29.1.2016 – V1.2

Operating and installation instructions

ICU62 Remote home control unit

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1 Introduction

The ICU62 is intended for the easy control and surveillance of premises. The functions are controlled by setting the ICU62 in one of the three modes: Present, Arriving or Away. The ICU62 may control heating, ventilation, power outlet groups, water inlet and various alarms may be included. It can be controlled either locally using a local control button or remotely through phone calls or text messages. Five users can be specified as recipients of alarms, with rights to control the device remotely.

2 Start-up

2.1 Start

1. Insert the ICU62 device SIM card into a mobile phone.
2. Deactivate the PIN code request from the mobile phone settings.
3. Turn off the ICU62 supply voltage and the battery backup voltage (if any).
4. Insert the SIM card into the ICU62 device.
5. Turn the supply voltage on.
6. The device is activated by sending the SMS command **ENG** to it from a mobile phone. Before that no other commands are available. The command sets the language to English, saves the installation date, enables controls and alarms and sets the device in the PRESENT mode.

   Other language options are Swedish and Finnish, when the activation command is **SWE** or **FIN**, respectively. **NOTE!** The activation command does not add the user to the user catalogue.

   Of the two led indicators on the operating panel, the upper blinks every two seconds when a GSM/3G connection is available. The lower is lit when the device is connected to a power source.

2.2 Adding users

Send the command **PHONE [POSITION] [TELEPHONE NUMBER]** to the device. E.g. **PHONE 1 +358123456789**. Added numbers must be confirmed in order to receive alarm messages to them. A number is confirmed when a command is sent from the number in question e.g. **PHONE**. The numbers must be input in international format. In Finland, the first 0 (zero) is replaced by the country code +358.

2.3 Alarm configuration

All other alarms are activated by default except the outside temperature alarm. It is activated by sending the command **ALARM 7 E**. If the device has alarm inputs with no alarm devices connected, these inputs must be deactivated by sending the command **ALARM [INPUT NUMBER] D** to the device. E.g. **ALARM 5 D**.

The default limit for the inside temperature alarm is +10 °C. If required, the value can be changed using the command **TEMPIN [DESIRED ALARM LIMIT]** and **TEMPOUT [DESIRED ALARM LIMIT]**. E.g. **TEMPOUT 5**.

After start-up, send the command **STATUS** to the device. Device, control and alarm statuses are listed in the reply message.

2.4 Important

The device may only be installed by a qualified person. Disconnect the supply voltage before installation or servicing. The device must be installed inside an enclosure or a closed space, to prevent the user from touching the connectors and screw heads. All relays must be connected to the same phase. All fire and smoke detectors connected to the system must have own back-up power supplies if required and the detector itself must provide a warning sound.

These operating instructions must be stored in a safe location and must be available during future installation and servicing.

3 Device operation

3.1 Present, Arriving and Away modes

The PRESENT, ARRIVING and AWAY modes are used to control the status of the premises, depending whether the occupants are at home or away. The mode can be changed both locally (button, code switch) or remotely (text message, call).

The modes are used to control functions, depending on the presence of the occupants, for example heating control and adjustment, control of ventilation and air processing equipment, alarm systems, alarm transfers, or groups of power outlets.

Mode	Presence	Examples of controls
PRESENT	Occupants are present	Normal status of the premises: • Temperature control normal • Burglar alarm off • Power outlets on • Ventilation speed normal
ARRIVING	Occupants are away for a short time or are arriving after a longer period of absence.	Premises in safe mode: • Temperature control normal • Burglar alarm on • Kitchen power outlets off • Ventilation speed lowered
AWAY	Occupants are away for a longer period of time.	Premises in energy saving mode: • Temperature lowered • Burglar alarm on • Kitchen and home entertainment power outlets off • Minimum ventilation speed

ICU62 has relay outputs (controls) for controlling external equipment. Controls 1, 3 and 4 react to mode changes only in accordance with the table below. Controls are intended for controlling the equipment, depending on the mode of the premises.

