Operating Instructions

Description of the UniOP eTOP Series 300

Exor International S.p.A.
MANUGENETOP3xx UniOP
Ver. 1.03

Table of Contents

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 UniOP operator panels. The Guide refers to the following models:

eTOP306	Operator interface with TFT color 5,7” display
eTOP307	Operator interface with TFT color 7” widescreen display
eTOP308	Operator interface with TFT color 7.5” display
eTOP310	Operator interface with TFT color 10” display
eTOP312	Operator interface with TFT color 12” display
eTOP313	Operator interface with TFT color 13.3” widescreen display
eTOP315	Operator interface with TFT color 15” display

Safety Guide

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

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

DANGER

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

ATTENTION

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

CAUTION

1 Production Overview

The UniOP eTOP Series 300 combines state-of-the-art features and performance with an oustanding design. They are the ideal choice for HMI applications including factory and building automation.

The eTOP Series 300 HMI panels are fully compatible with UniOP Designer 6 software.

- Powerful and intuitive programming with the UniOP Designer 6 software.
- Supports more than 150 communication drivers.
- Built-in Ethernet port for communication with devices, programming the HMI from Designer and retrieving data from computers.
- USB host port for the connection of flash drives. Flash drives can be used for upgrading applications and firmware.
- Optional plug-in modules for fieldbus systems and networks. Compatible with TCM and SCM modules.
- Dual-driver communication capability.
- Vector graphic capabilities including the support of multiple layers and object transparency.
- Data display in numerical, text, bargraph, analog gauges and graphic image formats. Dynamic object properties supported.
- Data acquisition and trend presentation. Trend data can be transferred to an host computer using the Ethernet connection.
- Recipe data storage. Recipe data can be transferred to an host computer using the Ethernet connection or copied to flash drives via USB connection.
- Multilanguage applications. Far East languages are supported. The number of runtime languages is limited only by the available memory. All text information in the application can be exported to files in Unicode format for easier translation.
- Powerful macro editor to configure touchscreen operation
- Alarms and historical alarm list. Alarm and event information can be printed or transferred to an host computer.
- Eight level password protection.
- Report printing to serial printer. Reports are freely configurable using Designer.
- Ethernet-based UniNet network to share data between UniOP HMIs and to serve data using UniNet OPC Server.

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

The installation of these devices into the residential, commercial and light-industrial environments is allowed only in the case that special in 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:

eTOP306	product model name
08/09	month/year of production
09994847559	serial number
H/W V	hardware version of the product
S/W V	software version of the product

3 Technical Specifications

Touch screen technology	Resistive
Back-up battery	3V 50mAh Lithium, rechargeable, not user-replaceable, model VL2330.
Fuse	Automatic
PC/Printer Port	RS-232, RS-485, RS-422 software configurable 300 - 38400 baud
PLC Port	RS-232, RS-485, RS-422 software configurable 300 - 38400 baud
AUX Port	connector D-9 pin female (functionality can be configured with an optional communication module)
User memory	64MB
Recipe memory	Flash
Hardware clock	Clock/Calendar with back-up battery
Accuracy RTC (at 25°C operating)	<100ppm
Alarms	1024
Historical event list	last 1024 events with back-up battery
Programming software	Designer version 6

Environmental conditions

Operating temperature (vertical installation)	0 ÷ +50°C	EN 60068-2-14
Storage temperature	-20 ÷ +70°C	EN 60068-2-14
Operating and storage humidity	5 ÷ 85 % RH not-condensing	EN 60068-2-30
Vibrations	5 ÷ 9 Hz, 7 mm $_{p-p}$ 9 ÷ 150 Hz, 1 g	EN 60068-2-6
Shock	± 50 g, 11 ms, 3 pulses per axis	EN 60068-2-27
Protection class	IP66 front panel *	EN 60529

* The front face of the UniOP unit, installed in a solid panel, has been tested using conditions equivalent to the standards shown in the “Environmental conditions”. Even though the level of resistance UniOP unit is equivalent to these standards, oils that should have no effect on the UniOP can possibly harm the unit. This can occur in areas where either vaporized oils are present, or where low viscosity cutting oil are allowed to adhere to the unit for long periods of time. If the front face protection sheet on the UniOP becomes peeled off, these conditions can lead to the ingress of oil into the UniOP and separate protection measures are suggested.
If the installation gasket is used for a long period of time, or if the unit and its gasket are removed from the panel, the original level of the protection cannot be guaranteed.

