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Installation, use and maintenance manual

📖	**BEFORE STARTING UP THE INDUSTRIAL COMPUTERS POSYC 3401/3402, CARE-FULLY READ THIS MANUAL AND FOLLOW ALL INSTRUCTIONS, IN ORDER TO EN-SURE MAXIMUM SAFETY**

INDUSTRIAL COMPUTERS
POSYC 3401/3402

ℹ	The technical data and the drawings in this manual might have been modified later; always refer to the latest version.

Summary

1 Preface

This manual provides all necessary information for the installation, use and maintenance of industrial computers POSYC 3401/3402.

The instructions included in this manual are addressed to the following professionals:

User	User is a person, a company or an institution that buys the equipment and uses it for the purposes it was designed for.
User/operator	User or operator is a person authorized by the user to operate on the equipment.
Specialized personnel	It refers to all persons with specific competence, able to recognize and avoid the dangers deriving from the use of the equipment.

The present instructions must be made available to all the above individuals.

2 General warnings

These assembly instructions are an integral part of the equipment, and must be kept for future reference until decommissioning.

The user should be informed that the present instructions reflect the state of the art at the moment when the equipment was sold; they will remain fully acceptable despite subsequent upgrades based on new experiences.

	DO NOT USE THE EQUIPMENT, NOR MAKE ANY INTERVENTION BEFORE INTEGRALLY READING AND UNDERSTANDING THIS MANUAL.
IN PARTICULAR, ADOPT ALL SAFETY PRECAUTIONS AND PRESCRIPTIONS INDICATED IN THIS MANUAL.	
THE EQUIPMENT CANNOT BE USED FOR PURPOSES DIFFERENT THAN THE ONES DESCRIBED IN THIS MANUAL; SMITEC S.p.A. SHALL NOT BE HELD RESPONSIBLE FOR ANY DAMAGES, INCONVENIENCES OR ACCIDENTS DUE TO THE NON-COMPLIANCE WITH THESE PRESCRIPTIONS.	

In order to make the manual consultation easier, the following symbols have been adopted:

	Indication of "PROHIBITED ACTION".
	The symbol "DANGER" is used when the non-respect of the prescriptions or the tampering of organs can cause serious harm to people or things.
	The symbol "USE OF INDIVIDUAL PROTECTIONS" means that protective gloves must be worn.
	Indication of "INFORMATION OF PARTICULAR RELEVANCE".

The safety prescriptions aim at establishing a series of behaviors and obligations to be complied with, while performing the activities described later on in this manual.

These prescriptions constitute the prescribed method of operating the device, in a way that is safe for personnel, equipments and environment.

3 Safety instructions

3.1 General information

🚫	Do not install or use the equipment before integrally reading and understanding this manual. In case of difficulties of interpretation, contact SMITEC technical service.
	It is absolutely forbidden to use the equipment for different purposes than the ones described in this manual. The technical data and the drawings in this manual might have been modified later; always refer to the latest version. All upgrades can be requested to SMITEC S.p.A. directly.
⚠️	Make sure that the personnel is qualified and adequately informed about the risks he may run and how to avoid them.
ℹ️	POSYC 340X series industrial PCs can be used only after the classification of the machine operating area and after checking the safety levels, which must correspond to the assembly safety levels.

3.2 Precautions during handling and assembly

⚠️	Use adequate tools during the assembly, in order to avoid crushing or abrasions.
🧤	Metal components and sharp surfaces may cause cuts and tears. In case of contact, be very careful and wear the personal protection equipment.

4 Product description

The POSYC is an ARM-based computer designed primarily as a human-machine interface (HMI) process-controller, with I/O (depending on the model) and integrated FLXIO bus controller.

The user interface has a flat color display with a 7 "diagonal LED illuminated and a touch screen pointing system integrated into the product.

The touch screen system offers features of robustness and ease of use, difficult to obtain with other common pointing devices such as mouse, track-ball and mouse pad.

Being completely integrated into the appliance, it is particularly suitable even in industrial applications that require resistance to external agents such as dust, humidity, water, oils, etc., which would be harmful for standard devices.

Since it is sufficient to exert a slight pressure with a finger on its surface to make an immediate pointing, this system is the main "User Friendly" feature of the POSYC computer.

In order to meet the most different interfacing needs, POSYC nevertheless provides the possibility to connect also standard input / output devices, such as keyboard, mouse, track-ball, monitor, etc.

The POSYC calculation capability is given by the ARM® Cortex® A9 i.MX6SX 1GHz processor with 1GB DDR3L RAM memory.

The storage of data and programs on non-volatile support is entrusted to a 4GB micro SD memory.

The position of the device inside the POSYC is such that it can be extracted without opening it. The main advantage of the micro SD card is its exceptional resistance to accidental shocks and vibrations.

POSYC 340X

5 Technical data

	All the technical information reported in this section are consistent with the hardware configuration of the POSYC computer produced at the date of writing of this document. With the aim of improving or updating the product technologically, SMITEC S.p.A. reserves the right to change the technical features of the POSYC computer without notice.

