01 07 Logical link device 800C04

Use of the application program

Product family: Controller
Product type: Controller
Manufacturer: Siemens

Name: Logical link device N 347/02
Order no.: 5WG1 347-1AB02

Functional description

The logical link device N 347/02 makes it possible to link binary information logically.
It uses up to 255 x 1 bit communication objects of type EIS 1, which can be assigned as required to the inputs or the output of up to 126 logic gates. The user is thus not tied to a fixed gate size with a constant number of inputs. He can moreover determine for each logic gate the number of inputs it should have and which logic operations should be carried out.
The user can assign one of the following logic functions to a gate:

AND / NAND / OR / NOR

The inversion (negation) of binary information can be carried out via NAND or NOR gates with only one input. It can also be selected individually for each output and input whether it is linked directly or inverted.
It is also possible to link an input with the output of another gate in order to carry out more complex functions such as EXOR gates or closed-loop flipflop operations.
The N 347/02 device listens to switching telegrams on the bus with the group addresses of all the assigned inputs or queries the current value of the group addresses cyclically.
Send conditions (output filter) can be defined for the outputs which describe when the output should generate a telegram.
Time functions can also be activated for each output. It is possible to switch on and off with a delay or the output can automatically revert once it has been switched on (staircase lighting function). The time intervals can be set between 0.1 seconds and 22 hours and can be retriggered if required.
Using a special supplementary tool (DLL) which is a component of the Siemens product database and is automatically linked to the device when the N 347/02 is selected in ETS2 (EIB Tool Software, version 1.1 onwards), the user can easily assign parameters to the N 347/02 and load the parameter settings via the EIB into the device.

Attention!

Version 4 of the application program may only be downloaded to a logicmodule N 347/02.If this application is downloaded into a logic module N 347/01, the devicebecomes unusable as a result and must be returned to Siemens AG for reprogramming.

If the programming LED is flashing (0.5 seconds off, 1.5 seconds on) there is a faulty setting of the device in the parameter list. By this logically false links may come up.
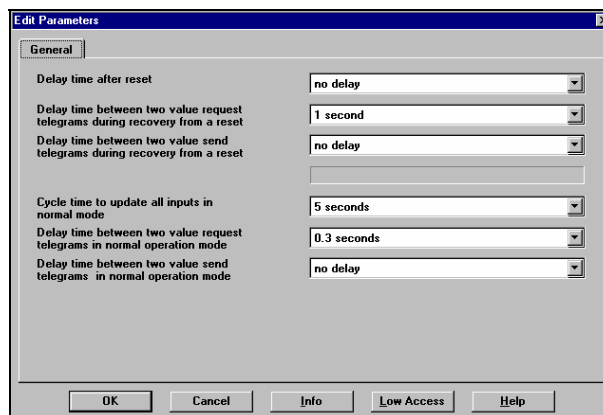An example of such a link could be like that:
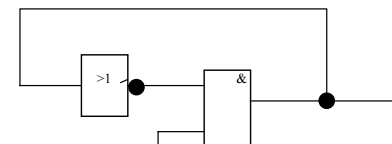
The device cannot determine a clear-cut result in the example shown above. This cannot produce a steady output.

Remedy:
The device must be reloaded with the correct parameter settings.

General parameters

Parameters	Settings
Delay time after reset	**no delay** 2 seconds 5 seconds 10 seconds 30 seconds 1 minute 2 minutes 5 minutes 10 minutes
On the one hand, this parameter is used to give the devices	

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(objects) that are to be polled enough time to prepare the object values. On the other hand, the bus load can be corrected by all the bus devices after a reset so that important signals can be processed first.

Delay time between two value request telegrams during recovery from a reset	no delay 0.2 seconds 0.3 seconds 0.5 seconds 0.7 seconds **1 second** 2 seconds 5 seconds 10 seconds 20 seconds

This parameter is also used to monitor the bus load with a timed distribution of the value request telegrams after a reset. The logic operations are only processed once all the objects have been polled.

Delay time between two send telegrams during recovery from a reset	**no delay** 0.2 seconds 0.3 seconds 0.5 seconds 0.7 seconds 1 second 2 seconds

All the logic results are sent on bus voltage recovery. As a result, a heavy load can be placed on the bus for a considerable period. In order to avoid this, a delay time can be set here between two send telegrams. The logic operations are not carried out throughout the sending process.