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 inducted 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 Power Supply		EN 61000-4-11

Durability information

Backlight service life (LED type)	40000 Hrs. or more (Time of continuos operation until the brightness of the backlight reaches 50% of the rated value when the sorrounding air temperature is 25°C) - see Note 1
Backlight service life (CCFL type)	50000 Hrs. or more (Time of continuos operation until the brightness of the backlight reaches 50% of the rated value when the sorrounding air temperature is 25°C) - see Note 1
Front foil (without directly exposure to sunlight or UV ray)	10 years if the surrounding air temperature is 25°C
UV Resistance	Indoor applications: After 300 hours cycled humidity in QUV accelerated weathering, some yellowing and brittleness may be present. - see Note 2.
Touch screen reliability	> 1 milion operations

Note 1: Extended use in environments where the surrounding air temperature is 40°C or higher may degrade backlight quality/reliability/durability.
Note 2: Solvent resistance:
Contact for 1/2 hour at 21°C, No visible effect: Acetone, Butyl Cellosolve, Cyclohexanone, Ethyl Acetate, Hexane, Isopropyl Alcohol, MEK, Methylene Chloride, Toluene, Xylene
Contact for 24 hours at 49°C, No visible effect: Coffee, Ketchup, Lemon Juice, Mustard (slight yellow stain), Tea, Tomato juice.

4 Technical Data

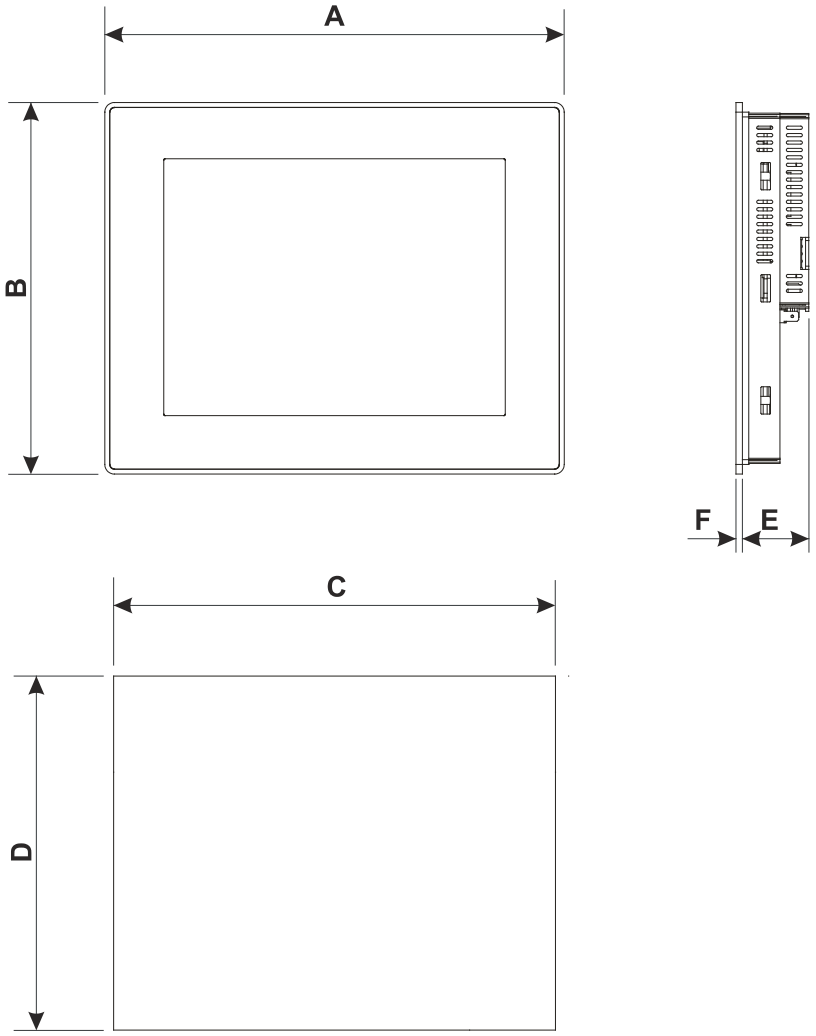
Model	*eTOP306*	*eTOP307*
Display / Backlight	TFT Color / LED	TFT Color / LED
Colors	64K	64K
Resolution	320x240	800x480
Diagonal (inches)	5.7”	7” widescreen
Dimming	yes	yes
Touch screen	yes	yes
User memory flash	64MB	64MB
Flash card option	-	-
Recipe memory	Yes. Flash memory storage limited only by available memory	Yes. Flash memory storage limited only by available memory
PLC Port	RS-232,RS-485 RS-422	RS-232,RS-485 RS-422
Programming/Printer Port	RS-232,RS-485 RS-422	RS-232,RS-485 RS-422
UniNet (server and client)	yes	yes
Aux port (optional fieldbus/Ethernet)	yes	yes
Ethernet programming	yes	yes
Ethernet port	10/100 Mbit	10/100 Mbit
Usb port	Host interface, version 1.1	Host interface, version 1.1
Graphic	yes	yes
Video input Option	-	-
Trend acquisition and display	yes	yes
Battery	rechargeable	rechargeable
Real Time Clock	yes	yes
Password	yes	yes
Alarms	1024	1024
Event list	1024	1024
Voltage	18-30VDC	18-30VDC
Current rating (at 24VDC)	0.55A	0.55A
Temperature range (vertical installation)	0-50°C	0-50°C
Weight	1 Kg	1 Kg

