Controlling Sleep Mode and the digital output on the SCALANCE WUM766-1 via TCP

SCALANCE WxM766-1 V1.1.0 or higher, SIMATIC S7-1500 CPU, SIMATIC S7-1200 CPU V4.0 or higher

https://support.industry.siemens.com/cs/ww/en/view/57249109

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1 Introduction

1.1 Overview

Starting point

The Sleep Mode function in conjunction with the digital input/output interface of the SCALANCE WxM766-1 facilitates targeted shutdown of mobile devices in the network.

TCP telegrams can trigger the Sleep Mode function as well as switch the digital output on or off.

Requirements

To save energy and increase the runtimes and maintenance cycles of battery-operated devices in an autonomous transport system (AGV), these devices should be turned off during non-production hours.

By shutting off the digital output or activating the Sleep Mode of the SCALANCE WxM76x-1, the energy consumption of an autonomous transport system (AGV) can be reduced significantly during non-production hours.

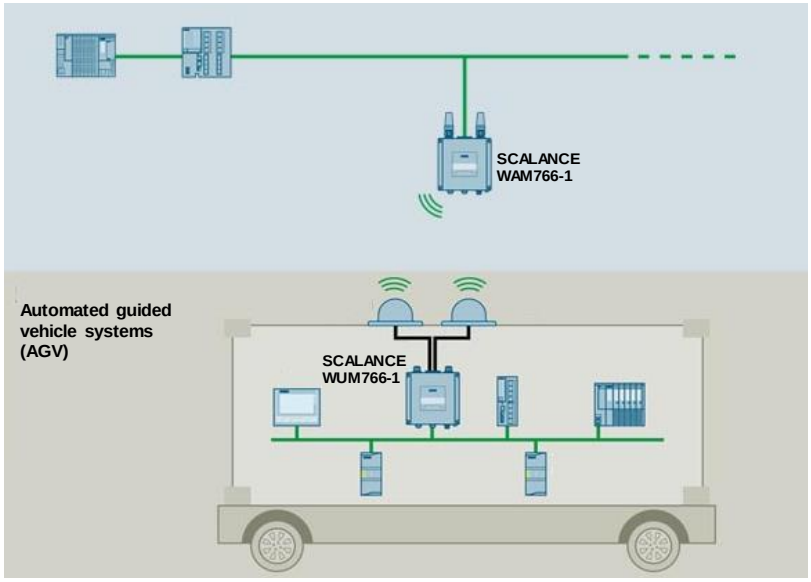
Table 1-1

AGV in non-production hours (depending on concept)	AGV in non-production hours Digital output is turned off (depending on configuration)	AGV in non-production hours Sleep Mode is activated (consumption of the SCALANCE W700)
Typically over 50 Watts	~ 6 Watts	15 mA, max. 0.3 Watts

With this goal in mind, an S7 CPU will either shut off the digital output of the SCALANCE WUM766-1 (Wi-Fi 6 client module) or WAM766-1 (Wi-Fi 6 access point in client mode) or enable Sleep Mode.

The following Figure provides an overview of the automation task.

Figure 1-1



Use case

The SCALANCE WxM766-1 device has a digital input/output and the Sleep Mode function.

This application example covers the following functionalities:

- Switching the digital output of the SCALANCE WxM766-1 (On/Off)
- Enabling the SCALANCE WxM766-1 Sleep Mode

Solution approach

The FB "DigOutSleepMode" enables a SIMATIC S7 CPU to switch off the digital output of the SCALANCE WxM766-1 or enable its Sleep Mode via TCP.

Applies to

This application example is valid for the following SCALANCE W devices:

Table 1-2

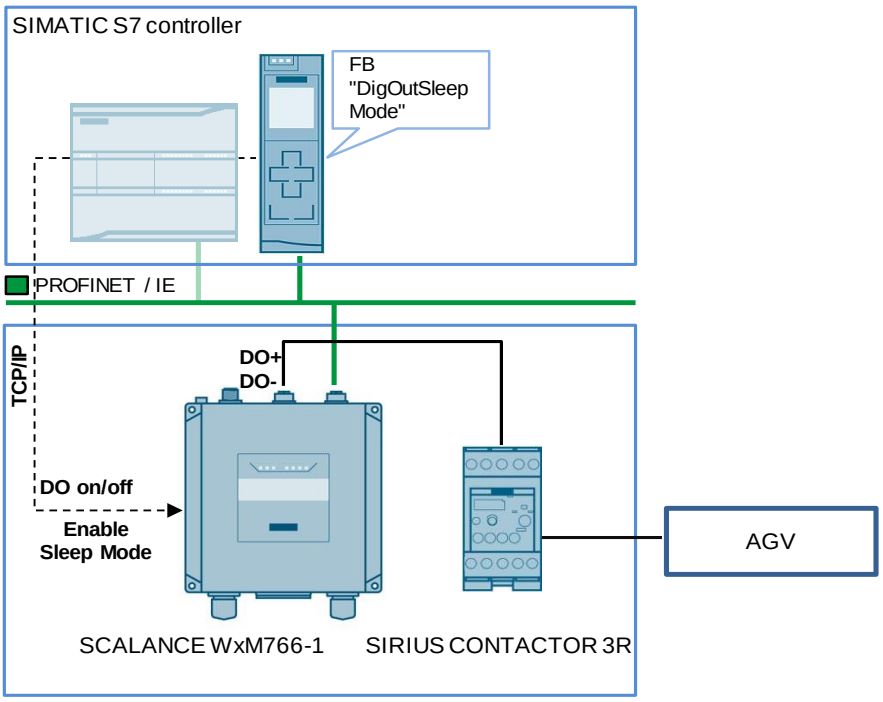
SCALANCE W	Switch digital output on/off	Activate Sleep Mode
SCALANCE WUM766-1, V1.1 6GK5766-1GE00-3DA0	x	x
SCALANCE WAM766-1, V1.1 (in client mode) 6GK5766-1GE00-7DA0	x	x
SCALANCE WUM763-1, 6GK5763-1AL00-3DA0	x	x
SCALANCE WAM763-1, 6GK5763-1AL00-7DA0	x	x
SCALANCE MUM856-1, V7.1 6GK5856-2EA00-3DA1	x	x
SCALANCE MUM853-1 6GK5853-2EA00-2DA1	x	x

1.2 Principle of operation

Diagram

The following Figure schematically illustrates the most important components of the solution:

Figure 1-2



Note

The communication between the CPU and the SCALANCE WxM766-1 can be implemented either over PROFINET or WLAN. If you are working with WLAN, enable WLAN on the SCALANCE WxM766-1 and establish a connection to the access point (e.g. a SCALANCE WAM766-1), which in turn is connected with the CPU.

An antenna must always be connected to the antenna connector on the SCALANCE WxM766-1 devices once the WLAN interface is switched on. Otherwise, transmission problems may occur.

Functionality

The Sleep Mode function of the SCALANCE WxM766-1 is triggered with TCP telegrams; its digital output can also be switched on or off in this manner.

A command should be sent over TCP to the SCALANCE WxM766-1 with a certain format:

- Switch off digital output

  Username#Password#106#2:

- Switch on digital output

  Username#Password#106#1:

- Enable Sleep Mode function

  Username#Password#107#1;x:

  x: Duration of Sleep Mode function in minutes.

Authorization is accomplished by comparing the user credentials (see Username and Password for the TCP event in the WBM, chapter 2.4).

If the inbound TCP telegram contains conformant data, the command it contains will be executed:

1. Switch off digital output:

   A component (e.g. a contactor) will be triggered to disable the power supply for the AGV components.

   The SCALANCE WxM766-1 remains the only active component and ensures communication with the network.

2. Activate Sleep Mode:

   The SCALANCE WxM766-1 is inactive. It will switch to the previous state after the programmed time expires.

   When Sleep Mode is activated, all processes such as firmware updates will be aborted.

