Monitoring and Control Using Mobile Devices

Intended Use of the Product

Asix Mobile module is an extension of a set of tools and programs available in the Asix system with dedicated functionality for all kinds of mobile devices of a smartphone or tablet type. Easy access to data, quick adaptation of presentation to individual needs, control functions and security of communication, are the main features of Asix Mobile.

Asix Mobile enables creating a fully functional interface for visualization of selected measurements of the inspected facility, as well as operation control. The method of creation and operation of the graphical interface has been fully adapted for use on devices with small screens. Much emphasis has been put on the effective use of touch screens.

Thanks to Asix Mobile, the user gains instant access to data regardless of location. It is possible to track current values of measurements and view their revision history. If necessary, you can alter the course of the process by sending a remote control or setting. There is also an option of alarm status check including readings confirmation function. In addition, the notification system allows the user to monitor the object without opening the Asix Mobile application - information about the change of status of each selected alarm can be sent automatically as a system notification displayed on the recipient's device.

Examples of Applications

Asix Mobile applications may be used in many ways. Here are some of the scenarios of use.

REMOTE CONTROL IN LARGE PLANTS

Asix Mobile allows for keeping control over large and distributed plants, such as wastewater treatment plants, water supply systems, heat distribution network, oil and gas transfer network, wind and solar power plants, traffic lights, bus and tram networks. You can respond to events without travelling to selected network points, without leaving the office or during on-call time at home.

DEVICE CONTROL WITH NO CONTROL PANELS

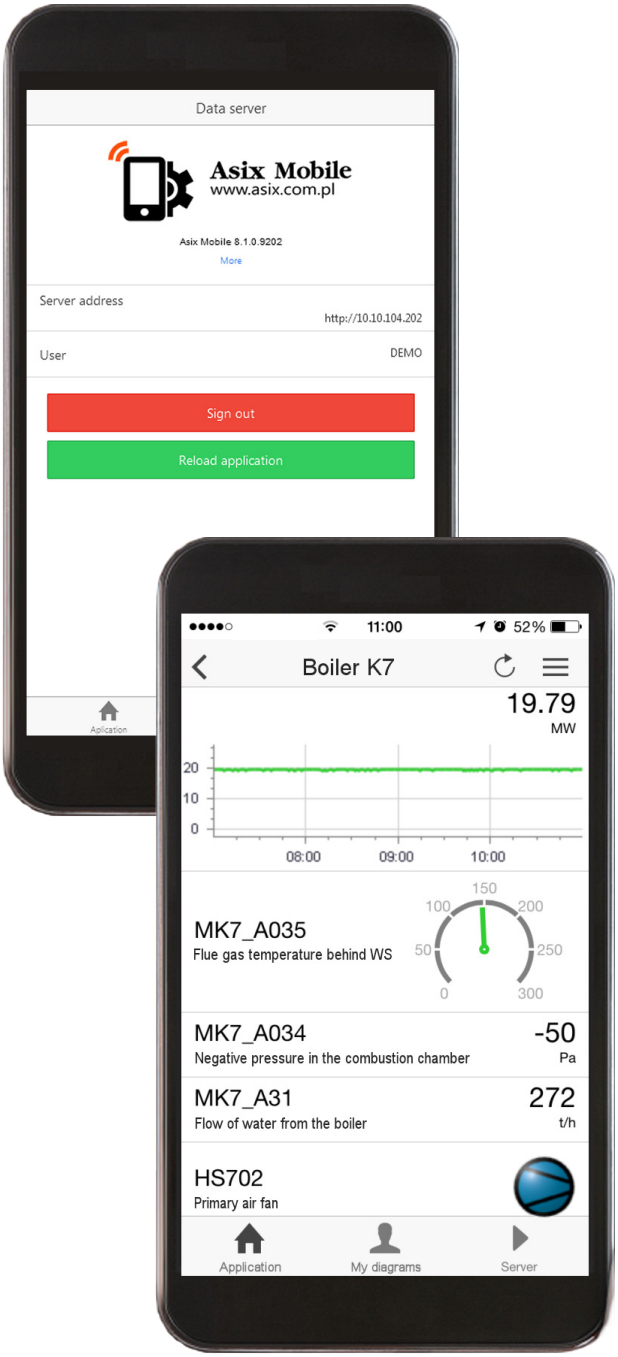
Asix Mobile may serve as the primary tool for monitoring and control of equipment and machine operation that do not have any other, graphical interface. With one tablet you can operate many such devices, reducing equipment costs.

