



DIM 24PN(-F)

MARINE DIMMER MODULE
12/24 Vdc

This installation manual has been written by the manufacturer and it is considered integrating part of this product.

The information included are intended for the expert technicians who execute the installation and the extraordinary maintenance of the product.

The expert technicians must have specific competences and particular abilities in order to carry out correctly and safely their work.

The constant observance of the information included in this manual guarantees safety of men, energy serving and a longer duration of product operative-life.

In order to avoid wrong handling and the consequent risk of accidents, it is important to read this manual carefully, keeping scrupulously to guidelines according to the supplied information.

CONFORMITY DECLARATION

All the devices of the YACHTICA® system are designed in order to comply the directives:

- EN 60945 Maritime navigation and radiocommunication equipment and system.
- IEC 61000;
- IEC 60068;
- IEC 60695;
- Rules for the Classification of Ship - Part C - Machinery;
- Systems and Fire Protection - Ch. 3, Sec. 6, table 1.

TYPE APPROVAL RINA: N° DIP244620CS

All the devices of the YACHTICA® system are tested and found to comply with the specification of the CE marking.



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DESCRIPTION

The DIM 24PN(-F) module is equipped with an integrated microcontroller used to control and to dimm different 12/24V_{dc} lighting sources, provided with 4 power outputs.

The module is rated to work with voltage driven monochromatic LEDs (with or without driver added). It can also be used to control 12/24V_{dc} incandescent and halogen lamps. Each channel handles up to 16A.

The module has 8 dry contact inputs that can be used with push-buttons or sensors, allowing to control single outputs or recall four global scenarios.

FEATURES

4 Dimmer outputs 12/24V_{dc}

Each channel allows a PWM (400Hz) 12/24V_{dc} constant voltage dimming for passive (LED strip), active (spot with electronic on board) or spot with voltage (12/24V_{dc}) to current (ex. 350-500-700mA, etc.) dimmable driver lighting sources. It can also be used to control 12/24V_{dc} constant voltage halogen light circuits.

8 dry contact inputs

The module allows single output or light scene control using the 8 dry contact inputs where push-buttons or sensors can be connected.

4 Feedback outputs (only on -F version)

The module, in the (-F) version, is provided with a patch lead cable that provide the status of each output, to be used by external monitoring systems.

Stand-alone mode

The module has a standard programming that allows to manage outputs and light presets, connecting push-buttons or sensors to the dry contact inputs.

Short circuit and overload advanced protection

Each single output is protected by an advanced monitoring system that is able to recognize a short circuit, disabling and protecting the module. The module also has an overload management system that avoid the outputs to be damaged, automatically reducing the outputs percentage value if needed.

NOTE: the module does not protect the load connected to the outputs. it suggested to protect the outputs properly, according to the project requirements.

Opto-isolation between electronic and power

Module electronic power supply and output power are opto-isolated in order to avoid interferences on the outputs.

Monitoring and control top board

The front panel LEDs board allows to control and monitoring the module's outputs and inputs status.

DIN rail installation

The DIM 24PN(-F) module can be installed into an electrical switchboard using DIN rail. Once installed and the switchboard closed, the module's front panel, with control buttons, is still accessible.

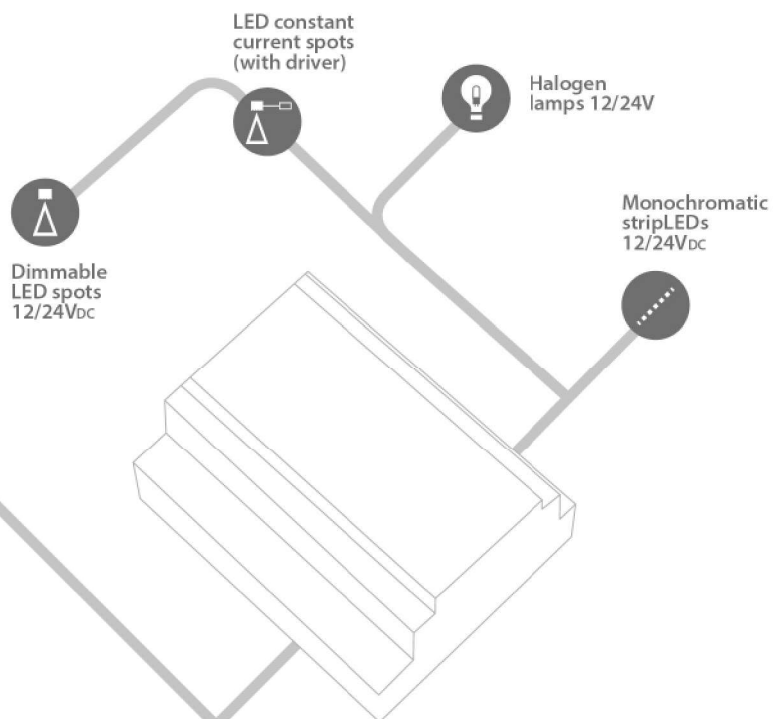
Detachable terminal block

All the terminal block of YACHTICA® modules are detachable, allowing a simple wiring and a quick replacement without the needed to disconnect any cable, with a high level of security and stability of the system.

