

NAVIOP GENIUS 7G

Operating Instructions

Basic User's Manual for NAVIOP GENIUS 7G
Touchscreen Products

NAVIOP S.P.A.
NAVIOP_GENIUS7G
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Introduction

The operational guidelines described below is information which relates to the device, installation, transportation, storage, assembly, use and maintenance.

This Operating Instruction describes the main features of the NAVIOP operator panels. The Manual refers to the following models:

GENIUS 7G Operator interface with TFT color 7" widescreen display touchscreen and 1Ghz CPU

Safety Guide

The manual contains safety standards that must be respected for the personal safety and to avoid damage. Indications of attention are divided into three levels of severity:

DANGER: indicates a failure to observe safety rules and such failure may cause death or serious injuries.



ATTENTION: indicates a failure to observe safety rules and that deficiency may cause damage.



CAUTION: indicates a failure to observe safety rules and that deficiency may cause defects to the equipment or inconsistencies.



1 Product Overview

The NAVIOP GENIUS 7G products combine state-of-the-art features and top performance with an outstanding design. They are the ideal choice for all demanding HMI applications including factory energy and marine applications.

The GENIUS 7G features a high-brightness, contrast-enhanced ruggedized 7" TFT widescreen (16:9) display with a fully dimmable LED backlight. The product has been designed for use in harsh environments and outdoor applications. Glass bonding assembly and anti-reflective (AR) glass surface treatment provide for superior optical performance. The durable glass touchscreen requires the human touch, eliminating false activations, and offers high reliability and durability; it will continue to work even surface is scratched or contaminated.

The GENIUS 7G panels have been designed to run the JMobile software.

- JMobile runtime included. Full compatibility with JMobile Studio.
- Full vector graphic support. Native support of SVG graphic objects. Transparency and alpha blending.
- Full object dynamics: control visibility and transparency, move, resize, rotate any object on screen. Change properties of basic and complex objects.
- TrueType fonts.
- Multilanguage applications. Easily create and manage your applications in multiple languages to meet global requirements. Far East languages are supported. Tools available in JMobile Studio support easy third-party translations and help reducing development and maintenance costs of the application.
- Data display in numerical, text, bargraph, analog gauges and graphic image formats.
- Rich set of state-of-the-art HMI features: data acquisition, alarm handling, scheduler and timed actions (daily and weekly schedulers, exception dates), recipes, users and passwords, RSS feeds, rotating menus.
- Includes support for a wide range of communication drivers for Factory systems.
- Multiple drivers communication capability.
- Remote monitoring and control. Client-Server functionality.
- Remote maintenance and support with VNC-based functionality.
- Off-line simulation with JMobile Studio.
- Powerful scripting language for automating HMI applications. Script debugging improves efficiency in application development.
- Rich gallery of vector symbols and objects.
- Project templates.
- Optional plug-in modules for fieldbus systems, I/O and controllers.
- Display backlight dimmable to 0%.
- Mediaplayer widget
- IP Network camera widget
- Optional CoDeSys SoftPLC.
- CPU ARM Cortex-A8 - 1Ghz

2 Standards and Approvals

The products have been designed for use in an industrial environment in compliance with the 2004/108/EC EMC Directive.

The products have been designed in compliance with:

EN 61000-6-4 EN 55011 Class A

EN 61000-6-2 EN 61000-4-2
 EN 61000-4-3
 EN 61000-4-4
 EN 61000-4-5
 EN 61000-4-6
 EN 61000-4-8

EN60945

EN 60079-0

EN 60079-15

EN 60079-31

The installation of these devices into the residential, commercial and light-industrial environments is allowed only in the case that special measures are taken in order to ensure conformity to EN 61000-6-3.

The products are in compliance with the Restrictions on Certain Hazardous Substances (RoHS) Directive 2002/95/EC

In compliance with the above regulations the products are CE marked.

Product Identification

The product may be identified through a plate attached to the rear cover. You will have to know the type of unit you are using for correct usage of the information contained in the guide.

An example of this plate is shown in the figure below:



GENIUS 7G	product model name
ETOP507U5P1	product part number
01/12	month/year of production
09994847559	serial number
040100A01000000	version id of the product

3 Technical Specifications

Touch screen technology	Projective Capacitive
Back-up battery	3V 50mAh Lithium, rechargeable, not user-replaceable, model VL2330.
Fuse	Automatic
Serial Port	RS-232, RS-485, RS-422 software configurable
User memory	Flash 256MB GENIUS 7G
Recipe memory	Flash
Hardware clock	Clock/Calendar with back-up battery
Accuracy RTC (at 25°C)	<100ppm

