

Tools PanelMaker and PanelSIM

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CONTENTS

1. INTRODUCTION.....	2
2. OPENING OF THE PanelMaker.....	3
3. DESCRIPTION OF THE ENVIRONMENT AND CONTROL.....	5
3.1 Basic screen.....	5
3.2 Description of Menu.....	6
3.3 Tool bar.....	7
3.4 Manage of structures of displays.....	8
3.4.1 Creation of groups and displays.....	8
3.4.2 Properties of groups of displays.....	8
3.5 Definition of appearances of the displays.....	10
4. TypES OF OBJECTS ON THE PanelMaker DISPLAY.....	12
4.1 Variable (V).....	12
4.2 Menu (M).....	14
4.3 Message (m).....	17
5. SpecIAl OPERATION OF THE DISPLAY.....	19
6. CODE AND GENERATION.....	20
6.1 Generation.....	20
7. OVERVIEW OF WARNING AND ERROR MESSAGES.....	21
8. KEY SHORTCUTS.....	22
9. TOOL panelSim.....	23
10. SETTING OF SIMULATION OF A PANEL.....	24
11. IniTIATING OF THE PANEL SIMULATOR SETTING.....	26

1. INTRODUCTION

The tool PanelMaker is designed for defining individual screens of the panels ID-14, ID-07, ID-08, TC500 and TR200 (further under a summarised name 'operator panel') without any necessity of extensive programming.

The tool PanelSIM is designed for simulation of the moderator panel.

The tools PanelMaker and PanelSIM are parts of the development environment Mosaic and can be opened only from this environment. The code, generated from the PanelMaker, is integrated into the programme resulting code. The generated code includes a complete operation of the series channel, if it is necessary, and a complete operation of the instruction TER. After opening of the programme, the code from the PanelMaker is processed using the instruction TER (see TXV 137 46).

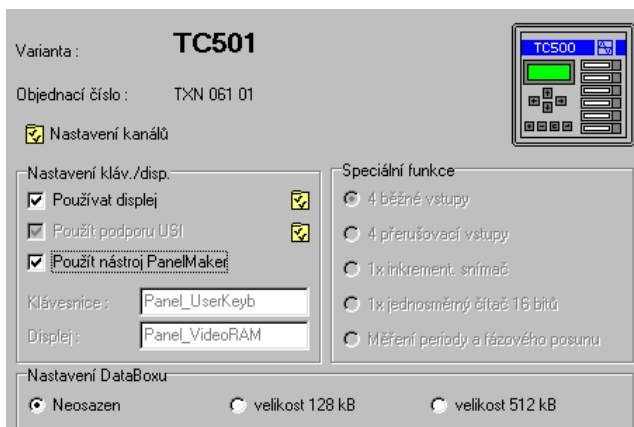
For use of PanelMaker and PanelSIM it is recommended to set resolution of the monitor with Windows to 1024x768 pixels.

2. OPENING OF THE PANELMAKER

Series PLC TC500 and TR200

In HW configuration in the Mosaic project manager it is necessary to check the following options:

1. Use display
2. Use tool PanelMaker



The tool PanelMaker can be opened by a click on the icon  on the Mosaic tool bar or on the item in the PanelMaker menu Tools. An offer with a list of Panels will be displayed - here TC500 or TR200.

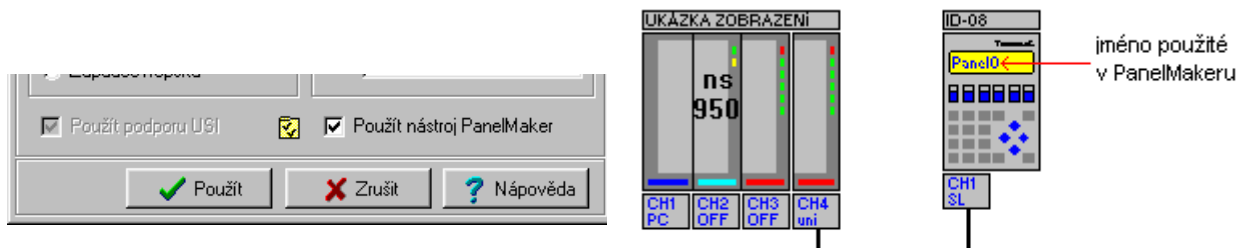
Operator panels ID-07, ID-08

In the PLC network in the manager of the project in the environment Mosaic it is necessary first create a connection of PLC and the respective panel. Check the option “Use PanelMaker tool” in the panel settings (see the illustration below).

The PanelMaker can be opened by a click on the icon  on the Mosaic tool bar or on the item in the PanelMaker menu Tools. An offer with a list of Panels will be displayed, e.g. Panel0.

