KSUA

Control and monitoring unit

MANUAL

KSUA

CONTENTS

DESCRIPTION

The KSUA is a control and monitoring unit designed to control various types of fire/smoke dampers and fans in a flexible way. This unit is a master unit. Up to 32 slave units can be connection to the KSUA. Each slave can operate two damper groups, each with a maximum of two dampers and two smoke detector groups. These units can be grouped in any way in up to 64 fire zones. Each damper group and detector group can be monitored individually. A central fire alarm system can be connected using the KSUC, which has a maximum capacity of 16+16 fire zones. The KSUA can also be used to connect ventilation systems, smoke evacuation fans and heater batteries. These units are then controlled in an intelligent way depending on their function. The KSUA has additional inputs for an external fire alarm, forced opening, night mode, etc. The KSUA also has a standardised input for connecting a Modbus network monitoring all dampers, smoke detectors and other devices.

Master unit for KSUB and other KSUx.

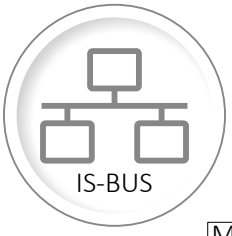
- 32 slave units. Fewer with KSUE and KSUF.
- 64 damper groups.
- 64 detector groups.
- Separate alarm inputs for isolating switches in smoke extraction fans (for example).
- 2 fan groups.
- 6 distributed relay outputs.
- Real time clock with battery backup.
- External input for central fire alarm system.
- Night mode input.
- Forced opening input.
- Evacuation dampers (pressure relief) can be configured in any way in the system.
- Damper position indication.
- Error logging.
- Integrated troubleshooting program.
- 8 time outputs.

Valid from program version FW3.1

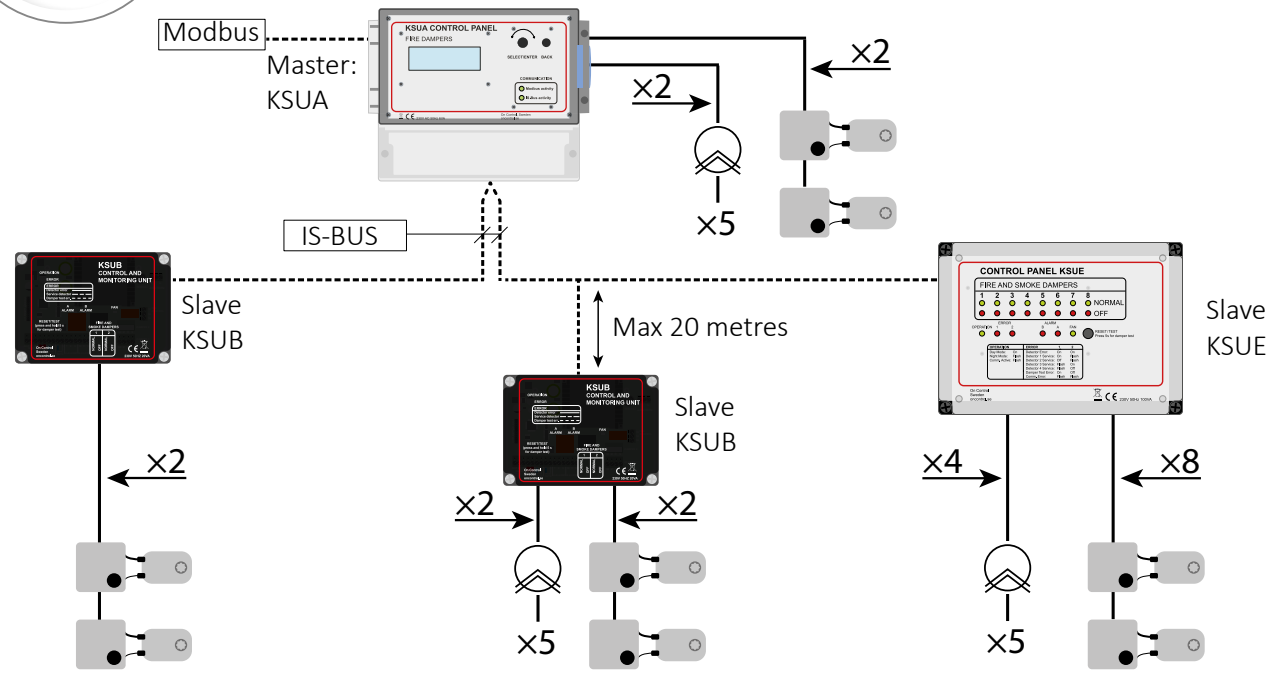
GENERAL SYSTEM OVERVIEW

The following diagram is a typical example of network mode between the KSUA master unit and slave units. KBOX replaces the required connection point between the motor and the control panel. It has no functional requirements and makes installation much easier. There is always one KBOX for each damper.

You can also visit our website oncontrol.se to use our product selection program.