Environmental conditions

Operating temperature (surrounding air temperature)	-20 ÷ +60°C (vertical installation)	EN60068-2-14
	-20 ÷ +50°C (horizontal installation)	
Storage temperature	-40 ÷ +85°C	EN60068-2-14
Operating and storage humidity	5 ÷ 85 % RH not-condensing	EN60068-2-30
Vibrations	5 ÷ 9 Hz, 7 mm _{p-p}	EN60068-2-6
	9 ÷ 150 Hz, 1 g	
Shock	± 50 g, 11 ms, 3 pulses per axis	EN60068-2-27
Protection class	IP69K (front panel)	EN 60529
	IP20 (rear)	

Electromagnetic Compatibility (EMC)

Radiated disturbance test	Class A	EN 55011
Electrostatic discharge immunity test	8 kV (air electrostatic discharge) 4 kV (contact electrostatic discharge)	EN 61000-4-2
Radiated, radio-frequency, electromagnetic field immunity test	80 MHz ÷ 1 GHz, 10V/m 1,4 GHz ÷ 2 GHz, 3 V/m 2 GHz ÷ 2.7 GHz, 1 V/m	EN 61000-4-3
Burst immunity test	± 2 KV dc power port ± 1 KV signal line	EN 61000-4-4
Surge immunity test	± 0,5 KV dc power port (line to earth) ± 0,5 KV dc power port (line to line) ± 1 KV signal line (line to earth)	EN 61000-4-5
Immunity to conducted disturbances induced by radiofrequency field	0.15 ÷ 80 MHz, 10V	EN 61000-4-6
Voltage dips, short interruptions and voltage variations immunity test	Port: AC mains; Level: 100% duration: 1 cycle and 250 cycles (50Hz); 40% duration: 10 cycles (50Hz); 70% duration: 25 cycles (50Hz); Phase: 0°-180°	
Test executed on the 230Vac side of the Exor International S.p.A. Power Supply		EN 61000-4-11

Durability information

Backlight service life (LED type)	40000 Hrs. or more (Time of continuous operation until the brightness of the backlight reaches 50% of the rated value when the surrounding air temperature is 25°C) - see Note 1
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Note 1: Extended use in environments where the surrounding air temperature is 40°C or higher may degrade backlight quality/reliability/durability.

Surface Chemical Resistance:

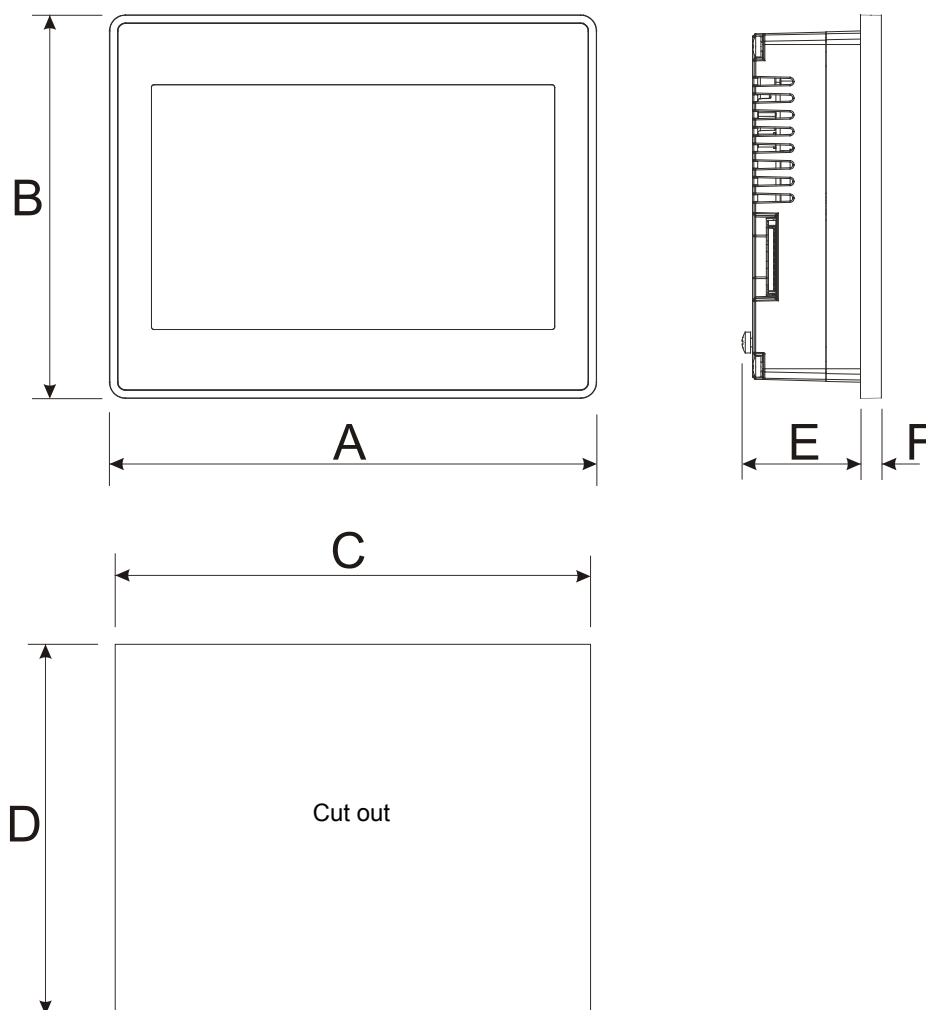
Alcohol, Acetone, Methylene Chloride, Isopropanol, Hexane, Methyl ethyl ketone, Turpentine, Mineral Spirit, Unleaded Gasoline, Diesel Fuel, Coal oil, Motor oil, Transmission Fluid, Antifreeze, 10% NaClO, 6% Hydrochloric Acid, 40% Sulfuric Acid, 70% Nitric Acid, 5% Ammonia, 10% Sodium Hydroxide, 3% Hydrogen Peroxide, Toluene, Ammonia-based Glass Cleaner, Laundry Detergents, Cleaner, Black Tea, Coffee, Vinegar, Coca Cola, Grease, Cooking Oil, Salt, Bleach

