

FutureNow FNIP-4xSH

Installation and Operation Manual

Four Channel Window Shading Controller with Local Inputs

/Surface and DIN Rail mountable/



The FNIP-4xSH Window Shading Controller

OVERVIEW

The FNIP-4xSH can be used for controlling four motorized window coverings, such as shades, shutters, blind, curtains, awnings or projection screens and any other devices equipped with four-wire bidirectional AC motors with built-in limit switches.

The module accepts controls either via its local inputs, via custom TCP protocol or via its built-in web interface.

Any device equipped with web browser (Computer, smart phone, tablet) can configure, and operate the module via local network.

Free Android and iOS apps are available.

The module can be used independently or as part of a complex control system in residential, or commercial installations.

In addition to the outputs, the FNIP-4xSH also provides local inputs for manual control, which give the customer the ability of using the system even before a central controller is installed or the network is built, offering stand-alone operation. This also improves reliability since the operation of the outputs via the inputs do not rely on a controller or network components.

The manual inputs are usually connected to momentary wall switches and function similarly to traditional light switches.

The inputs can also be used as independent digital inputs, for example to monitor the status of different contact sensors or if connected to a programmed output of a security system, its status (armed/disarmed/in alarm) can be determined remotely.

MAIN FEATURES

Robust Operation

- Ideal for motorized window coverings, projection screens, awnings, etc.
- 4 outputs for controlling 4 four-wire (up/down/neutral) bidirectional AC motors
- 4x2 (up/down) galvanically isolated inputs for fully and partly open/close and stop commands
- Up, Down, Stop commands
- Delay when changing direction to protect the motor
- Mechanical and electronic latch preventing the motor from being driven in both directions at the same time

Ultimate Flexibility

- Adjustable up and down motor running times
- Separate power inputs for powering motors with different voltage requirements
- "Motor in motion" indication
- Percentage indication of position
- Standard DIN rail mount
- Operation without a controller or network connection, via local inputs
- Local inputs can also be used to monitor door/window contacts, motion, water leakage and any other sensor type

Enhanced Connectivity

- New TCP/IP interface offers remote control and advanced management
- Built-in web server for configuration, control and monitoring
- Remote control and monitoring from network enabled smartphones and tablets
- Multiple users with different user rights
- TCP communication with simple ASCII commands
- Automatic event reports about status changes of inputs and outputs
- Firmware upgrade via LAN

Industry-Wide Interoperability

- Full Integration with home controllers from most major vendors (Control4, AMX etc.)
- Interoperable with any momentary contact switches available on the market



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INSTALLATION

WARNING! Since the module is connected to line voltage, the installation must be performed by a qualified electrician in accordance with the local electrical codes!

Turn off power (main circuit breaker) before installation!

Terminal connections

Each module has a wiring diagram on the front which can help the installer when connecting the modules at installation sites. See figure 2.

The terminal connections of the FNIP-4xSH are listed in Table 1.

