

Saia PCD7.D16x, D170 & D23x Edit the displays using HMI-Editor tool

A graduated range of text and graphics displays for Saia PCD® PCS and all Saia PCDs. SBC PLC- based terminals display text and, depending on the model, graphics. They use resources (text, variables, formats...) located in the user memory of the Saia PCD® control device. HMI-Editor: Add-on tool for the PG5 programming package. Design and edit terminal displays and control menus using the controller's own efficient programming tool.

Text-Display with 4 × 16 characters and LED backlighting

PCD7.D170 is the lowest in price, with just a simple text display

- ▶ 5 keys or Fkeys, configurable
- ▶ Auto-repeat with 2 speeds for incrementing/decrementing values
- ▶ Version **PCD7.D16x** for direct mounting on the PCD1 or PCD2 cover

Graphics displays with 128 × 64 pixels and LED backlighting

The PCD7.D23x series displays also such graphics as trend curves, bar graphs and icons.

They all have RS-232, 422 and 485 communications ports, as well as a buzzer

PCD7.D230 – as easy as operating a PC with a mouse

- ▶ Menu, submenus and process parameters are selected with single-knob control: just turn and press **PCD7.D231** – with large keys
- ▶ 10 large function keys for executing a variety of processes
- ▶ Auto-repeat with 2 speeds for incrementing/decrementing values **PCD7.D232** – with 25 keys and 8 LEDs
- ▶ Numeric keyboard for ease of value entry
- ▶ 8 function keys and 8 LEDs for process control and monitoring

PCD7.D1xx & D23x technical data



Type designation	PCD7.D170 PCD7.D16x	PCD7.D230 and Grafik Display PCS1	PCD7.D231	PCD7.D232
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Display

Type	Text display	Graphics display	Graphics display	Graphics display
Size (WxH)	4 × 16 characters		8 × 20 characters 128 × 63 Pixels	
Character size (WxH)	5 × 7 pixels (3 × 4.7 mm)		5 × 7 pixels (2.5 × 3.5 mm)	
Character sets	ASCII + special English, German, French, Scandinavian		ASCII (West European)	
Contrast setting	Via setup or software		Via Setup or Software	
Backlighting	on/off		on/off	

Keyboard

Total keys	5 keys	1 dial knob	10 keys	25 keys
Function keys and keys	5 F-keys ⁵⁾ or 5 keys	–	10 F-keys + 5 keys	8 F-keys + num. keypad
Key autorepeat	yes	–	yes	yes
Buzzer	–	yes ³⁾	yes	yes
LED	–	–	–	8 (6 red, 1 orange, 1 green)
Plastic frame	–	yes ³⁾	yes	yes

Interfaces

To Saia PCD® and PCS1	RS-232	RS-232 / 422 / 485 ³⁾	RS-232 / 422 / 485	RS-232 / 422 / 485
Protocol	Punkt-zu-Punkt	Punkt-zu-Punkt	Punkt-zu-Punkt	Punkt-zu-Punkt
Switch for termination resistors	–	yes ³⁾	yes	yes

Memory (PCD/PCS1)	up to max. 1 MByte	up to max. 1 MByte	up to max. 1 MByte	up to max. 1 MByte
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Performance

All performance features of PCD-PCS1 controllers are also available for the terminals

Programming software

Add-on tool PG5	HMI-Editor ²⁾	HMI-Editor	HMI-Editor	HMI-Editor
Graphical display capabilities	–	Icons and trend curves ¹⁾	Icons and trend curves ¹⁾	Icons and trend curves ¹⁾
Use of PG5 resources	–	yes	yes	yes
Autorepeat function	yes ⁴⁾	–	yes ⁴⁾	yes ⁴⁾
Function keys commands	yes ⁵⁾	–	yes ⁴⁾	yes ⁴⁾
LED controls	–	–	–	yes ⁴⁾
Buzzer controls	–	yes ⁴⁾	yes ⁴⁾	yes ⁴⁾

