

12 CO Posdrive 740D01**Devices Employing the Program**

Product family: Controller

Product type: Controller

Manufacturer: Siemens

Name: Logic Module N 301

Order-no.: 5WG1 301-1AB01

Application Description

This application program allows you to use 4 separate channels to setting individual positive drives.

Positive drives are used, for example in the load management to switching off devices that are not required during peak load periods (load reduction). Of course that only makes sense if these devices can be locked against manual local operation.

Two operating modes are available to each channel:

- A: Positive drive sending
- B: Binary object sending

When using mode A "Positive drive sending", the actuator establishes the status of the low bit when the positive drive is active (high bit set to logic '1'). The status of the actuator at enabled positive drive can either be adjusted by other parameters (see parameter "Operating mode A: value at enabled positive drive") or by combining objects (see objects [0], [3], [6], and [9]). The 2 bit telegram that is sent when the positive drive is active is passed on to the positive drive object of the actuator with an appropriate application program (e.g. the application program "11 A2 Binary 520501" provides a positive drive to the binary outputs 2-fold). Simultaneously, the actuator is locked against manual local operation when the positive drive is enabled.

The below table illustrates the effects of this application in the example of channel A set to operating mode A:

Bit 1 object [1]	Bit 0 object [0]	Effect
0	0	positive drive disabled
0	1	positive drive disabled
1	0	positive drive enabled: switch off
1	1	positive drive enabled: switch on

When set to operating mode B "Binary object sending", a 2 bit value is converted to a 1 bit sending value which can be used to address the switching object of an actuator which does not have a 2 bit positive drive object. However, this actuator will not be protected against manual local operation via a push button or sensor.

Communication Objects

Phys.Addr.	Program		
no.	Function	Object name	Type
01.01.034	12 CO Posdrive 740D01		
0	Channel A: Binary	Input	1 Bit
1	Channel A: Binary	Operating mode: A=Input, B=Output	1 Bit
2	Channel A: Positive drive	Operating mode: A=Output, B=Input	2 Bit
3	Channel B: Binary	Input	1 Bit
4	Channel B: Binary	Operating mode: A=Input, B=Output	1 Bit
5	Channel B: Positive drive	Operating mode: A=Output, B=Input	2 Bit
6	Channel C: Binary	Input	1 Bit
7	Channel C: Binary	Operating mode: A=Input, B=Output	1 Bit
8	Channel C: Positive drive	Operating mode: A=Output, B=Input	2 Bit
9	Channel D: Binary	Input	1 Bit
10	Channel D: Binary	Operating mode: A=Input, B=Output	1 Bit
11	Channel D: Positive drive	Operating mode: A=Output, B=Input	2 Bit

Note:

The order of the entries may vary from the above due to individual customization of the table.

Obj	Function	Object name	Type	Flags
0	Channel A: Binary	Input	1- Bit	CRWTU
This input object receives the low bit (bit 0) to the operating mode "A" which defines the switching status of the actuator when the positive drive is active (object [1] is set to logic '1'). Simultaneously it is locked against manual local operations. With the parameter "Operating mode A: Value on active positive drive", the status of this object can be specified.				
1	Channel A: Binary	Operating mode: A= Input, B= Output	1- Bit	CRWTU
This input object receives the high bit (bit 1) to the operating mode "A". On a logic "0" the positive drive is deactivated, on a logic "1", the positive drive is activated. When using operating mode "B", this object is used to sending a 1 bit value to the switching object of an actuator that does not have a positive drive object. However, the actuator then cannot be locked against manual local operation.				
2	Channel A: Positive drive	Operating mode: A= Output, B= Input	2- Bit	CRWTU
This object sends the positive drive information (2 bit) to operating mode "A". The object is assigned the group address of the positive drive object of the actuator. When using operating mode "B" this object is used as an input object to receiving 2 bit values.				
3	Channel B: Binary	Input	1- Bit	CRWTU
This input object receives the low bit (bit 0) to the operating mode "A" which defines the switching status of the actuator when the positive drive is active (object [4] is set to logic '1'). Simultaneously it is locked against manual local operations. With the parameter "Operating mode A: Value on active positive drive", the status of this object can be specified.				