Model	*eTOP308*	*eTOP310*
Display / Backlight	TFT Color / CCFL	TFT Color / CCFL
Colors	64K	64K
Resolution	640x480	640x480
Diagonal (inches)	7.5”	10.4”
Dimming	yes	yes
Touch screen	yes	yes
User memory flash	64MB	64MB
Flash card option	-	-
Recipe memory	Yes. Flash memory storage limited only by available memory	Yes. Flash memory storage limited only by available memory
PLC Port	RS-232,RS-485 RS-422	RS-232,RS-485 RS-422
Programming/Printer Port	RS-232,RS-485 RS-422	RS-232,RS-485 RS-422
UniNet (server and client)	yes	yes
Aux port (optional fieldbus/Ethernet)	yes	yes
Ethernet programming	yes	yes
Ethernet port	10/100 Mbit	10/100 Mbit
Usb port	Host interface, version 1.1	Host interface, version 1.1
Graphic	yes	yes
Video input Option	-	-
Trend acquisition and display	yes	yes
Battery	rechargeable	rechargeable
Real Time Clock	yes	yes
Password	yes	yes
Alarms	1024	1024
Event list	1024	1024
Voltage	18-30VDC	18-30VDC
Current rating (at 24VDC)	0.8A	0.8A
Temperature range (vertical installation)	0-50°C	0-50°C
Weight	1.2 Kg	2.1 Kg

Model	*eTOP312*	*eTOP313*
Display / Backlight	TFT Color / CCFL	TFT Color / LED
Colors	64K	64K
Resolution	800x600	1280x800
Diagonal (inches)	12,1”	13.3” widescreen
Dimming	yes	yes
Touch screen	yes	yes
User memory flash	64MB	64MB
Flash card option	-	-
Recipe memory	Yes. Flash memory storage limited only by available memory	Yes. Flash memory storage limited only by available memory
PLC Port	RS-232,RS-485 RS-422	RS-232,RS-485 RS-422
Programming/Printer Port	RS-232,RS-485 RS-422	RS-232,RS-485 RS-422
UniNet (server and client)	yes	yes
Aux port (optional fieldbus/Ethernet)	yes	yes
Ethernet programming	yes	yes
Ethernet port	10/100 Mbit	10/100 Mbit
Usb port	Host interface, version 1.1	Host interface, version 1.1
Graphic	yes	yes
Video input Option	-	-
Trend acquisition and display	yes	yes
Battery	rechargeable	rechargeable
Real Time Clock	yes	yes
Password	yes	yes
Alarms	1024	1024
Event list	1024	1024
Voltage	18-30VDC	18-30VDC
Current rating (at 24VDC)	1.05A	0.6A
Temperature range (vertical installation)	0-50°C	0-50°C
Weight	2.8 Kg	2.5 Kg

Model	*eTOP315*
Display / Backlight	TFT Color / CCFL
Colors	64K
Resolution	1024x768
Diagonal (inches)	15”
Dimming	yes
Touch screen	yes
User memory flash	64MB
Flash card option	-
Recipe memory	Yes. Flash memory storage limited only by available memory
PLC Port	RS-232,RS-485 RS-422
Programming/Printer Port	RS-232,RS-485 RS-422
UniNet (server and client)	yes
Aux port (optional fieldbus/Ethernet)	yes
Ethernet programming	yes
Ethernet port	10/100 Mbit
Usb port	Host interface, version 1.1
Graphic	yes
Video input Option	-
Trend acquisition and display	yes
Battery	rechargeable
Real Time Clock	yes
Password	yes
Alarms	1024
Event list	1024
Voltage	18-30VDC
Current rating (at 24VDC)	1.1A
Temperature range (vertical installation)	0-50°C
Weight	3.4 Kg

4.1 Dimensions



MODEL	A	B	C	D	E	F
eTOP306	187mm/7.36”	147mm/5.79”	176mm/6.90”	136mm/5.35”	45mm/1.77”	4mm/0.16”
eTOP307	187mm/7.36”	147mm/5.79”	176mm/6.90”	136mm/5.35”	45mm/1.77”	4mm/0.16”
eTOP308	232mm/9.13”	187mm/7.36”	221mm/8.70”	176mm/6.90”	42mm/1.65”	4mm/0.16”
eTOP310	287mm/11.30”	232mm/9.13”	276mm/10.86”	221mm/8.70”	42mm/1.65”	4mm/0.16”
eTOP312	337mm/13.26”	267mm/10.51”	326mm/9.30”	256mm/10.1”	42mm/1.65”	4mm/0.16”
eTOP313	337mm/13.26”	267mm/10.51”	326mm/9.30”	256mm/10.1”	42mm/1.65”	4mm/0.16”
eTOP315	392mm/15.43”	307mm/12.1”	381mm/15”	296mm/11.65”	46mm/1.82”	4mm/0.16”

4.2 Installation Environment

The equipment is not intended for continuous exposure to direct sunlight.
This might accelerate the aging process of the front panel film.

