

Library Description



ThermokonWRF04.lib

**WAGO-I/O-PRO Library for
Connecting the Thermokon
WRF04 Modbus® Room
Operating Unit**

Version 1.0.0



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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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The use of the product described in this document is exclusively geared to specialists having qualifications in PLC programming, electrical specialists or persons instructed by electrical specialists who are also familiar with the appropriate current standards.

Moreover, the persons named here must also be familiar with all of the products cited in this document, along with the operating instructions. They must also be capable of correctly predicting any hazards which may not arise until the products are combined.

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The sample applications described in this documentation represent concepts, that is, technically feasible applications. Whether these concepts can actually be implemented depends on various general conditions. For example, different versions of the hardware or software components may require different handling than that described here. Therefore, the descriptions contained in this documentation do not form the basis for assertion of a particular product characteristic.

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Function Blocks:

1.1. FbWRF04Master

| WAGO-I/O-PRO CAA Library Elements | | |
|--|--|---|
| Category: | Building Technology | |
| Name: | FbWRF04Master | |
| Type: | Function <input type="checkbox"/> | Function block X <input checked="" type="checkbox"/> Program <input type="checkbox"/> |
| Name of Library: | ThermokonWRF04.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: |
| typWRF04 | typWRF04 | Data exchange between the master module and the slave modules |
| Graphical Illustration: | | |
| <div><div>FbWRF04Master</div><div><div>bCOM_PORT</div><div>cbCOM_BAUDRATE</div><div>typWRF04 ▸</div></div></div> | | |

Function Description:

The **FbWRF04Master** function block can be used to connect the WRF04 Modbus® room operating panel to the WAGO-I/O-SYSTEM. Modbus® communication is implemented via an RS-485 serial interface module.

The **FbWRF04Master** enables communication with the multi-function room operating panels via an RS-485 serial interface module. The “**typWRF04**” variable facilitates the connection with other “WRF04” 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 the 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. FbWRF04

| WAGO-I/O-PRO CAA Library Elements | | | |
|-----------------------------------|--|--|--|
| Category: | | Building Technology | |
| Name: | | FbWRF04 | |
| Type: | | Function <input type="checkbox"/> | Function block X <input checked="" type="checkbox"/> |
| Name of Library: | | ThermokonWRF04.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 |
| typConfigWRF04 | | typConfig WRF04 | WRF04 configuration structure |
| .iMinSetpointCorrection | | INT | Lower setpoint value correction [<0] |
| .iMaxSetpointCorrection | | INT | Upper setpoint value correction [>0] |
| .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: |
| typWRF04 | | typWRF04 | 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 typConfigWRF04 |
| rRoomTemperature | REAL | Current room temperature |
| rSetpointCorrection | REAL | Potentiometer; setpoint value correction output |
| typFanLevel | typFanLevel | Currently set fan stage |
| .xLevel_0 | BOOL | Fan stage 1 |
| .xLevel_1 | BOOL | Fan stage 2 |
| .xLevel_2 | BOOL | Fan stage 3 |
| .xLevel_3 | BOOL | Fan stage 4 |
| .xLevel_Auto | BOOL | Automatic fan stage |
| Graphical Illustration: | | |
| | | |

Function Description:

The **FbWRF04** 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 WRF04 can be individually configured with the input structure "**typConfigWRF04**." The configuration values are saved in the WRF EEPROM. Cyclic writing of these values can destroy the room operating panel.

The "**typWRF04**" 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 "**typConfigWRF04.tPresenceTime**." Whether pressing the button again will restart the presence time can be selected through "**typConfigWRF04.xRetriggerPresence**."

The room temperature "**rRoomTemperature**" and the set setpoint correction "**rSetpointCorrection**" can be read out from the outputs on the module. If the WRF04 has a potentiometer for the fan stage, the currently set fan stage can be taken from the output structure "**typFanLevel**."

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