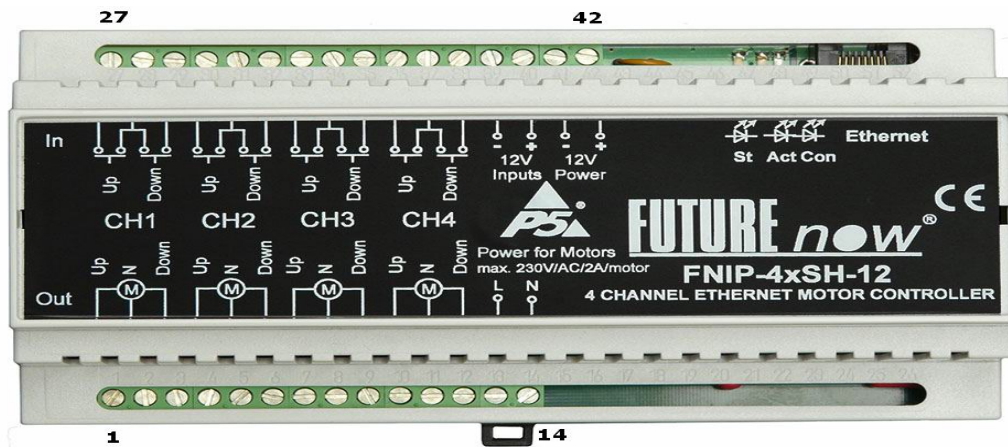


Figure 2. FNIP-4xSH front view with terminal connectors

No.	Description	No.	Description
1.	Motor 1. Up Out	27.	Motor 1. Up Input
2.	Neutral	28.	Inputs common
3.	Motor 1. Down Out	29.	Motor 1. Down Input
4.	Motor 2. Up Out	30.	Motor 2. Up Input
5.	Neutral	31.	Inputs common
6.	Motor 2. Down Out	32.	Motor 2. Down Input
7.	Motor 3. Up Out	33.	Motor 3. Up Input
8.	Neutral	34.	Inputs Common
9.	Motor 3. Down Out	35.	Motor 3. Down Input
10.	Motor 4. Up Out	36.	Motor 4. Up Input
11.	Neutral	37.	Inputs common
12.	Motor 4. Down Out	38.	Motor 4. Down Input
13.	Power for Motors Live	39.	Power for the Inputs GND
14.	Power for Motors Neutral	40.	Power for the Inputs +12 - 36 V DC
		41.	Power for the Main Circuit GND
		42.	Power for the Main Circuit +12 - 36 V DC

Table 1. FNIP-4xSH terminal connector

Wiring

A typical wiring diagram is shown in figure 3.

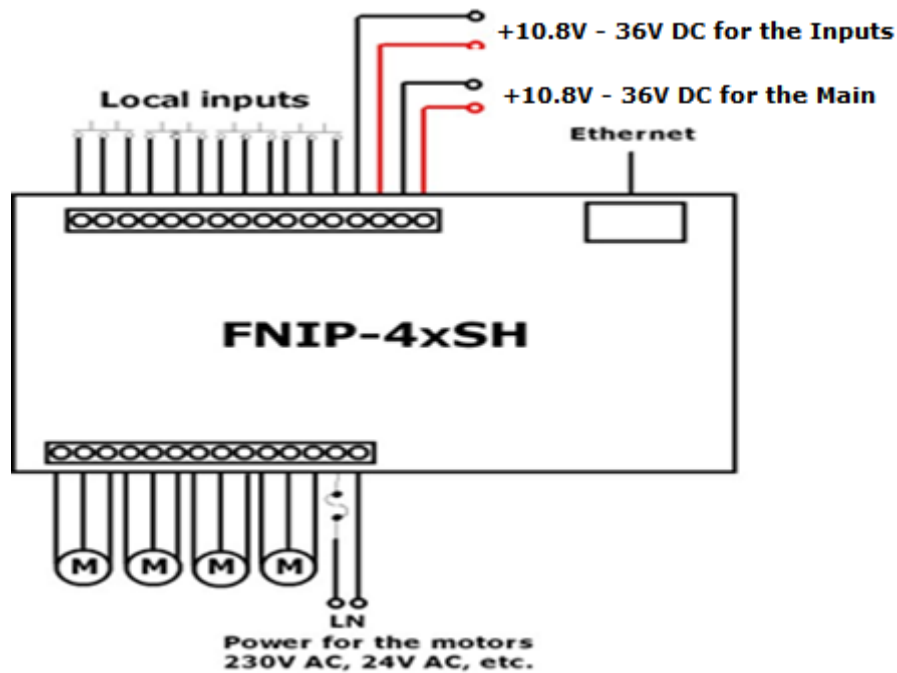


Figure 3. Wiring diagram

The input power connected to terminals 13 and 14 are switched to outputs for all motors, therefore all motors must have the same voltage requirement.

Providing other voltage (e.g. 24V AC) across terminals 13 and 14 motors with this power requirement can also be used but all four motor has to have the same power requirement.

After making all connections, check if the outputs work via the inputs (only applicable if input power is connected across terminals 39-40.) The status LEDs will assist you in tracking the status of the outputs and see if the inputs work properly.

