8.3. Pressure reading display.

When the user's function FU=2 is selected the control unit displays the pressure reading from the analogue sensor. In order to exit from

the pressure display mode one has to press the button ⬚ .

8.4 Evaporation temperature display for selected refrigerating media.

When a user's function from FU=3 to FU=7 is selected the control unit displays the evaporation temperature reading for selected refrigerating media (UF=3 - R22; UF=4 - R407; UF=5 - R507; UF=6 - R404; UF=7 - R134a).
In order to have these functions activated it is necessary to connect to the control unit an appropriate pressure sensor and configure it in function F18 SETUP.

In order to exit from this display mode one has to press the button ⬚ .

8.5 Software version display.

When the user's function FU=9 is selected the control unit displays the software version. In order to exit from this display mode one has

to press the button ⬚ .

9 „Dripping" Status Signalling

After completion of thawing process the controller keeps the compressor off for few more minutes in order to allow dripping of water left after thawing of the cooler. Dripping time is fixed by service (F25 SETUP).

Blinking diode signals dripping status ❄🍃 .

Attention! Dripping status signalling is available in controllers in program version 1.20 or higher.

10 Alarms signalling.

The control unit LGSA-02 controls the appearance of the following alarms:
- Temperature infringement alarm (upper temperature limit), signalling **A 0**
- Temperature infringement alarm (lower temperature limit), signalling **A 1**
- Open door alarm, signalling **A 2**
- Open control input no 2 alarm, signalling **A 3**

In case of alarms described above the alarm relay is switched on and a diode with a bell pictogram lights on. If the button ⬚ is pressed, the alarm signal is switched off for a period of 1 minute and the alarm number (as indicated above) is displayed. The

sequential pressing of the button ⬚ displays in-turn all the alarms that occurred till now.

11 Switching off the control unit - „STOP".

It is possible to switch off temporarily the control unit functions (in such a state all the control unit's inputs are switched off, the control unit does not analyse alarms, it does not perform recording of measurements, it does not realise the defrost process). This function is specially useful if the refrigerating installation is put into operation or in case of periodic maintenance or any brakes in refrigerating system operation.

In order to switch off the control unit, one has to press the button ⬚ four times (with intervals of about 0,5 second). The label **StoP** appears on the display.
When any button is pressed the control unit returns to its normal mode of operation.

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v.1.20

Manual of the Refrigerating Unit Controller LGSA - 02

1. Description of operation

The control unit is designed as a controller of the refrigerating device and it realises the following functions:
- temperature adjustment inside the cold chamber (switching the compressor + fans on / off),
- controlling the defrost process start at a given time, through switching on the heaters with the fan switched on or of (possibility to program up to 12 defrost processes per 24 hours)
- controlling the defrost process end on the basis of the radiator temperature measurements or on the basis of the infringement of permissible defrost time,
- measurements of suction pressure (if the pressure sensor is installed) that is then converted into corresponding to this pressure vaporisation point (temperature) for selected refrigerating media,
- measurement and adjustment of humidity inside the chamber (if the humidity sensor is installed),
- recording of events and manipulations done on the control unit (e.g. the door opening, "up" and "down" infringements of permissible temperatures, power drop, change of the controller parameters),
- recording and monitoring the temperature, pressure and humidity,
- wireless transmission (through IRDA port) of data stored in the control unit by means of the service terminal or through a computer equipped with an IRDA adapter.

2. Operator panel of the control unit.
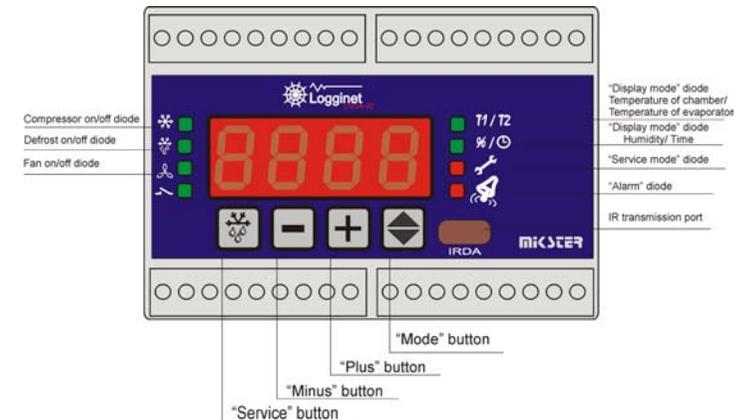
3. Start-up.

The control unit starts up automatically when the temperature sensors are connected to it (according to the labels placed on the unit, PT-1000 as standard) and power is witched on.
Chamber temperature is displayed on the control unit display, control functions of the refrigerating unit are consistent with factory settings, the diodes indicate the proper state of the devices. In case the symbols **uuuu** or **nnnn** are displayed on the unit display one should check the correctness of electrical connections and service settings if they are appropriate to the type of the temperature sensor (functions F36,F37,F38 – item 8 of the instruction manual). In case the start-up time of the control unit is identical with one of the pre-set defrost times (functions F40-F52 SETUP), the control unit will be in the defrost state.

