

Module for simple
cooling or heating systems
using FUJITSU GENERAL
outdoor units

TECHNICAL MANUAL

Inverter controller with temperature
regulation
99320 UTI-GDX

Applicable outdoor units
FUJITSU GENERAL:
AOYG xx L



IMPROMAT
KLIMA

APPLICATION

The UTI-GDX module is used for direct control and regulation of FUJITSU GENERAL inverter outdoor units when heat exchangers from other manufacturer are used instead of the original indoor unit.

The UTI-GDX module is specially designed to create simple cooling or heating systems with analogue setting of the device's performance by turning the control knob in the range of 1 to 10 and OFF. Level 1 is the lowest and the desired output is equal to the cooling temperature of +24°C and the heating temperature of +15°C. Level 10 is equal to the required temperature in the cooling mode +9°C, the heating mode +30°C. Switching between modes has to be done externally, using a relay or switch between terminals +12 V and H/C.

The module is equipped with a jumper between +12V and ON terminals - releasing the jumper will block the operation of the device, regardless of the setting on the control knob.

The module is applicable for all G-type models of FUJITSU GENERAL outdoor inverter units, except for Multi Split units.



WARNING

The compliance with installation instructions provided in this documentation is necessary for ensure technical parameters and reliable operation.

All construction work associated with installing and connecting the module may be performed only by a person with qualifications in the field installation and servicing of air conditioning Fujitsu licensed to work on electrical and cooling equipment.

Installation of the module and its accessories should be made in accordance with relevant standards and regulations in force in the region.

The manufacturer is not liable for damages caused by failure to comply with technical specifications, errors in installation, maintenance and improper use of the product.

PACKAGE CONTENTS

▪	Module UTI-GDX	1pc
▪	Temperature sensor UTI-ETS	2pcs
▪	Wall distribution box HAGER	1pc
▪	Technical manual	1pc

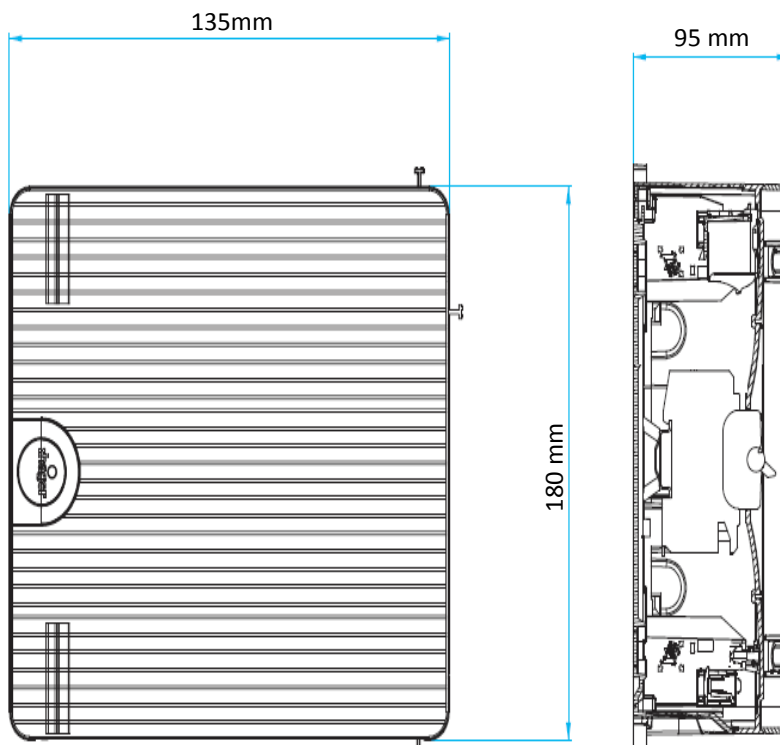
Note: Please check your package contents to verify the completeness of delivery.

PRODUCT DESCRIPTION

The control module is placed in a plastic box with IP40 protection (insulation class II.). Mechanically, the distribution box is ready for wall or embedded mounting. The distribution box is equipped with a transparent door for checking of the built-in two-colour LED indicator. It is supplied with two temperature sensors – the *Cu* pipe sensor and the indoor (room) sensor.

The UTI-GDX module has the following inputs and outputs:

- 230 VAC output "compressor operation" with contactless switch
 - ✓ active when the compressor is running
 - ✓ intended for direct supply of the evaporator fan
 - ✓ max. current 1,6 A.
- 230 VAC output "error" of the outdoor unit
 - ✓ max. current 0,4 A.
- input for switching between the cooling and heating modes
 - ✓ by connecting +12V and H/C terminals
- input for emergency stop
 - ✓ disconnecting of the +12V and ON terminal (connected by a jumper from factory)
- RS-232 interface for connection of the service UTI-SW software



ELECTRICAL CONNECTION

Power terminals – on the top side of the module:

The module is connected to outdoor unit by 3-core wire 3x1,5mm² minimum.