Maximum control relay current at voltage of 230 VAC is 10 A when the load is resistive. **NOTE! All relays must be connected to the same phase.** Separate relays

must be used when controlling loads connected to different phases. Relay contacts are potential free.

Control	Relay	PRESENT	ARRIVING	AWAY
Control 1 Present	Changeover contact	On	Off	Off
Control 2 - Siren - Smart setback - Manual control	On – Off	 No effect Off No effect	 No effect Off No effect	 No effect Smart No effect
Control 3 Arriving	On – Off	Off	On	Off
Control 4 Away	Changeover contact	Off	Off	On

CONTROL 2: SIREN

Control relay 2 is intended for siren control in an alarm situation. The siren function is the default function of control relay 2. Instructions are given for changing the operation of control relay 2 in the text message command section on page 7. The relay is activated when the fi re or burglar alarm is triggered and is deactivated when alarms are acknowledged. If the alarms are not acknowledged within five minutes of the last alarm being triggered, the relay is deactivated.

CONTROL 2: SMART SETBACK

Control relay 2 can be set to control the Smart setback function of Ensto ECO16FR thermostats. Smart temperature setback is on when the AWAY mode is active. Instructions are given for changing the operation of control relay 2 in the text message command section.

CONTROL 2: MANUAL CONTROL

Control relay 2 can be configured to control any equipment manually independent of the premises mode e.g. to turn on the garden lights when the owner arrives. When the manual control of relay 2 is on the device does not react to any mode changes or alarms.

ALARMS

ICU62 has alarm inputs for connecting different alarm systems. The device has fixed burglar, humidity, fire and power failure alarm loops. It also has a general alarm input available for e.g. a heating residual current protection circuit or a level alarm for waste water treatment systems. In addition, it is equipped with inside and outside temperature sensors for monitoring temperatures.

All alarm inputs are normally closed i.e. the alarm is triggered when the loop is opened. A text message is sent to each confirmed number in the user catalogue when the alarm is triggered. Only one text message is sent when the alarm loop is opened, even if the sensor connected to the loop activates again.

A temperature alarm is sent when the measured temperature drops below the specified limit. The device sends a notification when the temperature rises above the specified limit. A temperature alarm cannot be acknowledged. The default limit for

the inside temperature alarm is +10 °C, while the outside temperature alarm is deactivated by default. Only the fire and burglar alarms activate the siren.

The transfer of the alarm information depends on whether the device is in PRESENT, ARRIVING or AWAY mode. Only an active mode facilitates alarm transfer. Alarms and modes are mutually dependent, as indicated in the table below:

Alarm	**PRESENT**	**ARRIVING**	**AWAY**
Alarm 1 – General	Active	Active	Active
Alarm 2 – Humidity	Active	Active	Active
Alarm 3 – Burglar	Not Active	Active	Active
Alarm 4 – Fire	Active	Active	Active
Alarm 5 – Power cut	Not Active	Active	Active
Alarm 6 – Inside temperature	Not Active	Active	Active
Alarm 7 – Outside temperature	Not Active	Active	Active

An alarm must always be acknowledged, in order to enable the alarm's reactivation in the future. Acknowledgement can be performed either using a text message command or the local button. If the alarm is not acknowledged within 15 minutes of the last alarm, a reminder message containing a list of unacknowledged alarms is sent to users. The reminder message is sent only once. When the alarms are acknowledged, opening the alarm loop triggers a new alarm. If the loop is open when the alarms are acknowledged, a new alarm is triggered immediately.

If a sensor connected to the alarm inputs has a fault, the alarm loop can be deactivated. After this, the alarm must be acknowledged once, after which no new alarms are triggered.

NOTE! If no alarm is connected to an input, this input has to be disabled by means of a text message.

