FutureNow FNIP-12xDIO

Installation and Operations Manual
rev 10.10.2023

12 Channel Relay Switch with Local Inputs and IP communication

/DIN Rail Mountable

Figure 1. The FNIP-12xDIO relay module

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INSTALLATION

WARNING!

This equipment shall be installed in a closed cabinet with no access to live parts. Only the top enclosure of the equipment (where the label is affixed) is allowed to be accessed by the operator.

Since the module is connected to mains/line voltage, it must be installed by a qualified electrician in accordance with 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.
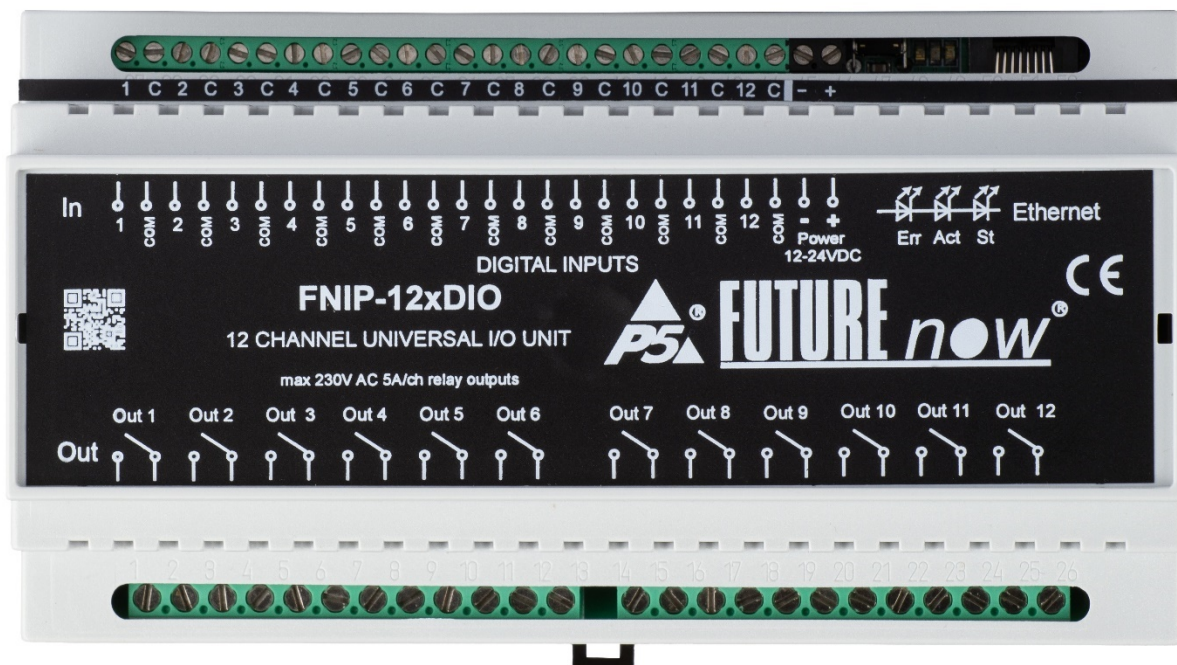

Figure 2. The FNIP-12xDIO relay module

The terminal connections of the FNIP-12xDIO are listed in Table 1.

Pos.	Description	Pos.	Description
1.	Output 1	27.	Input 1
2.	Output 1	28.	Input 1 Com
3.	Output 2	29.	Input 2
4.	Output 2	30.	Input 2 Com
5.	Output 3	31.	Input 3
6.	Output 3	32.	Input 3 Com
7.	Output 4	33.	Input 4
8.	Output 4	34.	Input 4 Com
9.	Output 5	35.	Input 5
10.	Output 5	36.	Input 5 Com
11.	Output 6	37.	Input 6
12.	Output 6	38.	Input 6 Com
14.	Output 7	39.	Input 7
15.	Output 7	40.	Input 7 Com
16.	Output 8	41.	Input 8
17.	Output 8	42.	Input 8 Com
18.	Output 9	43.	Input 9
19.	Output 9	44.	Input 9 Com
20.	Output 10	45.	Input 10
21.	Output 10	46.	Input 10 Com
22.	Output 11	47.	Input 11
23.	Output 11	48.	Input 11 Com
24.	Output 12	49.	Input 12
25.	Output 12	50.	Input 12 Com
		51.	Power for the Main Circuit -
		52.	Power for the Main Circuit + (12V – 24V DC)

