

OUMAN OUFLEX A

Freely programmable automation device

USER MANUAL

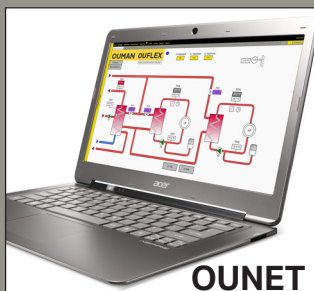


- Ouflex A is a DIN-rail-attachable, monitoring-, controlling- and regulating device.
- The DIN-standard-compatible structure of the Ouflex A device enables installation to most common cabinets.
- Detachable strip connectors make installation easier.

KEY WORDS

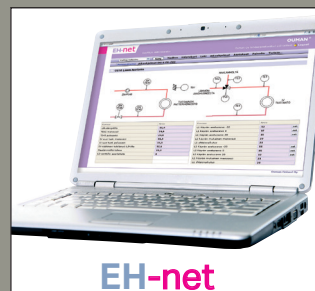
Key words:
Active alarms
Alarm history

Use of a GSM phone requires that the GSM modem (optional) is connected to the controller.



OUNET

Internet-based on-line control room for professional remote control and monitoring (optional).



EH-net

Local Web Server remote control and monitoring (optional).

Ouflex A is a DIN-rail-attachable and freely programmable device designed for monitoring, controlling and regulating. The device is programmed with Ouflex BA Tool utility and the prepared program is loaded to the Ouflex device via Ethernet connection. It is possible to increase the number of I/O-points with external I/O-modules via Modbus RTU connections.

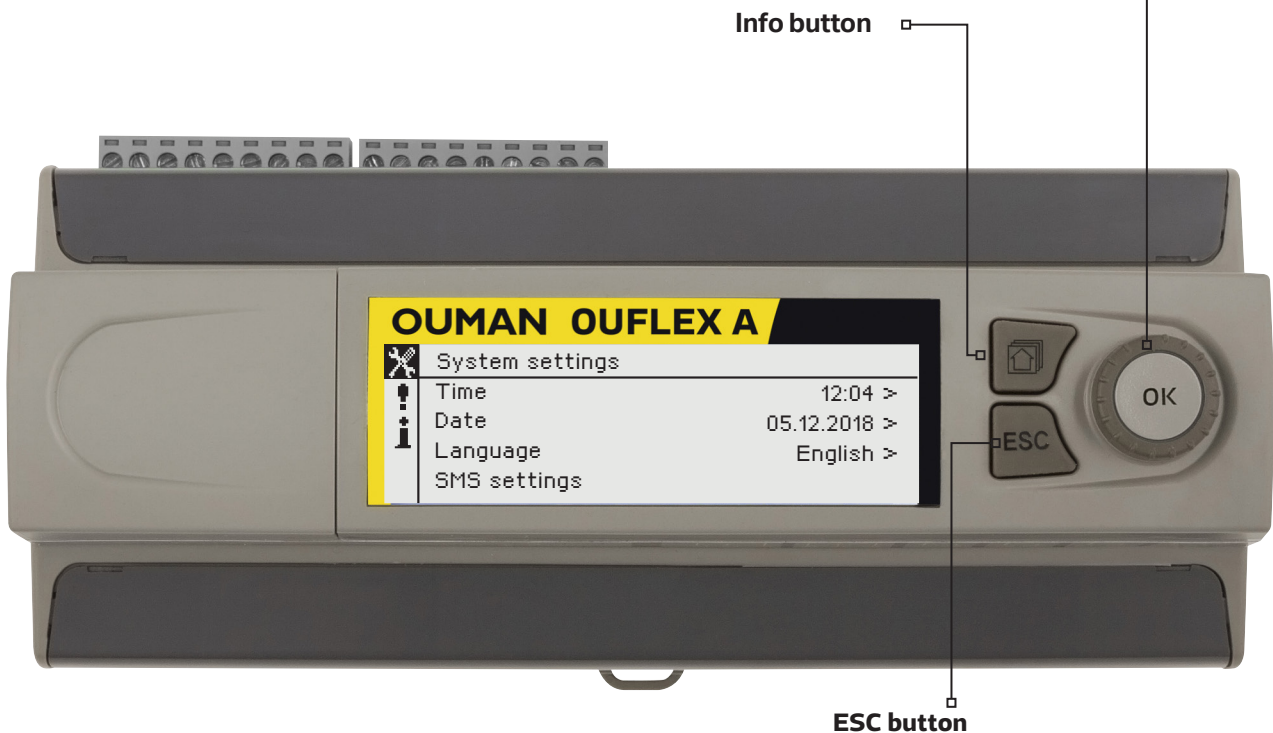
You can move from one function to another by turning the control knob of your OuflexA device. By pressing the control knob (= OK), you can enter any function to examine it in detail. This way you can see the related measurements, state information, settings, time programs, etc.

Control knob and OK

Press the control knob to enter the menu and accept the changes.



Turn the control knob to navigate in the menu.



Press ESC button to cancel changes or move back to previous menu. Holding the key down for a few seconds of time returns the controller to its basic mode. The display shows the basic view, the background light dims and the keyboard locks if the locking function is in use.

Hidden menus




Press OK for a few seconds

Some of the information in your Ouflex A device may be hidden. You can see the hidden menus by pressing OK for a few of seconds. Similarly, you can hide them again by pressing OK for a few of seconds. Hiding information that you seldom need to change or look into makes the HMI simpler. When visible, this information is shown indented.

Maintenance code



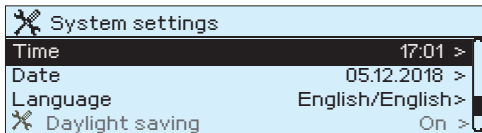
There may be a maintenance code in use in your Ouflex A device. In this case, you can see the information even when it's locked, but you can't make changes to settings without entering the maintenance code. Normally, you lock the most critical settings behind the maintenance code, or settings that require expertise.

There is a  symbol in front of a setting that requires maintenance code.

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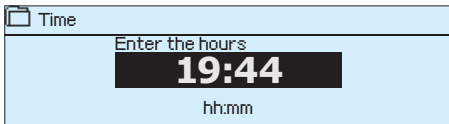
1 System settings



System settings include setting the time, date and language, as well as text message (SMS) settings, network settings, bus settings, display settings, device type information and also locking the user interface, backups and reset measurement history.

1.1 Setting date, time and language

System settings > Time

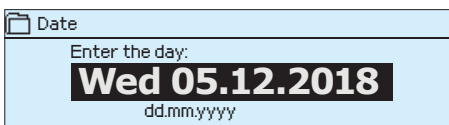


It is important that time and date are correct. Alarm information, for instance, shows when an alarm has activated and inactivated. It is highly recommendable to ensure that time and date are correct when you are making time programs with the weekly program or special calendar. The device clock takes daylight savings and leap years into account automatically. The clock has a backup for power outages for up to three days.

Hours and minutes can be set separately.

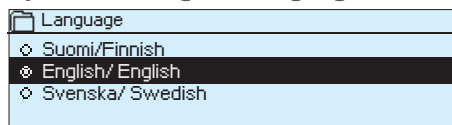
1. Set hours and press OK to accept.
2. Set minutes and press OK to accept.
3. Press Esc to cancel and exit if needed.

System settings > Date



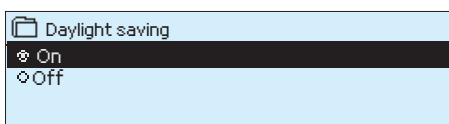
1. Set day and press OK to accept (name of weekday is updated automatically).
2. Set month and press OK to accept.
3. Set year and press OK to accept.
4. Press Esc to exit.

System settings > Language



You can change the HMI language here if device has more than one language.

System settings > Daylight saving



You can hide/show this setting by pressing OK for a few seconds. By selecting Daylight Saving Time, Ouflex A automatically goes into summer and winter time.

1.2 Text message (SMS) settings

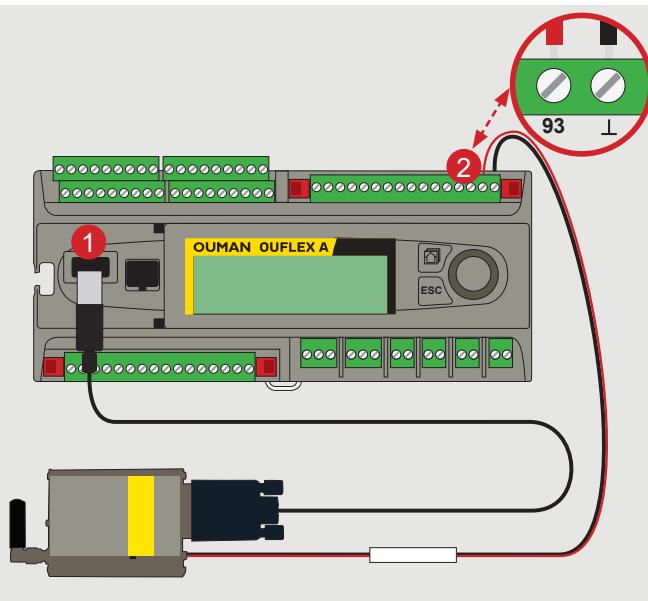
System settings > SMS settings

Use of text messaging requires that the Ouflex A is connected to a GSM modem (additional equipment).

