


User's guide

PLC based terminal Series: **PCD7.D230** **PCD7.D231** **PCD7.D232**

Revision	Date	Description
Rev. 5	12.2007	New chapters 3.6. and 3.7 <u>3.6 Set character set</u> Additional character sets can be selected in the setup menu. (Baltic, Central European, New Greek, Russian, Scandinavian and Turkish) - Use HMI-Editor from the version 1.4.210 - PCD7.D23x: From Hardware F and Firmware 40 . <u>3.7 Windows platform</u> Adapt windows registry if need.

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1. General Characteristics

The PCD7.D23x consists in a range of 3 Graphics-display:

- PCD7.D230 with a dial including a push switch.
 - PCD7.D231 with keys and Fkeys
 - PCD7.D232 with keys, Fkeys, keyboard and LEDs
- and enables the user to navigate the menus and activate any function.

1.1. Hardware / Firmware versions:

- Hardware version: See "status" info in the setup menu
- Firmware version: See "status info" in the setup menu

1.2. HMI-Editor Official software version

- Current version: HMI-Editor version 1.4.210 is recommended to use D23x with non West European character sets.

1.3. Communication modes via 1 D-Sub 9pole (Baudrate and control)

1.3.1. RS 232

With or without handshaking

<u>Baud rate</u>	<u>Typ</u>	<u>handshaking</u>	<u>Graphics functionalities (icons, trends, bargraphs)</u>
4800 / 9600	MC0	None	no
4800 / 9600 /19200	MC1	RTS/CTS	yes
4800 / 9600 /19200	MC2	XON/XOFF (full)	no
4800 / 9600 /19200	MC2	XON/XOFF (R)***	yes

RTS/CTS is recommended in most cases !

1.3.2. RS 422

With handshaking

<u>Baud rate</u>	<u>Typ</u>	<u>handshaking</u>	<u>Graphics functionalities (icons, trends, bargraphs)</u>
4800 / 9600 /19200	MC2	XON/XOFF (full)	no
4800 / 9600 /19200	MC2	XON/XOFF (R)***	yes

1.3.3. RS 485 FTP**

<u>Baud rate</u>	<u>Typ</u>	<u>handshaking</u>	<u>Graphics functionalities (icons, trends, bargraphs)</u>
4800 / 9600	MC4 (5)	-	no

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

1.3.4. RS 422 FTP (MD)**

<u>Baud rate</u>	<u>Typ</u>	<u>handshaking</u>	<u>Graphics functionalities (icons, trends, bargraphs)</u>
4800 / 9600	MC0	-	no

** △ See explanation on page 5/6 paragraphs: **FTP mode** and **FTP Multi Drop mode**

*** △ See explanation on page 5 paragraph: **XON/XOFF (R) Reduced mode**

2. SETUP MENU (handling)

2.1. How to enter into the "Setup menu"?

- D230:
Press the dial during the firmware version indication at power-up.
- D231 and D232:
At power-up: Press any keys (excepted Shift key) during the firmware version indication.
At running terminal: Press the Shift-Info (i) key combination.
In the running case the setup menu is not entered if the terminal setup is locked.

2.2. Setup locked mode:

The setup locked / unlocked mode is permanently stored.

By default the terminal is delivered with setup unlocked which means full access to the setup menu. That means that you can change every parameter.

In the HMI-Editor you can select the HMI to send the command to activate or to deactivate the setup locking each time it starts up. This changes the permanently stored setup control to locked or unlocked according to the setting in the HMI.

Setup locked :

No access to the setup menu at run time.

At power-up no access to serial Baud rate and serial mode settings.

Setup unlocked:

Runtime access to the setup menu (PCD7.D231 and PCD7.D232) and access to the serial Baud rate and serial mode settings in the setup menu.

2.3. How to unlock the setup menu ?

In the setup menu: Select the line "back to defaults" and press the dial or enter key,

While using the HMI: Change the setting in the HMI, rebuild it, download it and restart the program.

