INSTALLATION MANUAL

Module for controlling Inverter outdoor units

99105 UTI-INV-U (AOYG/R410) 99106 UTI-INV-W (WOYx/R410) 99107 UTI-INV-R32 (AOYG/R32)

USE

The UTI-INV module is used for direct control of Fujitsu-General-Fuji outdoor inverter units, when you need to connect heat exchangers of different producer or of different construction.

PACKAGE CONTENTS

Module UTI-INV


Temperature sensor UTI-ETS


This manual

MECHANICAL PLACING

The module with IP20 protection is designed to be attached to the DIN rail situated inside the electrical switchboard or installation box. In the outdoor environment, it must be used only in facilities with adequate protection. It's also possible to install the module inside the outdoor unit (only if there is enough space for installation).

ELECTRICAL CONNECTION

General wiring of the supplied module can be found in the enclosed scheme. For detailed specifications of inputs and outputs and their possible use, see the Technical Manual.

⚠ WARNING

- Pay extra attention to the wire connection between the module and the outdoor unit! Risk of possible destruction of the module and electronics of the outdoor unit, if incorrectly connected!
- The power and communication terminal of the module must not be used as a power supply of the outdoor unit!
- The module may be powered only from the outdoor unit to which is communicatively connected. Power supply from another source is unacceptable. If the outdoor unit doesn't have a separate terminal for indoor unit connection, please use connection over the fuse terminal of the outdoor unit. If you need separate power supply circuits, it is necessary to use optical separating modules UTI-FIN / UTI-FOUT.

BASIC CIRCUIT FOR COOLING AND HEATING APPLICATIONS

⚠ 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!