1.3 Components used

The following hardware and software components were used to create this application example:

Table 1-3

Component	Quantity	Item number	Note
SIMATIC PM1507/1AC/DC24V/3A	1	6EP1332-4BA00	Regulated power supply for SIMATIC S7-1500
SIMATIC S7-1500 CPU 1511-1 PN	1	6ES7511-1AK01-0AB0	A different SIMATIC S7-1500 CPU or SIMATIC S7-1200 CPU of version V4.0 or highercan also be used.
SCALANCE WUM766-1 V1.1.0 or higher	1	6GK5766-1GE00-3DA0	Wi-Fi 6 client module. A different SCALANCE device can also be used (Table 1-2): • a SCALANCE WAM766-1 V1.1 or later in client mode • a SCALANCE WxM763-1 • a SCALANCE MUM856-1 V7.1 or later. **WxM766-1 Firmware V1.1.0 download:** https://support.industry.siemens.com/cs/ww/en/view/109802059) **SCALANCE MUM856-1 Firmware V7.1 download:** https://support.industry.siemens.com/cs/ww/en/view/109807276
Industrial Ethernet cable IE TP Cord M12-180/ RJ45-180	1	6XV1878-5TH20	For the communication between the controller and the SCALANCE WUM766-1
Digital input/output cables or Digital input/output M12 plug-in connector	1	6XV1801-2CE50	For connecting to the contactor
	1	6GK1908-0DB10-6AA0	
M12 power plug-in cable	1	6XV1801-6D*	For connecting to the power supply

Component	Quantity	Item number	Note
IWLAN antenna ANT795-6MN (optional for this application example)	1	6GK5795-6MN10-0AA6	An antenna must always be connected to the antenna connector on the SCALANCE WxM766-1 once the WLAN interface is switched on. Otherwise, transmission problems may occur.
SIRIUS 3R CONTACTOR	1	3RT1016-1BB41	For disabling the power supply for the AGV components.
STEP 7 V17 Professional or STEP 7 V18 Professional	1	6ES7822-1AA07-0YA5 6ES7822-1AE08-0YA5	

This application example consists of the following components:

Table 1-4

Component	File name
Project	• TIA Portal V17 project: 57249109_DigOut_SleepMode_TCP_PROJ_V17_V20.zip • TIA Portal V18 project: 57249109_DigOut_SleepMode_TCP_PROJ_V18_V20.zip
Documentation	57249109_DigOut_SleepMode_TCP_DOC_V20_en.pdf

2 Engineering

2.1 Overview

Introduction

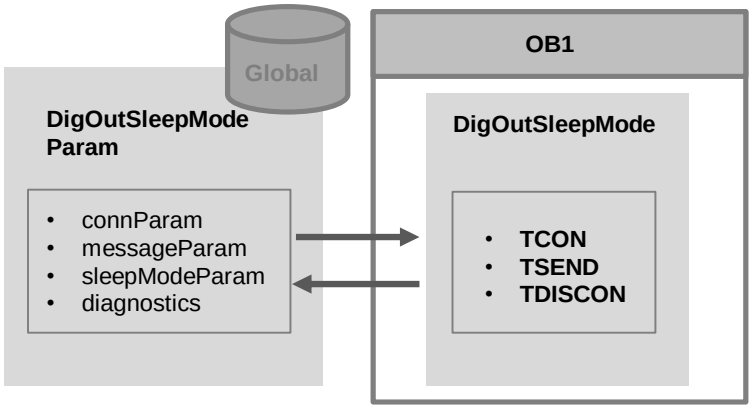
The STEP 7 V17 project contains:

- the user program for the S7 CPU with the "DigOutSleepMode" function block:
  - establishes connection between S7 CPU and the SCALANCE WxM766-1
  - sends the TCP telegrams for switching the digital output on/off and enabling the Sleep Mode function of the SCALANCE WxM766-1
  - terminates the connection after successfully sending the TCP telegram.
- the configuration of the SIMATIC S7 CPU for this hardware setup.

Diagram

The following graphic shows the program structure.

Figure 2-1



Program blocks

The user program of the SIMATIC S7-1500 CPU consists of the following elements:

Table 2-1

Element	Symbolic name	Description
OB1	Main	In OB1, the "DigOutSleepMode" function block, including the associated instance data block, is called cyclically.
FB1	"DigOutSleepMode"	The "DigOutSleepMode" function block does the following: • establishes the connection between S7 CPU and the SCALANCE WxM766-1 • sends the TCP telegrams for - switching the digital output of the SCALANCE WxM766-1 on/off and - enabling the Sleep Mode function of the SCALANCE WxM766-1 • terminates the connection after successfully sending the TCP telegram • outputs status and error messages from the block.
DB1	"InstDigOutSleepMode"	Instance data block of the function block "DigOutSleepMode"
DB2	"DigOutSleepModeParam"	Global data block for storing • all necessary parameters for switching the digital output on/off and enabling the Sleep Mode function of the SCALANCE WxM766-1 • the status of the function block "DigOutSleepMode"
OUC Instructions	"TCON"	Establish communication connection
	"TSEND"	Send data over the communication connection
	"TDISCON"	Terminate communication connection
PLC data types	"typeParam"	Data type for storing all necessary parameters for switching the digital output on/off and activating the Sleep Mode function: • typeConnParam • typeMessageParam • typeSleepModeParam
	"typeConnParam"	Data type for storing the parameters necessary for establishing the communication connection: • hwIdentifier • conId • ipAddress • remotePort

Element	Symbolic name	Description
PLC data types	"typeMessageParam"	Data type for storing the parameters necessary for the TCP telegram: • userName • password
	"typeSleepModeParam"	Data type for storing the parameters for activating the Sleep Mode function: • time (in minutes) • estTime
	"typeDiagnostics"	Data type for storing the error messages that occur in the "DigOutSleepMode" function block: • status: last status code of the interface parameter "status" of the FB • subfunctionStatus: Status or returned value from internal commands or FBs where an error occurred. For detailed information, refer to the Online Help for the instruction in question, or the documentation of the FB. • stateNumber: State of the FB's state machine in which the error occurred.

2.2 "DigOutSleepMode" function block

The "DigOutSleepMode" function block contains all functionalities for communicating with the SCALANCE WxM766-1.

The "DigOutSleepMode" function block is a custom development for this application example and is already integrated in the STEP 7 project so that you can adapt it to your requirements.

It is called cyclically in OB1 and in turn automatically calls the OUC instructions "TCON", "TSEND" and "TDISCON".

Function

The "DigOutSleepMode" function block does the following:

- establishes connection between S7 CPU and the SCALANCE WxM766-1
- structures the TCP telegrams
- sends the TCP telegrams for switching the digital output on/off and enabling the Sleep Mode function of the SCALANCE WxM766-1
- terminates the connection after successfully sending the TCP telegram
- outputs status and error messages from the block.

This functionality is implemented as a simple sequencer with the following states:

Figure 2-2

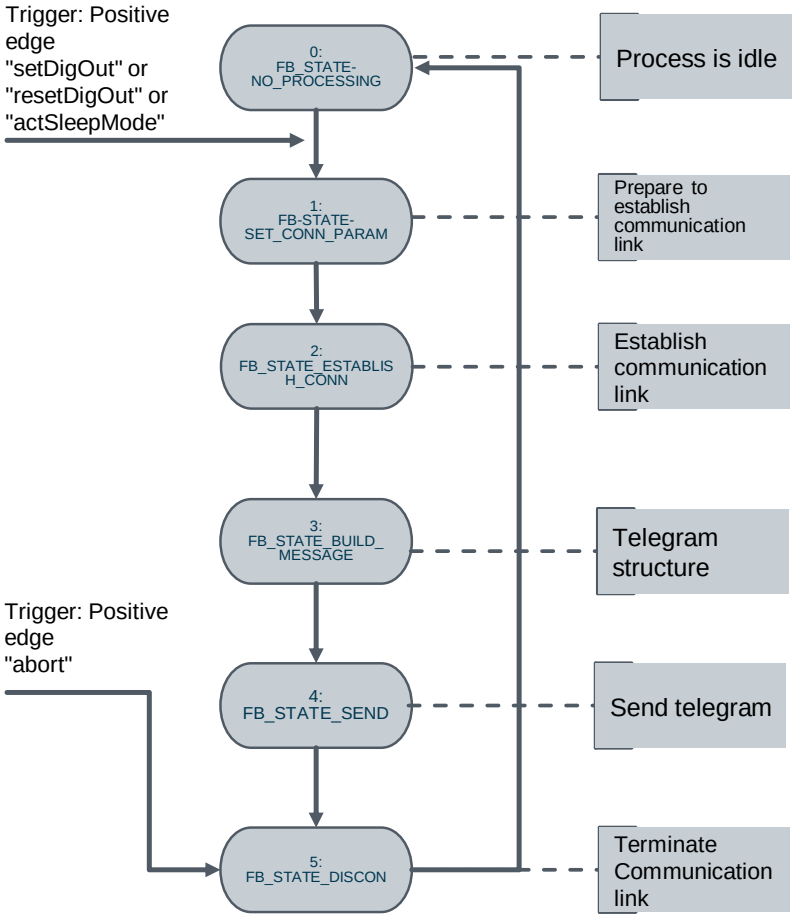


Table 2-2

Status		Description
0	FB_STATE_NO_PROCESSING	Idle process: The process is in idle mode and is waiting for inputs.
1	FB_STATE_SET_CONN_PARAM	Sets all necessary parameters for establishing the communication connection between the S7 CPU and the SCALANCE WxM766-1.
2	FB_STATE_ESTABLISH_CONN	Calls the OUC instruction "TCON" for establishing the communication connection between the S7 CPU and the SCALANCE WxM766-1.
3	FB_STATE_BUILD_MESSAGE	Structure of the telegram: • Switch off digital output **Username#Password#106#2:** • Switch on digital output **Username#Password#106#1:** • Enable Sleep Mode function **Username#Password#107#1;x:** x: Duration of Sleep Mode function in minutes.
4	FB_STATE_SEND	Calls the OUC instruction "TSEND" for sending the telegram to the SCALANCE WxM766-1.
5	FB_STATE_DISCON	Calls the OUC instruction "TDISCON" for terminating the communication connection between the S7 CPU and the SCALANCE WxM766-1.