Recommended wire types

- Ethernet cable: Twisted pair, CAT5 or better.
- Outputs: According to the loads attached to the outputs (current and voltage).
- Inputs: A pair of low or high voltage cables.
- The inputs use low voltage signals. The inputs use low voltage signals.

All wires used and the way they are run must be in accordance with the local electrical codes.

Keep line voltage wiring physically separated from Ethernet and signal wiring!

Power requirements

The module must be powered through terminals 41 and 42. by 12 - 36V DC

Please pay attention to the correct polarity!

The galvanic isolation of the inputs is only effective when a separate power supply is used for powering the inputs. The FNIP-4xSH has separate power input terminals (39 and 40) for this purpose. If you choose not to use the extra protection the isolated inputs offer (not recommended), you can use the same power to supply both the main circuit and the inputs. In that case, simply connect terminal 39 to terminal 41 and terminal 40 to terminal 42.

Ethernet connection

Connect the module to the LAN via the RJ45 Ethernet socket.

Outputs

The module has four motor driver outputs each allows for connecting 230V or lower voltage four-wire bidirectional AC motors. Note that all the four motors have to have the same power requirement. The power for all the motors is the same, provided across terminals 13 and 14.

Local Inputs

For each output, there are two local inputs to allow for manual operations. If you do not wish to use local inputs, this section may be skipped.

Connect momentary switches across the appropriate input terminals and the input common terminal for both the 'up' and the 'down' directions.

WARNING! Avoid supplying voltage on these terminals!

All input ports are galvanically isolated to protect the module against unwanted effects of ground loops, overvoltage or misconnections.

It should be noted that the galvanic isolation is only effective when an independent power supply is used for powering the inputs. The FNIP4xSH has separate power input terminals for this purpose. See section “Power Requirements” if you don’t want to use two separate power supply units.

To assure an additional level of safe and reliable operation, the inputs are also software protected against the effects of noise spikes that usually occur when heavy inductive loads (motors, fans, etc.) are switched nearby. In most systems lacking this level of protection, these spikes may result in unwanted operation.

Three-way switches can be implemented by simply connecting multiple momentary switches in parallel.

Status LED Indicators

In order to make installation and debugging easier, communication and channel status are displayed via LEDs. (Remove cover to see the LEDs)

Use the board layout drawing in Figure 4. to locate the status LEDs.

