HOW TO
Program *SKW22(L) or SKP22*

eliwell

by Schneider Electric

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LAN expansion bus overview

LAN expansion bus overview

The SMD/SMP can be connected with LAN bus to the follow device:

- SMC, IO expansion module (up to 22 IO)
- SKP10, Local display mirror, powered from serial line
- SKP22 or SKW22(L), remote display, powered from serial line

Target Function and variable to program the remote display in Application

Target Functions and variables of the remote display

The remote display has to be managed from FreeSmart that is the master of the LAN bus.

A dedicated set of function and variable can be used be used for that purpose.

Name	Type	Group	Description
WriteClockLCD	Function		Convert a number expressed as minutes into format hh:mm and write it on left display of LCD
WriteNumLCD	Function		Write string to LCD
WriteStringLCD	Function		Write string to LCD
KeyLogOutDisplays	Function		Pop Logic Keys. The function cannot be used, with input=0, if the automatic menu is enabled.

Operator and standard blocks | Target variables | Target blocks | basic | smartbios | SmartHMI_412_15 | SmartHMI_412_15 vars | Regu

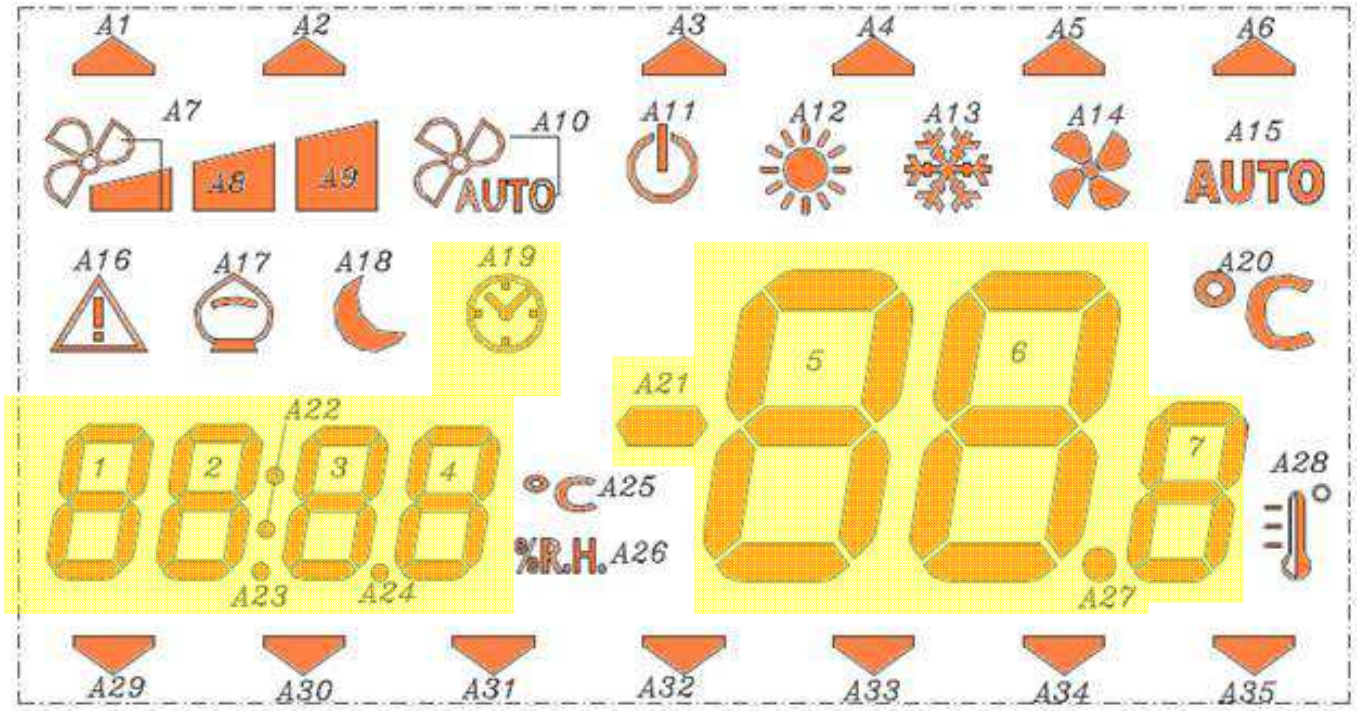
Name	Type	Address	Size	Group	Description
sysLCDAnalogInputs	INT	%IW21.0	2	Analog Inputs	LCD Analog Inputs
sysLCDLeds	USINT	%QB20.0	35	Leds status	LCD Leds Status
sysLCDStatus	BOOL	%MX7.0	1	Peripheral	LCD peripheral status

