

# **FutureNow FNIP-12xPWM**

## **Installation and Operation Manual**

rev 14.10.2020

12 Channel RGB(W) LED Dimmer  
/Surface and DIN Rail mountable/



**Figure 1. The FNIP-12xPWM LED dimmer module**

## OVERVIEW

The FNIP-12xPWM is used for switching and dimming low voltage LED strips using the constant voltage PWM method.

The outputs can be controlled via the local inputs and through the network using TCP/IP commands or the built-in web interface.

The local inputs 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. The home owner can decide later on what controller or system to use.

This also improves reliability since the operation of the outputs do not rely on any other device. If network or programming errors should occur, the lights still remain controllable.

The inputs can also be used as independent digital inputs for remote monitoring various sensors, such as water leakage sensor or door contacts, or even an output of a security system (armed/disarmed/in alarm).

The local inputs are usually connected to momentary wall switches and work similarly to traditional light switches.

The inputs can also be used to recall pre-defined scenes. See the **Scenes** section for more details.

The FNIP-12xPWM connects to the network via an RJ45 Ethernet connector.

The outputs can be used individually or in groups of three or four depending on what types of LEDs are to be controlled. Low voltage single colour LEDs or halogens are controlled by one output each. RGB LED strips take three outputs while RGBW LED strips need four outputs. The possible grouping of the outputs:

Output 1,2,3 – individual outputs or R1,G1,B1

Output 4,5,6 – individual outputs or R2,G2,B2

Output 7,8,9 – individual outputs or R3,G3,B3

Output 10,11,12 – individual outputs or R4,G4,B4 or W1,W2,W3

where W1,W2,W3 are the white channels of RGBW LED strips connected to RGB groups.



## Main features

- Ideal for dimming single colour or RGB LED strips
- 12 outputs for switching and dimming 12 single colour, 4 RGB or 3 RGBW LEDs or low voltage halogens
- 12 galvanically isolated multi-purpose inputs for direct control or connecting digital sensors
- 255 dim levels
- 24 bit colour depth
- Colour picker to set output colour easily
- Colour fade with adjustable speed
- Input "gestures" for output toggle, recall preset colours and colour fading
- Preset dim level – outputs will go to that level when turned on
- Dim level memory - Modules remember their last dim level. When next turned on, lights will return to the last remembered value
- Adjustable minimum and maximum dim levels
- Adjustable ramp rates
- Overcurrent protection
- Standard DIN rail mount

### 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 smart phones, 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

- Integration with home controllers from most major vendors (Control4, AMX etc.)
- Compatible with any momentary contact switch

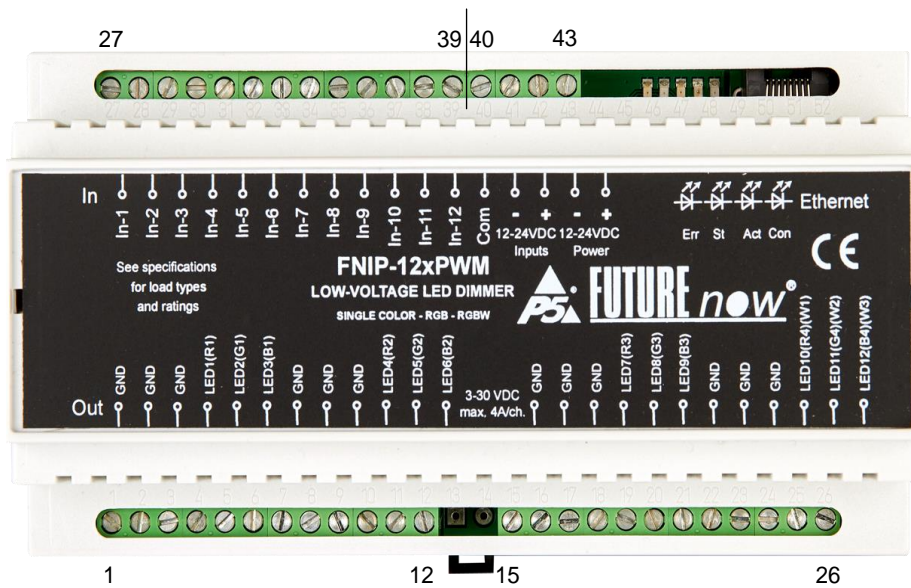
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# INSTALLATION

## Terminal connections

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



No.	Description	No.	Description	No.	Description
1.	GND	14.	-	27.	Input 1
2.	GND	15.	GND	28.	Input 2
3.	GND	16.	GND	29.	Input 3
4.	LED1(R1)	17.	GND	30.	Input 4
5.	LED2(G1)	18.	LED7(R3)	31.	Input 5
6.	LED3(B1)	19.	LED8(G3)	32.	Input 6
7.	GND	20.	LED9(B3)	33.	Input 7
8.	GND	21.	GND	34.	Input 8
9.	GND	22.	GND	35.	Input 9
10.	LED4(R2)	23.	GND	36.	Input 10
11.	LED5(G2)	24.	LED10(R4)(W1)	37.	Input 11
12.	LED6(B2)	25.	LED11(G4)(W2)	38.	Input 12
13.	-	26.	LED12(B4)(W3)	39.	Input Common
				40.	Power for the Inputs GND
				41.	Power for the Inputs +10V - +36V
				42.	Power for the Main Circuit GND
				43.	Power for the Main Circuit +10V - +36V

## Wiring

An example wiring diagram where two RGB and a single colour LED strips are controlled is shown in figure 3. In this example all the LED strips and the module are powered by separate power supplies. You can use the same power supply if you use same voltage LED strips and if it can supply enough power for all the LEDs and the module.