- Max length of IS-BUS 1200 m
- Daisy chain with max branch length 20 m
- Max 32 slave units



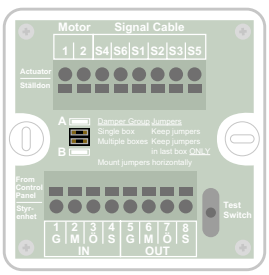
UNIT	FIRE DAMPER	SMOKE DETECTOR
KSUE	16 (8X2)	20 (4X5)
KSUB	4 (2X2)	10 (2X5)
KSUR	2 0-10 V	5

ACCESSORIES

KBOX

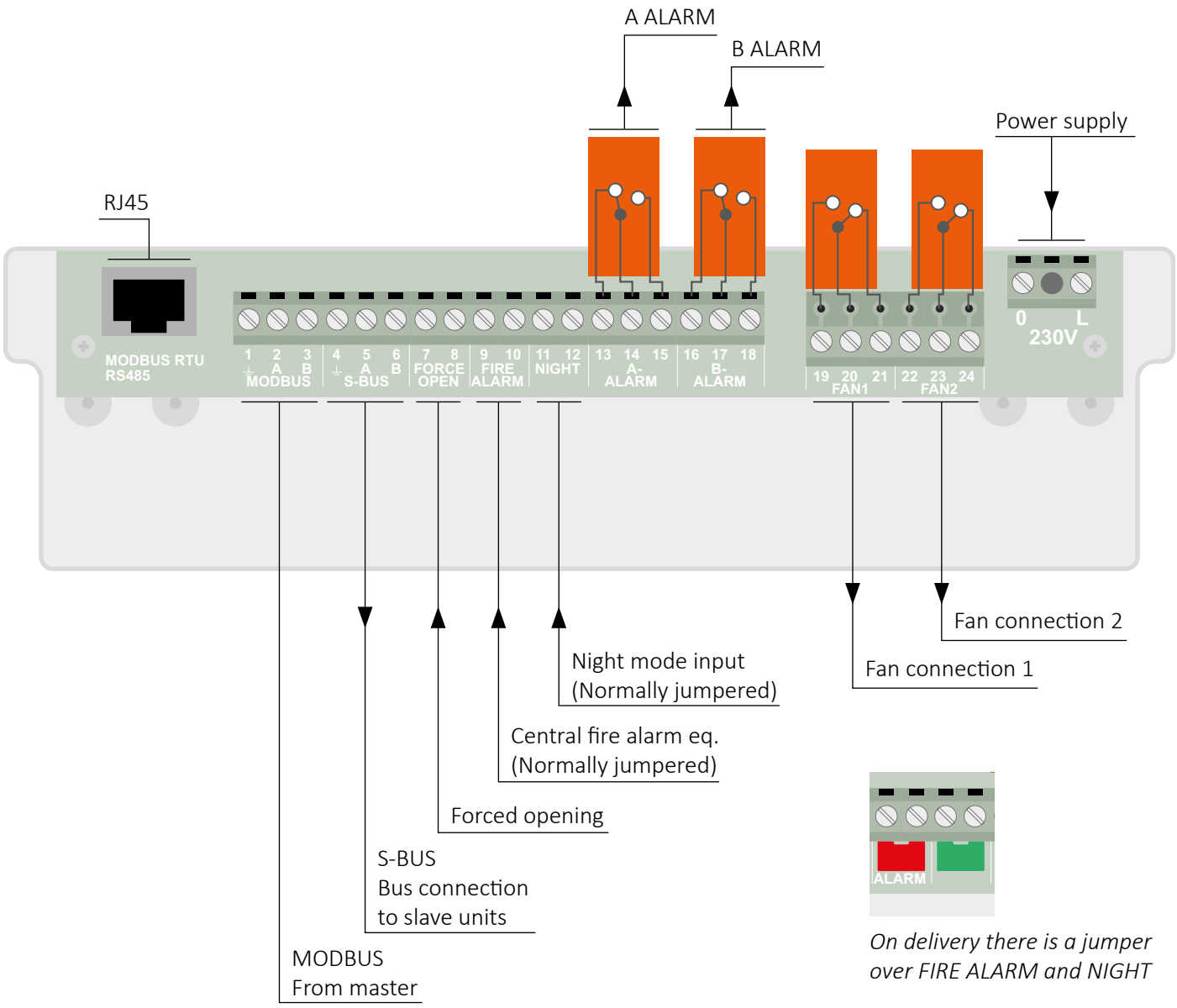
The KBOX connection box makes it much easier to connect an actuator to the control panel. It has labelled terminals and a built-in button to test the motor.

Two actuators can easily be linked to create a damper group (parallel connection).



MAXIMUM CONFIGURATION

The system can handle a total of 64 damper groups with a maximum of 128 dampers and 64 detector inputs. In principle, an unlimited number of smoke detectors can be connected. These smoke detector inputs and fire dampers can then be grouped into a maximum of 64 fire zones. 16+16 fire alarms come from the KSUC. There are up to two outputs for fan control. Using the KSUC, a further 6 outputs are available. These outputs can be configured for ventilation fans, smoke extraction fans, various alarms or heater batteries. Custom delays, etc. can be selected for each of the options. Up to 12 fan controls via the relay outputs of the slave units.



On delivery there is a jumper over FIRE ALARM and NIGHT

Description of Modbus

The KSUA acts as a slave and must be connected to a Modbus server. According to the standard, the server must clearly define a 1 on the line before transmission takes place. This can be done with resistance on the line to +5V or 0V, or using software by sending a logical 1 before transmission takes place. See the description for the relevant server. Modbus can be used for effective monitoring of the entire system. It can obtain information about the status of each damper, how each detector is working and provide an overview of all possible alarms. Modbus can also be used to control day/night mode, damper testing, resets and much more. Certain Modbus parameters can be set in the communication menu. The factory setting is 19200bps, 8 bits even parity and address 10. RTU mode is always used. Modbus over TCP/IP is an optional extra. See the separate description.

Priority handling

The system can handle so-called critical and non-critical detector groups. A non-critical group will not affect the fans, etc. if a detector is triggered. All that happens is that the dampers assigned to the group are closed and an alarm is sent to the KSUA output for triggered smoke detector. For evacuation dampers, it is possible to start smoke extraction fans without switching to critical mode. If a critical group triggers an alarm, the ventilation system is stopped, all dampers are moved to alarm position and any smoke extraction fans are started. The alarm is sent from the KSUA output for triggered detector. Forced opening has the highest priority. Regardless of the alarm position, the dampers will be forced to the open position. If there is a communication error between KSUA-KSUB, the system goes into critical mode except that any smoke extraction fan is not started (you can use a KSUC unit if you want to start the smoke extraction fan in the presence of a communication error). The alarm output for triggered detector will be unaffected. Dampers in the KSUB-KSUR that lose communication with the KSUA will move to alarm position.