2.4. How to navigate into the "Setup menu"?

PCD7.D230:

Turn the dial to the left and right to select a line and confirm with a brief (< 0.75 Sec) pressing.

"Enter" command: brief pressing = saving

"Quit" command: longer pressing = quit without saving

PCD7.D231:

Press up and down arrows key to select a line and press "enter" key

"Enter" command: (shift + ▼) or (▶) = saving

"Quit" command: (shift + ◀) or (◀) = quit without saving

PCD7.D232:

Press up and down arrows key to select a line and press "enter" key

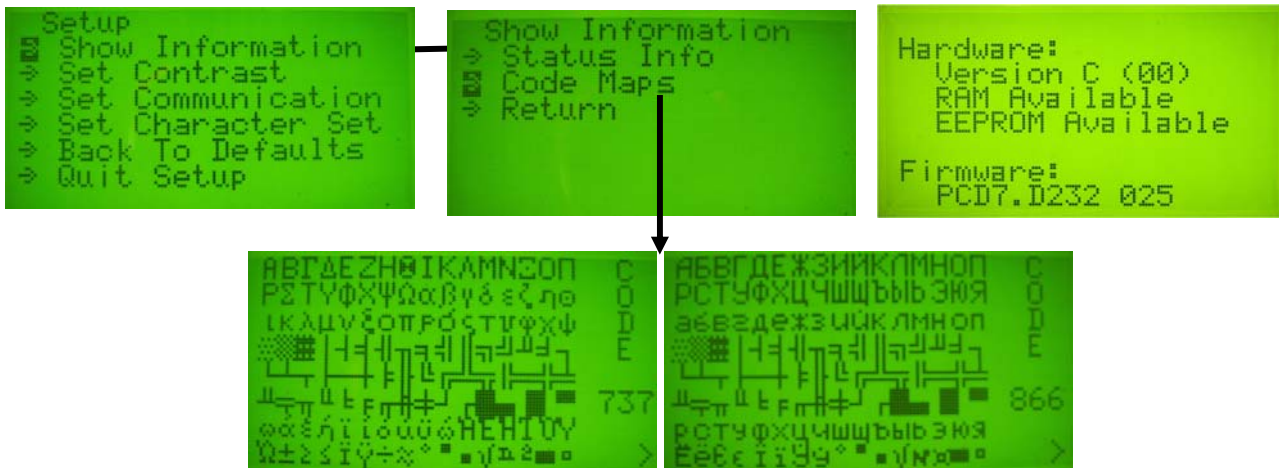
"Enter" command: (Enter) or (▶) = saving

"Quit" command: (Quit) or (◀) = quit without saving

The selection of the "baudrate" and the selection of the "mode" have to be confirmed by a second pressure on the dial or on the "enter" key.

3. SETUP MENU

3.1. "Show information" (read only)



"Status Info" displays the hardware and firmware version* and checks RAM and EEPROM.

* To help you with a problem, the "TC Service" needs to know the hardware version and firmware version of the terminal as well as other information from the labels on the back of the housing.

"Character Maps" display 6 windows of character codes that you can use with this terminal (the windows are shown automatically).

"Return" exits "Show Information".

3.2. "Set Contrast " (Read and Write)



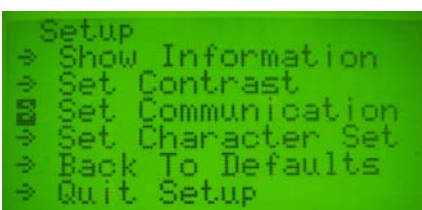
- D230

"Set Contrast" adjusts the contrast by turning the dial to the left and right. Press the dial briefly (< 0.8 Sec) to save the setting.

