# FutureNow FNIP-6x2AD
# Installation Manual

rev 28.04.2021

Please proceed the following steps first:

1. Connect a low voltage (10V – 36V DC) power supply to terminal 41 (GND) and terminal 42 (+)
2. Connect the module to the LAN through Ethernet port, and locate the module on the network.
3. Connect to the web server of the module by typing the IP Address into the browser.
4. User: andmin, Pass: futurenow
5. After successful login to the web page, you can adjust all parameters of the module.
6. If you are not familiar with this module, please read the installation guide!

**WARNING! In the next step the module will be connected to line voltage (230V)!**
**The line voltage installation must be performed by a qualified electrician!**

7. Turn off power (main circuit breaker) before going to the next step
8. Connect the live power (230V AC) to terminal 3 (Live phase), and terminal 4 (Neutral)
9. Turn on power (main circuit breaker)

**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.

| Load | |
|---|---|
| **No.** | **Description** |
| 2. | Output 1 Live |
| 3. | 230V Mains Input Live for ch1 and ch2 |
| 4. | Neutral INPUT |
| 5. | Output 2 Live |
| 12. | Output 3 Live |
| 13. | 230V Mains input Live for ch3 and ch4 |
| 14. | Neutral INPUT |
| 15. | Output 4 Live |
| 22. | Output 5 Live |
| 23. | 230V Main Input Live for ch5 and ch6 |
| 24. | Neutral INPUT |
| 25. | Output 6 Live |

| Control | |
|---|---|
| **No.** | **Description** |
| 27. | Inputs Common |
| 28. | Input 1 |
| 29. | Inputs Common |
| 30. | Input 2 |
| 31. | Inputs Common |
| 32. | Input 3 |
| 33. | Inputs Common |
| 34. | Input 4 |
| 35. | Inputs Common |
| 36. | Input 5 |
| 37. | Inputs Common |
| 38. | Input 6 |

| Low voltage inputs for the module | |
|---|---|
| **No.** | **Description** |
| 39. | Power for the Inputs GND |
| 40. | Power for the Inputs +10V.. +36V DC |
| 41. | Power for the Main Circuit GND |
| 42. | Power for the Main Circuit +10V.. +36V DC |

**Table 1: FNIP-6x2AD terminal connectors**

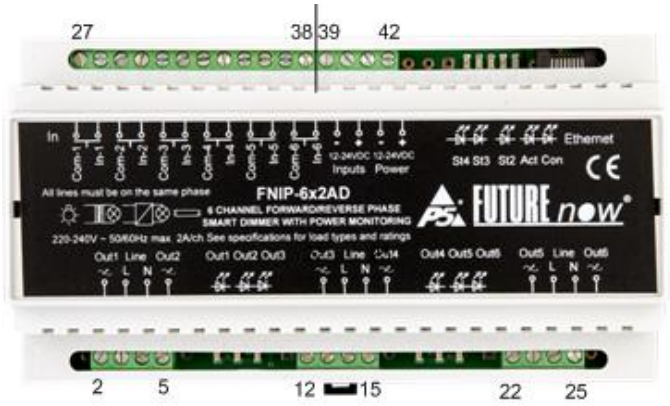


**Figure 2. FNIP-6x2AD front view with terminal connectors**

## Wiring

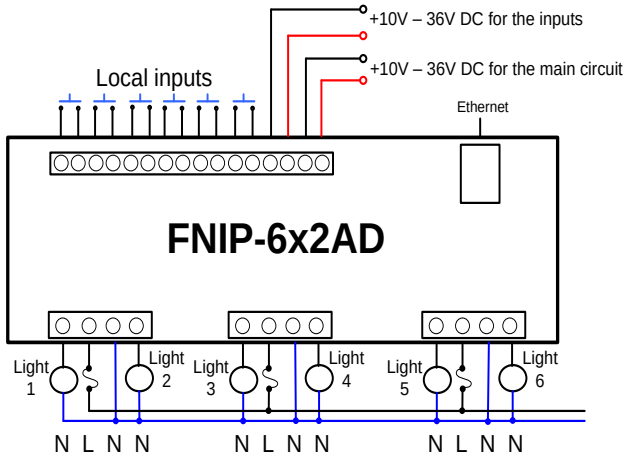


**Figure 3. Wiring diagram**
**Please note that the neutral leg of the light sources are not connected to the module and all line inputs must be on the same phase and on the same circuit breaker!**