The code pages DosLatin2 and Cyrillic (866) are not available for the PanelMaker tool and vice versa.

name used in PanelMaker



Operator panel ID-14

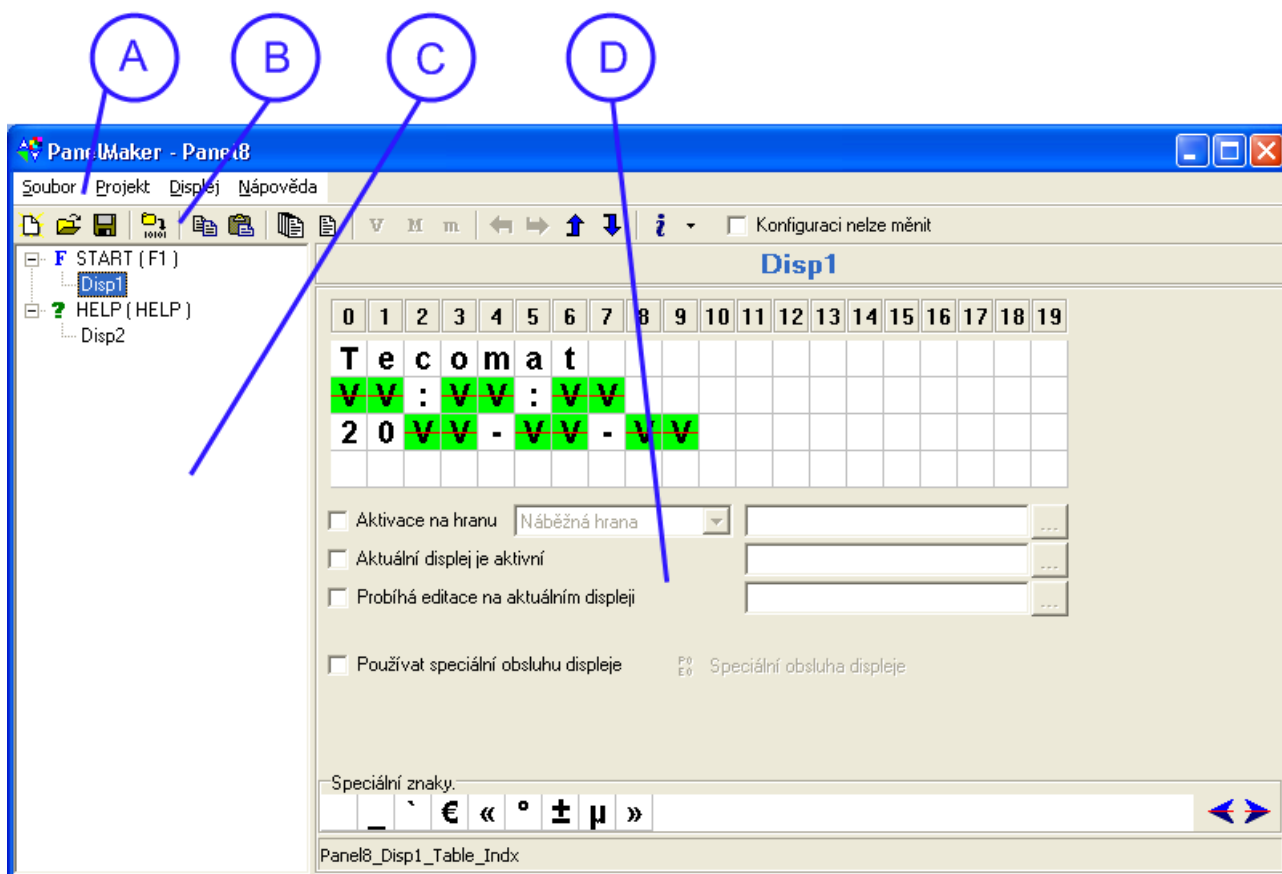
In the HW configuration in the manager of the project in the environment Mosaic it is necessary to add a panel ID-14 to the configuration for the series Foxtrot.

The tool PanelMaker can be opened by a click on the icon  on the Mosaic tool bar or on the item in the PanelMaker menu Tools. An offer with a list of Panels will be displayed, e.g. Panel0.

The code pages DosLatin2 and Cyrillic (866) are not available for the PanelMaker tool and vice versa.

3. DESCRIPTION OF THE ENVIRONMENT AND CONTROL

3.1 Basic screen



- A) Offer of the PanelMaker
- B) PanelMaker tool bar
- C) Manager of the structure of displays
- D) Definition of appearance of the display

When docking the PanelMaker window the menu () will be minimised on the tool bar.

3.2 Description of Menu

File Menu

- New* - deletion of all created groups of displays – begin again
- Import* - loading of the existing panel project from the disk (*.iddx)
- Save* - saving of the panel project on a disk into a file named Panel*.iddx, where * in panel number in the Mosaic project with TC500 and TR200 is only Panel.iddx
- Export* - saving of the project under any name (*.iddx), but editing continues in the original project
- Close-* closing of the tool PanelMaker

Menu Project

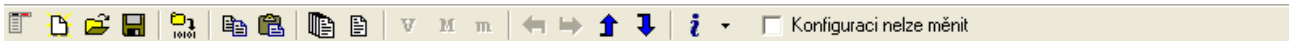
- Generate* - generation of a code, possible saving depends on setting in the manager of the project Mosaic
- Information* - information about the project

Menu Display

This menu is accessible, if the display in the display structure manager is active.

- Add variable* - opening of a dialogue for insertion of a variable
- Add menu* - opening of a dialogue for insertion of a menu
- Add message* - opening of a dialogue for insertion of a message

3.3 Tool bar



Pictures of the icons on the bar correspond to the icons in the menu.

	Opens the PanelMaker menu (see chapter 3.1), if docked
	Deletion of all created displays and groups
	Import of the project
	Saving of the project
	Generation of a code
	Copying of a display to the clipboard
	Insertion of a display from the clipboard
	Addition of a new group of displays
	Addition of a display to an active group
	Opening of a dialog for insertion of a variable
	Opening of a dialog for insertion of a menu
	Opening of a dialog for insertion of a message
	Arrows for moving of an already established object in the display window of moving of the display within the manager of structures of displays (up or down)
	Information about the project and tool PanelMaker
<i>Configuration cannot be changed</i>	Locks the PanelMaker project against changes; setting can only be viewed and project saved

3.4 Manage of structures of displays

3.4.1 Creation of groups and displays

Groups of displays or displays can be inserted using icons on the tool bar or through the context offer that can be opened by the right mouse button. The order of displays can be changed using arrows on the tool bar or key shortcut CTRL+SHIFT+↑(↓).