General Data

Supply voltage U _n	24 VDC, +30% / –20% or 19 VAC ± 15% full-wave rectified			
Power consumption at U _n	100 mA	200 mA ³⁾	200 mA	200 mA
Noise immunity	CE mark, according to EN 50 081-1 and 50 082-2			
Operating/Storage temperature	0...50°C / –25...+70°C			
Permissible humidity	5 ... 95% relative humidity, without condensation			
Protection system (front)	IP 65	IP 54 ³⁾	IP 65	IP 65

1) with RS-232 RTS/CTS | XON/XOFF reduced, RS-422 XON/XOFF reduced

2) only with «shift key» setup mode

3) only PCD7.D230

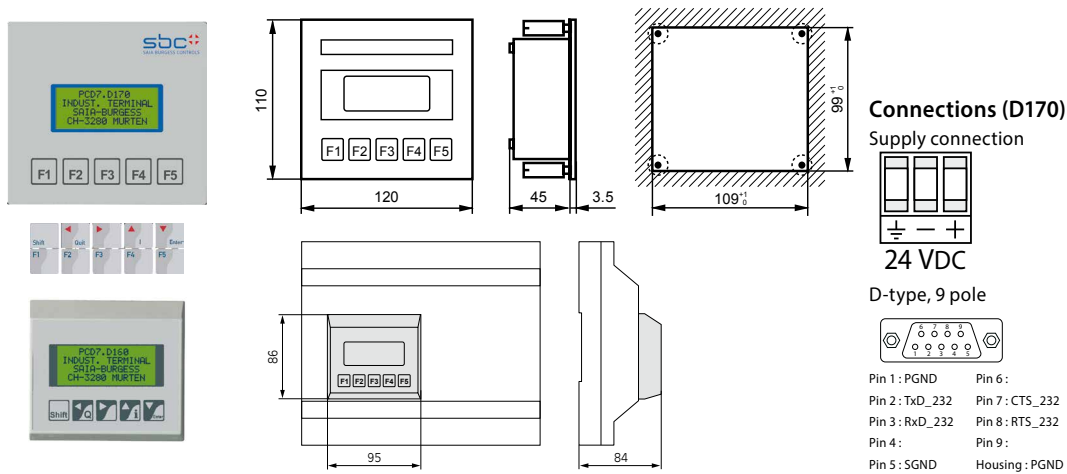
4) not with FTP mode (RS 485)

5) function keys are not supported by the HMI-Editor

Terminals: PCD7.D170 / PCD7.D16x

PCD7.D170: The 5 front-panel keys can be configured in software (setup mode) either as simple function keys (F1 to F5) or as control keys (Esc, Enter, Quit, and cursor keys right/left/up/down) that can be used for navigation and to modify variables. In the latter case, the terminal may be programmed with the HMI-Editor.

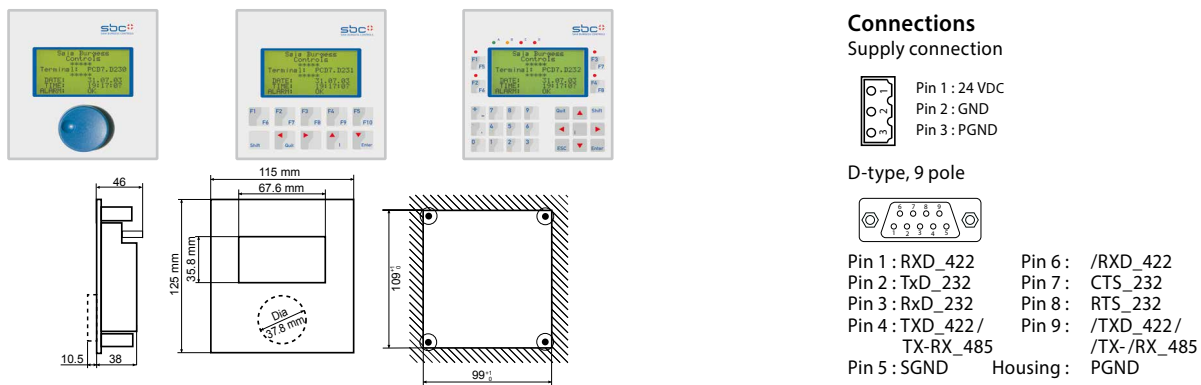
The PCD7.D16x, which has identical characteristics, can be mounted directly onto the cover of a PCD1 or PCD2 controller to produce a compact system.