Take the GSM modem into use:

1. Enter your SIM card PIN code.
2. Switch the device off.
3. Connect the modem. Connect the modem USB connector to the device USB host connector. Connect the modem power supply to the device connectors 93 (+) and ⊥.
4. Switch the power on. The controller initializes the modem and detects the message center (the message not visible on the display).center number is
5. Check the signal strength and status of the modem from the controller display.
6. Enter Device ID (optional).
7. Test the SMS communication. Send a message to Ouflex A: Keywords. If the controller replies with a message containing a list of key words, text message communication is ok. If the controller doesn't send a text message, make power cut and turn it back. Retest the text message communication. If communication fails to verify that the message center number has not been manually entered. Press and hold ok for the hidden menus to open. If the messagecenter number is assigned, delete the number. The number can be removed most conveniently by placing the first character in place "blank" and then pressing for a long time OK. Then use the system as powerless and turn it on again, and the controller automatically retrieves the message center number (the number does not appear on the display). Test for communication.

1. Connect the modem USB-connector to the device USB host connector.
2. Connect the modem power supply to the device connectors 93 (+) and ⊥ . When connect modem supply to Ouflex A connectors Ouflex A reboot automatically.



SMS PIN:

Enter Ouflex A device the same PIN as as the GSM modem's SIM card PIN.

Signal strength:

Signal strength is expressed with description: "Excellent", "Good", "Moderate", "Low", "Very low" and "Initialization failed". If signal strength is "Very low" or "No network", try changing the modem's location or use an external antenna. If the unit displays "Initialisation failed," check that the SIM card is correctly installed.

Modem status:

When Ouflex A device starts up, it will automatically detect whether the modem is connected or not and then initialises modem.

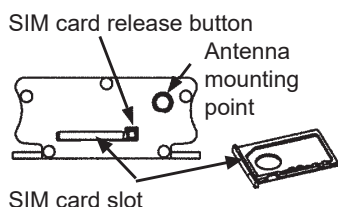
Ouman GSM modem is connected to modem using an USB cable. The modem has a fixed antenna that can replaced with to an external antenna with a 2,5m cord (optional equipment) if needed.

Mode	Explanation / Instructions
Connected	The modem is ready for use.
Not connected	The modem is not connected or the connection is incorrect

You can check the status of the modem also on the modemLED indicator light.

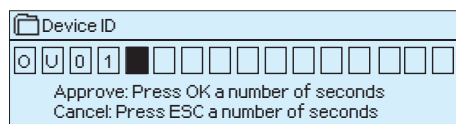
SIM card status:

Press the small black SIM card release button with, for example, a pen tip. SIM card holder pops out. Pull out the SIM card holder. Do not try to remove SIM card holder without pressing the SIM card release button first! Insert SIM card into the slot and make sure it settles properly. Push the slot back to its place. Enter the SIM card PIN code in Ouflex A device. Make sure PIN inquiry is in use in the SIM card.



Mode	Explanation / Instructions
Unregistered	The subscription agreement is not valid.
Registered	The SIM card is ready for use.
PIN error	Incorrect PIN code. Enter the SIM card PIN code in Ouflex A device.
PUK	The SIM card is locked (PUK code).

Device ID:



You may give your Ouflex A device a device ID. In SMS communication, always type the device ID in front of the keyword (e.g. OU01 MEASUREMENTS. Note the empty digit between device ID and the keyword.)

1.3 Network settings

System settings > Network settings

Network settings	
IP-address	x.x.x.x >
Hostname	
Connection status	Offline >
IP settings	>
Time settings	>
Access settings	>
Modbus TCP/IP	>
SNMP	>
FTP	Off >

There are two alternative ways to set the Ouflex A device IP address and network settings:

1. IP address is retrieved via DHCP function. This requires that DHCP service is in use in the network and network cables have been connected.
2. IP address is set manually.

Device has fixed Hostname. Hostname can be used to connect to device from Ouflex tool or Ounet.

Connection status indicates whether Ouflex A device is in the network or not. Ouflex A device can be connected to a local network or the Internet. If you use a protected VPN connection using OUMAN Access service, the controller displays the network mode OUMAN Access.

The Ouflex A device should not be connected to a public Internet network without a firewall!

1.3.1 IP settings

System settings > Network settings > IP settings

IP settings	
DHCP	Off >
Gateway address	0.0.0.0 >
Subnet mask	0.0.0.0 >
IP address	0.0.0.0 >
Nameserver address	0.0.0.0 >
Update network settings	>

IP settings

Setting the IP address using DHCP function:

1. Go to DHCP and press OK.
2. Select **"On"** and press OK to accept selection.
3. Wait approximately one minute. If DHCP is still "Off" after one minute, setting the IP address and network settings was not successful. Either the settings used previously or factory settings have been taken in use. In this case, the device does not necessarily function in the network. The reason for this is usually that the required DHCP service is not in use in the network, or it is out of order, or the network cables have not been connected properly. Check the network cable connections and/or make sure DHCP service is in use.
4. If DHCP is "On", network settings were successfully changed and the device now functions in the network. Device IP address is shown on display.

Setting the IP address manually:

1. Go to DHCP and press OK.
2. Select **"Off"** and press OK to accept selection. If DHCP function is on, manual changes in "Subnet mask", "Gateway address", "Name server address" and "IP address" will be ignored.
3. When set IP-settings manually you need to ask correct settings in that LAN administrator. OBS. Never try to guess the correct settings. Incorrect settings cause problems, and the network is work properly.
4. Select "Update network settings".

1.3.2 Time settings

System settings > Network settings > Time settings

Time settings	
NTP server	3.fi.pool.ntp.org >
NTP server 2	83.145.237.222 >
Time zone	2 >
Daylight saving	On >

Automatic time update from the network on two different time servers. If no access to the primary NTP server is available, the device uses the NTP server 2 server. You can change the time zone. In Finland, zone 2 (+ 2h) is used. The daylight saving is as a default on the device. In this case, the device will automatically switch from normal to summer time according to calendar.

1.3.3 Access settings

System settings > Network settings > Access settings

Access settings	
Access	Off >
Access name	
Connection status	Ouman Access

OUMAN ACCESS – service enables you to make a remote connection (useful with Ounet use) to Ouflex device from internet without any extra hardware. All you need is a normal internet-connected LAN with firewall and you have to ensure that certain ports to Internet are open.

OUMAN ACCESS- service is "off" by default in Ouflex A. OUMAN ACCESS- service is taken in use in following way: Ouman salesperson feeds in the target and billing information to the Ouman system and activates the service based on the serial number of the Ouflex A device. After that, you have to activate the ACCESS service from the device.

OUMAN ACCESS- device can be connected to LAN if following conditions are fulfilled:

1. LAN is routed via Internet

The Access service operates on the Internet so the Access service is not available if the device is not connected to the Internet. The Access device examines the availability of Internet connection by sending a Ping packet to the Internet server at 3-minute intervals. The network must allow the ICMP outwards from any port and the receipt of the reply message to the same port.

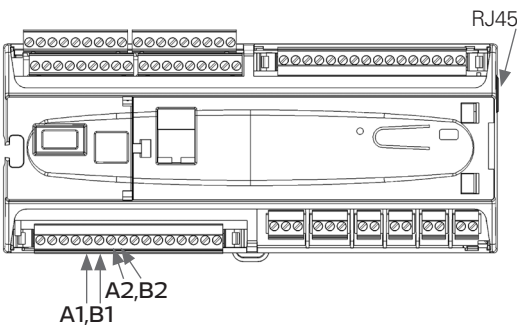
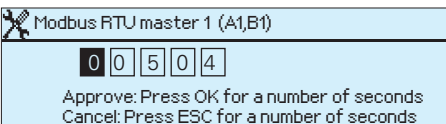
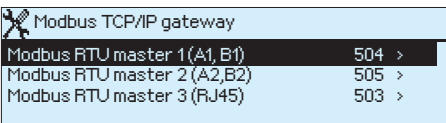
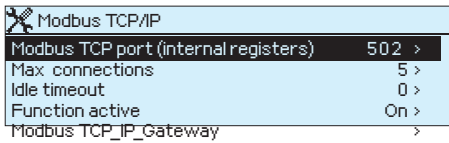
2. The VPN protocol used by Access service outwards is not blocked

The Access service is based on the VPN connection which the Access device creates to the Access server. The network must allow the UDP outwards from any port to the port 1194 and the receipt of the reply message to this port.