**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.

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 requires 10V - 36V DC through terminals 41 and 42.
If local inputs are to be used 10V - 36V DC through terminals 39-40 will also be required.
**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-6x2AD has separate power input terminals (39 and 40) for this purpose. 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 39 to terminal 41 and terminal 40 to terminal 42.

Apply 230V 50 Hz AC live on terminals 3, 13 and 23 and neutral on terminal 4 and 14 and 24.

**Please make sure that all the three line inputs (terminal 3, 13 and 23) are on the same phase and on the same circuit breaker! Different phase connection would create a short circuit and damage the module!**

**The loads should be connected between the outputs of the module (terminal 2, 5, 12, 15, 22, 25) and a neutral point somewhere outside the module.**

**Connecting the Neutral legs of the loads to the module could damage the module. This will void the warranty.**

**Ethernet Connection**

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

## Outputs

The FNIP-6X2AD supports both trailing and leading-edge dimming modes. It handles most lighting load be it resistive, inductive or capacitive, such as incandescent, line voltage and low voltage halogens with both electronic and iron core transformers, phase-cut dimmable fluorescents and compact fluorescents, phase-cut dimmable line voltage LEDs.

**Do not attach any other types of loads to the outputs if dimming of the outputs is enabled! Using an improper load can damage both the attached device and the FNIP-6x2AD, creating a potential fire hazard!**

To avoid inadvertent dimming of non-dimmable loads, the dimming of the outputs is disabled by default.

If dimming of the outputs is disabled, non-dimmable lights and other types of loads that don't exceed the output ratings can be turned on/off.

## Local Inputs

For each output there is a local input to allow for 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.) or open collector transistor outputs across the appropriate input terminals and the input common terminal. Low voltage for the inputs is supplied by the module itself**.**

**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.

It should be noted that the galvanic isolation is only effective when an independent power supply is used for powering the inputs. The FNIP6x2AD 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.

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

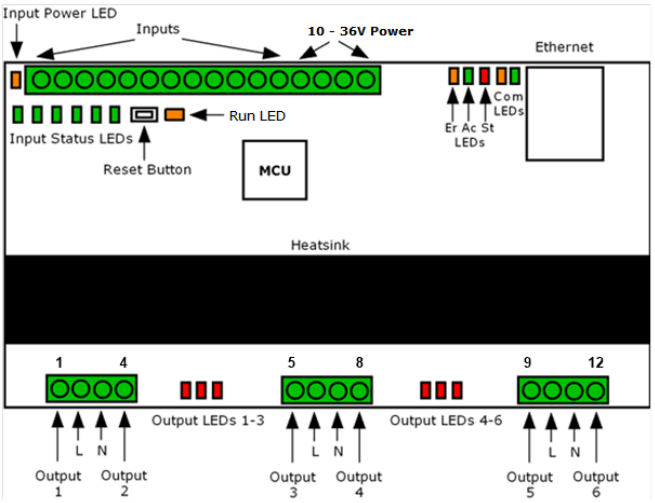


**Figure 4. The board layout of the FNIP-6x2AD**

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

**Power LED**
When on, indicates that the 12V DC power for the main circuit is present.
**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.

**Status LED**

**St LED**
It is blinking while the boot loader of the module is active. This should only happen during hardware resets and in the second phase of firmware updates.

**AC LED**
This LED indicates the presence of the 50/60Hz line voltage.

**Er LED**
The Er LED turns on if the module gets overheated. This LED will not turn off until the module is power cycled or the temperature of the heat sink falls below 40°C.

**Output status LEDs**
Each output has a dedicated status LED that illuminates solid red when the corresponding output is activated. In case of overcurrent the corresponding LED starts flashing. The error condition resets when the output is turned on again.