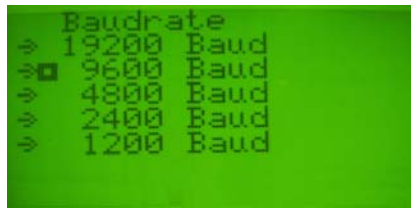
- D231 and D232

"Set Contrast" adjusts the contrast by pressing the up and down arrows key. Press "enter" key to save the setting.

3.3. "Set Communication " (Read and Write)



3.4. "Set Baudrate" (Read and Write)



Set the baudrate according to the communications mode (see also the chapter 4) to match baudrate of the PCD or PCS. (The baudrate is also set in the HMI-Editor.)

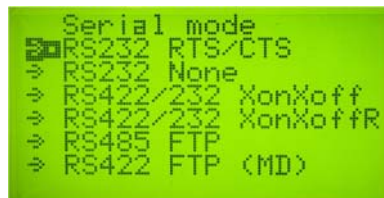
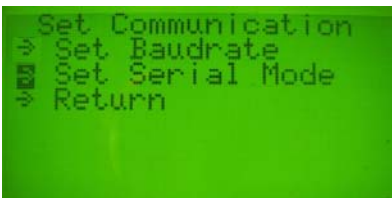
D230: Select the line by turning the dial to the left and right.

Press the dial to select the baudrate and press the dial once again to save the baudrate.

D231 and D232: Select the line by pressing the up and down arrows key

Press enter to select the baudrate and press enter once again to save the baudrate.

3.5. "Set Serial mode" (Read and Write)



See paragraph: [FTP mode](#)

Select the serial mode

- RS 232 RTS/CTS = RS 232 with handshake RTS/CTS (**recommended in most cases**)
- RS 232 None = RS 232 without handshake (not recommended)
- RS 422/232 XonXoff = RS 422 or RS 232 with handshake Xon/Xoff
- RS 422/232 XonXoff R= RS 422 or RS 232 with Reduced handshake Xon/Xoff
- RS 485 FTP = RS 485 "with free terminal protocol"
- RS 422 FTP(MD) = RS 422 "with free terminal protocol" Multi Drop.

D230: Select the line by turning the dial to the left and right.

Press the dial to select the mode and press the dial once again to save the mode.

D231 and D232: Select the line by pressing the up and down arrows key

Press enter to select the mode and press enter once again to save the mode.

(The same mode and baud rate must also be selected in the HMI-Editor)

XON/XOFF (R) Reduced mode

XON/XOFF (R): R = Reduced – Recommended if you use XON/XOFF handshaking.

The reduced Xon/Xoff mode is a save, non-locking, Xon/Xoff mode with the PCD7.D23x always responding. If using Xon/Xoff, it is recommended to use this reduced mode especially if you notice that after some time of use you must switch the power off and on to get the PCD7.D230 responding again. It is necessary to use this reduced mode if you use "Bargraph" format or graphics in your programme with XON/XOFF handshaking.

In this mode, the reception of responses from the PCD7.D23x does not have handshaking .

PCD ----- flow control -----> D23x

PCD <--- without flow control ----D23x

Generality concerning the FTP mode

In FTP Mode (RS 485), "HMI-Editor" doesn't support Auto repeat Keys function, Function keys, Leds and buzzer commands as well as the graphics functions as bargraph, trends and Icons.

FTP mode:

The FTP mode knows an 'always active mode' with FTP address 0, and an addressed mode with the terminal only active after selection of it's FTP address (1..31). This is set in the terminal in the setup menu at the selection of the FTP mode. The default is addressed mode with address 1.

In the normal FTP mode (not Multi Drop mode) the 'always active mode' with FTP address 0 can only be used with one terminal connected.

In the HMI-Editor, the terminal: D23x (bus) must be selected, and the number of stations on the terminal list. For each station (terminal) the address must be set . This HMI address must be the same as the FTP address that is set in the connected terminal in the setup menu.

FTP Multi Drop mode:

In the normal FTP Multi Drop mode the 'always active mode' with FTP address 0 can be used for all connected terminals which makes them display all together the same display information regardless of the HMI address setting.