3. Time service protocol outwards is not blocked

The Access service works only when the clock in the Access device shows the correct time. The clock is set to the correct time automatically from the network using the NTP protocol. The network must allow the UDP outwards from any port to the port 123 and the receipt of the reply message to this port.

System settings > Network settings -> Modbus TCP/IP



Modbus TCP/IP settings

Modbus TCP server settings are changed via Modbus TCP/IP settings. It is possible to communicate with an Ouflex A device and the Modbus/RTU slave devices connected to it via Modbus TCP/IP interface.

Modbus TCP port (internal registers): Port number 502 is reserved for communication of Ouflex A device. Information of Modbus registers of Ouflex A device are read through this port. Recommendation is that the value should not be changed unless there is a compelling reason.

Max connections: It is possible to decrease server load by changing this setting that defines the maximum number of simultaneous connections from different IP addresses to the server. Recommendation is that the values should not be changed unless there is a compelling reason.

Idle timeout: This setting defines the time after which the server closes an inactive connection. Recommendation is that the value should not be changed unless there is a compelling reason.

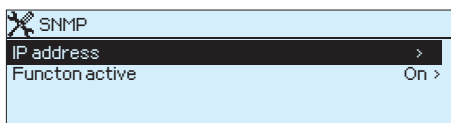
Allowed address: It is possible to improve the information security of the system by taking permitted connection address into use. If the value is 0.0.0.0, connections to the server are permitted from any IP address. If you define one permitted connection address, connections to the server are not permitted from any other IP address.

Function active: This selection either enables or disables the entire Modbus/TCP communication.

Modbus TCP/IP gateway -> Modbus RTU master

It is possible to connect three Modbus/RTU buses to an Ouflex A device. Each bus has its own port address that is used to communicate with bus devices via Modbus/TCP interface. "Modbus RTU master 1 (A1,B1)" setting defines the TCP/IP port for Modbus 1. Similarly, "Modbus RTU master 2 (A2,B2)" setting defines the TCP/IP port to Modbus 2. "Modbus RTU master (RJ45)" setting defines the TCP/IP port that functions as a gateway to Ouflex I/O extension bus. Gate addresses can be changed.

System settings > Network settings -> SNMP



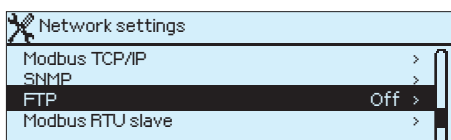
SNMP settings: SNMP function can be used to send notifications about alarms activating, inactivating and being acknowledged via SNMP protocol to a desired server.

IP address: The IP address of the target server to which messages are sent.

Function active: This selection either enables or disables the entire SNMP function.

Retry delay (min): If the alarm is not acknowledged in Ounet, Ouflex A sends SNMP messages again. The retransmission is limited to max 240 minutes. By setting the Retry delay to 0, the retransmission is disabled.

System settings > Network settings -> Modbus TCP/IP-> FTP



FTP

Ouflex A device support also FTP but read only mode.

1.4 Bus settings

System settings -> Bus settings -> Modbus RTU slave (COM3 (A2/B2))

Modbus RTU slave (COM3 (A2/B2))	
A2/ B2	
Address	1 >
Baudrate	960 0 >
Data bits	8 >
Stop bits	1 >
Parity	None >

Ouflex A device can be connected to Modbus RTU bus as a master or a slave device. Bus settings are configurable. Every device connected to the same bus must have unique address and same baud rate, number of data bits, number of stop bits, and parity.

System settings -> Network settings -> Modbus RTU master 1 (COM2 (A1,B1))

Modbus RTU master 1 (COM2 (A1/B1))	
A1/ B1	
Baudrate	960 0 >
Data bits	8 >
Stop bits	1 >
Parity	None >
Delay between packages	10 ms >

Ouflex A device can be connected to Modbus RTU bus as a master or a slave device. Bus settings are configurable. Every device connected to the same bus must have unique address and same baud rate, number of data bits, number of stop bits, and parity.

If a device is unstable on the bus, it may be possible to get the bus traffic stable by increasing the delay between the packets.

System settings -> Network settings -> Modbus RTU master 3 (COM1 (RJ45 in the end of device))

Modbus RTU master 3 (COM1 (RJ45))	
RJ45	
Baudrate	960 0 >
Data bits	8 >
Stop bits	1 >
Parity	None >
Delay between packages	1 ms >

Every device connected to the same bus must have unique address and same baud rate, number of data bits, number of stop bits, and parity.

If a device is unstable on the bus, it may be possible to get the bus traffic stable by increasing the delay between the packets.

1.5 Display settings

System settings > Display settings

Display settings	
Display version	xxxxxx
Contrast	75 >

You can adjust contrast. If you wish the display to be brighter, set a smaller numerical value. The setting range is 50... 100. The display changes after you have confirmed the setting change.

1.6 Type info

System settings > Type info

Type information	
Serial number	xxxxxxx
Application version	0.0.0
Ouman Ouflex	0.0.0
Display	1.1.1
Platform SW	

Type information shows the device platform version and application version. The name of application and version is determined by the user of OuflexTool. This information is useful especially in case of maintenance or upgrade.

1.7 Lock code

System settings > Lock code

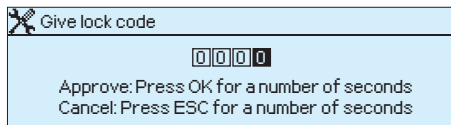
Lock code	
Display settings	>
Type information	>
Connections, meas. and states	>
Lock code	Not in use >

Lock code	
<input checked="" type="radio"/> In use	
<input type="radio"/> Not in use	

If you take lock code into use, you can read Ouflex A device information when the device is locked, but you can not change settings. It is recommended, for example, that you take lock code into use if the device is located so that anyone could reach it and change settings (e.g. deactivate burglar monitoring). Locking the device and changing the lock code prevents unauthorized use of the device.

Lock code function	Description
Not in use	You can read Ouflex A device information and change settings.
In use	You can read Ouflex A device information but you can not change settings without entering the lock code. The factory setting of lock code is 0000. If you take lock code into use, change the code for security reasons.

System settings > Change lock code



If you have taken lock code into use, you may change the code.

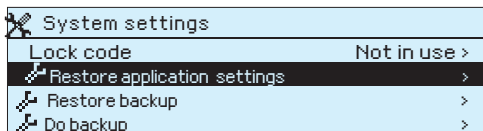
Ouflex A device asks you to enter the current code. The factory setting of lock code is 0000.

Turn the control knob and press OK to accept each number.
Press ESC to return to the previous square.
Press OK for a number of seconds to accept the code.
Press ESC for a number of seconds to cancel

1.8 Do backup and restore settings

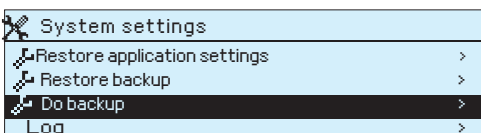
It is recommended to make a backup as soon as Ouflex A has been taken into use and property-specific settings have been made. Backup requires that you have a service code.

System settings -> Restore application settings



Press OK for a number of seconds to show hidden settings. If you want to restore application settings, restore backup or do backup you have to enter the service code. You can also reset the measurement history.

System settings -> Do backup

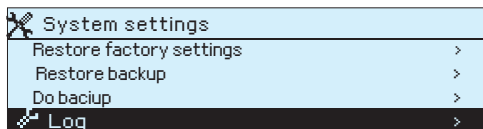


It is recommended to make a backup as soon as Ouflex A has been taken into use and property-specific settings have been made. You may also restore application settings.

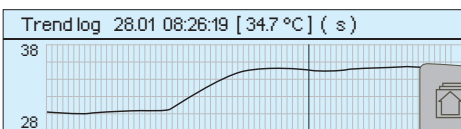
All the parameters which are saved in the non-volatile memory will be included in the backup. Such parameters are e.g. all the setting values, time programs and namings.

1.9 Log

System settings -> Log



Show measurement history on display.