## CONFIGURATION

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

**Configuration via the web interface**

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

**Connecting to the module's web server**

Each module automatically obtains an IP address from a DHCP server by default. In the lack of DHCP server 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).

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

The default user name:**admin**
The default password:**futurenow**

**Hardware reset**
Holding the reset button briefly (less than 2 sec) while powering up the module will reset the module.

**Resetting to factory defaults**
Holding the reset button for more than 4 sec while powering up the module will set all the settings to factory defaults.

## OPERATION

### Operation via 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 9V-16V DC must be applied across terminals 39 and 40. In case local inputs are not needed, this power connection is not necessary.

**Input Modes**

There are different input modes. Setting the input mode is possible via bus commands.
The inputs are factory defaulted to toggle mode. The input modes work as follows:

**1. Toggle mode (factory default)**
Each short button press toggles the corresponding output. Holding the button for less than 0.5 s will dim up and down (always to the opposite of the last direction) the output until the button is let go of or min/max dim level is reached.

**2. Independent inputs**
Inputs can be disconnected 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 or to activate lighting scenes or macros whenever the input gets triggered.

**3. Input follow mode**
The status of outputs will follow the state of the corresponding inputs, as in case of a regular maintained switch. (The output will be on while the momentary switch is pressed and off while it is released).

**4. Toggle with no dimming mode**
Each press of the button toggles the corresponding output. Holding the button has no function. No dimming is possible.

**5. Monostable mode**
The outputs can be programmed to switch on for an adjustable amount of time when the corresponding input is triggered (in case of a staircase lighting for example).

**6. Switch mode**
This mode makes it possible to use maintained (standard switches) instead of momentary switches on the inputs. Each transition 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 indicate the status of the output.

### Operation via the built-in web server

Operation of the outputs is possible via the Control page. The outputs can be toggled by clicking their status icons. The status of the outputs are also displayed. A grey icon means that the corresponding output is inactive. An active output is indicated by a red icon. The current power usage is displayed for each channel. A common temperature for outputs 1, 2, 3 and outputs 4, 5, 6 is also displayed as well as the current power consumption for each output and the frequency of the line voltage

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

### 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 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.

## TECHNICAL SPECIFICATIONS

**Power requirements**
Main circuit**:** 10V - 36V DC max. 80mA@12V
Inputs: 10V - 36V DC, max. 30mA@12V
Line: 220 - 240V AC +/-10%, 50/60Hz

**Outputs**
Load**:** Incadescent, 230V halogens: max. 500W
Fluorescents and electronic low voltage transformers: max. 500W
Compact fluorescents: max. 400W
LEDs: max. 200W
All channels combined: max 3000W
The above ratings are valid at 25°C ambient temperature, only half ratings are allowed at 40°C.

**Inputs**
Type: 6 x galvanically isolated, noise protected common GND digital inputs for dry contacts or open collector transistor outputs
Functions: Assigned to the corresponding output (Toggle, Follow, Monostable) or Independent

**Terminals**
Type: Screw terminals for max. 2.5 $mm^2$ wires

**Communication**
10Mb/s Ethernet via RJ45 Ethernet connector
Simple ASCII based TCP commands via port 7078, number of socket connections that are allowed to be opened simultaneously: 4
HTTP via built-in web server
**Supported web browsers**
Mozilla Firefox, Google Chrome, Safari, Internet Explorer 7 or greater, Opera

**Other parameters**
Operating temperature: 0 °C – 40 °C (32-104 °F)
Dimensions: W x H x D = 157 mm x 86 mm x 57 mm (9 DIN unit width)
Weight: 0,48 kg
Color: Light grey with black cover plate

**Standards**
EN 60669-2-1
RoHS

**Test methods**
EN 55015:2013
EN 61547:2010

## REFERENCES

FNIP Search Utility
FNIP-6x2AD TCP Communication Protocol Description
FutureNow FNIP-6x2AD Installation Manual

**For further instructions please download the FutureNow-FNIP-6x2AD Installation Manual from [www.p5.hu](http://www.p5.hu).**

## CONTACT DETAILS

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