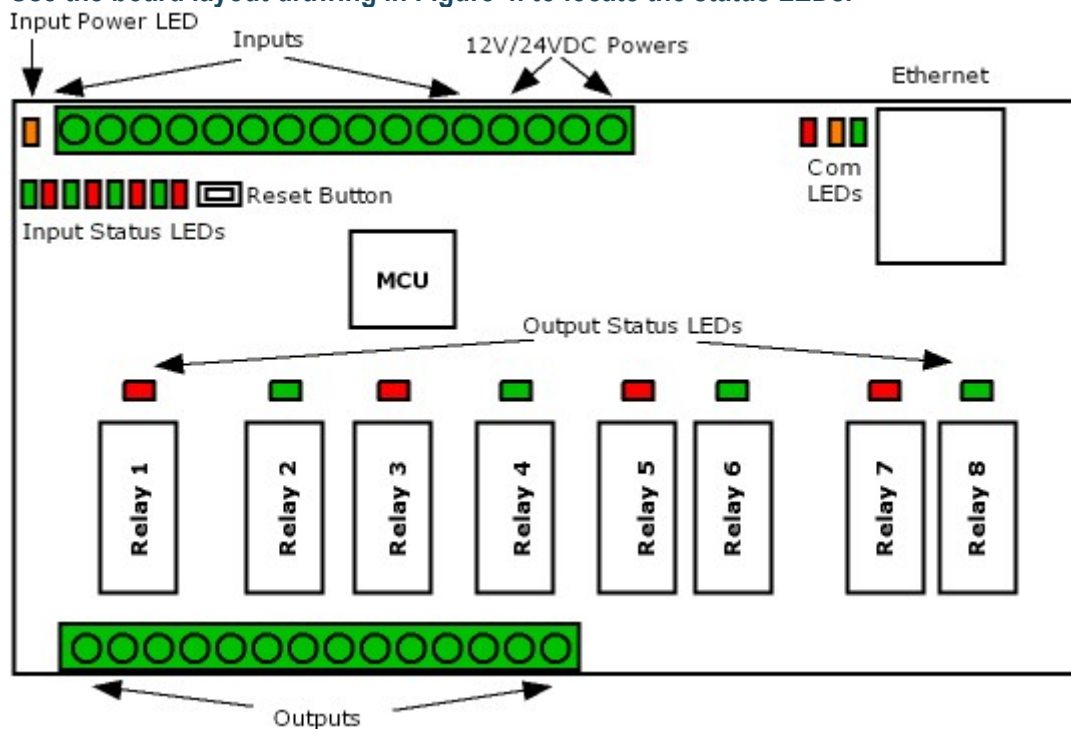


Figure 4. The board layout of the FNIP-4xSH

Output status LEDs

Each channel has two dedicated (red and green) output status LEDs. The green LED is on when the corresponding output is activated (the motor is running). The red LED indicates the direction. It’s on if the motor is moving down.

Input status LEDs

Each channel has two dedicated (red and green) input status LEDs. The green LED is on while the “up” input is active and the red LED is on while the “down” input is active.

Input power LED

When on, indicates that the input power is present.

Communication LEDs

Con LED

The Con LED is on when the module is connected to the Ethernet network.

Act LED

It indicates that communication via Ethernet is in progress.

St LED

This status LED indicates that the bootloader of the module is active. This should only happen during firmware update.

Please never disconnect power from the module while this LED is on!

If this LED stays on after the firmware update, please contact your distributor!

CONFIGURATION

Configuration can be done either via the built-in website or via TCP/IP connection.

Configuration via the web interface

The FNIP-4xSH automatically receives an IP address from a DHCP server.

In the lack of a DHCP server or when DHCP option is disabled on the network configuration page of the module, the default IP address of 192.168.1.25 will be assigned. The same IP address will be assigned when connecting the module directly to your computer using an Ethernet cross cable (no DHCP server).

Use the FNIP Network Discovery Utility or other network discovery software to find all FutureNow IP devices on your network.

Connecting to the module's web server

Connect to the web interface of the module by using a web browser. Clicking on one of the units found by the FNIP Network Discovery Tool will automatically do that for you.

You can also access the module's internal website from an Internet browser using the host name (FNIP8x16A by default) or the IP address.

Authentication

Once connected to the module's website, you will be asked to identify yourself, as seen in figure 5.

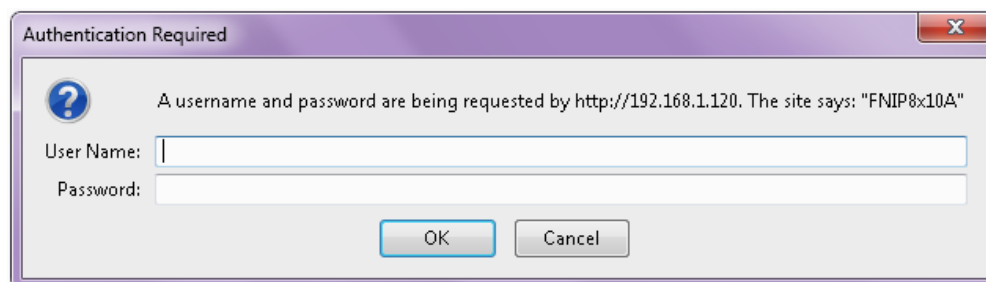


Figure 5. Authentication Window



<https://automataotthon.hu>

The default user name: **admin**

The default password: **futurenow**

The default user has administrator rights and offer access to all settings and functions.

Once logged in, you will automatically be directed to the control page. you can see the details in the

Operation via the built-in web **server** section.

You can use the tabs on the top of the screen to navigate between the different control and configuration pages.

Network settings

To make basic network settings click the **Network** tab. The network configuration page is shown in Figure 6.

You can choose between using DHCP or static IP address here.