**Please note that if you use the same power supply to power the module and the LEDs, the GND of the Power for the Main Circuit (terminal 42) must be connected to one of the GND terminals on the output side (the bottom of the module). If you use multiple power supplies, all of their GNDs must be connected there too. Failing to do so may damage the module. The bottom side GND terminals are connected together internally.**

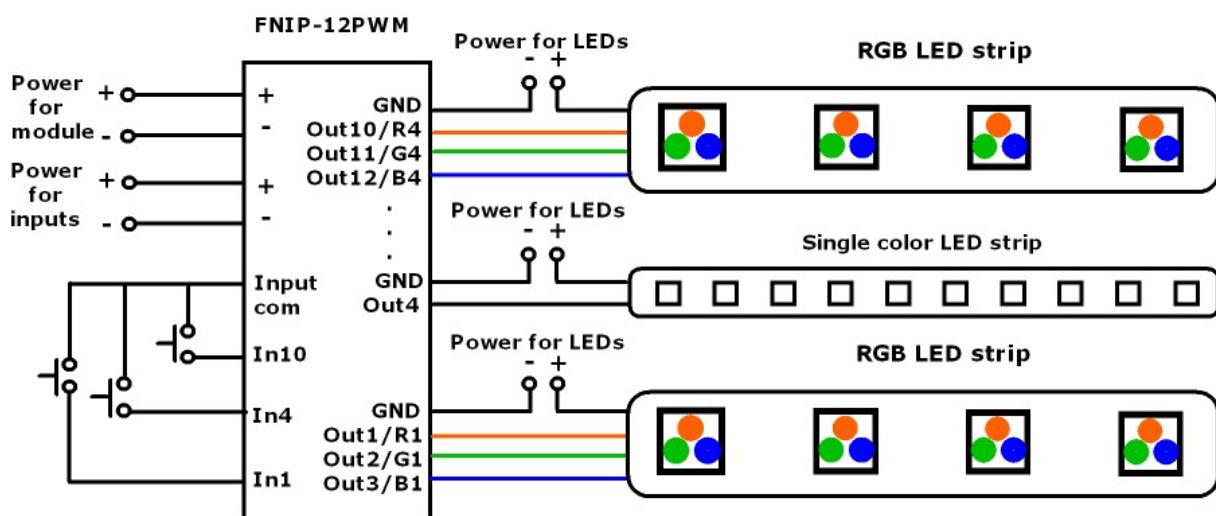


Figure 3. Sample wiring diagram

## Recommended wire types

- Ethernet cable: Twisted pair, CAT5 or better.
- Outputs: According to the loads attached to the outputs (current and voltage).  
**Please note that because of the low voltage, high currents are flowing through the wires that drive the LED strips, so to avoid high voltage drops and too much heat dissipating on the wires, make sure you use the correct wire gauge.**

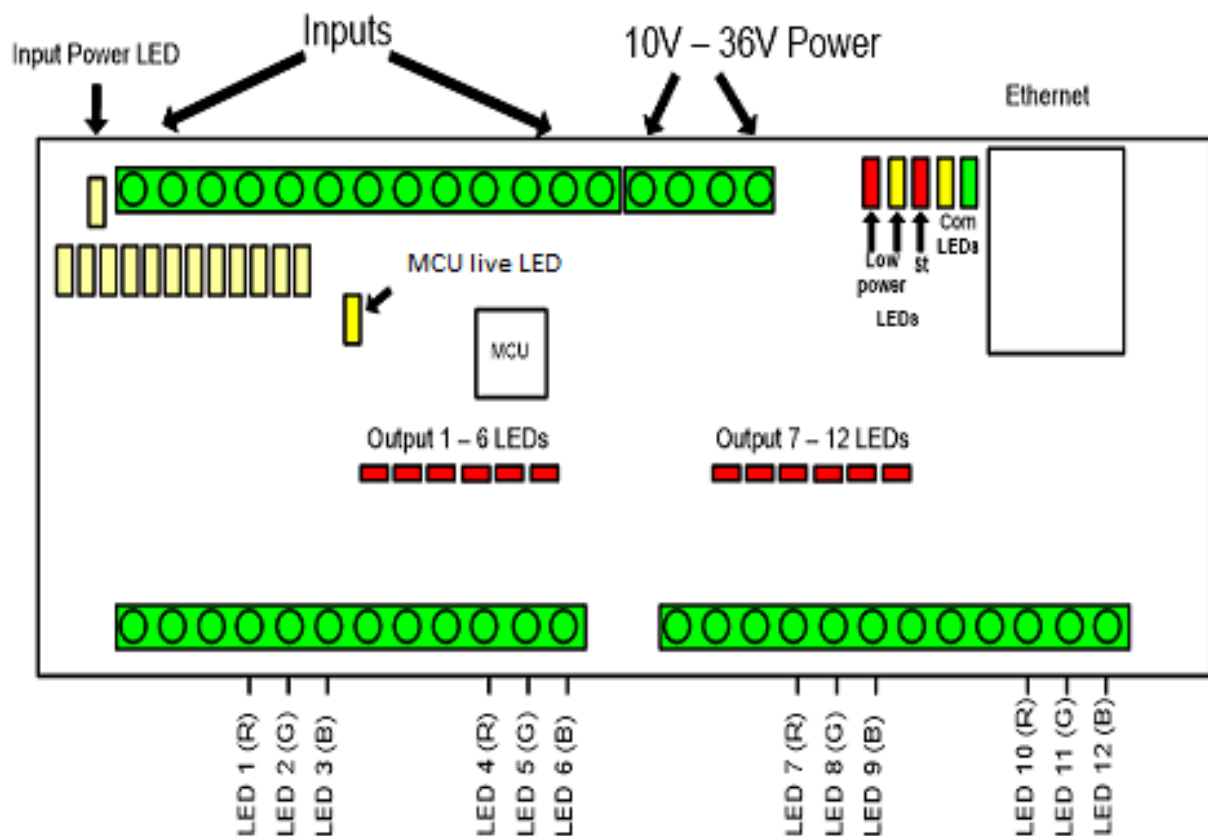
- Inputs: A pair of low or high voltage cables. The inputs use low voltage signals.