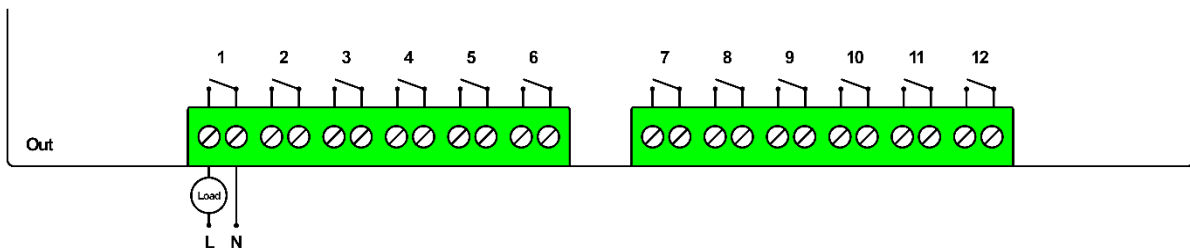Table 1: FNIP-12xDIO terminal connectors

Wiring diagrams

Input Wiring diagram
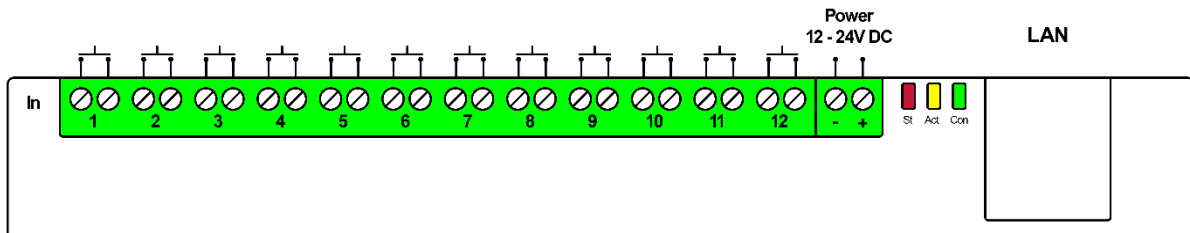
Output Wiring diagram

The output in this example is used to switch line voltage. Since the outputs provide dry contacts, any voltage that doesn't exceed the specifications can be switched.

If mains voltage is switched, outputs 1-6 must be on the same phase, so must output 7-12. The two groups can be on different phases.

Recommended wire types

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

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

Local Inputs

For each channel, there is a local input to allow manual operation. Please note that the inputs have voltage on them. Any voltage connected to the input terminals may damage the input circuits.

Communication LEDs

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

Act LED - yellow
The Act LED indicates that communication via Ethernet is in progress.

St LED - red
The status LED indicates that the boot loader 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, contact your distributor or technical support!

Outputs

The FNIP-12xDIO has 12 relay outputs. All outputs are dry contacts.

CONFIGURATION

Configuration can be done either via the built-in website or via TCP/IP connection. In the latter case the configuration interface the third-party controller provides is used.

Configuration via the web interface

Use the FNIP Network Discovery Utility software to find all FutureNow IP devices on your network. Alternatively, you can use third-party IP scanner utilities.
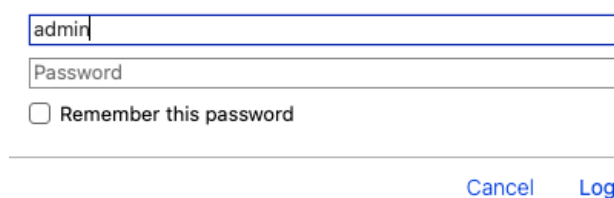
Connecting to the module's web server

You can access the module's internal website from an Internet browser using the IP address.