4. Display / Adjustment of the required temperature of chamber and compressor hysteresis parameters

Single press of the button ⬚ or ⬚ will display the required value.
The continuous pressing or holding down the button will increase or decrease the required value.
In case the function enabling adjustment of compressor hysteresis parameters at a required temperature is activated, one should press the

button ⬚ first, and then set the hysteresis parameters by pressing the buttons ⬚ or ⬚ .

5. ***Readings display: chamber temperature, evaporator temperature, humidity, real time clock.***

LED display mode may be changed by pressing the button ⬍.

Continuous pressing the button ⬍ will cause sequential display of cycle parameters on the LED display:

CHAMBER TEMPERATURE (the diode ◢ T 1/ T 2 is continuously on, the diode ◢ %/ 🕐 is off).

EVAPORATOR TEMPERATURE (the diode ◢ T 1/ T 2 pulsates , the diode ◢ %/ 🕐 is off).

HUMIDITY (the diode ◢ T 1 / T2 is off , the diode ◢ %/ 🕐 is continuously on).

CLOCK (the diode ◢ T 1/ T2 is off , the diode ◢ %/ 🕐 pulsates).

6. ***Humidity regulator.***

6.1 **Configuration of the humidity regulator.**

In order to activate functions of the humidity regulator, the digital sensor of humidity has to be connected to the control unit and the functions: SETUP F57=1 and hysteresis parameters (function F58 as standard ± 1%, symmetric hysteresis) have to be set.
The adjustment function is realised through switching on/off the relay connected to the connector 16 of the control unit, according to the required value and set hysteresis parameters (below the lower hysteresis the relay is switched on, and above the upper hysteresis the relay is switched off).

6.2 **Change of the required humidity setting.**

If the control unit is correctly configured according to item 6.1, it is possible to set the required humidity.

In order to do this one has to press several times the button ⬍ and display the humidity reading (the diode ◢ %/ 🕐 is continuously on).

At this moment a single press of the button ⊟ or ⊞ will display the symbol **Hu** followed by the required value on the control display.

Sequential pressing or holding down the button ⊟ or ⊞ will change the value of required humidity in the range from 0 to 99%.

7. *Forced switching on/off the defrost process.*

The control unit LGSA - 02 has the possibility to switch on automatically the defrost process 12 times per 24 hour at programmed times.
In case of necessity to force the defrost process at a given moment (if the defrost process is actually off) or to stop the defrost process
(if it is actually on) one has to press and hold down for about 2 seconds the button ❄, which will cause switching on or off the defrost process.

8. ***Service functions accessible for the user.***

The user has access to the following functions.

UF=0   Real time clock set.
UF=1   Change of the password for user's functions.
UF=2   Value of pressure displayed in bars.
                 (if the sensor is connected and the upper limit value of the pressure sensor is correctly entered in function F18, the standard value is 20 bars).
UF=3   Evaporation temperature display for the refrigerating medium R22.
UF=4   Evaporation temperature display for the refrigerating medium R407.
UF=5   Evaporation temperature display for the refrigerating medium R507
UF=6   Evaporation temperature display for the refrigerating medium R404.
UF=7   Evaporation temperature display for the refrigerating medium R134a.
UF=8   Free.
UF=9   Software version display.

In order to enter the service mode one has to press and hold down the button ❄ , press and hold down the button ⊟ .

The word "CODE" will be displayed and then an access code has to be entered.
If the access code is entered correctly, the number of the user's service function will be displayed.
UF=0 .

Pressing the buttons ⊟ ⊞ one should set the required user's function number.

Selection of the function is done by pressing the button ⬍. In order to exit from the service mode the button ❄ has to be pressed.

8.1 **Real time clock setting (UF=0)**

As standard the control unit LGSA - 02 is equipped with a real time clock.
The correct setting of the clock is important for the correct work of the device and specially for the performed recording of events and defrosts steered by the real time clock.
When the user's function FU=0 is selected the control unit enters the mode of real time clock setting and the letter **H-** is displayed followed by a pulsating value of hour.

The value of a proper real time clock parameter should be set by pressing the buttons ⊟ ⊞ .

By pressing the button ⬍ one enters the edition mode of sequential clock parameters.

In turn:

- hours (display begins with letter H)
- minutes (display begins with letters Mi)
- year (display begins with letter Y)
- month (display begins with letters Mo)
- day (display begins with letter d)

In order to exit from the real clock setting mode, one has to press the button ❄ .

8.2. **Changing the password to the user's service functions.**

When the user's function FU=1 is selected the control unit enters the mode of password change and a current valid password is displayed.

Pressing the buttons ⊟ ⊞ one can change the password. The new password is stored when the button ⬍ is pressed.

In order to exit from the password setting mode one has to press the button ❄ .