### Power requirements

The module must be powered through terminals 42 and 43. by 10V - 36V DC

In case the local inputs are used the inputs must also be powered by 10V - 36V DC across terminals 40-41.

**Please make sure that the polarity is correct.**



### Ethernet Connection

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

### Local Inputs

For each output, there is a local input to allow manual operation. If you do not wish to use local inputs, this section may be skipped.



Connect dry contacts (pushbuttons, momentary switches, relay contacts, etc.) across the appropriate input terminals and the input common terminal.

**WARNING!** Avoid supplying voltage on these terminals!

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

The galvanic isolation is only effective when a separate power supply is used for powering the inputs on terminals 40, 41.

If you choose not to use the extra protection the isolated inputs offer, you can use the same power to supply both the main circuit and the inputs. In that case simply connect terminal 41 to terminal 43 and terminal 40 to terminal 42.

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.

### Input status LEDs

Each input has a dedicated status LED that illuminates solid green when the corresponding input is activated.

### MCU live LED

When on, indicates that the FNIP-12xPWM unit is running.

### Input power LED

When on, indicates that the input power is present.

### Output status LEDs

Each output has a dedicated status LED that illuminates solid red when the corresponding output is activated.

## **Communication LEDs**

### **Con LED - green**

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

### **Act LED - yellow**

It indicates that communication via Ethernet is in progress.

### **St LED - red**

It is illuminated while the boot loader is active and it is blinking during a firmware upload procedure. This should only happen during hardware resets and in the second phase of firmware updates.

### **Low Power LEDs**

These LEDs turn on when the DC power drops below 6V.

## CONFIGURATION

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

### Configuration via the web interface

The FNIP-12xPWM automatically obtains 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).

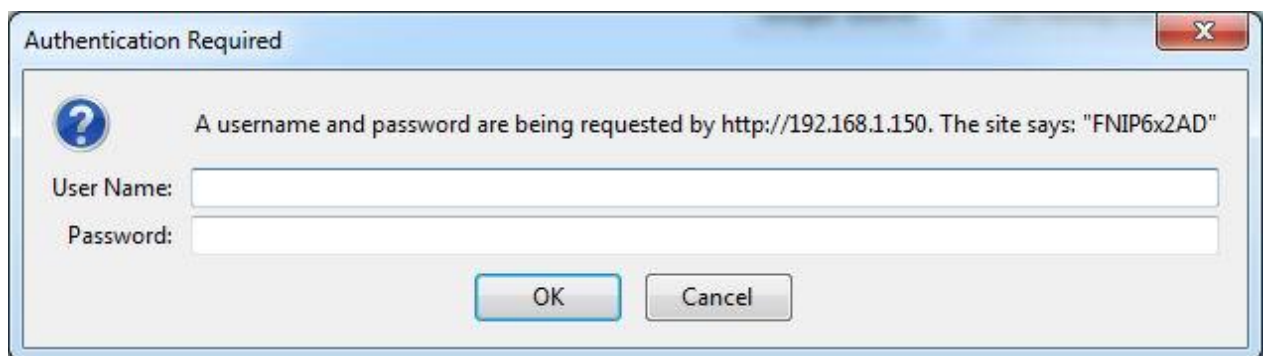
Use the FNIP Network Discovery Utility or other network discovery software to find all FutureNow IP devices on your network.

### Connecting to the web server of the module

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 web interface of the module via an internet browser using the hostname of the module (**FNIP-12xPWM** by default) or its IP address.

Once you are connected, you will be asked to identify yourself, as seen in Figure 5.



**Figure 5. Authentication window**

Default user name: **admin**

Default password: **futurenow**

You will be logged in as an administrator with access to all settings and functions.

Once logged in, you will automatically be directed to the **Control** page. 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 for third party applications.

### 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 not desired.

Please note disabling broadcast messages will stop the Discovery Tool and the mobile applications from discovering 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.

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

Network settings:

Host Name:

FNIP12XPWM

☐ Enable DHCP

☒ Enable TCP

☒ Enable HTTP Authentication

☒ Enable Broadcast Messages

TCP Port:

7078

IP Address:

192.168.1.76

Gateway:

192.168.1.2

Subnet Mask:

255.255.255.0

Primary DNS:

192.168.1.1

Secondary DNS:

0.0.0.0

Multicast Address:

0

MAC Address:

80:1F:12:6D:C3:1A

Save Config

**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.

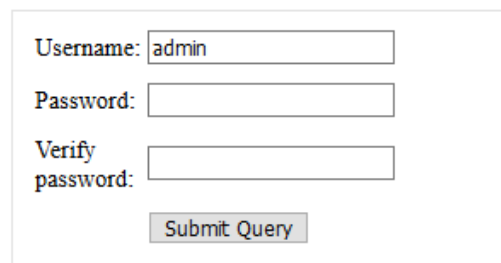
**Actors** are allowed to control the outputs and monitor the status of the inputs and the outputs, but are not allowed to change any settings.

