Pop

Operating manual

May 2002

HAUSER
We automate motion

CERTIFIED DIN EN ISO 9001 QUALITY SYSTEM
Reg. Nr. 36 38

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The contents of this manual have been checked for correctness and conformance to the described equipment. Nevertheless it is not possible to guarantee the absence of possible discrepancies. The contents of the manual are checked on a regular basis and any necessary corrections are introduced in successive versions.

Information in this document is subject to change without notice.

Installation Guide

Contents

Introduction

This Installation Guide describes the main features of the Parker operator panels. The Guide refers to the following models:

Pop11	Operator interface with LC-text display
Pop12	Operator interface with LC-graphic display
Pop21	Operator interface with LC-graphic display
Pop22	Operator interface with LC-graphic display
Pop23	Operator interface with LC-graphic display
Pop31	Operator interface with LCD 5,6” touch display
Pop32	Operator interface with LCD 5,6” touch display

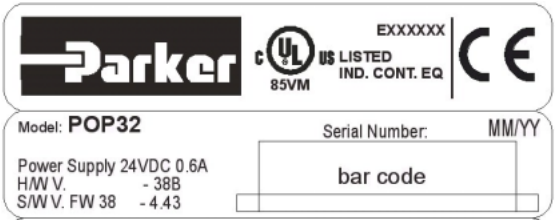
The products have been designed for installation in an industrial environment in compliance with the following regulations:

Emitted interference	EN 50081-2, 1993
Noise Immunity	EN 50082-2, 1994

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

Product Identification

The product may be identified by the aid of 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 operating manual.
An example of this plate is shown in the figure below:



Pop32	product model name
MM/YY	month/year of production
Serial number	serial number of the unit
H/W V	hardware version of the product
S/W V	software version of the product

Technical Specifications

Power supply voltage	DC 18 - 30 V
Power consumption	(1)
Back-up battery (1)	3 V 270mA Lithium, not rechargeable, life about 1 year, user replaceable, model: CR2430.Replace with same or equivalent battery with the working temperature of Pop.
Fuse	overcurrent protection device

Environmental conditions

Operating temperature	0 ÷ +50°C, with the exception of the model indicated on note (2)	IEC 68-2-14
Storage temperature	-20 ÷ +70°C	IEC 68-2-14
Operating/storage humidity	5 ÷ 95 % RH not-condensing (3)	IEC 68-2-3
Vibrations	10 ÷ 57 Hz, 0,075 mm peak 57 ÷ 150 Hz, 1 G	IEC 68-2-6
Shock	50 g, 11 ms, 3 pulses per axis	IEC 68-2-27
Protection class	IP65 front panel (4)	IEC 529
Keyboard reliability	> 3 million operations	
Touch screen tecnology	resistive	
Touch screen reliability	> 1 million operations	

Electromagnetic Compatibility (EMC)

Emitted interference	Class A	EN 55011
Immunity to radiated radiofrequency electromagnetic field	80 MHz ÷ 1 GHz, 10 V/m 900 MHz, 10V/m	ENV 50140 ENV 50204
Immunity to conducted disturbances inducted by radiofrequency field	0.15 ÷ 80 MHz, 10 V	ENV 50141
Fast transient	2 KV power supply 1 KV signal lines	EN 61000-4-4
Electrostatic discharge	8 KV in air	EN 61000-4-2

PC/Printer Port(1)	RS-232connector D-sub 15 pin female 300 - 38400 baud
PLC Port	RS-232, RS-422, RS-485, C.L. 20 mA (active), connector D-15 pin male 300 - 38400(1) baud
AUX Port	connector D-9 pin female (functionality can be configured with an optional communicatin module)
User memory	(1)
Recipe memory (1)	16 KB / 32 KB RAM with back-up battery
Hardware clock (1)	Clock/Calendar with back-up battery
Alarms (1)	256/1024
Historical event list (1)	last 256/1024 events with back-up battery
Programming software	Pop Designer

Notes:

(1) feature depends on the panel models; see Table 1.

(2) for Pop31 and Pop32 range 0 ÷ +45°C

(3) for temperature <= 40°C: 85% RH max.
for temperature > 40°C: absolute humidity must be lower than the humidity of 85% RH at 40°C.

(4) all the installation instructions listed in the chapter ‘Installation Environment’ must be followed in detail.

Model	Pop11	Pop12	Pop21
Display	2x20 LCD	4x20 LCD	4x20 LCD
Backlight	LED	LED	LED
Graphics	-	120x32	120x32
Display dimensions (mm)	-	70x21	70x21
Diagonal (inches)	-	2.8”	2.8”
Character height (mm)	6	-	-
User memory	512KB	512KB	512KB
User memory expansion	-	-	Up to 1MB
Function keys	4	4	12
System keys	7	7	23
Touch screen	-	-	-
User LED’s	5	5	13
System LED’s	4	4	4
PC/Printer Port	-	-	-
PLC Port	YES	YES	YES
AUX Port [(1)]	YES	YES	YES
External keyboard Port	-	-	-
Programming speed	9600	9600	9600
Battery	-	-	-
Recipe memory	-	-	-
Alarms	256	256	256
Events list	-	-	-
Hardware clock	-	-	-
Downloadable characters	8	256	256
Screen saver	-	-	-
Buzzer	-	-	-
Max current consumption on	250	250	300
Dimensions WxHxD (mm)	149x109x65	149x109x65	141x176x80
Max panel thickness (mm)	5	5	5
Weight (Kg)	0.9	1	1.1

Pop22	Pop23	Pop31	Pop32
4x20 LCD	8x40 LCD	16X40 LCD	16X40 STN COLOR
LED	CCFL	CCFL	CCFL
120x32	240x64	320X240	320X240
70x21	127x34	121X91	121x91
2.8”	5.2”	5.7”	5.7”
-	-	-	-
512KB	512KB	8MB	8MB
Up to 1MB	1024KB	-	-
12	23	-	-
23	24	-	-
-	-	YES	YES
13	24	-	-
4	5	5	5
YES	YES	YES	YES
YES	YES	YES	YES
YES	YES	YES	YES
-	-	-	-
9600-38400	9600-38400	9600-38400	9600-38400
YES	YES	YES	YES
16KB	16KB	32 KB	32KB
1024	1024	1024	1024
256	256	1024	1024
YES	YES	YES	YES
256	256	256	256
-	-	YES	YES
-	-	YES	YES
300	400	600	600
141x176x80	220x176x85	187x147x79	187x147x94
5	5	5	5
1.1	1.2	1.4	1.4

Table 1 - Pop Technical Data

Installation

The Parker Pop panels are designed to be mounted on the front of some type of enclosure. The bezel height, bezel width and the cut-out dimensions for each panel type are given in the following pages.