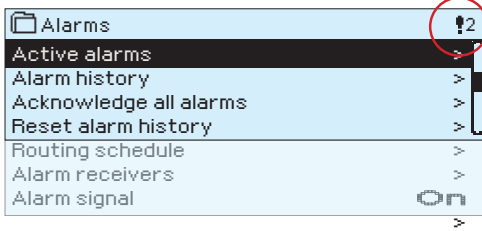


To see trend line, select the wanted measurement and press Info button.

You can also rename the measurement.

To delete log from device, select "Reset measure history".

2 Alarms

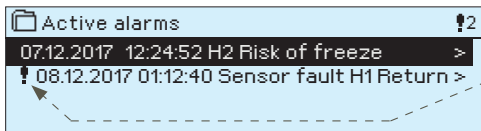


In the alarm menu of Ouflex A device, you can check the active alarms and what alarms have been active. The number of active alarms will be shown in the right corner of the main view.

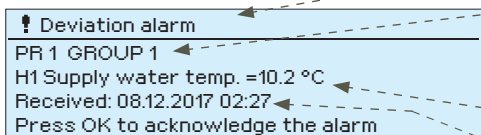
In Ouman Tool it is possible to specify if the alarm acknowledgment is required or not. If not required, the alarm will disappear of active alarms when the cause of the alarm has disappeared even if the alarm has not been acknowledged.

2.1 Active alarms

Alarms > Active alarms



Every active alarm is shown in a separate row, where you can see when the alarm has become active. Press OK to get more information about the alarm.



- An exclamation mark in front of the date shows that the alarm has been silenced by pressing Esc.
- The heading of the alarm view shows the reason for the alarm.
- You can also see, what is the alarm priority (1 ...5) and what alarm group it belongs to (1...10)
- What location the alarm is coming from
- The time, when the alarm was activated.

If Ouflex A device is connected to a GSM modem, you can communicate with Ouflex A device via text message.

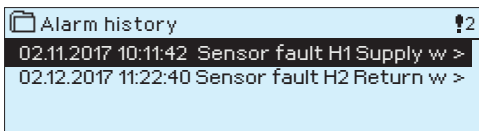
ACTIVE ALARMS

Send message: Active alarms

The controller sends a message showing all active alarms. Message is informational.

2.2 Alarm history

Alarms -> Alarm history



You can see the cause of the alarm, where the alarm has come from and when the alarm has become inactive. (e.g., 02.11.2017 at 10:11:42). The last 10 alarms can be seen in Alarm history.

If Ouflex A device is connected to a GSM modem, you can communicate with Ouflex A device via text message.

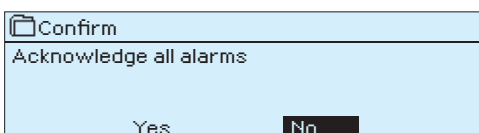
ALARM HISTORY

Send message: Alarm history

The controller sends a message showing the last alarms. Message is informational.

2.3 Acknowledge all alarms

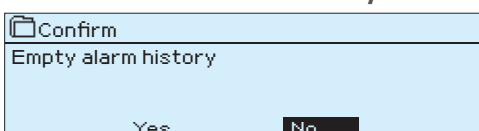
Alarms -> Acknowledge all alarms



Ouflex A requests confirmation before acknowledging all alarms.

2.4 Reset alarm history

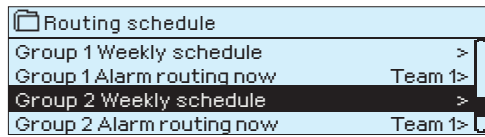
Alarms -> Reset alarm history



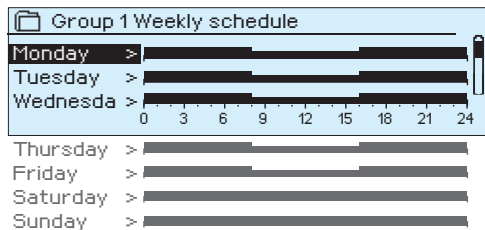
Ouflex A requests confirmation before deleting alarm history.

2.5 Routing schedule

Alarms > Routing schedule (SMS use only)



Graph



This example shows that group 1 alarms are always forwarded. During business hours (Monday - Friday 8:00 a.m. - 4:00 p.m.) alarms are forwarded to different teams than during evenings and weekends. More detailed information is shown in the "Editing view".

Editing view

Time	Mode	M	T	W	T	F	S	S
08:00	Team 1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16:00	Team 2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
00:00	Add new	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

1. Set switch time

2. Set alarm team | 3. Select day(s)

Time	Mode	M	T	W	T	F	S	S
08:00	Team 1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16:00	Team 2	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
00:00	Add new	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Time	Mode	M	T	W	T	F	S	S
08:00	Team 1	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
16:00	No routing	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
00:00	Add new	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Time	Mode	M	T	W	T	F	S	S
08:00	Team 1	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
21:00	Delete switch time	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>
00:00	Add new	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

You can see where alarms are currently being routed in the routing time schedule display. You can also set up a routing schedule for each alarm group.

You can create a weekly schedule for each alarm group. Weekly schedule has a general graphic view and an editing view, where you can see to which alarm team each alarm is directed at different points of time. In the graph, alarm teams are distinguished from each other by the thickness of the black bar.

Turn the control knob to browse a weekly program. If you wish to see the exact switch times and names of alarm teams, or if you wish to edit, remove or add switch times, press OK at any weekday.

Browsing a weekly program:

An editing view opens, and it shows all the switch times and also to which alarm teams alarms are routed at these times on the chosen days.

Adding a new switch time:

1. Press OK at the "Add new" row.
2. Press OK. Set the switch time for alarm routing (set hours and minutes separately) and press OK.
3. Press OK and then turn the control knob to set the alarm team or the "No routing" option. (No routing selection means that alarms will not be forwarded.) Accept by pressing OK.
4. Press OK at each weekday you wish to choose.
5. Press OK at the end of the row to accept the new time program.
6. Press Esc to exit.

Editing a weekly program:

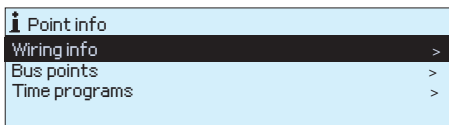
1. Turn the control knob to move to the value you wish to change and press OK.
2. Turn the control knob to make the time and alarm team changes. Press OK to accept.
3. Press the OK button to change the day of the week.
4. Press Esc to exit.

Deleting a switch time:

1. Turn the control knob to move to the switch time you wish to delete and press OK.
2. Press OK at the selected alarm team and select "Delete switch time"
3. Press OK at the end of the row.
4. Press Esc to exit.

If alarms are routed, alarm information is sent to the alarm team by text message. Alarms are relayed according to the alarm routing time schedule. You can acknowledge an alarm by sending the same message back to the Ouflex A.

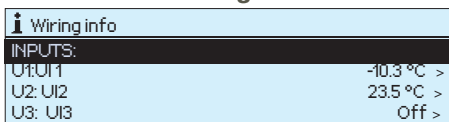
3 Point information




In the point info you can see wiring info, bus points and time programs.

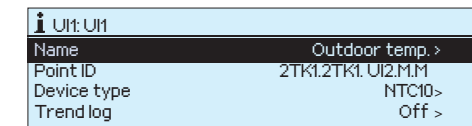
3.1 Wiring info

Point info -> Wiring info

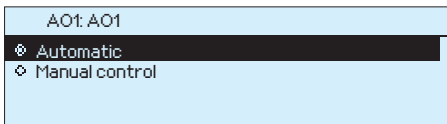


Point information shows all the inputs and outputs of the Ouflex A device and display names. It also shows the measurement value or state of the point.

Press  -button to see more detailed information, like name and point ID of the measurement point, You can also rename the measurement point, change device type and activate trend log.

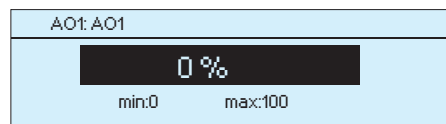
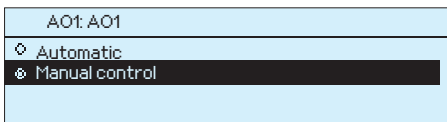


3.1.1 Measuring point control/manual control



Automatic control is the mode that is normally used. If your application allows the change of control mode, you may change automatic control to manual control here.

 When you are in the manual control mode, the hand symbol appears.



3.2 Bus points

Point info -> Bus points

i Bus points
Modbus RTU 1 (RJ45) >
Modbus RTU 2 (A1,B1) >
Modbus RTU 3 (A2,B2) >
Modbus TCP Master

i Modbus RTU 1 (RJ45)
FLEX COMBI 21 >
FLEX UI 12 >

i Flex Combi 32
Device information >

i Device information
Device state >
Address 1>
Update device >
IO SW x.x

i Device information
Device state >
Address 1>
Ok messages 0
Timeouts 0
CRC errors 0
Error messages 0

In the bus points menu, you can see those devices which are connected to the bus. By pressing OK in the row of a specific bus device, you will see those points which has been taken into use of the bus device.

