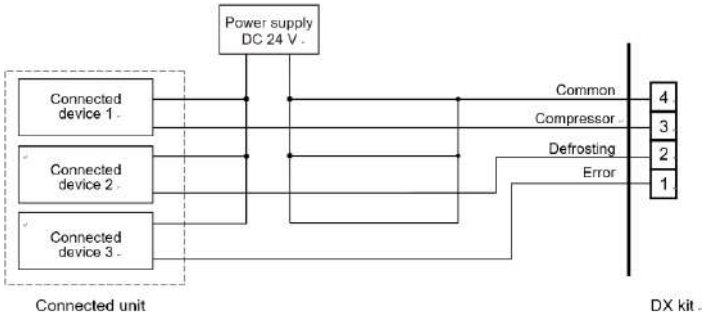

・Temperature sensor input



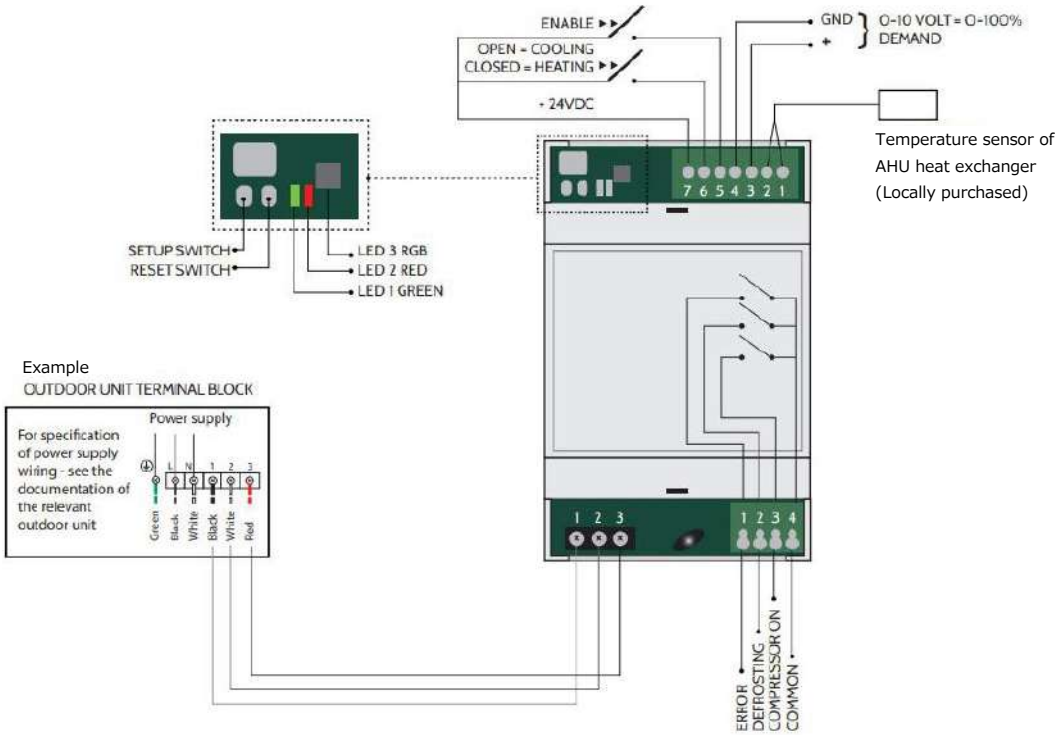
### 6.3.2 External outputs

The external outputs are 3 potential free relays with a common supply. Total rating is 3A 250VAC or 30VDC resistive load. For inductive or capacitive load proper precautions must be made to avoid over voltage. Current on one output should not exceed 1A.

| Output name | Terminal No. |
|---|---|
| Compressor running | 3—4 |
| Defrosting | 2—4 |
| Error | 1—4 |




## 6.4 Circuit diagram




# 7. LED indicators

The unit has 3 LED's

・LED 1 (Green) : indicates demand level with 1HZ pulses, one per 10% demand. 3,0sec without light between indication cycles.

・LED 2 (Red) : indicates operation mode and outdoor communication status.

Continuous red = heating

Off = cooling

This product and outdoor unit mismatch = 1Hz blinking

Communication error 5Hz blink

This error condition is if this product can't receive the communication protocol over the 120 seconds.

・LED 3 is general system state indication.

For detailed description of LED3 go to https://ecosmart.cloud

| LED 3 | Meaning |
|---|---|
| Breathing cyan | When it is breathing cyan, your device is happily connected to the internet. |
| Rapidly blink cyan | In the process of connecting to the cloud, it will rapidly blink cyan. You often see this mode when you first connect your product to a network, after it has just blinked green. |
| Blinking green | If your device is blinking green, it is trying to connect to W-LAN. |
| Blinking blue | Listening mode – device is ready for configuration via local device webpage. |

## 8. Switch operations

The unit has 2 Switch

| Setup Switch | Contents |
|---|---|
| 10 seconds push<br>(Hold until LED 3 blinks rapidly) | Stored W-LAN network configuration reset.<br>System will after next restart connect to EcoSmart network if found. |

| Reset Switch | Contents |
|---|---|
| Short push | Restart the device and enter W-LAN and outdoor unit configuration mode. |

| Safe mode | Contents |
|---|---|
| Hold down both Reset and Setup switches until magenta LED3 | Used to force the unit to connect to cloud without starting user application. |

## 9. Startup and Test Run

Please confirm that the entire system including external device operates normally.
(If only the outdoor unit operates, it may cause damage to the entire refrigerant system.)
Before turning on power for the first time please double check all wiring to avoid damage to unit and/or external equipment.