Note: remove the red BATTERY PROTECTION strip before istallation

Physical Dimensions

All measurements are given in mm, with tolerance ±0.5.

Pop11, Pop12

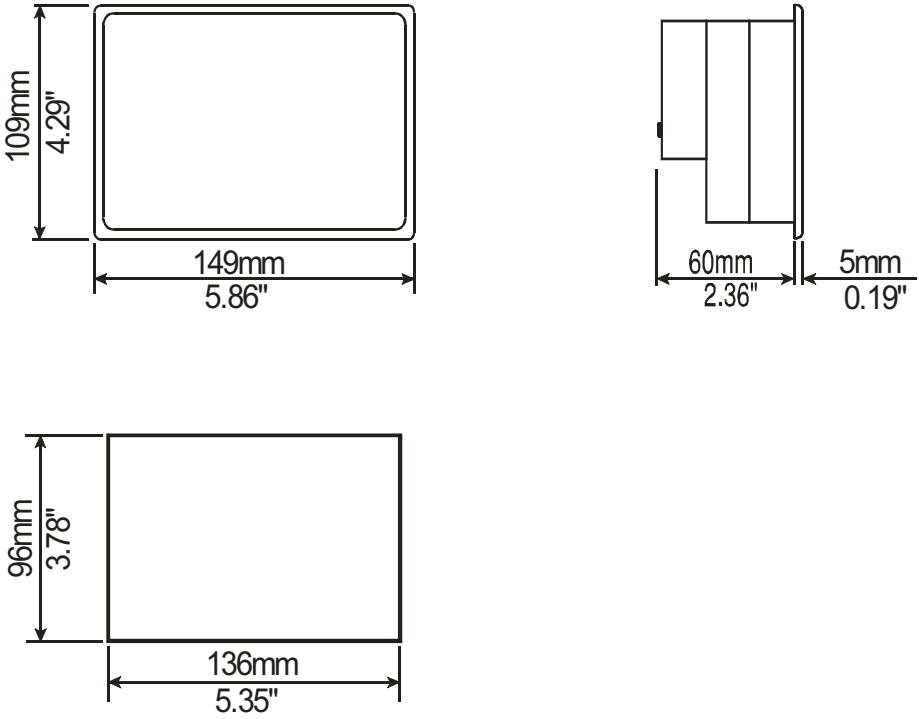
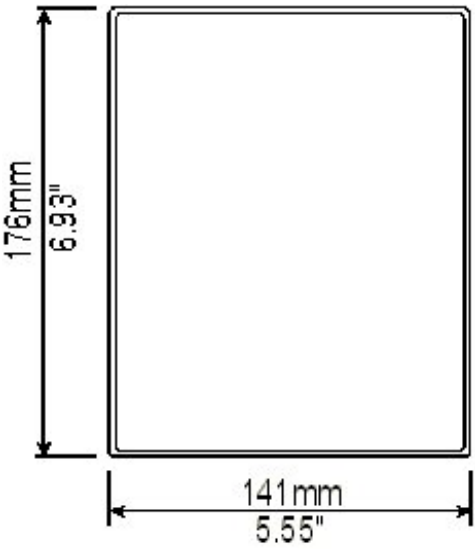
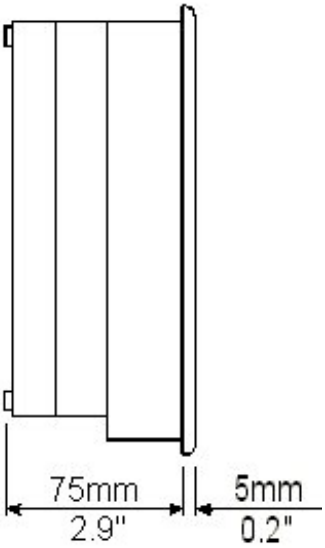