Tropicalized electronic

All the YACHTICA® modules have a tropicalization treatment in order to prevent a deterioration due to the humidity and sea mist.

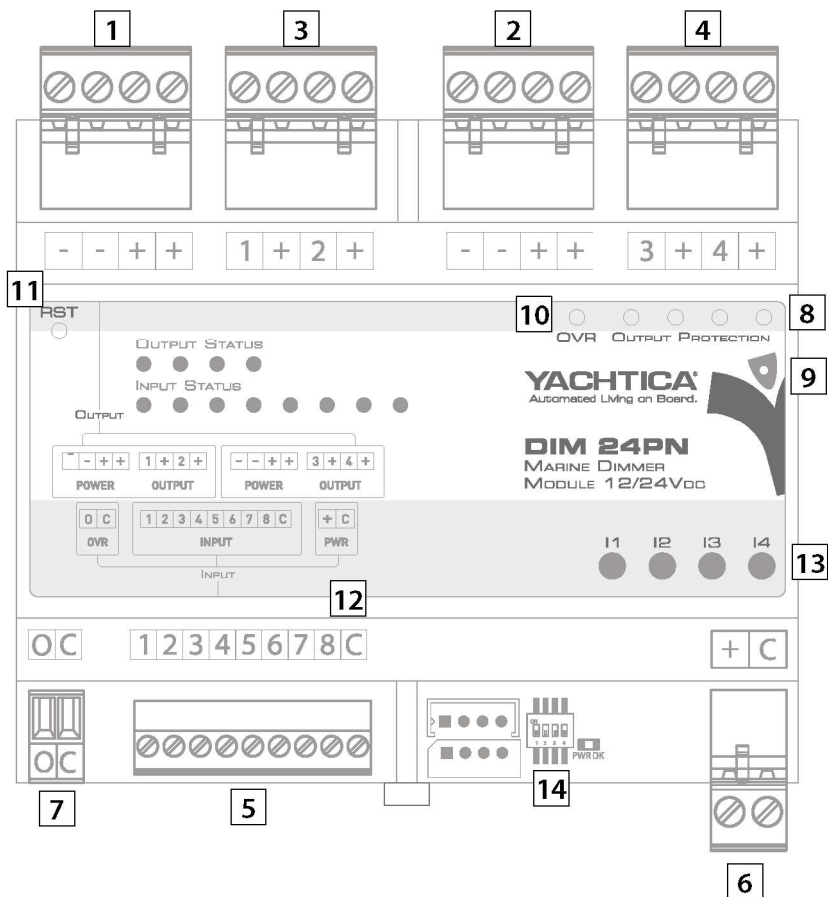
APPLICATIONS









TECHNICAL SPECIFICATIONS




SPECIFICATION	DETAILS
Electronic power supply	11-28V _{DC}
Electronic requirements	0,6W (20mA @24V _{DC} , 40mA @12V _{DC})
Outputs power supply	12/24V _{DC}
Outputs	4
Dry contact inputs	8
Load ratings	-16A@24V (384W) per channel, PWM 400Hz -16A@12V (192W) per channel, PWM 400Hz
Load ratings for feedback outputs (only in -F)	15mA
Working temperature	+5°/+55° C (41°/122° F)
Storage temperature	-40°/+70° C (-40°/+158° F)
Humidity	15%/90% non condensing
Heat dissipation (@Ta=40°C, maximum load)	6,6W
IP Protection	IP20
Enclosure	Self-extinguishing UL94-V0
Color	RAL 7024
Dimensions (LxAxP)	106x58x90 mm (6 DIN module spaces)
Weight	275 g
Compliance	CE; EN60945; EN61000-4-2; EN61000-4-3; EN61000-4-4; EN61000-4-5; EN61000-4-6; EN61000-4-8; EN61000-4-11; CISPR 16-1-1; EN 60695-11-5; IEC60068-2; IEC60068-6; IEC60068-30; RINA Rules 2018 Pt. C, Ch. 3, Sec.6.

MODULE DESCRIPTION



#	CONNECTORS, LED, INDICATORS	DESCRIPTION
1		4 poles detachable connector; Maximum cable section: 2,5mm ² (12AWG); Outputs 1-2 power supply connector ⁽¹⁾ ; -/-: negative 12-24Vdc; +/: positive 12-24Vdc.
2		4 poles detachable connector; Maximum cable section: 2,5mm ² (12AWG); Outputs 3-4 power supply connector ⁽¹⁾ ; -/-: negative 12-24Vdc; +/: positive 12-24Vdc.
3		4 poles detachable connector; Maximum cable section: 2,5mm ² (12AWG); Outputs 1-2 connector; 1: output 1 negative/output 1 PWM; + : positive 12-24Vdc outputs 1 & 2; 2: output 2 negative/output 2 PWM; + : positive 12-24Vdc outputs 1 & 2.
4		4 poles detachable connector; Maximum cable section: 2,5mm ² (12AWG); Outputs 3-4 connector; 3: output 3 negative/output 3 PWM; + : positive 12-24Vdc outputs 3 & 4; 4: output 4 negative/output 4 PWM; + : positive 12-24Vdc outputs 3 & 4.
5		9 poles detachable connector; Maximum cable section: 1,5mm ² (15AWG); 8 dry contact inputs connector; 1-8: inputs; C: common.