Terminals: PCD7.D230, PCD7.D231 & PCD7.D232

PCD7.D23x series: During setup, these terminals can be configured for different communications modes: RS-232, RS-422 (with or without control) or RS-485. It is possible to adjust the contrast and communications speed manually and to enter identification numbers for the different terminals in RS-485 bus mode.

All these terminals can be programmed with the HMI-Editor. The graphics capabilities of D23x terminals (trend curves, icons and bar graphs) are supported



HMI-Editor programming tool : A PG5 add-on FREE WITH PG5 !!

This tool allows you to create an HMI application for PCD7.D170/ D16x/ D230/ D230Easy/ D231, D232/ PCS1 with integrated display as well as the older generation of D202 and D250 PLC based terminals.

With the HMI-Editor you can create an HMI menu tree, define password levels, allow display and editing of variables, access internal FBox parameters (FUPLA) and create an alarm list.

Recommendations and restrictions

Saia PG5® / HMI-Editor: use the same version (for example: PG5 1.3.100 and HMI-Editor 1.3.100). When several terminals are used, all terminals should be of the same type. Only one terminal can be in use at a time. When a user logs onto one terminal, the others are put in a busy state.

Some features are not supported by the bus topology (RS-485): bargraph display, function keys, LED control, buzzer control, autorepeat, icon and status bars, advanced object trends.

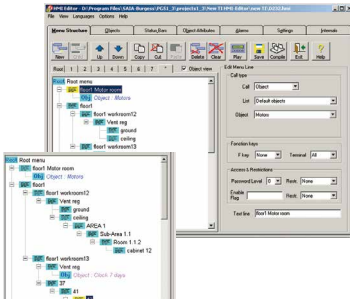
Menu structure and organization

Unlike standard commercial editors, the operator's desktop editor has a hierarchical structure. Menus point to submenus, which in turn point to other submenus, and so on. This sequence of branches constitutes the menu structure. At the lowest level, the last menu or submenu item points to an OBJECT.

A maximum of 50 submenus, each with 8 levels, allows a complex but transparent menu structure to be constructed.

```

#floor1 Motor room
floor1
floor2 workroom21
floor2 workroom22
Full HVC
Icons
Symmetrical trend 1
Symmetrical trend 2
    
```



Root menu

This is the very first menu that the terminal will display. Three different root menus are possible, depending on the chosen topology:

- ▶ One single terminal connected: standby menu
- ▶ Multi-point connection of terminals: standby menu and busy menu
- ▶ Network connection of terminals: standby menu, login menu and busy menu

These menus can include: text, date/time, password, alarm states, state of acknowledgement and PCD variables.