Warning! Terminals of the module must not be used for power supply of the outdoor unit!

N terminal of the module connects to **neutral** terminal of outdoor unit (white wire).

L terminal of the module connects to **phase** terminal of outdoor unit (black wire).

C terminal of the module connects to **communication** terminal of outdoor unit (red wire).

Note: Terminals of various models outdoor units may be marked differently.

Warning! Incorrect connection of wires may cause damage of the module and/or the outdoor unit electronics!

ON output: Voltage 230VAC, maximum current 1,6 A. Active at compressor run. Used for indoor exchanger fan.

ERR output: Voltage 230VAC, maximum current 0,4 A. Active at outdoor unit error.

DEF output: Voltage 230VAC, maximum current 0,4 A. Active at outdoor unit defrosting.

Warning: The external inputs and outputs of the module consist of optoelectronic switches.

The voltage induced on the coils of the connected relays may cause unreliable operation, e.g. damage of the switching elements of the module. Therefore, we recommend using a relay with integrated overvoltage protection, preferably with integrated rectifier (e.g. ELKO EP VS116(308,316)K, TeSys LC7-K06, etc.).

Signal terminal - on the bottom side of module:

Input ON: Connected to the +12V terminal from factory. Disconnecting will shut down the entire system.

Input H/C: Used for switching between the cooling and heating modes. Connects to +12V terminal. This connection is not made in production, so the system is set to the cooling mode. To change to heating, it is necessary to connect these terminals permanently.

PLACING OF TEMPERATURE SENSORS

For proper operation of the equipment, it is necessary to detect the internal temperature of the heat exchanger temperature by the UTI-ETS sensor addressed as A, and the sensor addressed as B for scanning the room temperature.

Placing of UTI-ETS-A sensor:

The UTI-ETS-A sensor must be located so it detects the average temperature of the heat exchanger. It has to have a good thermal contact with the measuring point and at the same time be thermally isolated from the ambient environment. The best method of attachment is in the housing made of the copper pipe of a diameter of approx. 8 mm, soldered to the heat exchanger. It can also be attached using a heat conductive silicone sealant. The sensor should be placed at the coldest part of the exchanger or at the refrigerant return pipe (gas pipe).

Placing of UTI-ETS-B sensor:

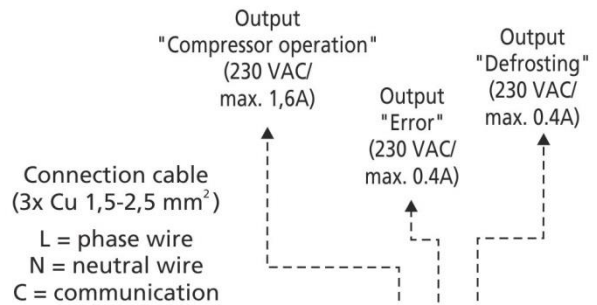
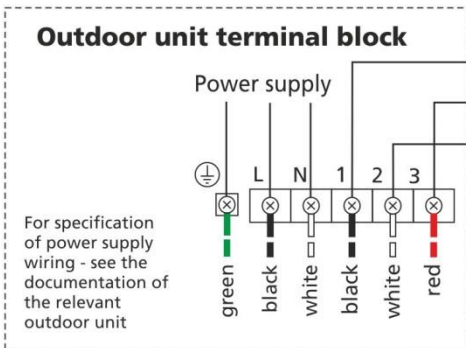
The UTI-ETS-B should be located so it detects the average room temperature. Don't place it directly in the air flow from the cooling device, nor directly on the heat source in the room. Choose an ideal sensor position in the room, or remove the sensor from the installation box and place it to the side of the air intake to the indoor unit (heat exchanger).