#	CONNECTORS, LED, INDICATORS	DESCRIPTION
6		<p>2 poles detachable connector; Maximum cable section: 2,5mm² (12AWG); Electronic power supply connector; +: positive 11-28V_{DC}; -: negative 11-28V_{DC}. Be sure that all the negative poles of all the power supplies used for electronic are in parallel.</p> <p>NOTE: it is suggested to use a dedicated stabilized power supply for the electronic of all the modules inside a switchboard.</p>
7		<p>2 poles detachable connector; Maximum cable section: 1,5mm² (15AWG); Override connector; O: override contact; C: common. In case of short circuit between C and O the module starts Override mode: all the outputs are forced to 100%.</p>
8		<p>Red LED alert signal on outputs, FUSE PROTECTION. - LED on: shortcircuit on output (NOTE: The load is not protected from short circuit with fuse); - LED blinking (1 second frequency): output power supply for corresponding outputs missing (1-2 and 3-4); - LED blinking (3 pulse per second): overload on corresponding output.</p>
9		<p>Blue LED, PWR. On if electronic power supply is given.</p>
10		<p>Orange LED, OVR. On if the module is in Override mode.</p>
11		<p>Recessed button to reset microcontroller of the module, RST. The outputs will be switched off and the values of outputs and memories will be set to factory values.</p>

#	CONNETTORE, LED, INDICATORI VARI	DESCRIZIONE
12		<p>Feedback patch connector (only -F modules). This connector allows to connect a patch lead cable that provides four outputs status to an external system. RED: common ORANGE: OUT 1 status; YELLOW: OUT 2 status; GREEN: OUT 3 status; BLUE: OUT 4 status;</p>
13		<p>Buttons used to control the corresponding output, following "Dimmer without memory" function⁽²⁾.</p>
14		<p>DIP switches to set some standard programming. DIP switch 4 not used. 000-, 101-: standard programming⁽²⁾. 100-: OUT2 linked to OUT1. Outputs 1 and 2 are driven by I1 in parallel, I2 is not used. I3 and I4 are used to control the corresponding outputs. 110-: OUT2 and OUT3 are linked to OUT1. Outputs 1, 2 and 3 are driven by I1 in parallel, I2 and I3 are not used. I4 is used to control the corresponding output. 111-: OUT2, OUT3 and OUT4 are linked to OUT1. Outputs 1, 2, 3 and 4 are driven by I1 in parallel, I2, I3 ed I4 are not used. 010-: OUT3 is linked to OUT2. Outputs 2 and 3 are driven by I2 in parallel, I3 is not used. I1 and I4 are used to control corresponding outputs. 011-: OUT3 and OUT4 are linked to OUT2. Outputs 2, 3 and 4 are driven by I2 in parallel, I3 and I4 are not used. I1 is used to control the corresponding output. 001-: OUT2 is linked to OUT1 and OUT4 is linked to OUT3. Outputs 1 and 2 are driven by I1 in parallel, I2 is not used; Outputs 3 and 4 are driven by I3 in parallel, I4 is not used.</p>

⁽¹⁾ Using alternate tension causes modules to be damaged.

⁽²⁾ See STANDARD PROGRAMMING paragraph.

INSTALLATION

Important notes

The following information are intended for the expert technicians who execute the installation and the extraordinary maintenance of the product. The installation and the maintenance of the module must be executed by qualified technicians, respecting the Norm of the installation country.

The expert technicians must have specific competences and particular abilities in order to carry out correctly and safely their work.

The constant observance of the information included in this manual guarantees safety of men, energy saving and a longer duration of product operative-life. Keep this manual and notes included.

In order to avoid wrong handling and the consequent risk of accidents, it is important to read this manual carefully, keeping scrupulously to guidelines according to the supplied information.

Electrical tension may cause shock and severe burns. Be sure to turn off the electrical supply before carrying out any type of work on the connectors. Omission of observation of these safety measures may cause death or severe lesions to people as well as great material damages.

Before preceeding with the use of the modules, make sure that electric installation, carried out by a qualified technician in conformity with the Technical Norms, corresponding to the class of homologation of the electrical system, is provided with the devices prescribed for the protection against direct and indirect contacts and electrical surcharges.

The modules of the YACHTICA® must be exclusively used in connection with other modules and external components which are conformed to the Norms comparative to the product.

Do not use the module if, upon visual inspection, it shows deterioration of the enclosing box or if the screening wraps of the feeding cables show any wear and tear or damage.