4 Technical Data

Model	@@@@@	GENIUS 7G
Display / Backlight	TFT Color / LED	TFT Color / LED
Colors	64K	64K
Resolution	800X480	800x480
Diagonal (inches)	7" widescreen	7" widescreen
Dimming	yes	yes
User memory flash	128MB	256MB
SD card slot	yes	yes
Recipe memory	Yes. Flash memory storage limited only by available memory	Yes. Flash memory storage limited only by available memory
Serial Port	RS-232,RS-485 RS-422 DB9 female software configurable	RS-232,RS-485 RS-422 DB9 female software configurable
Ethernet port	2 10/100 Mbit with integrated switch	2 10/100 Mbit with integrated switch
USB port	2 Host interface, 1 version 2.0, 1 version 2.0 and 1.1	2 Host interface, 1 version 2.0, 1 version 2.0 and 1.1
Expansion slot	2 Optional Plugin	2 Optional Plugin
Battery	rechargeable	rechargeable
Real Time Clock	yes	yes
Voltage	10-32Vdc (*)	10-32Vdc (*)
Current rating (at 24VDC)	0.7A	0.7 A
Weight	1 Kg	1 Kg

(*) For applications requiring compliance with EN 61131-2 and specifically in reference to 10 ms voltage dips, the minimum power supply voltage is 18Vdc.

4.1 Dimensions



MODEL	A	B	C	D	E	F
GENIUS 7G	187mm/7.36"	147mm/5.79"	176mm/6.90"	136mm/5.35"	47mm/1.85"	8mm/0.31"

MODEL	CSD	CSD2
GENIUS 7G	500mm/19.68"	350mm/13.77"

CSD=Minimum Compass Safe Distance of standard compass

CSD2=Minimum Compass Safe Distance of steering compass, standby steering compass, emergency compass

4.2 Installation Environment

Avoid prolonged exposition to direct sunlight to avoid the risk of overheating the device.

The equipment is not intended for installation in contact with corrosive chemical compounds. Check the resistance of the front panel to a specific compound before installation.

Do not use tools of any kind (screwdrivers, etc.) to operate the touch screen of the panel.

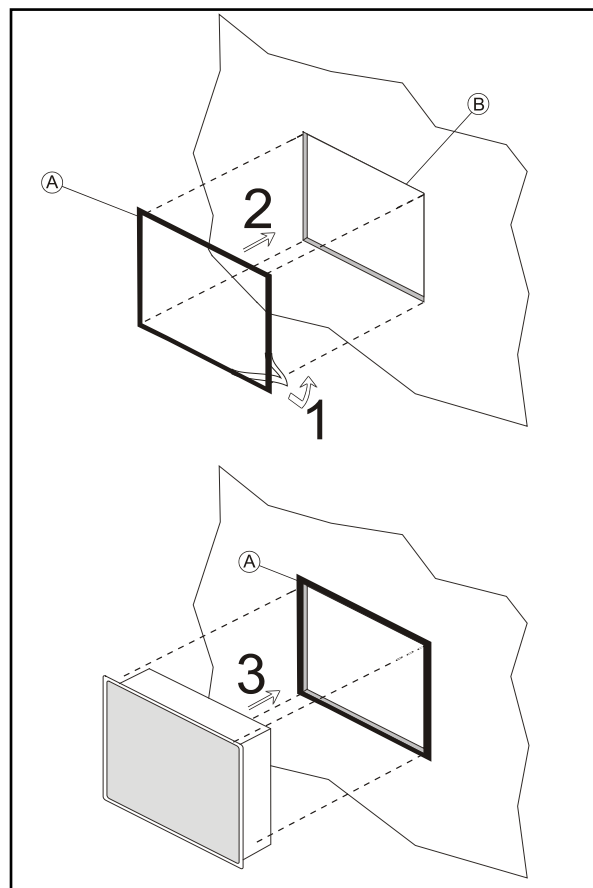
In order to meet the front panel protection classifications, proper installation procedure must be followed:

- the borders of the cutout must be flat
- screw up each fixing screw until the plastic bezel corner get in contact with the panel.
- the cutout for the panel must be of the dimensions indicated in this manual.