Enable HTTP authentication

HTTP authentication can be disabled to make HTTP communication easier.

Enable broadcast messages

All FNIP modules periodically send out heartbeat broadcast messages with basic information about themselves. This helps discovery tools and mobile apps to find them. These broadcasts can be disabled if constant traffic on the network is a problem.

Please note disabling broadcast messages will hinder the Discovery Tool and the setup of the mobile applications.

Multicast address

Used to create groups of FNIP modules that react to scene activation commands only if set to the same multicast address as the scene activator module.

More information about the scenes is in the

Scenes chapter.

Control Input **Network** Channel Scenes Users Firmware Logout

Network settings:

Host Name:

Enable DHCP

Enable TCP

Enable HTTP Authentication

Enable Broadcast Messages

TCP Port:

IP Address:

Gateway:

Subnet Mask:

Primary DNS:

Secondary DNS:

Multicast Address:

MAC Address: D8:80:39:6E:1C:A2

Figure 6. Network Configuration Page

Users and user rights

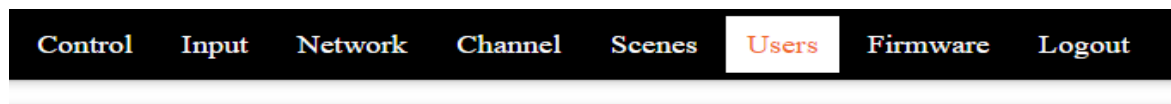
Three different users can be defined each with three different user rights: **admin**, **actor** and **observer**.

Admins have access to all functions, including control of the outputs, monitoring the status of the inputs and outputs and changing all the settings.

Actors are allowed to control the outputs and monitor the status of the inputs and the outputs, but are not allowed to change any settings.

Observers are allowed to monitor the status of inputs and outputs but not allowed to control the outputs, nor can they change any settings.

To change user settings, click on the **User** tab in the top menu. The user configuration page is shown in Figure 7.



Username and password settings

Username:	<input type="text" value="admin"/>
Password:	<input type="password"/>
Verify password:	<input type="password"/>
<input type="button" value="Elküldés"/>	

User Administration

Users:	<input type="text" value="user1"/>
Username:	<input type="text" value="user1"/>
User role:	<input type="text" value="actor"/>
<input type="checkbox"/> User Enabled	
Password:	<input type="password"/>
Verify password:	<input type="password"/>
<input type="button" value="Elküldés"/>	

Figure 7. User Configuration Page

Channel settings

On the **Channel** page the outputs and inputs can be renamed. Input modes can also be chosen here. The input mode determines the logical connection between the input and the output of the given channel. For details on possible input modes and how they work, see [Operation via the local inputs](#) section of this document.

Control
Input
Network
Channel
Scenes
Users
Firmware
Logout

Output label:	Motor start delay (0.1sec):	Input label:	Input mode:	Scene no.:	Run time:	Direction:
<input type="text" value="Channel1"/>	<input type="text" value="0"/>	<input type="text" value="Channel1"/>	<input type="text" value="Up"/>	<input type="text" value="1"/>	<input type="text" value="15"/>	Up
		<input type="text" value="Channel1"/>	<input type="text" value="Down"/>	<input type="text" value="1"/>	<input type="text" value="15"/>	Down
<input type="text" value="Channel2"/>	<input type="text" value="0"/>	<input type="text" value="Channel2"/>	<input type="text" value="Up"/>	<input type="text" value="1"/>	<input type="text" value="15"/>	Up
		<input type="text" value="Channel2"/>	<input type="text" value="Down"/>	<input type="text" value="1"/>	<input type="text" value="15"/>	Down
<input type="text" value="Channel3"/>	<input type="text" value="0"/>	<input type="text" value="Channel3"/>	<input type="text" value="Up"/>	<input type="text" value="1"/>	<input type="text" value="15"/>	Up
		<input type="text" value="Channel3"/>	<input type="text" value="Down"/>	<input type="text" value="1"/>	<input type="text" value="15"/>	Down
<input type="text" value="Channel4"/>	<input type="text" value="0"/>	<input type="text" value="Channel4"/>	<input type="text" value="Up"/>	<input type="text" value="1"/>	<input type="text" value="15"/>	Up
		<input type="text" value="Channel4"/>	<input type="text" value="Down"/>	<input type="text" value="1"/>	<input type="text" value="15"/>	Down

Figure 8. Channel Settings Page

Motor start delay

It's the latency of the motor. (i.e: the time difference between closing the input connectors and the actual start of the motor) It's helpful to set this parameter to have the correct display of the shutter/blind position. It can be adjusted in 0,1 sec steps.