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

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

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 IP65 is guaranteed only if:
- max deviation from the plane surface to the cut-out: ≤0.5mm
- thickness of the case where is mounted the equipment: from 1,5mm to 6mm
- max surface roughness where the gasket is applied: ≤120 um

Applying the rectangular gasket
The gasket should be applied on the rear of the frame.

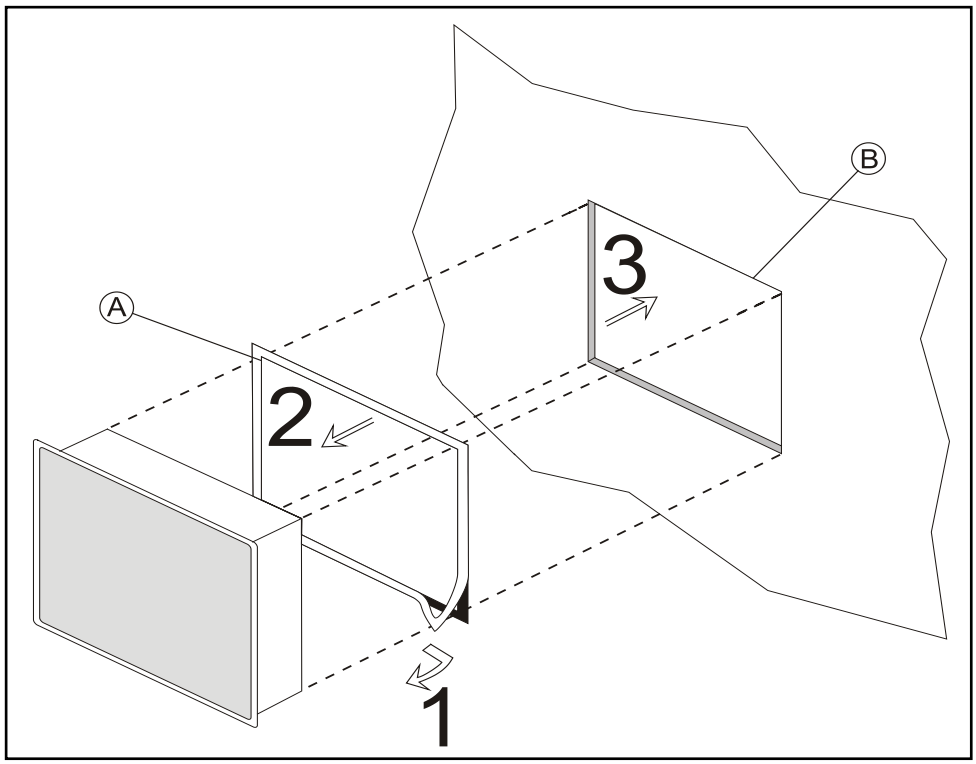


Fig. 4.1

A. Gasket
B. Installation cut-out

4.3 Installation Procedure

Place the fixing brackets as shown in figure **(Fig. 4.2)**.