The YACHTICA® system may not be used to carry out safety and accident prevention functions since it does not have the redundancy requirements lawfully requested.

The installer must verify the correct installation and operation of the product.
It is prohibited to use the product for improper purposes or purposes different from those provided

V.Y.C. Srl shall not be held liable for any damage of any sort or kind in case of module used or installed incorrectly.

It is prohibited to tamper or to modify the product.

Before starting

Place the module inside a switchboard and follow carefully the following wiring diagrams. The module can be installed on DIN rail.

Always switch off the electronic and outputs power supply before carrying out any type of electrical connection on the module.

NOTE: use a dedicated stabilized power supply for electronic modules installed into a switchboard.

The module is intended for internal use. Install it in dry place in order to respect the specifications described in the TECHNICAL SPECIFICATIONS paragraph of this manual.

Blackout management

The YACHTICA® modules manage the states of lack of power supply both for the electronic and the power in case of dimming modules.

Lack of electronic power supply (all modules).

In case of lack of this tension the module switch off. After the blackout the outputs come back to their latest values before the blackout.

Lack of power supply for outputs (dimmer modules).

In case of lack of power supply for the outputs, the dimmer modules show this with a blinking of FUSE PROTECTION LED and the lighting icons on the display will disappear. After the blackout, if no problem occurs, the outputs come back to their latest values.

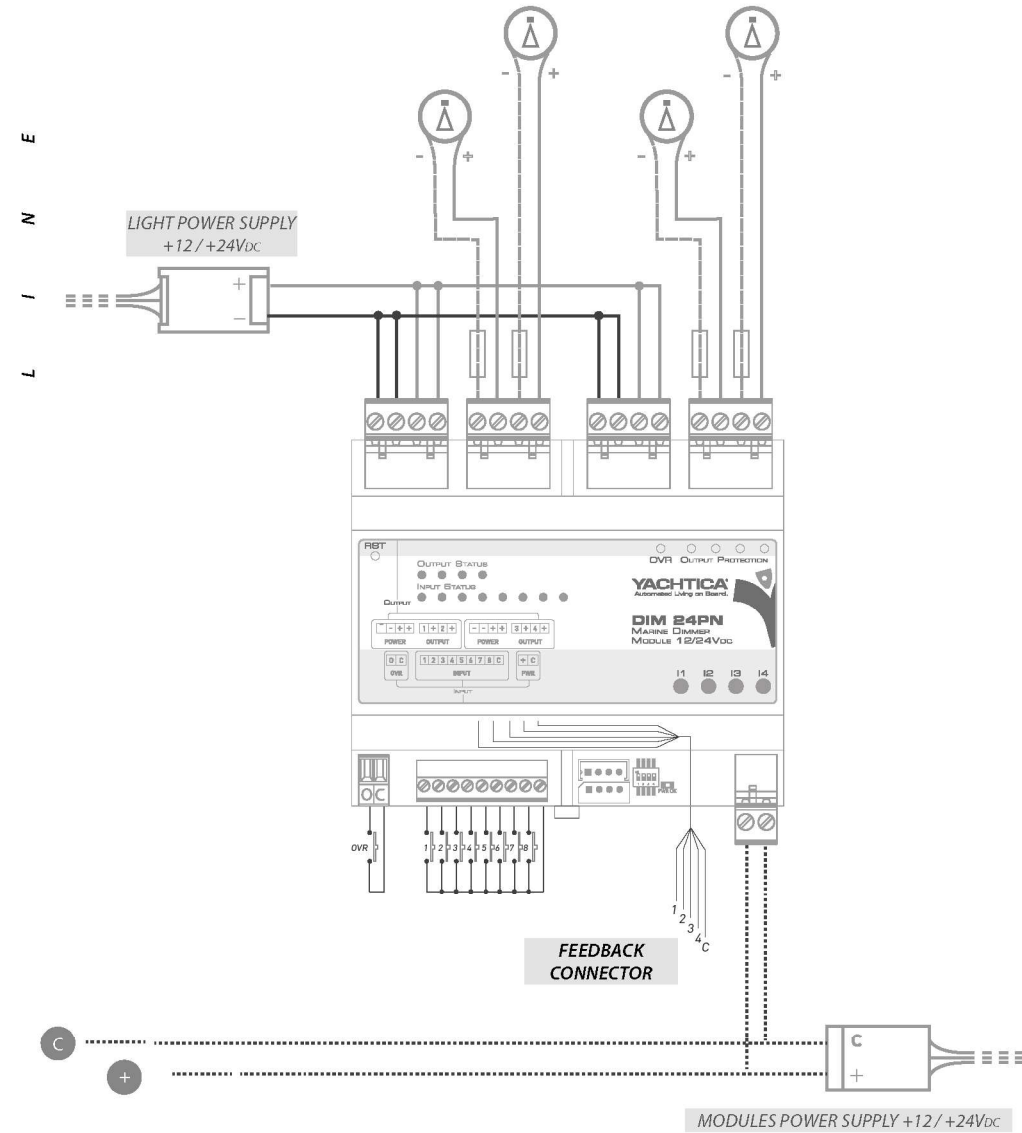
WIRING DIAGRAMS

Shown below different wiring diagrams that can be used when installing a DIM 24PN(F) module.