The IP69K is guaranteed only if:

- max deviation from the plane surface to the cut-out: $\leq 0.5\text{mm}$
- thickness of the case where is mounted the equipment: from 1,5mm to 6mm
- max surface roughness where the gasket is applied: $\leq 120\text{ }\mu\text{m}$

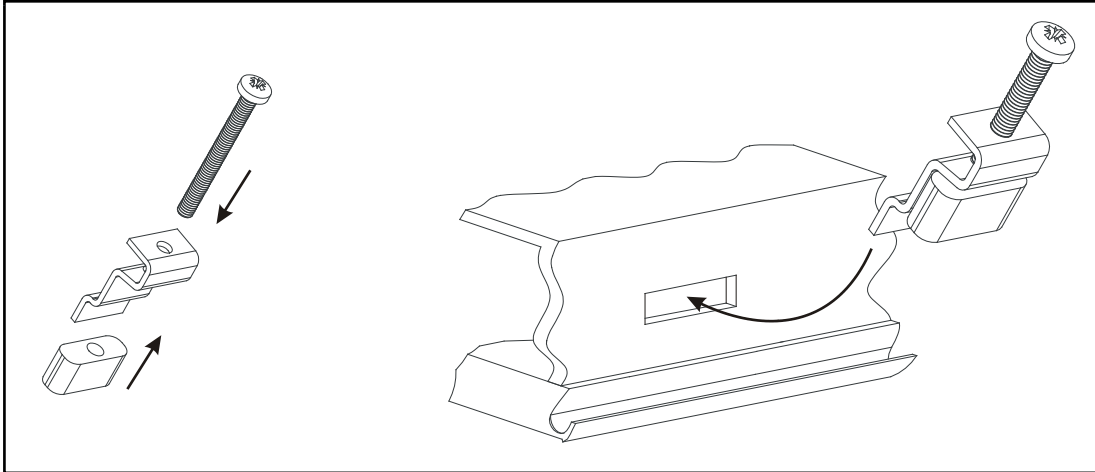
Applying the gasket



- A.** Gasket
B. Installation cut-out

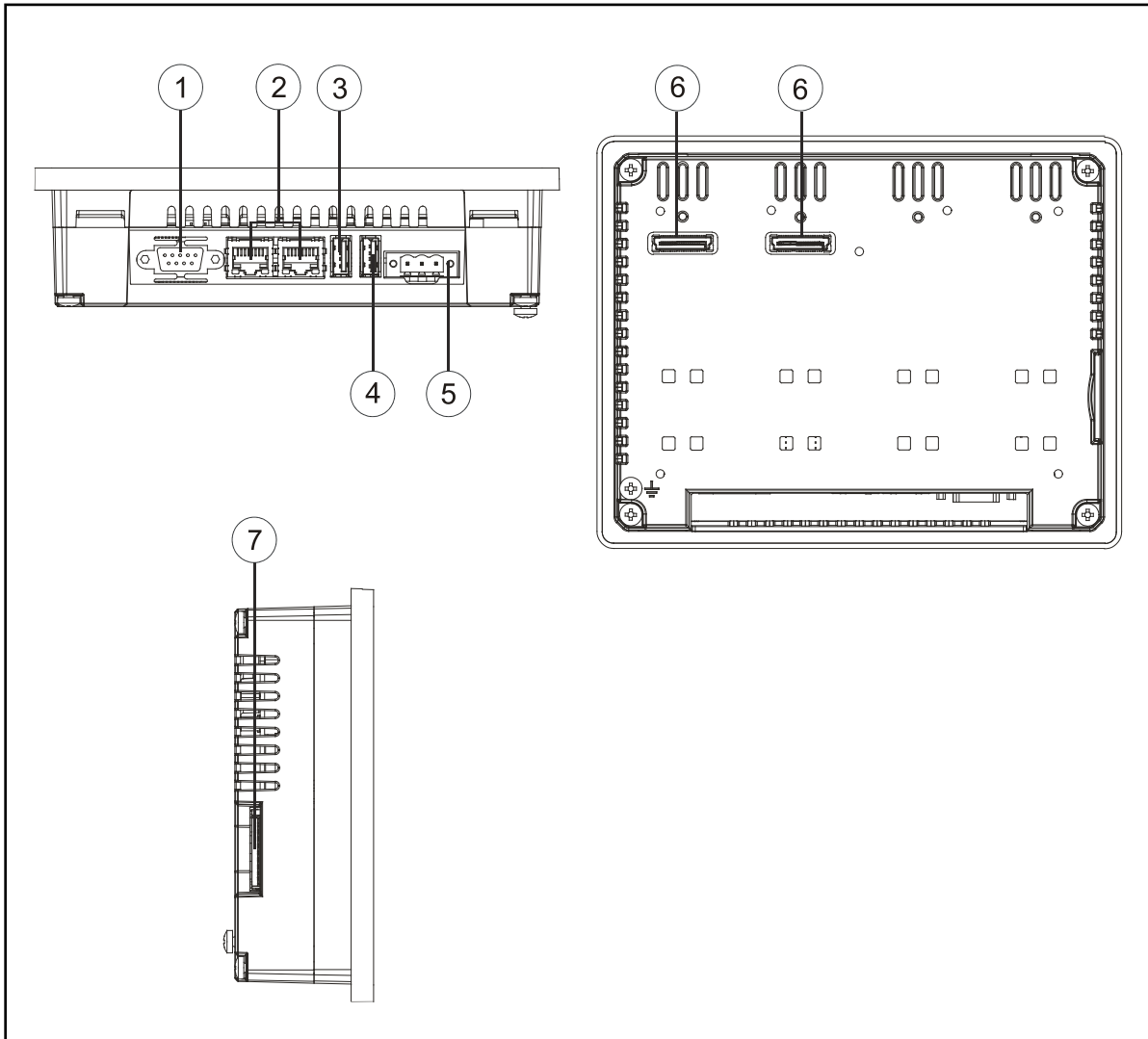
4.3 Installation Procedure

Place the fixing brackets as shown in figure.

**CAUTION**

Screw each fixing screw until the bezel corner gets in contact with the panel.

5 Connections



1. Serial Port
2. 2x Ethernet Port
3. USB Port (version 2.0 - 1.1)
4. USB Port (version 2.0 High speed only)
5. Power Supply
6. Expansion slot for Plugin module
7. SD Card Slot

5.1 Serial Port

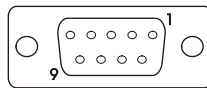