Operator and standard blocks | Target variables | Target blocks | basic | smartbios | Sr

Tips: if sysPeripheralStatus(X) is FALSE, it means that is connected (X=0 LCD, X=1 Echo, X=2 Exp)

Target Functions and variables of the remote LCD

The IEC code symbols directly accessible are from A1 to A18, A20, A25, A26 and A28 to A35.



Note: the icons of the yellow area is automatically manage by the functions:

WriteClockLCD

WriteNumLCD

WriteStringLCD

IEC library for LCD remote display

All the function block as been grouped in the SmartHMI_412_15.pll library.

The SmartHMI function block has been developed with different purpose.

Name	Type	G...	Description
LocalMainView_t	Function block		This FUNCTION_BLOCK manages FREE Smart local display LEDs and keys, detecting long presses ('hot-key' functions) of them, in fundamental view
SKMainViewBasic_t	Function block		This FUNCTION_BLOCK manages FREE Smart local display LEDs and keys, detecting long presses ('hot-key' functions) of them, in fundamental view
SKWAlarmMenu_t	Function block		Navigation of an alarm menu (that is, a menu listing all active alarms
SKWFolderMenu_t	Function block		Navigation of a folder menu (that is, a menu containing a list of sub-menus)
SKWLeftDisplayMenu_t	Function block		Navigation of an LCD keyboard menu, using the left display to show its items' values
SKWLeftDynDisplayMenu_t	Function block		Navigation of an LCD keyboard menu, using the left display to show its items values This block support dynamic item list with visibility HIDE, R ONLY, RW
SKWMainView_t	Function block		This FUNCTION_BLOCK manages FREE Smart local display LEDs and keys, detecting long presses ('hot-key' functions) of them, in fundamental view
SKWPswProtection_t	Function block		This FUNCTION_BLOCK implements a password-protection mechanism to access an LCD keyboard menu
SKWRightDisplayMenu_t	Function block		Navigation of an LCD keyboard menu, using the right display to show its items' values
SKWRightDynDisplayMenu_t	Function block		Navigation of an LCD keyboard menu, using the right display to show its items values This block support dynamic item list with visibility HIDE, R ONLY, RW

Operator and standard blocks | Target variables | Target blocks | basic | smartbios | SmartHMI_412_15 | SmartHMI_412_15 vars | Regul and Control | Application

