

Library Description



ThermokonWRF07.lib

**WAGO-I/O-PRO Library for
Connecting the Thermokon
WRF07 Modbus® Room
Operating Panel**

Version 1.0.0



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WAGO Kontakttechnik GmbH & Co. KG

Hansastraße 27
D-32423 Minden

Phone: +49 (0) 571/8 87 – 0

Fax: +49 (0) 571/8 87 – 1 69

Email: info@wago.com

Online: <http://www.wago.com>

Technical Support

Phone: +49 (0) 571/8 87 – 445 55

Fax: +49 (0) 571/8 87 – 844 555

Email: support@wago.com

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Number Notation

Table 1: Number Notation









Number System	Example	Comment
Decimal	100	Normal notation
Hexadecimal	0x64	C notation
Binary	'100' '0110.0100'	In single quotes, nibble separated by a period

Font Conventions

Table 2: Font Conventions

Font Type	Explanation
<i>italic</i>	Names of paths and files are shown in italics, e.g.: <i>C:\Programs\WAGO-I/O-CHECK</i>
Menu	Menu options are shown in bold, e.g.: Save
>	A “greater than” symbol between two names denotes the selection of a menu option, e.g.: File > New
Input	Names of input or selection fields are shown in bold, e.g.: Start of measurement range
“Value”	Input or selection values are shown in quotation marks, e.g.: Enter the value “4 mA” under Start of measurement range .
[Button]	Button labels within the dialogs are shown in bold and enclosed in square brackets, e.g.: [Input]
[Key]	Key labels on the keyboard are shown in bold and enclosed in square brackets, e.g.: [F5]

Symbols

DANGER	Warning against personal injury! Indicates a high-risk, imminently hazardous situation which, if not avoided, will result in death or serious injury.
	
DANGER	Do not work on components while energized! Indicates a high-risk, imminently hazardous situation which, if not avoided, will result in death or serious injury.
	
WARNING	Warning against personal injury! Indicates a moderate-risk, potentially hazardous situation which, if not avoided, could result in death or serious injury.
	
CAUTION	Warning against personal injury! Indicates a low-risk, potentially hazardous situation which, if not avoided, may result in minor or moderate injury.
	
NOTICE	Warning against damage to property! Indicates a potentially hazardous situation which, if not avoided, may result in damage to property.
	
ESD	Warning against damage to property caused by electrostatic discharge! Indicates a potentially hazardous situation which, if not avoided, may result in damage to property.
	
Note	Important note! Indicates a potential malfunction, but one which will not result in damage to property if not avoided.
	
Information	Additional information Refers to additional information which is not an integral part of this documentation (e.g., the Internet).
	

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Function Blocks:

1.1. FbWRF07Master

WAGO-I/O-PRO CAA Library Elements		
Category:	Building Technology	
Name:	FbWRF07Master	
Type:	Function <input type="checkbox"/>	Function block <input checked="" type="checkbox"/> Program <input type="checkbox"/>
Name of Library:	ThermokonWRF07.lib	
Applicable to:	See Release Note.	
Libraries Used:	SerComm.lib Serial_Interface_01.lib. mod_com.lib Modb_105.lib	
Input Parameters:	Data Type:	Comment:
bCOM_PORT	BYTE	No. of the serial interface used 1 -> Internal service interface 2 -> 1st plugged serial module 3 -> 2nd plugged serial module
cbCOM_BAUDRATE	COM_BAUDRATE	Baud rate: BAUD_19200 := 1920 Default = BAUD_19200
Input/Output Parameters:	Data Type:	Comment:
typWRF07	typWRF07	Data exchange between the master module and the slave modules
Graphical Illustration:		
<div><div>FbWRF07Master</div><div><div>bCOM_PORT</div><div>cbCOM_BAUDRATE</div><div>typWRF07 ▸</div></div></div>		

Function Description:

The **FbWRF07Master** function block can be used to connect the WRF07 Modbus® room operating panel to the WAGO-I/O-SYSTEM. Modbus® communication is implemented via an RS-485 serial interface module.

The **FbWRF07Master** enables communication with the multi-function room operating panels via an RS-485 serial interface module. The "**typWRF07**" variable facilitates the connection with other "WRF07" function blocks.

The number of serial interfaces used can be set at the "**bCOM_PORT**" input.

Example:

- 1 -> Internal service interface
- 2 -> 1st plugged serial module
- 3 -> 2nd plugged serial module

The baud rate is set at the "**cbCOM_BAUDRATE**" input. The baud rate set here must match the baud rate of the multi-function room operating panels from Thermokon.