INTELLIGENT BUILDING MANAGED WITH A SMARTPHONE

Asix Mobile enables comprehensive management of a building fitted with automation directly via smartphone. You can control the operation of electronic devices, as well as lighting, blinds, heating, air conditioning or alarm system. The scope of application ranges from small, single-family houses to apartment blocks, hotels, large production facilities or shopping centres.

MAINTENANCE AND PRODUCTION MANAGEMENT

In the production plant, access to reliable information about the processes and production and the ability to control the production in real-time becomes a necessity. Asix Mobile on a mobile device allows the production maintenance engineers being up to date – have instant information on the course of the process, emergency situations and faults, the need to take maintenance actions – remotely, from any location within the plant. Production managers can monitor the results of production, material consumption, KPIs, OEE, etc., when out of the office, at meetings, any time, on a regular basis.

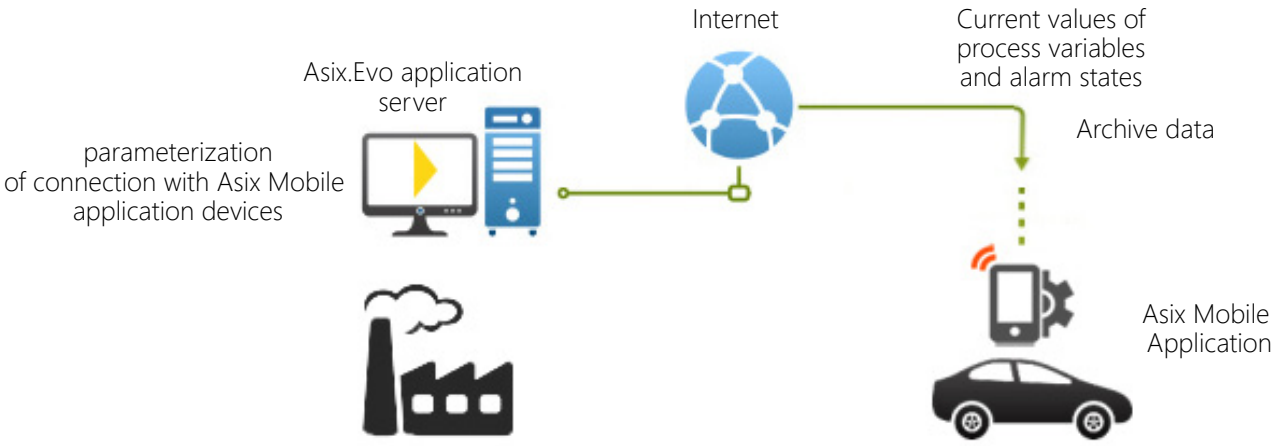


Architecture

Asix Mobile is an integral part of Asix system. The base for mobile application is a stationary server of application designed in Asix.Evo technology. Asix Mobile options (except for the visual part design) are configured in the Asix.Evo application settings. Basically it comes down to setting the parameters of the module responsible for communication with Asix Mobile devices and configuration of user authorizations.