Parameters	**Settings**
Cycle time to update all inputs in normal mode	2 seconds **5 seconds** 10 seconds 30 seconds 1 minute 2 minutes 5 minutes 10 minutes 15 minutes

The cyclic time for polling input objects is generally set via this parameter. However, if the period for polling all the assigned objects exceeds the "Cycle time to update all inputs in normal mode" due to the "Delay time between two value request telegrams in normal operation mode", the longer period is taken as the cyclic interval.

Delay time between two value request telegrams in normal operation mode	no delay 0.2 seconds 0.3 seconds 0.5 seconds 0.7 seconds **1 second** 2 seconds 5 seconds 10 seconds 20 seconds

This parameter is also used to monitor the bus load with a timed distribution of the value request telegrams after a reset. The logic operations are only processed once all the objects have been polled.

Delay time between two send telegrams in normal operation mode	**no delay** 0.2 seconds 0.3 seconds 0.5 seconds 0.7 seconds 1 second 2 seconds

All the logic objects are sent on bus voltage recovery. As a result, a heavy load can be placed on the bus for a considerable period. In order to avoid this, a delay time can be set here between two send telegrams. The logic operations are not carried out throughout the sending process.

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**Parameterisation of logic gates using supplementary tools**

The parameterisation of the logic module N 347/02 is carried out using a supplementary tool which is accessed via the "Gate" tab. Up to 255 communication objects can be stored in the logic module N 347/02. All the communication objects are 1 bit objects. These can be defined as inputs or outputs for the gates i.e. each input or output corresponds to a communication object. Each gate can have between 1 and 252 inputs and one output. The maximum possible number of gates is produced from the number of gates that have been configured and the number of inputs that have been assigned per gate.
An output can also act as the input of another gate. The input and the output however do not use the same communication object as the assignment is stored internally in a parameter.

The following screens contain this example.
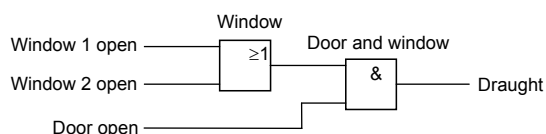

'Edit Device' dialog
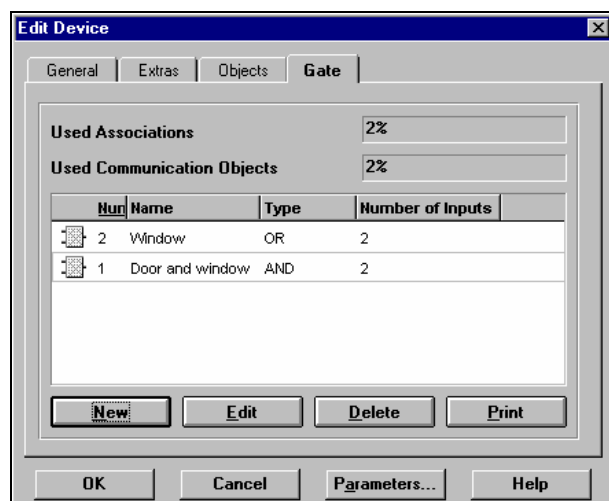
Creating new gates

It is possible to create new gates. Information such as the name and type of the gate (AND, OR, NAND, NOR) as well as the number of inputs is entered by the user. New gates are displayed in a list and can be edited or deleted as required. This data can be modified in the "Edit Gate" dialog.
The dialog also displays the percentage of associations and communication objects that has been used.

'New Gate' dialog
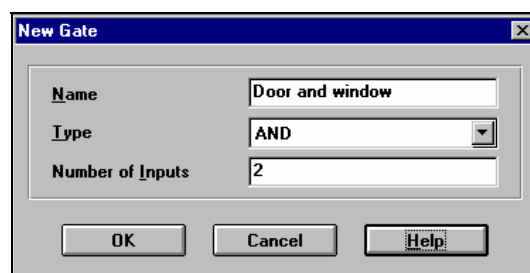
Printing
It is possible to print out the assignment of inputs, outputs and group addresses to the gates as well as the input- and output-specific parameters. The general parameters can be printed out using the standard printing function.