	Přidat skupinu displejů	Add a new group of displays
	Přidat displej	Add displays to the active group
	Rozvinout vše	Unfolding of the tree of displays
	Sbalit vše	Folding of the tree of displays
	Kopírovat	Copying of the actual display to a clipboard
	Vložit	Insertion of a display from the clipboard
	Vymazat	Deletion of a display or structure

3.4.2 Properties of groups of displays

Individual displays are divided into groups. The displays can be moved up or down in the structures of the displays using arrows on the tool bar.

The following properties can be assigned to the groups of displays:

Activation to the key F

(only ID-08, ID-14, TC500, TR200) – Push of the key F on the operator panel during run of the user programme causes displaying of the assigned group of displays. Assignment of the key is indicated by the letter F in front of the group in the PanelMaker manager. The already used key is disabled for other groups of displays. The key HELP is used in the panel ID-14, the key with the decimal point is used for other groups.

The displays of the group can be edited

This option enables/disables editing of the variables in individual displays within the group. It is preferred against setting of the item. It does not apply to the display with a menu defined for reading and writing (ReadWrite).

Browsing among displays of the group is possible

This option enables/disables browsing among display of the group. It does not apply to the display with a menu defined for reading and writing (ReadWrite).

Go to the display ... using the key C

In case the option is active, push of the key C causes a pass to the determined display (the target display may not be member of the group). In case the option is not checked, push of the key C does not execute any action. Differences in behaviour of the key C are given in descriptions of individual objects (chapter 3.5).

Using the arrow go up from the first display to ...

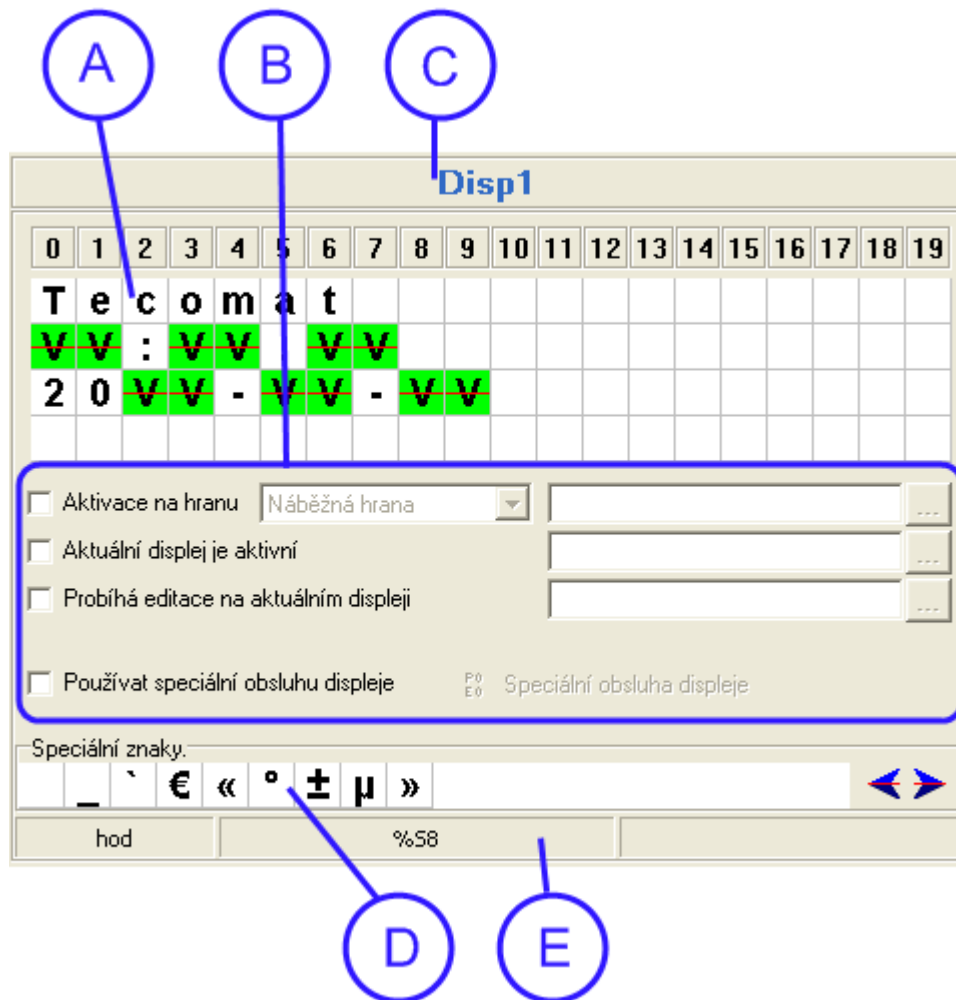
Using the arrow down from the last display to ...

Activation of these options enables browsing among displays “in a circle” (the target display may not be member of the group).

First group after start – In case this option is checked, the first display of this group appears after start of the programme. Assignment is indicated by a letter S in front of the group in the PanelMaker manager. In case that this option is not assigned to any group within the project

panel, the first display from the first group appears after start of the user programme.