By default, each module obtains an IP address from a DHCP server automatically.

If there's no DHCP server available on the network, 192.168.1.25 will be assigned to the module. The same IP address will be used when connecting the module directly to your computer with an Ethernet cross cable.

Authentication

Once connected to the module's website, you will be asked to identify yourself, as seen in figure 6.

admin

Password

☐ Remember this password

Cancel   Log

Figure 6. Authentication Window

The default user name:**admin**

The default password:**futurenow**

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

Network settings

Figure 7. Network Configuration Page

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

Enable HTTP authentication

HTTP authentication can be disabled to make HTTP communication easier for third party applications.

Enable broadcast messages

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 not desirable.

Please note that disabling broadcast messages will prevent the Discovery Tool and the mobile applications from finding the modules on the network.
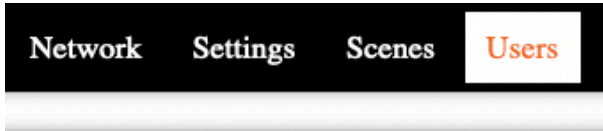
Multicast address

Used to create groups of FNIP modules that react to scene activation commands received from a module with the same multicast address.

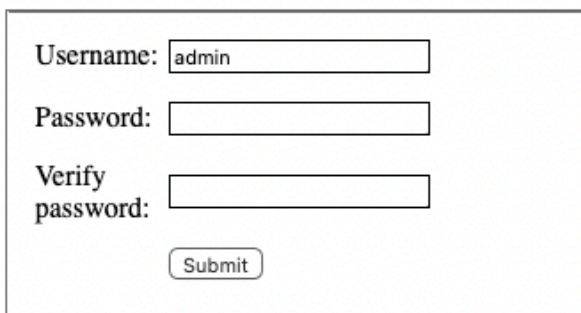More information about scenes can be found in the Scenes chapter.

Username and password settings

Figure 8. User Configuration Page

Three different users can be defined, each can have three different user rights: **admin**, **actor** and **observer**.
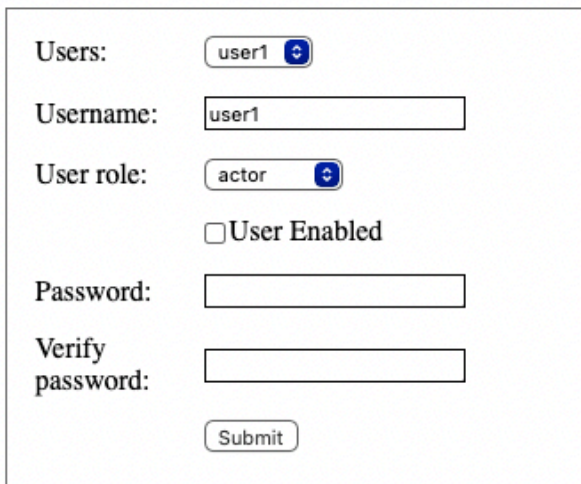
Admins have access to all functions, including control of the outputs, monitoring the status of the inputs, outputs and changing all the settings.

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.