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Device information
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Test project N 347/02
01.01.001
Logical link device N 347/02 (V3)/Siemens

Name	Window
Type	OR

Communication object no.	0/Input
Group address(es)	00/0006
	Window 1
Poll communication object	Never
Default value	0
Direct/inverted	Direct
Communication object no.	1/Input
Group address(es)	00/0003
	Window 2
Poll communication object	Never
Default value	0
Direct/inverted	Direct
Communication object no.	2/Output
Group address(es)	00/0007
	Window open
Linked with input	4/Door and window
Direct/inverted	Direct
Send condition	None
No time function	

Name	Door and window
Type	AND

Communication object no.	3/Input	
Group address(es)	00/0001	Door 1 open
	00/0005	Door 2 open
Poll communication object	Reset	
Default value	1	
Direct/inverted	Direct	
Communication object no.	4/Input	
Linked with output of	Window	
Poll communication object	Never	
Default value	0	
Direct/invert	Direct	
Communication object no.	5/Output	
Group address(es)	00/0004 Draught	
Direct/inverted	Direct	
Send condition	Output change	
ON delay	00:00:05.0	
Retrigger	Not possible	

'Edit Gate' dialog (in the two different modes)
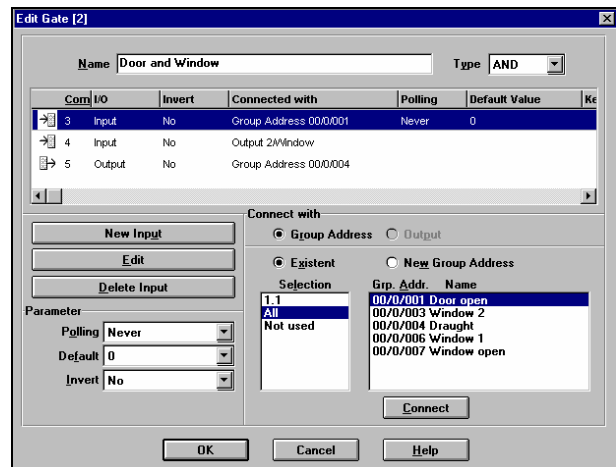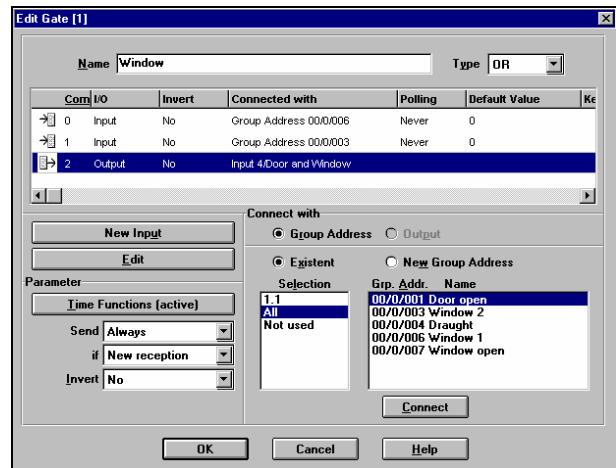
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Editing gates

The "Edit Gate" dialog contains the following basic elements:

- Name	Gate name - this can be modified
- Type	Gate type - this can also be modified
- I/O	Input / Output
- Invert	Direct / inverted, indicates whether the input or output is inverted before the logic function is carried out.
- Comm. Obj. No.	The number of the communication object is displayed here. If the communication object data needs to be changed, this can be carried out in the standard ETS2 "Edit Object" dialog. The standard dialog can be accessed from this screen via the "Edit" button or by double clicking.
- Key	A key can be stored for each object in the standard ETS2 "Edit Object" dialog. This is used above all to provide the inputs or outputs with a "comment" for more complex logic operations.
- Connected with	An input can either be linked with a group address or with an output of another gate. If the input is linked with a group address, the word "group address" is displayed together with an enumeration of all the group addresses that are linked to this output. Depending on the setting in ETS, the group address that is assigned to the input/output is displayed in 2 or 3 levels.
	If however the input is linked to an output, the word "output" is entered. The object that the output controls and the name of the gate are also noted.
- Polling	It can be set for each input whether polling is always carried out, never carried out or only after a reset. The selected option is indicated here.
- Default	After a reset, the selected input is preset with the value displayed. This field is only displayed if an input is selected in the list.

- Send	This field is only displayed if an output is selected in the list and indicates whether the output state is always sent or only if the value of the output is 0 or 1.
- if	This field is only displayed if an output is selected in the list and indicates whether the output state is sent each time an input telegram is received or only if the output state has changed.

Changing the display mode

The basic "Edit Gate" screen displays only those group addresses or the output of another gate which are linked to the respective input. As in many cases it is a good idea to show the names of the group addresses, it is also possible to change the display mode. The display mode can be changed by clicking with the right mouse button on an input or output. If the mode "Show Connections" is selected, the following elements are added to the basic screen. A line is reserved for each connection.