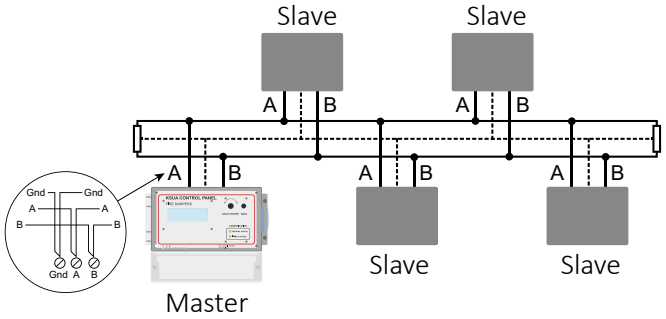
How does the network work?

Both network connections are based on the RS485 standard, which is well-established in the market. For communication to take place, there is always one master and one or more slaves. Each of the slaves must have a unique address. In the case of Modbus, a special Modbus menu is used to configure the address. (The KSUA is always a slave.)

In the case of IS-BUS, the KSUA is the master and the KSUB units are slaves. The address is configured in a jumper panel in the KSUB.

The maximum length of the cable between master and slave is 1200 metres. According to the standard, the cable has three wires, one of which is the "internal ground" of the system. It is usually OK to leave out this ground, and most installers even think that systems may work better without the ground wire. Note that the ground wire CANNOT be connected to anything other than a KSUA-KSUB-KSUC-KSUE-KSUR. Because the system is symmetrical, twisted pair cable should be used to minimise the risk of transients. In this type of cable, the diameter of the wires is usually 0.5 mm. If shielded cable is used, the shield can be used as the ”ground wire” if it is not connected to any other ground. An example of a widely used cable is FKAR-PG 2*0.5.

It is advisable to run the cable from one unit to another, but it is also possible to install a backbone cable with drop cables. Make sure that the drop cables are no longer than 20 metres.



An RS485 network must be connected correctly. There must be a termination at each end of the network. For example the master unit is usually placed at one end and one of the slaves at the other. Both units must then be terminated with the built-in resistors, I.e. jumper I in the KSUB and KSUR and jumper PL2 or PL3 in the KSUA. PL3 is used for the Modbus connection and PL2 for IS-BUS.

Modbus / RJ45

The contact is standard for Modbus RTU and contains outputs for +5V on pin 7 and 0V on pin 8. A is on pin 5 and B is on pin 4. +5V can be loaded with up to 100 mA resistive load. The contact for Modbus over TCP/IP is on the left of the box. (TCP/IP is an optional extra)

MBUS, IS-BUS

These are connections for Modbus and IS-BUS respectively. The IS-BUS connection goes to the slave units.

Forced opening

If the input is closed, the dampers will move to the open position. All other functions are disabled. It is possible to define whether the fans will be on or off.

Alarms

This input is used to connect to a central fire alarm system. If 9-10 is open the entire system switches to critical mode. Ventilation systems, etc. are stopped immediately, the dampers are switched off and any smoke extraction fans are started. Normally the function must be reset manually, but it can be reset automatically via menu 19.

Night

The night mode input is activated when 11-12 is open. What happens next is that any heater battery and the ventilation system are stopped with the delays defined during configuration. The open dampers are closed. If there are evacuation dampers (pressure relief dampers), they are not affected.

OUTPUTS

Relay outputs

All relays are shown in the open position. FAN 1 is normally activated. The state of FAN 2 depends on the configuration.

Triggered detector

If a smoke detector in the system is triggered, 13-15 is closed. The output can be seen as a so-called A alarm.

Sum alarm

The sum alarm is activated for any kind of error apart from triggered detector (16-18 closed). The error is also logged. The output can be seen as a so-called B alarm.

FAN 1

Used to lock the ventilation system. 19-21 is normally closed. The delay can be adjusted between 0-300 seconds to allow large systems to shut down before the duct system is stopped.

FAN 2

There are four different ways to use this output.

- EXT. The fire output is activated when input 9-10 is opened.
- To control heater batteries with an adjustable cooling period between 0 and 990 seconds.
- To control a second ventilation system. In this case, the output follows FAN 1.
- To control a smoke extraction fan.
  The fan can be set to start either after all the evacuation dampers have opened or after 20 seconds. For the function test, the running time can be set between 10 and 900 seconds.

230V 50Hz

Must be connected via fixed cables to a group fuse of at least 2A. The isolating switch must be positioned close to the unit. The KSUA is built with reinforced insulation, so no ground is necessary.

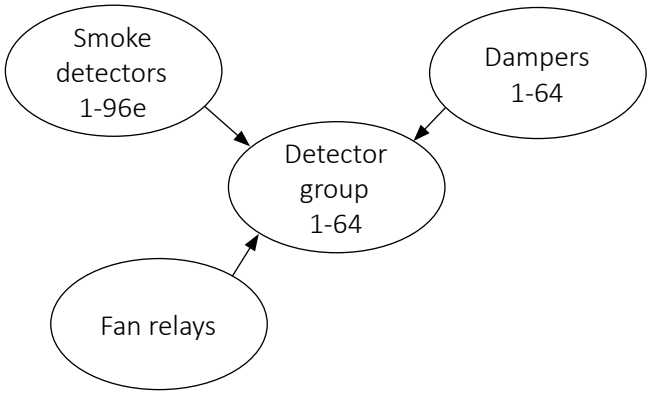
IS-BUS

Connect one slave at a time, each with a unique address, so that not too many errors occur at the same time. Make sure the network is correctly connected as described above.