5.1 Electrical characteristics

Operating temperature	0° ÷ +50°C when operational
Storage temperature	-20° ÷ +60°C when not operational
Relative humidity	0 ÷ 90% (without condensation)
Protection degree	IP65 on the front (according to IEC 60529 and type 1 UL) IP20 on the back (according to IEC 60529)
Maximum altitude	2000 m a.s.l

5.2 Electrical characteristics

The following characteristics refer to the standard POSYC computer load as supplied, without any connected peripheral device.

Main power supply voltage (PWR)	24 VDC (-15% ÷ + 20% according to EN 61131-2) from CLASS 2 power supply (UL)
Current consumption	Max 0.40A @ 24VDC
Absorbed power	Max 9.60 W
Auxiliary power supply voltage (I/O)	24 VDC (-15% ÷ + 20% according to EN 61131-2) from CLASS 2 power supply (UL)

5.3 Mechanical characteristics

Fixing	Front panel with 4 through holes of 3.2 mm
Weight	Model 3401: 0.83 kg
	Model 3402: 0.78 kg

5.3.1   Mechanical dimensions

5.3.1.1   Front view
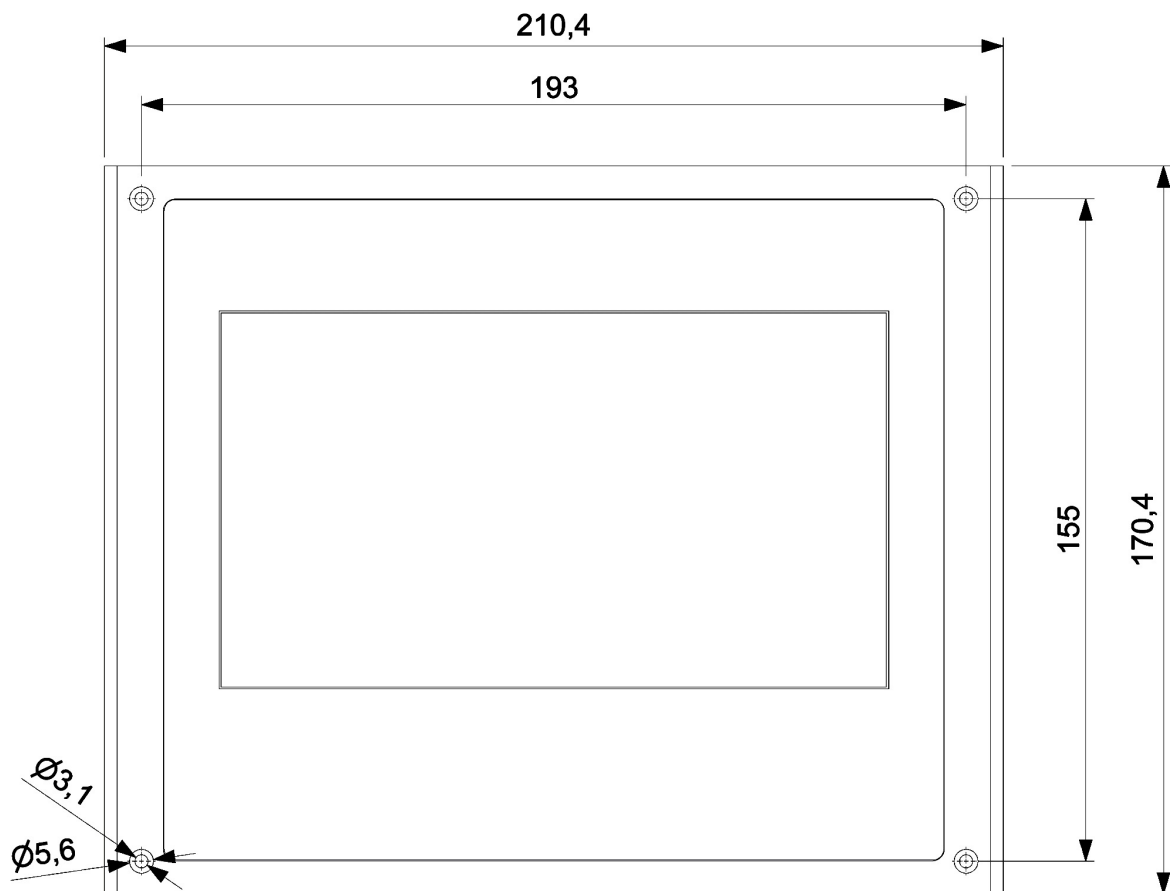
The computers Posyc 3401/3402 need to be fixed on a stable and rigid panel provided with 4xM3 metal threaded hole, min. 1.5mm deep. Use 4xM3x10mm Fe/Zn (not countersunk head type) screws, min. class 8.8, tightened at 1Nm.