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

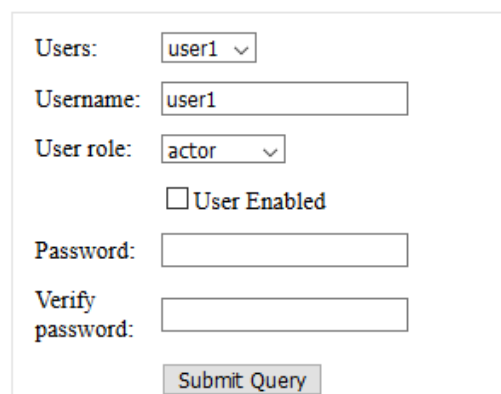
To change user settings, click on the **User** tab in the top menu. The user configuration page is shown in Figure 7.



### Username and password settings

A form with a light gray border. It contains three text input fields: 'Username:' with 'admin' entered, 'Password:', and 'Verify password:'. Below the fields is a 'Submit Query' button.

### User Administration

A form with a light gray border. It contains a 'Users:' dropdown menu with 'user1' selected, a 'Username:' text input field with 'user1' entered, a 'User role:' dropdown menu with 'actor' selected, a 'User Enabled' checkbox, a 'Password:' text input field, a 'Verify password:' text input field, and a 'Submit Query' button.

**Figure 7. User configuration page**

## Channel settings

On the **Channel** page the outputs and inputs can be renamed. Operation and input modes can also be chosen here. The input mode determines the logical connection between the input and the output of the same channel. For details on possible input modes and how they work, see **Error! Reference source not found.** s section of this document.

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

Output labels:	Input labels:	Operation modes:	Input modes:	Scene no.	Monostable duration:	Bind to:
Channel1	Input1		Toggle ▼	1	11	
Channel2	Input2	RGBW ▼	Independent ▼	1	10	2 ▼
Channel3	Input3		Independent ▼	1	10	3 ▼
Channel4	Input4		Independent ▼	1	10	4 ▼
Channel5	Input5	Single ▼	Toggle ▼	1	10	5 ▼
Channel6	Input6		Independent ▼	1	10	6 ▼
Channel7	Input7		Toggle ▼	1	10	
Channel8	Input8	RGBW ▼	Independent ▼	1	10	8 ▼
Channel9	Input9		Independent ▼	1	10	9 ▼
Channel10	Input10		Scene on close ▼	1	10	10 ▼
Channel11	Input11	Single ▼	Scene on open ▼	1	10	11 ▼
Channel12	Input12		Independent ▼	1	10	12 ▼

**Other settings:**

Resume light levels after power outage: ☐

Inverted operation mode: ☐

Save

## Grouping of outputs

The outputs can be used individually or in groups of three or four depending on what types of LEDs are to be controlled. Low voltage single colour LEDs or halogens are controlled by one output each. RGB LED strips take three outputs while RGBW LED strips need four outputs. The possible grouping of the outputs:

Output 1,2,3 – individual outputs or R1,G1,B1

Output 4,5,6 – individual outputs or R2,G2,B2

Output 7,8,9 – individual outputs or R3,G3,B3

Output 10,11,12 – individual outputs or R4,G4,B4 or W1,W2,W3

where W1,W2,W3 are the white channels of RGB LEDs on outputs 1,2,3 4,5,6, 7,8,9 respectively if RGBW LED strips are used.

## Dim settings

Control
Input
Network
Channel
Dimming
Scenes
Users
Firmware
Logout

Outputs:	Preset level:	Minimum level:	Maximum level:	Default ramp rate:	Hold ramp rate:
Channel1:	<input type="text" value="100"/>	<input type="text" value="0"/>	<input type="text" value="255"/>	<input type="text" value="1"/>	<input type="text" value="3"/>
Channel2:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="255"/>	<input type="text" value="1"/>	<input type="text" value="3"/>
Channel3:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="255"/>	<input type="text" value="1"/>	<input type="text" value="3"/>
Channel4:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="255"/>	<input type="text" value="1"/>	<input type="text" value="3"/>
Channel5:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="255"/>	<input type="text" value="1"/>	<input type="text" value="3"/>
Channel6:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="255"/>	<input type="text" value="1"/>	<input type="text" value="3"/>
Channel7:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="255"/>	<input type="text" value="1"/>	<input type="text" value="3"/>
Channel8:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="255"/>	<input type="text" value="1"/>	<input type="text" value="3"/>
Channel9:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="255"/>	<input type="text" value="1"/>	<input type="text" value="3"/>
Channel10:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="255"/>	<input type="text" value="1"/>	<input type="text" value="3"/>
Channel11:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="255"/>	<input type="text" value="1"/>	<input type="text" value="3"/>
Channel12:	<input type="text" value="0"/>	<input type="text" value="0"/>	<input type="text" value="255"/>	<input type="text" value="1"/>	<input type="text" value="3"/>

Save

### Preset level:

If other than zero, the output will go to the specified level when turned on. Zero means the output will go to the last used dim level.



