UniOP ePALM10

The ePALM10 is a state-of-the-art handheld HMI device with a graphic display and a keypad. The rugged polyamide enclosure offers a high level of shock and environmental resistance making the ePALM the ideal choice for use in the factory floor.

***Note**: the wiring of the dead-man buttons has been changed since October 2001.*

Highlights

- **Graphical display 120x64 pixels (up to 8 lines 20 characters)**
- **Highly visible transflective LCD display**
- **27-keys keypad with tactile feedback**
- **Connection to industrial bus systems**
- **Large memory size (512 KB Flash)**
- **IP65 protection**
- **Programmable with UniOP Designer version 5.08**
- **Includes Emergency Stop button**
- **Includes 'dead-man' buttons**

The ePALM HMI panels are the handheld products of the UniOP family. All of the ePALM products support the rich common functionality of the UniOP operator panels:

- Transflective LCD display ensures readability under the most critical light conditions
- Powerful and intuitive programming with the UniOP Designer software
- Support of more than 130 communication drivers for industrial devices
- Optional modules for fieldbus systems (Profibus DP, DeviceNet, CANopen, …)
- Display data in numerical, text and bargraph format
- Dynamic graphic objects
- Recipe data storage
- Keyboard macro editor
- Alarms and historical alarm list
- Eight levels password protection
- Report printing to serial printer

In addition some unique features make them a perfect fit for handheld operation.

- Emergency Stop button. Hardwired
- 'Dead man' buttons. Hardwired
- High-quality polyurethane cable for mobile applications

Technical data

	ePALM10
Display	
Graphic resolution	120x64 pixels
Active display area	66 x 33 mm
Rows/columns	8x20
Character height	-
Scalable fonts	Yes
User definable characters	256
Contrast regulation	Software
Brightness regulation	No
Memory	
User memory	512 KB Flash
User memory expansion	-
Front panel	
Function keys	9
System keys	18
Touch screen	No
User LED's	20
System LED's	5
Connections	
PC/Printer port	Yes
PLC port	RS-232, RS-485, RS-422
Aux port (fieldbus connection)	Yes, with optional modules
External keyboard port	No
Programming speed	9600 – 38400 bps
Functionality	
Page size	32 rows
Number of variables per page	Unlimited
Recipe memory	16 KB
UniNet network	Client/Server
Alarms	1024
Event list	256
Alarm info page	Yes
Password	Yes
Battery	Yes. User replaceable lithium battery model Duracell DL2430
Hardware RTC	Yes
Screen saver	No
Buzzer	No
Power supply voltage	18 - 30 VDC
Max power consumption	~ 300 mA at 24 VDC
Fuse	Automatic
Weight	~ 0.5 Kg (not including cable)
Operating temperature	0 to 50 °C
Storage temperature	-20 to +70 °C

Operating and storage humidity	5 – 95 % RH non-condensing
Protection class	IP65
Min diameter of cable	7 mm
Max diameter of cable	11 mm