The serial port is used to communicate with the PLC or with another type of controller. Different electrical standards are available for the signals in the PLC port connector: RS-232, RS-422, RS-485.

The serial port is software programmable. Make sure you select the appropriate interface in the programming software.

RS-232

Pin	Description
1	GND
2	
3	TX
4	RX
5	
6	+5V output
7	CTS
8	RTS
9	

SERIAL PORT



RS-422, RS-485

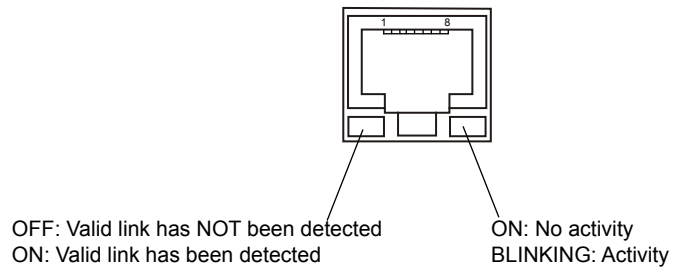
Pin	Description
1	GND
2	
3	CHA-
4	CHB-
5	
6	+5V output
7	CHB+
8	CHA+
9	

To operate in RS485 pins 4-3 and 8-7 must be connected externally.

The communication cable must be chosen for the type of device being connected.

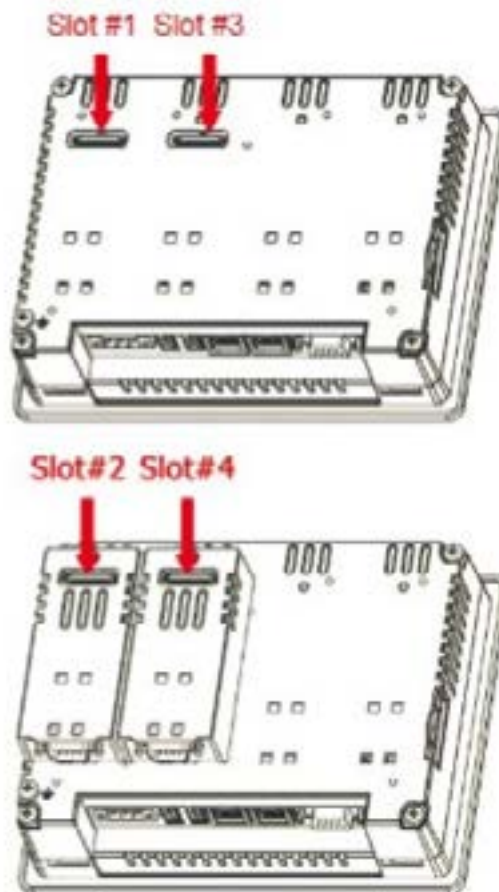
5.2 Ethernet Port

The Ethernet port have two status indicators. Please see description in figure.



5.3 Optional plugin module

GENIUS 7G have several optional plugin module, multiple modules configurations are possible.