Configuration/installation

Install and test run each KSUB-KSUR in stand-alone mode. This ensures that the dampers and detectors are connected correctly.

Start the configuration process by defining the dampers in the respective KSUB. When all dampers are included in the table, start on the smoke detectors.



The detector groups appear first in the menu. A detector group is a collection of smoke detectors that form a fire zone. One or more smoke detectors can be connection to a detector group. The smoke detectors in a group are indicated with a star to the right of the menu. A smoke detector can be assigned to more than one detector group if required. When you close the menu, a message tell you the number of smoke detectors in this group. The external input of the KSUB/KSUR is always connected to detector 1 for each KSUB/KSUR. This means that external fire alarm systems connected to a KSUB/KSUR can also be included in a particular detector group. The fire alarm input of the KSUA always take precedence and can be thought of as belonging to all detector groups.

The fan control is configured next. FAN 1 is the same as Relay 1 in the description. Relay 1 is intended for the ventilation system. Relay 2 can be used for another ventilation system, heater batteries or smoke extraction fans. An important part of the configuration process is defining what is to happen when a smoke detector group is triggered. If a detector group is considered to be critical, the entire system must switch to fire mode, which means that the ventilation system is stopped, all ventilation dampers are closed, the evacuation dampers are opened and a smoke extraction fan is started. In a non-critical group, only the dampers within the group are affected if a smoke detector is triggered. Detector groups are defined as critical in Stop/DetGrps in the menu.

The fan output of the KSUB can be used if there are a number of small ventilation systems in the installation, and you want them to be controlled by the relevant detector group. The output is hard coded so that detector group 1 is connected to KSUB address 0. Detector group 2 is connected to KSUB address 1, etc. up to detector group 12.

The KSUB fan relay output is dependent on the Relay 1 configuration in the KSUA. If you want the fans connected via the KSUB to stay on during damper testing until the relevant damper closes, set Stop/DMP test to OFF in the Relay 1 menu. Other functions are also dependent on the settings in the Relay 1 menu.

There are 8 time outputs that can be controlled from Modbus. Each damper can be assigned to one of these outputs. A Modbus command can then be used to close and open all dampers belonging to that output. During a function check or fire, the time output is overridden and the dampers move to the position required for the function check or fire mode. Only ventilation dampers can be assigned to a time output. Fan functions are not affected by the time output control system. After a power failure in the KSUA, all time outputs change to off mode.

In other words, in alarm-free day mode, the dampers will open.

Heat detectors

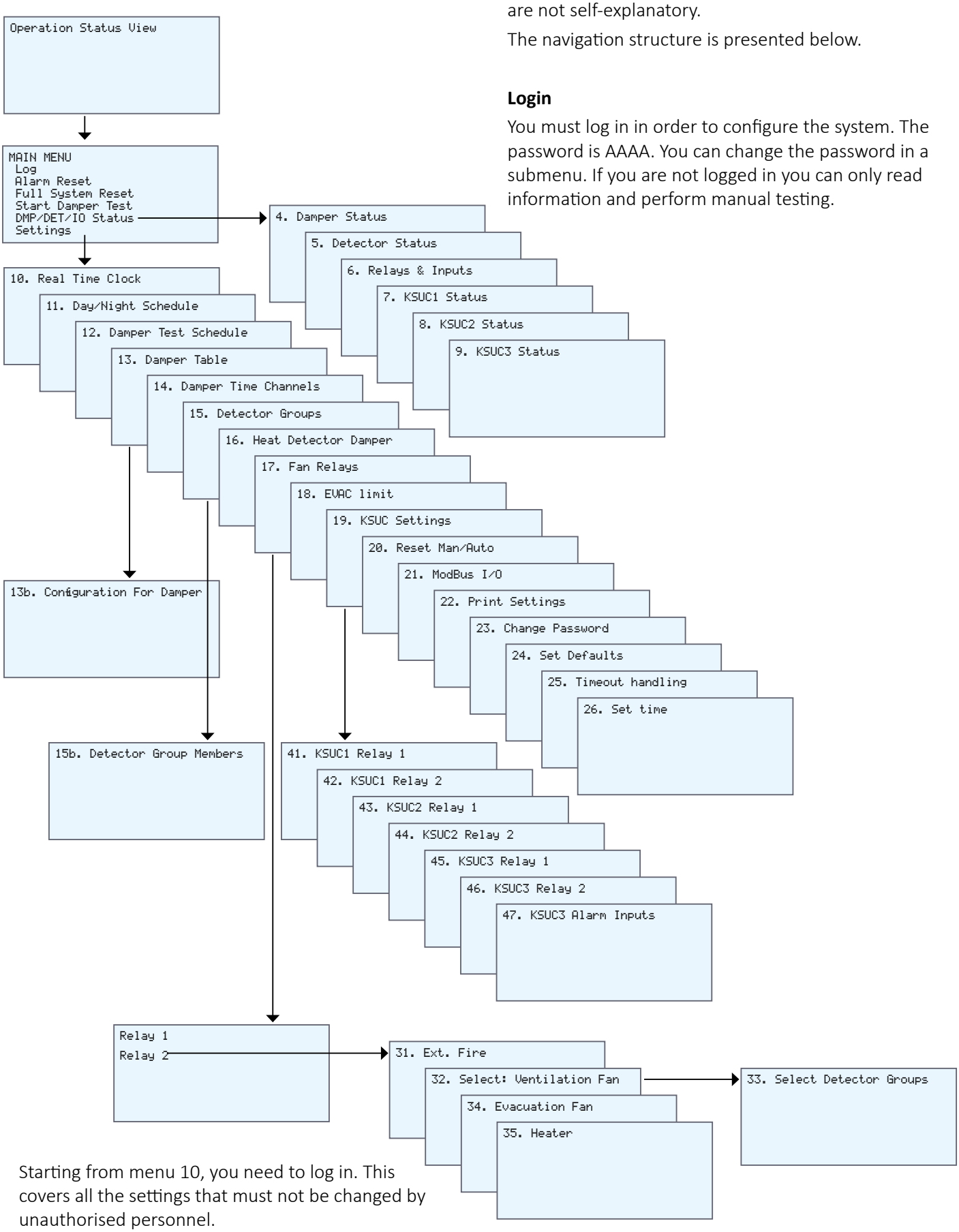
The heat detectors integrated in all CE marked dampers can be used to indicate fire/heat in their detector group. A special menu option must be selected! See below in the menu description. If a heat detector is triggered, an alarm is generated in the same way as with a smoke detector.