### **Minimum level:**

Some load types cannot be dimmed down all the way to zero. They cut off at some point and show some strange behavior (flickering or pulsing) below that dim level. Light bulbs also need a minimum dim level to produce visible light. Setting the minimum level slightly above these cut-off points makes these loads dimmable all the way down more smoothly.

### **Maximum level:**

The output will not go above this level. One reason may be to limit the brightness to suit the environment.

### **Default ramp rate:**

This is the time it takes for the light to go from zero to 100% when turned on/off via the inputs, via the website, or TCP commands. Shorter ramps will take a proportionally shorter time. For example, going from zero to 50% will take half the time than what the ramp rate is set to.

### **Hold ramp rate:**

The time it takes for the light to go from zero to 100% when the corresponding input is held. Shorter ramps will take a proportionally shorter time. For example, going from zero to 50% will take half the time than what the ramp rate is set to.

## Scenes

Scenes are predefined states of the outputs on the module.

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

Scene no: 1 ▼

Outputs	Action	Level	Ramp Rate	Outputs	Action	Level	Ramp Rate
Channel1	<input checked="" type="radio"/> No action <input type="radio"/> Go to level	0	1	Channel7	<input checked="" type="radio"/> No action <input type="radio"/> Go to level	0	1
Channel2	<input checked="" type="radio"/> No action <input type="radio"/> Go to level	0	1	Channel8	<input checked="" type="radio"/> No action <input type="radio"/> Go to level	0	1
Channel3	<input checked="" type="radio"/> No action <input type="radio"/> Go to level	0	1	Channel9	<input checked="" type="radio"/> No action <input type="radio"/> Go to level	0	1
Channel4	<input checked="" type="radio"/> No action <input type="radio"/> Go to level	0	1	Channel10	<input checked="" type="radio"/> No action <input type="radio"/> Go to level	0	1
Channel5	<input checked="" type="radio"/> No action <input type="radio"/> Go to level	0	1	Channel11	<input checked="" type="radio"/> No action <input type="radio"/> Go to level	0	1
Channel6	<input checked="" type="radio"/> No action <input type="radio"/> Go to level	0	1	Channel12	<input checked="" type="radio"/> No action <input type="radio"/> Go to level	0	1

Reset all
All on
All off
Save

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

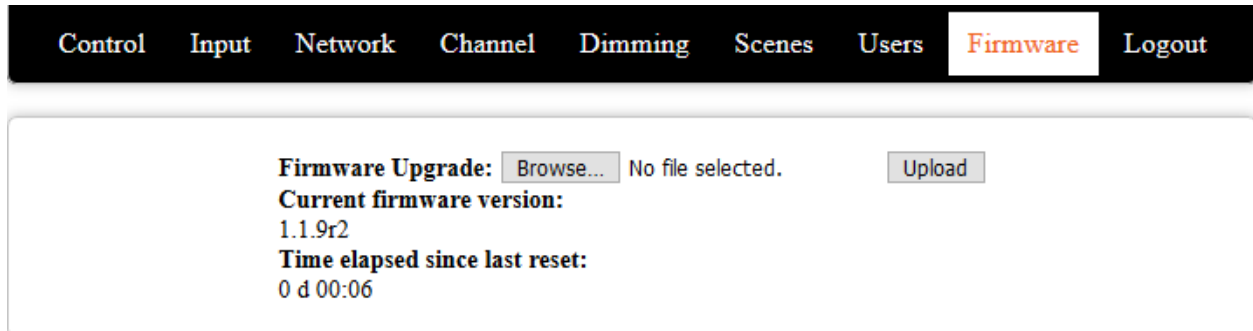
If a module receives a **Scene Activation Command (SAC)**, the designated outputs will go to the defined state. Any module in the group can send and receive this command. SAC can be triggered by an input change on this module, or on any module in the group

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 can be done on the Scenes page using the following steps:**

1. Select a scene using the Scene no scroll-down box
2. Define the action of the desired outputs using the Action, Level and Ramp Rate parameters
3. Save the settings (before selecting another Scene)

## Firmware Upgrade

A screenshot of the 'Firmware Upgrade' page in a web interface. The page has a dark navigation bar at the top with links: Control, Input, Network, Channel, Dimming, Scenes, Users, Firmware (highlighted in red), and Logout. The main content area is white and contains the following text: 'Firmware Upgrade: Browse... No file selected.' with a 'Browse...' button and an 'Upload' button. Below this, it says 'Current firmware version: 1.1.9r2' and 'Time elapsed since last reset: 0 d 00:06'.

**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 version of the current firmware 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. **Please make sure you release the button when the red LED comes on or the unit will go into re-flash mode.**

## OPERATION

### Operation via local inputs

The inputs can be activated by shorting or opening (depending on the settings of the Channel Settings) an input terminal and the input common terminal.

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

In order to use the local inputs, an input power of 12-36VDC must be applied across terminals 40 and 41. If the inputs are not used, this power connection is not necessary.

### Operation Modes via the inputs

#### Single

Each input controls the corresponding output. (For example single colour led fixture)

**If RGB or RGBW LEDs are controlled only the first input of each RGB group will control the outputs of the module directly.**

#### RGB

The first input in the group controls the entire group.