3.5 Definition of appearances of the displays



C) Name of the display

The name of the display shall be unique within whole project for this Panel and its length shall be at least 3 characters (non-fulfilment of these conditions causes black background). Name of the display can be changes simply by a click on it name. The name shall be acknowledged by the key ENTER or click by the left mouse button on another active PanelMakeru area (e.g. Manager of structures of displays or a window with a text). The name may include characters with diacritics. These are replaced by the underscore character in the generated code, e.g. “zpráva2” is converted to “zpr_va2”.

Attention to similar words type e.g. pěkný, pěkná – it is the same name after conversion (p_kn_) when checked by the PanelMaker.

A) Window with a text and items

The size of the window corresponds to the type of the panel, where each square means one character. The text or items are inserted under cursor position. When writing a text, the cursor moves to the right up to the end of the line; pressing of the keys CTRL+ENTER causes a jump to the next line. The item can be inserted and edited using the key ENTER or the right mouse button; in both cases a context options window opens.

V Přidat proměnnou	Opening of a dialog to insert and edit a variable
M Přidat menu	Opening of a dialog to insert and edit a menu
m Přidat zprávu	Opening of a dialog to insert and edit a message
 Kopírovat	Copying of a display to a clipboard
 Vložit	Insertion of a display from the clipboard
 Přidat skupinu displejů	Add a group of displays
 Přidat displej	Add a display to the active group

B) Properties of the display

Activation on the edge – Three options are available here: ascending edge, descending edge, both edges. The display activates when the chosen condition is fulfilled. The variable is type bit and shall be defined and operated (including zeroing) in the user programme.

Use special operation – A special operation is assigned to the display using activation of this option. We do not recommend use this option in new projects. Use a combination of the following options instead of this one, it provides more other options.

Actual display is active – Here you can set up your declared bit variable that is set to log.1 in case that this display is just shown on the display.

Editing is running on the actual display – Here you can set up your declared bit variable that is set to log.1 in case that a variable, message is just edited on this display.

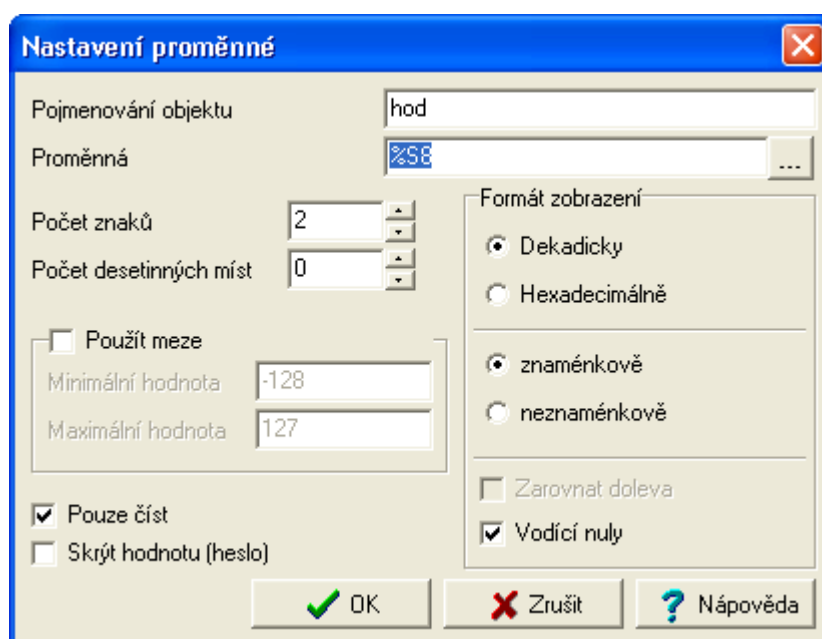
Special characters – This includes a list of the characters that are not shown on the PC keyboard, but these are included in the respective map of characters in the operator panel. Click on the character inserts this selected character to the text being just edited. The arrows allow browse through the list.

Information on the active object – The first part includes information on naming of an object (internal name of the PanelMaker project), the second part includes information about the name of the variable (used and declared in the user programme).

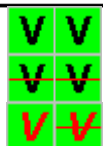
4. TYPES OF OBJECTS ON THE PANELMAKER DISPLAY

The length of the object is checked by the PanelMaker, whether its size does not exceed the size of the display window or does not overlap the adjacent object. The corresponding dialog is displayed according to the type of the object or the length of the object cannot be increased manually.

4.1 Variable (V)



Format of displaying of a variable on the display in the PanelMaker



- the variable can be edited
- the variable is for reading only
- active variable (the cursor is placed on it)

Naming of object – this will be shown in information about the active object (internal name)

Variable – it is the name of the displayed variable. The variable shall be defined in the user programme before its use in the PanelMaker. In case that no variable exists, PanelMaker displays a warning message.

A variable type *bit* (*bool*) can be entered in two formats; the variable is declared in the user programme (or special operation of the display) as a variable type bit in the format “variable.0”, the digit gives here the order number of the bit of the **byte** variable, so 0 to 7.

Displaying format – this option toggles between decimal and hexadecimal displaying of the variable and defines displaying with signs or without signs (this option is only accessible for decimal displaying). The option of displaying with signs has no effect for variables type

long; it is always displayed within range -2147483648 to 2147483647.

Number of characters – this number gives the total places on the display, on which the variable is displayed (minimum value is 1). This number of places also includes the sign (in case of the format with signs) and decimal point (i.e. the number of decimal places is higher than 0); see the illustration above.