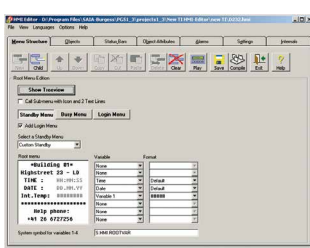
The bottom 2 lines may be replaced with a line of icons.

```

-----
to log in
Enter your password
-----
Code 8 characters
Pass:          0
    
```

```

*Building_01*
Highstreet 23 - LD
TIME :      07:36:23
DATE :      07.02.03
Int.Temp:
*****
Help phone:
+41 26 6727256
    
```



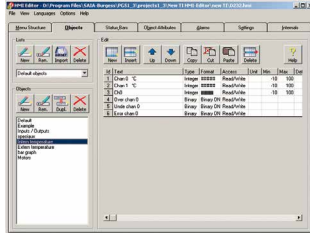
Standard objects and elements

An object is a collection of elements. These always comprise a variable (flag, float...), a format (###, HH.MM, Phone...) and an access mode (read only, action...) but they may also include a unit of measurement (°C, kW...), or some limiting values. Instead of values, one can choose to display states (run/stop, manual/auto...).

The bottom 2 lines may be replaced with a line of icons.

```

#FULL STATUS MOTORS
S/D TEMP & SPEEDS
Status Mot1 star<
Speed Mot1 0
Temp Mot1 0.00
Status Mot2 star<
HIGH
    
```

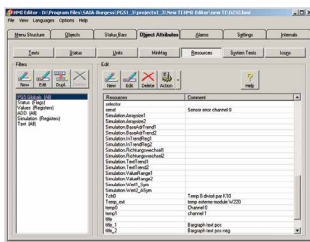


Resources

The variables (which are associated with elements and comprise the objects) are imported automatically from the PG5. The PG5's global resources constitute the database. These resources can be filtered by type, name etc. All types of media may be used: flags, registers, inputs, outputs, timers, counters, constants, DBs, etc.

```

Chan 0 °C = 21.8
Chan 1 °C = 21.7
Ch0
Over chan 0 OFF
Under chan 0 OFF
Error chan 0 OFF
    
```



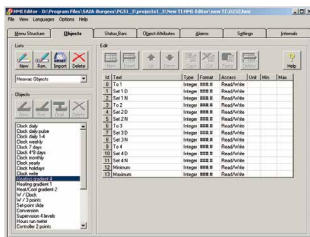
Importing predefined objects

The import/application button is used to import an object library (HEAVAC library, modem library) with all its predefined texts.

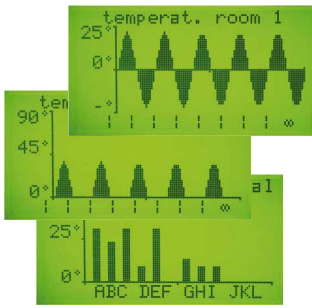
Transfer also includes connection to the corresponding function box (FBox) with all its parameters (which then become object elements) and all its texts, data sources, formats etc.

```

On Mon = 0.00<
Off Mon = 0.00<
On Tue = 0.00<
Off Tue = 0.00<
On Wed = 0.00<
Off Wed = 0.00<
HIGH
    
```

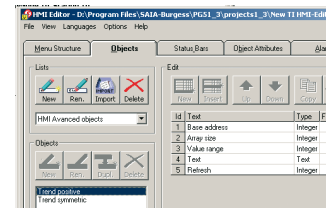


Importing complex objects

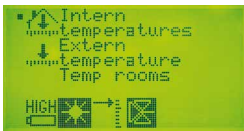
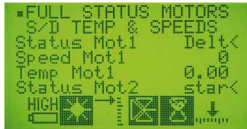


The import/standard button is used to import a library of complex objects (advanced objects). This library includes 2 objects that support 2 trend curves (symmetrical and positive). To complete the graph, the user can then edit free text (captions) or simple characters (scale).

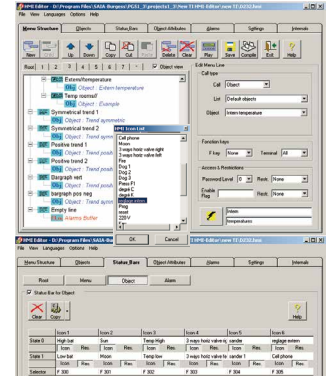
This object can be called by the menu as often as required for the graphical display of up to 100 register values in any one curve. Only supported by D23x series terminals.