Application Programs Description

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Obj	Function	Object name	Type	Flags
4	Channel B: Binary	Operating mode: A= Input, B= Output	1- Bit	CRWTU
<p>This input object receives the high bit (bit 1) to the operating mode "A". On a logic "0" the positive drive is deactivated, on a logic "1", the positive drive is activated.</p> <p>When using operating mode "B", this object is used to sending a 1 bit value to the switching object of an actuator that does not have a positive drive object. However, the actuator then cannot be locked against manual local operation.</p>				
5	Channel B: Positive drive	Operating mode: A= Output, B= Input	2- Bit	CRWTU
<p>This object sends the positive drive information (2 bit) to operating mode "A". The object is assigned the group address of the positive drive object of the actuator.</p> <p>When using operating mode "B" this object is used as an input object to receiving 2 bit values.</p>				
6	Channel C: Binary	Input	1- Bit	CRWTU
<p>This input object receives the low bit (bit 0) to the operating mode "A" which defines the switching status of the actuator when the positive drive is active (object [7] is set to logic '1'). Simultaneously it is locked against manual local operations.</p> <p>With the parameter "Operating mode A: Value on active positive drive", the status of this object can be specified.</p>				
7	Channel C: Binary	Operating mode: A= Input, B= Output	1- Bit	CRWTU
<p>This input object receives the high bit (bit 1) to the operating mode "A". On a logic "0" the positive drive is deactivated, on a logic "1", the positive drive is activated.</p> <p>When using operating mode "B", this object is used to sending a 1 bit value to the switching object of an actuator that does not have a positive drive object. However, the actuator then cannot be locked against manual local operation.</p>				
8	Channel C: Positive drive	Operating mode: A= Output, B= Input	2- Bit	CRWTU
<p>This object sends the positive drive information (2 bit) to operating mode "A". The object is assigned the group address of the positive drive object of the actuator.</p> <p>When using operating mode "B" this object is used as an input object to receiving 2 bit values.</p>				
9	Channel D: Binary	Input	1- Bit	CRWTU
<p>This input object receives the low bit (bit 0) to the operating mode "A" which defines the switching status of the actuator when the positive drive is active (object [10] is set to logic '1'). Simultaneously it is locked against manual local operations.</p>				
10	Channel D: Binary	Operating mode: A= Input, B= Output	1- Bit	CRWTU
<p>This input object receives the high bit (bit 1) to the operating mode "A". On a logic "0" the positive drive is deactivated, on a logic "1", the positive drive is activated.</p> <p>When using operating mode "B", this object is used to sending a 1 bit value to the switching object of an actuator that does not have a positive drive object. However, the actuator then cannot be locked against manual local operations.</p>				

Obj	Function	Object name	Type	Flags
11	Channel D: Positive drive	Operating mode: A= Output, B= Input	2- Bit	CRWTU

This object sends the positive drive information (2 bit) to operating mode "A". The object is assigned the group address of the positive drive object of the actuator.

When using operating mode "B" this object is used as an input object to receiving 2 bit values.

Maximum number of group addresses: 22
Maximum number of assignments: 22

Parameters

Channel A:

Channel A	Channel B	Channel C	Channel D
Operating mode	A: sending positive drive		
Operating mode A: Value on activated positive drive	via binary input		