Motor running time

Set the motor running time to the length of time it takes for the shutter/blind to go from one of the extreme positions to the other. Since the time may be different in the two directions it is possible to set a different value for each direction.

Scene No

If the input is activated, this (1 – 9) Scene Activation Command will be sent out to the network. See more detailed description in the



<https://automataotthon.hu>

Scenes chapter.

Scenes

Scenes are predefined states of the outputs on the module.


FNIP scenes can be used in standalone applications without any third-party controller. FNIP modules (module groups) support 9 scenes.

If a module receives a **Scene Activation Command (SAC)**, the designated outputs will go to the defined state. Any module in the group can send and receive this command. SAC can be triggered by an input change on this module, or on any other module in the group

Each module in the group must have the same Multicast address set on the Network page. Modules in other groups will not receive the SAC.

Definition of the scenes happens on this page by the following steps:

1. Select a scene
2. Define the action of the desired outputs.
3. Save the settings
4. Select another scene...

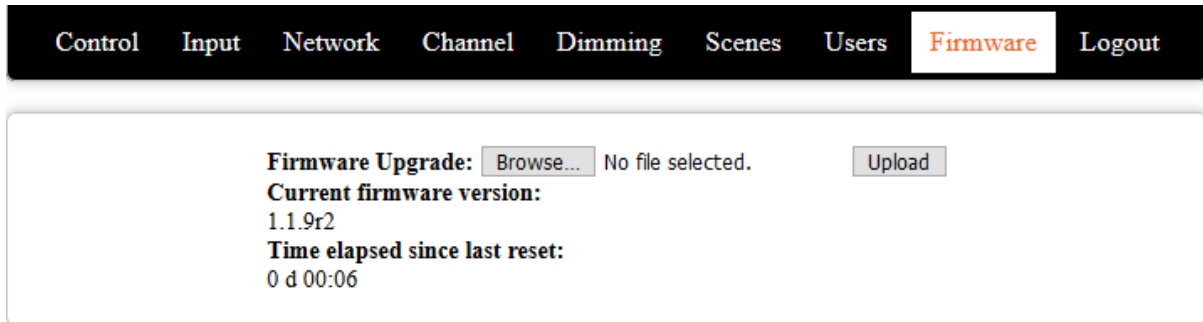


Outputs	Action	Position
Channel1	<input checked="" type="radio"/> No action <input type="radio"/> Go to	0
Channel2	<input checked="" type="radio"/> No action <input type="radio"/> Go to	0
Channel3	<input checked="" type="radio"/> No action <input type="radio"/> Go to	0
Channel4	<input checked="" type="radio"/> No action <input type="radio"/> Go to	0

Reset all All up All down Save

Figure 9. Scene setting page

Firmware Upgrade



The screenshot shows a web interface with a navigation bar at the top containing the following menu items: Control, Input, Network, Channel, Dimming, Scenes, Users, **Firmware**, and Logout. The **Firmware** menu item is highlighted in red. Below the navigation bar, the main content area displays the following information:

- Firmware Upgrade:** No file selected.
- Current firmware version:** 1.1.9r2
- Time elapsed since last reset:** 0 d 00:06

Figure 10. Firmware upgrade page

Upgrading the firmware in the module is possible via the network.

On the **Firmware** page click browse and find the new firmware on your PC. The latest firmware versions are always downloadable from the website of P5. Then click **Upload**. The **St** LED turns on and stays on or blinks during firmware update. After uploading the new firmware – which takes about a minute – the module will automatically restart.