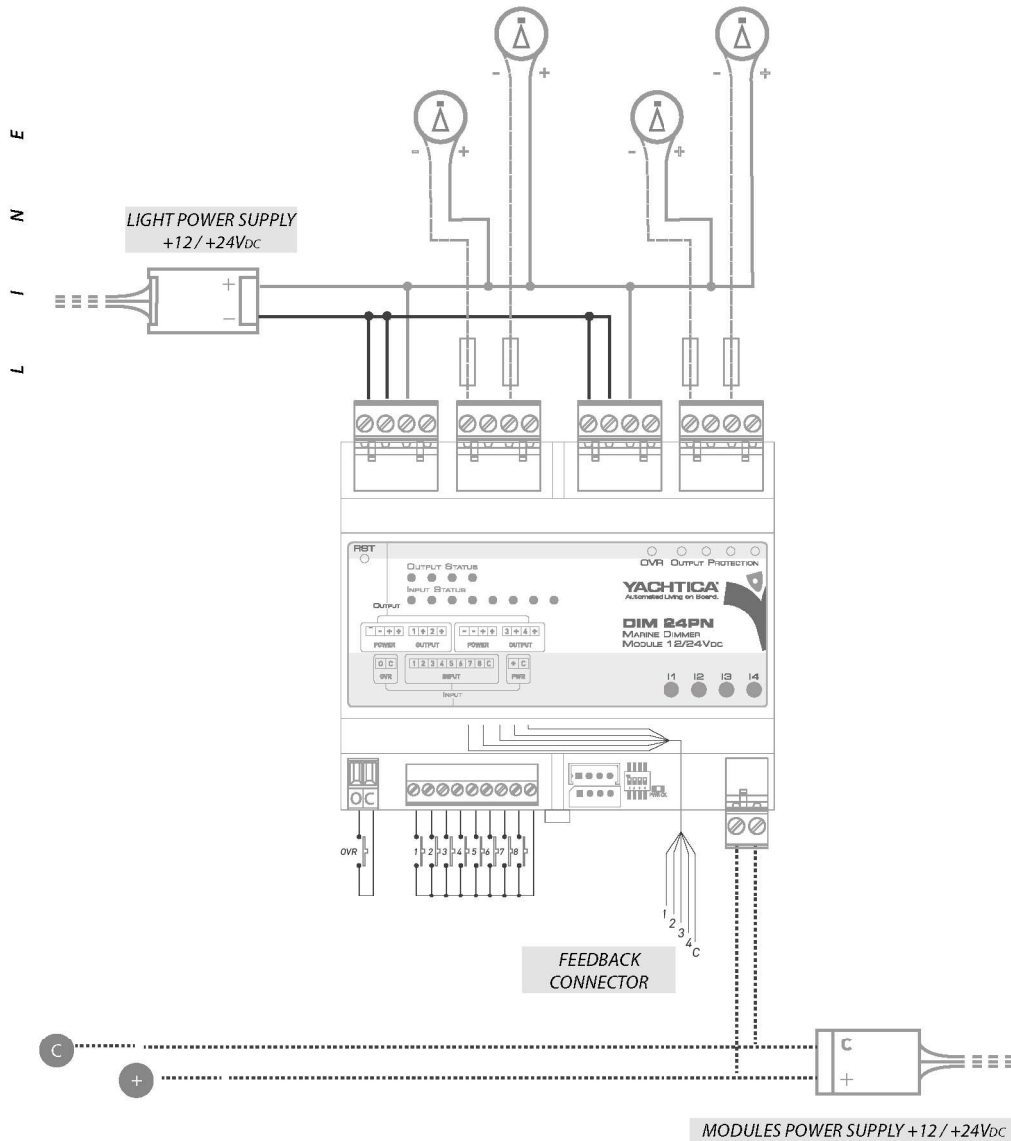
For particular wiring ask for YACHTICA® assistance.

NOTE: it is suggested to protect each output properly (fuse), according to the wiring present on board. Choose proper size of protections according to the section of the cables used and according to the load connected.