E.g: Input **1** controls RGB LEDs connected to output **1, 2, 3**  
Input **4** controls RGB LEDs connected to output **4, 5, 6**  
Input **7** controls RGB LEDs connected to output **7, 8, 9**  
Input **10** controls RGB LEDs connected to output **10, 11, 12**

#### RGBW

The first input controls the entire group plus the corresponding White channel.

E.g: Input **1** controls RGBW outputs **1, 2, 3, 10**  
Input **4** controls RGBW outputs **4, 5, 6, 11**  
Input **7** controls RGBW outputs **7, 8, 9, 12**

## Input modes

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

### 1. Independent inputs

Inputs can be detached from their corresponding outputs, in which case they will have no direct effect on them. However, the status changes of the digital inputs 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 digital sensors connected to the inputs or to activate lighting scenes or macros whenever the input gets triggered.

### 2. Toggle mode single colour and RGB (factory default)

Each short button press toggles the corresponding output. Holding the button for more than 0.5s will dim up and down (always in the opposite direction then last time) the output until the button is let go of or the minimum or maximum dim level is reached.

Each double press on the first input of an RGB or RGBW group will recall basic colours one after the other.

Double press and hold on the first input of an RGB or RGBW group will cause the output to swipe through all colours. This allows you to set the output to any colour you want. You should let off the input once the desired colour is reached.

### 3. 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 only for an adjustable amount of time when the respective input is triggered then turn off. An example is a staircase lighting. The duration of this interval can be set by the **Monostable Duration**.

### 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 opened the **Scene Activation Command** assigned to the input on the channel configuration page will be executed.

## 7. Scene on close mode

If an input gets closed the **Scene Activation Command** assigned to the input on the channel configuration page will be executed.

## Scene no.

The selected **Scene Activation Command** will be sent to the other modules within the same group in case **Input Mode 6** or **7** is selected.

## Operation via the built-in web server

### Control page

#### Single colour mode



Control Input Network Channel Dimming Scenes Users Firmware Logout

Channel11 100 Channel17 0

Channel12 0 Channel18 0

Channel13 0 Channel19 0

Channel14 0 Channel110 0

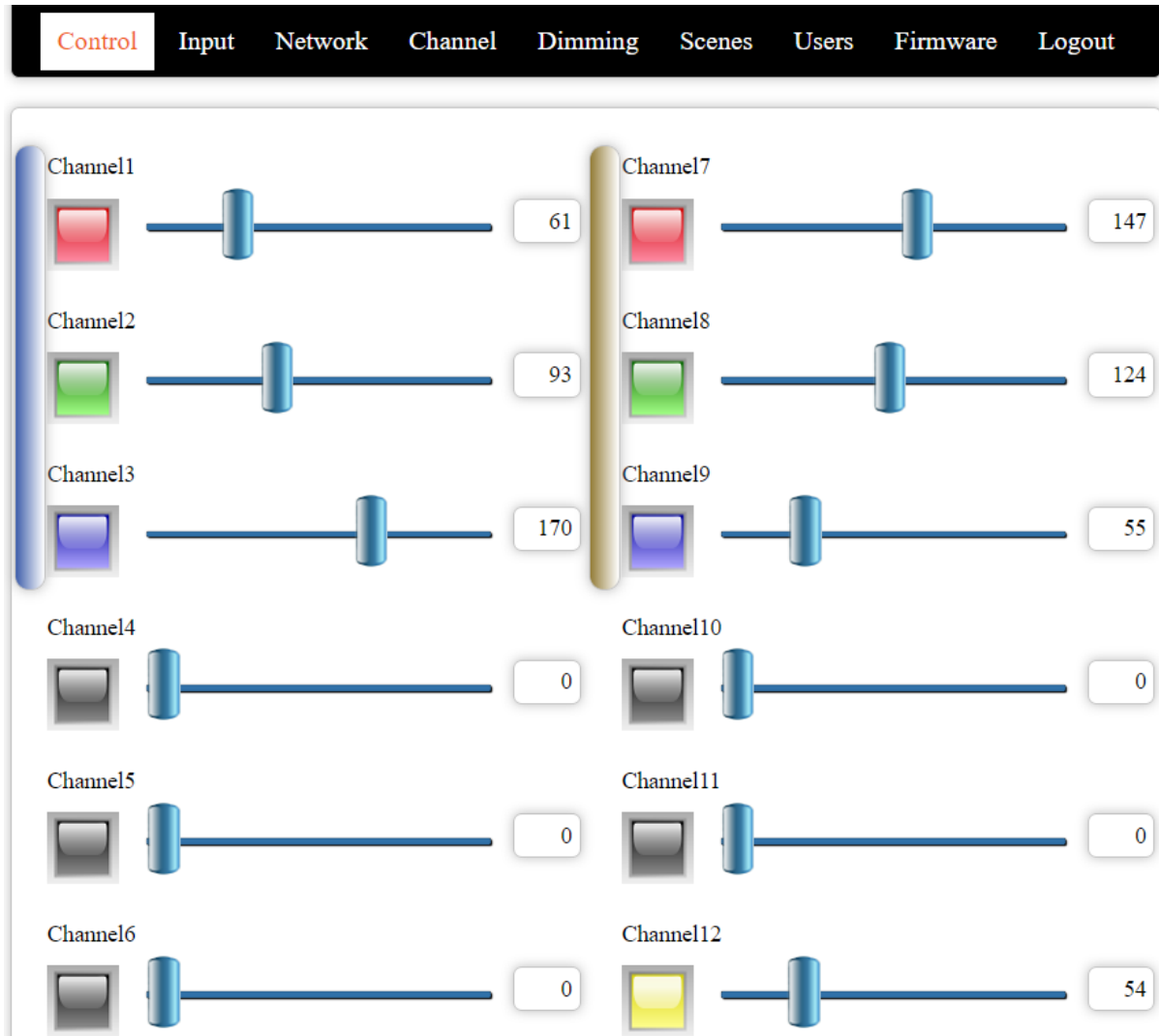
Channel15 0 Channel111 0

Channel16 0 Channel112 0

Temperature(1-6): 30°C Temperature(7-12): 28.5°C

The outputs can be controlled on this page. Clicking the Channel icon will toggle, moving the slider will dim the outputs. A grey status icon means that the output is off. An active output is indicated by a yellow icon. A common temperature of the module is also displayed.