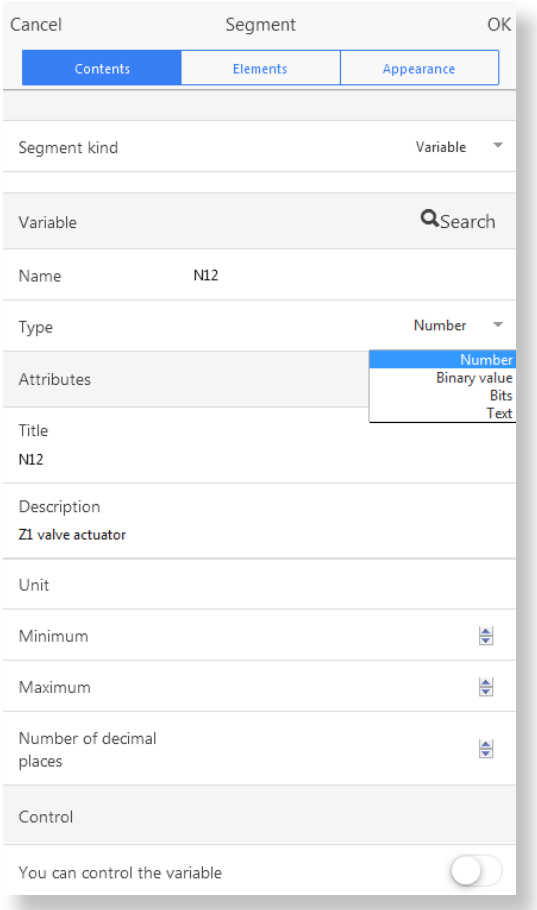
Asix Mobile applications do not require the use of IIS server; all communication is done with the internal server module Asix.Evo. The whole mobile application project is stored on Asix.Evo server, therefore no information is stored directly on a mobile device.

During communication between the server and Asix Mobile devices, large emphasis is put on limiting the amount of transmitted data. Changes of the values of current variables and alarms status are sent on an on-going basis. However, in the case of access to historical data, they are fully processed on the server side, and the minimum necessary amount of information is sent to the device.



Design of the Application

Asix Mobile application consists of a set of diagrams. Part of the diagrams belongs to a group of predefined diagrams created by the system designer and available to all users. In addition to this, any user with sufficient authorization may create their own private diagrams. Diagrams are designed with tools available directly in Asix Mobile on a mobile device (or in a browser window on a PC).



SUPPLEMENT TO ASIX4INTERNET

Asix Mobile may be used as a supplement to full visualization of SCADA application based on Asix4Internet technology. This allows users to create their own diagrams suited to individual needs, on PCs or laptops. In the case of small plants, Asix Mobile may even completely replace the use of Asix4Internet.

Each diagram consists of a number of segments. The appearance and functionality of a segment depend on its type.

TEXT SEGMENT

The segment is used to place in the diagram additional text information for the user or for visual grouping of segments that display process data.

LINK SEGMENT

This is a navigation segment, that allows you to move from the current diagram to another. In addition to link segments, a diagram may be opened by direct selection from a list of all created diagrams. There is also a previous/next navigation type that is based on the history of user actions.

ALARM SEGMENT

The segment allows you to view the state of one alarm. Current alarm status is shown as an icon. The segment has the functionality of alarm confirmation.