Icons and icon management



Icons: An icon is a predefined figure displayed on the screen. The Icons Menu, with icons and status bar, are new features supported by D23x series terminals. Status bars have a fixed number of 6 icons. Up to 100 icons can be imported to an HMI file and then loaded into the D23x terminals. Menu items can be created with an icon (static icon) and 2 text lines. A status bar can be defined for: Root, Menu, Objects and Alarm buffer. Status bars can use static or dynamic icons. Any bars defined will appear on the 2 bottom lines of the display. Dynamic icons can be switched by means of a flag, or selected via a register value.

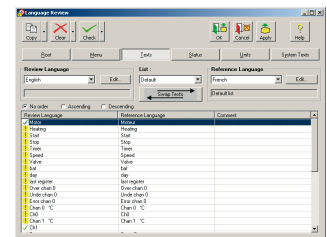


Language manager

The language manager allows all text to be edited simultaneously in 5 languages in the same HMI project.

Text can be sorted and languages changed according to the revised language. Untranslated text is marked and translated text is checked.

Language selection prior to compiling a program is quick and simple.



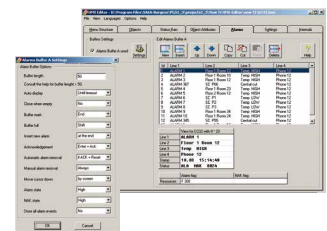
Alarms and alarm settings



The alarm tab is used to create a list of alarms associated with flags, and to define alarm messages in the buffer. For each alarm, 4 lines of text can be defined, + 2 lines for the date, time, alarm state, acknowledgement and number.

Options and adjustment possibilities allow almost all requirements to be met.

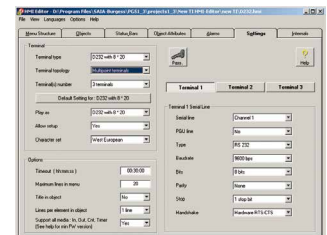
The bottom 2 lines may be replaced with a line of icons.

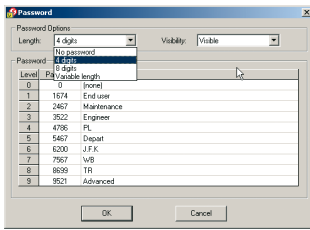


Terminal selection and settings



The settings tab is used to select the terminal type (text, such as D170, or graphical, such as D23x); define its topology (stand-alone, multi-point, network); and choose the port number, serial line type, communications speed, controls, etc. It allows options to be defined, such as screen illumination, setup access, types of media supported etc.





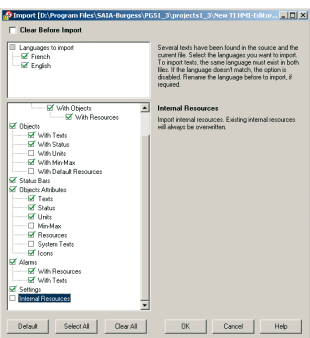
Password and Enable flag

10 password levels of 4 or 8 characters (or of variable length) control the read/write access to each menu or submenu line. Passwords may be visible or hidden; or they may be visible during editing and then hidden, as with the D230. Enable flag: The status of a flag also allows restrictions to be applied that are similar to password restrictions.



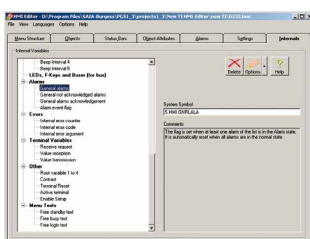
PLAY function

By pressing the «PLAY» button, the terminal's menus can be displayed (offline) at any time. This is a way of checking presentation, alignment, spacing, window sequencing, navigation and word-breaks. Also, by simply clicking on the «preview» button, the contents of an object can be viewed in a virtual window. Complex objects and icons are not displayed.