The version of the current firmware and the time since the last reset is also displayed on this page.

Resetting to factory defaults

Holding the reset button for at least than 2 sec while powering up the module will set all the settings to factory defaults.

OPERATION

Operation via the local inputs

The inputs can be activated by shorting the appropriate input terminal to the input common terminal.

Throughout this section it is assumed that momentary switches are connected to the local inputs.

In order to power the circuit for the local inputs, an input power of 12-32 V DC must be applied across terminals 39 and 40. In case local inputs are not needed, this power connection is not necessary.

Input Modes

The inputs are factory defaulted to toggle mode and can be changed via the web interface of the dimmer or by TCP/IP commands. The input modes work as follows.

1. Direction mode (input mode 1/factory default)

There are separate directional inputs for the two possible motor directions. If the motor is inactive (off) and an input is activated, then the motor will start moving in one direction. If the same input is activated again while the motor is still running, it will stop. Activating the other input while the motor is stopped will cause the motor to move in the other direction. The motor will continue running until the motor running timer expires (factory default is 1min.) or the built-in limit switch in the motor turns the power off.

2. Independent inputs

Inputs can be detached from their corresponding outputs, in which case they will have no effect on them. However, the status changes of the digital inputs will still be reported via the open TCP/IP sockets and on the Control page of the built-in website. This can be used for monitoring the status of digital sensors connected to the inputs. This can be used to monitor the status of digital sensors connected to the inputs or to activate lighting scenes or macros whenever the input gets triggered.

3. Toggle mode

Each short button press toggles the motor running status. If the shutter/blind is not moving, it starts to move in the opposite direction of the last move. If the motor is running while the input is closed the motor stop.

This mode mostly used to control the shutter/blind with a single button only.

4. Scene on close mode

If an input gets closed the Scene Activation Command will be activated

5. Scene on open mode

If an input gets opened the Scene Activation Command will be activated

Operation via the built-in web server

Clicking on **Control** in the top menu the control page in Figure 11. will open. Via this page the outputs can be controlled and the status of the blinds are displayed.

For simplicity, throughout this section the word “blind” will be used for all the motorized window coverings and other devices that can be controlled by the FNIP-4xSH.