Parameters

The Figure and Table below show the call interface of the function block "DigOutSleepMode".

Figure 2-3

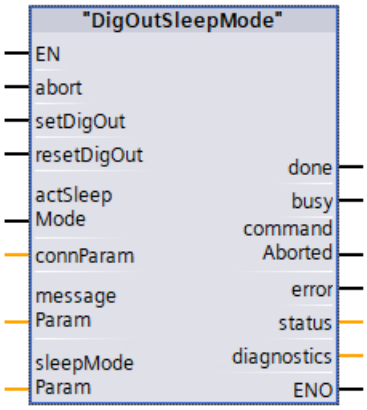


Table 2-3

Symbol	Data type	Description
EN	BOOL	Enable input. Only relevant in FDP and LAD view
abort	BOOL	Aborts the command running in the function block.
setDigOut	BOOL	• Switches on the digital output of the SCALANCE WxM766-1. • Reacts to positive edge. • The process is only activated when the inputs "abort", "resetDigOut" and "actSleepMode" are FALSE.
resetDigOut	BOOL	• Switches off the digital output of the SCALANCE WxM766-1. • Reacts to positive edge. • The process is only activated when the inputs "abort", "setDigOut" and "actSleepMode" are FALSE.
actSleepMode	BOOL	• Enables the Sleep Mode function of the SCALANCE WxM766-1. • Reacts to positive edge. • The process is only activated when the inputs "abort", "setDigOut" and "resetDigOut" are FALSE.
connParam	"typeConnParam"	Stores the required parameter for establishing the communication connection: • hwIdntifier Hardware identifier of the local interface • conId Reference to the connection • ipAddress IP address of the connection partner (SCALANCE W device) • remotelPort Port number of the connection partner

Symbol	Data type	Description
messageParam	"typeMessageParam"	Stores the required parameters for the structure of the TCP telegram: • userName User name for the TCP event • password Password for the TCP event
sleepModeParam	"typeSleepModeParam"	Stores the required parameters for activating the Sleep Mode function: • time (in minutes) Duration of the Sleep Mode function • estTime Remaining time of the Sleep Mode function:
done	BOOL	• The process has been completed successfully. • If "setDigOut", "resetDigOut" and "actSleepMode" are reset, then "done" will also be reset.
busy	BOOL	• The "DigOutSleepMode" function block is active. • If the process is completed or aborted, or if an error occurs, "busy" will be reset.
commandAborted	BOOL	• The current command of the function block will be canceled with "abort". • If "setDigOut", "resetDigOut" and "actSleepMode" are reset, "commandAborted" will also be reset.
error	BOOL	• Set if the "DigOutSleepMode" function block terminated with errors. • The error must be remedied by the user. • If "setDigOut", "resetDigOut" and "actSleepMode" are reset, "error" is also reset.
status	WORD	• Status of the instruction • Error information ("error"=true)
diagnostics	"typediagnostics"	Error message that appears in the "DigOutSleepMode" function block: • status: last status code of the interface parameter "status" of the FB. • subfunctionStatus: Status or returned value from internal commands or FBs where an error occurred. For detailed information, refer to the Online Help for the instruction in question, or the documentation of the FB.

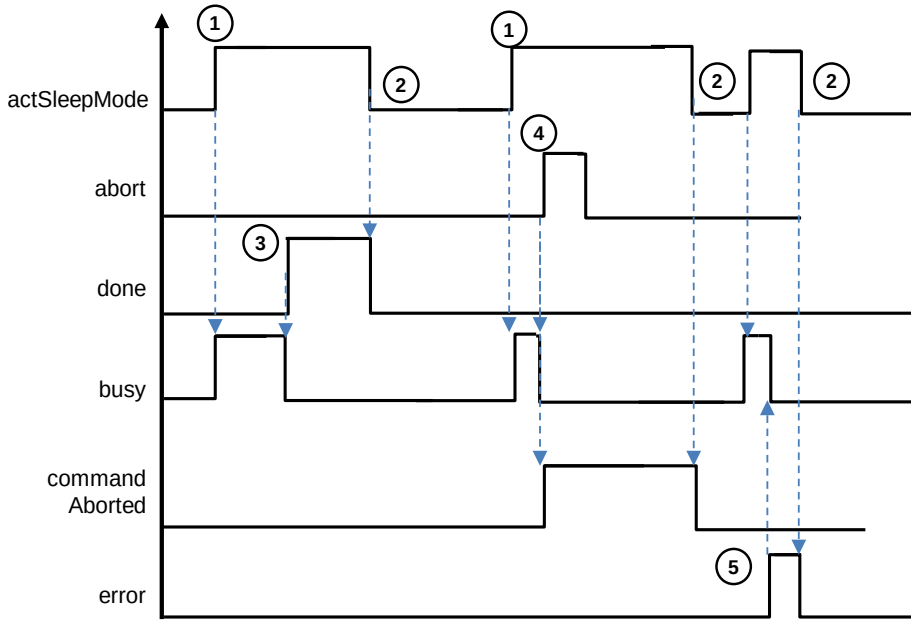
Symbol	Data type	Description
		• stateNumber: State of the FB's state machine in which the error occurred.

Signal flow chart

The following Figure shows the signal flow chart for the "DigOutSleepMode" function block for the Sleep Mode function.

The signal flow charts for switching the digital output on and off are identical.

Figure 2-4



1. A positive edge at "actSleepMode" sets "busy"; "error", "done" and "commandAborted" are reset.
2. If "actSleepMode" is FALSE, "busy" and "commandAborted" are reset.

   The pending error, which must be remedied by the user, can only be cleared with a falling edge at "actSleepMode".
3. Sleep Mode is activated after the TCP telegram is sent successfully. Once the time duration expires, Sleep Mode will be deactivated; "done" will be set and "busy" will be reset.
4. A positive edge at "abort" sets "commandAborted" and resets "busy". The current command of the function block is aborted.
5. With "error" equal to TRUE, "busy" is reset and all functionalities of the "DigOutSleepMode" function block are stopped.

2.3 "DigOutSleepModeParam" global data block

The "DigOutSleepMode" DB contains:

1. the PLC data type "typeParam":

   The parameter "param" serves to store all the required parameters for establishing the communication connection, structuring the TCP telegram, and activating the Sleep Mode function:

   - "typeConnParam"

     hwIdntifier

     Hardware identifier of the local interface.

     conId

     Reference to the connection.

     ipAddress

     IP address of the connection partner (SCALANCE W device)

     remotelPort

     Port number of the connection partner.

   - "typeMessageParam"

     userName

     User name for the TCP event

     password

     Password for the TCP event

Note These values must match the configuration of the SCALANCE WxM766-1.

   - "typeSleepModeParam"

     time

     Duration of the Sleep Mode function (in minutes)

     estTime

     Remaining time of the Sleep Mode function

Note After the sleep mode (status= 16#0002) has expired, the SCALANCE WxM76x-1 devices need approx. 45 seconds to boot up again. Only after the additional start-up time are the SCALANCE devices fully operational again (status= 16#0005).

2. the PLC data type "typeDiagnostics":

   The "diagnostics" output parameter of the "DigOutSleepMode" function block helps store error information and requires the "typeDiagnostics" data type as a PLC data type:

   - status:

     Last status code of the interface parameter "status" of the FB

   - subfunctionStatus:

     Status or returned value from internal instructions or FBs where an error occurred. For detailed information, refer to the Online Help for the instruction in question, or the documentation of the FB.

   - stateNumber:

     State of the FB's state machine in which the error occurred,

3. the "interface" PLC tags for calling the function block "DigOutSleepMode" in OB1.

Figure 2-5

DigOutSleepModeParam

	Name	Data type	
1	Static		
2	param	"typeParam"	
3	connParam	"typeConnParam"	
4	hwIdentifier	HW_ANY	
5	connId	Word	
6	ipAddress	IP_V4	
7	ADDR	Array[1..4] of Byte	
8	remotePort	UInt	
9	messageParam	"typeMessageParam"	1
10	userName	String[30]	
11	password	String[30]	
12	sleepModeParam	"typeSleepModeParam"	
13	time	String[10]	
14	estTime	Time	
15	status	"typeDiagnostics"	
16	status	Word	
17	subfunctionStatus	Word	
18	stateNumber	DInt	2
19	interface	Struct	
20	abort	Bool	
21	setDigOut	Bool	
22	resetDigOut	Bool	
23	sleepMode	Bool	
24	done	Bool	3
25	busy	Bool	
26	commandAborted	Bool	
27	error	Bool	
28	status	Word	

2.4 Configuring the SCALANCE WxM766-1

In order for the S7 CPU to send TCP telegrams to the WxM766-1, you must make the following settings via the web-based management of the SCALANCE WxM766-1:

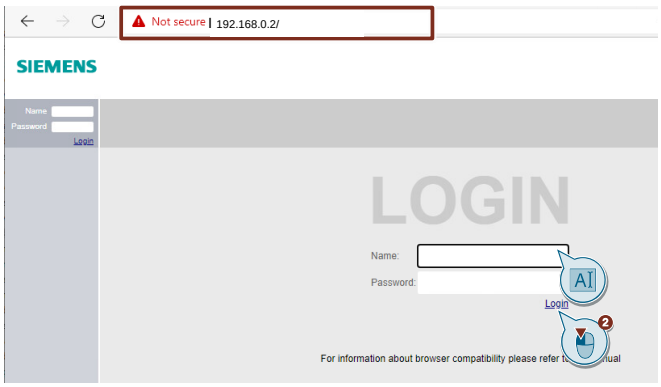
- Enable TCP event
- Enter user name for the TCP event
- Enter password for the TCP event
- Enter port number
- Enable "Digital output" event
- Enable "Sleep Mode" event.