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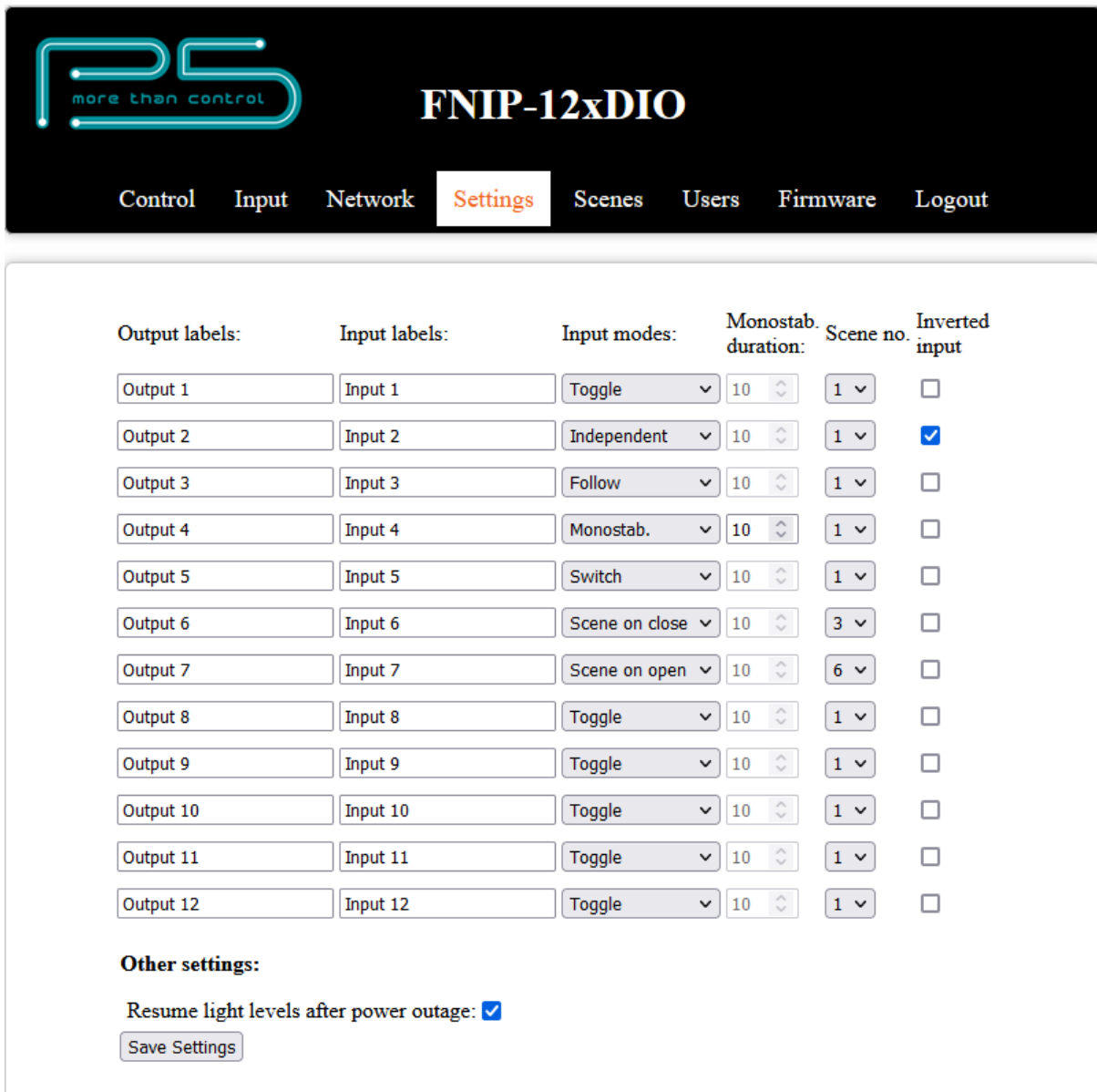
On the **Settings** page the outputs and inputs can be renamed. Input modes can also be chosen here. The input mode determines the logical connection between the input and the output of a given channel. For more details on possible input modes and how they work, see **Operation via the local inputs**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

Figure 9. Channel Settings Page

Scenes

Scenes are predefined states of the outputs.

FutureNow Scenes are developed to provide group commands for FutureNow modules used in stand-alone mode. Any input of any module in the group can trigger actions for any outputs in the same group of modules.