5.3.1.2 Side view

5.3.1.3   Rear view (recommended panel cut)

5.4 Hardware features

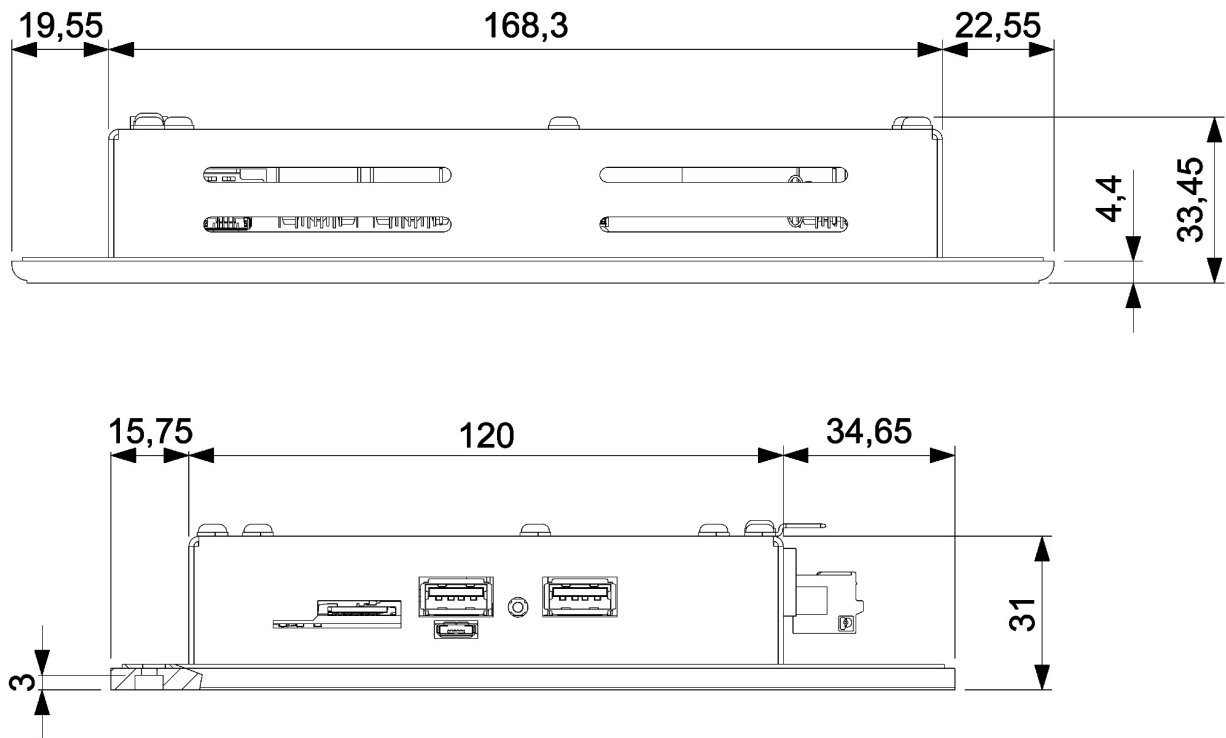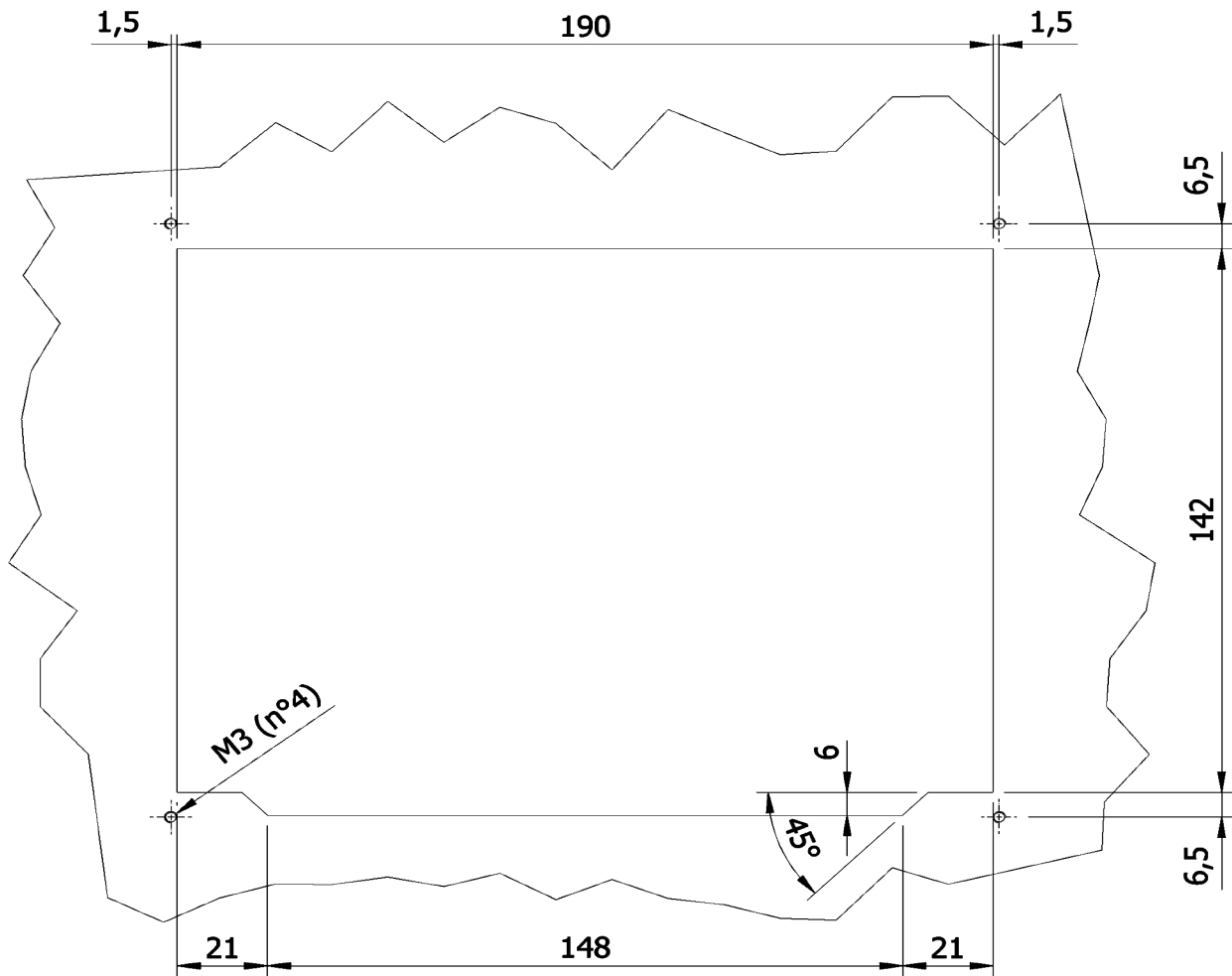|	
i	The hardware whose features are described is the minimum guaranteed in the product and functionally tested; some peripherals possibly present in addition to the purchased product are not guaranteed neither for production continuity nor for functionality.