Points are grouped by first displaying universal inputs and then analog and digital outputs. You can change the analog and digital outputs from automatic to manual control.

You can update the software of Ouman Flex I/O extension device connected to the Modbus RTU bus or change the status of the device. The device may be active, passive, error, or update mode. You can also read and change the Modbus address of the device.

i Device state
<input checked="" type="radio"/> Active
<input type="radio"/> Passive
<input type="radio"/> Error
<input type="radio"/> Updating
<input type="radio"/> Device type error

3.3 Time programs

Point info -> Time programs

i Time programs
H1 Heating temperature drop Off >
H2 Heating temperature drop Off >
Light control On >
El. group 1 control On >

In Ouflex A, weekly programs can be added to different functions - such as temperature drops, car heating and control of lights. In your Ouflex A device, you can find time programs under the clock symbol and/or under the function that a time program has been made for (e.g. heating control, car heating, control of lights, control of electric groups, routing of alarms).

3.3.1 Present value

Point info -> Time programs -> Present value

i Heating H1 Temperature drop
Present value Off >
weekly schedule >
Exception schedule >
Special days >

The present value shows what is the status of the control just now. When the automatic control is in use, it is shown in the display, what is state of the control according to the time program at the moment. Control command can be either a weekly schedule or exception schedule.

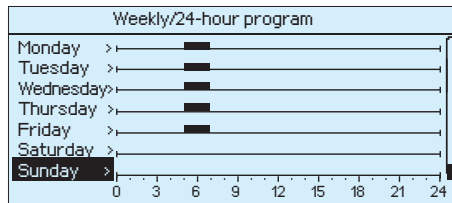
i Heating H1 Temperature drop
Present value off
Weekly schedule >
Exception schedule >
Special days >

When you press the "Present value" line OK, Ouflex A device asks for a service code. After entering the service code, you can change the control mode (automatic/ manual). This way you bypass time program and force the control to the desired mode. When the manual control is in use, the hand symbol appears on the front of the line.

3.3.2 Weekly schedule

Point info -> Time programs -> Weekly schedule

Graph



Editing view

Time State	M	T	W	T	F	S	S
05:00 On	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
07:00 Off	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
00:00 Add new	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

In this example, you can see a weekly car heating program. According to the program, car heating is on from 5 am to 7 am on working days.

Weekly programs have a general graphic view and an editing view, where you can see when the control is activated. (e.g., temperature drop, car heating on, lights on).

Turn the control knob to browse a weekly program. If you wish to see the exact switch times or you wish to change, delete or add switch times, press OK at any weekday.

Browsing a weekly program:

An editing view opens, and it shows all the switch times and also the states into which the function is driven at these times on the chosen days.

Editing view

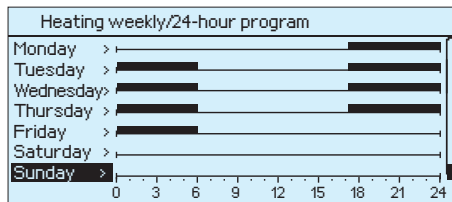
1. Set switch time

2. Set state
(=desired temp. level)

3. Select day(s)

Time	M	T	W	T	F	S	S
06:00 Normal temp.	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
17:00 Temp. drop	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
00:00 Add new	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Graph



In this example, you can see a weekly temperature drop program. Temperature drop is on from 5 pm to 6 am from Monday to Friday.

Time	M	T	W	T	F	S	S
21:00 Temp. drop	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input checked="" type="checkbox"/>
06:00 Delete switch time	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input checked="" type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>
00:00 Add new	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>

Adding a new switch time:

1. Press OK at the "Add new" row.
2. Press OK. Set the switch time (set hours and minutes separately). Press OK to accept.
3. Press OK and then turn the control knob to set the control state (temperature drop weekly program) or ON/OFF state (electric controls). Press OK to accept.
4. Press OK at each weekday you wish to choose.
5. Press OK at the end of the row to accept the new time program. Note! Also remember to define when the control returns to automatic (=normal). Press Esc to exit.

Editing a weekly program:

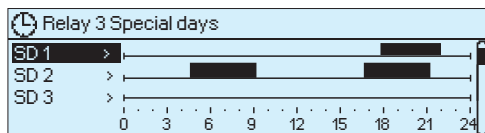
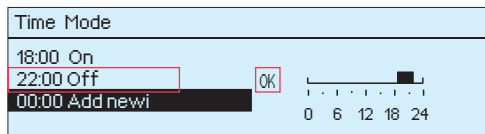
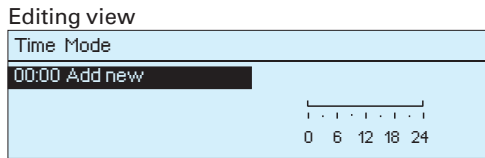
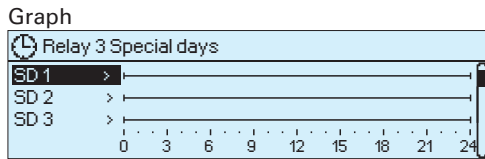
1. Turn the control knob to move to the value you wish to change and press OK.
2. Turn the control knob to make the time and control mode changes. Press OK to accept.
3. Press the OK button to change the day of the week.
4. Press Esc to exit.

Deleting a switch time:

1. Turn the control knob to move to the switch time you wish to delete and press OK.
2. Press OK at control state and select "Delete switch time"
3. Press OK at the end of the row.

3.3.3 Special days

Point info -> Time program > Special days



You can enter special day programs as exceptions to normal weekly programs. You can designate a maximum of 7 special day programs (SD). A special day program is typically created for each holiday. When the special day program will be applied it is set in the exception calendar.

Adding a new switch time:

1. Navigate to "Special days" and press OK.
2. Select an unused special day and press OK.
3. Place the cursor on "Add new" and press OK. Set the time for the program (hours and minutes are set separately). Select the control mode to be switched to at the time specified. Accept the program by pressing OK when the cursor is on OK.
4. Navigate to the "Add new" row. Set the time when the mode will change from selected mode back to normal mode. Accept the program by pressing OK. You can set several different control periods for the same special day.

Deleting a control from the special day program:

Select the switch moment to be deleted at mode "Delete switch time" and select "Ready" to confirm.

3.3.4 Exception schedule

Time program > Exception schedule

Date	Time	Mode
00.00.0000	00:00	Add new

Date	Time	Mode	
21.12.2017	11:30	Off	>
03.01.2018	16:00	Automatic	>
00.00.0000	00:00	Add new	>

Add/change switch time	
Day:	21.12.2017
Time:	11:30
Mode:	Off
Repeat:	No
Accept:	Ready

In the example of relay 3 control has been done the exception schedule. Relay 3 is switched off (OFF) 21.12.2017 11:30 - 03.01.2018 16:00.

NOTE! Be sure to set the end time to the control according to the exception schedule! Set the date and time at which the control goes to "Automatic". In this case, the control returns back to the weekly schedule. Do same kind of selection to "Repeat" field as you did at the start time (for example, if you chose the start time period that repeats monthly, also select the end time repeats monthly).

The controls that differ from the normal week schedule will be done with the exception schedule. The exception schedule is stronger than the week schedule. The date, time and mode to which control mode will be changed in the period in question are entered in the exception calendar. To switch from an exception schedule to weekly schedule mode, select automatic mode.

Adding a new switch time:

1. Navigate to "Exception schedule" and press OK.
2. The display will read "Add new." Press OK
3. Press OK and set the start date for the program. Press OK
4. Press OK and set the start time for the program. Press OK
5. Press OK and set the mode for the program. Press OK. You can select from the following:

- one day schedule from the weekly schedule (Monday - Sunday)
- a special day from a special day program (SD1 - SD7) or
- one of the following modes: "on," "off" or "automatic"

If you select a specific day of a week, it means that that day program is used during the set time period. You can also make special day programs (SD) in Ounet and take them into use in the exception calendar.

6. Select, if the exception schedule repeats or not. If you select repeat, it can be repeated every month same time or every year same time.
7. Accept the exception schedule you created by pressing "Ready."

Deleting a control from the exception schedule:

Select the switch moment to be deleted at mode "Delete switch time" and select "Ready" to confirm.