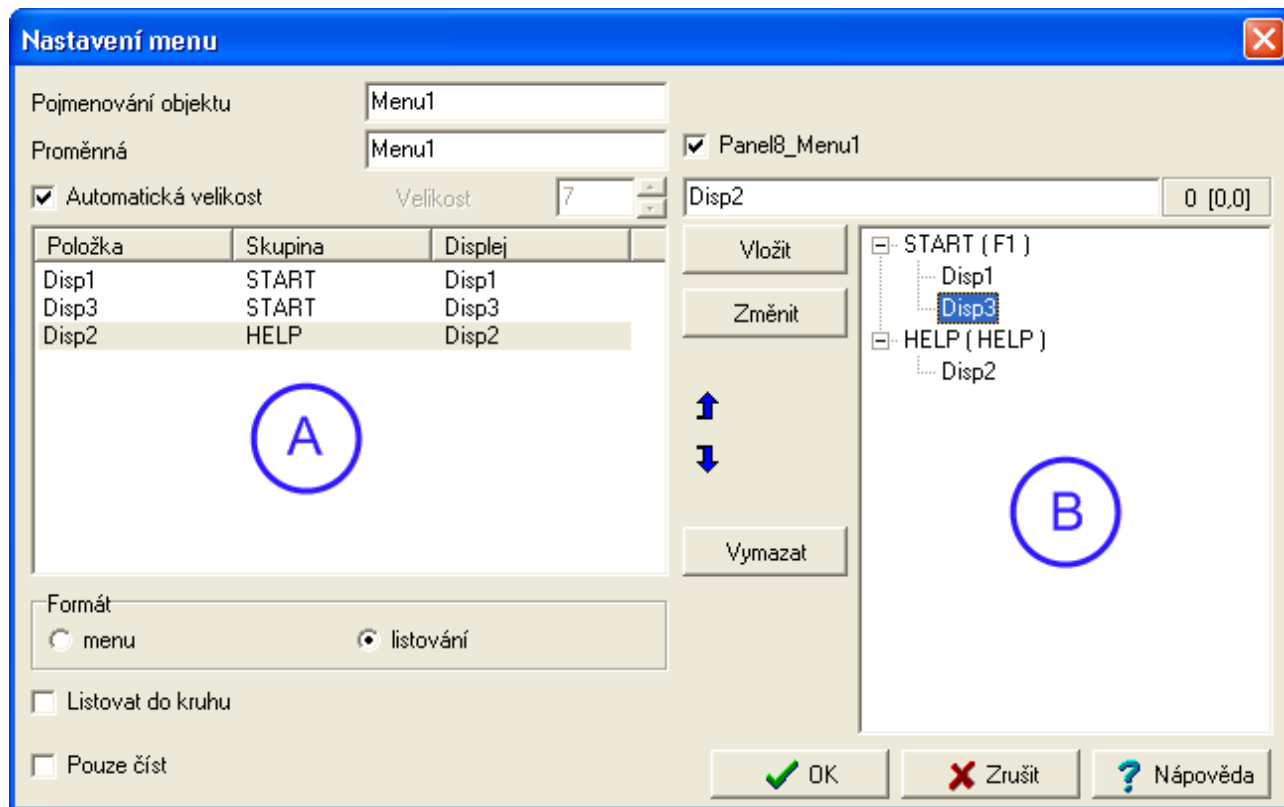
Number of decimal places – this gives the number of digits after the decimal point with decimal variables; 0 means displaying without decimal places.

Use limits – check of this option allows to enter minimal and maximal values of the variable that can be entered on the operator panel (on the example in the illustration you can enter a value within range -12.0 to 12.0 on the operator panel during run of programme). In case the variable is type Read only, this option has no effect to the value of the displayed variable.

Read only – check of this option disables editing of the variable on the operator panel (ReadOnly).

During editing of the variable on the operator panel the key C causes stop of editing and restoration of the original value. In other cases this depends on properties of the group to which the display belongs.

4.2 Menu (M)



Format of displaying of the menu on the display in the PanelMaker

- | | |
|-----------------------|--|
| M M | - menu items can be selected |
| M M | - menu is for reading only |
| M M | - active menu (the cursor is placed on it) |

Naming of object – it is shown in information about the active object (internal PanelMaker name).

Variable – it is name of the shown variable. In case that “Auto name” after the variable is checked, the variable is generated automatically by the PanelMakerem; the actual name of the generated variable is shown next to the field (this variable with this name can be used in the programme). In case that it is not checked, the variable shall be defined in the user programme or in the special operation before its use in PanelMaker. In case that no variable exists, PanelMaker displays a warning message.

Automatic size – if this option is checked, it gives the length of the longest menu item and includes spaces before and after the item automatically. In case that this option is not checked, the length of the item shall be set up manually; the spaces before and after the item are not added in this case.

Add – individual menu items are added in the right part of the dialog (marked A); two methods are available here. The first method is a double click on the display in the structure in the right part of the window; this adds a menu item that will have the same name as the display to which it refers. The other method is to select a display using one click and define an own name of the item (see the illustration above); the pushbutton “Add” adds the menu item. When defining an own name, information about actual position of the edited menu item “p [r, c]” is shown in “position of the character”, where “p” gives position of the charac-

ter following the cursor in the edited item, “r” gives the line number and “c” gives the display column number according to position of the cursor. The position values are calculated from 0.