Figure 1 - Dimensions

Pop21, Pop22





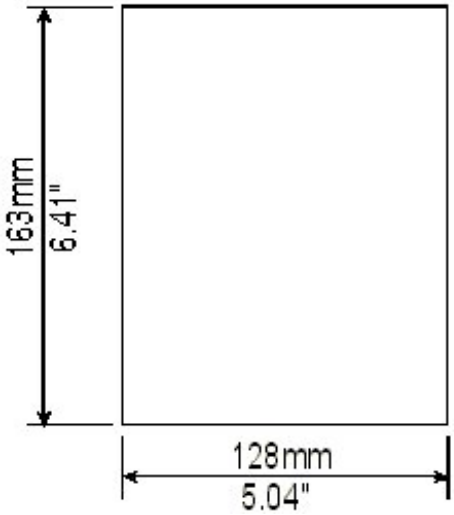


Figure 2 - Dimensions

Pop23

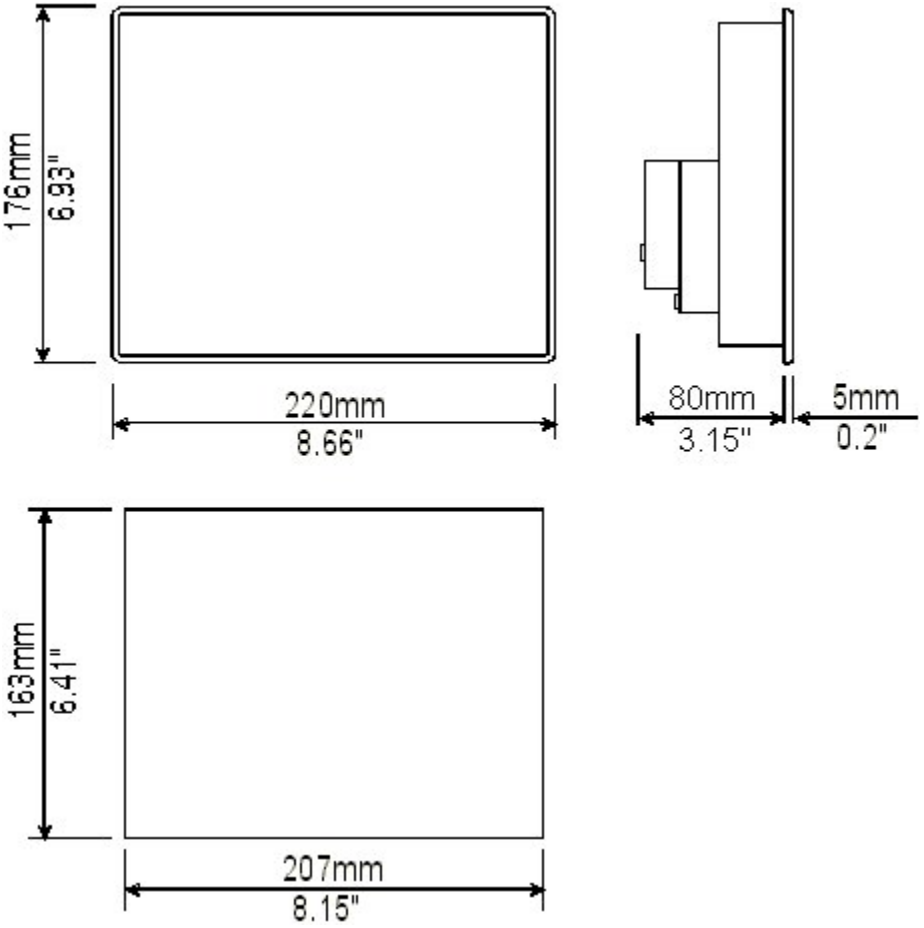
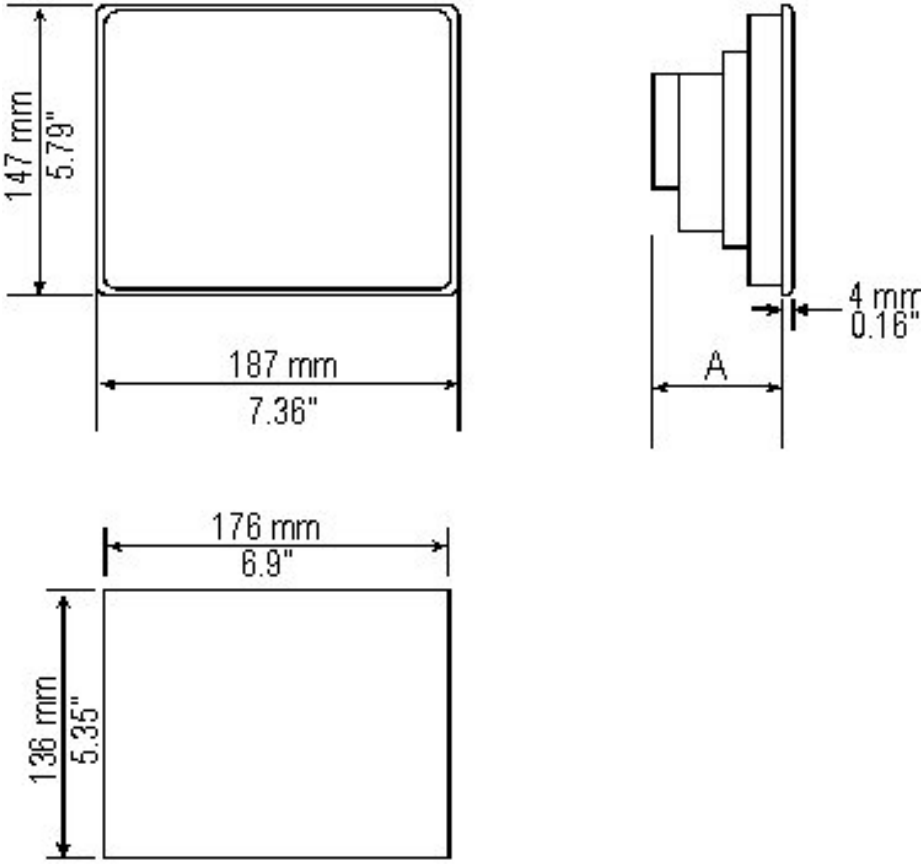


Figure 3 - Dimensions

Pop31, Pop32



Pop 31: A = 79,0mm / 3.12”

Pop 32: A = 90,4mm / 3.56”