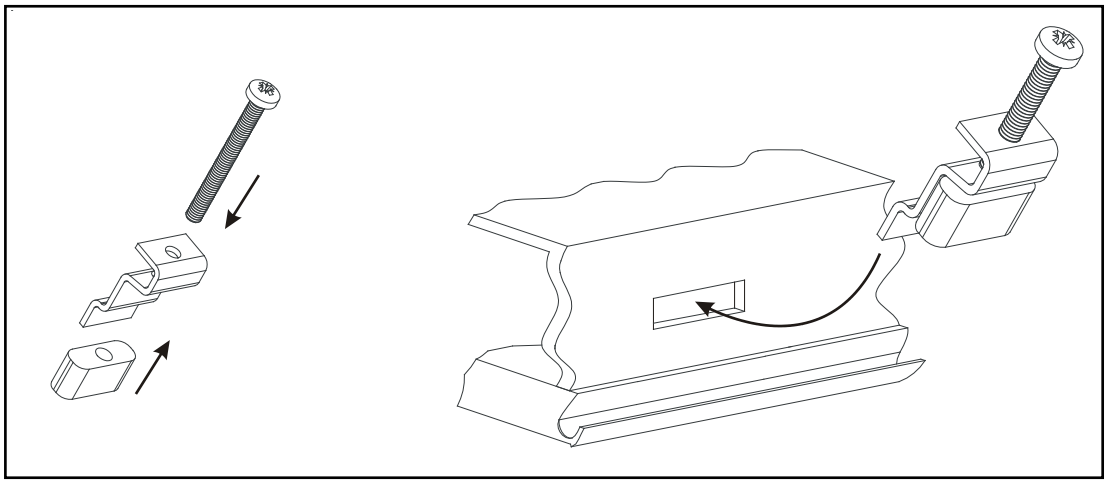


Fig. 4.2

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

5 Connections

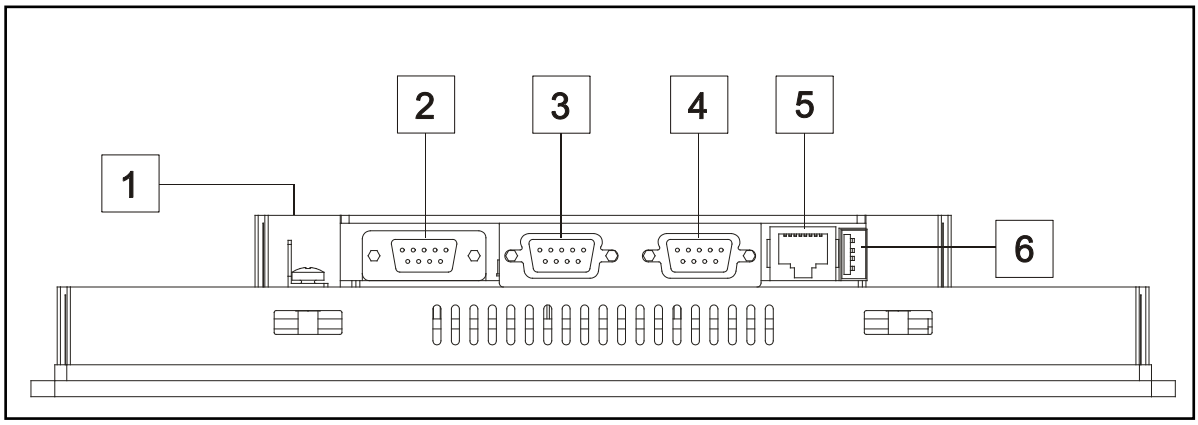


Fig. 5.1

1. Power
2. Aux Port
3. PLC Port
4. PC/Printer Port
5. Ethernet Port
6. USB Port **(Fig. 4.2)**

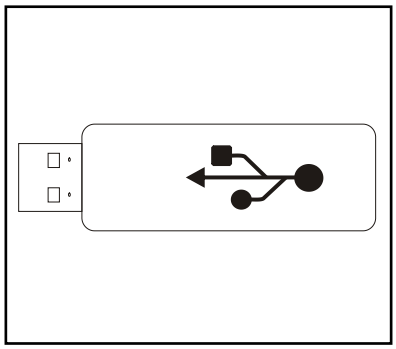


Fig. 5.2

5.1 Serial Port

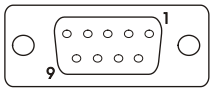
The serial port is used to communicate with the PLC or with another type of controller.
Different electrical standards are available for the signals in the PLC port connector: RS-232, RS-422, RS-485.

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



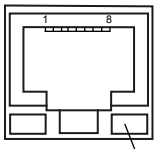
RS-422, RS-485

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

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

5.2 Ethernet Port

Pin	Description
1	TX OUT +
2	TX OUT -
3	RX OUT +
4	
5	
6	RX OUT -
7	
8	



ON: Valid link has NOT been detected
OFF: Valid link has been detected

6 Power Supply, Grounding and Shielding

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

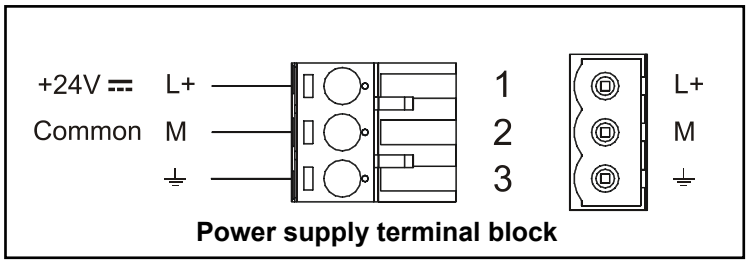


Fig. 6.1

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 1MΩ resistor in parallel with a 4,7nF capacitor.
The power supply must have double or reinforced insulation.
The suggested wiring for the power supply is shown below.