5.4.1 Basic hardware

Processor	ARM® Cortex® A9 i.MX6SX 1GHz
Memory	1GB DDR3L
Display	7 "color LED TFT, 800x480 16M with integrated touch-panel
Touch screen sensor	4 resistive wires
Side USB ports	2 x 2.0
Micro SD card	4GB with Linux operating system

5.4.1.1 POSYC 3401

Basic hardware with the following additions.

Ethernet ports	2 x 10/100 Mbps
FLXIO ports	3 (isolated)
I/O	Current consumption power input (VI): 2.0A max 4 24V digital I/O (isolated): max single channel output current: 0.5A Total current withdraw-able from the outputs (VO and I/O): 2.0A max 4 digital inputs 24V (isolated): according to EN 61131-2 Type 1 and Type 3

5.4.1.2 POSYC 3402

Basic hardware with the following additions.

Ethernet ports	1 x 10/100 Mbps
FLXIO ports	3 (not isolated)
I/O	Not present

5.5 Order codes

Order code	Model	Description
KZ010501	3401	Hardware base PC with I/O, 2 Ethernet, FLEXIO bus isolated
KZ010528	3402	Hardware base PC without I/O, 1 Ethernet, FLXIO bus not isolated
KZ010573	3402 AUDION (UL)	Hardware base PC without I/O, 1 Ethernet, FLXIO bus not isolated

5.6 Accessories

The POSYC 3401/3402 industrial computers come with a power connector. The same can be ordered separately as well as other accessories not included in the POSYC.

Below is the list of order codes.

Order code	Article
KF101074	24VDC connector (Phoenix Contact cod.1851232) *
KF101049	I/O connector (Phoenix Contact cod.1738856) **
KE050082	Micro SD flash disk, minimum class 4, 4GB capacity (with Linux operating system)
KE020040	Micro SD flash disk, minimum class 4, 4GB capacity (empty)
TB010554	CR2032 3V lithium coin cell battery *

* = Supplied with POSYC

** = Supplied only with model 3401

6 Connections and LEDs

6.1 Top panel view

The following figures show the connectors on the top of the POSYC:

ETH 1   ETH 2   I/O   L0   L1   L2   PWR   FE

POSYC 3401

ETH 1   L0   L1   L2   PWR   FE
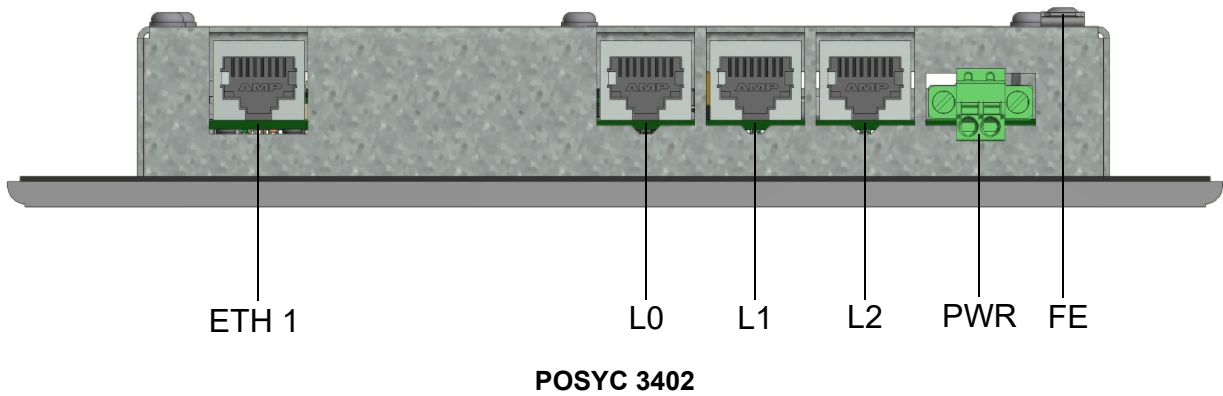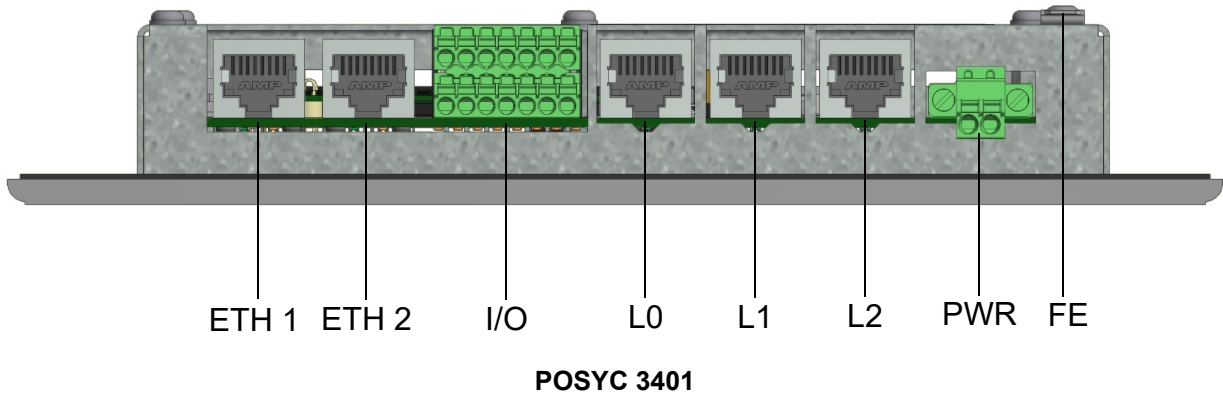
POSYC 3402

Name	Function
PWR	24 VDC power supply connection
FE	Earth protection connection
ETH 1	Ethernet communication port 1
ETH 2	Ethernet communication port 2 (only for POSYC 3401)
I/O	24V digital inputs and outputs (only for POSYC 3401)
L0	FLXIO communication port 1
L1	FLXIO communication port 2
L2	FLXIO communication port 3

6.2 Side panel view

The following image shows the connectors on the side of the POSYC:
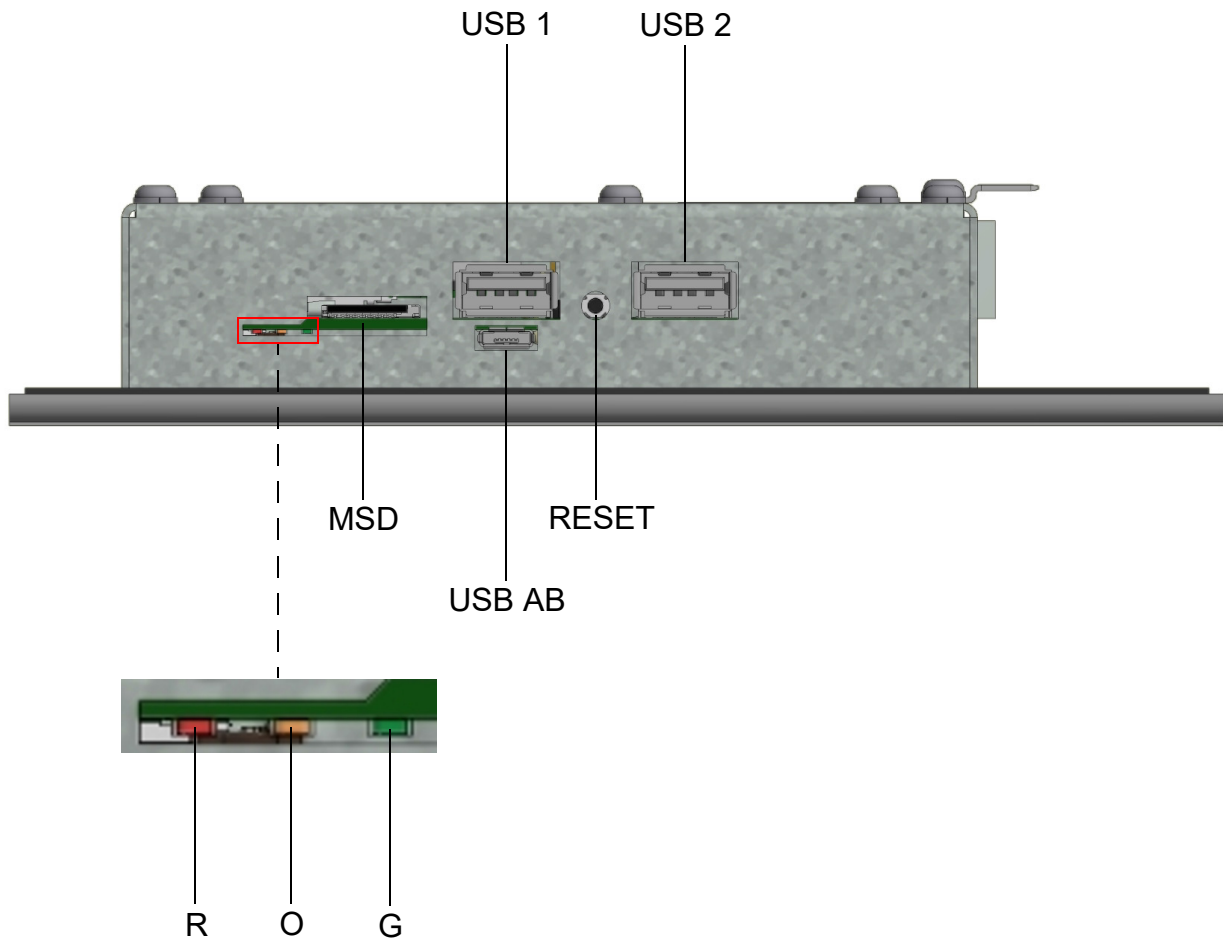
POSYC 3401/3402