Note General information on configuring the SCALANCE WxM766-1 can be found in the configuration manual for the SCALANCE W700 devices.

https://support.industry.siemens.com/cs/ww/en/view/109797832

The SCALANCE devices are configured via the web-based management:

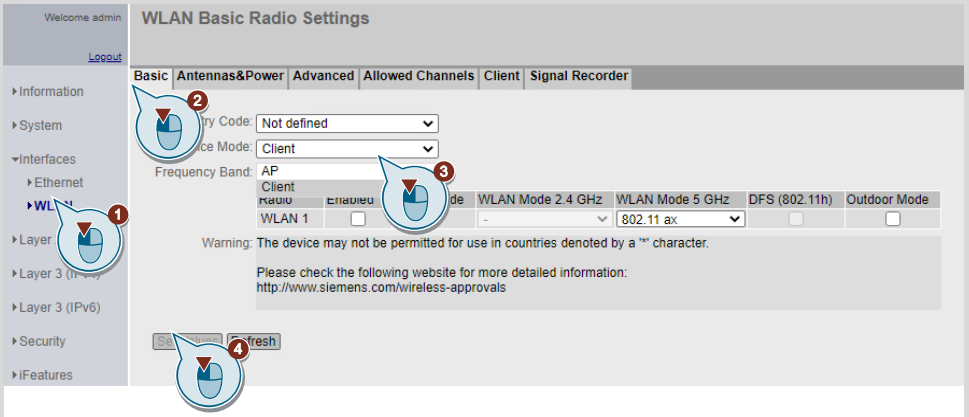
1. Open an internet browser and enter the IP address of the SCALANCE WxM766-1 (192.168.0.2) in the address bar.
2. Log in as an administrator.



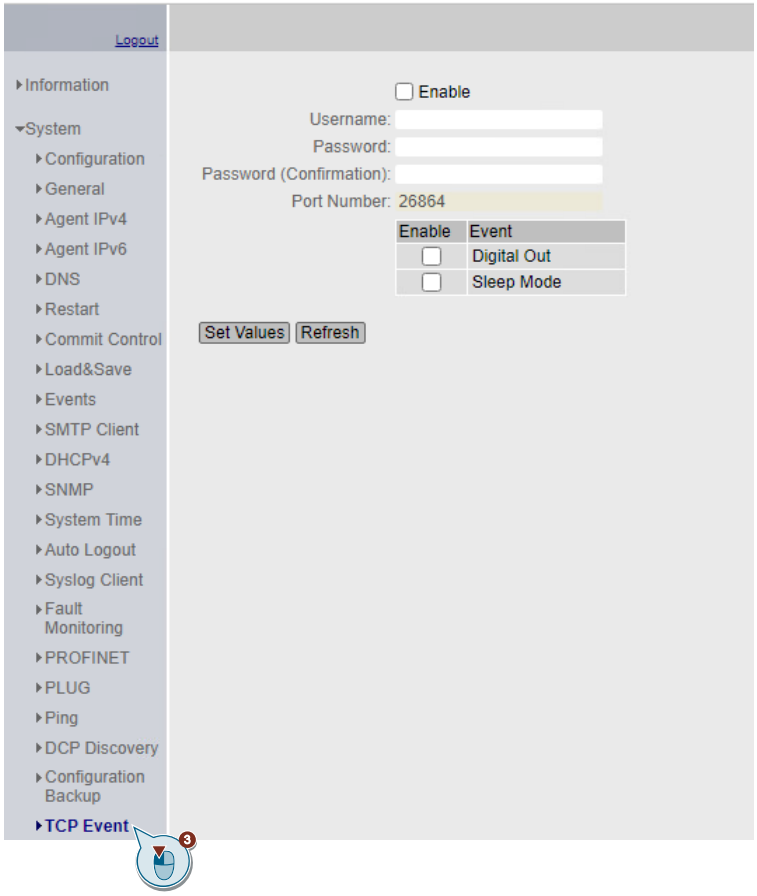
Note When you log in for the first time, you will be prompted to change the password "admin" for the "admin" user.

Note

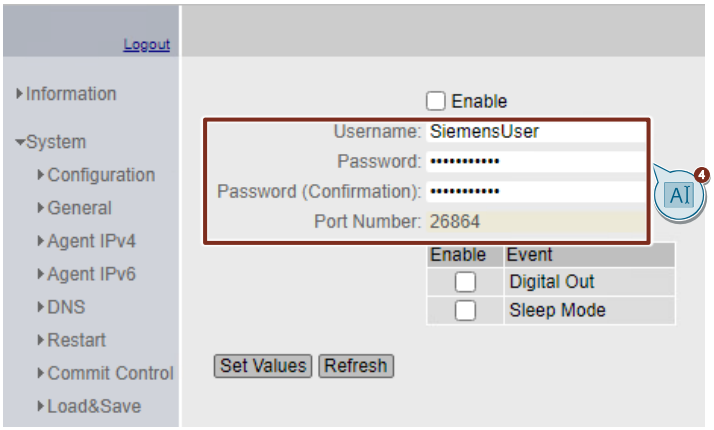
If you use a WAM766-1 (access point) in client mode, you must first change the operating mode of the device.



3. Go to the menu "System > TCP Event".



4. Enter the user name, password and port number for the TCP event:

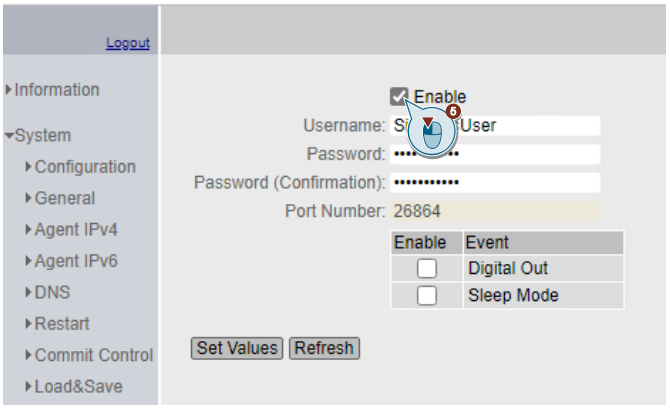


Note

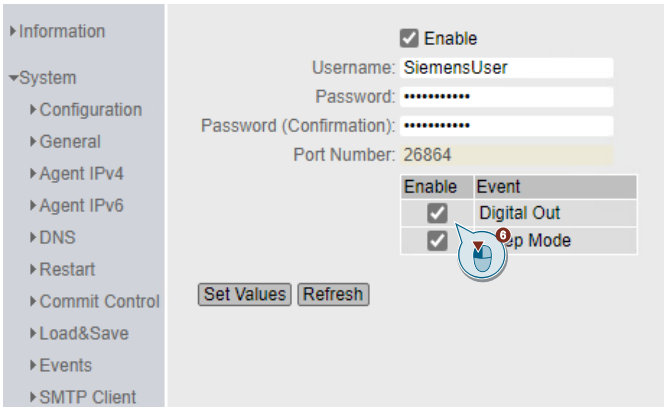
You need the user name and the password for various commands in the TCP/IP telegram in the following format:

- Switch off digital output
  Username#Password#106#2:
- Switch on digital output
  Username#Password#106#1:
- Enable Sleep Mode function
  Username#Password#107#1;x:

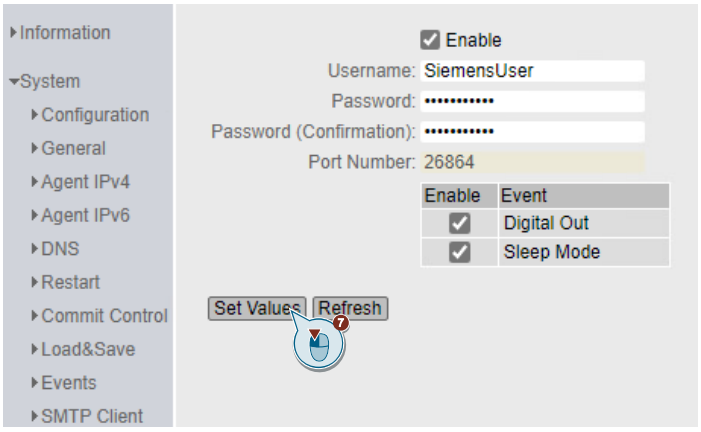
5. Enable the TCP event.