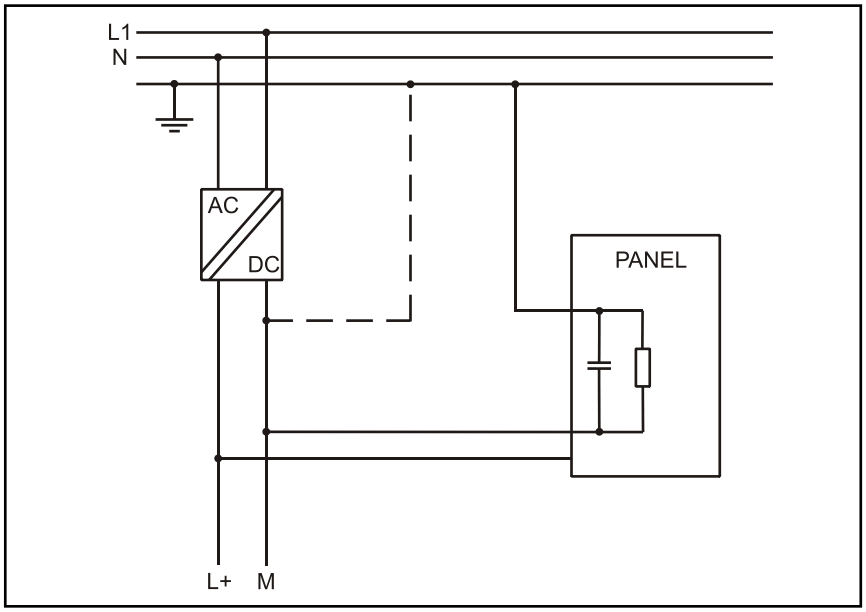


Fig. 6.2

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

7 AUX Port

The AUX Port is a communication port specially designed for industrial network communication. The AUX Port connector is a 9 pin D sub type. The functionality of the AUX Port depends on the optional communication module which is plugged into the unit.

NOTE
The pin assignment of the Aux Port connector is described in the manual of the communication module.

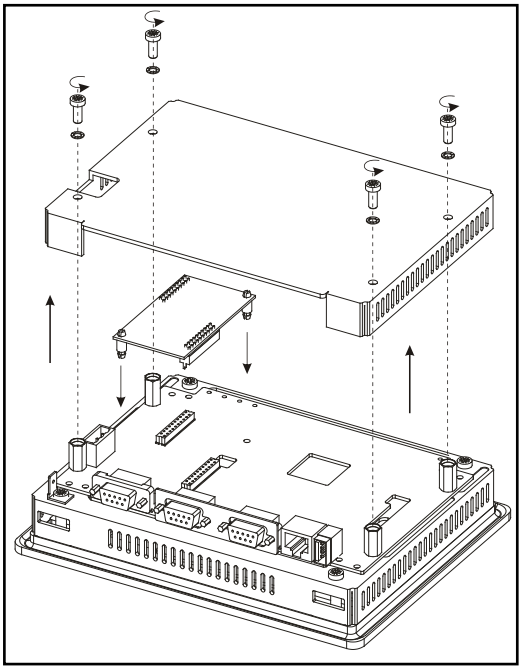


Fig. 7.1

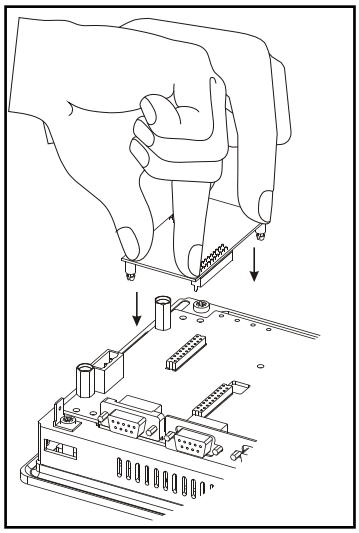


Fig. 7.2

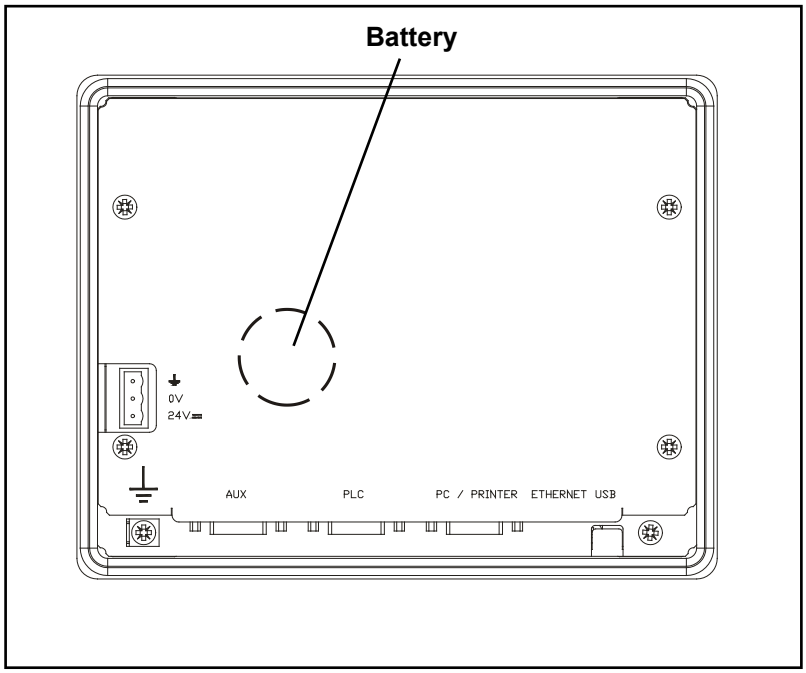
ATTENTION
Insert the module pressing simultaneously on the four corners.
Do not plug the module and the ETAD adapter when power is applied to the operator panel.