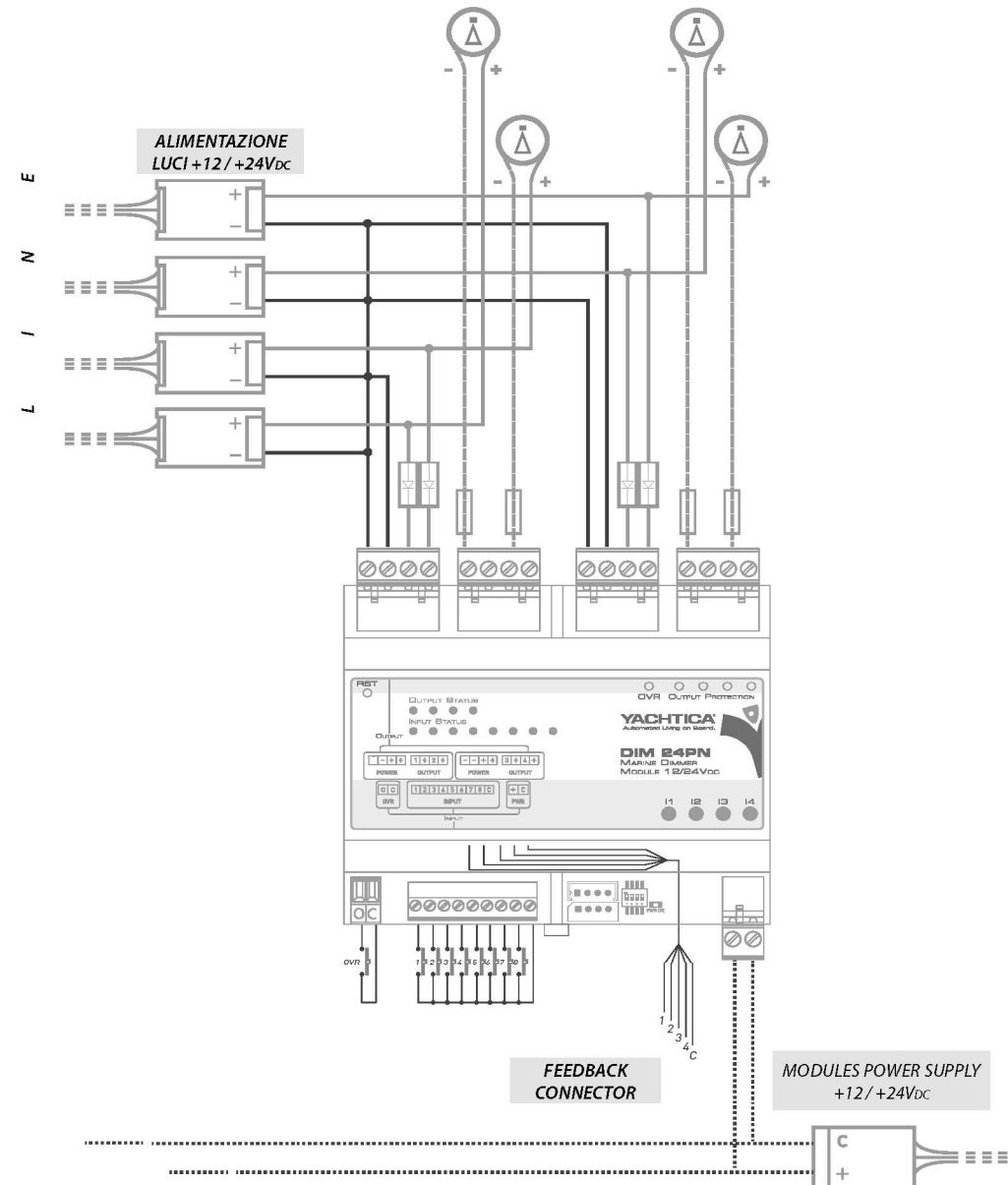
SCHEME 1: Direct wiring on the module



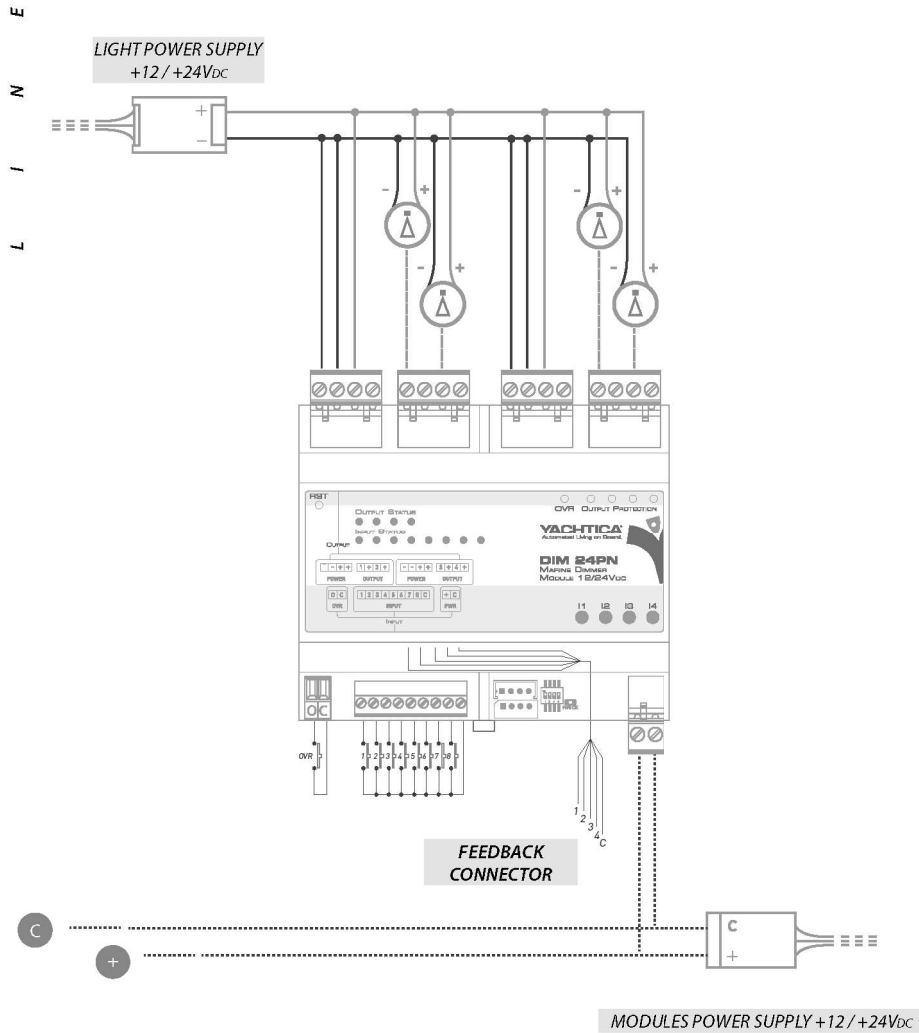
SCHEME 2: Wiring with direct positive



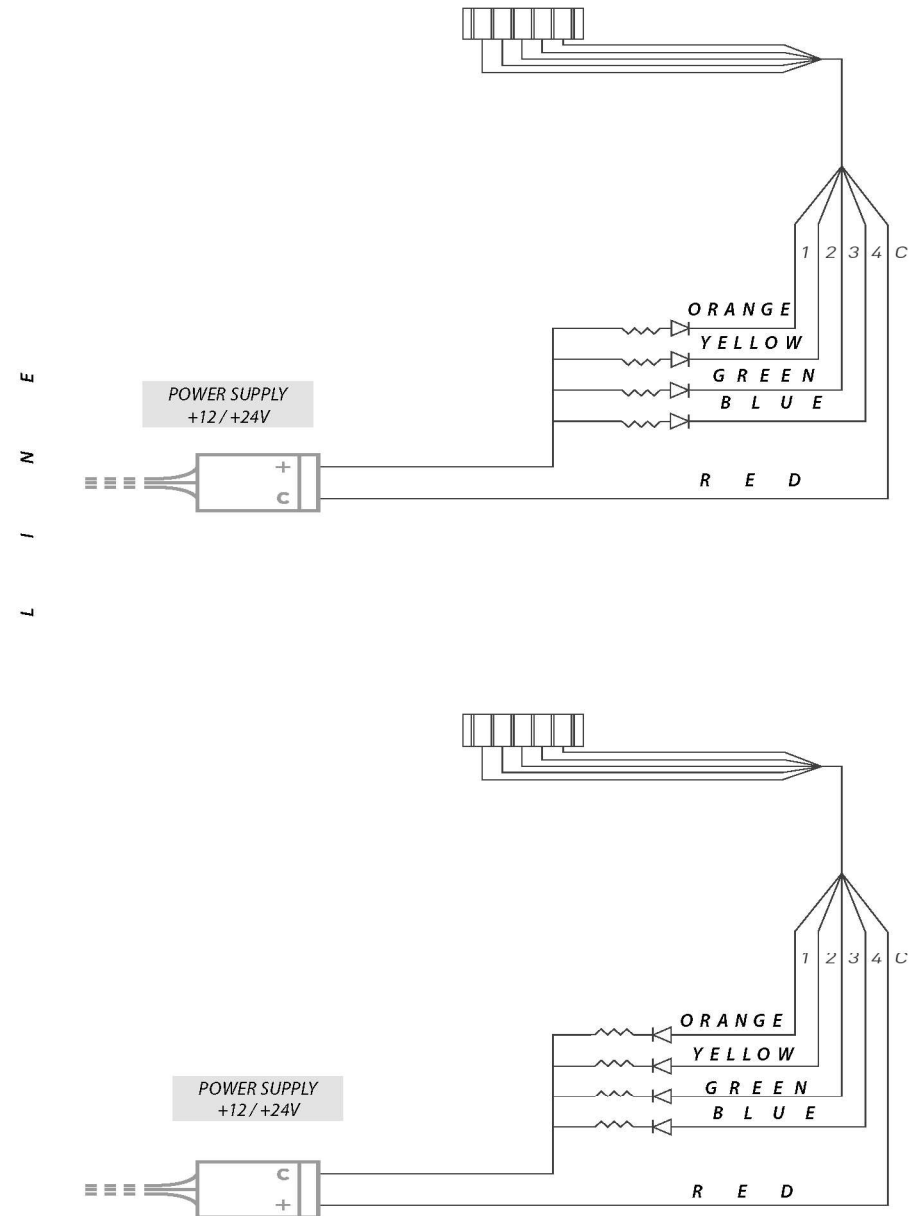
SCHEMA 3: Wiring with direct positive and independent power supply



SCHEME 4: Wiring for 3 wires spots



SCHEME 5: Feedback wiring



PROGRAMMING

STANDARD PROGRAMMING

Each DIM 24PN(-F) module has a standard programming that allows it to be used with its 8 dry contact inputs. Each input is associated with a particular functionality.