Slot#2 and Slot#4 are available only if plugin module has the “bus extension connector”.

Each slot carries three communication channels:

- 1 serial interface
- 1 CAN interface
- 1 SPI interface

Note: It is not possible to stack two modules that are using the same type of interface.

Below you can find relation between modules and max number of modules that can be used into eTOP500 serie panels, based on their Interface Type:

Module	Application	Max Modules	Interface Type	Bus Extension connector
PLCM01	CAN	2 for GENIUS 7G	CAN	Y
PLCM01-NE	CAN	2 for GENIUS 7G	CAN	N
PLCM02	KNX	1	Serial	N
PLCM03	Serial RS232	2	Serial	Y
PLCM04	Serial RS485	2	Serial	Y
PLCM05	CODESYS V2 License	1		Y
PLCM06	Profibus DP	1	SPI	N
PLIO03	Multifunction I/O	1	SPI	N
PLIO06	Compact I/O	2	SPI	N

Max modules refers to max number of modules can be plugged into the HMI (all slots),

If you are planning to use PLCM03 and PLCM04 (additional serial ports) you will obtain following “COM - Slot#” association:

- a module plugged in Slot#1 or into Slot#2 will be COM2,
- a module plugged in Slot#3 or into Slot#4 will be COM3.

If you are planning to use two PLCM01 (CAN interface) you will obtain following Slot# association:

- a module plugged in Slot#1 or into Slot#2 will be the CanPort 0,
- a module plugged in Slot#3 or into Slot#4 will be the CanPort 1.

6 Power Supply, Grounding and Shielding

The power supply terminal block is shown in the figure below.

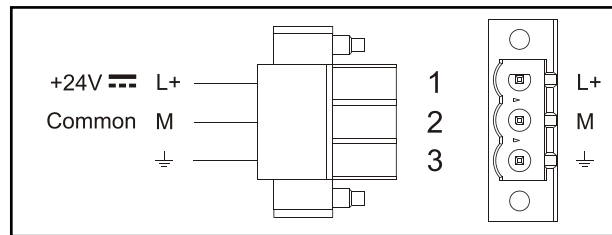


Fig. 6.1

Note: Ensure that the power supply has enough power capacity for the operation of the equipment.

The unit must always be grounded to earth. Grounding helps limit the effects of noise due to electro-magnetic interference on the control system.

Earth connection will have to be done using either the screw or the faston terminal located near the power supply terminal block. A label helps identify the ground connection. Also connect to ground the terminal 3 on the power supply terminal block.

The power supply circuit may be floating or grounded. In the latter case, connect to ground the power source common as shown in figure (see below) with a dashed line.

When using the floating power scheme, note that the panes internally connects the power common to ground with a $1\text{M}\Omega$ resistor in parallel with a $4,7\text{nF}$ capacitor.

The power supply must have double or reinforced insulation.

The suggested wiring for the power supply is shown below.

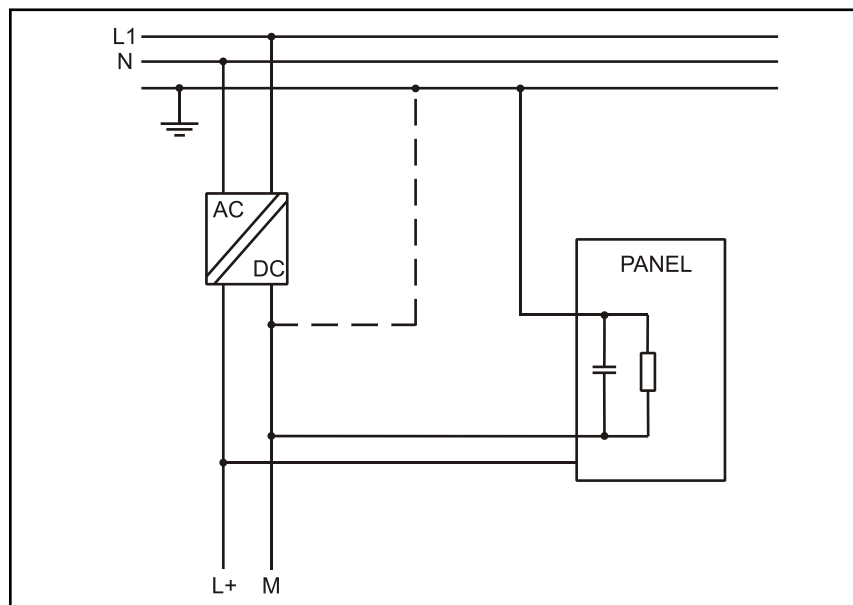


Fig. 6.2

All the electronic devices in the control system must be properly grounded. Grounding must be performed according to applicable regulations.

7 Battery

These devices are equipped with rechargeable Lithium battery, not user-replaceable.