A detailed description is provided for the menus that are not self-explanatory.

The navigation structure is presented below.

Login

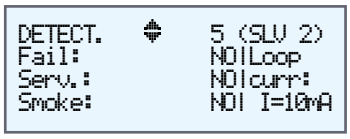
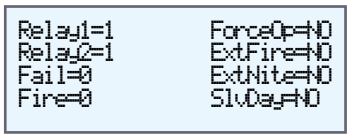
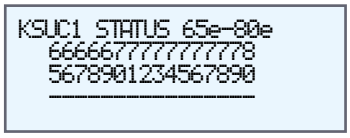
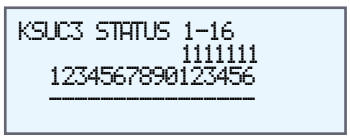
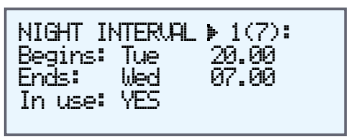
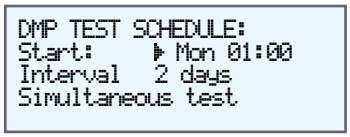
You must log in in order to configure the system. The password is AAAA. You can change the password in a submenu. If you are not logged in you can only read information and perform manual testing.



Starting from menu 10, you need to log in. This covers all the settings that must not be changed by unauthorised personnel.

Press any of the buttons to show the main menu from standby mode. A short summary of the system status appears in standby mode. Errors or anything else of interest appear in summary.

MENU SYSTEM

MENU	DESCRIPTION
MAIN MENU 	Select this item to open the log. The log contains the last 99 events. It contains information with timestamps for all errors. Two different resets are possible. The alarm reset is a softer reset, and only applies to the affected dampers in the system. All critical alarms must be acknowledged by clicking on Full Restart.
4 	You can read the position of the dampers in real time. There are three different positions. On, off and intermediate. You can also see if the damper motor is receiving power. And you can see if the damper is being controlled by a time output and whether it is on or off.
5 	The status of the detectors is shown in real time. Loop current is passing through the detector. The standby current is approx. 10 mA. The current increases when the detectors are dirty, and at 20 mA a service alarm is triggered. This indicates that the detector needs cleaning. A fire alarm is triggered if the current increases to 40 mA. An alarm can be traced more accurately by reading the current.
6 	All outputs and inputs in the KSUA can be viewed in real time. SlvDay is a day mode request from a slave.
7 and 8 	The active inputs in the KSUC are displayed here. Inactive inputs appear as –, and if there is no unit, "Not Installed" appears. Menu 8 contains the corresponding function for alarm inputs 81e-96e.
9 	The active inputs in a KSUC3 (a KSUC with jumper 8 on) appear as described for menus 7 and 8.
11 	There are up to seven different schemes that can be used for the night interval. Night mode can also be controlled from external units via input 11-12 or via Modbus. In this case, close this menu with all intervals deactivated.
12 	Damper testing is defined in a separate menu, where the start time is specified. You specify how often testing will be carried out. After seven days, weeks appear. A maximum of 52 weeks can be selected. Finally, you can specify whether the test covers all dampers simultaneously or in sequence. In sequence means that each damper is closed and opened fully before the next damper is tested. If Modbus is used for testing, choose Off from this menu.
13 	All dampers appear in a table with their configuration. Damper numbers 1 and 2 are in slave unit 0. Damper numbers 3 and 4 are in slave unit 1. Damper numbers 5 and 6 are in slave unit 2, etc. ▪ DMP stands for damper number. ▪ I indicates whether the damper is installed. ▪ T is the type – either ventilation damper or evacuation damper. Ventilation dampers are normally open while evacuation dampers are closed. ▪ F stands for function. For ventilation dampers, the options are either Always open or Night. Select Always open if you only want the damper to be affected by an alarm state. Select Night if you want the damper to be affected by night mode. For evacuation dampers, the options are Critical or Detector group no. Critical means that the damper is operated when a fire occurs in a critical detector group. See menu 31. ▪ Dgr shows the detector group of the damper. This can be between 1 and 64.