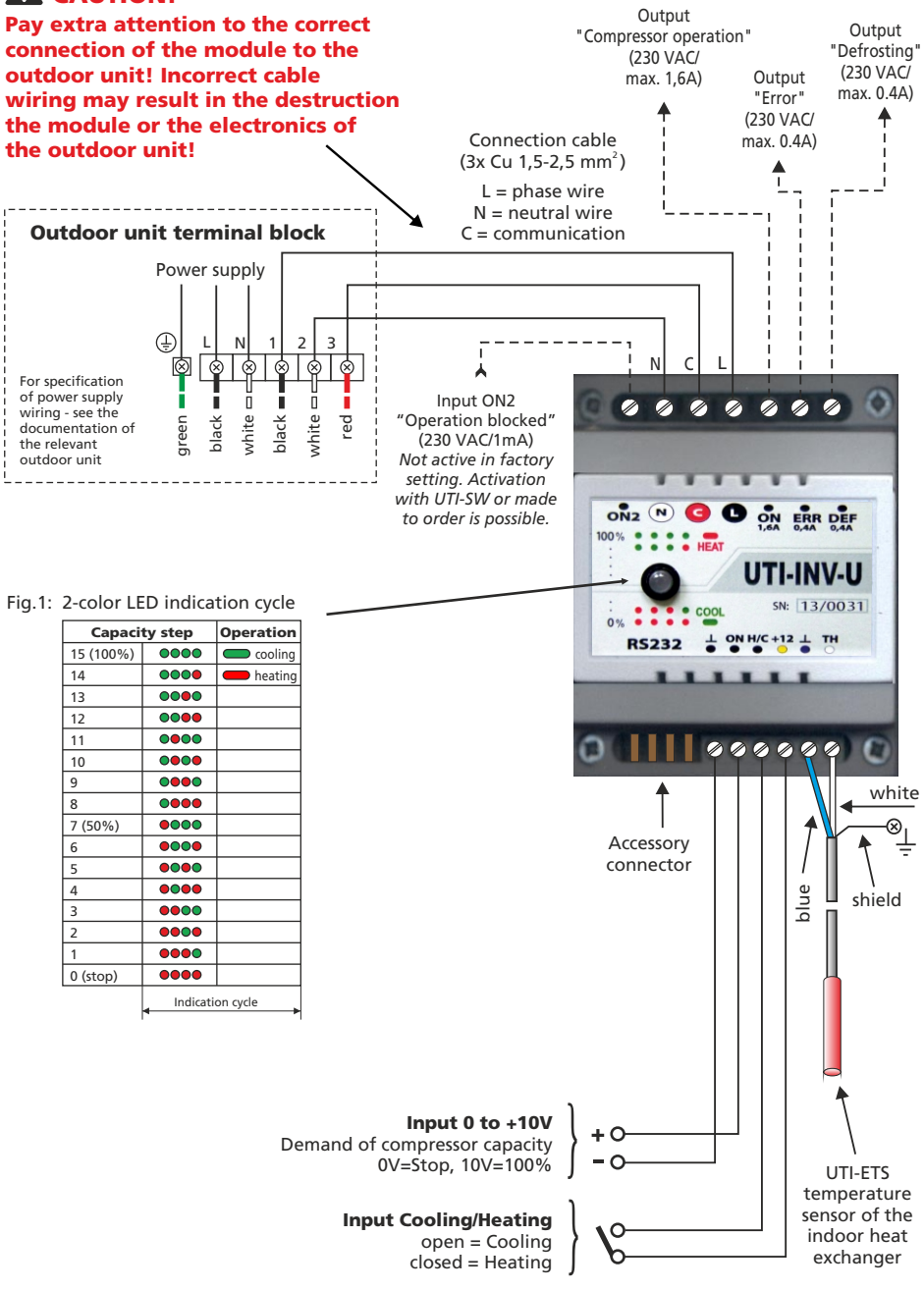

Fig.1: 2-color LED indication cycle

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

Indication cycle

INSTALLATION OF TEMPERATURE SENSOR UTI-ETS

The use of the temperature sensor is necessary for the correct module function. Please follow these instructions during the installation:

- The location and method of sensor installation must ensure its perfect thermal contact with the sensed surface - e.g. location in the housing, fixed with sleeve or thermally conductive sealant.
- The sensor must be isolated from the influence of the surrounding air temperature (e.g. by suitable temperature insulation).
- The sensor must always be electrically connected to the module. The module doesn't work without the connected sensor.
- It is necessary to meet the correct electrical polarity of the sensor. This can be ensured by the connection of the color-coded sensor wires to the same color-coded terminals of the module. The module doesn't work with sensor which is incorrectly connected!
- Connect the cable shield of the sensor to the device chassis or the switch box.
- The maximum cable length of the UTI-ETS sensor is 10m. If you need to extend the length of the original cable, please follow no current grounding principles to avoid current loops.
- If the cable is over 2m long and if it is located in the environment with electromagnetic interference, we recommend to use the Anti-EMI ferrite elements with minimum impedance of 150 Ohm/100MHz (e.g. type CF4A, 742 712 21 etc.).

Sensor location:

- Sensors in systems that are used only for cooling should be placed on the coldest part of the evaporator or on the refrigerant return pipe (gas pipe).
- For air exchangers with cooling and heating functions, the best sensor location is approximately in the middle of the tube exchanger lenght.

The sensor location in **air-to-water heat pumps** depends on the structural design:

- When using the plate heat exchanger, it is suitable to place the sensor to its lower part. Right in the middle between the water inlet and the liquid refrigerant outlet.
- When using the coil heat exchanger which is integrated into a storage tank, place the sensor inside the housing in order to reach the bottom of the spiral heat exchanger.

USE OF EXTERNAL OUTPUTS

The ON, DEF and ERR outputs are a SSR (Solid State Relay) type. They can be used for status indication or supply power to the power elements (with regard to the maximum allowable output current).

Note: In some particular types of relays connected to external outputs, the big inductance of the coils can cause unreliable function of these switches. To avoid these incidents, please use relays with integrated overvoltage protection or integrated rectifier, for example ELKO EP VS116(308,316)K, TeSys LC7-K06, FINDER coupler 3851 etc.

TEST RUN

❶ **Before first turning the power on,** please check if the module and the outdoor unit are correctly connected.

❷ **After switching the power on,** check the indicators:

Module UTI-INV: Flashing of the 2-color LED indicates the demand of compressor capacity and operation mode of the outdoor unit - see Fig. 1.

⚠ **Error indication:** *Continuous green light of the 2-color LED indicates missing communication response from the outdoor unit.*

Outdoor unit: If the outdoor unit is equipped with an error indication with LED lamps or alphanumeric display, check if the error status is not indicated. To decode the errors, use the Fujitsu-General service documentation (Installation manual, Service manual, Service Instructions).

❸ **Starting the outdoor unit:**

If the control signal from the master control system is missing, it is possible to test the device by using voltage +12V from the terminal marked as +12 directly to the input ON. This can be provided by the wire jumper. The desired cooling/heating mode must be set up by input H/C. At the beginning, the LED of the module indicates 0% of the power requirement for the compressor. After the initialization protection delay, the power demand is gradually increased up to 100% (this interval may take up to several minutes). During this time, keep checking the operation of the compressor and the outdoor unit fan by hearing. After reaching 100% of the power, you can start testing the current of the unit and also the working pressure of the refrigerant.

⚠ **Caution!** *If the heat offtake from the indoor unit is not provided (for example, if the indoor heat exchanger is not connected, the indoor fan or circulation pump is not running), the compressor may operate for maximum of 1 minute!*

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