In this case in the HMI only one 'shared' terminal is configured.

It is also possible to display different data on groups of the displays setting e.g. the master terminal to address 1 and all others to address 2.

In this case in the HMI two terminals are configured. The other displays in the master group follow the master display. The displays in the non master group permanently show the HMI 'standby' menu.

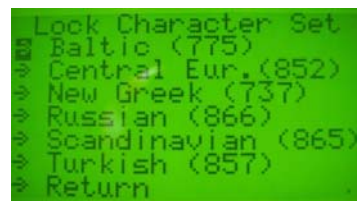
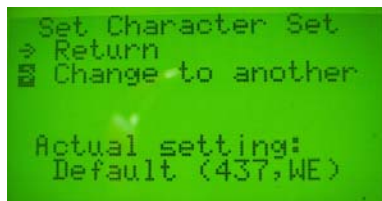
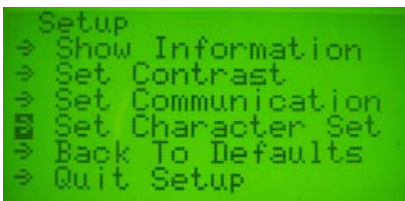
3.6. "Set Character Set " (Read and Write)

→ Available from the HW version F and FW 40

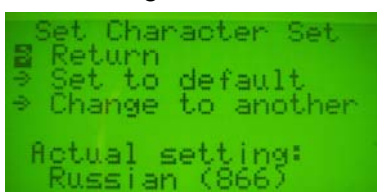
The default character map is West European: OEM code 437 .
Change to other character set.

Character Set	OEM code page
West European (default)	437
Baltic	775
Central European	852
New Greek	737 (723*)
Russian (Cyrillic)	866
Scandinavian	865
Turkish	857

Code page 737: Some devices display 723 instead of 737, but the code map is correct (new Greek 737)



With change to another, here Russian is chosen as example:



Now, in this menu it can be set back to the default or changed again to another one.

Select the right OEM code page corresponding to your country.

Languages	OEM primary code page	OEM secondary code page
Bulgarian	866	
Byelorussian	866	
Czech	852	
Estonian	775	
Greek	737	
Hungarian	852	
Latvian	775	
Lithuanian	775	
Polish	852	
Russian	866	
Romanian	852	
Scandinavian		865
Slovak	852	
Slovenian	852	
Turkish	857	
Ukrainian	866	

Showing the selected Code map

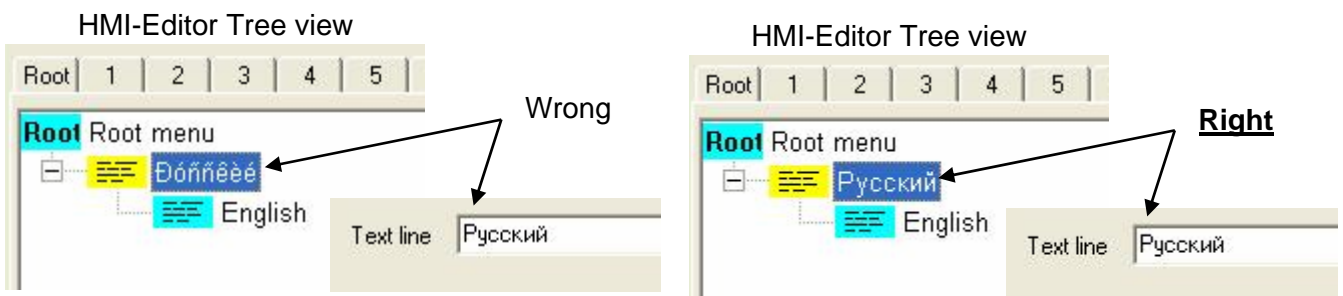
What's actually in the character set can be verified going back to the main menu and selecting "Show information" then code map

3.7. Windows platform

The HMI-Editor must be installed on a Windows platform using the characters set which will be displayed on the terminal.