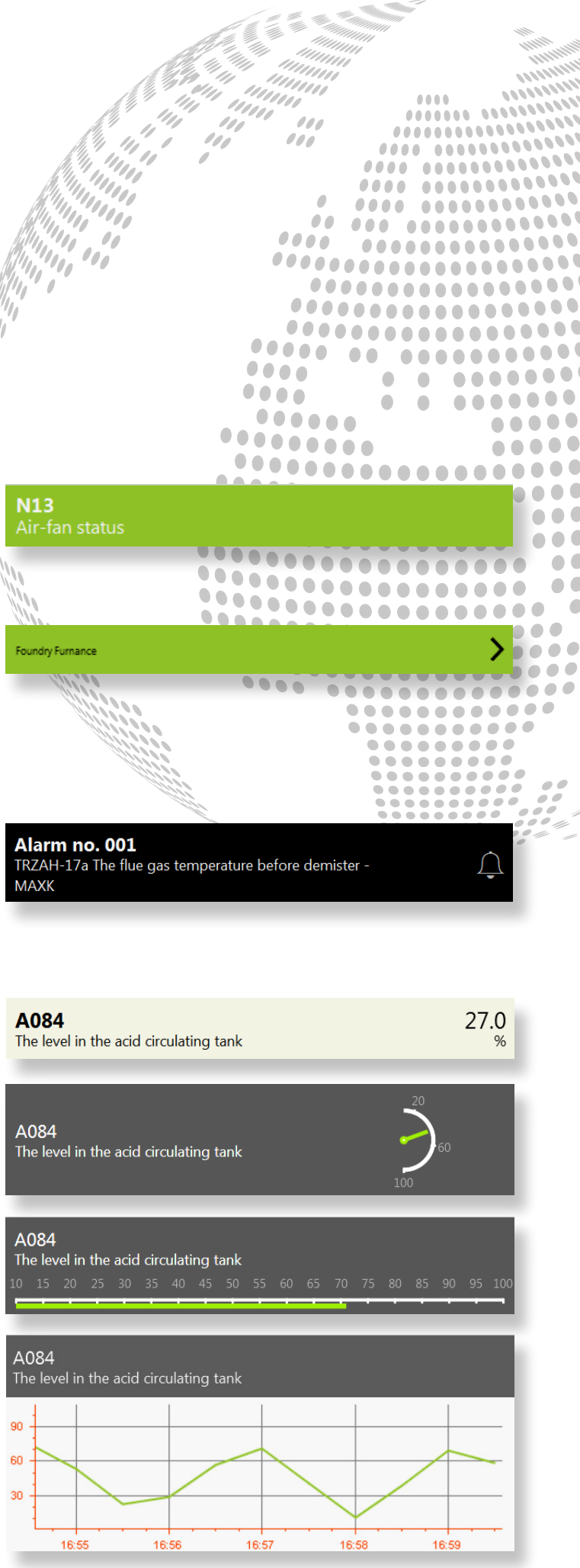
VARIABLE SEGMENT

The segment is used to display the values of process variables. It is available in many versions that depend on the type of the visualized variable.

Number type variable

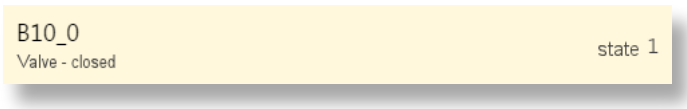
The available visualization methods for a Number type variable include:

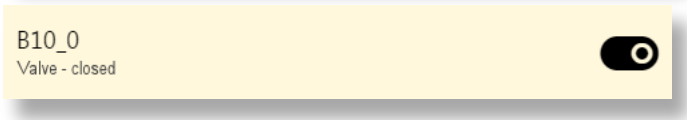
- Value
  It displays the numerical value of a variable rounded to the specified number of decimal places.
- Gauge
  It displays the value of the variable as a reading on the gauge scale, which can additionally show the ranges of alarm and warning values.
- Bar
  It displays the value of the variable as a reading on the horizontal bar scale, which can additionally show the ranges of alarm and warning values.
- Chart
  Displays the history of the recent variable values in the form of a chart. It can be a complete chart featuring the axes and grid in addition to the values presented, or a mini chart illustrating the values only.

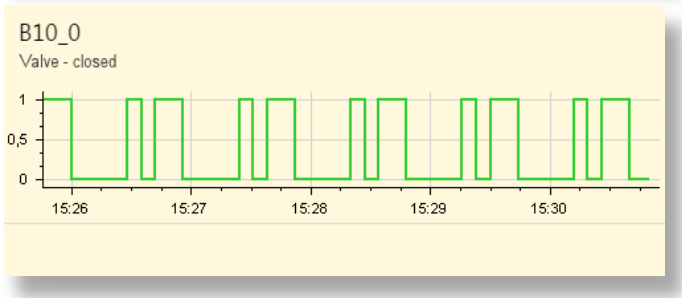


Binary value type variable
The available visualization methods for a binary variable include:

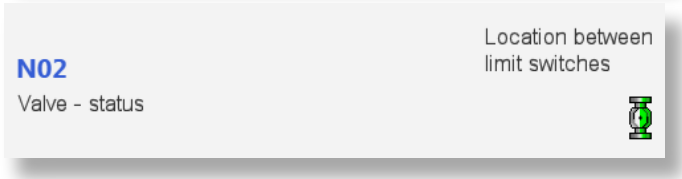
- Value
  Displays the numerical value of the variable, that is 0 or 1. Instead of numbers, you can use your own labels.
- Value presented in the form of a switch
  Displays the measurement value as a switch icon, where 0 is represented as the switch open and 1 is represented as the switch closed.
- Chart
  Displays the history of the recent variable values in the form of a chart. It can be a complete chart featuring the axes and grid in addition to the values presented, or a mini chart illustrating the values only.