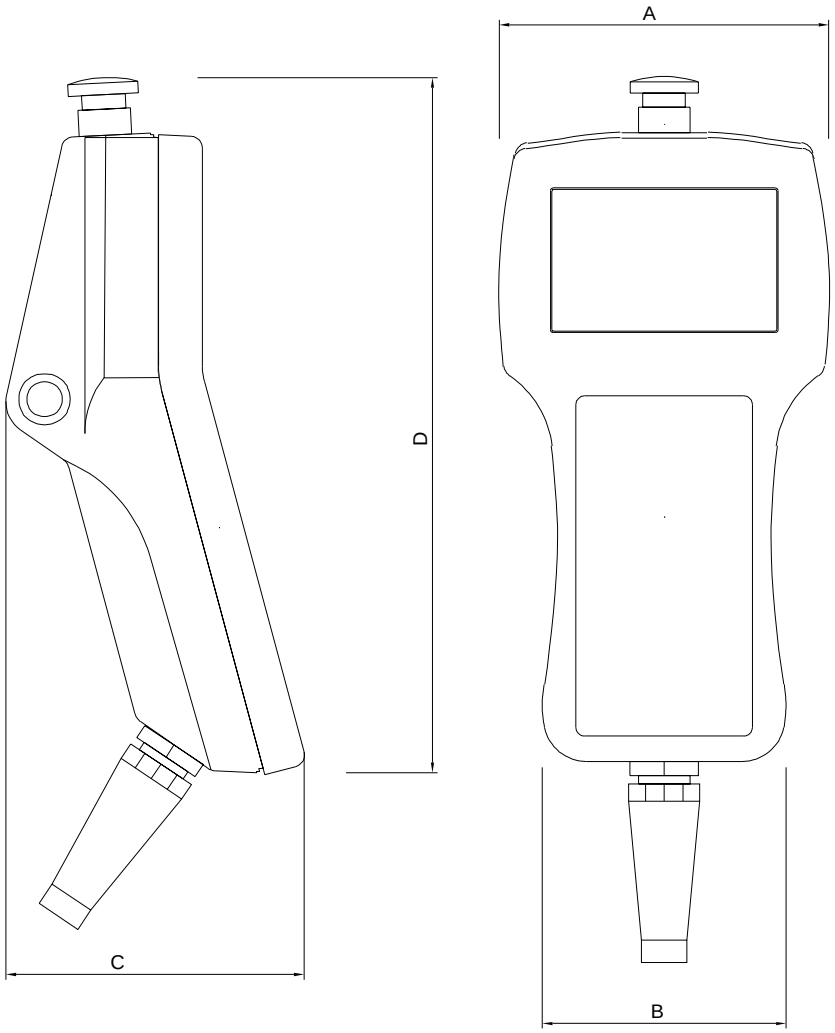
The product is designed for installation in an industrial environment in compliance with the regulations:

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

All circuits in the handheld, including the wiring for the emergency stop button and the deadman buttons, must be considered SELV circuits. They will have to be used in compliace with EN 60950.

Dimensions

A	116 mm	4.56”
B	86 mm	3.38”
C	102 mm	4.01”
D	239 mm	9.41”

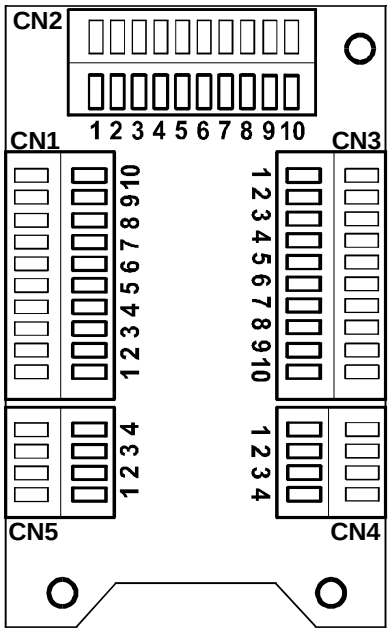


Connections

The unit provides all standard UniOP connections (PC/Printer Port, PLC Port, Aux Port, power) plus some special signals (Emergency Stop button – two NC contacts, “dead-man” buttons – two independent NO contacts) on the internal terminal block.

***Note**: the ePALM10 unit does not include a current loop (20 mA) interface on the PLC port. The communication modules TCM04 (Interbus), TCM07 (Simatic S7 MPI without optical insulation) and TCM10 (Ethernet) are **not** supported.*

The internal terminal block is a detachable module with five terminal blocks. The position of the connectors and the numbering of the contacts are shown in the figure below. The board shown in figure will be referred as CA01 interface board.



The assignment of the signals on the connectors is shown in the tables below. Terminals indicated as ‘Reserved’ should not be used.

CN1 Aux Port	
1	Aux Port pin 5
2	Aux Port pin 9
3	Aux Port pin 4
4	Aux Port pin 8
5	Aux Port pin 3
6	Aux Port pin 7
7	Aux Port pin 2
8	Aux Port pin 6
9	Aux Port pin 1
10	Reserved

CN2 PC/Printer Port	
1	Reserved
2	Reserved
3	Reserved
4	Reserved
5	+5V output (max 100 mA)
6	GND
7	RXD
8	CTS
9	TXD
10	RTS

The terminal assignment in CN1 refers to the equivalent assignment in the Aux Port of the standard panel-mount version of the product. This correspondence will be useful to adapt the normal cable drawings for use with the handheld device.