8 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)
- event list

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.

9 Cleaning Faceplates

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

10 Getting Started

UniOP panels must be programmed with the programming package Designer.
To program a panel you will have to connect the panel to a personal computer running Designer software package; the panel must be in Configuration mode to be programmed. Use the cable CA253 to connect the panel to a personal computer.

The software package Designer is a Windows™ application and must be properly installed. The Windows™ environment is not included in the software package Designer and must already be installed on the personal computer.

The software package can use either the communication ports COM1 or COM2 on the personal computer. Check that the Designer program is correctly configured to comunicate with the communication port to which the cable attached.
The communication parameters between the panel and the personal computer are:
speed: 9600 (models PC/Printer Port sup. also speeds of 19200 and 38400 baud)
parity: none
stop bit: 1
The Designer software defaults to the correct parameters.

The version of the Designer being used must be compatible with the firmware version of the panel to be programmed. Call for more information on compatibility between firmware and programming software.

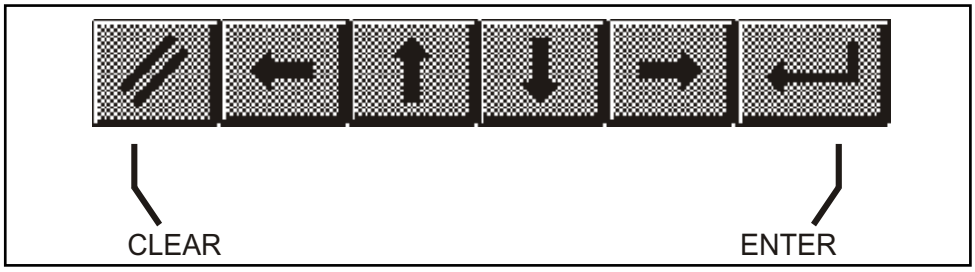
11 Command Summary

The UniOP panels have an extended set of pre-defined commands. Commands are available for the use of the built-in system functions including navigation in all system pages.

CAUTION
The standard command assignment is described in this chapter. All the commands, except those defined for Configuration Mode, can be changed, deleted and/or extended using the Keyboard Macro Editor facility of the programming software.

The chapter describes the touchscreen commands recognized by all UniOP panels. Commands are classified according to the operating modes of the unit.

UniOP panels with touchscreen interface will show a touch keypad on the screen whenever operator input in required. For System Commands the default keypad in shown in figure. All keypads, except the one shown in Configuration Mode, can be changed by the programmer.



Touch screen panels will show automatically a numeric keypad whenever the data entry phase is activated. Pop-up keypads are configurable by users.

NOTE
The text ‘2 s’ associated to a key means that the key must be held pressed for two seconds to activate the associated function.

12 Configuration Mode

ENTER shows the type and version of the communication driver stored in the unit (if any) and boot FW version.

ENTER 2 s returns to Operation Mode if a valid communication driver and a valid project are stored in the unit (the key must be pressed for 2 seconds).

CLEAR 2 s Call standard touchscreen calibration procedure

↑ 2 s Update firmware

← 2 s Erase Static RAM (Password and Recipe reset)

→ 2 s Shows memory menu

To change the panel IP address, Ethernet GMT and DST settings: touch the item you want to change.

11.1 Operation Mode/Page Mode

To recall the Configuration Mode, touch the screen in an area where no active touch areas have been defined and hold for 2 seconds. The value of 2 seconds can be changed with Designer on disabled requiring the use of a touch button programmed with the specific enter configuration mode macro.

Command Menu

↑	select up
↓	select down
←	select left
→	select right
ENTER	activate selection
CLEAR	return to Page Mode

System Menu

↑	select up
↓	select down
←	activate selection
→	activate selection
ENTER	return to Page Mode when EXT is selected
CLEAR	return to Page Mode

13 Special Modes: Calibration, Configuration and Safe Mode

12.1 Touchs Screen Calibration - “Go to Calibration Mode”

Touchscreen calibration may be required to restore proper operation of the touchscreen interface.