Name	Function
MSD	Socket for micro SD card
USB AB	AB type USB micro port (for SMITEC internal use only)
RESET	Reset button
USB 1	Port 1 USB 2.0
USB 2	Port 2 USB 2.0
R	Red LED: indication of operating status of the device (depends on the application)
O	Orange LED: indication of operating status of the device (depends on the application)
G	Green LED: indication of operating status of the device (depends on the application)

6.3 PWR connector

The connector used to power the POSYC 340X, has spring contacts to facilitate wiring of individual cables.

Connector type: Phoenix Contact FK-MCP 1,5/2-STF-3,81 (1851232) * ** Order code: KF101074				
Features		**Conductors cross section**		
Connection in accordance with	EN-VDE	Solid min.	0,14 mm²	26 AWG
Rated voltage	320 V	Solid max.	1,5 mm²	16 AWG
Rated current	8 A	Stranded min.	0,14 mm²	26 AWG
		Stranded max.	1,5 mm²	16 AWG
Insulating material	PA	Stranded, with ferrule without plastic sleeve min.	0,25 mm²	26 AWG
Inflammability class according to UL 94	V0	Stranded, with ferrule without plastic sleeve max.	1,5 mm²	16 AWG
Stripping length	9 mm	Stranded, with ferrule with plastic sleeve min.	0,25 mm²	26 AWG
Screwdriver to be used for opening the connections	0,6 x 3,5 mm	Stranded, with ferrule with plastic sleeve max.	0,5 mm²	16 AWG
*= Use only 75°C cables **= Use only copper conductors				
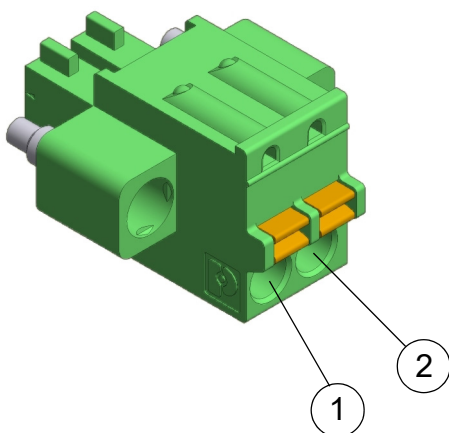
| Supply 24VDC	
Pin	**Signal**
1	VM (24 VDC)
2	GND

CAUTION

⚠️	Use a cable with a suitable cross-section, sized correctly according to the through-current. A cable with a section smaller than that required may cause fire due to overheating phenomena generated by the cable itself.
	To ensure compliance with the EMC 2014/30 / EU directive, the length of the cables must not exceed a length of 30 meters.
	The POSYC 340X is a high-tech electronic device, sensitive to electrostatic discharge (ESD) phenomena. Pay the utmost attention to prevent such phenomena, complying with the provisions of the law, in order to avoid damage to the device.

ATTENTION

⚠️	Utilisez un câble de section appropriée, dimensionné correctement en fonction du courant traversant. Un câble de section inférieure à celle requise peut provoquer un incendie en raison de phénomènes de surchauffe générés par le câble lui-même.
	Pour garantir la conformité avec la directive EMC 2014/30 / EU, la longueur des câbles ne doit pas dépasser 30 mètres.
	Le POSYC 340X est un appareil électronique de haute technologie, sensible aux phénomènes de décharge électrostatique (ESD). Faites très attention à ce que ces phénomènes ne se produisent pas, dans le respect des dispositions légales, afin d'endommager l'appareil.