NOTIFICATIONS

When the device power is turned on, it sends a message “Device has started” to all confirmed numbers in the user catalogue. In this case, notification of a power failure is also received from systems without battery backup. In systems with battery backup, the device sends notification of the power being back on.

If an incorrect text message command is sent to the device, the device replies with “Unknown command” and a list of available commands.

4 Operating instructions

4.1 Local button operation

A button or code switch for changing the premises mode can be connected to the device. Local button functions are activated based on closing contact information.

The local button changes the modes as follows.

- ARRIVING mode always changes to PRESENT mode.
- AWAY mode always changes to PRESENT mode.
- PRESENT mode always changes to ARRIVING mode.

An alarm can also be acknowledged from the local button. When an alarm is acknowledged, the mode is always changed to PRESENT. When an alarm is acknowledged locally, a text message on the acknowledgement is sent to each confirmed number in the user catalogue.

An indicator light (max. 3.3V/1.5mA) can be connected in parallel with the button, to indicate the device status.

- The light is not on in PRESENT mode.
- The light is on in ARRIVING mode
- The light is on in AWAY mode
- The light flashes when the burglar alarm delay is active

4.2 Using the calling function

Calling the device's number sets the device in ARRIVING mode. This function can be used e.g. on the way to the summer house when the temperature needs to be raised or when the burglar alarm is activated remotely e.g. when a neighbour invites the user for a cup of coffee.

4.3 Using the text message function

The ICU62 can be changed between the PRESENT, AWAY and ARRIVING modes by using text messages. Status information, alarm transfer and device setting changes can also be performed using text messages.

The device sends a reply message to all commands sent to it, if the user has the right to control the device. If the sender has no right to control the device, the device sends a notification message. For this reason, the user should place a bar on SMS advertisements to the device's number.

Brackets should not be entered into text message commands; in commands they are used only to indicate variable values. Both uppercase and lowercase characters can be used in text message commands. Uppercase characters are used here for clarity.

SETTING COMMANDS

ENG (FIN, SWE)

This command sets English as the device language. ENG is also the device's start-up command.

PHONE [POSITION] [TELEPHONE NUMBER] (PUH, TEL)

This command is used for managing the user catalogue.

User catalogue rules:

When the user catalogue is empty

- Everyone can use the device
- The device sends no alarm messages

When all numbers in the user catalogue are unconfirmed

- Users can be added or deleted from any number
- Only numbers in the user catalogue can control the device (NOTE: a sent control command confirms the number)
- The device does not send alarm messages
- Entering your own number confirms the number automatically

When the user catalogue contains at least one confirmed number

- Only numbers in the user catalogue can add or delete users
- Only numbers in the user catalogue can control the device
- Alarm messages are sent only to confirmed numbers

Adding and confirming a number:

Phone command with parameters catalogue position and telephone number saves the number in the given position. The catalogue has five positions (1-5). Each new number must be confirmed by sending a command from that number to the device.

E.g. the user adds the telephone number 012 3456789 to catalogue position 1. The number is Finnish and the country code is +358 » **PHONE 1 +358123456789**. The added user confirms the added number using e.g. the **STATUS** command.

Replacing and confirming a number:

When PHONE command is used to add a number to a catalogue position which is already occupied, the new number replaces the old one. Each new number must be confirmed by sending a command from that number to the device.

E.g. the user can replace a number in user catalogue position 1 with a new telephone number 012 0000000. The user's number is Finnish and the country code is +358 » **PHONE 1 +358120000000**. The added user confirms the added number using e.g. the **STATUS** command.

Deleting a number:

The parameter is the user catalogue position, containing the number to be deleted.

E.g. The user deletes the number from user catalogue position 1 » **PHONE 1**

Printing the user catalogue:

The command **PHONE** instructs the device to reply with a list of all telephone numbers and their positions in the user catalogue.

RESET (RESET, RESET)

The unit’s factory settings are restored by sending the command RESET to the device. All saved telephone numbers remain in the memory.