## RGB and RGBW modes



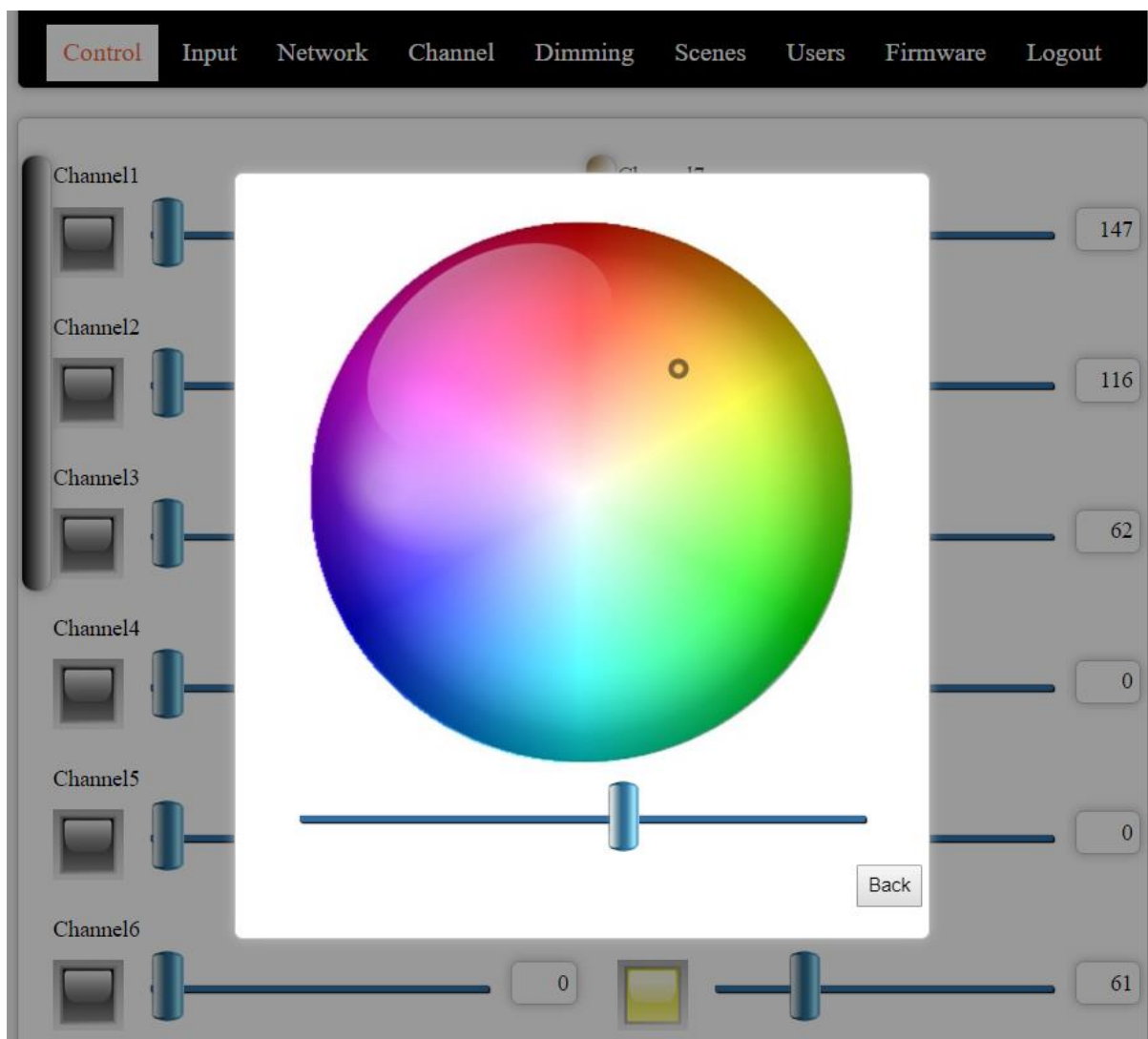
In this figure the first three channels are in RGB mode, while channels 7, 8, 9, 12 are in RGBW mode.

You can adjust the colours by dragging the R,G,B sliders, or by using the colour picker.

A colour picker appears when you click on the vertical bar grouping the channels into RGB or RGBW mode.