☞ To display the right text with the right codepage in the treeview menu of the HMI-editor, it is necessary to adapt the codepage in the windows registry like:

```
1252=c_1250.nls
1252=c_1251.nls
1252=c_1253.nls
1252=c_1254.nls.
1252=c_1257.nls
```



→ If you have wrong text on tree view :

In order to change automatically the right Windows® (ANSI) code page, we put at the disposal two tools:

One to force it and one to restore it.

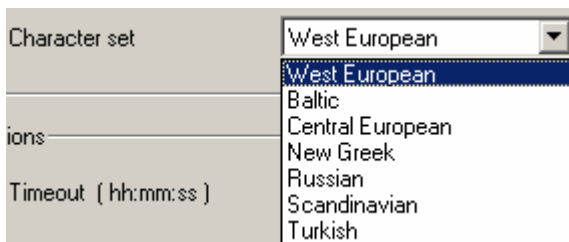
Force it with HMI_Force_ANSI.exe
Restore it with HMI_Restore_ANSI.exe
(recommendation: without making the "Restore" after finish the HMI project, you could create some troubles in other processes.)

Both are disposable on the CDROM under CD:\PG5\Windows\HMI_registry_tools

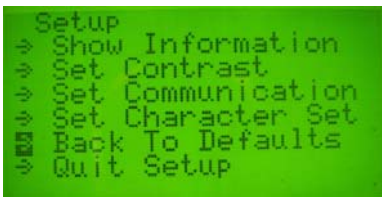
The force tools looks at the current ANSI code page setting (ACP in the registry) and forces the parallel western European 1252 Code page use to the corresponding ANSI page setting. As the HMI works with parallel 1252 code page use it will take the current one instead correctly.

HMI-Editor.

Selection of the character set is not necessary but welcome. The selection allows to know the used language and therefore the character set of the windows platform.



3.8. Back to defaults



Default parameters:

- set contrast: middle
- set baudrate: 9600
- set character set: West European
- serial mode RS 232 RTS/CTS)

D230: By pressing on the dial, you can restore all parameters.

D231 and D232: By pressing the "Enter" key, you can restore all parameters.

(Default parameters: set contrast: middle / set baudrate: 9600 / serial mode RS 232 RTS/CTS)

Enabled or disabled setup access

The HMI-Editor allows you to enable or disable the "setup access" on the terminal.

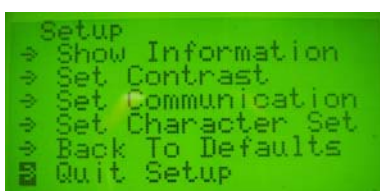
[allow setup "yes" or "no" in the Settings tab).

Setup is disable (Allow setup = No , on the Settings tab of the HMI-Editor)

See the chapter 5: "Setup locked mode"

3.9. Quit the setup

You have 3 possibilities:



- 1) Switch the power off and on (without pressing the dial or any keys).
- 2) Select the 'Quit Set Up' menu entry and activate it by pressing on the dial or "enter".
- 3) Activate the quit by pushing long (> 0.75 Sec) or the quit key.

3.10. Buzzer control :

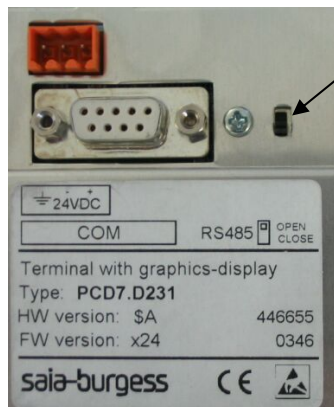
The buzzer can be made silent over the key controls doing an "emergency stop" by pressing on the enter key on the dial or on the "quit" key.

4. DESIGN, LABELS

Front view (PCD7.D230 PCD7.D231 and PCD7.D232)



Back view and back view detail



Switch for termination resistor (150 Ohm).