6. Enable the events "Dig Out" and "Sleep Mode".



7. Apply the change with "Set Values".



2.5 Diagnostics and error messages

The "DigOutSleepMode" function block provides the status of the instruction via the "status" output parameter. In the event of an error, it sends various error messages via the output parameters "status" and "diagnostics".

Status of the instruction

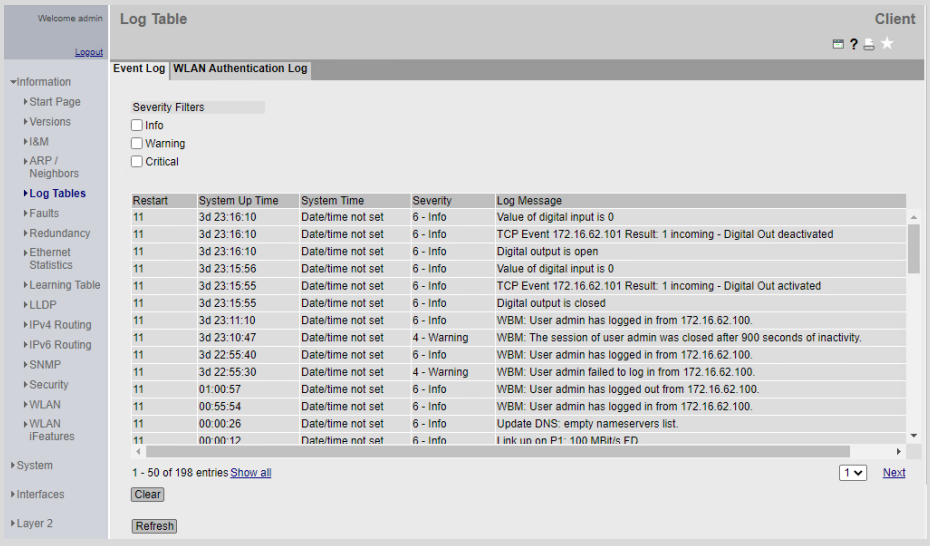
The following Table provides an overview of the instruction status.

Table 2-4

"status"	Meaning
16#7000	No job processing active.
16#7001	Initial call when job is started.
16#7002	Second call when job is started.
16#7003	Currently running functionality is aborted.
16#7004	The Sleep Mode function has been activated.
16#7FFF	The currently running functionality has been aborted.
16#0002	The Sleep Mode function has been deactivated.
16#0003	The digital output has been switched on.
16#0004	The digital output has been switched off.
16#0005	The SCALANCE WxM76x-1 booted up after sleep mode and is fully functional again.

Note

Information on the events that occur in the SCALANCE WxM766-1 can be found in the event log table in the device's WBM.



Error messages

The following Table provides an overview of the error messages from the "DigOutSleepMode" function block.

Table 2-5

"status"/ "diagnostics.status"	Meaning
16#8600	Error message due to an undefined state in the state machine.
16#8601	"TCON" error The status or returned value of the internal instruction can be found in the tag <diagnostics.subfunktionStatus>.
16#8602	"TSEND" error The status or returned value of the internal instruction can be found in the tag <diagnostics.subfunktionStatus>.
16#8603	"TDISCON" error The status or returned value of the internal instruction can be found in the tag <diagnostics.subfunktionStatus>.

The Table below shows the status or returned value of the internal OUC instruction "TCON", "TSEND" and "TDISCON".

Table 2-6

"status"/ "subFunctionStatus"	Meaning
16#80xx	Error messages that occurred in the internal OUC instructions "TCON", "TSEND" and "TDISCON". **Note:** For detailed information, refer to the Online Help for the instruction in question.

3 Installation and commissioning

3.1 Hardware setup

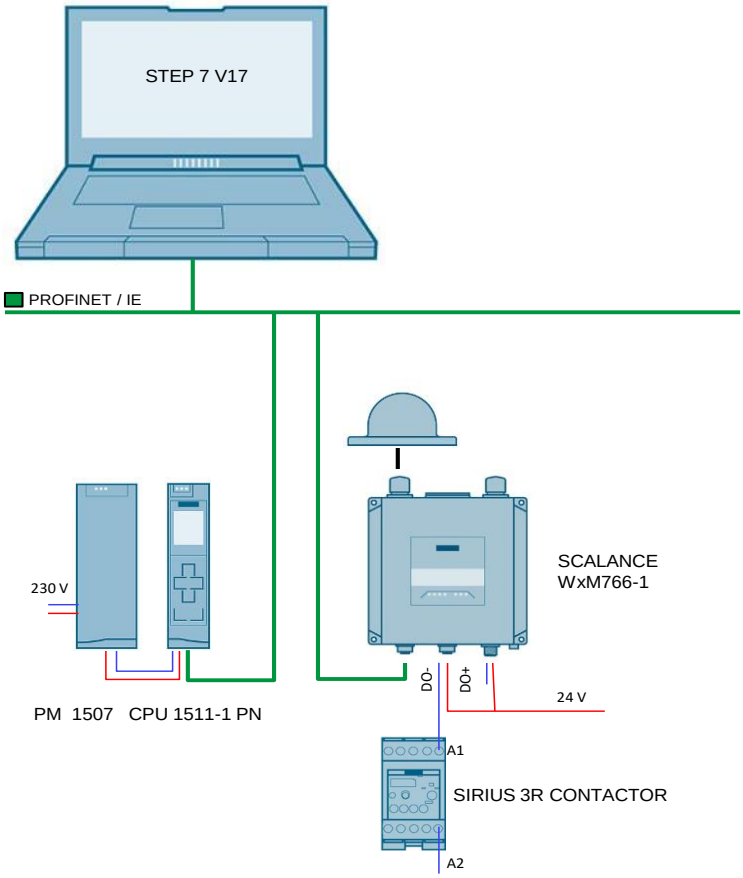
Chapter 1.3 lists the required hardware components.

ATTENTION	**The S7-1500 and SCALANCE WxM766-1 installation guidelines must be observed. Please read the corresponding device manuals.** https://support.industry.siemens.com/cs/ww/en/view/109752841 https://support.industry.siemens.com/cs/ww/en/view/109799201

ATTENTION	**Only switch on the power supply after you have completed and checked the assembly!**

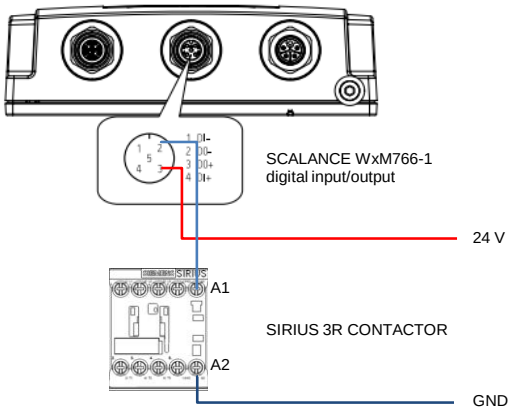
The following graphic shows the hardware setup of the application.

Figure 3-1



1. Plug the individual hardware components from Table 1.3 into a suitable component rack.
2. Connect the PM 1507 to the power supply. Ensure the polarity is correct.

3. Connect the following devices together:
   - PROFINET port of the engineering station with the PROFINET port of the CPU
   - PROFINET port of the SCALANCE WxM766-1 with the second PROFINET port of the CPU
4. Connect the contactor with the digital output of the SCALANCE WxM766-1.



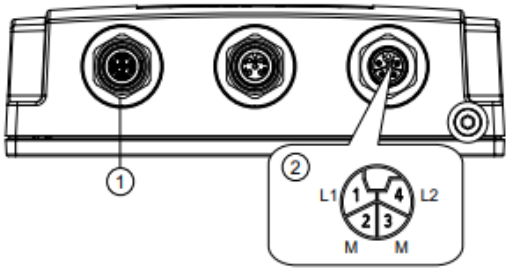
5. Connect the CPU 1511-1 PN and the SCALANCE WxM766-1 to the PM 1507.

Power supply – position and pinout

There are two options for the power supply:

1. Power over Ethernet via the 8-pin M12 Ethernet interface P1 (position 1, Figure 3.3). The power supply cannot be connected redundantly.
2. Direct feed via the 4-pin M12 connection socket (position 2). The power supply can be connected redundantly. The L1/L2 inputs are decoupled. There is no distribution of load. The power supply unit with the higher output voltage supplies the device alone.

Figure 3-2



The four-pin M12 socket has the following pinout:

Table 3-1

Pin	Signal	Function
1	L1+	DC 24 V
2	M	GND
3	M	GND
4	L2+	DC 24 V

Ethernet – position and pinout

The device has an M12 port for connecting to Industrial Ethernet with 10/100/1000 MBit/s: X-coded, 8-pin.