Figure 4 - Dimensions

Connections

Pop11, Pop12

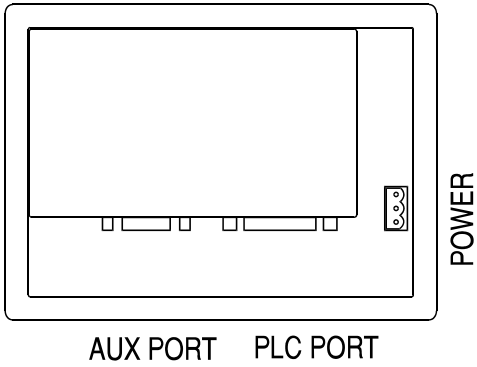


Figure 5 - Connectors

PopP21

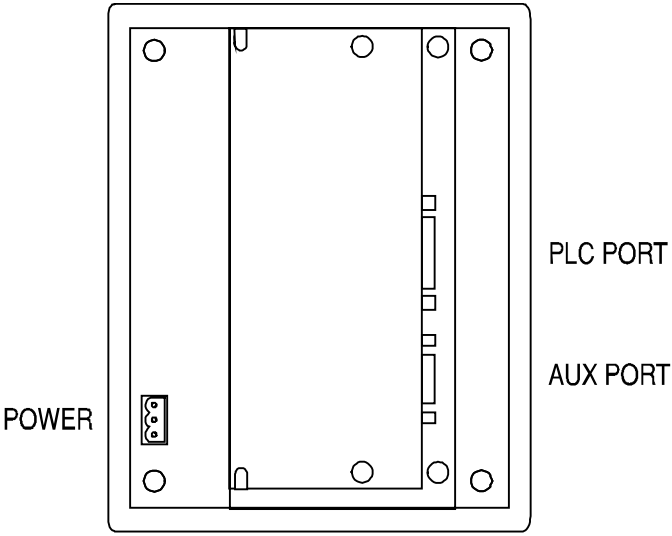


Figure 6 - Connectors

Pop22

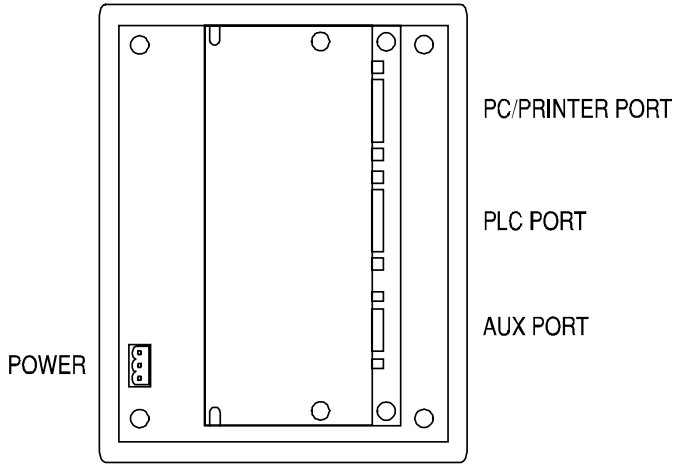


Figure 7 - Connectors

Pop23

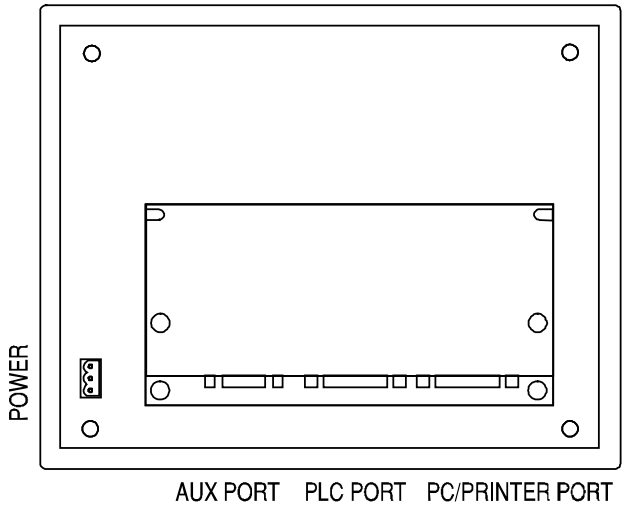


Figure 8 - Connectors

Pop31, Pop32

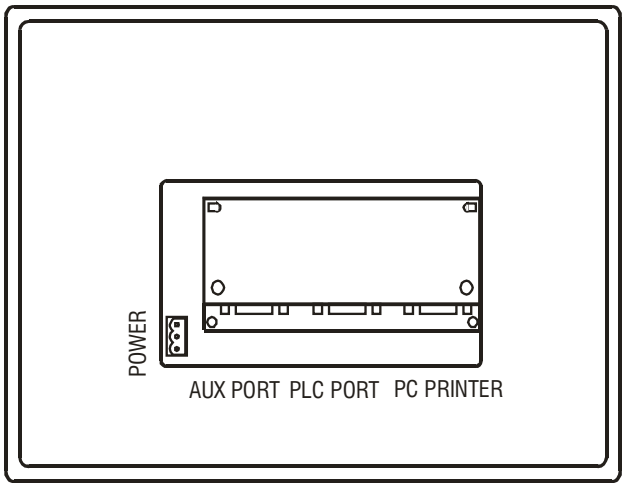


Figure 9 - Connectors

Power Supply and Grounding

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

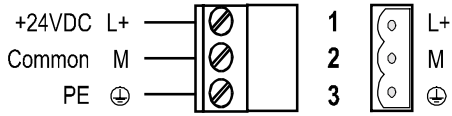


Figure 10 - Power supply terminal block

> ***Note**: ensure that the power supply has enough power capacity for the operation of the equipment.*

The unit must always be grounded to protection earth (PE). Grounding helps limit the effects of noise due to electromagnetic interference on the control system.

Earth connection will have to be done using either either the screw or the faston terminal located near the power supply terminal block. A yellow label helps to 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 11 with a dashed line.
When using the floating power scheme, note that the panels internally connect the power command to ground with a 1 MΩ resistor in parallel with a 10 nF capacitor.
The power supply must have double or reinforced insulation

The suggested wiring for the power supply is shown in figure 11.

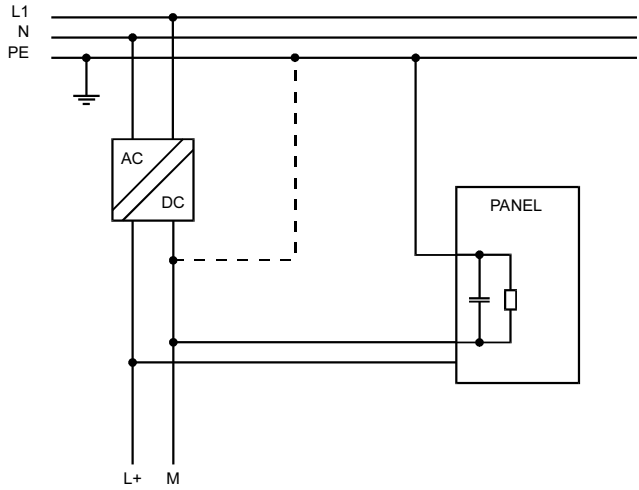


Figure 11 - Power supply

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

PLC Port

The PLC Port is used to communicate with the Compax or with another type of controller; if the panel is configured as an Pop HMI client, then this port may be used for the PopNet connection.
Different electrical standards are available for the signals in the PLC port connector: RS-232, RS-422, RS-485 or Current Loop 20 mA. The cable used selects the appropriate signals. It is always necessary to use the correct cable type for on the Compax to be connected.

> ***Note**: If the proper cable is not used, communication with the Compax will not be possible.*

The connector is a D-15 pin male. Pin assignment is shown in the table below.

Pin	Description
1	Frame Ground
2	RXD
3	TXD
4	+5 V output (Max 100mA)
5	GND
6	CHA-
7	CHB-
8	TX+ 20 mA
9	TX- 20 mA
10	RTS
11	CTS
12	RX+ 20 mA
13	RX- 20 mA
14	CHA+
15	CHB+

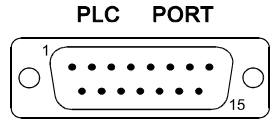


Figure 12 - PLC Port connector and pin assignment

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

Connection	Cable	Bus
Pop - Compax3	SSK27	RS485
Pop - COMPAX-M/S	SSK20	RS485
COMPAX-M/S - COMPAX-M/S	SSK13	RS485
Pop - COMPAX-M/S	SSK26	RS232

PC/Printer Port

The function of the PC/Printer Port depends on the mode of operation of the panel.