MENU SYSTEM

MENU	DESCRIPTION
13b CONFIG| Instal: ∧ YES FOR | Type: VENT DAMPER| Func: ITE NO 5 | DetGrp: 3	This menu is used to actually program the dampers. See the description for menu 13.
14 Edit time- | ▶1 (6) channel for | 2 (3) damper: | 3 (6) ∨ 4 (-)	There are 8 time outputs. Each damper can belong to one time output or none at all. In the example above, dampers 1 and 3 belong to time output 6. Damper 2 belongs to output 3. The time outputs can then be controlled by Modbus.
15 DETECTOR- | ▶1 (6) GROUPS | 2 (3) (Det count) | 3 (6) Select GRP: ∨ 4 (-)	There are 64 detector groups. Each detector group is a fire zone. There are one or more detectors in a detector group. The number of detectors in the group is shown in brackets.
15b DETECTOR 1 | ▶ 1* GROUP 1 | 2* (Det count) | 3* Select GRP: ∨ 4*	This menu selects the detectors that are included in a detector group. A detector can be included in more than one group. The stars on the right indicate that the detector is included in the group. Detectors 65e-96e come from KSUC1 and 2
16 Self-closing dampers Shall trigger fire- Alarm in its own- detector group: ∧ NO	To use the heat detectors in the dampers to trigger groups, menu 16 must be activated. The heat detector in the relevant damper will then affect all functions in the associated detector group. If the group is critical (see menu 33), other groups will also be affected.
17 SETTINGS ∧ Damper Table 6 Detector groups ∨ ▶ Fan Relays	Select Fan Relays to configure the way the ventilation system, smoke extraction fans, heater batteries, etc. are controlled.
32 CONFIGURE RELAY 1: | Func: ▶ VENT-FAN | Stop/night: YES ∨ Stop/DMP test: YES	Select Stop/night if you want the ventilation system to stop in night mode. Similarly, you can specify whether you want the ventilation system to stop during the function test.
32 (Continued from the Relay 1 menu.) CONFIGURE RELAY 1: ∧ Stop/DMP fail: YES | Stop/ForceOp: NO ∨ Stop/DetGrps: ▶ List	▪ Select Stop/DMP fail if you want the ventilation system to stop if a damper closes incorrectly. ▪ Select Start/ForceOp if you want the ventilation system to start during forced opening. ▪ **Stop/DetGrps has a submenu, see below. It works by causing the selected detector group or groups to stop the ventilation system, meanwhile placing the entire system into a critical state. This means that all V dampers are closed, evacuation dampers are opened and smoke extraction fans are started.**
33 Select D-Grps | ∧ 1* To stop V-fan | 2 when smoke or | 3 det. Failure ∨ 4	Select the detector groups to be defined as critical.
33 Relay 2 | ▶EXT. FIRE | VENT FAN Select | EVAC FAN Function| HEATER	Relay output 2 can be configured for a specific purpose. EXT. FIRE means that relay 2 energises in the event of a central fire alarm (input 9-10). If you select VENT FAN, relay 2 completely follows relay 1.

MENU SYSTEM

MENU	DESCRIPTION
34 CONFIGURE RELAY 2: | Func: ▶ EVAC FAN | Await ED open: YES ▼ Start/ForceOp: YES	EVAC FAN is displayed to explain the special parameters used with this type of fan. ▪ Await ED open means that the evacuation fan is not started until all evacuation dampers are open. If you specify NO, the fan starts after 20 seconds or when the evacuation dampers are open. ▪ Start/ForceOp means that the fan is started when the forced opening input is closed.
34 (Continued from the evacuation fan menu.) CONFIGURE RELAY 2: ▲ Start/ForceOp: YES | Test run for: ▶ 600s | Test weekday: ▶ Mon	The test day and subsequent parameters mean than the fan will be tested, for example, at 18.00 on the Monday of the first week in July. If you do not specify a month, the test will never run automatically. The test always takes place in the first week of the selected month. A manual function test of the evacuation fan is possible using the menu that appears when an evacuation fan is defined for relay 2. During the test, the ventilation system stops, the ventilation damper closes, and the evacuation damper opens before the evacuation fan starts. This test is never carried out in sequence, regardless of the setting.
18 EVAC LIMIT Max evac dampers that can open: ▶Unlimited	If multiple evacuation dampers are used in different detector groups, the number can be limited so that 1, 2 or 3 can open simultaneously. This setting has no effect if there is a critical group. The default setting is an unlimited number.
20 Automatic reset when External fire alarm Input goes back to normal: ∧ NO	Choose whether you want to perform an automatic reset of input 9-10 and all KSUC fire alarm inputs.
41-47 KSUC1 Relay 1 is controlled by: ▶Fan relay 1	All the relays in the various models of KSUC can be connected to the four different relays in the KSUA. Menus 41 to 47 are used to change the settings.
22 SETTINGS ▲ ModBus I/O | ▶Print Settings ▼ Change Password	This function is used to document the entire installation. The Modbus port is used as the output, and is connected to the serial port of a PC via a small adapter, KS232 or KSUSB. A communication program is used in the PC, for example Windows HyperTerminal. This program is installed as standard on most PCs. Set the program parameters to 9600 bps, 8 bits, no parity. Set the emulation to TTY and the font to Courier New. You will then be able to save the entire output to file or print it on paper. To output the data, you will need to physically disconnect any Modbus connection.
25 SETTINGS ▲ Change Password | Set Defaults ▼ ▶Timeout handling	The system normally switches to critical mode if there is a communication error. If you do not want this to happen, you can disable the function in this menu. Consider potential safety issues!
26	The time is normally adjusted at the factory. Access to a calibrated timing device is required.

Attachment

Designed for wall or rack installation. A simple assembly kit is required for rack installation.

Power supply

230 VAC, 50 Hz, 5 VA. Fused with max 10 A / min 2 A

The mains voltage may vary ±10%.

Transient voltages up to overvoltage category II.