According to the setting of the DIP switches it is possible to select some particular programming usable with the 8 dry contact inputs.

NOTE

The 4 buttons on the top board do the Dimmer without memory function: long press does the dimming of the output; short press switch on and off the output at 100% with a ramp. The memory of the value reached with a long press is lost.

OTHER CONFIGURATIONS: STANDARD PROGRAMMING

If one of the possible configurations of the DIP switches is set, a simple link between the outputs is configured, keeping the same functionalities of the 8 dry contact inputs (see table pg 11).

# IN	FUNCTION NAME	DESCRIPTION
1-2-3-4	Dimmer With Memory	4 Outputs control commands: - Short press: switch on and off corresponding output to its last value, in 3 seconds. - Long press: allows the dimming of the corresponding output. When reaching 100% and 0%, the dimming process stops for 2 seconds, in order to select these particular values. When releasing the button the output stops to the reached value.
5	All On Scene	Command for a 4 outputs scene control. - Short press: switch on and off the outputs to 100% in 3 seconds. - Long press: allows the dimming of the 4 outputs. The outputs start dimming to low values, getting synchronized when reaching 0%, then raising towards 100% values.
6	Welcome Scene	Command used to set 4 outputs to 60% in 3 seconds.
7	Night Scene	Command used to set 4 outputs to 20% in 3 seconds.
8	All Off Scene	Command used to set 4 outputs to 0% in 2 seconds.

PROBLEM SOLVING

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
Module does not switch on	The module doesn't receive power supply on the electronic power supply connector	Check that dedicated power supply is working properly, providing right output voltage according to the specifications written in this manual.
	Positive and negative cabling poles inverted	Check that dedicated power supply positive and negative poles are connected in the right way.
The module is switched on but the outputs connected don't switch on	The module doesn't receive output power supply (Red fuse LED blinking once per second).	Check that 12/24V _{DC} dedicated output power supply is working properly, providing right output voltage.
	One or more outputs are in short circuit (Red fuse LED on for corresponding output).	Check the cabling for the outputs. There's a short circuit on the output corresponding to the fuse LED switched on.
	One or more outputs are in overload (Red fuse LED blinking 3 times per second for corresponding output)	Check that the load connected to each output of the module is under 16A. Check also that the switchboard temperature in which the module is installed is not too high: hot places can reduce the maximum load of the outputs.
Nothing happens while pressing a button connected to an input of the module	The module is in Override mode	Check that OVR input is not activated.
	Broken cable problem	Check that while pressing the button the corresponding label on the display is switched on. Check cabling in case it doesn't happen.

REPAIR AND WARRANTY POLICIES

PROBLEM	POSSIBLE CAUSE	POSSIBLE SOLUTION
One or more outputs floats between two different intensity level	Overload problem (Red fuse LED blinking 3 times per second for corresponding output)	Check the power load connected to the output and be sure that it is under the max load rating of the module. Check also the switchboard temperature where the module is installed, being sure it's not too high for best performance of the module.

Merchandise returns

No V.Y.C. Srl merchandise may be returned for credit, exchange or service without prior authorization from V.Y.C. Srl. To obtain warranty service for V.Y.C. Srl products, contact V.Y.C. Srl or an authorized dealer. Request for an RMA (Return Merchandise Authorization) and fill it in properly all the fields, before returning the module. Shipments arriving freight collect or without RMA number shall be subject to refusal.

Return freight charges following repair of items under warranty shall be paid by V.Y.C. Srl, shipping by standard ground carrier. In the event repairs are found to be non-warranty, return freight costs shall be paid by the purchaser. V.Y.C. Srl will provide repairing costs in case the merchandise is not under warranty.

V.Y.C. Srl limited warranty

V.Y.C. Srl warrants YACHTICA® products to be free from manufacturing defects in materials and workmanship under normal use for a period of 2 years from the date of purchase.

This warranty extends to products purchased directly from V.Y.C. Srl or an authorized YACHTICA® dealer.

V.Y.C. Srl shall not be liable to honor the terms of warranty if the product has been used in any application other than that for which it was intended or if it has been subject to misuse, accidental damage, modification or improper installation procedures

Furthermore, this warranty does not cover any products that has had the warranty void label altered, defaced or removed.

V.Y.C. Srl shall, at its option, repair or replace any product found defective, without charge for parts or labor. Repaired or replaced equipment and parts supplied under this warranty shall be covered only by the unexpired portion of the warranty.

Except as expressly set forth in this warranty, V.Y.C. Srl makes no other warranties, expressed or implied, nor authorizes any other party to offer any warranty, including any implied warranties of merchantability or fitness for a particular purpose. Any implied warranties that may be imposed by law are limited to the terms of this limited warranty.

This warranty statement supersedes all previous warranties.



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