Configuration Mode	programming port
Operation Mode, PopNet Server	connection to PopNet
Operation Mode, PopNet not active or Client node	connection to serial printer

Only RS232 signals are available on the PC/Printer Port. The connector is a D-15 pi female. Pin assignment is shown in the table below.

Pin	Description
1	Frame Ground
2	RXD
3	TXD
4	+5 V output (max 100mA)
5	GND
6	Reserved
7	Reserved
8	Reserved
9	Reserved
10	RTS
11	CTS
12	Reserved
13	Reserved
14	Reserved
15	Reserved

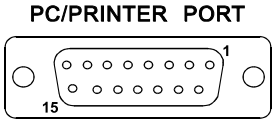


Figure 13 - PC/Printer Port connector and pin assignment

Use cable SSK25 to connect the panel to a PC for programming. The diagram is shown in the figure below. The connector is a D-9 pin female.

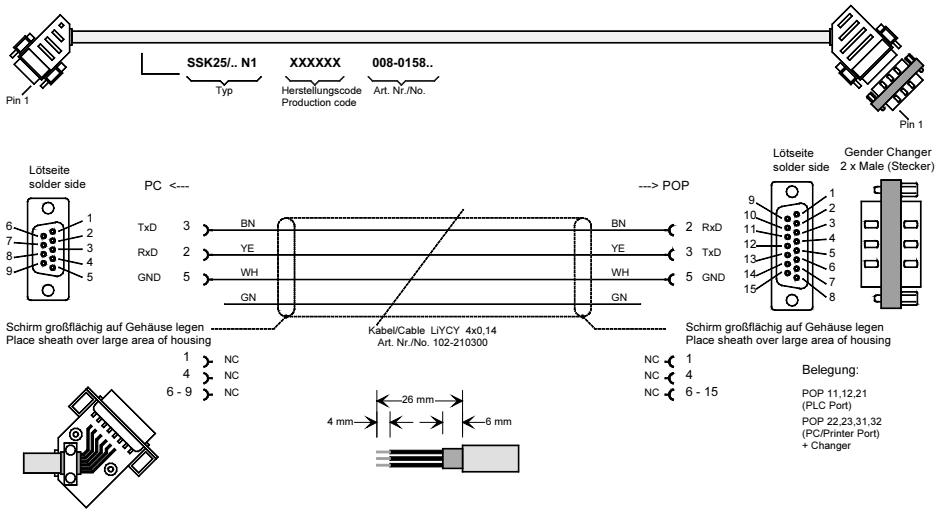


Figure 14.1 SSK25: Programming cable

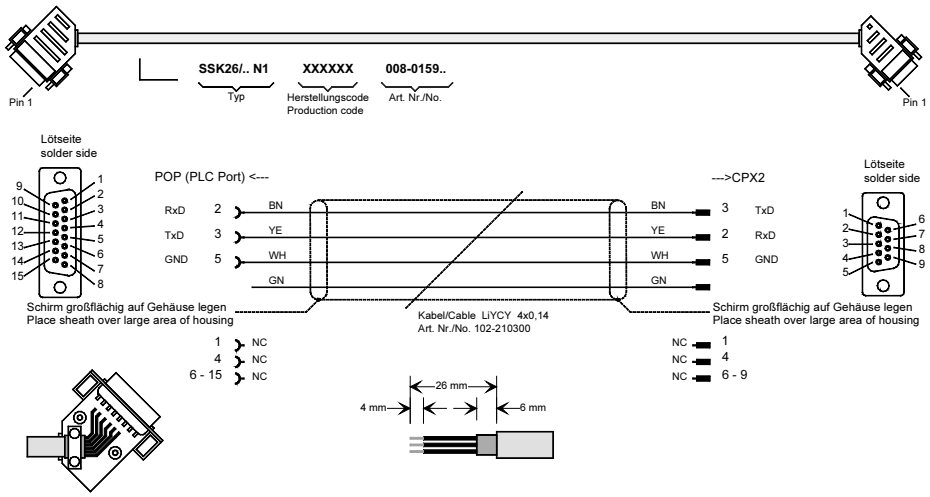


Figure 14.2 SSK26: Pop – COMPAX–M/S (RS232)

Farbcode nach IEC60757

BK	BN	RD	OG	YE	GN	BU	VT	GY	WH	PK	TQ
black	brown	red	orange	yellow	green	blue	violet	grey	white	pink	turqoise