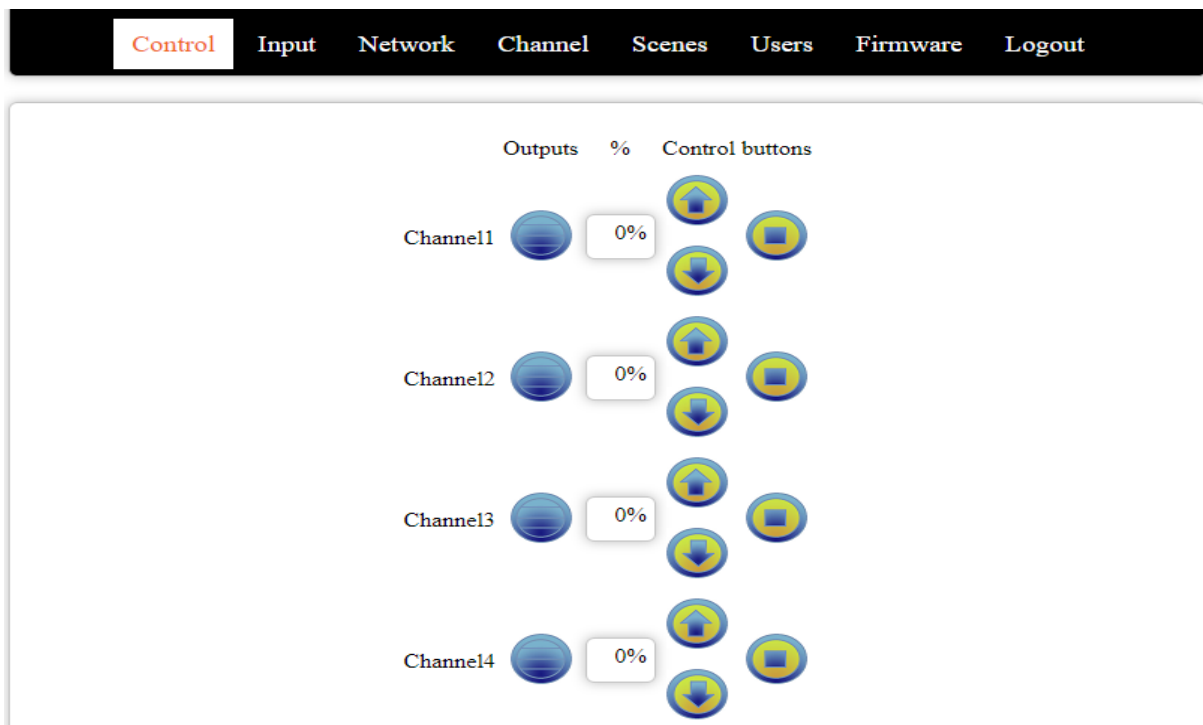


Figure 11. Control Page

The blind statuses are indicated by the following icons:



The blind is fully open



The blind is fully closed



The blind is moving up (opening)



The blind is moving down (closing)



The blind is partly open. The position is also displayed. (e.g. 52% open)

Controlling the blinds is also possible via this web page:



Clicking on the “up arrow” icon will start moving the blind up (opening).



Clicking on the “down arrow” icon will start moving the blind down (closing).



Clicking on this icon will stop the blind at the current position.

Operation via TCP

To achieve the easiest integration with most controllers used in home and commercial applications, the module can be controlled by raw TCP protocol using simple ASCII based commands.

The TCP/IP communication can be enabled/disabled via the Network settings screen.

The TCP Communication Protocol Description is available upon request.

Event notifications

There are automatic event notifications sent to clients via the open socket connections whenever the status of an input or output changes.

The TCP/IP communication can be enabled/disabled via the Network settings page.

Most third-party automation controllers that can implement the simple communication protocol of the FNIP-6x2AD and they are able to control the FutureNow FNIP-6x2AD. The following are the most widely used:

- AMX
- Control4



<https://automataotthon.hu>

- Crestron
- RTI
- Savant
- Extron
- DemoPad

Software modules/plug-ins for the above controllers are available or P5 will provide full assistance in creating them.

Android and iOS applications are also available.

Besides these special-purpose controllers, there are many applications for embedded industrial PC boards, PCs and smartphones running Linux, Windows, Mac OS.

TECHNICAL SPECIFICATIONS

Power Requirements	
Main Circuit	10.8 – 36 VDC max. 340mA @ 12V max. 170mA @ 24V
Inputs	9 – 36 VDC max. 20mA @ 12V max. 45mA @ 24V
Outputs	
Type	4 x Up/Down relay outputs
Load	max. 4x2A@250VAC for inductive (cos(fi)=0.4) loads
Inputs	
Type	4 x 2 optically isolated, noise protected, common GND digital inputs
Communication	
Control	TCP (simple ASCII TCP commands) Build-in web server Local inputs (dry contacts, momentary switches)
Input modes	Toggle, monostable, input follow, independent
iOS/Android app	P5 iOS/Android apps
Interoperability	Drivers available for most systems
Connectors	
Terminals	2.5mm ²² screw terminals for both inputs and outputs
Ethernet	RJ45 Ethernet Connector
Environmental	
Operating Temperature	0 °C – 40 °C (32 °F – 104 °F)
Storage Temperature	-20 °C – 60 °C (-4 °F – 140 °F)
Humidity	Up to 93%
Physical	
Dimensions (H x W x D)	157 mm x 86 mm x 57 mm (9 DIN unit width)
Weight	0.38Kg
Installation	Standard DIN Rail Mount

Approvals

CE

Package Content

FNIP-4xSH
Quick Installation Guide

Warranty

2 years

REFERENCES

FNIP Search Utility: [FNIP Discovery Tool](#) (Registration needed on www.P5.hu)

FNIP-4xSH TCP Communication Protocol Description :

Please send an email to support@p5.hu

CONTACT DETAILS

support@p5.hu

<http://p5.hu/index.php/support/contact-technical-support>