Power over Ethernet can also be supplied through this port.

Figure 3-3

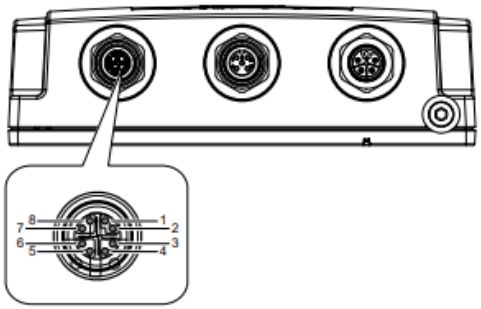


Table 3-2

Pin	Description
1	D0+
2	D0-
3	D1+
4	D1-
5	D3+
6	D3-
7	D2-
8	D2+

Digital input/output – position and pinout

The device has a digital input and output (M12, A-coded).

Figure 3-4

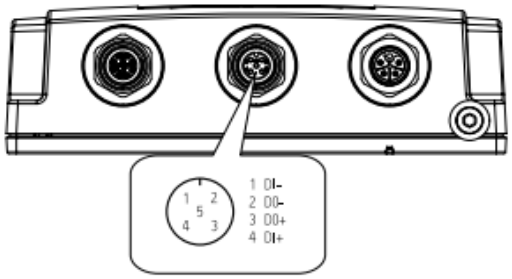


Table 3-3

Pin	Signal	Function
1	DI-	Input Chassis ground
2	D0-	Relay DC 24 V / 0.5 A
3	D0+	Relay DC 24 V / 0.5 A
4	DI+	DC 24 V
5	NC	Not connected

ATTENTION	**Material damage due to voltage that is too high or too low** The voltage of the digital input/output must not exceed DC 30 V and must not fall below DC -30 V; otherwise, the digital input/output will be destroyed.

The following table provides an overview of all IP addresses used in this example. Assignment of static IP addresses is assumed.

Table 3-4

Component	IP address	Description
SIMATIC S7 CPU	192.168.0.1	CPU 1511-1 PN
SCALANCE W device:	192.168.0.2	Wi-Fi 6 client module SCALANCE WUM766-1 Or Wi-Fi 6 access point SCALANCE WAM766-1 in client mode
Engineering station	192.168.0.10	STEP 7 V17

The subnet mask in all network components is 255.255.255.0.

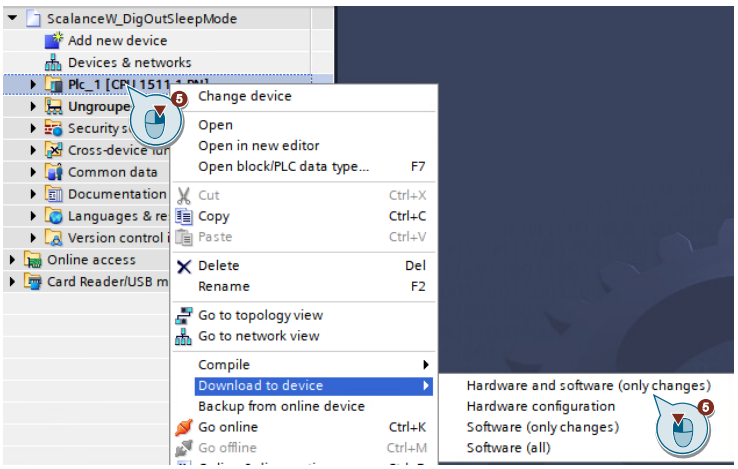
Note Adjust the IP addresses of the components in your project so that they are on the same subnet.

3.2 Loading the STEP 7 program

Proceed as follows to load the STEP 7 program:

1. Extract the STEP 7 V17 project "57249109_DigOut_SleepMode_TCP_PROJ_V10.zip".
2. Start TIA Portal V17.
3. Open the project "ScalanceW_DigOutSleepMode.ap17".
4. Connect the Ethernet port of the programming computer with the Ethernet port of the S7-1500 CPU.
5. Load the configuration "Plc_1".

   To do this, right-click the device in the project tree and select the menu "Download to device > Hardware and software (only changes)".



4 Operation

Introduction

In this chapter, you will learn how to operate the functions of this application example:

- Switch on the digital output of the SCALANCE WxM766-1
- Switch off the digital output of the SCALANCE WxM766-1
- Activate Sleep Mode function of the SCALANCE WxM766-1

Procedure

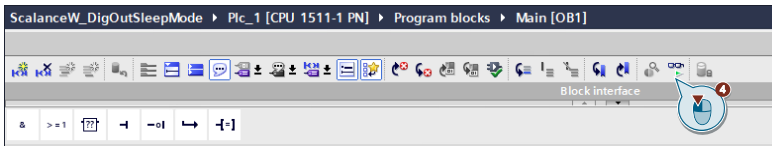
1. Open the global DB "DigOutSleepModeParam".
2. Populate all necessary parameters for sending the TCP telegram with values:
   - hwIdentifier
   - ipAddress
   - remotePort
   - userName
   - password
   - time (in minutes)

Note The parameters "remotePort", "password" and "userName" must match the configuration of the SCALANCE WxM766-1.

DigOutSleepModeParam

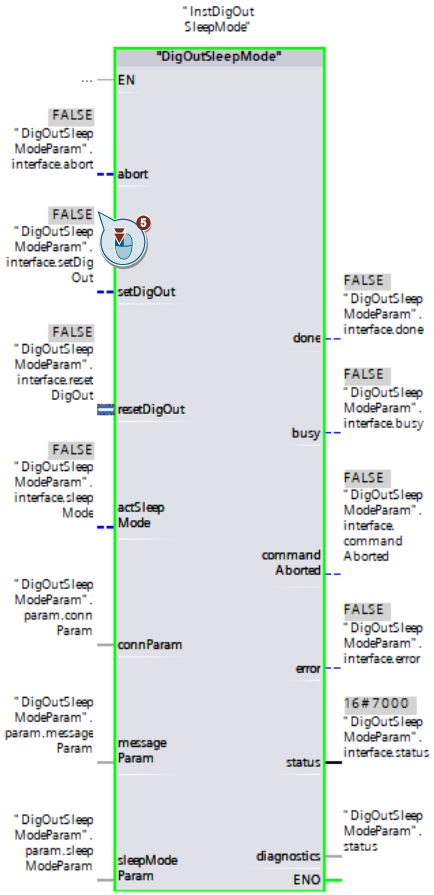
	Name	Data type	Start value
1	Static		
2	param	"typeParam"	
3	connParam	"typeConnParam"	
4	hwIdentifier	HW_ANY	64
5	connId	Word	16#1
6	ipAddress	IP_V4	
7	ADDR	Array[1..4] of Byte	
8	ADDR[1]	Byte	192
9	ADDR[2]	Byte	168
10	ADDR[3]	Byte	0
11	ADDR[4]	Byte	2
12	remotePort	UInt	26864
13	messageParam	"typeMessageParam"	
14	userName	String[30]	'SiemensUser'
15	password	String[30]	'Siemens123!'
16	sleepModeParam	"typeSleepModePar...	
17	time	String[10]	'1'
18	estTime	Time	T#0ms
19	status	"typeDiagnostics"	
20	interface	Struct	

3. Save and compile the global DB "DigOutSleepModeParam".
4. Open and activate OB1.



Switch on digital output

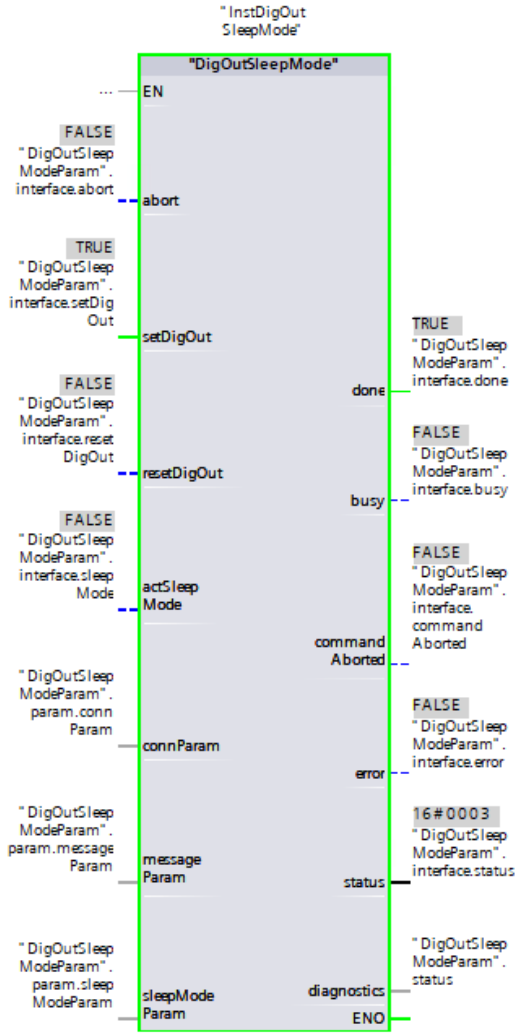
5. In Network 1, enable the input "setDigOut" of "DigOutSleepMode" to switch on the digital output.