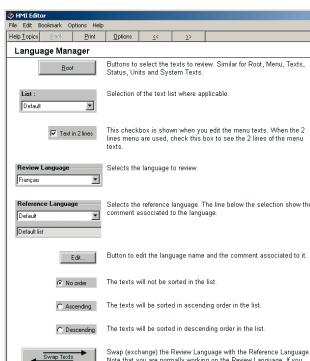
Importing HMI projects

This command allows any part of an existing HMI project to be imported into a new HMI project. A dialog box is used to select which parts of the project to import. Parts to be imported are ticked: objects with or without resources, with or without mini-max, alarms with or without text, with or without settings, etc.



Internal variables

The «Internals» tab displays internal variables that can be accessed by the user program for interaction with the HMI editor's internal functions. These variables (S.HMI.xxxxxx) are accessible with predefined system symbols. The variables comprise: passwords, LEDs, F-keys, buzzers, alarms, communications variables, root menu variables and text, and error registers.



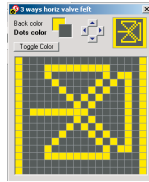
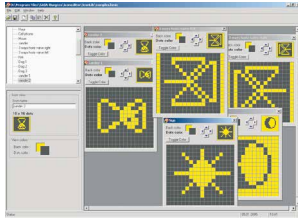
Help and online help

- ▶ HMI-Editor
A manual is available in 3 languages (pdf format) with the install program. At every step, online help in English supplies information on how to proceed.
- ▶ ICON-Editor
A manual is available in 3 languages (pdf format) with the install program. At every step, online help in English supplies information on how to proceed.

Icon-Editor

The icon editor is installed automatically in the PG5 when the HMI-Editor is installed. It will be found in the pulldown «Tools» menu.

The icon editor is the only tool for creating a library of icons to use in the HMI-Editor. The icon editor always works with just one library at a time and can contain a large number of icons. When the icon editor is opened, one icon library is accessed by default. An icon is a rectangle of 18 x 16 pixels. Icons are very simple to create and freely definable for the requirements of each application.



Handling and compatibility



Handling	PCD7.D170 or PCD7.D16x	PCD7.D230 or PCS1	PCD7.D231	PCD7.D232
How to enter in setup mode?	⌘ «Shift»/«I» (Info) key combination	⌘ dial during power-up	⌘ any key during power-up. During runtime, ⌘ «Shift»/«I» (Info) key combination	
HMI-Editor	Yes, except with «5 F-keys» setup mode	Yes, in all configurations	Yes, in all configurations	Yes, in all configurations
Enter command	⌘ «Shift»/«Enter» key combination or → key	⌘ dial briefly	⌘ «Shift»/«Enter» key combination or → key	⌘ «Enter» key or ⌘ → key
Escape command	⌘ ← key	⌘ ----- for menu return. ⌘ ----- for return to the main menu	⌘ ← key	⌘ «ESC» key or ⌘ ← key
How to navigate in a menu	⌘ ↑↓ arrow keys to select a line	Turn dial to ∪∪ to select a line	⌘ ↑↓ arrow keys to select a line	⌘ ↑↓ arrows keys to select a line
How to enter or change a value*	⌘ ↑↓ arrow keys to select the line with a variable to change, then press enter. Change the value by ⌘ ↑↓ arrows (auto-repeat keys), then ⌘ «Enter» key to confirm.	Turn dial to ∪∪ to select the line with a variable to change, then ⌘ the dial (Enter). Turn dial to ∪∪ to decrease or increase the value, then ⌘ the dial (enter)	⌘ ↑↓ arrow keys to select the line with a variable to change, then ⌘ enter. Change the value by ⌘ ↑↓ arrows (auto-repeat keys), then ⌘ «Enter» key to confirm	⌘ ↑↓ arrow keys to select the line with a variable to change, then ⌘ «Enter». Change the value with the keyboard, then ⌘ «Enter» key to confirm. (Also possible with autorepeat keys)
Buzzer emergency stop	-	⌘ dial briefly	⌘ «Shift»/«Quit» key combination	⌘ «Quit» key
Manual alarm acknowledgement	-	-	⌘ «Shift»/«Quit» key combination	⌘ «Quit» key