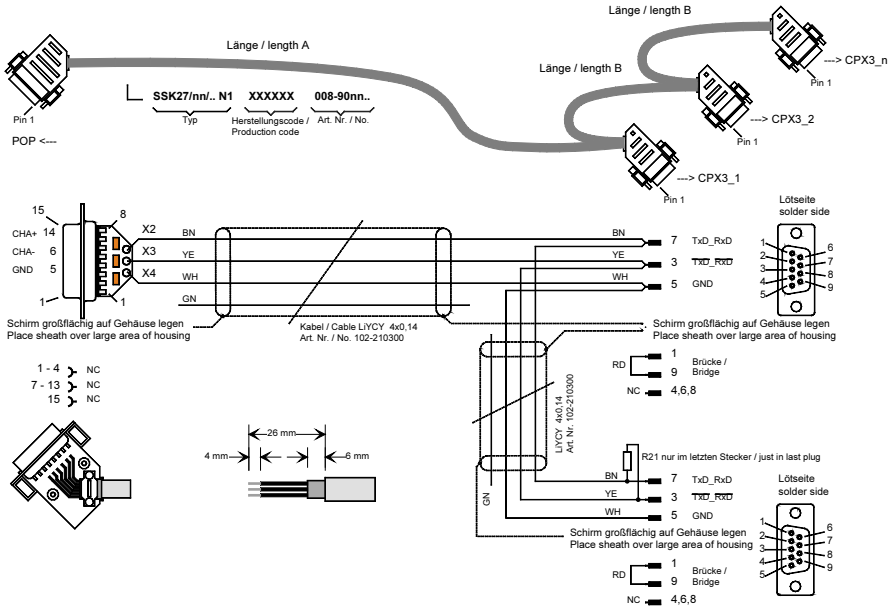


Figure 14.3 SSK27: Pop – Compax3 (X10) - ... – Compax3 nn

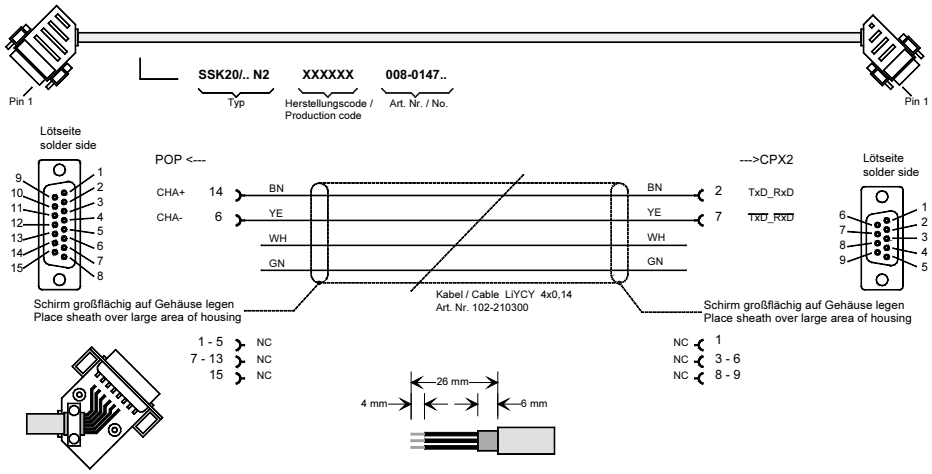


Figure 14.4 SSK20: Pop – COMPAX–M/S (RS485)

When the panel is in Operation Mode and is not as a PopNet Server, you can attach a serial printer to the PC/Printer Port. The communication parameters for the printer are defined by the application program (project file)

> ***Note**: the communication cable to the printer depends on the communication interface of the printer.*

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.*

The procedure to mount the communication modules is the following:

1) turn off the unit
2) partially unscrew with a screwdriver the 2 screws holding the rear cover. The screws are labelled 'A' in Figure 44
3) remove the cover (for Pop31/32 lever with screwdriver on the slot on the cover's side).
4) plug the module in the red connectors; make sure the connectors are locked
5) replace the rear cover
6) fix the 2 screws 'A' (for Pop31/32 close the cover with a little pressure).
7) stick in the area 'B' the label describing the functionality of the AUX Port. The label is delivered with the modules

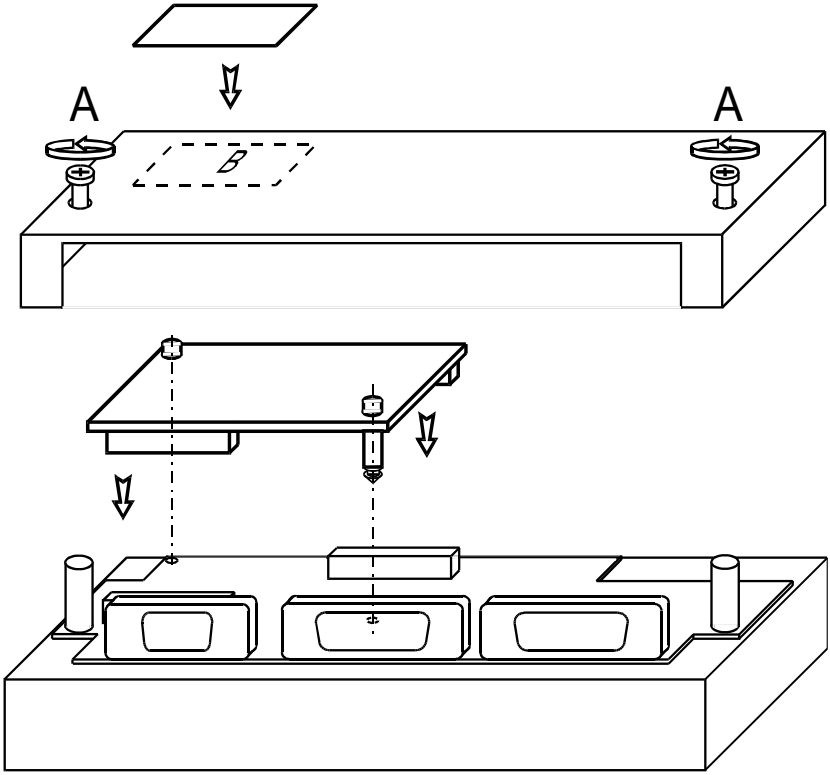


Figure 16 - Mounting the communication modules

Models without the PC/Printer Port

Some Pop models, see Table 1, do not have the PC/Printer Port. The PLC Port will be referred to as the PLC/PC Port, and will be used as a programming port when the Pop HMI is in Configuration Mode. You must use a gender changer with the SSK25 cable to program these units.

Battery Replacement

Some models require the use of the lithium battery for data back-up.
The following information is maintained by the battery:

- hardware real-time clock (date and time)
- event list
- recipe data

Pop panels signal the battery status in more than one way:

- blinking of the LED indicator FAULT or FLT (when available) or
- with the 'Battery' field in System Menu (BATTERY OK or LOW)
- with the value of the S6 bit in the RDA

When the panel signals that the battery is low, you should replace the battery as soon as possible.

> ***Note:*** *Replacing the battery will cause the loss of the data maintained by the battery.*

To replace the battery, follow the procedure listed below:

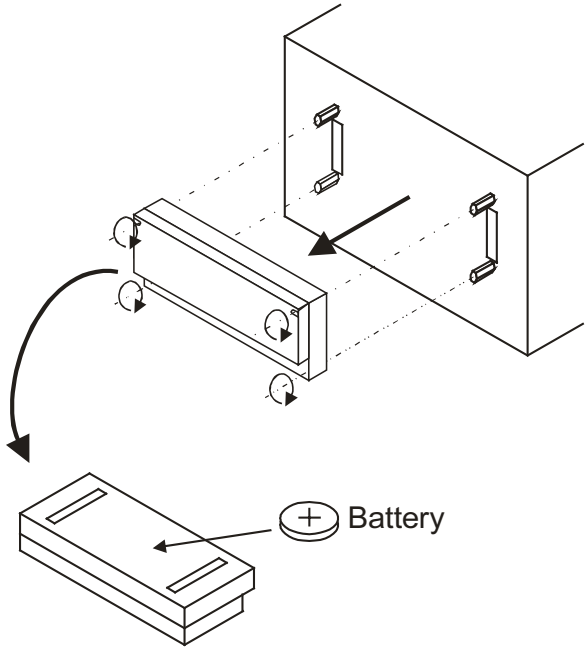


Figure 17 - battery replacement

1) turn off the power to the Pop HMI
2) use a screwdriver to loose the four screws securing the block composed by the two metal units
3) remove the block
4) remove the battery
5) replace the battery with a new one

> ***Note:CAUTION!*** *Danger of explosion if battery is incorrectly replaced . Replace only with the same or equivalent type recommended by the manufacturer.Dispose of used batteries according to the manufaturer's instructions.*

6) replace the block; tighten the four screws
7) apply power to the panel and check that battery good status is signaled.