4 Settings

Settings	
Room temperature	21.0 °C >
Temperature drop (room temperature)	1.5 °C >
Big temperature drop (room temperature)	5.0 °C >
Supply water min limit	12.0 °C >

Settings	
Supply water min limit	12.0 °C >
Min lmt increase outd. temp. -20	3.0 °C >
Supply water max limit	42.0 °C >
∞-control's max effect on supp. wtr	2.0 °C >

Room temperature	
21.0°C	
min: 0.0 max: 95.0	

In Ouflex A, settings can be classified into the following categories:

- **Main settings**
- **Hidden settings**
You can hide/show these settings by pressing OK for a few seconds. When visible, these settings are shown slightly indented.
- **Settings that require maintenance code**
There is a  symbol in front of these settings. If you try to change one of these settings, your Ouflex A device asks you to enter the maintenance code.

Changing a setting:

Choose the desired setting by turning the control knob. Press OK to go to the view where editing is possible. Change the setting. Press OK to accept the change. Press Esc to exit the editing view. You can see the setting range (minimum and maximum value), if there is one, in the editing view.

Locking the settings:

Lock the settings to prevent unauthorized persons from changing them. The device will then ask for lock code before it let's you change the settings. You can lock the settings in Ouflex A device system settings.

If a GSM modem is connected to Ouflex A device and the setting values have been brought into SMS interface, you can edit settings by text message. Send a message "Key words". The reply message shows you which key words are in use in the application. The example below describes the communication principle.

H1 SETTINGS

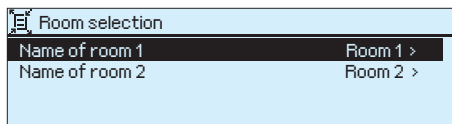
H1 Settings:
Room temperature = 21.5°C/
Temp.drop = 3.0°C/

H2 SETTINGS

Send a message: H1 Settings.

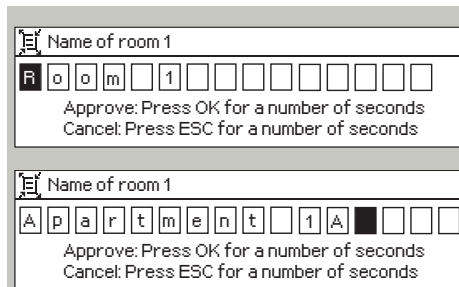
The controller sends the main settings to your mobile phone. Editing the setting values: write the new setting in place of the old setting and send a message back to the controller. The controller sends the setting as a return message.

5 Naming



There may be fields that you can rename in your Ouflex device. You often download an application where general names have been given to the controls, and you may want to rename them more accurately.

In heating control, for example, the rooms have typically been named "Room 1", "Room 2", etc. You may want to give them more accurate names. In control of electric groups, you may want to rename "Electric group 1" and "Electric group 2" more accurately, depending on what you actually control with the relay in question.



Move to the title you wish to rename and press OK. A naming view opens. Turn the control knob and accept each letter by pressing OK. Move to the next square by pressing OK.

Return to the previous square by pressing ESC. Accept the name by pressing OK for a number of seconds. Cancel by pressing ESC for a number of seconds.



6 Communication via a mobile phone

KEY WORDS

Key words:
Active alarms
Alarm history

If a GSM modem is connected to the Ouflex you can communicate with the controller by text message using key words.

Send the following text message to the controller: **KEY WORDS**.

You can send the text message question mark to the controller to get a list of key words. If the controller has a device ID in use, always write the device ID in front of the key word (example. Ou01 KEY WORDS or Ou01 ?). **Capital and small letters are different characters in the device ID!**

The controller sends as a text message a list of keywords, that can be used to get information about the controller functions. Key words are separated by a /. You can write the key word using capital or small letters. Write only one key word/message. Store the key words into your phone's memory.

Informative messages

ACTIVE ALARMS

ALARM HISTORY

Informative messages can not be edited or sent back to the Ouflex A. Informative messages are, for example. measurements, different types of information displayed, or the alarm queries

The reply message will show all active alarms.

The reply message will show information about the latest alarms.

Change of the setting value by text message

Send a message with the correct key word.

The controller sends the settings to your mobile phone. Editing the setting values: write the new setting in place of the old setting and send a message back to the controller. The controller sends the setting as a return message.

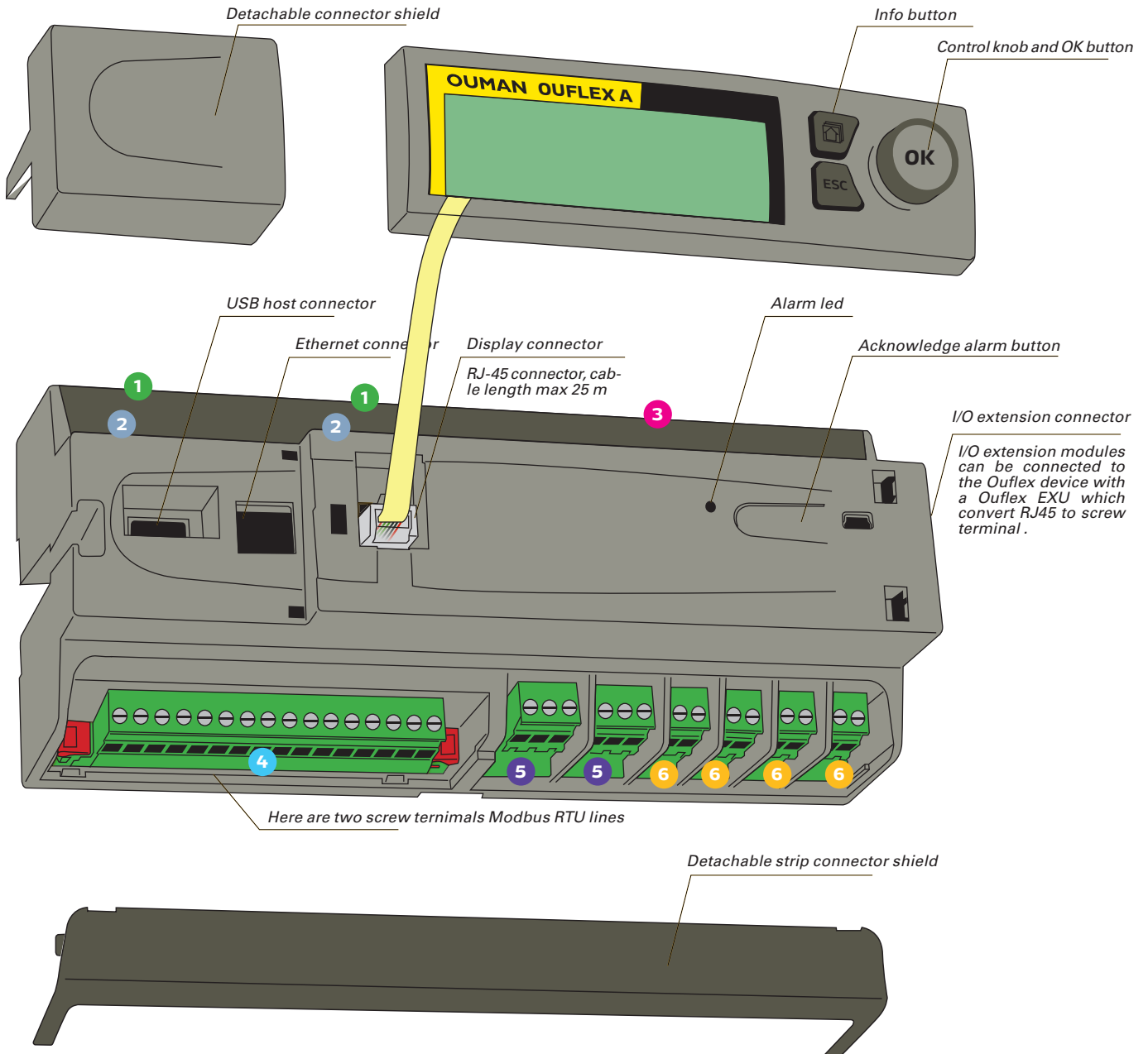
Change of the selection by text message

Send a message with the correct key word.

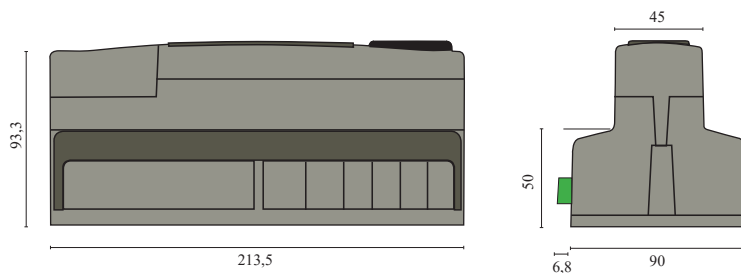
The controller sends a return message in which a * appears in front of the control mode in use. If you want to change the control mode, move the * in front of the desired control mode and send the message back to the controller. The controller will then send a return message showing that it has switched to the desired control mode.