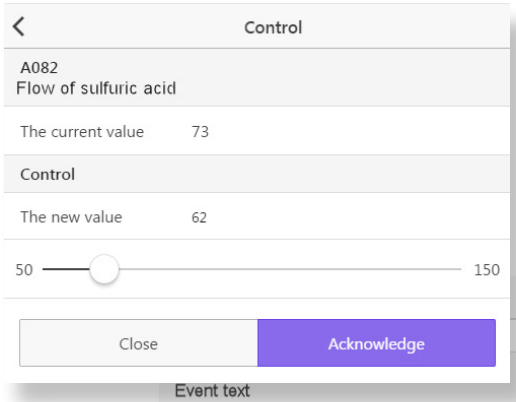
Bit type variable
The idea of the bit type variable interpretation is the analysis of the value of a bit variable and, on this basis, selection of appropriate text or icon that describe the status. To select the status you can use the bit masks that specify the required values of the individual bits of a variable (0, 1, or insignificant).

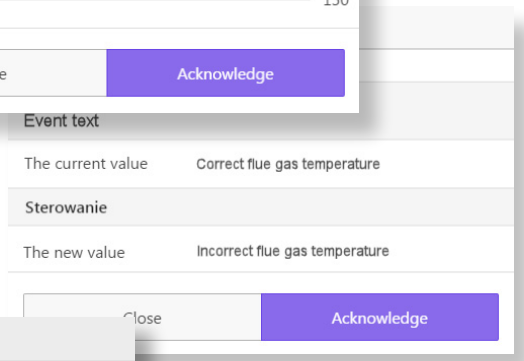


Text type variable
Text variable value is displayed.

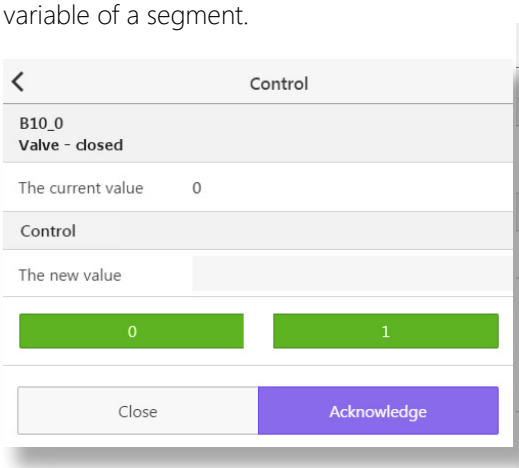
Variable type segment has a built-in functions of settings sending – setting the variable value. Variable control is carried out using the control window. The control window features different properties for each variable type:

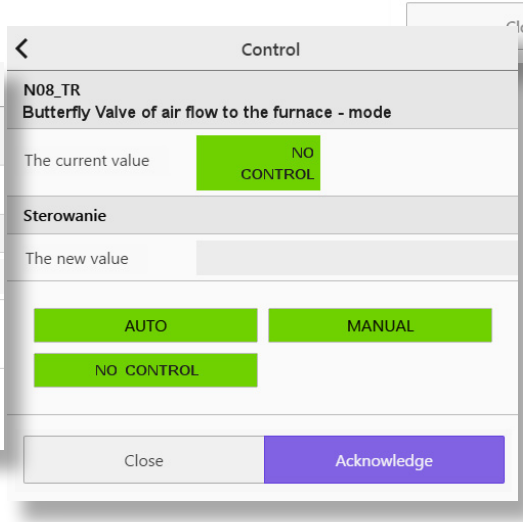
- To a Number type variable any numerical value from the specified range can be assigned. The value can also be selected using the slider.
- For a Binary value type variable two buttons for the values 0 and 1 are displayed, used to select the value to be sent.
- For a Bit type variable as many buttons are display ed as there are states available to be controlled.
- For a Text type variable any text can be entered.