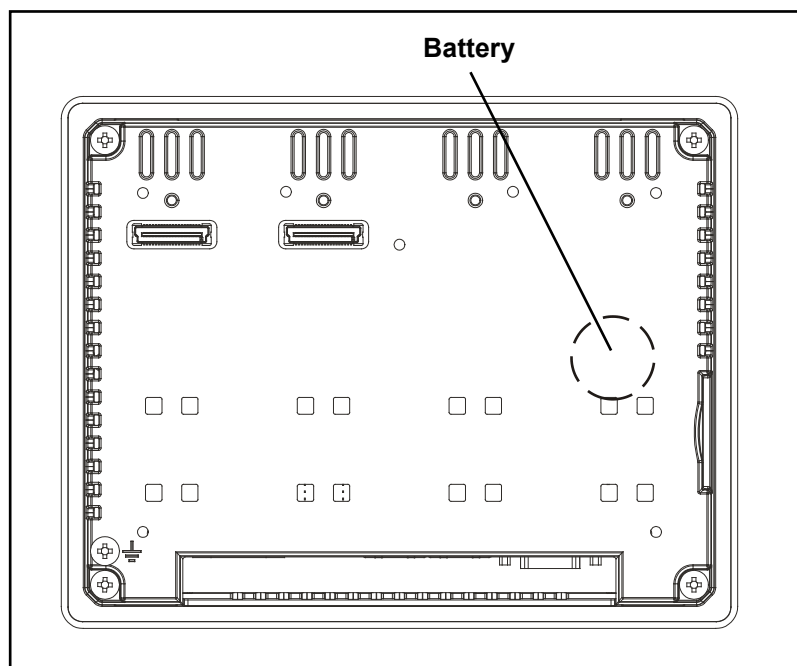
The following information is maintained by the battery:

- hardware real-time clock (date and time)

Charge:

At first installation must be charged for 48 hours.

When the battery is fully charged, it ensures a period of 3 months of data back-up at 25°C.



ATTENTION

Dispose of batteries according to local regulations.



8 Cleaning Faceplates

The equipment must be cleaned only with a soft cloth and neutral soap product. Do not use solvents.

9 Getting Started

NAVIOP GENIUS series panels must be programmed with the programming software JMobile Studio. To program a panel you will have to connect the panel to a personal computer running JMobile Studio software package; the panel must be in Configuration mode to be programmed. NAVIOP GENIUS series units are programmed via the Ethernet interface.

The software package JMobile is a Windows™ application and must be properly installed.

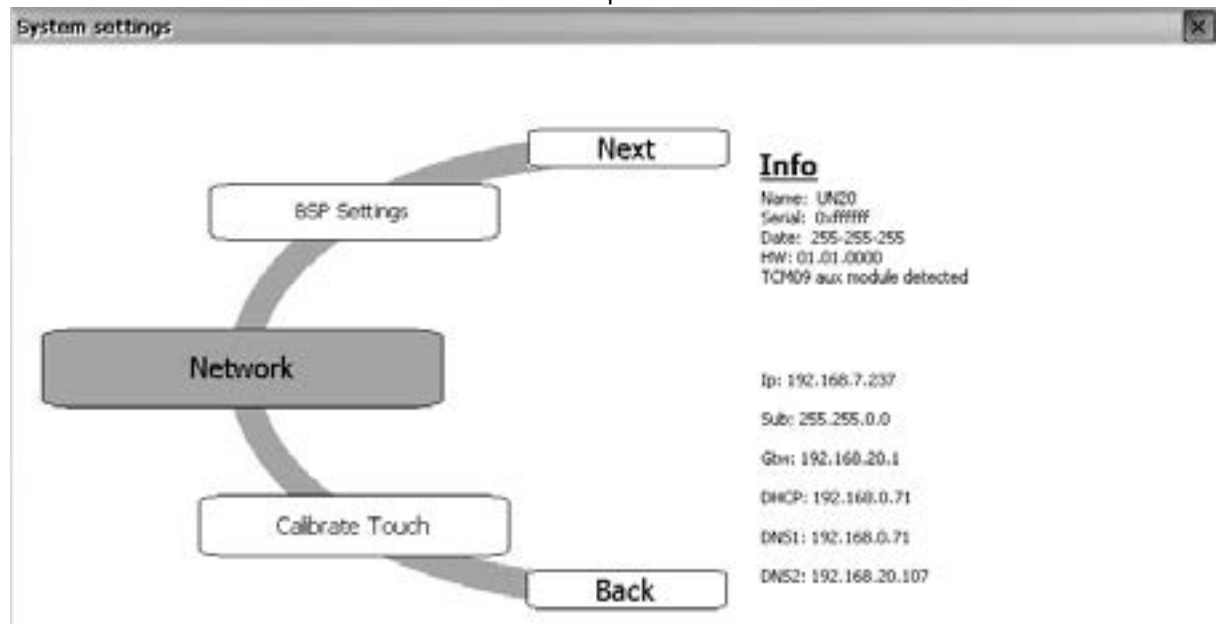
JMobile uses the personal computer Ethernet interface to communicate with the target device. Make sure that the proper firewall policy is configured in order to allow JMobile Studio to access the network.