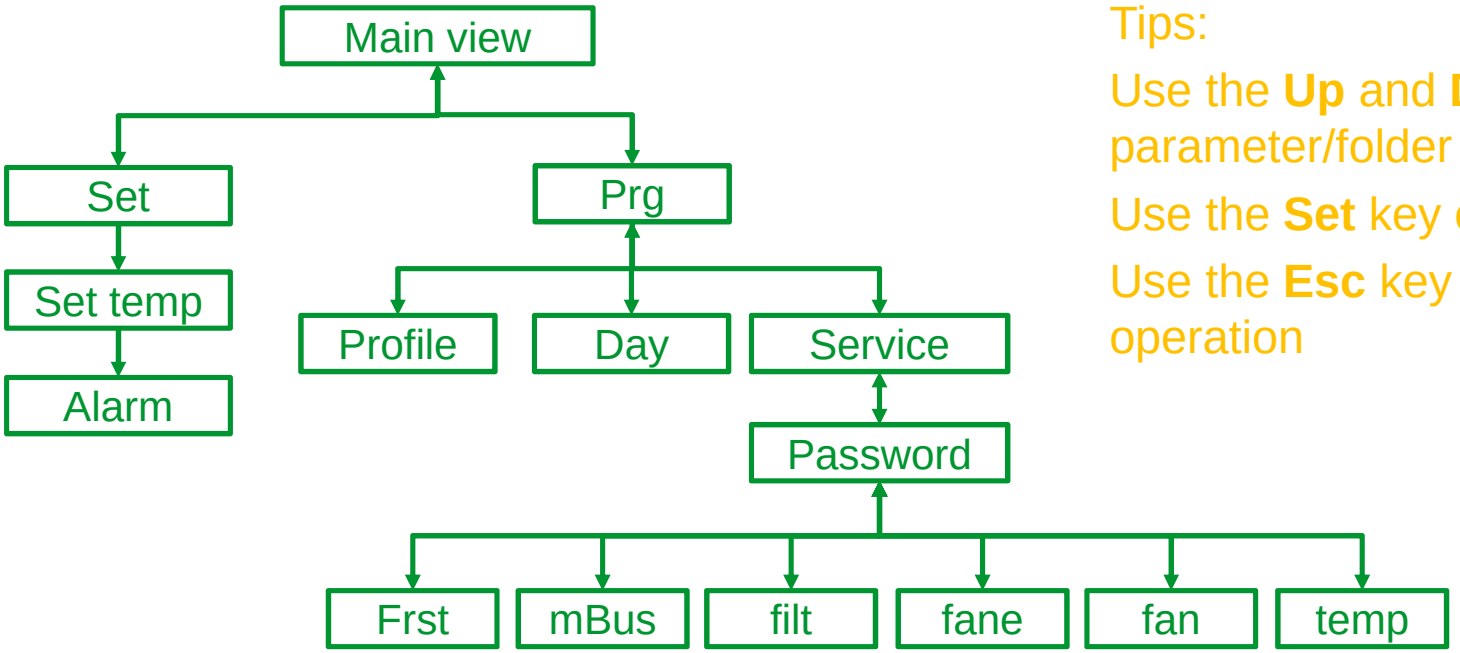
The IEC FB will be described in the next slide.

Tips: if the library doesn't fit the customer needs, import it in your project and customize it.

The demo application FS_Es20_SKWmenu and the IEC library

The demo application FS_Es20_SKWmenu

This example include the SmartHMI_412_15.pll library and is guideline to develop your application.
The navigation tree of the demo application menu is below summarized:

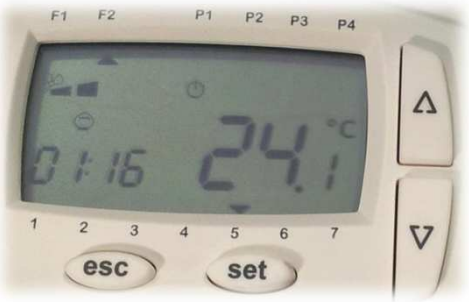


Tips:

Use the **Up** and **Down** key to change current parameter/folder

Use the **Set** key enter or set in current item

Use the **Esc** key to return or abort the operation



The demo application FS_Es20_SKWmenu

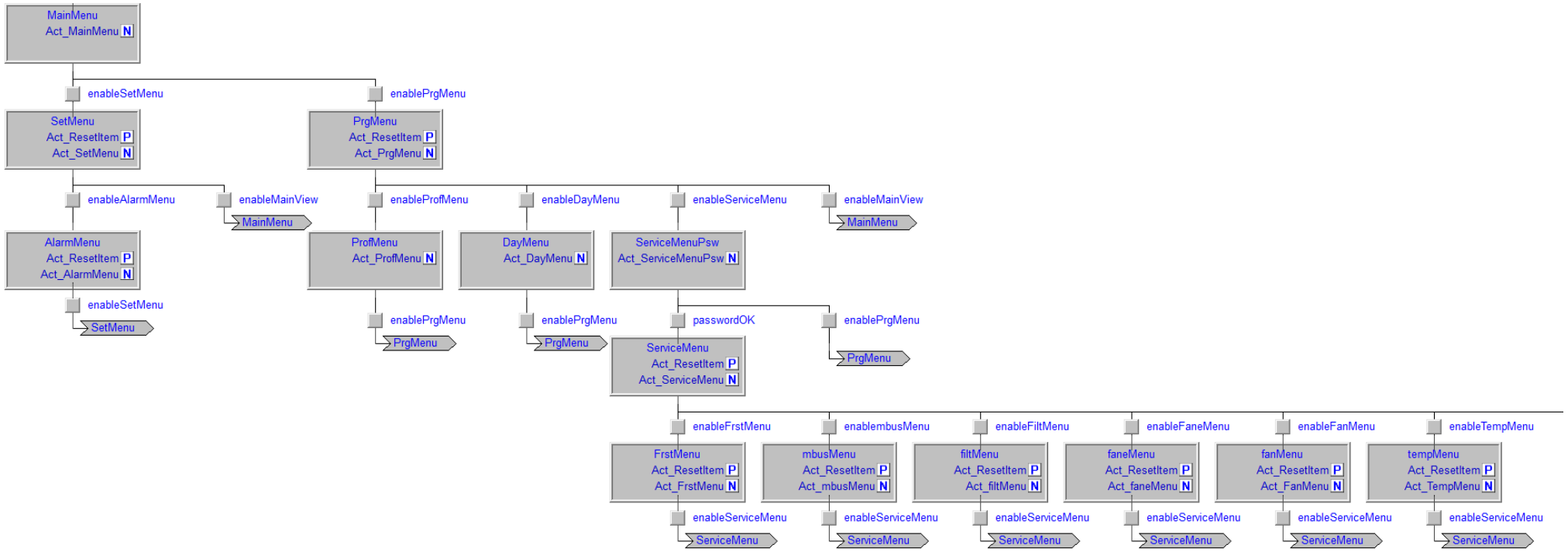
The IO used required in this example has been listed below:

#	Name	Variable	Type	Description
1	AIL1	I_TempOutdoor	INT	AIL1 analogue input
2	AIL2	I_TempSupply	INT	AIL2 analogue input
3	AIL3	I_TempInlet	INT	AIL3 analogue input
4	AIL4		INT	AIL4 analogue input
5	AIL5	I_TempExhaust	INT	AIL5 analogue input
6	DIL1	ShowOff_DI	BOOL	DIL1 digital input
7	DIL2	ShowLeftValue_DI	BOOL	DIL2 digital input
8	DIL3	Alarm_DI	BOOL	DIL3 digital input

The demo application FS_Es20_SKWmenu

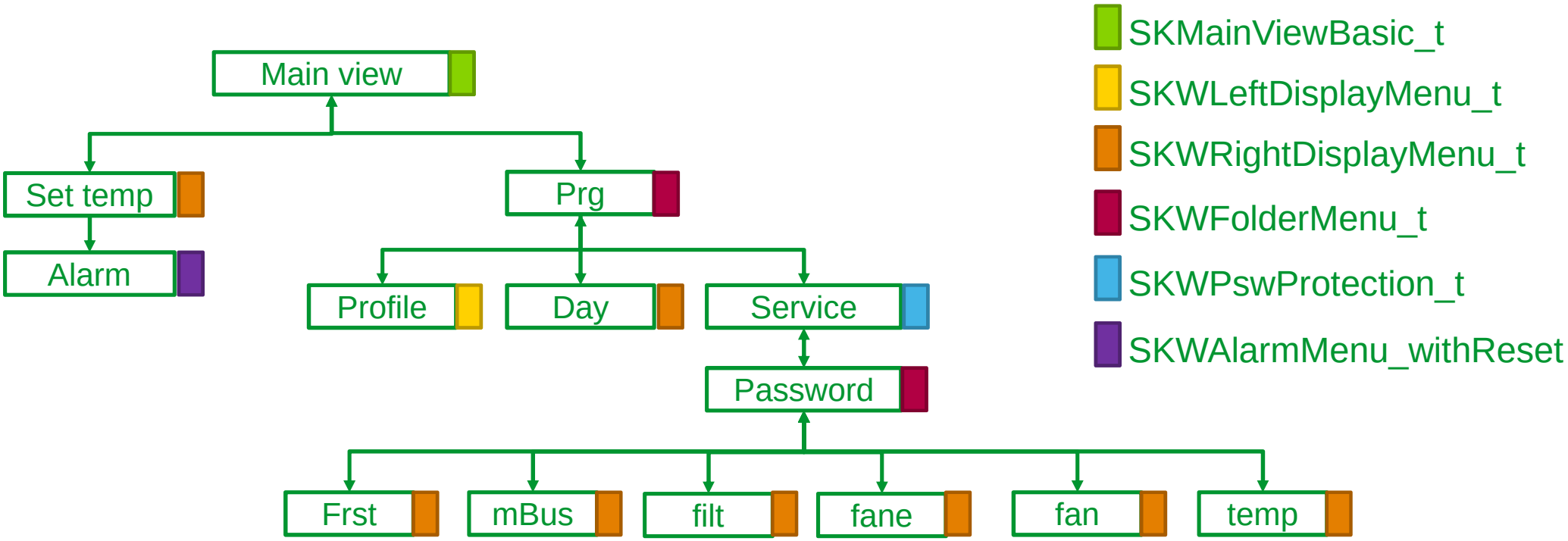
The program used to manage the navigation status has been developed in SFC language.