Enclosure degree of protection

IP65

Ambient temperature

Max +30 °C, min-0 °C

Altitude up to 2000 m

Max relative humidity 80% at temperatures up to 31 °C

Max relative humidity falls in a linear fashion to 50% at 40 °C

Weight

1.5 Kg

Inputs

- Modbus slave. (RS485) Available as a screw terminal or standardised RJ45 contact.
- IS-BUS for KSUB and other KSUx slave units. (RS485)
- Forced opening.
- Night mode.
- Alarm. (External control unit.) Opening the circuit has the same effect as a triggered smoke detector. (The system switches to critical mode)

Outputs

- Sum alarm. Voltage-free changeover contact 1 A max 60 VA. Terminal numbers 16,17,18.
- Triggered smoke detector, shared by all smoke detectors. Voltage-free changeover contact 1 A max 60 VA. Terminal numbers 13,14,15.
- Fan 1. Voltage-free changeover contact max 8 A / 24 VAC/DC. Terminal numbers 19,20,21.
  Intended to lock the ventilation system.
- Fan 2. Voltage-free changeover contact max 8 A / 24 VAC/DC. Terminal numbers 22,23,24. Various applications. Vent. systems, heater batteries or smoke extraction fans can be programmed with different time delays.

Fuses

There is a 50 mAT 250 V fuse (FS1) on the motherboard.

To access the fuse, remove the four screws in the corners of the front panel. Carefully place the panel to one side. Take extra care with the thin ribbon cable connecting the front panel with the connection card.

DO NOT let the front panel hang from the cable! Instead, use the slots in the box to store it temporarily. There is a fuse holder on the bottom right-hand side. This is the primary fuse.

Pollution degree

Pollution degree 2 is valid for the intended environment.

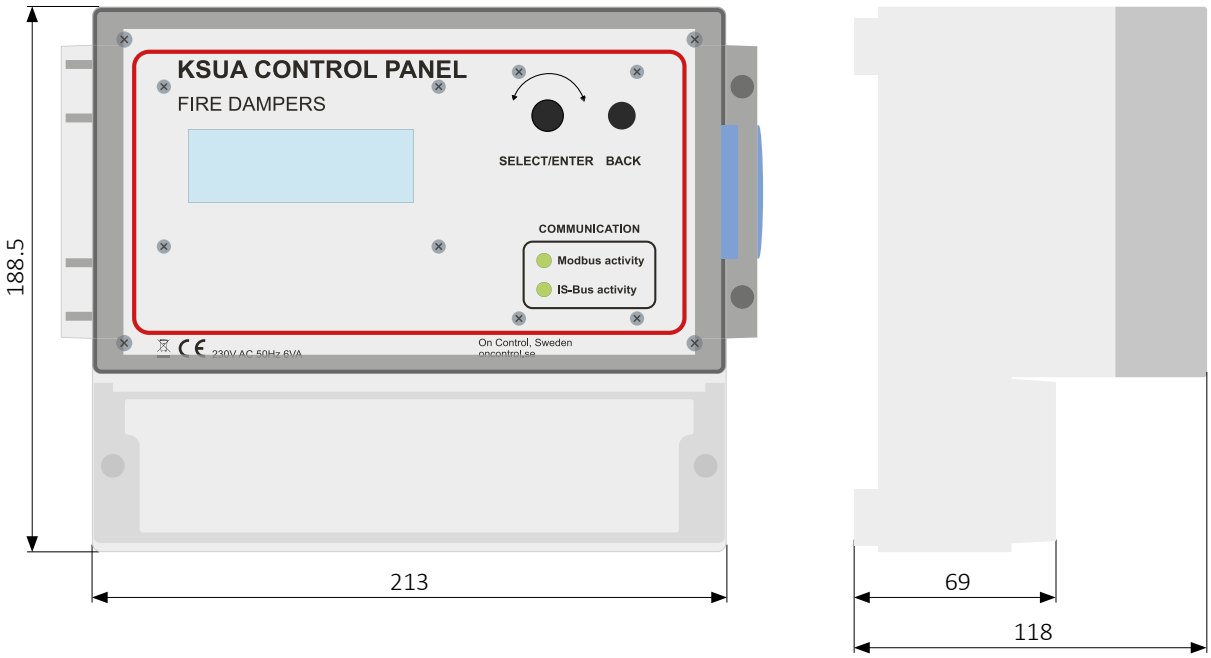
Isolating switch

The installation must have an isolating switch or circuit breaker.

It must be easy to access at a suitable location.

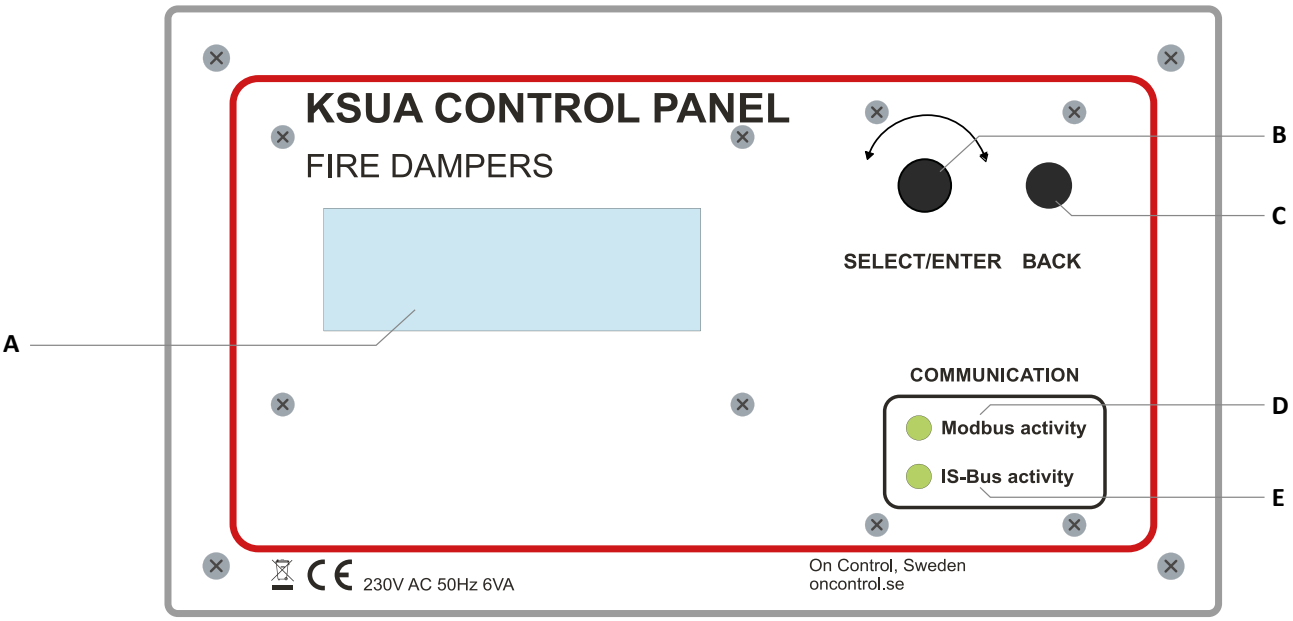
If must be labelled as the isolating device for the equipment.