He selected items are shown in the left part of the window (marked B); in this window the selected item can be moved (changed order, in which it is displayed on the operator panel) using keys SHIFT+CTRL+↑(↓) or icons with arrows.

Change – a change can be carried out by selection of the item in the left part of the window; after editing the item (also the target display can be changed) a change can be performed using the key “Change”.

Delete – first it is necessary to select the item that has to be deleted, then press the push-button “Delete” and reply the question with acknowledgement of the action.

Format – in case that the format “menu” is selected, a list of all items will be shown on the display. Browsing through the items on the operator panel display is possible using the keys with arrows to the left and right. In case that the format “browsing” is selected, only one item will be shown on the display. Browsing through the items on operator panel display is possible using the keys with arrows to the left and right.

Browsing in circle – after displaying the last item there will be displayed the first item and vice versa.

Read only – only one menu item will be shown on the display; it cannot be changed on the operator panel.

Using menu you can create various complex structures. The target display of the menu item is not limited only to one group of displays; it can be linked to any display in another group of displays. For selection of an item on the operator panel that leads to a display in another group, there are set properties of the group to which the display belongs.

In case that the display shows a menu for writing (ReadWrite), on the display you can create other objects for reading only (ReadOnly).

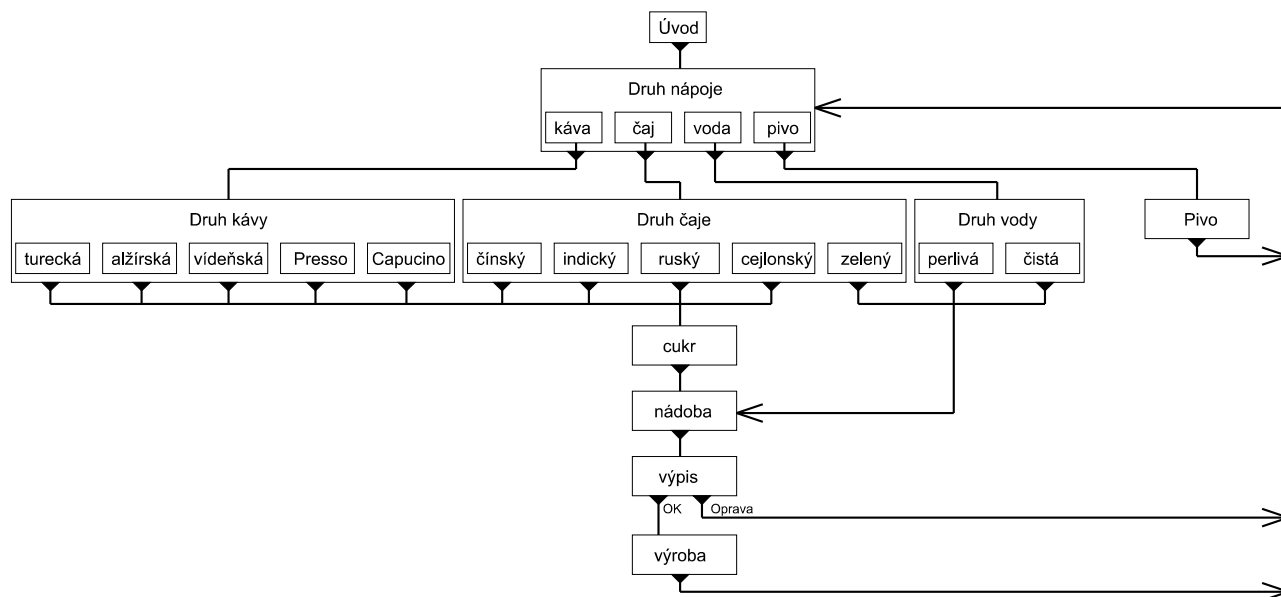
In case that a menu type ReadWrite appears on the display, setting of properties of the group “displays of the group can be edited” and “browsing through the displays of the group is possible” has no effect to this display.

Browsing through the displays with menu on the operator panel is possible using the key ENTER (pass to the target display), arrow up (shows a display upward), arrow down (same as ENTER) and key C (see below). Moving among the items on the operator panel display is possible using the keys with arrows to the left and right.

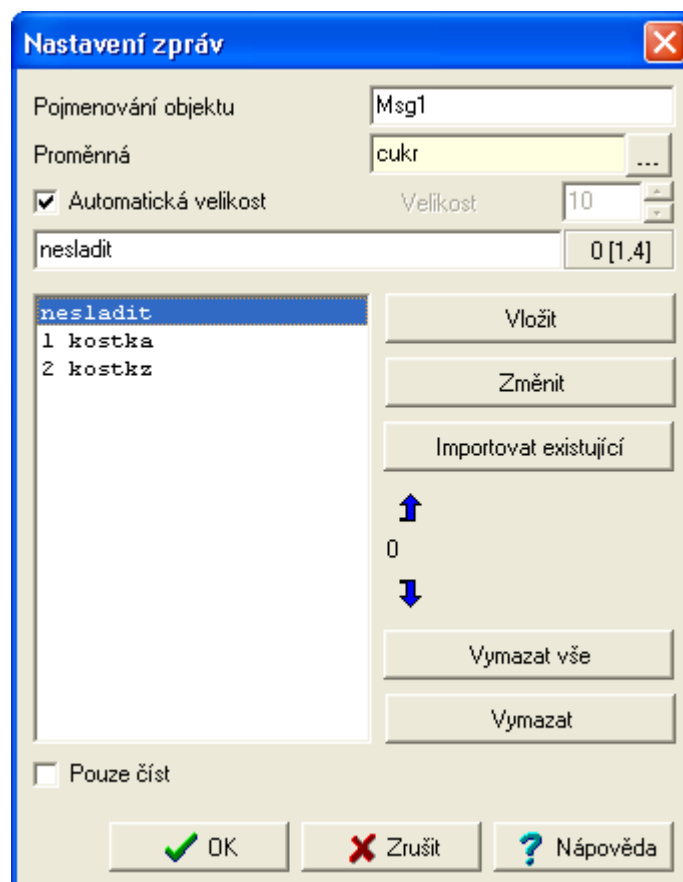
Behaviour of the key C on the display with menu is influenced by setting of properties of the group of displays “using the key C pass to the display”. In case that a target display is selected in properties of the group of displays, pushing the key C causes a pass to the particular display. In case that no target display is specified, the key C on the display with menu behaves in the same way as the arrow up, i.e. causes a pass to the display upwards in the group..

