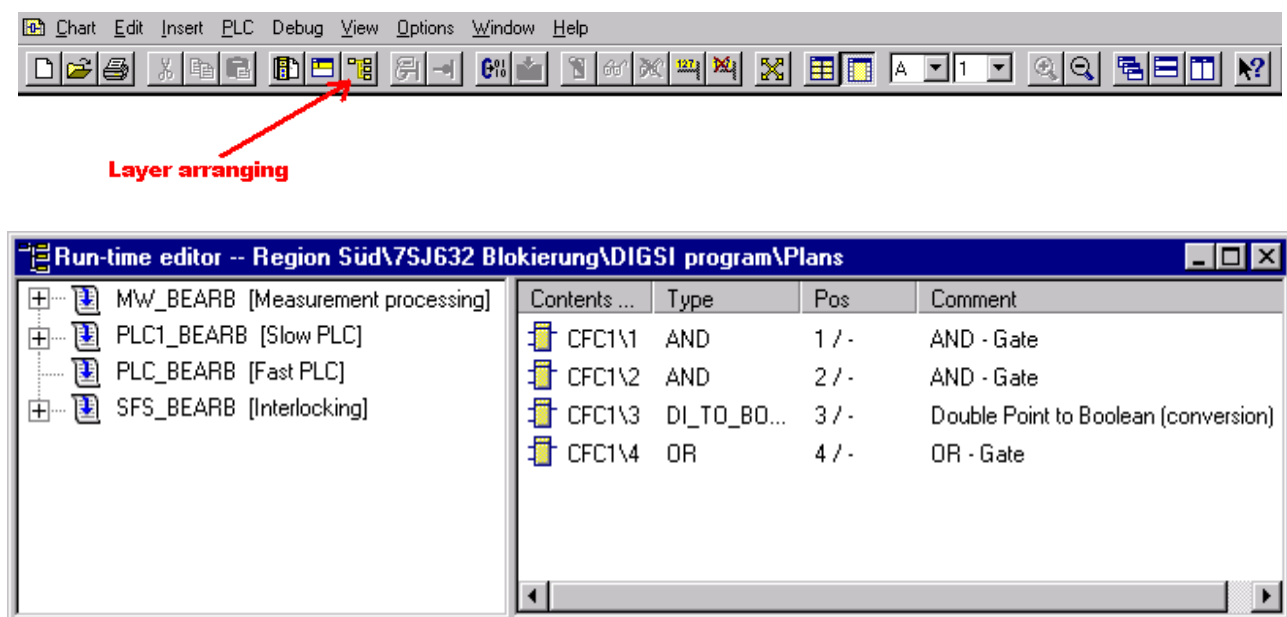


The Run time groups

Once all the gates have been entered and connected, it must be checked that the gates are in the appropriate layer and that the sequence of execution (run sequence) is correct.. Four layers are available for different types of application.

By default, the gates are always entered into the measurement processing layer. If the user requires the gates to entered in a different processing layer, the appropriate layer can be selected in the menu bar “Edit” – “Predecessor for installation”, alternatively Shift+F11. To view the layer in which the gates are executed, select “Edit” – “Run sequence” alternatively Ctrl + F11 or the appropriate icon in the tool bar. If this is done the display as in picture 1 will appear. When the processing layer in the left hand window is marked, the right hand window will show all the gates in this layer. The sequence of the gates in the right hand window corresponds to the sequence in which the gates are executed.