CN3 PLC Port	
1	CHA+
2	CHA-
3	CHB+
4	CHB-
5	+5V output (max 100 mA)
6	GND
7	RXD
8	CTS
9	TXD
10	RTS

CN4 Power	
1	+24 VDC
2	Common
3	Reserved
4	PE

CN5 Additional Signals	
1	Dead man button R (NO contact)
2	Dead man button R (NO contact)
3	Dead man button L (NO contact)
4	Dead man button L (NO contact)

The Emergency Stop button is hardwired directly to the cable: the corresponding signals do not appear listed in the connectors.

The ePALM10-0061 includes a communication cable with a length of 5 meters. The cable does not have a connector on its free end as it is intended to be wired directly in the control cabinet.
The connections are color-coded according to the table below.

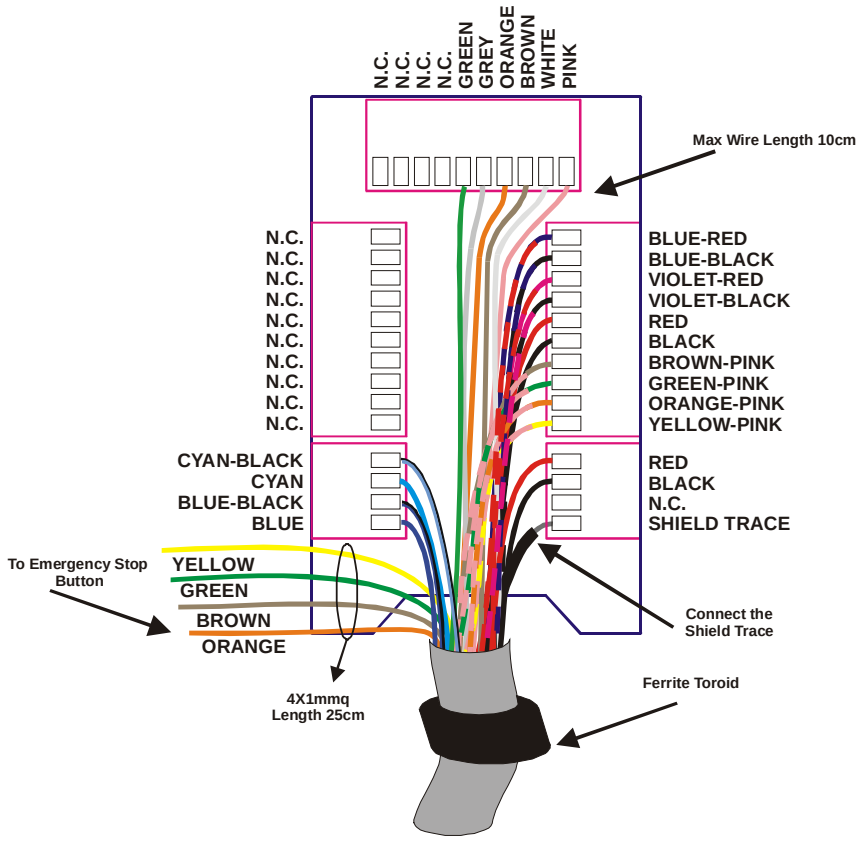
Signal	Color	S mm^2	AWG (approx)
Power			
+24 VDC	Red	0.5	20
Common	Black	0.5	20
PC/Printer Port			
GND	Grey	0.14	26
RXD	Orange	0.14	26
CTS	Brown	0.14	26
TXD	White	0.14	26
RTS	Pink	0.14	26
+5V Output	Green	0.14	26
PLC Port			
CHA+	Blue-Red	0.14	26
CHA-	Blue-Black	0.14	26
CHB+	Violet-Red	0.14	26
CHB-	Violet-Black	0.14	26
+5V Output	Red	0.14	26
GND	Black	0.14	26
RXD	Brown-Pink	0.14	26
CTS	Green-Pink	0.14	26
TXD	Orange-Pink	0.14	26
RTS	Yellow-Pink	0.14	26
Additional Signals			
DM Right (NO)	Cyan-Black	0.35	22
DM Right (NO)	Cyan	0.35	22
DM Left (NO)	Blue-Black	0.35	22
DM Left (NO)	Blue	0.35	22