7 Ouflex A device I/O connections and structure

Ouflex A is a freely programmable and DIN-rail-attachable building automation system for control and monitoring. The DIN-standard-compatible structure of the Ouflex A device enables installation to most common cabinets. Detachable strip connectors make installation easier.



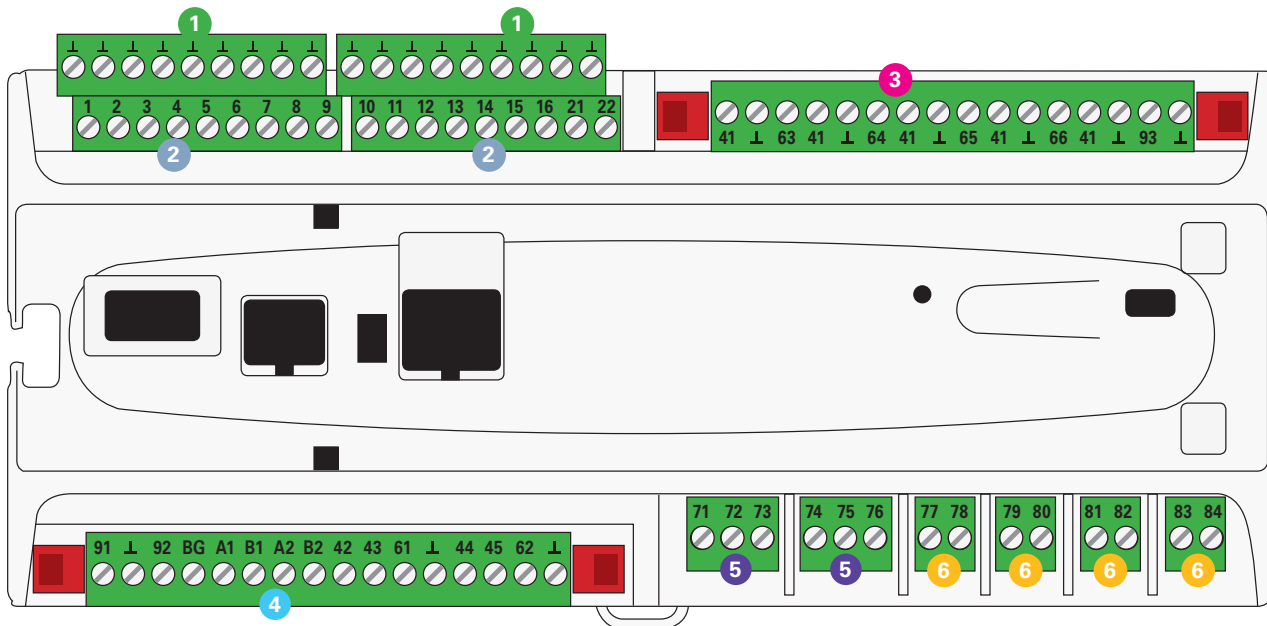
Dimensions:



Ouflex A includes open source software using the following licenses: AFL, AGPLv3 with OpenSSL exception, BSD-2c, BSD-3c, GPLv2, GPLv3, LGPLv2.1, MIT, MIT with advertising clause, NTP license, OpenSSL License, pkgconf license, The "Artistic License", zlib license.

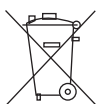
The open source software in this product is distributed in the hope that it will be useful, but without any warranty, without even the implied warranty of merchantability or fitness for a particular purpose, see the applicable licenses for more details.

Ouflex A includes 34 I/O-points, and also versatile data transfer and field bus connections. In addition, the device contains 24 Vac and 15 Vdc outputs. Display unit is detachable, and can be relocated. It is possible to increase the number of I/O-points with external I/O-modules via bus connections.



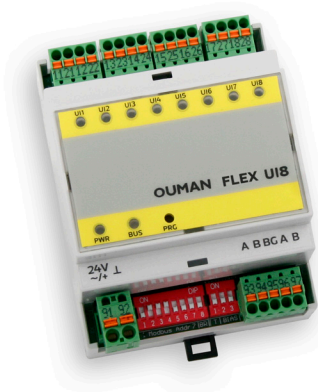
- 1** Detachable strip connectors (measurements' ground)
Connector labels
┴...┴ Measurements' ground (16pcs)
- 2** Detachable strip connectors (universal measurement, digital and pulse counter inputs)
Universal inputs are configured NTC-10 measurements by default. Do not connect transmitter outputs over 5 V if measurement channels are not configured to transmitter measurements.
- Connector markings:
1...12 Universal input
13...16 Universal input, pulse counter input
21...22 Digital input, pulse counter input
- 3** Detachable strip connector (operation voltage and outputs)
Connector markings:
41 24 Vac operating voltage output
┴ GND
63 0...10 V output
41 24 Vac operating voltage output
┴ GND
64 0...10 V output
41 24 Vac operating voltage output
┴ GND
65 0...10 V output
41 24 Vac operating voltage output
┴ GND
66 0...10 V output
41 24 Vac operating voltage output
┴ GND
93 15 Vdc operating voltage output
┴ GND
- 4** Detachable strip connectors (power supply, battery backup, RS-485 bus connections, outputs)
Connector markings:
91 24 Vac power supply
┴ GND
92 12 Vdc backup voltage input
BG RS-485 bus isolated ground
A1 and B1 RS-485 bus connection
A2 and B2 RS-485 bus connection
42 and 43 24 Vac output (Triac or continuous 24 Vac)
61 0...10 V output
┴ GND
44 and 45 24 Vac output (Triac or continuous 24 Vac)
62 0...10 V output
┴ GND
- 5** Detachable strip connectors (Change-over contact relays max 230 Vac, 6 A)
Connector markings:
71 Relay 1 NO
72 Relay 1 C
73 Relay 1 NC
74 Relay 2 NO
75 Relay 2 C
76 Relay 2 NC
- 6** Detachable strip connectors (relays with normally open contact max 230 Vac, 6 A)
Connector markings:
77 Relay 3 NO
78 Relay 3 C
79 Relay 4 NO
80 Relay 4 C
81 Relay 5 NO
82 Relay 5 C
83 Relay 6 NO
84 Relay 6 C

Product disposal:



The enclosed marking on the additional material of the product indicates that this product must not be disposed of together with household waste at the end of its life span. The product must be processed separately from other waste to prevent damage caused by uncontrolled waste disposal to the environment and the health of fellow human beings. The users must contact the retailer responsible for having sold the product, the supplier or a local environmental authority, who will provide additional information on safe recycling opportunities of the product. This product must not be disposed of together with other commercial waste.

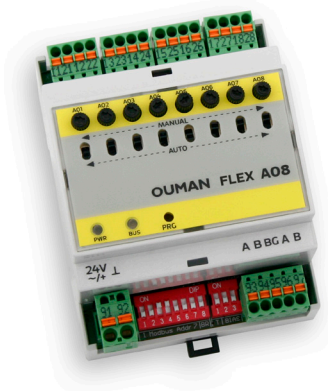
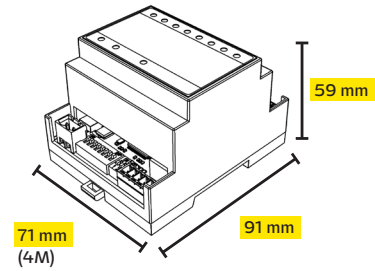
Extension units



FLEX UI8

FLEX UI8 device has 8 universal inputs. Supported signals and sensor types are:

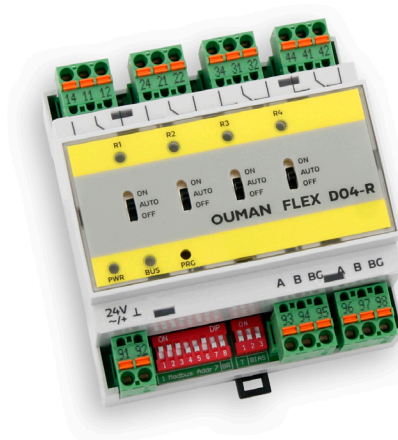
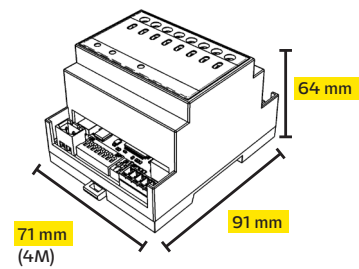
- transmitters 0-10V
- transmitters 0/4-20mA
- digital contact input
- potential free pulse counter
- first supported passive sensors:
 - NTC10, NTC1.8, NTC2.2 and NTC20
 - Ni 1000 LG, Ni 1000 DIN 43760
 - Pt 1000



FLEX A08

FLEX A08 has 8 analog outputs.