Example of a structure of displays:

This structure is created in a Mosaic example – group of projects “PanelMak” – project “beverages”. The example is available if installation of illustrative samples is enabled with installation of Mosaic.



4.3 Message (m)



Format of displaying of a message on the PanelMaker display

- | | |
|-----------------------|---|
| m m | - items can be selected |
| m m | - the message is for reading only |
| <i>m m</i> | - active message (the cursor is placed on it) |

Naming of object – it is shown in information about the active object (internal PanelMaker name); it is also shown in the list of messages when importing the existing messages.

Variable – it is name of the displayed variable; the variable can be type bit or byte. The variable shall be defined in the user programme or special operation before its use in PanelMaker. In case that no variable exists, PanelMaker displays a warning message.

Automatic size - if this option is checked, it gives the length of the longest menu item and includes spaces before and after the item automatically. In case that this option is not checked, the length of the item shall be set up manually; the spaces before and after the item are not added in this case.

Add item – after writing a text of the message it is necessary to press the pushbutton “Add” or key ENTER. When defining an item, information about actual position of the edited menu item “p [r, c]” is shown in “position of the character”, where “p” gives position of the character following the cursor in the edited item, “r” gives the line number and “c” gives the display column number according to position of the cursor. The position values are calculated from 0.

The selected item can be moved using the keys SHIFT+CTRL+↑(↓) or icons with arrows.

Change of item – after section of an item and its editing it is necessary to push the button “Change”.

Import the existing – displays a list of the already existing messages; selection loads all message items; the original items are deleted.

Delete all – deletes all message items.

Delete – deletes the selected item.

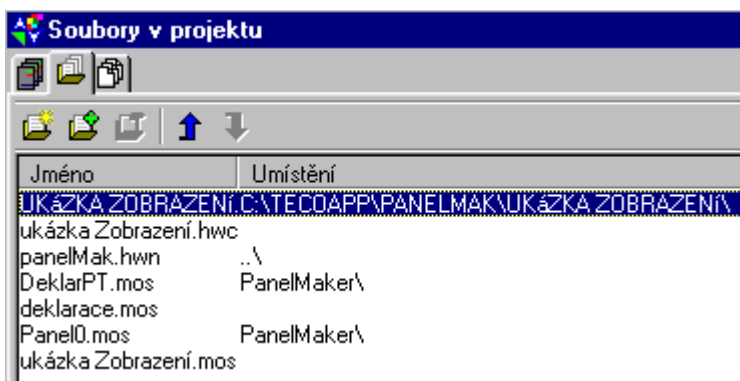
Read only – in case this option is checked, the message cannot be edited on the operator panel.

5. SPECIAL OPERATION OF THE DISPLAY

We do not recommend using special operation; therefore it is not described here. Better results can be obtained using options "Actual display is active" and "Editing to actual display is running".

6. CODE AND GENERATION

At the moment when the option “Use PanelMaker tool” is checked on the operator panel in the manager of The project Mosaic, the PanelMaker files are integrated into the Mosaic project.



Mosaic file

File with HW configuration of the Mosaic project

Mosaic file

PanelMaker file with definitions

User file with declarations of variables

PanelMaker file with display operation

User programme

The user file with declarations of variables **shall be** moved after being established **before** the PanelMaker file with operation of displays, otherwise Mosaic generates an error message with translation of the programme.

It is not advisable to combine older projects with operator panels with simultaneous use of PanelMaker. Operation for operator panels is generated automatically by the PanelMaker; there occurs collisions of variables and definitions (the way of setting see the documentation in the environment of Mosaic “Setting of the panel ID-07, ID-08 and project Mosaic”).

6.1 Generation

Generation of the project PanelMaker can be carried out by two ways:

Generation of a code using the icon  or from the PanelMaker menu. After generation of a code the warning messages in the window “Messages 1” of the environment Mosaic can be displayed **only for this panel**.

Other method of generation of a code with open PanelMaker projects includes a translation of the whole project of Mosaic. After translation the possible warning messages **from all open projects** of PanelMaker are shown in the window “Messages 1” of the environment Mosaic.

7. OVERVIEW OF WARNING AND ERROR MESSAGES

[PanelMaker: Panel0] Menu 'xxxx' uses variable 'yyyy'.

Warning: The variable 'yyyy' that is not declared automatically by PanelMaker is used on the display of the Panel0 with menu 'xxxx'.