Emergency Stop			
E-Stop 1 (NC)	Green	1	17
E-Stop 1 (NC)	Yellow	1	17
E-Stop 2 (NC)	Brown	1	17
E-Stop 2 (NC)	Orange	1	17

The internal layout of the communication cable is shown in the figure below. Please note that the ferrite toroid is required.

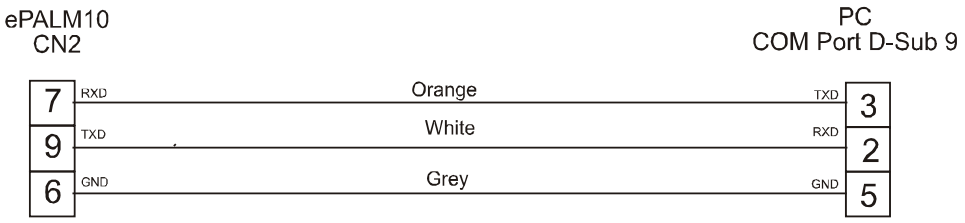
***Note**: the wiring of the Emergency Stop button is to be considered a SELV circuit and it is intended **only** for connection to low voltage circuits (below 48 VDC).*

The standard cable layout of the ePALM10-0061 and ePALM10-0062 includes the signals of the PC/Printer Port and the signals of the PLC Port. It will allow, without further modification, to connect to the handheld device for programming and to set-up a connection to a field device using RS-232, RS-422 and RS-485.
If connection to the Aux Port is required, connections wired to the PLC port will have to be manually moved to the Aux Port.
When the RS-422 or RS-485 communication is used, it is recommended not to leave floating the RXD and the CTS signals (that are not used in this configuration). The RXD signal it to be connected to GND, the CTS signal is to be connected to the +5V Output.



The figure shows the assembly of the communication cable.
Please note that the ferrite toroid (included in the ePALM10 package) is required for proper operation.

To program the ePALM10 you will need to wire at least the power supply and the programming port connections. Connect the ePALM10 to the COM port of a PC as indicated in the figure below.



Using Optional Fieldbus Modules

The ePALM handheld HMI can use some of the standard TCM communication modules for connection to fieldbus systems.
The list of the TCM module currently supported by the ePALM product is the following:

TCM module	Fieldbus	Notes
TCM01	Siemens Simatic S7 MPI	Suitable for a point-to-point configuration
TCM02	Moeller Suconet K	Suitable for a point-to-point configuration
TCM03	DeviceNet	There are limitations in the bus speed and network configuration that can be used
TCM08	Profibus DP	There are limitations in the bus speed and network configuration that can be used
TCM09	CANopen	There are limitations in the bus speed and network configuration that can be used

Other TCM modules are currently not supported for use in the ePALM products.

The following notes are important:

- The TCM module must be plugged into the unit. The ePALM must be opened to allow for the insertion of the TCM module. After plugging the module the ePALM product must be carefully closed to ensure proper sealing.
- The default wiring of the Aux Port CN1 must be **manually** changed to connect the appropriate signals. Fieldbus topologies do not allow long (5-10 meters) drop segments; the wiring must include incoming and outcoming segments for all bus signals.
- The CA01 interface board does not allow adding terminator resistors to the bus lines. The ePALM cannot be used a final node in the network topology unless termination resistors are applied externally.

The most common wiring layouts will be described in detail in this chapter.