Here is the program in Application called SKWHMI.



The demo application FS_Es20_SKWmenu

Each menu page, that is a different status of the SFC program, use the highlighted function block program:



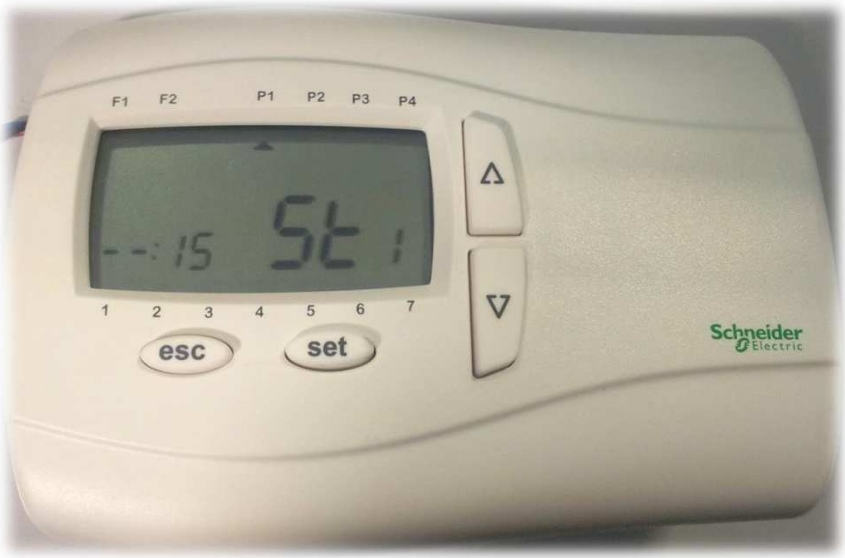
The demo application FS_Es20_SKWmenu

The **SKMainViewBasic_t** function block has the purpose to manage the main view, in this demo all the icons will change without considering the application logic.

- **SKMainViewBasic_t**
- SKWLeftDisplayMenu_t
- SKWRightDisplayMenu_t
- SKWFolderMenu_t
- SKWPswProtection_t
- SKWAlarmMenu_withReset

The demo application FS_Es20_SKWmenu

The **SKWLeftDisplayMenu_t** function block is used to visualize and edit a time information 00:00 in the left 4 digit.
The tree right digit will be used to show the value description.



- SKMainViewBasic_t
- SKWLeftDisplayMenu_t
- SKWRightDisplayMenu_t
- SKWFolderMenu_t
- SKWPswProtection_t
- SKWAlarmMenu_withReset

The demo application FS_Es20_SKWmenu

The **SKWRightDisplayMenu_t** function block is used to visualize and edit a temperature or a percentage 00.0 in the right tree digit. The left four digit will be used to show the value description.

- SKMainViewBasic_t
- SKWLeftDisplayMenu_t
- **SKWRightDisplayMenu_t**
- SKWFolderMenu_t
- SKWPswProtection_t
- SKWAlarmMenu_withReset