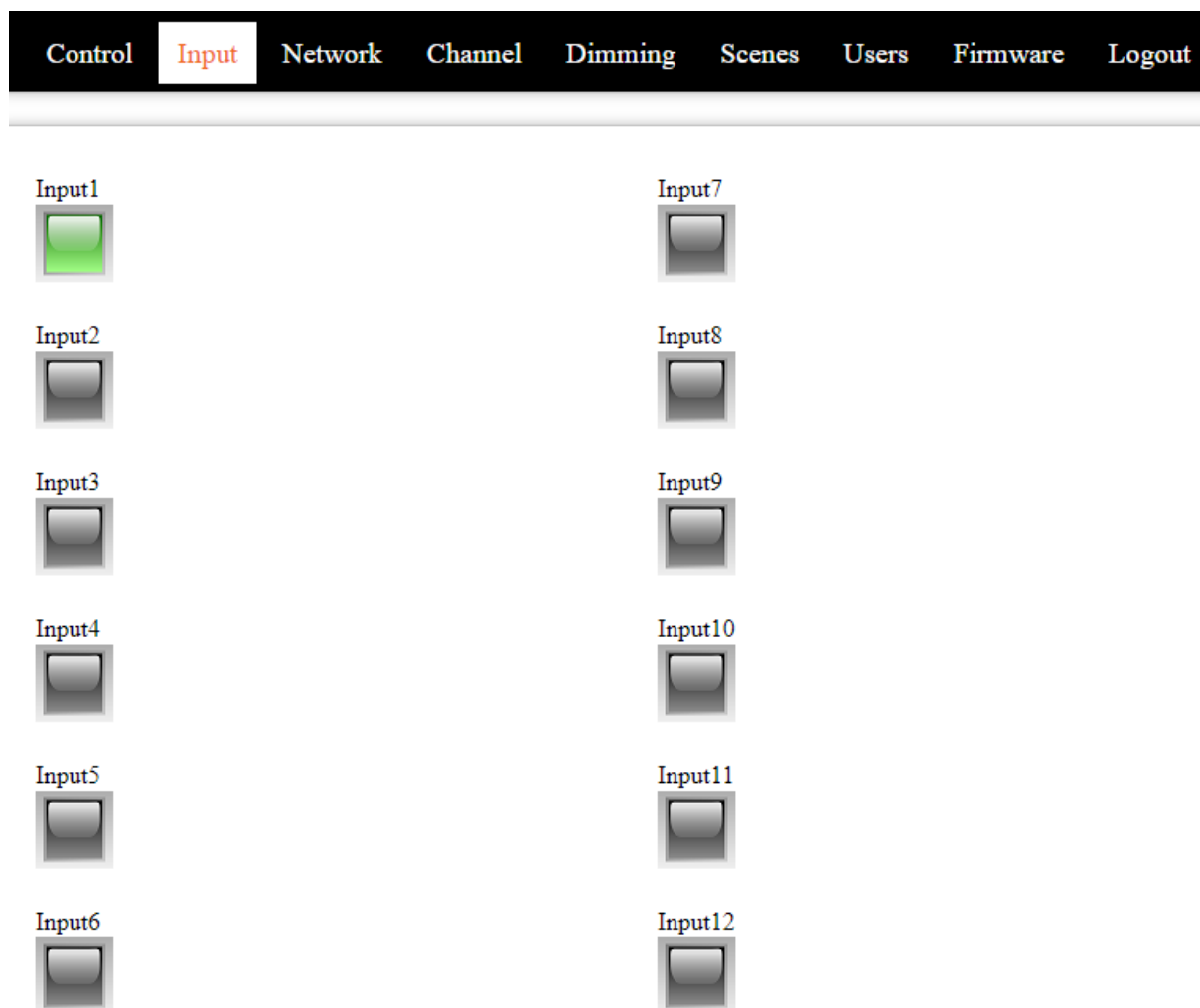


The colour picker appears as this:



You can choose the desired colour by clicking on the circle. Use the slider to set the luminance.

## Input status page



The status of the **local inputs** is displayed on the Input status page. A grey icon means that the corresponding input is inactive (input circuit open). An active input (input circuit closed) is indicated by a green icon.

## Operation via the local network (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 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 TCP/IP communication protocol can control the FutureNow FNIP-12xPWM. The following are the most widely used:

- AMX
- Control4
- Crestron
- RTI
- Savant
- Extron
- Neets

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

Android and iOS applications are also available.

## **Power requirements**

Main Circuit: 10V-36V DC

Inputs: 10V-36V DC

## **Outputs**

Load: 3-30V DC, max. 4A/channel, constant voltage PWM dimming

## **Inputs**

Type: 12 x galvanically isolated, noise protected common GND digital inputs for dry contacts or open collector transistor outputs

## **Terminals**

Type: Screw terminals for max. 2.5 mm<sup>2</sup> wires

## **Communication**

10Mb/s Ethernet via RJ45 Ethernet connector

Simple ASCII based TCP commands, number of socket connections that are allowed to be opened simultaneously: 4

HTTP via built-in web server

## **Other parameters**

Dimensions: W x H x D = 157 mm x 86 mm x 57 mm (9 DIN unit width)

## **Standards**

EN 60669-2-1, EN 55015:2013, EN 61547:2009, EN 61347-1, EN 61347-2-13, RoHS

## **Test methods**

EN 55016-2-3:2010, EN 55022:2010/AC:2011, EN 61000-4-3:2006/A1:2008/A2:2010

EN 61000-4-6:2009, EN 61000-4-4:2005/A1:2010, EN 61000-4-2:2009

# **CONTACT DETAILS**

## **REFERENCES**

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

FNIP TCP Communication Protocol Description

(Please send an email to [support@p5.hu](mailto:support@p5.hu) )

## **CONTACT DETAILS**

[support@p5.hu](mailto:support@p5.hu)

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