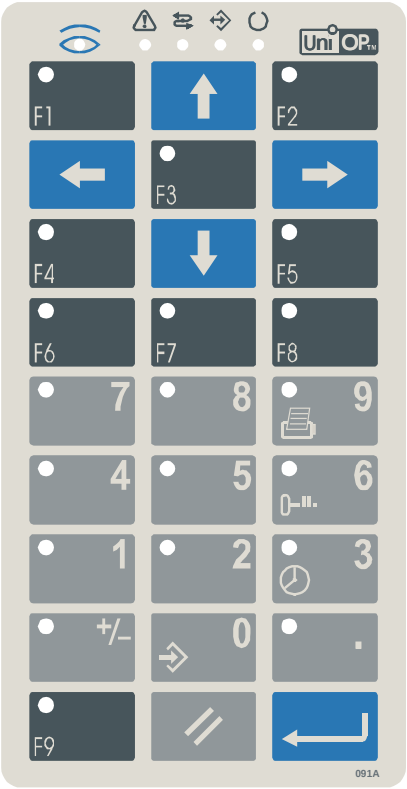
Connecting the ePALM to the Simatic S7 MPI network

It is recommended that the necessary wires are moved from the CN3 connector (PLC Port) to the CN1 connector (Aux Port).
We suggest to wire the connections as shown in the table below.
The table indicates the wires that must be moved from CN3 to CN1. The signals A and B will have to be connected to the MPI network.
Please note that it is not possible to connect the termination resistors in the ePALM.

CN1 Connector (Aux Port)			CN3 Connector (PLC Port) Wires to be removed	
Pin	**Signal**	**Color**	**Pin**	**Signal**
4	A	Blue-Red	1	CHA+
5	B	Blue-Black	2	CHA-
1	GND	Black	6	GND

Indicators and Keypad

The standard keypad of the ePALM panels is shown in the figure below.
Custom artwork may be designed and produced on request. Please inquire for more information.



There are several dedicated LED indicators on the front panel of the unit. Functions are described in the table below.

LED	Color	Status	Meaning
	red	OFF	No hardware problems detected
		BLINK	Battery low
		ON	Hardware fault
	green	OFF	No key pressed
		ON	While any key is pressed (visual feedback)
	green	OFF	Hardware fault
		ON	Unit in operation
	green	BLINK	Communication error
		ON	Communication OK
	red	OFF	No alarms
		BLINK	Alarm requires acknowledgment
		ON	Alarm active
	green		May be user controlled as LED number 65 using the Macro Editor. Turns ON when recipe/event backup is being performed.

The RDA mapping of LED indicators is shown in the table below.

RDA Bit	LED on Key
L1	F1
L2	F2
L3	F3
L4	F4
L5	F5
L6	F6
L7	F7
L8	F8
L9	F9
L10	
L11	
L12	
L13	
L14	
L15	
L16	

RDA Bit	LED on Key
L17	
L18	1
L19	2
L20	3 /
L21	4
L22	5
L23	6 /
L24	7
L25	8
L26	9 /
L27	.
L28	+/-
L29	
L30	
L31	
L32	

The RDA mapping of the keypad is standard.

Battery Replacement

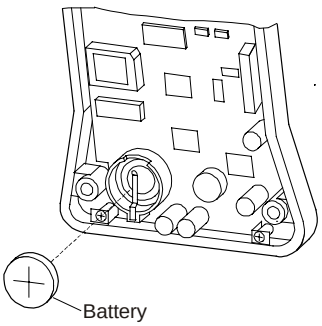
A lithium battery is required for data back-up. The following information is maintained by the battery:

- Hardware real time clock
- Event list
- Recipe data

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

To replace the battery follow the procedure listed below:

1) turn off the power to the device
2) using a screwdriver loose the 6 screws securing the plastic enclosure
3) open the handheld; the battery is located on the CPU subsystem
4) remove the battery
5) replace the battery with a new one
6) close the handheld and tighten the six screws
7) apply power to the handheld and check that the battery good status is reported.



Accessories

The following accessories are currently available for the ePALM10 products:

- hooks for hanging the handheld device. Hooks are available in two versions, AHOOK01 without magnet and AHOOK02 with a magnet.

The hook with the magnet is shown in the figure below.

Ordering Information

ePALM10-0061	ePALM10 HMI with cable (length 5 meters)
ePALM10-0062	ePALM10 HMI with cable (length 10 meters)
AHOOK01	Hook set without magnet
AHOOK02	Hook set with magnet

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