6.4 Ethernet ports

Depending on the model, there are one or two 10/100 Mbps Ethernet ports that use standard RJ45 Ethernet connectors.
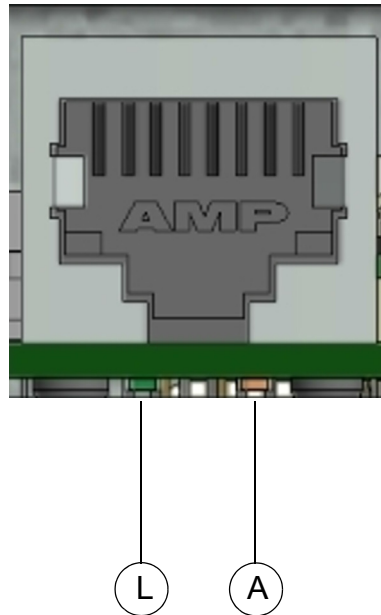
The Ethernet port has two LEDs. The first one, in green color, marked with the letter L, indicates if the door is connected. The second, orange, marked by the letter A, indicates the state of activity of the door itself, or if the door is communicating.

LED	Color	State	Function
L	Green	OFF	Not connected
L	Green	ON	Connected
A	Orange	OFF	No activity
A	Orange	BLINK ON	Communicating

6.5 FLXIO port

The POSYC 3401/3402, are equipped with three FLXIO doors; the ports are isolated in the model 3401 unlike the model 3402. This proprietary field bus is based on an RS485 electrical interface and allows a reliable real-time control of complex applications.

The connections are made via the RJ45 connectors; the following illustration shows the pinout of one of the connectors and the behavior of the LED (S).
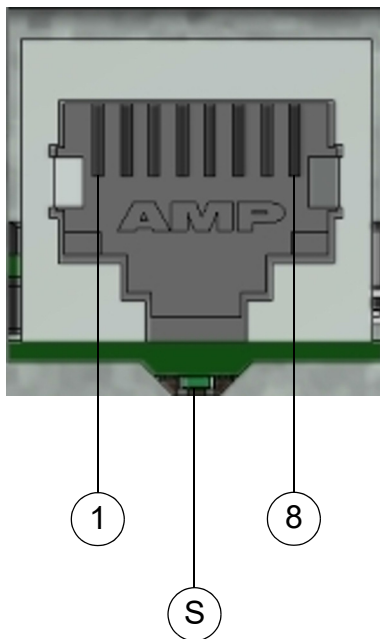
FLXIO port	
Pin	**Signal**
1	DATA +
2	DATA -
3	GND
4	NC
5	NC
6	Self-addressing service
7	Reserved
8	Reserved

| LED	Color	State	Function
S	Green	Slow flashing (1Hz)	Initialization of the bus
S	Green	OFF	Absent communication
S	Green	ON	Communicating
S	Green	Fast flashing (5Hz)	Communication error

This fieldbus requires a minimum CAT 5 type shielded cable, headed with RJ45 connectors.

Refer to the FLXIO and FLXMOD integration manual (DK400076) for using these buses.

6.6 I/O connector

The connector used for the wiring of the digital I / O of the POSYC 3401/3402 is detachable and has spring-loaded contacts to facilitate the wiring of the individual cables:

Connector type: Phoenix Contact FMCD 1,5/ 7-ST-3,5 (1738856) * ** Order code: KF101049				
Features		**Conductors cross section**		
Connection in accordance with	EN-VDE	Solid min.	0,2 mm²	26 AWG
Rated voltage	160 V	Solid max.	1,5 mm²	16 AWG
Rated current	8 A	Stranded min.	0,2 mm²	26 AWG
		Stranded max.	1,5 mm²	16 AWG
Insulating material	PA	Stranded, with ferrule without plastic sleeve min.	0,25 mm²	26 AWG
Inflammability class according to UL 94	V0	Stranded, with ferrule without plastic sleeve max.	1,5 mm²	16 AWG
Stripping length	10 mm	Stranded, with ferrule with plastic sleeve min.	0,25 mm²	26 AWG
Screwdriver to be used for opening the connections	0,6 x 3,5 mm	Stranded, with ferrule with plastic sleeve max.	0,75 mm²	16 AWG
*= Use only 75°C cables **= Use only copper conductors				
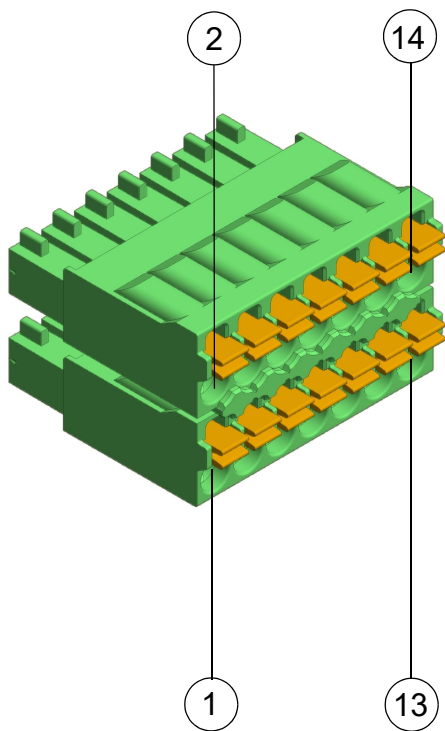
I/O port	
Pin	**Signal**
1	FE
2	FE
3	VI (24V inputs power supply)
4	VO (24V outputs power supply)
5	GI (GND)
6	GO (GND)
7	IO5 (Input 5)
8	IO1 (Input/output 1)
9	IO6 (Input 6)
10	IO2 (Input/output 2)
11	IO7 (Input 7)
12	IO3 (Input/output 3)
13	IO8 (Input 8)
14	IO4 (Input/output 4)