If a module receives a **S**cene **A**ctivation **C**ommand (SAC), the designated outputs will go to a pre-defined state. SAC can be triggered by an input change on the same module or on any 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 react to the SAC.

	Output 1	Output 2	Output 3	Output 4	Output 5	Output 6	Output 7	Output 8	Output 9	Output 10	Output 11	Output 12	Output 13
Scene 0	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off
Scene 1	On	On	-	-	-	-	-	-	-	-	-	-	-
Scene 2	Off	Off	-	-	-	-	-	-	-	-	-	-	-
Scene 3	-	-	-	-	-	-	-	-	-	-	-	-	-
Scene 4	-	-	-	-	-	-	-	-	-	-	-	-	-
Scene 5	-	-	-	-	-	-	-	-	-	-	-	-	-
Scene 6	-	-	-	-	-	-	-	-	-	-	-	-	-
Scene 7	-	-	-	-	-	-	-	-	-	-	-	-	-
Scene 8	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off	Off
Scene 9	On	On	On	On	On	On	On	On	On	On	On	On	On

Global scenes: Enabled Enables scenes between other FNIP modules on the same subnetwork

Multicast address: 224.5.5.1

Save

Figure 10. Scene setting page
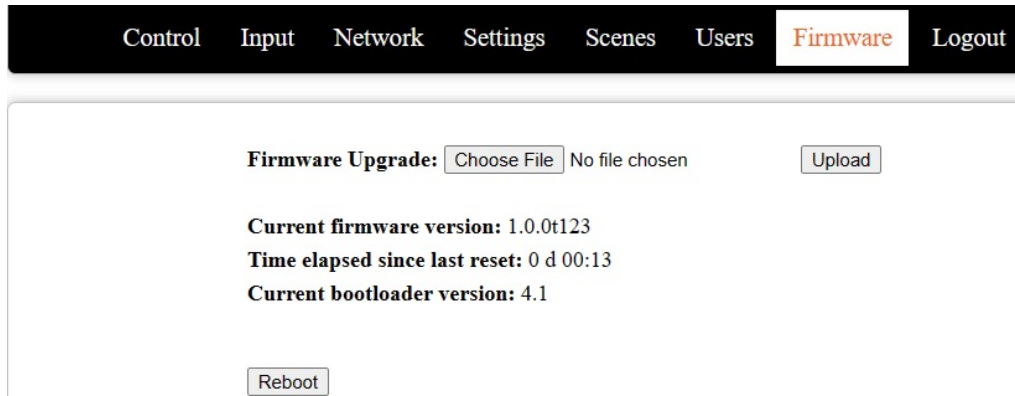
Firmware Upgrade

Figure 11. 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 P5's website. 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 current firmware version and the time since the last reset are also displayed on this page.

Resetting to factory defaults

Holding the reset button for at least 2 sec while powering up the module will set all the settings to factory defaults. **Make sure you release the button when the red LED comes on.**

OPERATION

Operation via the local inputs

The inputs can be activated by shorting (or opening) the appropriate input terminal.

Input modes

The inputs are factory defaulted to toggle mode and can be changed via the web interface of the module as seen in **Figure 9. Channel Settings Page** or by TCP/IP commands. The input modes work as follows

1. **Toggle mode (factory default)**

Each short button press toggles the corresponding output

2. **Independent inputs**

Inputs has no effect on the channel. However, the measured resistance will still be reported via the open TCP/IP sockets and on the **Input** page of the built-in website. This can be used for monitoring the status of connected to the inputs or to activate lighting scenes or macros whenever the input gets triggered.

3. **Input follow mode**

The status the outputs will follow the state of the corresponding input. The output will be on while the momentary switch is pressed and off while it is released.

4. **Monostable mode**

The outputs can be programmed to turn on for an adjustable amount of time when the corresponding input trigger got off. (Timer start, when the input contact is released e.g: staircase lighting).