ELECTRICAL WIRING

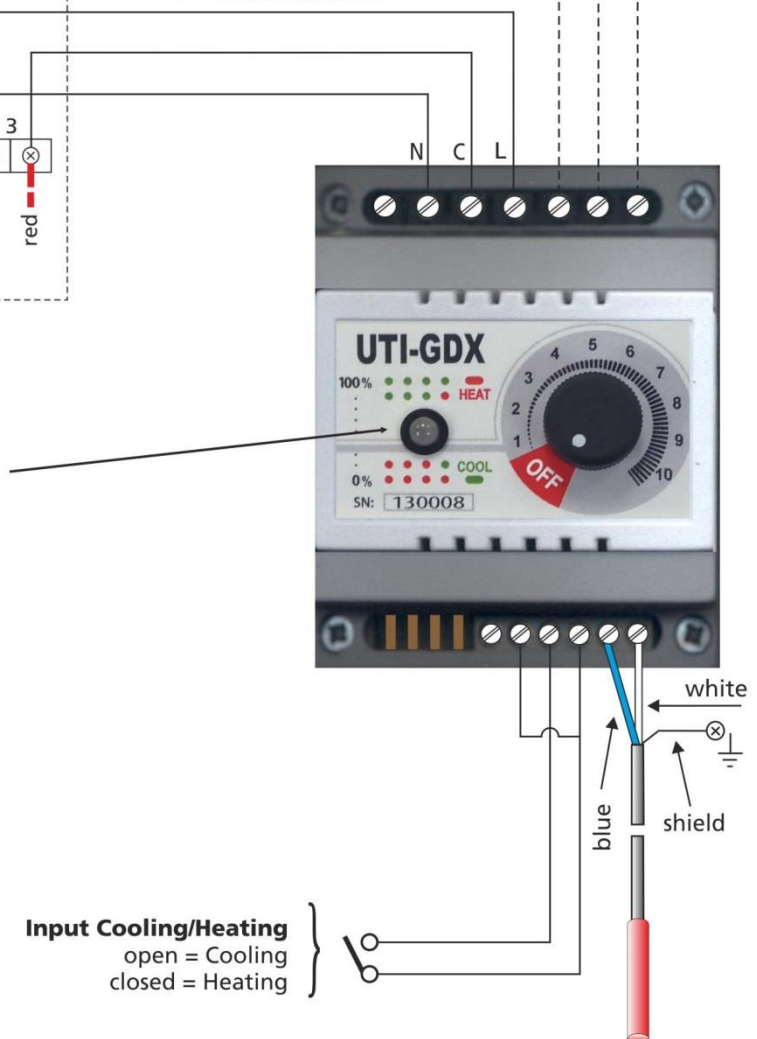
Connection of the UTI-GDX module for cooling applications using the internal regulator with the temperature detected by the ETS-B sensor. The temperature on this sensor is set by turning the control knob to the desired performance in the range of 1 to 10, with the option to set to OFF (in this case, the device is off, but it still remains under power – disconnect when performing maintenance!). The heat exchanger protection is set by the temperature limit of the ETS-A sensor, the factory setting is + 5°C for cooling and +50°C for heating.

⚠ CAUTION!

Pay extra attention to the correct connection of the module to the outdoor unit! Incorrect cable wiring may result in the destruction the module or the electronics of the outdoor unit!



Capacity step	Operation
15 (100%)	●●●●● cooling
14	●●●●● heating
13	●●●●●
12	●●●●●
11	●●●●●
10	●●●●●
9	●●●●●
8	●●●●●
7 (50%)	●●●●●
6	●●●●●
5	●●●●●
4	●●●●●
3	●●●●●
2	●●●●●
1	●●●●●
0 (stop)	●●●●●



ELECTRICAL WIRING

Connection and function of the ETS sensors

Addressing of the UTI-ETS temperature sensors:

The UTI-GDX module temperature sensors are adjusted at the factory. There is no need to make any additional settings. When replacing the temperature sensors, follow the instructions below.

1. Connect the module to the computer running the UTI-SW software using the UTI-RS or UTI-USB cable.
2. Run the UTI-SW software and open the folder „Factory“ (with code 1937).
3. Open the window „Learn“ in the folder „Hardware“.
4. Connect the sensor you want to address to the terminal of the module. Only one sensor can be connected.
5. Click five times on the position to which the sensor is to be assigned.
6. When the „Learn now“ button is activated, press it.
7. The appropriate position will now show the current temperature on the assigned sensor.
8. Disconnect the sensor and connect a new sensor to be addressed. Repeat the steps.
9. After assigning all sensors, connect them all to the module and check whether their values appear on the correct positions.

SETTING OF THE UTI-GDX MODULES

This type of the control module must be addressed to the specific outdoor unit. This setting is done using the UTI-SW software (in the file FACTORY/FD).

CAUTION!

Save every change you make. Before turning off the power of the simulator with the connected module, always exit the program. When the program is on, or during the module setting, the power supply must not be interrupted. It may result in improper functioning of the module and the outdoor unit!