7 Installation

🚫	During installation of the POSYC 340X computer, falls and violent shocks must be avoided which could compromise the smooth operation.
	Avoid touching the input / output connectors on the computer panel directly unless you are equipped with suitable static electricity protection equipment; any discharges on the connectors could damage the appliance.
⚠️	Since the front panel integrates the touch screen sensor, violent blows in addition to damaging it irreparably could bring to light cut-glass shards, therefore dangerous for the operator.
	Always carry out all electrical connections when the equipment is switched off: this will prevent damage to the computer and danger to the operator (exceptions to connections to the USB ports are possible).
	Always make sure that all the devices connected to the POSYC have an efficient grounding (if foreseen by the device). Failure to follow this precaution could result in damage to the computer and danger to the operator.
ℹ️	Do not position the device so that it is difficult to disconnect the wiring connected to it.

7.1 Panel mounting

The POSYC can be mounted on a panel that is strong enough to support its weight and stay flat once the computer is attached. A lack of flatness can compromise the effectiveness of the installed gasket. For fixing use 4 M3 steel screws with cylindrical head (not supplied).

7.2 Environmental requirements

The POSYC is designed to be placed in a container that gives it protection from water and dust that could damage it.
In order for the system to work properly it must remain within the room temperature limits given in the specifications. All this implies that within the panel that will surround the POSYC, there must be suitable cooling systems to keep the temperature within the accepted limits.

7.3 Electrical connections

The essential connections for POSYC operation are power and ground; make these two connections by following the polarity, conductors and connectors indicated in the "Connections" chapter. Before switching on the appliance, check that the power supply voltage is within the parameters specified.

The connection of POSYC to peripherals is simplified by the use of standard computer connectors; this means that all standard peripherals for personal computers can be connected via the cable supplied with them or in any case with easily available commercial cables.

In the case of connection of non-standard devices for personal computers such as inverters or other and you need combinations of signals and lengths of customized cables, you can make yourself what you need based on the information provided in the chapter "Connections".

8 Use

8.1 Touch screen

The use of the POSYC computer is very similar to a normal desktop computer; the only substantial difference is the touch screen pointing device which, however, allows an even more intuitive use of the computer.

CAUTION

⚠️	Operate the touch screen sensor only with your fingers or soft and not sharp objects, otherwise you will damage it.

ATTENTION

⚠️	Utilisez le capteur d'écran tactile uniquement avec vos doigts ou des objets mous et non tranchants, sinon vous risqueriez de l'endommager.

To operate the touch screen, a slight pressure is sufficient (this has the appearance of any glass plate) to command the operating system pointer to move below the area where the pressure has been exerted. Depending on the software settings, the touch screen simulates dragging, clicking, double clicking and right mouse button. Refer to the software manual for further details.

8.2 Side USB ports

The front USB ports have been designed to connect temporary devices such as keyboards and flash disks.

8.3 Micro SD card

The positioning of the micro SD card and the simplicity of extraction / insertion allows a quick replacement both in case of failure and off-line software update.

CAUTION

⚠	To avoid computer failures and/or data loss to micro SD card, replacement of the same must be done only with POSYC switched off.

ATTENTION

⚠	Pour éviter toute défaillance de l'ordinateur et / ou toute perte de données sur la carte micro SD, son remplacement doit être effectué exclusivement sur POSYC désactivé.

9 Ordinary maintenance

9.1 Cleaning the touch screen sensor

The cleaning of the touch-screen sensor must take place rather frequently to avoid the stratification of the dirt derived from the hands or from materials that were accidentally in contact with its surface and to maintain the best possible visibility of the display.

If necessary, the front of the device (keyboard and viewing window) can be cleaned with a very soft cleaning cloth (recommended in microfibre) dampened with water or cleaning solution for display.

9.2 Replacing the clock battery

The internal clock battery guarantees the maintenance of the same for an estimated time of at least 4 years. When the battery is completely used up, the date and time inside the POSYC will no longer be updated. If date and time are relevant for the use of POSYC, it is necessary to replace it.

Due to the particular assembly of POSYC, to replace the battery contact the technical assistance service.

10 Analytical index