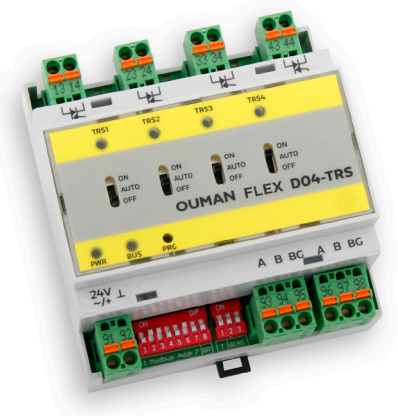
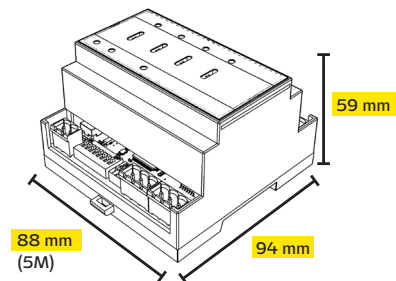
- Output voltage range 0-10 V
- Output current 7 mA/output
- Each output has Auto-Manual switch.
- In manual mode the output voltage of each channel is adjusted via potentiometer



FLEX D04-R

FLEX D04-R relay module consists of 4 change-over contact relays.

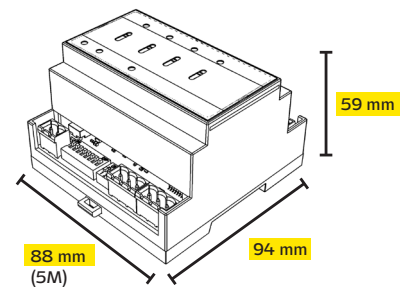
- Each relay control has 3 stage switch for selection between automatic control, forced ON or OFF (ON-AUTO-OFF).
- Change-over contact relay 230 Vac/ 4A or 24Vdc/4A
- Easy to install in electrical cabinet



FLEX D04-TRS

FLEX D04-TRS module consists of 4 triac outputs

- Each triac control has 3 stage switch for selection between automatic control, forced ON or OFF (AUTO-ON-OFF).
- 24...230Vac, max 1A/output
- Potential-free AC switch
- DC controls require a supplementary relay in installation



FLEX UI16



Flex UI 16 is a DIN-rail-attachable and RS-485-connected universal I/O extension unit. It has on 16 universal measurement inputs (UI) that can read the following types of data:

- Passive sensors
- Transmitters
- Digital inputs
- Pulse information 4pcs. (inputs 13...16)

FLEX COMBI 21



Flex Combi 21 is a DIN-rail-attachable and RS-485-connected universal I/O extension unit. It has 21 I/O points.

The device has:

9 pcs. universal measurement inputs (UI) that can read:

- Passive sensors
- Transmitters
- Digital inputs
- Pulse information

2 pcs. 0...10 V universal outputs (AO)

2 pcs. relay outputs with change-over contact

4 pcs. relay outputs with normally open contact

4 pcs. 24 Vac Triac outputs

FLEX COMBI 32



Flex Combi 32 is a DIN-rail-attachable and RS-485-connected universal I/O extension unit. It has 31 pcs I/O points, and 5 pcs 24Vac outputs and 15Vdc output.

The device has:

16 pcs. universal measurement inputs (UI) that can read:

- Passive sensors
- Transmitters
- Digital inputs
- Pulse information 4 pcs. (inputs 13...16)

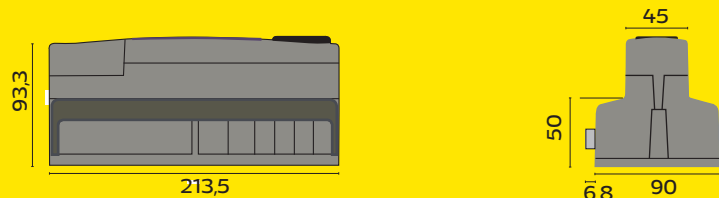
6 pcs. 0...10 V universal outputs (AO)

2 pcs. relay outputs with change-over contact

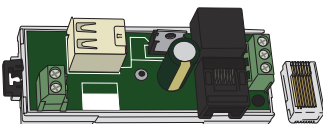
4 pcs. relay outputs with normally open contact

4 pcs. 24 Vac Triac outputs

FLEX COMBI 32, FLEX COMBI 21 and FLEX UI16 dimensions (mm)



FLEX EXU




Interface card for modem and local I/O extension

- unisolated RS-485 bus, supported protocols Modbus-RTU
- USB host connection (not in use)
- 15 Vdc voltage output, max 750 mA (total capacity together with the Ouflex A device 15 Vdc voltage output (strip connector 93)

OUMAN OUFLEX A

Freely programmable automation system

Dimensions	width 213,5 mm, height 93,3 mm, depth 96,8 mm	
Weight	0.7 kg	
Protection class	IP 20	
Operating temperature	0 °C...+40 °C	
Storing temperature	-20 °C...+70 °C	
Power supply		
Operating voltage	24 Vac, 50 Hz (22 Vac - 33 Vac)	
Power required	(15 Vdc output =if not connected) 13 VA (15 Vdc output = 750 mA) 34 VA Notice! Please consider 24 Vac operating voltage and power required for Triac outputs.	
Backup input	12 Vdc	
Current consumption	300mA / 3,6W (relays not in use) 400mA / 4,8W (relays in use)	
Universal measurement input (can be configured) measurement types:		
Passive sensors (inputs 1...16)	Measurement channel accuracy: - NTC10 element: ±0,1 °C between -50 °C...+100 °C, ±0,25 °C between +100 °C...+130 °C - NTC 1.8 element: ±0,2 °C between -20 °C...+40 °C, ±0,6 °C between +40 °C...+70 °C and +2.0 temperatures above 75 °C. - NTC 2.2 element: ±0,2 °C between -20 °C...+55 °C, ±0,5 °C between +60 °C...+70 °C and +2.0 temperatures above 75 °C. - NTC20 element: ±0,1 °C between -20 °C...+70 °C, ±0,6 °C between +75 °C...+120 °C - Ni1000: ±1,0 °C between -50 °C...+130 °C - Ni1000 DIN: ±0,2 °C between 0 °C...+130 °C, +0,5 °C between -5 °C...+120 °C - PT1000 element: ±1,0 °C between -50 °C...+130 °C Also sensor tolerances and the effect of cables must be considered when calculating total accuracy.	
Active sensors (inputs 1...16)	0...10 V voltage message, meas. accuracy 1 mV Milliampere signal with shunt resistor 0/4-20 mA	
Contact information (inputs 1...16)	Contact voltage 5 Vdc. Contact current 0,5 mA Contact resistance max 1,9 kΩ (closed), min 11 kΩ (open)	
Counter inputs (inputs 13...16)	Minimum pulse length 30 ms	
Digital input measurement types:		
Contact information (inputs 21 and 22)	Contact voltage 15 Vdc. Contact current 1,5 mA Contact resistance max 500 Ω (closed), min 1,6 kΩ (open)	
Counter inputs (inputs 21...22)	Minimum pulse length 30 ms	
Analog outputs (61...66)	Output voltage range 0...10 V. Output current max 10 mA/output.	
Relay output		
Change-over contact relay (71...76)	2 pcs, 230 V, 6 A	
Normally open contact relay (77...84)	4 pcs, 230 V, 6 A	
Triac outputs		
24 Vac (42 and 43)	Output current together max 1 A	
24 Vac (44 and 45)	Output current together max 1 A	
Operating voltage outputs		
5 pcs 24 Vac outputs (41)	Output current max 1 A/output	
15 Vdc output	Output current max 750 mA	
Data transfer connections		
RS-485 bus (A1 and B1)	Galvanically isolated, supported protocols Modbus-RTU	
RS-485 bus (A2 and B2)	Galvanically isolated, supported protocols Modbus-RTU	
USB-host connection	RS-232-modem, Ouman GSM-modeemi	
USB-device connection		
Ethernet	Full-duplex 10/100 Mbit/s, supported protocols Modbus-TCP/IP	
Ouman Access	Intelligent remote connection built-in for use with Ounet and Ouflex BA Tool	
APPROVALS		
EMC-directive	2014/30/EU	
Interference tolerance	EN 61000-6-1	
Interference emissions	EN 61000-6-3	

We reserve the right to make changes to our products without a special notice.

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