1. Turn on power.
2. Connect to unit W-LAN EcoSmart_xxxx using your smartphone, tablet, PC, or MAC.
3. Open web browser and go to unit website 192.168.0.1
4. Note down 6 the digit alphanumeric device code.
5. Follow the instructions to configure W-LAN connection and select outdoor unit and refrigerant type.
6. Go to https://ecosmart.cloud and make account and claim the device using 6-digit alphanumeric device code.

Reading of status, setting of parameters and simulation of demand may be done from https://ecosmart.cloud
※If you want to know system status, please check 3 LED's(Reference Contents 7)

| ⚠ CAUTION |
|---|
| If it makes mistake to choose the outdoor unit and refrigerant type, it causes the damage and trouble for the outdoor unit.<br>Please make sure to check the connecting outdoor unit model and choose the proper outdoor unit type on website. |

Operation environment (Personal computer environment)

| Items | Contents |
|---|---|
| CPU | 2GHz or higher |
| Memory | 2GB or more |
| HDD | 10GB or more of free space |
| Display | 1366 x 768 or higher resolution |
| Interface | Ethernet port (Ethernet port is required for remote connection using internet.)<br>Or Wireless LAN port |
| OS | Windows 10 |
| Browser | Internet explorer 11 / Google Chrome ver.75 |

## 10. Check List (Example)

Pay special attention to the check item below when installing the entire system.
After installation is complete, be sure to check the following check item again.

| Check items | If not performed correctly | Check box |
|---|---|---|
| Does temperature sensor detect proper temperature with operation? | No operation, heat or burn damage<br>No cooling, No heating | |
| Are the wirings between each device correct? | No operation, heat or burn damage | |
| Are the installed outdoor unit and the selection of outdoor unit by webpage matched? | No operation, heat or burn damage<br>No cooling, No heating | |
| Are the external device and DX-kit operating as expected? | No operation, heat or burn damage | |
| Has the AHU of 3rd party been installed correctly? | Vibration, noise, indoor unit may drop | |
| Has there been a check for F-gas leakage (refrigerant pipes)? | No cooling, No heating | |

| | | |
|---|---|---|
| Has heat insulation work been completed? | Water leakage | |
| Does water drain easily from AHU of 3rd party? | Water leakage | |
| Is the voltage of the power source the same as that indicated on the label? | No operation, heat or burn damage | |
| Are the wires and pipe all connected completely? | No operation, heat or burn damage | |
| In this unit earthed (grounded) been installed correctly? | Short circuit | |
| In each cable the specified thickness? | No operation, heat or burn damage | |
| Does operation by input and output or external device? | No cooling, No heating | |
| After installations completed, has the proper operation and handling been explained to the user? | - | |

## 11. Error codes

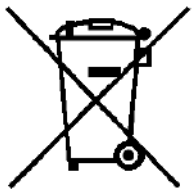
When an error appears, please check on LED or web browser, https://ecosmart.cloud.
And please check the error code, then please check the installation manual or technical manual or service manual of installed outdoor unit.

## 12. Specification

| Items | Value |
|---|---|
| Input voltage | 230V / 50Hz |
| Power consumption | Max. 2.0W |
| Current value | Less than 0.01A |
| Dry bulb temperature of installed environmental | -20 - 46 degree |
| Dimension (H x W X D) | 90.2mm x 53.3mm x 57.5 mm |
| Weight (Net) | 100 g |
| IP protection | IP10 |
| W-LAN specification | IEEE 802 11 b/g/n<br>Frequency band 2.4GHz |

W-LAN output power

| Characteristics | | TYP. | Criteria | Unit |
|---|---|---|---|---|
| RF average output power, 802.11b CCK mode | 1M | 16.5 | +/- 1.5 | dBm |
| | 11M | 16.5 | +/- 1.5 | dBm |
| RF average output power, 802.11g OFDM mode | 6M | 15 | +/- 1.5 | dBm |
| | 54M | 13 | +/- 1.5 | dBm |
| RF average output power, 802.11n OFDM mode | MCS0 | 14.5 | +/- 1.5 | dBm |
| | MCS7 | 12 | +/- 1.5 | dBm |



**Your air conditioning product is marked with this symbol. This means that electrical and electronic products shall not be mixed with general household waste. European Community countries(*), Norway, Iceland and Liechtenstein should have a dedicated collection system for these products.**
**Do not try to dismantle the system yourself as this could have harmful effects on your health and on the environment. The dismantling and treatment of refrigerant, oil and other parts must be done by a qualified installer in accordance with relevant local and national regulations.**
**Air conditioners must be treated at a specialized treatment facility for re-use, recycling and other forms of recovery and shall not be disposed of in the municipal waste stream. Please contact the installer or local authority for more information.**
*** subject to the national law of each member state**

FUJITSU GENERAL LIMITED

DMS10032747-2