Parameters	Settings
Operating mode	A: sending positive drive B: sending binary object
Operating mode A: Value on activated positive drive	This parameter rules the operating mode to channel A: "A: sending positive drive": On an active positive drive, i.e. when object [1] was set to logic '1', the output (object [2]) sends a 2 bit telegram via the bus to the positive drive object of the actuator. According to the switching status of object [0], or the parameter settings (see "Operating mode A: value at active pos. drive"), the actuator switches on or off as specified in the low bit (bit0). Simultaneously the actuator is locked against manual local operations.
Operating mode B: Value on activated positive drive	"B: sending binary object": When using this operating mode a 1 bit value is sent via object0 [1] on receiving a 2 bit value at object [2]. If the low bit (bit0) is set to logic "0", an "off" telegram is sent, on a logic "1" an "on" telegram is sent to the actuator.
Operating mode A: Value on activated positive drive	This operating mode is used to control actuators that do not have a technical drive. However, the actuator cannot be locked against manual local operation.
Operating mode A: Value on activated positive drive	via binary input '0' (Off) '1' (On)
Operating mode A: Value on activated positive drive	This parameter rules the switching status (bit0) of the low bit to the operating mode "A" which is the switching status the actuator will be set to while the positive drive is active. Telegrams received at output [0] are ignored.

The parameters of the channels B to D can be set accordingly.

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Examples

Example 1:

The lighting of a corridor is to be switched with a binary output. The lighting is to be operated via a push button single. In case of an overload it is to be switched off until the load returns to normal when the light is to be set the status (on/off) it was set to last before the overload occurred. Here, a push button 2-fold simulates the positive drive.

Employed devices:

- 1x push button single 5WG1 210-2AB11
- 1x push button 2-fold 5WG1 211-2AB11
- 1x logic module 5WG1 301-1AB01
- 1x binary output 5WG1 562-1AB01

Product	Program	Order number
Push button UP 210 /Ds/sg	10 S1 Off/On 210601	5WG1 210-2AB71
Push button UP 211 /Ds/tw	10 S2 Off/On 220202	5WG1 211-2AB11
Logic module N 301	12 CO Posdriv 740D01	5WG1 301-1AB01
Binary output GE 562 1x230V/6A	11 A1 Binary 510501	5WG1 562-4AB01

Required group addresses:

Address	Maingroup
0	Switch, push button single
1	Inputs, logic module
2	Positive drive

Parameter settings:

To this example, all four devices can be used in their default setting.

The corridor lighting can be switched on and off via the push button single only. The push button 2-fold now simulates the positive drive. The left rocker is to be used to entering the low bit (bit 0), the right rocker is used to entering the high bit (bit 1 = positive drive). While the upper switching point of the right rocker is not operated, the push button single can switch the corridor lighting. Once the positive drive is activated with the right rocker the status selected at the left rocker is immediately established at the actuator (binary output). Switch operations at the push button single are ignored and cannot change the actuator's switching status. To a better illustration of the switching status the push button LEDs were assigned the same group addresses as the rockers.

Push button single	Push button 2-fold left rocker (bit 1)	Push button 2-fold right rocker (bit 0)	Lighting (binary output)
Off	Off	Off	Off
Status after programming the application software.			
On	Off	Off	On
Positive drive inactive. Lighting can be switched on and off with the push button single.			
On	Off	On	Off
Positive drive active: The status defined by "bit 1" (here: "off") is established at the binary output, i.e. If the left rocker of the push button 2-fold is not operated, the lighting is switched off, although it was previously switched on with the push button single.			
On	On	On	On
Positive drive active: The status defined by "bit 1" (here: "off") is established at the binary output Now, the left rocker is operated sending a "1" ("on"). The lighting is switched on.			
Off	On	On	On
Positive drive active: The lighting cannot be switched off with the push button single. The logic module stores the switch off telegram to the binary output.			
Off	On	Off	Off
Positive drive inactive: As the logic module did store the "off" telegram, the lighting is switched off, once the positive drive is deactivated.			

In the example the lighting is switched Off on overload which can be achieved with the setting of line three from the above table. The push button single is set to "on", however, the binary output switches the lighting off, once the positive drive becomes activated with the right rocker of the push button 2-fold. The lighting is switched off because the left rocker sends an off signal (bit 1 = '0', bit 0 = '1'). When the load drops to normal (positive drive is deactivated), the lighting is switched according to the status at the push button single.