The demo application FS_Es20_SKWmenu

The **SKWFolderMenu_t** function block is used to

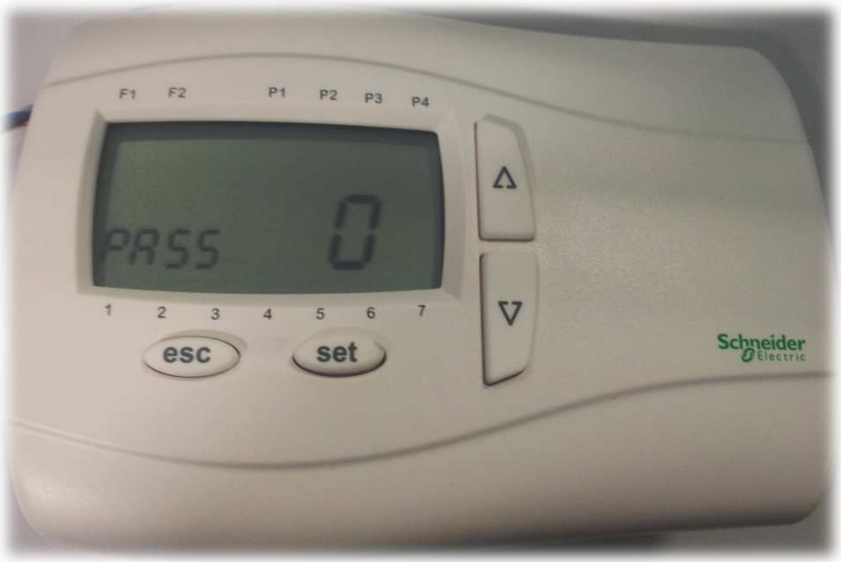
visualize and set the next menu folder, the au and down key will change the folder description and the set will select current folder.

- SKMainViewBasic_t
- SKWLeftDisplayMenu_t
- SKWRightDisplayMenu_t
- **SKWFolderMenu_t**
- SKWPswProtection_t
- SKWAlarmMenu_withReset

The demo application FS_Es20_SKWmenu

The **SKWPswProtection_t** function block is used to visualize and check the service password.

The value will be compare with the Bios parameter Ui27, if it match the navigation to the next page become active.

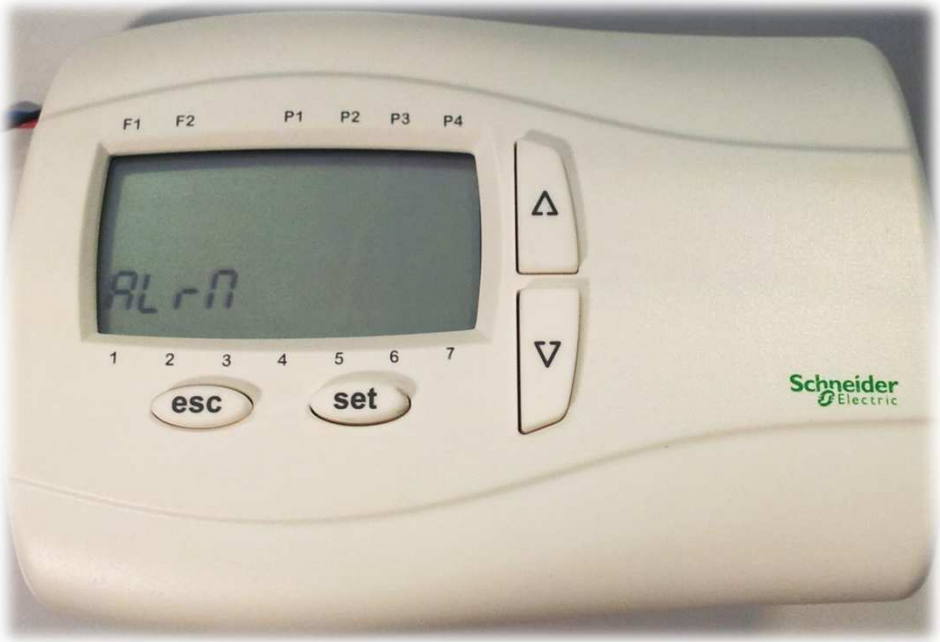


- SKMainViewBasic_t
- SKWLeftDisplayMenu_t
- SKWRightDisplayMenu_t
- SKWFolderMenu_t
- **SKWPswProtection_t**
- SKWAlarmMenu_withReset

The demo application FS_Es20_SKWmenu

The **SKWAlarmMenu_withReset** function block is used to visualize the active alarm.

The log press of the key Set trigger a reset of the resettable alarm.



- SKMainViewBasic_t
- SKWLeftDisplayMenu_t
- SKWRightDisplayMenu_t
- SKWFolderMenu_t
- SKWPswProtection_t
- SKWAlarmMenu_withReset

Tips: use the DI 3 to test the active alarm condition.

Thanks