Compatibility

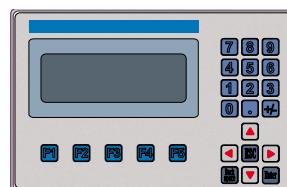
Commands	99% with D231	-	99% with D170 & D16x	99% with D202
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*) available if write access

Smart Controls:

Allows to face the specific requirements.

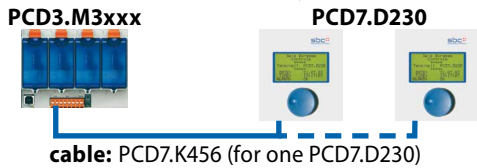
From 100 pieces a year, you will get a special label on front, from 500 pieces a special Firmware, a special function or a special advanced object in the HMI-Editor. From 1000 pieces a year, a full new design can be developed for you.



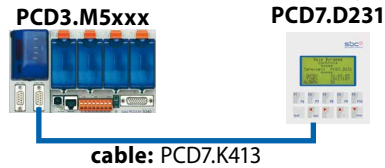
Example of new PLC based terminal for a OEM customer.

Communications examples

RS-485 (without graphics capability)



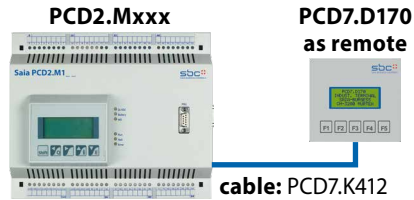
RS-232 RTS/CTS (with graphics capability)



RS-232 RTS/CTS (with graphics capability)



RS-232



Ordering information

Type	Description	Weight
Text terminals for direct mounting on PCD1 or PCD2 cover		
PCD7.D162*	without additional interface	260 g
PCD7.D163*	with additional RS-422 / RS-485 interface	260 g
PCD7.D164*	with Profibus DP connection (as slave) + RS-485, electrically isolated	260 g
PCD7.D165*	with LonWorks® connection + RS-485, electrically isolated	260 g
* outphased		
Terminals for front panel flush mounting		
PCD7.D170	Text terminal for front panel flush mounting with display 4 x 16 characters and 5 keys	260 g
PCD7.D230	Terminal for front panel flush mounting with graphics display and single-knob control	400 g
PCD7.D230Z11	version without SBC logo and type	400 g
PCD7.D231	Terminal for front panel flush mounting with graphics display and 10 key pads	400 g
PCD7.D231Z11	version without SBC logo and type	400 g
PCD7.D232	Terminal for front panel flush mounting with graphics display, 25 key pads and 8 LEDs	400 g
PCD7.D232Z11	version without SBC logo and type	400 g
Shielded interface connection cables, length 2.5 m for RS-232 and length 5 m for RS-485		
PCD7.K412	RS-232 between terminal and PGU connector of PCS1 or PCD (D-type, 9-pole at both ends)	140 g
PCD7.K413	RS-232 RTS/CTS between terminal and PGU connector of PCS1 or PCD (D-type, 9-pole at both ends)	180 g
PCD7.K422	RS-232 between terminal (D-type, 9-pole) and PCS1 or PCD (wire ends free)	110 g
PCD7.K423	RS-232 RTS/CTS between terminal (D-type, 9-pole) and PCS1 or PCD (wire ends free)	150 g
PCD7.K456	RS-485 between terminal (D-type, 9-pole) and PCS1 or PCD (wire ends free)	200 g
PG5-Core Package	Complete PG5 package, including HMI editor	

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