12.1.1 Standard Calibration

1. Recall Configuration Mode
2. Touch and hold CLEAR key on the screen until TOUCH SCREEN CALIBRATION message appears, then follow the instructions on page (reported also below)
3. touch and hold the x symbol in the right upper corner until it will move to the low left corner of the screen
4. touch and hold the x symbol in the low left corner
5. touch the key ←
6. touch the key ↓ until the indication to touch the Enter key will be displayed on the screen
7. touch the Enter key

12.1.2 Emergency Calibration

The Emergency calibration procedure should be used in all cases when it would result not possible to go to calibration using the standard procedure.

1. Switch off the unit
2. turn on the unit
3. tap in the middle of the touchscreen with a frequency of about half a second until the operator panel will enter the Calibration Mode
4. perform the standard calibration procedure.

12.2 “Go to Configuration Mode”

In the case it might prove impossible to switch the operator panel to Configuration Mode due to problems in the start-up phase, follow the procedure below:

1. Switch off the unit
2. Touch in the middle of the left side of the display screen with the left hand
3. Switch on the operator panel and tap with the right hand in the middle of the right side of the display screen with a period of about half a second.
4. Continue until the screen will show Configuration Mode

12.3 Safe Mode

UniOP “safe” mode allows some specific and special operations to be performed on the unit.
Under some circumstances “safe” mode is required to reset the panel contrast adjustment parameters.
The UniOP safe mode activation is similar to the emergency procedure that activates Configuration Mode at start-up.

1. Switch off the unit
2. Divide the screen in two parts with a horizontal imaginary line; press and hold one finger on the upper part of the display screen.
3. Switch on the operator panel and tap in the bottom part of the display screen with a period of about half a second
4. The panel will remain with black screen and system leds blinking

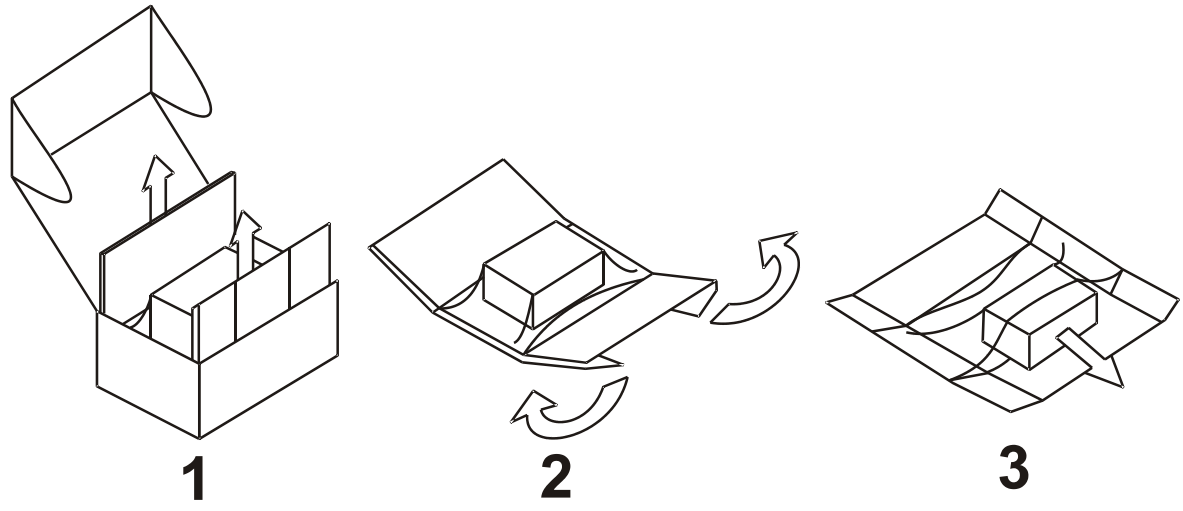
14 Dedicated LED Indicators

The table below shows the name and the symbol (when available) of the LED indicators dedicated to special functions. Please note that some indicators may be available only in some models of UniOP operator panels.

LED Indicator		Status	Meaning
Name/symbol	**Color**		
	red	OFF	No hardware problem detected
		BLINK	Battery low
		ON	Hardware fault
	green	OFF	No keys are pressed and no errors
		BLINK	Communication error (not all models)
		ON	While any key is pressed (visual feedback)
RUN / 	green	OFF	Hardware fault
		ON	Unit in operation
COM / 	green	BLINK	Communication error
		ON	Communication OK
ALARM / 	red	OFF	No alarms
		BLINK	Alarm requires acknowledgment
		ON	Alarm active
	green	ON	Recipe data backup in progress

You will find a complete reference to programming this product in the UniOP User's Manual.

15 Unpacking and Packing Instructions



To repack the unit, please follow the instructions backwards.