- Connect with	This field indicates whether the input/output is connected with a group address or an output.
- Number	If the gate input is linked to a group address, the assigned group address is represented in 2 or 3 levels, depending on the setting in ETS. If however the gate output is linked with an output, the number of the object which the gate output controls is displayed.
- Name	When a communication object is linked with a group address, the name of the group address is entered here. When it is linked with the output of another gate, the name of the other gate is displayed.

The user can set the size of the columns and the sorting method.

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Linking inputs and outputs with gates

A link is defined in the "Edit Gate" dialog by assigning a group address to an input or output. A group address is assigned by entering the number and name of the group address ("New Grp. Addr."). Otherwise, it is also possible to select a group address from the list of existing group addresses ("Existent Grp. Addr."). The group addresses of a selected line, all lines or all the unlinked (unused) group addresses are then displayed in a list.

The link is displayed as an association of a group address to a communication object. The number of associations that can be linked to an input is unlimited. However, only one association is possible for an output.

It is also possible to carry out a cascade arrangement of the gates (output) i.e. the output of one gate is also used as the input of another gate. The connection of an input with the output of the same gate is prevented.

Links can be deleted directly in the "Edit Object" dialog. The number of free and configured group addresses is displayed.

Note

Communication objects and associations i.e. inputs and outputs with links are also displayed in list views in ETS2. Associations can also be created directly there.

Deleting and creating inputs

The number of inputs for a gate is defined in the "New Gate" dialog when a gate is created. Inputs can also be deleted ("Delete Input") and created ("New Input") in the "Edit Gate" dialog.

Editing input-specific parameters

If an input is selected in the list above, the fields for the input-specific parameters are displayed and can now be defined.

Polling the object status:
- At restart
- Never, or
- Always

Invert the input before processing the value:
- Yes, or
- No

Default value of the object on restart:
- 1, or
- 0

Editing output-specific parameters

If an output is selected in the list above, the fields for the output-specific parameters are displayed and can now be defined.

Invert the output before evaluating the time functions:
- Yes, or
- No

Send the output value on the bus:
- only if logic "0" at the output,
- only if logic "1" at the output, or
- always

and
- each time a new input telegram is received for this output, or
- only after output changes

Time functions

After clicking on this button, an additional dialog box is opened where the time functions of the selected output can be set. The parameter "Invert" is carried out before the time function which means that a logic "1" is always sent when the time functions are activated. This is important for the staircase lighting function.
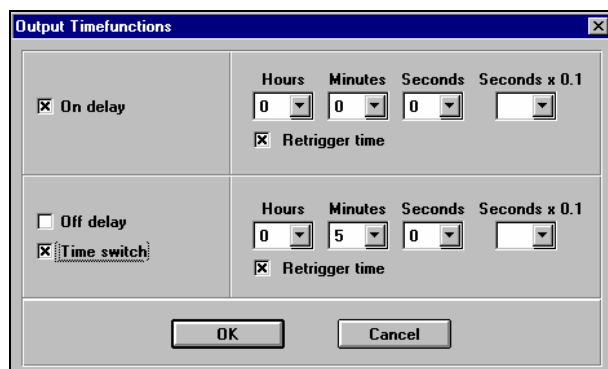
- **ON delay:**
  In the first dialog field, the ON delay can be switched on and off. If the output has been activated (a logic "1" should be sent), the delay period is started first of all. The output actually sends a logic "1" once this period has elapsed. The delay period can be set between 0.1 seconds and 22 hours in intervals of 0.1 seconds. If the "Retrigger" box is selected, the delay period can be restarted by a new signal. If an input signal is received during the delay period which would deactivate the output, the delay period is stopped and the output remains deactivated.

- **OFF delay:**
  In the lower field, the OFF delay can be switched on and off. If the output has been deactivated (a logic "0" should be sent), the delay period is started first of all. The output actually sends a logic "0" once this period has elapsed. The delay period can be set between 0.1 seconds and 22 hours in intervals of 0.1 seconds. If the "Retrigger" box is selected, the delay period can be restarted by a new signal. If an input signal is received during the OFF delay which would reactivate the output, the delay period is stopped and the output remains activated.

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- **Time switch:**
  The time switch functions can also be switched on and off here. If the output has been activated (a logic "1" should be sent), the delay period is started simultaneously. The output is automatically deactivated again once this period has elapsed (a logic "0" is sent). The delay period can be set between 0.1 seconds and 22 hours in intervals of 0.1 seconds. If the "Retrigger" box is selected, the delay period can be restarted by a new signal. If an input signal is received during the delay period for the time switch function which would deactivate the output, the delay period is stopped and the output is immediately deactivated.

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Notes