The controlled variable may be different than the basic variable of a segment.



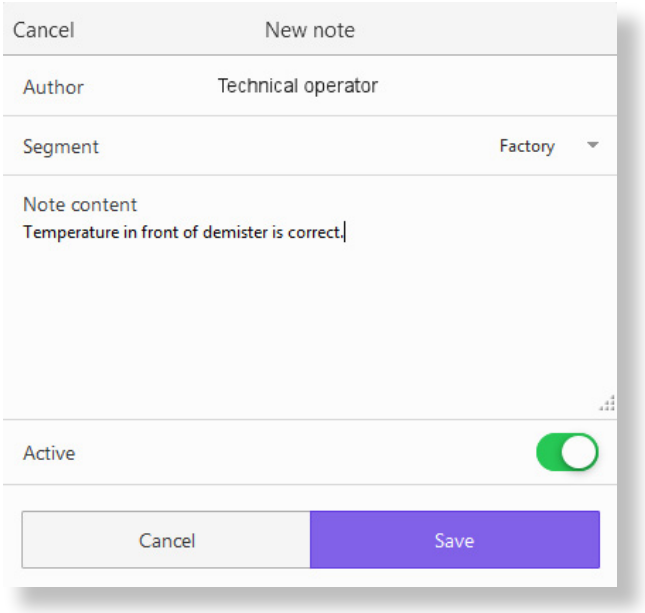


OPERATOR NOTES SEGMENT

Operator notes window is used to view recent notes and create new ones by the application users. Each note consists of:

- Text – any content entered by the user,
- Location – every note is linked to a specific part of the application (installation),
- Flags of activity – used to mark new notes.

Notes created in Asix Mobile can be viewed in the desktop version of the Asix application. In particular, the notification mechanism about active notes is available.



Application Safety

The communication between the application server Asix.Evo and Asix Mobile mobile devices is done by using a https encrypted protocol. This allows for free data transfer on the Internet.

Using a secure encrypted HTTPS connection requires the SSL certificate to be configured. It is recommended to use a certificate purchased from an external supplier, but it is also possible to generate it using Asix Mobile. The latter requires however installation of a generated certificate on each device that will be used for running the Asix Mobile client.

Asix Mobile also lets the user use an unencrypted transfer over HTTP. In order to protect data from unauthorized access it is recommended to use a VPN connection.

In addition to protection on the data transmission level, Asix Mobile also applies protection through the approval of user authorizations. Each access to the Asix Mobile application requires the user to log in. Verification of the correctness of the login and authorizations is carried out on the Asix.Evo application server using its user database. The scope of possibilities of users accepted to work in Asix Mobile application depends on their authorizations:

- Edition of diagrams and options – allows the users to create their own diagrams, change existing diagrams, setting a starting diagram and default appearance of diagrams.
- Variable control – allows the users to control the process (modify the values of variables).
- Alarm confirmation – allows the users to confirm the alarms.

System Requirements

Asix Mobile may be run on mobile devices with Android, iOS systems, and on computers with Windows, Linux or OS X systems system via Chrome and Firefox browser.

Licensing

Asix Mobile requires at least version 8.1 of Asix. Evo. Each Asix. Evo server licence allows you to use one mobile device at no extra charge. Additional customer licenses are chargeable. The details of licensing terms and conditions, and licence prices are shown in the current Asix.Evo Commercial Information.

ASKOM

ASKOM Sp. z o.o.
POLAND
44-100 GLIWICE
ul. Józefa Sowińskiego 13
tel. +48 32 30 18 100
fax +48 32 30 18 101
e-mail: office@askom.pl
www.askom.pl
www.asix.com.pl