Note

Switching on of the digital output is only enabled if the inputs "abort", "resetDigOut" (trigger for switching off the digital output) and "actSleepMode" (trigger for activating the Sleep Mode function) are FALSE.

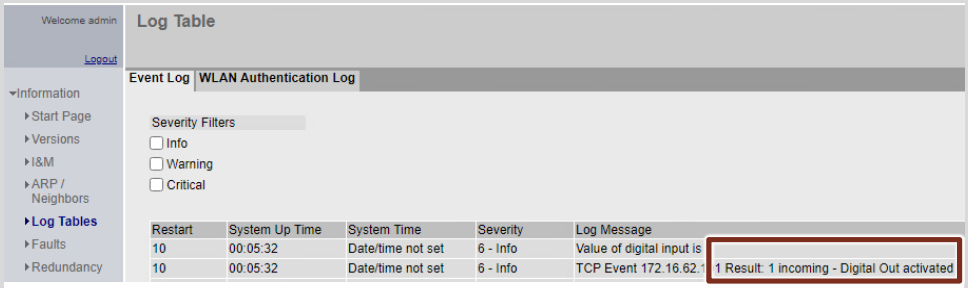
6. Observe the output parameters "done" and "status":



- "done" =TRUE
  The process has been completed successfully.
- status=16#0003
  The digital output has been switched on.

Note

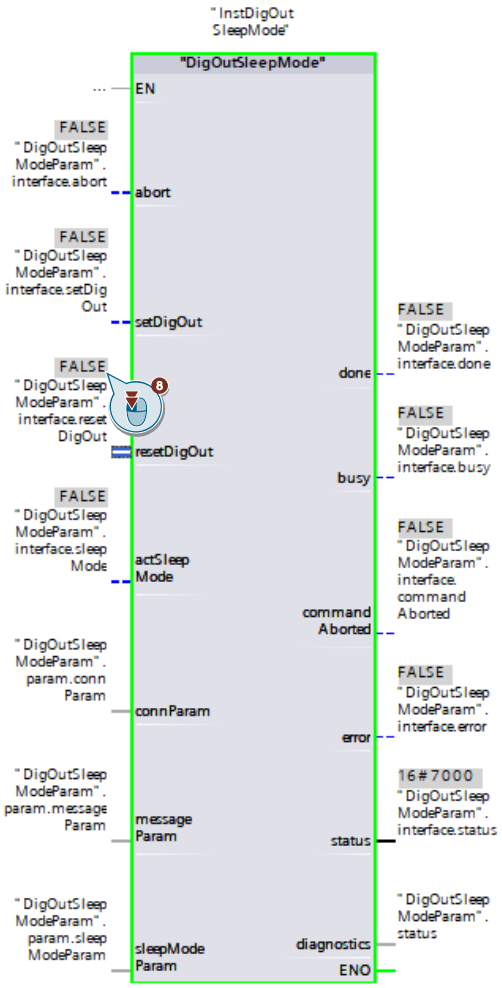
The event log table in the WBM of the SCALANCE WxM766-1 provides you with further information about the event that occurs.



7. Reset the input "setDigOut".

Switch off digital output

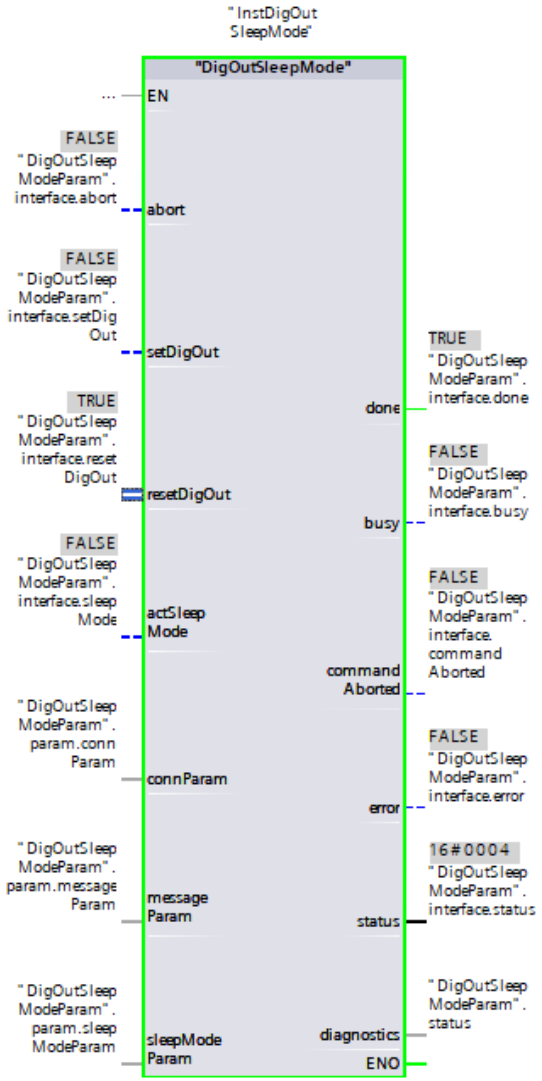
8. In Network 1, enable the input "resetDigOut" of "DigOutSleepMode" to switch off the digital output.



Note

Switching off the digital output is only enabled when the inputs "abort", "setDigOut" (trigger for switching on the digital output) and "actSleepMode" (trigger for activating the Sleep Mode function) are FALSE.

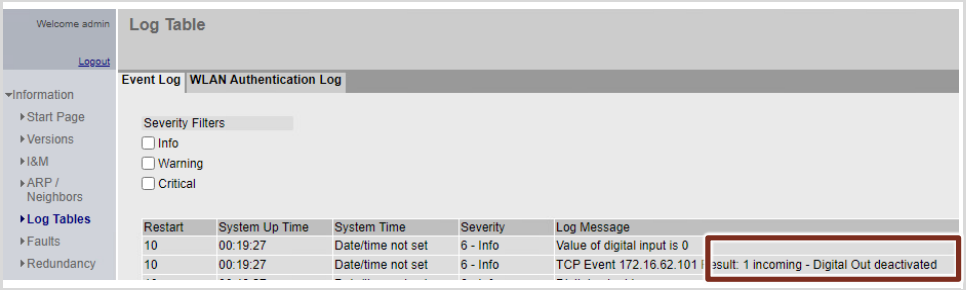
9. Observe the output parameters "done" and "status":



- "done" =TRUE
  The process has been completed successfully.
- status=16#0004
  The digital output has been switched off.

Note

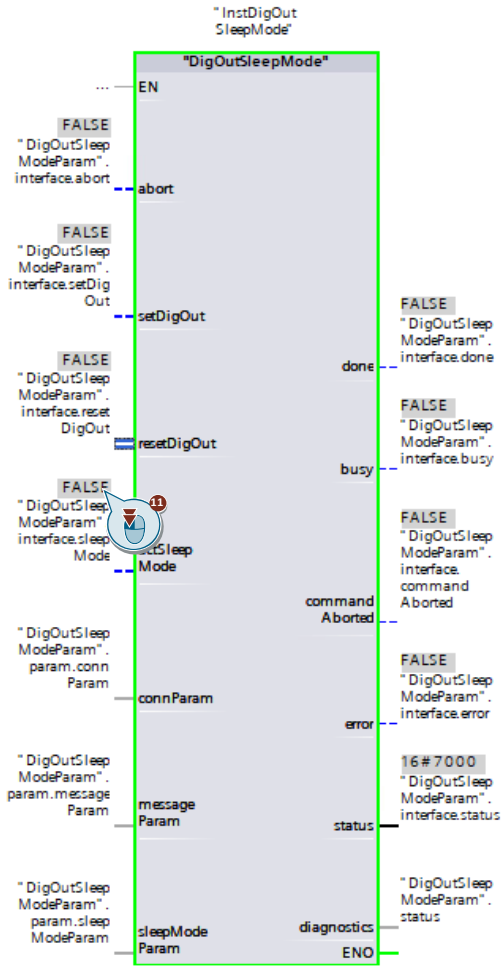
The event log table in the WBM of the SCALANCE WxM766-1 provides you with more information about the event that occurs.