Hardware:

The RS-485 module (750-652) should be used as interface. The function block configures the module with the following parameters:

Baud rate:	19200
Data bits:	8
Stop bits:	1
Parity:	Even
Duplex mode:	Half duplex

1.2. FbWRF07

WAGO-I/O-PRO CAA Library Elements		
Category:	Building Technology	
Name:	FbWRF07	
Type:	Function <input type="checkbox"/> Function block X <input checked="" type="checkbox"/> Program <input type="checkbox"/>	
Name of Library:	ThermokonWRF07.lib	
Applicable to:	See Release Note.	
Libraries Used:	SerComm.lib Serial_Interface_01.lib. mod_com.lib Modb_105.lib	
Input Parameters:	Data Type:	Comment:
xEnable	BOOL	Enables communication with the room operating panel
bSlaveNo	BYTE	Slave No. of the room operating panel
tCycleTime	TIME	Cycle time for reading out the device Default: 0 (fastest possible)
xLED	BOOL	Activating the LED on the WRF
typConfigWRF07	typConfig WRF07	WRF07 configuration structure
.bSetpointCorrection	BYTE	Setpoint value correction (e.g., 3= +3/-3)
.tPresenceTime	TIME	Presence time (default= t#2h)
.xRetriggerPresence	BOOL	True= tPresenceTime can be retriggered.
.xWriteConfiguration	BOOL	Writes the configuration to the WRF.
Input/Output Parameters:	Data Type:	Comment:
typWRF07	typWRF07	Structure for communication with the master module

Return Value:	Data Type:	Comment:
enumMB_ERROR	enumMB_ERROR	Indication of communication errors MB_NO_ERROR := 16#00, MB_ILLEGAL_ADDRESS := 16#02, MB_ILLEGAL_DATA := 16#03, MB_SLAVE_DEVICE_FAILURE := 16#04, MB_SLAVE_DEVICE_BUSY := 16#06, MB_MEMORY_PARITY_ERROR := 16#08, MB_GATEWAY_PATH_UNAVAILABLE := 16#0A, MB_EXTENDED_SLAVE_ERROR:= 16#90, MB_NOT_ALLOWED_BROADCAST:= 16#95, MB_CRC_ERROR := 16#96, MB_ILLEGAL_NUMBER_OF_POINTS := 16#97 (more modules are not allowed) MB_OVERRUN := 16#98, MB_TIME_OUT := 16#99
xPresence	BOOL	Presence output; dependent on typConfigWRF07
rRoomTemperature	REAL	Current room temperature
rSetpointCorrection	REAL	Potentiometer; setpoint value correction output
Graphical Illustration:		
<pre> graph LR subgraph FbWRF07 direction TB xEnable bSlaveNo tCycleTime xLED typConfigWRF07 typWRF07 end FbWRF07 --> enumMB_ERROR FbWRF07 --> xPresence FbWRF07 --> rRoomTemperature FbWRF07 --> rSetpointCorrection </pre>		

Function Description:

The **FbWRF07** function block is used to output the current values of a room operating panel. In addition, this function block can be used to change the values of the input register.

A permanent TRUE signal at the input "**xEnable**" enables the output process and a FALSE signal disables it. If the input is not enabled, the output process starts automatically.

The device address is specified at the input "**bSlaveNo.**" By assigning different addresses, multiple devices can be addressed via one serial I/O module. This input is assigned with "1" by default.

The minimum interval time to be maintained for outputs is determined at the input "**tCycleTime**." The actual time between the outputs can be greater depending on the number of instantiated output modules on one Modbus® line. As default, no time is set; this ensures operation is as fast as possible.

The respective WRF07 can be individually configured with the input structure "**typConfigWRF07**." The configuration values are saved in the WRF EEPROM. Cyclic writing of these values can destroy the room operating panel.

The "**typWRF07**" input/output parameter is used for communication with the master module and must have the same structure as on the input/output of the master module with the same name.

The "**enumMB_ERROR**" output displays the communication error that has occurred.

As soon as the presence button on the WRF is pressed, the output "**xPresence**" is switched on for the time TRUE set in "**typConfigWRF07.tPresenceTime**." Whether pressing the button again will restart the presence time can be selected through "**typConfigWRF07.xRetriggerPresence**."

The room temperature "**rRoomTemperature**" and the set setpoint correction "**rSetpointCorrection**" can be read out from the outputs on the module.

WAGO Kontakttechnik GmbH & Co. KG
PO Box 2880 • D-32385 Minden
Hansastraße 27 • D-32423 Minden
Phone: +49 (0) 571/8 87 – 0
Fax: +49 (0) 571/8 87 – 1 69
Email: info@wago.com
Web: <http://www.wago.com>