Available in RS 485

At the last station, the switch must be moved to the "CLOSED" position.
For all other stations, switches must be moved in the "OPEN" position

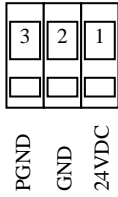
5. MAIN TECHNICAL CHARACTERISTICS

- Power Supply :
 - ➔ 24VDC +/-20%
 - ➔ 19VAC +/-15% from fullwave rectified AC
 - Supply Current : 200mA on 24VDC
- Graphical Display 128x64 dots with Backlight (8 lines x 20 characters in text mode)
- One 9 pin D-Sub communication port for RS 232, RS 422 or RS 485*
- Protection Class:
 - D230: IP54 (front panel element)
 - D231 and D232: IP 65 (front panel element)

* A switch for termination resistor is located on the back side of terminal.

CONNECTORS

- Power supply (X2)



- Communication (X1)

The Standard D-Sub 9-pin female is fitted

Pins are as following:

Pin 1 : RXD_422	Pin 6 : /RXD_422
Pin 2 : TxD_232	Pin 7 : CTS_232
Pin 3 : RxD_232	Pin 8 : RTS_232
Pin 4 : TXD_422 / TX-RX_485	Pin 9 : /TXD_422 / /TX-/RX_485
Pin 5 : SGND	<i>Metal support connected to PGND</i>



All unused pins must be disconnected!

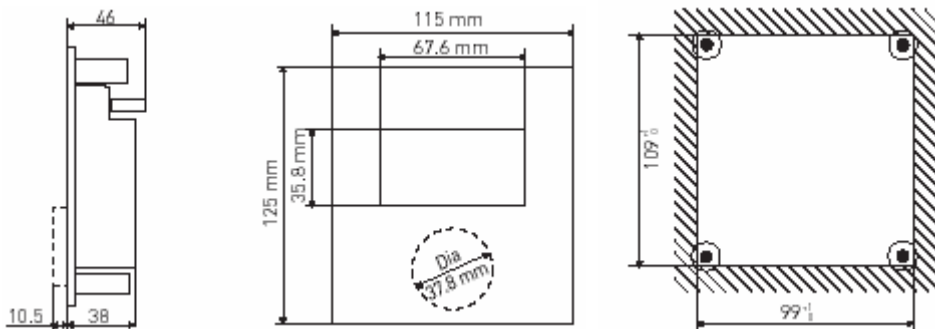
6. COMMUNICATION CABLES

- PCD7.K422** Shielded cable for RS 232, between the terminal (D-Sub 9) and the RS 232 interface of PCS1 or PCD. Length 2.5 m
- PCD7.K412** Shielded cable for RS 232, between the terminal (D-Sub 9) and PCD's or PCS1* PGU connector. Length 2.5 m.
- PCD7.K413** Shielded cable for RS 232 with RTS/CTS (recommended), between the terminal (D-Sub 9) and PCD's or PCS1* PGU connector. Length 2.5 m
- PCD7.K423** Shielded cable for RS 232 with RTS/CTS (recommended), between the terminal (D-Sub 9) and the RS 232 interface of PCS1 or PCD. Length 2.5 m
- PCD7.K456** Shielded cable for RS 485 between the terminal (D-Sub 9) and the RS 485 interface of PCS1 or PCD. Length 5 m

* With PCS1 PGU, It is necessary to enable the Port 0 with a SYSWR command.

INFO: PCD7.D230Z11, PCD7.D231Z11, PCD7.D232Z11 are delivery without Saia-burgess logo and type.

7. DIMENSIONS & CUT-OUT



8. DOCUMENTATION & CONTACTS

- Manual No: 26/795
- Technical Information No: 26/430
- Flyer S-HMI overview No: 26/432

General: www.start-controls.com
Support on: www.sbc-support.ch
Contact by e-mail: pcdsupport@saia-burgess.com

or contact your nearest agent.