10. Reset the input "resetDigOut".

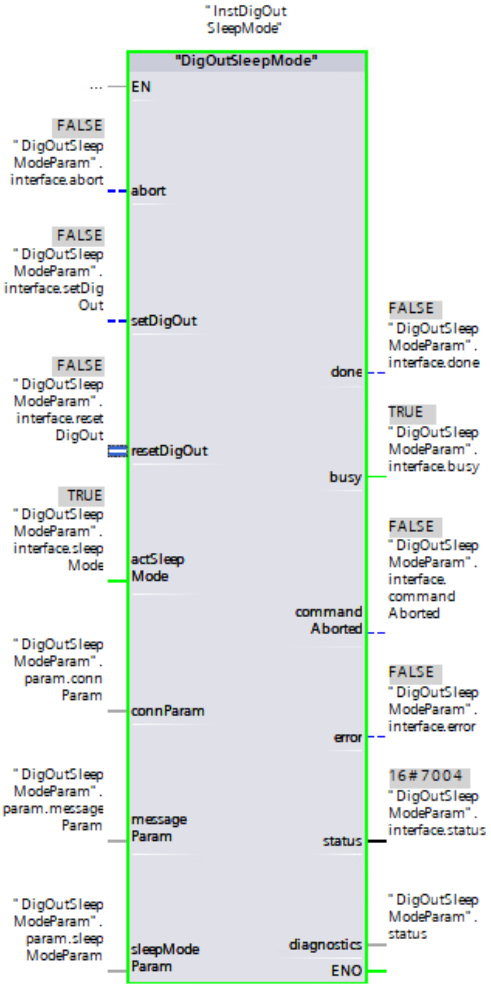
Activate Sleep Mode

11. In Network 1, enable the input "actSleepMode" of "DigOutSleepMode" to activate the Sleep Mode function.



Note Switching off the digital output is only enabled if the inputs "abort", "setDigOut" (trigger for switching on the digital output) and "resetDigOut" (trigger for switching off the digital output) are FALSE.

12. Monitor the output parameter "status":

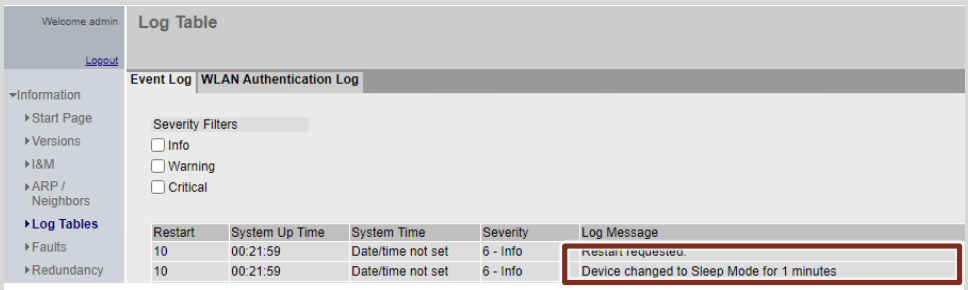


- status=16#7004

  The Sleep Mode function has been activated.

Note

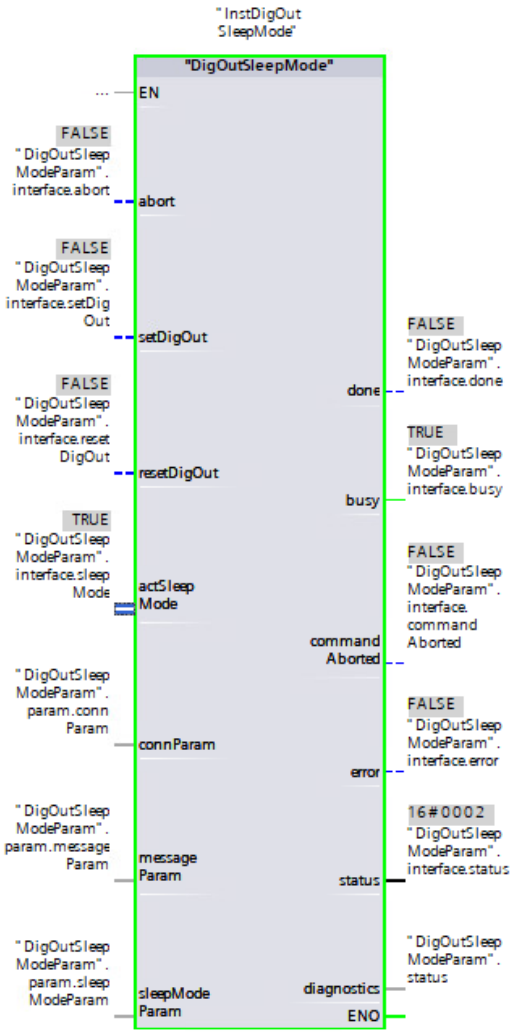
The event log table in the WBM of the SCALANCE WxM766-1 provides you with more information about the event that occurs.



Result:

The device accepts the setting for the duration "time" and immediately switches to sleep mode.

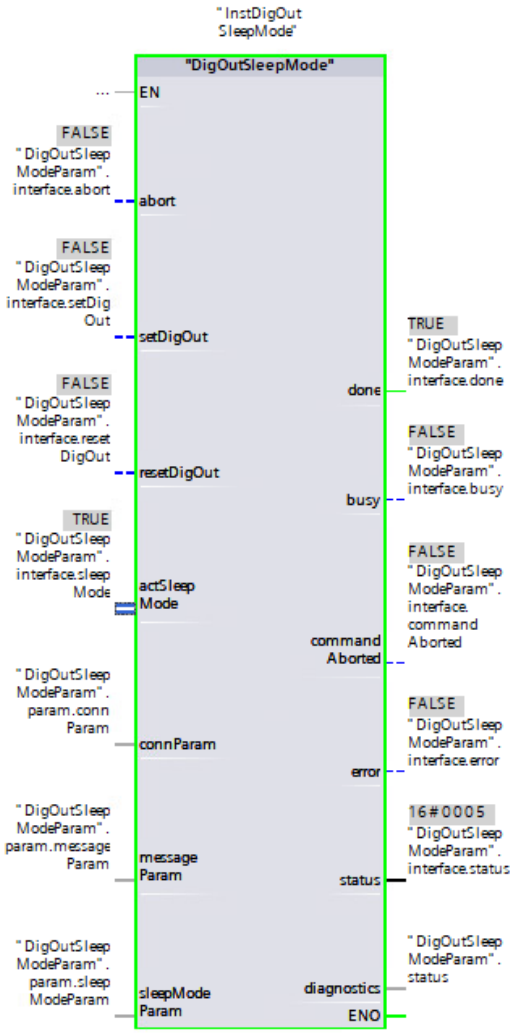
13. Once the time "estTime" expires, the sleep mode function is deactivated:



- status=16#0002
  Sleep Mode is deactivated.

Result:

The device returns to the active state approximately 45 seconds after the end of sleep mode:



- "done" =TRUE

  The process has been completed successfully.
- status=16#0005

  The device is fully operational again.

14. Reset the input "actSleepMode".

5 Appendix

5.1 Service and support

Industry Online Support

Do you have any questions or need assistance?

Siemens Industry Online Support offers round the clock access to our entire service and support know-how and portfolio.

The Industry Online Support is the central address for information about our products, solutions and services.

Product information, manuals, downloads, FAQs, application examples and videos – all information is accessible with just a few mouse clicks:

support.industry.siemens.com

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The Technical Support of Siemens Industry provides you fast and competent support regarding all technical queries with numerous tailor-made offers – ranging from basic support to individual support contracts.

Please send queries to Technical Support via Web form:

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- Service programs and contracts

You can find detailed information on our range of services in the service catalog web page:

support.industry.siemens.com/cs/sc

Industry Online Support app

You will receive optimum support wherever you are with the "Siemens Industry Online Support" APP. The app is available for iOS and Android:

support.industry.siemens.com/cs/ww/en/sc/2067

5.2 Industry Mall

The Siemens Industry Mall is the platform on which the entire siemens Industry product portfolio is accessible. From the selection of products to the order and the delivery tracking, the Industry Mall enables the complete purchasing processing – directly and independently of time and location:
mall.industry.siemens.com

5.3 Links and literature

Table 5-1

No.	Subject
\1\	Siemens Industry Online Support https://support.industry.siemens.com
\2\	Link to the article page of the application example https://support.industry.siemens.com/cs/ww/en/view/57249109
\3\	SIMATIC S7-1500 CPU 1511-1 PN https://support.industry.siemens.com/cs/ww/en/view/109752841
\4\	SIMATIC NET: Industrial Wireless LAN SCALANCE W700 according to IEEE 802.11ax Web Based Management https://support.industry.siemens.com/cs/ww/en/view/109797832
\5\	SIMATIC NET: Industrial Wireless LAN SCALANCE WxM766 https://support.industry.siemens.com/cs/ww/en/view/109799201
\6\	SCALANCE W700 IEEE 802.11ax V1.1.0 firmware download https://support.industry.siemens.com/cs/ww/en/view/109802059
\7\	SIMATIC NET: Industrial Wireless LAN SCALANCE WxM763 https://support.industry.siemens.com/cs/ww/en/view/109810558
\8\	SIMATIC NET: Industrial Remote Communication Remote Networks SCALANCE M-800 Web Based Management V7.1 https://support.industry.siemens.com/cs/ww/en/view/109751635
\9\	Firmware V7.1 for SCALANCE M800 / S615 https://support.industry.siemens.com/cs/ww/en/view/109807276

5.4 Change documentation

Table 5-2

Version	Date	Change
V1.0	12/2021	First version
V2.0	04/2023	• Added note about the start-up time of the devices after the end of the Sleep Mode • Table 2-4 updated