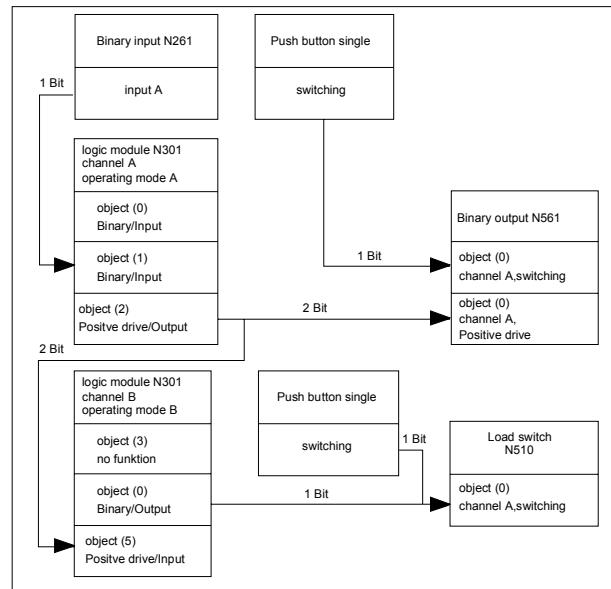
Assigned group addresses:

Push button UP 210 /Ds/sg	10 S1 Off/On 210601	5WG1 210-2AB71
2 not used	not used	1 Bit
3 not used	not used	1 Bit
4 Left	LEDs	0/1 1 Bit
5 Centre	LEDs	0/1 1 Bit
0 Top	Rocker	0/1 1 Bit
1 Bottom	Rocker	0/1 1 Bit
Push button UP 211 /Ds/tw	10 S2 Off/On 220202	5WG1 211-2AB11
0 Top	Left rocker	1/0 1 Bit
1 Bottom	Left rocker	1/0 1 Bit
4 Left	LEDs	1/0 1 Bit
2 Top	Right rocker	1/1 1 Bit
3 Bottom	Right rocker	1/1 1 Bit
5 Centre	LEDs	1/1 1 Bit

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Logic module N 301	12 CO Posdriv 740D01	5WG1 301-1AB01
3 Input	Channel B: Binary	1 Bit
4 Operating mode: A=input,...	Channel B: Binary	1 Bit
5 Operating mode: A=output,...	Channel B: Positive...	2 Bit
6 Input	Channel C: Binary	1 Bit
7 Operating mode: A=input,...	Channel C: Binary	1 Bit
8 Operating mode: A=output,...	Channel C: Positive...	2 Bit
9 Input	Channel D: Binary	1 Bit
10 Operating mode: A=input,...	Channel D: Binary	1 Bit
11 Operating mode: A=output,...	Channel D: Positive...	2 Bit
0 Input	Channel A: Binary 1/0	1 Bit
1 Operating mode: A=input,...	Channel A: Binary 1/1	1 Bit
2 Operating mode: A=output,...	Channel A: Positive/...	2 Bit
Binary output GE 562 1x230V/6A	11 A1 Binary	510501 5WG1 562-4AB01
0 Switch	Channel A	0/1
1 Positive drive	Channel A	2/0
		2 Bit

Example load reduction:



At the binary input N261 the NO contact of the relay to reducing load is connected.

In the above example, channel A of the logic module is set to operating mode "A" and the parameter "Operating mode A: status on active pos. drive" is set to "0 (Off)". Channel B is set to operating mode "B".

When object [1] receives a logic "1" from the binary input, the positive drive is activated and the load connected to binary output N561 is switched off by the positive drive. Simultaneously, channel B of the logic module sends a logic "0 (Off)" to the load switch which switches off any load connected to channel A. However, this load can be switched on again with the push button 2 even though the positive drive still is active. The load connected to the binary output cannot be switched on as output A was switched off via its positive drive object and immediately locked. Once the positive drive is deactivated, the previous status is re-established. Then, the binary output can be switched with the push button manually again.