Removing the Legends

The keyboard legends can be removed in one step by grasping the exposed portion of the legend and sliding it downward.

Use the blank legends that come with the panel or other with equivalent thickness and consistency. Do not use legends thicker than ones included in the panel.

You may also make your own legends in WORD 97 and print them out on printable foil. Then cut the foil to the correct size and insert the strips into the respective panel.

Dedicated LED's
The table below shows the name and the symbol (when available) of the LED's dedicated to special functions which may be available in the Pop operator panels.

LED			
Name/symbol	**Color**	**Status**	**Meaning**
FAULT/FLT ⚠	red	OFF	No hardware problem detected; battery OK
		BLINK	Battery low
		ON	Hardware fault
DL	green	OFF	No keys are pressed and no errors
		BLINK	Communication error (not all models)
		ON	While any key is pressed (visual feedback)
⚠	red	OFF	No hardware problem detected
		BLINK	Battery low
		ON	Hardware fault
	green	OFF	No keys are pressed
		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

Table 2 - Dedicated LED's

Usage and Safety Guidelines

Applicable Regulations

Regulations and recommendations have been issued in Europe covering the main safety-related issues in control systems which include operator interfaces. EN 60204-1 lists some important guidelines applicable when using operator interfaces.

9.2.4	Suspension of safeguards
9.2.5.3	Stop
9.2.5.4	Emergency stop
9.2.5.6	Hold-to-run controls
9.2.5.7	Two-hand controls
9.4	Control function in case of failure

Do not use an operator interface to directly command motors, valves or other actuators not equipped with safeguards and potentially harmful to persons or equipment in case of fault to the unit.

The units are intended to be mounted on the front panel of a metallic cabinet. The service personnel, when operating directly on the powered unit, must be electrostatically discharged.
All safety related regulations must be observed.

> ***CAUTION!*** *Don't open the panel rear cover when the power supply is applied.*

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.

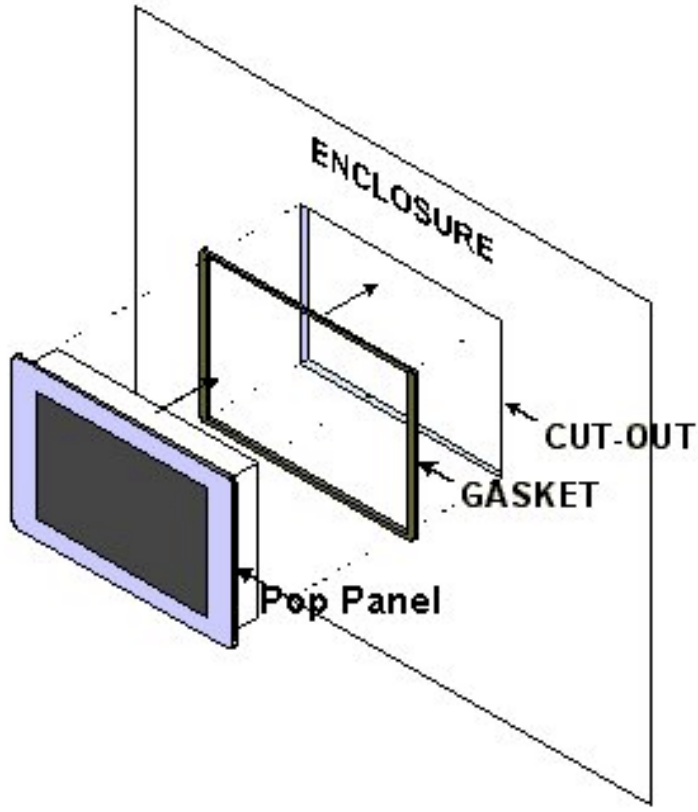
Do not use tools of any kind (screwdrivers, etc.) to operate the keyboard of the panel or the touch screen.

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.
- Two types of gaskets are delivered with the UniOP panels, depending on the model, rectangular or linear.

Applying the rectangular gasket

- The gasket should be applied around the cutout prepared for the panel being careful not to place it under tension
- The gasket should be replaced every time that the panel is dismounted and remounted in its place



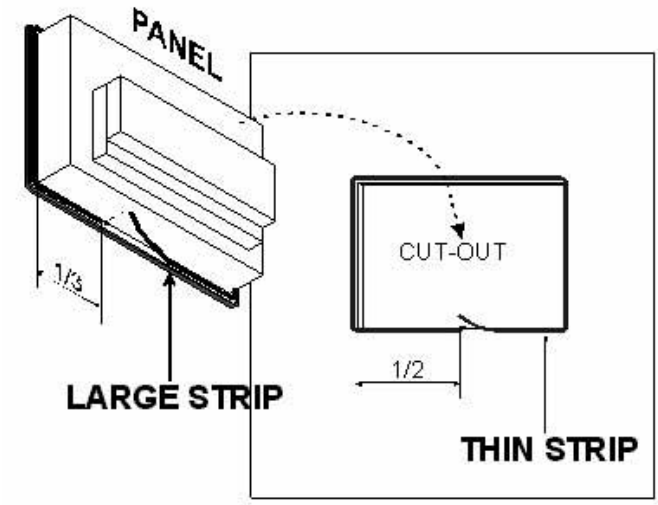
Applying the two linear gaskets:

Thin strip:

- The gasket should be applied around the cutout prepared for the panel
- The gasket should be applied starting from the middle of the lower side being careful not to place it under tension
- The two ends of the gasket should meet without overlap
- The gasket should be replaced every time that the panel is dismounted and remounted in its place

Large strip:

- The gasket should be applied on the Pop just behind the bezel
- The gasket should be applied starting from the 1/3 of the lower side being careful not to place it under tension
- The two ends of the gasket should meet without overlap
- The gasket should be replaced every time that the panel is dismounted and remounted in its place



Cleaning Faceplates

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

Getting Started

Pop panels must be programmed with the programming package Pop Designer.
To program a panel you will have to connect the panel to a personal computer running Pop Designer software package; the panel must be in configuration mode to be programmed. Use the cable SSK25 to connect the panel to a personal computer.