5. **Switch mode**

This mode makes it possible to use maintained (standard light switches) instead of momentary switches on the inputs. Each trigger of the switch (On or Off) will toggle the outputs. Please note that the position of the switch – similarly to three-way switches – will not determine the status of the output.

6. **Scene on open mode**

If an input gets inactive the scene assigned to the input will be executed.

7. **Scene on close mode**

If an input gets active the scene assigned to the input will be executed.

8. Inverted Input

This checkbox inverts the active mode of the inputs. Opening (open circuit) the input instead of closing (short circuit) will be considered active.

Operation via the built-in web server

Control page

Once logged in, you will automatically be directed to the control page, where you can control the outputs directly.
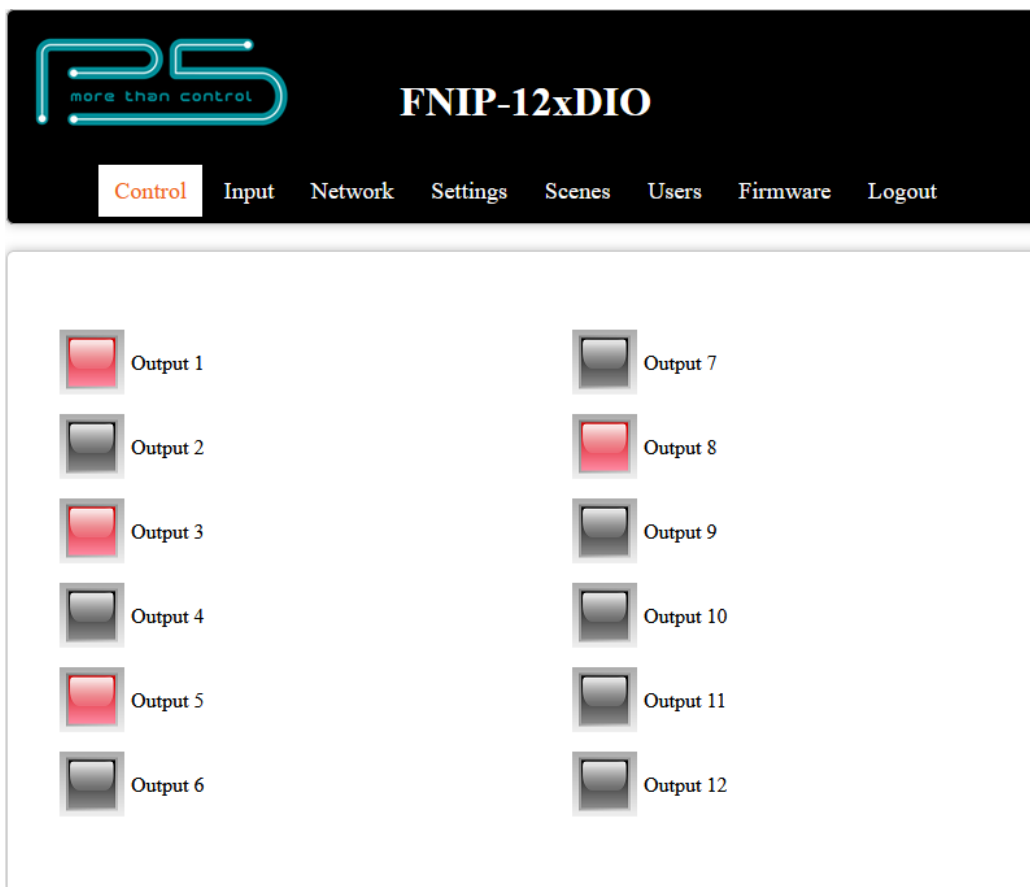