[PanelMaker: Panel0] The display 'zzzz' includes a menu! It is not possible to pass to the next display of the group by mere browsing!

Warning: It is displayed if the menu 'zzzz' type ReadWrite is on the display of the Panel0.

[Xpro: Fatal] PANELMAKER\PANEL0.MOS (63): 'yyyy' ... Variable does not exist or it is established later! Display: 'zzzz'

Error: The variable 'yyyy' on the display 'zzzz' of the Panel0 is not declared in the user programme or it is declared later. In case of occurrence of this error it is necessary to check the order of the files with declarations, if the variable is declared (see chapter 5.); otherwise it shall be established.

8. KEY SHORTCUTS

In the manager of the structure of the displays:

- ↑ (↓) - browsing through the display or group of displays;
- + (-) - unfolding/folding of a group of displays;
- Ctrl + Shift + ↑ (↓) - move of the display within the tree.

In definition of appearance of the displays (the cursor in the window with texts and objects is active):

- Ctrl + ↑ (↓) - browsing through the displays;
- INS - insertion of one box to the cursor position (this causes move of the texts and objects by one position to the right on the line);
- DEL - active cursor is positioned in the text; removal of one field on the cursor position (this causes move of the text and objects by one position to the left on the line);
- BACKSPACE - active cursor is positioned on the item; deletion of the item;
- BACKSPACE - deletion of a character (this causes move of the text and objects by one position on the line);
- CTRL+↵ - jump to the next line;
- ↵ - opening of a context offer for insertion of an object; editing of the selected object.

In dialogs menu and message:

- Ctrl + Shift + ↑ (↓) – move of the already created item; the item shall be selected.

9. TOOL PANELSIM

Simulator of the panel is used to test operation of the operator panel without necessity to connect a real panel. You can simulate panels ID-07 and ID-08 or integrated panels TR200 and TC500.

The panels include Pushbuttons according to the type of the particular panel. The pushbuttons can be operated using a mouse or keyboard. The cursor pushbuttons can be controlled by keys for move of the cursor, the figures by pressing the respective value on the numerical part of the keyboard. The pushbuttons plus, minus, divided and decimal points can also be controlled using the respective keys on the numerical part of the keyboard. The special pushbutton Back can be controlled using the key Esc or C. The confirmation pushbutton (Enter, Return) is identical with the key with the same function on the keyboard. The functional keys F1 to F6 are important exception. The operating system Windows assigned to these functional keys and their combinations with keys Alt, Shift and Ctrl standard functions and therefore these keys cannot be used in this special case. Thus for simulation of functions of the keys F1 to F6 can be used simultaneous pressing Ctrl+1 to Ctrl+6.

10. SETTING OF SIMULATION OF A PANEL

Setting can be initiated by a double click of the left mouse button or selection of Settings from the local offer. In settings it is necessary to set up a type of the panel, its size, code page, marking of functional keys and, above all, number of the register for the key and VideoRam. Numbers of registers can be entered symbolically; however, location shall be initiated.

Setting of the panel can be saved for later use. Settings can also be initiated using the initiating pushbutton.

Profile

It is used for saving and loading of the already used and saved setting without any necessity of manual re-setting.

Read only

Checking this option disables changes of the actual setting. However, any profiles can be recorded.

Panel type

The desired type of the panel can be set up using the respective option. This sets up changes in description of the functional keys and option of the panel size.

Size

The operator panel ID-08 can be delivered in two alternatives that differ each other only by the number of the displayed characters. The panels ID-07 and ID-08 and the built-in panels include two lines per 16 characters each, so 32 characters. The panel ID-08 can dis-

play four lines per 20 characters each, so 80 characters. The size of the field for VideoRAM shall correspond to the number of characters.

Coding

Using this option you can set up the code page in which the panels work. As the panel always works with one code page, it is necessary to set it up correctly. The options Kamenických and DOSLatin2 is used for back compatibility of Czech characters with the operating system MS DOS; Cyrilice (866) is a Russian characters set for MS DOS. The Středoevropská is identical with the characters set Windows 1250, Cyrilice (1251) is a Russian characters set of Windows and Západoevropská is a standard characters set of Windows.

Functional keys

Here you can assign a brief text to the keys. It cannot be edited with ID-07.

Location of a key, VideoRAM

In these fields you can enter an address of the key and beginning of the zone VideoRAM for setting a communication. You can enter a symbolic name and then it is necessary to initiate it using the initiating pushbutton. In the fields you can also enter directly numbers of the registers. Some options are available here: write a plain number of the register or an R+číslo. The number can be entered in a decimal format or hexadecimal format as 0xA or \$A. After correct entering the numerical marking of the register appears automatically in the frame; question marks appear here in case of incorrect entering. For correct setting it is necessary to enter correctly both types of data.

Initiating

Pressing of this pushbutton opens a dialog with the connected operator panels that can be used.

11. INITIATING OF THE PANEL SIMULATOR SETTING

Using this dialog you can select some of the connected panels in the actual project without any necessity of manual settings. The table includes a complete list of all the available panels with simple descriptions.

<i>Legend</i>	Brief description of the object in the network (uppr light blue strip on the network object).
<i>Panel</i>	Type of the panel.
<i>Size</i>	Number of characters of the panel.
<i>Key</i>	Symbolic marking of the key location.
<i>VideoRAM</i>	Symbolic marking of VideoRAM location.
<i>Note</i>	Brief description of the panel. This includes, above all, the channel number and mode to which the panel is connected.