Dimensions



TERMINOLOGY

Dampers	This documentation refers to ventilation dampers and evacuation dampers. Ventilation dampers (fire dampers) are normally open and are closed by a spring. Evacuation dampers are sometimes called pressure relief dampers or bypasses. They are normally closed and they are opened by a spring.
Fans	A ventilation fan is also called a ventilation system. In this documentation, an evacuation fan is a smoke extraction fan or other extractor which starts when there is a fire.
Operating positions	In normal operation, all ventilation fans are open and the evacuation fans are closed. In night mode, all dampers are closed. Night mode is activated when the circuit is opened between terminals 26-27.
Night mode	All damper types close. For example, used if the ventilation system is shut down to save energy. The fire damper is put in the fail-safe position and then opens when the NIGHT input closes again. Damper tests (if any) can take place at this time.
Function groups	The SUSA consists of two halves called function groups. Each group has dampers, detectors and fan relays. All dampers and detectors must be assigned to one or both groups. The groups themselves have various group functions which can be set in the "Group config." menu. At present there are four options. One option is for just one group to be active, controlling detectors, dampers and fan functions in a shared configuration. This means that no division is possible.



	FUNCTION	DESCRIPTION
A	Display	The display is dimly lit during normal operation. When you start using the menu the light level increases to make the display easier to read. *Description:* Turn to choose an option. Press to go to the next menu. Press the knob for direct selection.
B	KNOB	Encoder for selecting options. Push the knob to select or activate an option.
C	BACK	Back button. Usually moves one step back in the menus.
D	Modbus activity	Flashes when a Modbus message is received
E	IS-Bus activity	Flashes when an SBus message is received

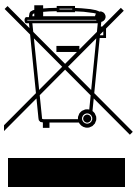
TROUBLESHOOTING

You do not need to enter the authorisation code to read logs and error messages.

The special status menus in the KSUA can be used as a very good diagnostics tool covering every part of the system. One serious pitfall that cannot be diagnosed is giving the same address to more than one slave unit. It is therefore extremely important to assign addresses correctly during installation.

If an error occurs, always start by looking at the log. The log contains information about what happened. To find out more detail about the error, you can then use everything in the six status menus to physically inspect individual dampers. One good tip is to look at the status screen for I/O Relays and Inputs. Menu 6. You can see from this menu whether the KSUA went into a specific state because of an external system. It can take a lot of work to find out what exactly caused the problem. The KSUA includes tools to help with diagnostics.

PROBLEM	DESCRIPTION
Finding the slaves	The easiest way to find out which slaves are installed is to look at menu 4. You can scroll through all the dampers for the relevant slave unit by simply turning the encoder knob. The bottom part of the menu indicates if contact with a slave has been lost.
Smoke detector error	It is not unusual for something to go wrong with a smoke detector. Go to menu 5 and check the current for the detector with the problem. The standby current should be 10mA. If the current increases to around 20mA, the service alarm is triggered and the detector needs to be cleaned. If the dirt continues to build up, the current gradually increases until the alarm limit of 40mA is reached. This will trigger a real smoke alarm, more or less affecting the entire system.
A manual reset is required after an automatic function test.	The ”FAN 1” output has probably been connected to the wrong input in the ventilation system, which has locked itself as a result.
A manual reset is required after night mode	Requires a night mode signal from ventilation system to the KSUA. Locking may occur if night mode is indicated by the KSUA, which then sends a stop signal to the system via fan lock on the FAN 1 output. This locking may be bypassed by specifying that there is no fan stop in night mode. The fans are still locked if a smoke detector is triggered and during the function test.
Other	See the troubleshooting section in the KSUB/KSUR description, which contains lots of tips about connecting dampers, for example.



Disposal of used electrical and electronic equipment
(applies to the EU and other European countries with a dedicated collection system)

If this symbol appears on the product or its packaging, the product must not be treated as household waste. Instead, it must be sent to a suitable collection point that recycles electrical and electronic equipment. By making sure this product is correctly processed, you will help to prevent the negative impact on the environment and on human health that could result from inappropriate waste handling. Recycling helps to conserve natural resources. To find out more about recycling this product you can contact your local authority, your cleaning contractor or the dealer you purchased the product from.

PROFCON AB
Victor Hasselblads gata 9
421 31 Västra Frölunda
Sweden
Tel: +46 (0)33 25 65 70
Web: oncontrol.se