The version of the JMobile Studio used must be compatible with the JMobile runtime version installed on the panel to be programmed.

10 System Settings

unit. The System settings tool comes in the shape of a rotating menu with navigation buttons at top and bottom. The NAVIOP GENIUS panels have a system settings tool to allow basic and preliminary settings to the unit. The System settings tool comes in the shape of a rotating menu with navigation buttons at top and bottom to scroll between the available options. The tool is shown in the picture below.

On the left side the several components and functions are highlighted and, per each of them, the right side ("Info" pane) shows the information about the current version, when applicable. In the picture below it is showed the version of the Main OS component.



System Settings has two operating modes:

User Mode and **System Mode**.

The difference between them is only in the number of available options.

System settings in **User Mode** is activated from the context menu. The context menu can be recalled by clicking and holding any unused area of the touchscreen for a few seconds. Default holding time is 2 sec. Holding time is a runtime parameter that can be changed.

System settings in **System Mode** can be activated with the so-called Emergency system access procedure. This procedure consist in tapping in the middle of the touchscreen with a finger at a high frequency while the system is powering up. The Emergency procedure can only be accessed at power-up.

“**User mode**” is the simplest possible interface where a generic user can get access to the basic settings of the panel:

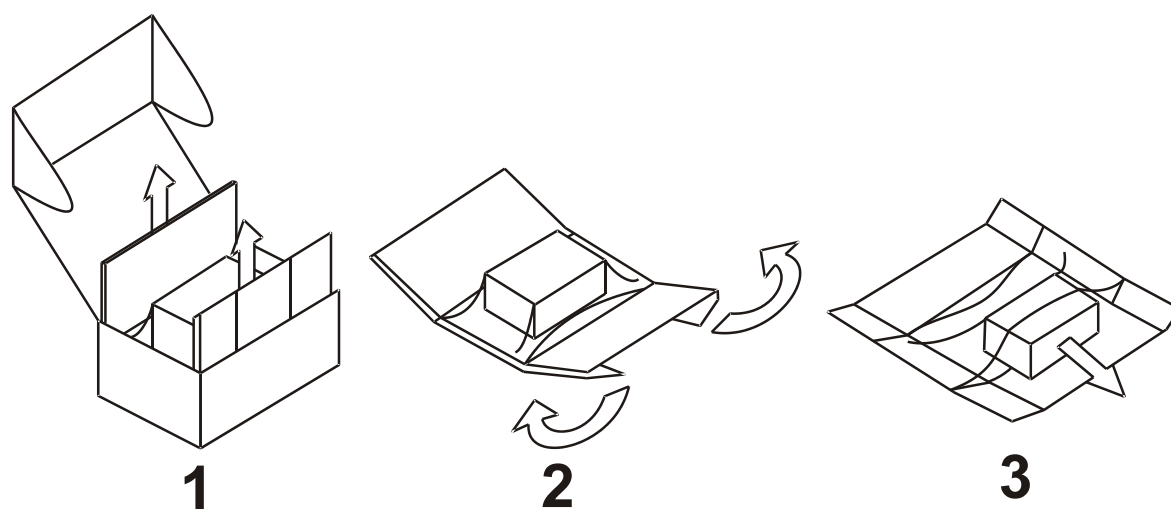
Calibrate Touch:	allows to calibrate the touch screen interface
Network:	allows to change the options of the panel on-board network card
Time:	allows to change the panel RTC options, including time zone and DST
Display settings:	automatic backlight turnoff and brightness adjustment
BSP settings:	allows to check the BSP (Board Support Package) version (example 2.37), check the operating hours timers for the unit and separately for the backlight, enable/disable the buzzer
Plugin list:	allows to check the presence of optional plugin modules installed.

“**System Mode**” is the complete interface of the System Settings tool where all the available options are available; in addition to the options available in the “User Mode” we have the following important options:

Format Flash:	allows to format the internal panel flash disk
Resize Image Area:	allows to resize the flash portion reserved to store the splash screen image displayed by the unit at power up; default settings are normally ok for all the units
Download Configuration OS:	allows to check current version and upgrade the back-up operating system, see below in the next chapter for additional details
Download Main OS:	allows to check current version and upgrade the main operating system, see below in the next chapter for additional details
Download Splash Image:	allows changing the splash screen image displayed by the unit at power up; the image should be provide in a specific format. We suggest to update Splash Screen Image directly from Studio software which supports this feature starting from V 1. 50
Download Bootloader:	allows to check actual version of the system boot loader and to upgrade it, see below for additional details

Note: *the System Settings tool includes also other options, not described and not documented at this moment*

11 Unpacking and Packing Instructions



to repack the unit, please follow the instructions backwards.