Factory settings:

- Device is in PRESENT mode.
- Control2 configured to control the siren
- Smart setback is +5 °C
- Inside temperature alarm limit +10 °C
- Outside temperature alarm not activated

ALARM [INPUT NUMBER] [D/E] (HÄLYTYS, ALARM)

This command activates or deactivates alarm inputs. When the alarm is deactivated, the unit does not react to an alarm by the device connected to the alarm input.

Input numbering:
1 = General alarm
2 = Humidity alarm
3 = Burglar alarm
4 = Fire alarm
5 = Power cut alarm
6 = Inside temperature alarm
7 = Outside temperature alarm

Activate / deactivate the alarm
D = Deactivate
E = Activate

E.g. Fire alarm is deactivated » **ALARM 4 D**

CONTROL2 [ON/OFF/SMART/SIREN] (OHJAUS2, STYRNING2)

This command changes the operation of control relay 2
- The ON parameter deactivates control relay 2
- The OFF parameter deactivates control relay 2
- The SMART parameter configures control relay 2 as the Smart setback control
- The SIREN parameter configures control relay 2 for controlling the siren function (default)

E.g. The user activates control relay 2 manually » **CONTROL2 ON**

DELAY [LENGTH OF DELAY] (VIIVE, FÖRDRÖJNING)

This command sets the burglar alarm activation delay, during which it is possible to enter or exit the premises without triggering an alarm. The delay can be set between 0 - 120 s.

E.g. The user sets the burglar alarm delay to 60 s » **DELAY 60**

TEMPOUT [DESIRED ALARM LIMIT] (ULKOLÄMPÖ, UTETEMP)

This command changes the outside temperature alarm limit. The alarm limit can be set between -30 – +50 °C.

E.g. The user sets the outside temperature alarm limit to -10 °C » **TEMPOUT -10**

TEMPIN [DESIRED ALARM LIMIT] (SISÄLÄMPÖ, INNETEMP)

This command changes the inside temperature alarm limit. The alarm limit can be set between -30 – +50 °C.

E.g. The user sets the inside temperature alarm limit to 5 °C » **TEMPIN 5**

CONTROL COMMANDS

PRESENT (PAIKALLA, NÄRVARANDE)

The command PRESENT sets the device in the PRESENT mode.

ARRIVING (TULOSSA, ANKOMST)

The command ARRIVING sets the device in the ARRIVING mode. A call to the device's number has the same function.

AWAY (POISSA, BORTA)

The command AWAY sets the device in the AWAY mode

ACK (KUITTAUS, BEKRÄFTNING)

The command ACK acknowledges all alarms and reactivates the alarm inputs which caused the alarm.

SETBACK [DESIRED TEMPERATURE SETBACK] (PUDOTUS, SÄNKNING)

This command changes the Smart temperature setback of the Ensto ECO16FR thermostat. E.g. The user reduces the temperature of the AWAY mode to 10 °C » **SETBACK 10**

SMS [TEXT] (SMS, SMS)

This command transfers a message to all confirmed numbers in the user catalogue. E.g. A user saved in user catalogue position 1 informs all other users that he or she has arrived » **SMS I AM HERE NOW**

STATUS AND HISTORY QUERIES

STATUS (TILANNE, STATUS)

The command STATUS provides a reply message indicating the current status of the premises, outputs and alarms. The reply message is structured as follows:

`State:` <mode>
`T1:` <temperature> [(<alarm limit>C)]
`T2:` <temperature> [(<alarm limit>C)]
`General:` <alarm status>
`Humidity:` <alarm status >
`Burglar:` <alarm status **>
`Fire:` <alarm status>
`Power cut:` <alarm status **>
`RLY1:` <control status>
`RLY2:` <control status **>
`RLY3:` <control status>
`RLY4:` <control status>