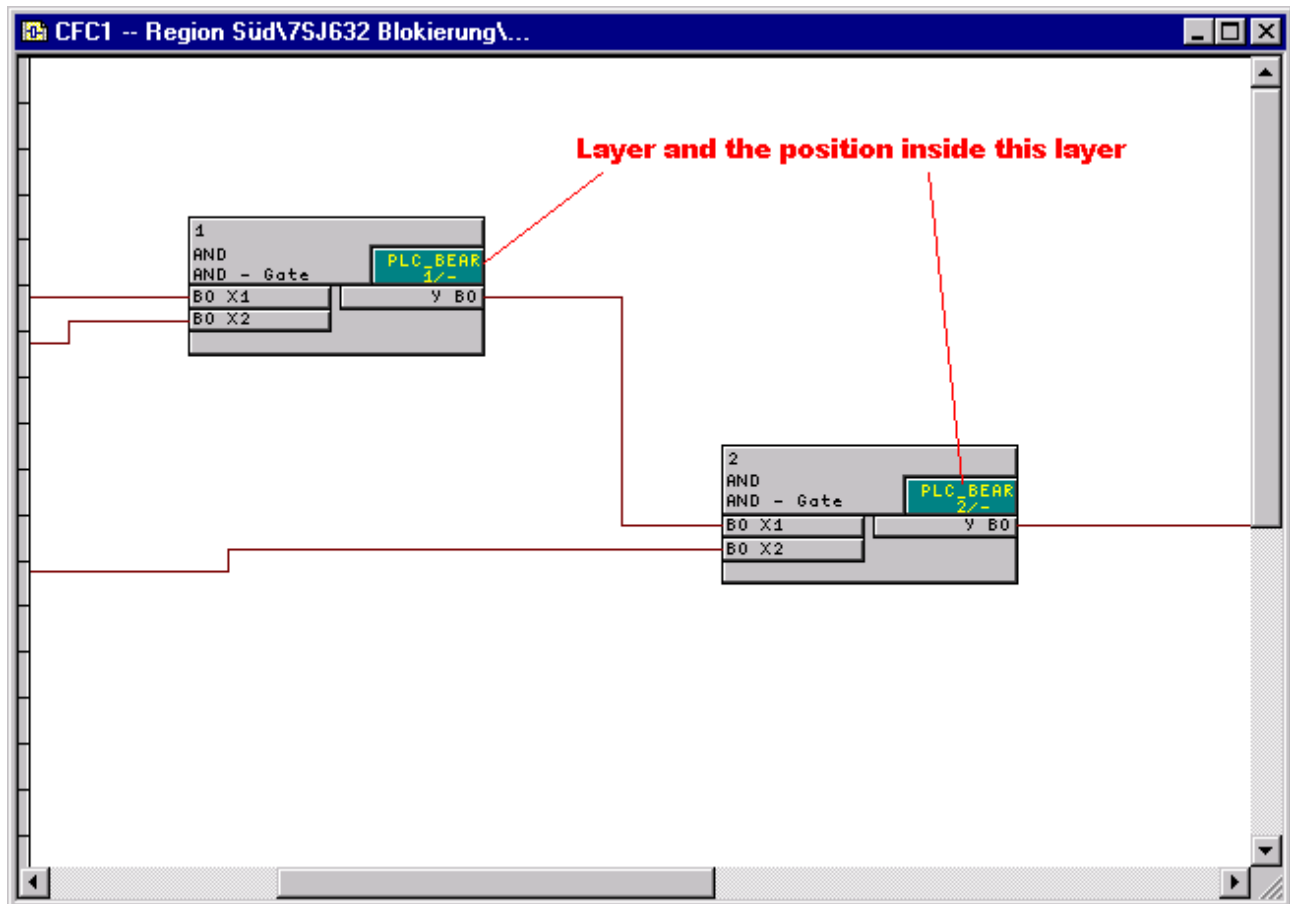


Picture 1 The run time editor for the gates

On the left side the four run time groups are shown. On the right hand side the gates of the highlighted group are shown. To re-position a gate from one group to another, use the “drag & drop” technique or select the gate by clicking the right hand mouse button and choosing the “cut & paste” method.

The gates of a particular group must be listed in the correct sequence i.e. the sequence in which they have to be executed.

Example: picture 2



Picture 2: The run time group and the sequence of the gates

In picture 2 two interconnected AND gates are shown. Each gate is designated with its run time group (e.g. PLC_BEAR) and its relative position for execution e.g. 1/ or 2/. see in the picture 2 AND-gates which are connected together.

The sequence of execution must be from left to right. The output of a gate should only be connected to the input of a gate which is lower down in the sequence of execution.

It is essential that the sequence of the gates is applied correctly (the programme will generate a warning during the compilation if the sequence is incorrect).

To modify the sequence of execution, a gate can be moved in the run time editor (picture 1) by “drag & drop” or “cut & paste”. The sequence of execution is from top to bottom in the run time editor.

Hint:

If you highlight a gate by clicking on it with the right mouse button and subsequently select "Predecessor for installation" in the pop-up menu, all subsequent gates will be entered in the same layer with incremental run time sequence.

The description and properties of each layer are listed below.

The desired group must be selected in accordance with the application. The CFC logic in PLC_BEARB (fast PLC) processes signals with a high priority so that they have a speed comparable with the protection functions. This high priority (speed) may be necessary if the signal generated by the CFC has to block a particular protection function. Due to this high priority execution the number of gates available in this layer is restricted.

Most CFC applications can be applied in PLC1_BEARB (slow PLC). The signal processing here is of a lower priority.

Command and interlock processing should be applied in the SFS_BEARB (interlocking layer). Finally the MW_BEARB (measurement processing) is available for cyclic evaluation of measured values (set point evaluation).

	MW_BEARB Measurement processing	PLC1_BEARB Slow PLC	PLC_BEARB Fast PLC	SFS_BEARB Interlocking
ABSVALUE	X			
AND		X	X	X
BOOL_TO_CO		X	X	
BOOL_TO_DI		X	X	X
BOOL_TO_IC		X	X	X
BUILD_DI		X	X	X
CMD_INF				X
CONNECT		X	X	X
D_FF		X	X	X
DI_TO_BOOL		X	X	X
LIVE_ZERO	X			
LOWER_SETPOINT	X			
NAND		X	X	X
NEG		X	X	X
NOR		X	X	X
OR		X	X	X
RS_FF		X	X	X
SR_FF		X	X	X
TIMER		X	X	
LONG_TIMER		X	X	
UPPER_SETPOINT	X			
X_OR		X	X	X
ZERO_POINT	X			

Table1: Selection guide for gates and task levels

1. Fast PLC (PLC_BEARB)

- Priority higher than the protection function
- Event-triggered: Initiation of execution by change of an input signal, timer expiry etc.
- Suitable for blocking protection functions (e.g. CB tripping)
- Number of gates restricted (refer to device manual)

2. Slow PLC (PLC1_BEARB)

- Priority lower than the protection function
- Event-triggered: Initiation of execution by change of an input signal, timer expiry etc.
- Preferred class for most applications
- Number of gates restricted (refer to device manual)
-

3. Switchgear interlocking (SFS_BEARB)

- Priority lower than the protection function
- Event-triggered: Initiated by command sequence
- Suitable for interlocking applications
- Number of gates restricted (refer to device manual)

4. Measured value processing (MW_BEARB)

- Priority lower than the protection function
- Cyclic execution: Executed approximately every 600 ms
- Suitable for processing measured values (e.g. limit value comparison, implementation of protection functions such as "Reverse Power ANSI 32" or "Power Factor ANSI 55")
- Number of gates restricted (refer to device manual)