The software package Pop 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 Pop Designer program is correctly configured to comunicate with the communication port to which the cable attached.
The communication parameters between the Pop HMI and the personal computer are:

speed:	9600 (models PC/Printer Port support also speeds of 19200 and 38400 baud)
parity:	none
stop bit:	1

The Pop Designer software defaults to the correct parameters.

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

Command Summary

The chapter describes the keyboard commands recognized by Pop panels. Commands are classified according to the operating modes of the Pop HMI.

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

Some models ado not have CLEAR key on the keyboard; the corresponding function cam be done pressing the keys ← e → at the same time.

All the Pop models, except the Pop31/32, have at least 4 arrow keys and the Enter key. Panels with touch screen will show system defined touch keys on the screen whenever it is required (Figure 18).

Figure 18 - Default touch keys for the panels with touchscreen

Some of the keys described in this chapter may not be available in each Pop model. The functions associated to them may, however, be implemented using the Keyboard Macro Editor or using an alternative predefined key.
Models without numeric keypad and without touch screen allow numeric data entry using arrow keys and/or using the Keyboard Macro Editor.
Touch screen panels will show automatically a numeric keypad whenever the data entry phase is activated.

> ***Note**: the text '2 s' associated to a key means that the key has to be held for two seconds to activate the associated function.*

Configuration Mode

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

Operation Mode

↑	scroll page up
↓	scroll page down

←	previous page
→	next page
ENTER 2 s	recall the Command Menu
0/INS	enter Data Entry Mode
Ins	enter Data Entry Mode
9/PRN	print page/cancel print
Prt Scr	print page/cancel print
ENABLE 2 s	recall Direct Access Mode
6/ (2)	recall Password Insert Mode
3/ (2)	recall Date/Time Insert Mode

To recall the Configuration Mode in the models Pop31/32 touch the screen in an area where no touch cells have been defined and hold for 2 seconds.

Command Menu

↑	select up
↓	select down
←	select left
→	select right
ENTER	activate selection
CLEAR (1)	return to Page Mode

System Menu

↑	select up
↓	select down
←	activate selection
→	activate selection
ENTER	return to Page Mode when EXT is selected
CLEAR (1)	return to Page Mode

Data Entry Mode

When in Data Entry Mode the meaning of the keys changes depending on wheter a field has been selected for Data Entry or not. A field is selected when The Data Entry procedure has been started on that field. If no field has already been selected for Data Entry, the key assignment is shown in the table below.

↑	move to field in previous row
↓	move to field in next row
←	previous field
→	next field
Ins	next field
0÷9 . +/-	select field a numeric field for Data Entry and enter numeric value
ENTER	select a field for Data Entry
CLEAR (1)	cancel entry and return to Page Mode

After a field has been selected for Data Entry, the keys are interpreted as follows.

↑	increment digit / scroll up ASCII / select message up
↓	increment digit / scroll down ASCII / select message down
←	move cursor left in ASCII field
→	move cursor right in ASCII field
0÷9 . +/-	numeric entry
ENTER	confirm entry and return to Page Mode
CLEAR (1)	cancel entry and return to Page Mode

Alarm Mode

↑	previous alarm in the list
↓	next alarm in the list
ENTER 2 s	acknowledge current alarm
CLEAR (1)	return to page Mode
9/PRN	alarm list printout/cancel print
Prt Alm	alarm list printout/cancel print
Prt Scr	alarm list printout/cancel print

Event Mode

↑	scroll up
↓	scroll down
CLEAR (1)	return to page Mode
9/PRN	event list printout/cancel print
Prt Alm	event list printout/cancel print
Prt Scr	event list printout/cancel print

Password Entry Mode

↑	increment digit
↓	decrement digit

←	next digit
0÷9	numeric password entry
ENTER	confirm password and return to Page Mode
CLEAR (1)	cancel entry and return to Page Mode
ESC	end entry and return to Page Mode

Time and Date Set Mode

↑	increment field value
↓	decrement field value
ENTER	field select
CLEAR (1)	return to Page Mode

Direct Page Selection Mode

←	decrement page
→	increment page
0÷9	page number entry
ENTER	confirm entry and go to selected page
CLEAR (1)	cancel entry and return to Page Mode

Direct Acces Mode

←	decrement offset
→	increment offset
0÷9	numeric offset entry
ENTER	select next, confirm offset entry
CLEAR (1)	cancel numeric offset entry end return to Page Mode
T	select timers
Z	select counters
E	select digital inputs
A	select digital outputs
M	select flags/merkers
ENABLE	return to Page Mode

Notes:

(1) it is equivalent to the key ESC/  , when available

(2) available only in the models Pop21, Pop22, and Pop23

Troubleshooting

In the case it might be impossible to switch the Pop HMI to Configuration Mode due to problems in the start-up phase, follow the procedure described below:

1. Switch off the unit
2. Press and hold any 3 keys
3. Turn on the unit and hold the keys pressed until Configuration Mode will be shown on the screen.

For keyless models such as the Pop31/32, 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 one second.
4. Continue until the screen will show Configuration Mode

Touchscreen Calibration

Standard calibration:

1. Recall Configuration Mode
2. Touch the CLEAR key on the screen until a small round symbol will appear on the top right corner of the screen
3. touch and hold the symbol until it will move to the low lef corner of the screen
4. touch and hold the symbol until the indication to touch the ← key will be displayed on the screen
5. touch and hold the key ← until the indication to touch the ↓ key will be displayed on the screen
6. touch and hold the key ↓ until the indication to touch the Enter key will be displayed on the screen
7. touch and hold the Enter key until the panel will switch to Operation Mode (if a valid project is loaded in the memory)

Emergency calibration.
The Emergency calibration procedure should be used in all cases when the standard calibration procedure is, for any reason, not possible:

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