LEGEND	OPTIONS	DESCRIPTION
State	PRESENT	PRESENT status is active
	AWAY	AWAY status is active
	ARRIVING	ARRIVING status is active
Temp alarm limit	-30 ... +50 °C	Alarm limit is shown, if the alarm is active
Alarm status	-	Alarm not in use
	on	Alarm is active
	off	Alarm is not active
Alarm status **	-	Alarm not in use
	on	Alarm is active
	off	Alarm is not active
	***	Alarm not activated, because status is PRESENT
Control status	on	Control is active
	off	Control is not active

Control status **	on	Control is active
	off	Control is not active
	smart on	Control is active, SMART setback is in use
	smart off	Control is not active, SMART setback is in use

LOG (LOKI, LOGG)

The command LOG provides information on the ten most previous events in chronological order, beginning with the latest event. The reply message contains the event, its cause and the time which has elapsed since the event in hours and minutes, counted backwards from the current time.

Reply message	**Event**
START	Device started
GSMUP	GSM has network connection
GSMDN	GSM has dropped network connection
ALARM	Alarm, type in ”cause of the event” table below
ACK	Alarm acknowledgement
HOME	PRESENT mode set
AWAY	AWAY mode set
ARVNG	ARRIVING mode set
RESET	Factory settings restored
T1LMT	T1 alarm limit set
T2LMT	T2 alarm limit set
R2CHG	Relay 2 settings changed
DELAY	Burglar alarm delay changed
SMART	SMART setback value changed

Reply message	**Cause of the event**
SYS	System
PHN1	Text message or call from number saved in position 1
PHN2	Text message or call from number saved in position 2
PHN3	Text message or call from number saved in position 3
PHN4	Text message or call from number saved in position 4
PHN5	Text message or call from number saved in position 5
PHNE	Text message or call, no numbers saved
LCL	Local control
FIRE	Fire alarm
GNRL	General alarm
HMDT	Humidity alarm
PWR	Power cut alarm
BRGL	Burglar alarm
T1	Inside temperature alarm
T2	Outside temperature alarm

E.g. Reply message **ARVNG, LCL, -00d00h26m** indicates that the unit was set in ARRIVING mode using local control 26 minutes earlier.

TEMPLOG (LÄMMÖT, TEMPLOGG)

The command TEMPLOG provides temperature information for the ten preceding hours. Measurements begin when the device is started and are performed once an hour. The reply message contains the inside temperature T1, outside temperature T2 and the time elapsed since the measurement in hours and minutes, counted backwards from the current time.

INFO (TIEDOT, INFO)

The command INFO replies a message containing the following information:

- Serial number
- Software version
- Installation date
- GSM/3G network signal strength in dBm and in percent

OTHERS

HELP (HELP, HELP)

The command HELP provides a reply message containing a list of available commands.

5 Technical specifications

GSM/3G, four frequency bands Antenna: External, SMA connector Operating temperature range: -25 ... +50C° Storage temperature range: -30 ... +85°C Operating voltage: 12 - 24 VDC / 0,65 A Dimensions: 105 x 90 x 52 Installation to DIN rail	Type of automatic function: 1.B Pollution class: 2 Rated overvoltage: • Relays 2,500 V • Power supply 330V Temperature during ball pressure test: 75 °C Protection class: IP 20

6 Warranty

ionSign grants a warranty of two (2) years for all delivered devices. The warranty starts from the day of receiving the device and it covers material and manufacturing defects. The warranty does not cover defects caused by improper use or installation of devices. Further, it does not cover for situations where malfunction is due to third party actions. These would be for instance service changes of mobile network operators or changes in mobile network itself.

ionSign delivers a new device to replace a defected one, without cost. Alternatively, ionSign may repair the defected device. The defected device must be returned to ionSign, if required, at ionSign's cost. ionSign does not assume responsibility of any indirect damages or work and travel costs caused by a defective device. In warranty issues, contact ionSign via e-mail: ionsign@ionsign.fi or by phone: +358 2 822 0097.

CONNECTION EXAMPLE