Figure 12. Control Page

Input page

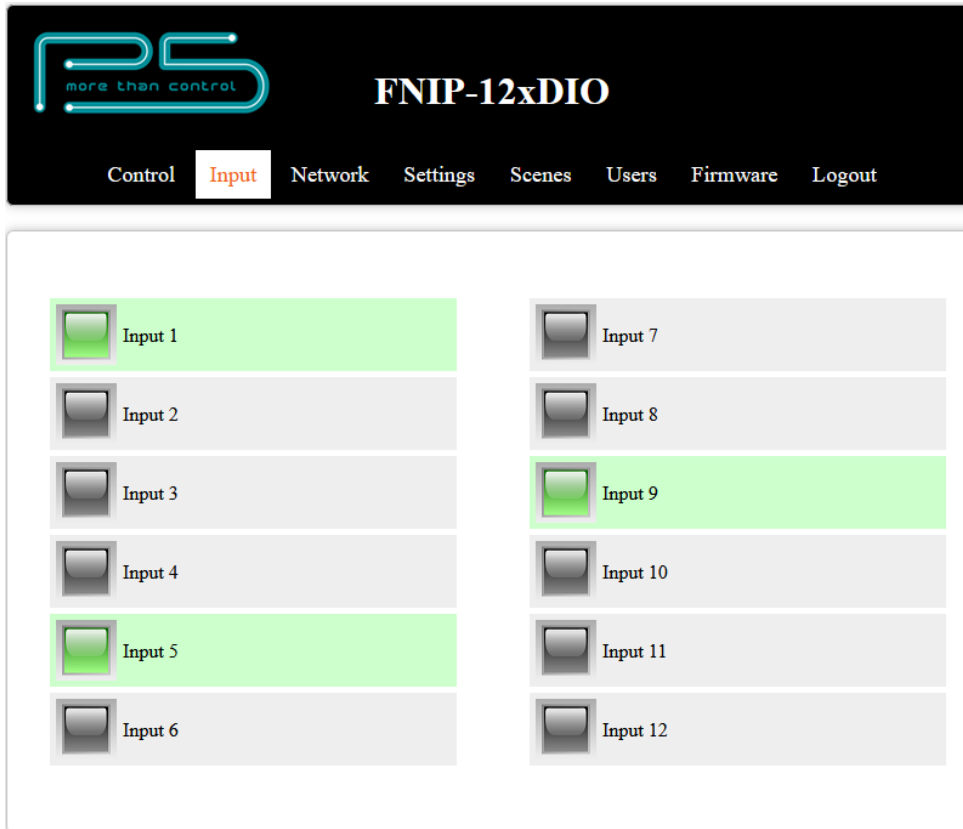This page displays the logical status of the inputs.

Figure 13. Input Page

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

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

Basically, any third-party controller that can implement the FNIP-12xDIO's simple communication protocol can control the module. The following controllers are the most widely used:

- AMX
- Control4
- Crestron
- RTI
- Savant
- Fibaro
- Extron
- Neets (biamp)
- Home Assistant
- QSYS

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

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

TECHNICAL SPECIFICATIONS

Power Requirements	
	12 – 24 VDC (10.8V - 36V DC), max 280 mA @ 12V, 150 mA @ 24V
Outputs	
Type	12 x SPST NO, dry contacts
Load	max. 5A@250VAC or 24VDC
Inputs	
Type	12 digital inputs
Communication	
Control	TCP (simple ASCII TCP command)
	Built-in web server
	Local inputs (resistance detection)
Channel modes	Toggle, monostable, input follow, independent
Interoperability	Drivers available for most systems
Connectors	
Input Terminals	1.5mm² screw terminals
Output Terminals	2.5mm² screw terminals
LAN (10Mb/s)	RJ45 Ethernet Connector
Environmental	
Operating Temperature	0 ºC – 40 ºC (32 ºF – 104 ºF)
Storage Temperature	-20 ºC – 60 ºC (-4 ºF – 140 ºF)
Humidity	Up to 93% (Non condensing)
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	Package Content	Warranty
CE	FNIP-12xDIO	2 years