



DIN-9XWxR-MOD Programming Guide

G024.0.0

Warrior DIN-9XWxR-MOD Programming Guide

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1.0 Introduction

The DIN module transmits remote control commands to a programmable logic controller (PLC)-based system. The remote control device commands—along with a number of other values—are transmitted to the PLC via a MODBUS interface. The DIN module acts as a slave device to the host PLC. The host PLC must poll the DIN module to acquire the remote control system's current state.



Figure 1. DIN-9XWxR-MOD Receiver

2.0 Physical Interface

The DIN module includes an RS-485 / RS-422 physical interface, configurable for full- or half-duplex operation (half-duplex is the default). The DIN module supports communication at 38,400 baud, eight data bits, no parity, and two stop bits.

3.0 Logical Interface

The DIN module supports a subset of the MODBUS remote terminal unit (RTU) protocol. Inter-frame timeout is fixed at five milliseconds. The DIN functions as a MODBUS slave with a default address of 100 decimal. The device only supports four MODBUS commands:

- Read Multiple Holding Registers (function 3)
- Write Multiple Holding Registers (function 16)
- Read Coils (function 1)
- Write Multiple Coils (function 15)

4.0 Memory Map

The MODBUS interface is partitioned into a set of holding registers and coils. Following the MODBUS RTU protocol, all holding registers are 16 bits wide, and all coils are 1 bit wide. Table 1 outlines the names and addresses.

Table 1. MODBUS Names/Addresses

Address	Type	Name	Description
0	Holding RO	LOCAL_STATUS	DIN module status
1	Holding RO	REMOTE_SN_H	Connected remote control SN high word
2	Holding RO	REMOTE_SN_L	Connected remote control SN low word
3	Holding RO	REMOTE_PROD_ID	Connected remote control product ID
4	Holding RO	REMOTE_STATUS_D	Connected remote control status
5	Holding RO	REMOTE_DIN_00_15	Connected remote control digital inputs 00-15
6	Holding RO	REMOTE_DIN_16_31	Connected remote control digital inputs 16-31
7	Holding RO	REMOTE_DIN_32_47	Connected remote control digital inputs 32-47
8	Holding RO	REMOTE_DIN_48_63	Connected remote control digital inputs 48-63
9	Holding RO	REMOTE_AIN_00_01	Connected remote control analog inputs 00-01
10	Holding RO	REMOTE_AIN_02_03	Connected remote control analog inputs 02-03
11	Holding RO	REMOTE_AIN_04_05	Connected remote control analog inputs 04-05
12	Holding RO	REMOTE_AIN_06_07	Connected remote control analog inputs 06-07
13	Holding RO	REMOTE_AIN_08_09	Connected remote control analog inputs 08-09
14	Holding RO	REMOTE_AIN_10_11	Connected remote control analog inputs 10-11
15	Holding RO	REMOTE_AIN_12_13	Connected remote control analog inputs 12-13
16	Holding RO	REMOTE_AIN_14_15	Connected remote control analog inputs 14-15
17	Holding RW	REMOTE_DISPLAY_00_01	Connected remote control display characters 0-1
18	Holding RW	REMOTE_DISPLAY_02_03	Connected remote control display characters 2-3

Address	Type	Name	Description
19	Holding RW	REMOTE_DISPLAY_04_05	Connected remote control display characters 4-5
20	Holding RW	REMOTE_DISPLAY_06_07	Connected remote control display characters 6-7
100	Coil RW	REMOTE_COILS_00	DIN relay if enabled via DIP switch 0

4.1 LOCAL_STATUS

Address 0, read only

This holding register provides status information about the DIN module.

15	14	13	12	11	10	9	8
Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved

7	6	5	4	3	2	1	0
Reserved	Reserved	Reserved	Reserved	Reserved	Nominated	Assoc	RF Link

RF Link: This bit is set when a remote control is connected to the DIN module.

Assoc: This bit indicates that a remote control is currently executing the association process.

Nominated: This bit indicates that a remote control that is executing association has nominated the DIN module.

4.2 REMOTE_SN_H/L

Address 1 – 2, read only

These holding registers hold the serial number of the connected remote control. Every Warrior remote control device has a unique serial number. Address 1 holds the most significant word of the serial number.

4.3 REMOTE_PROD_ID

Address 3, read only

This register holds the product identification of the connected remote control. Each Warrior remote control model has a unique product identification.

Table 2. Warrior Remote Control Product IDs

Warrior Remote Control Model	Product Identification
HH2S / HHMS	0x002A (42d)
MCB	0x000B (11d)
CB-xW	0x0123 (291d)
HHMS Extended	0x8298 (33288d)

4.4 REMOTE_STATUS_D

Address 4, read only

This holding register provides remote control status information.

15	14	13	12	11	10	9	8
Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved	Reserved
7	6	5	4	3	2	1	0
M-STOP	TRIGGER	LOW BATT	TILTED	NO KEY	INACT	Reserved	Reserved

INACT: This bit is set when the remote control is shutting down due to inactivity.

NO KEY: This bit is set when the remote control is shutting down due to the security key being missing.

TILTED: This bit is set when the remote control detects a tilted condition.

LOW BATT: This bit is set when the batteries in the remote control need to be replaced.

TRIGGER: This bit is set when the trigger on the remote control is activated.

M-STOP: This bit is set when the M-STOP button on the remote control has been activated.

4.5 REMOTE_DIN_00_15 – REMOTE_DIN_48_63

Address 5–8, read only

These registers hold the remote control’s digital inputs. Bit 0 corresponds to remote control digital input 0. Bit 1 corresponds to remote control digital input 1. Not all remote controls have all 64 output bits, and those not supported read “0.” Each remote control device maps physical buttons to digital inputs differently. See additional project documentation for mapping details.

✓ *Note: If an HHMS Extended Mode remote control is being used, the button mapping is unique. A button is represented by a nibble (4 bits). The first nibble of address 5 represents button 1, the second nibble represents button 2. Each button is encoded based on the depth of depression. 0b0000 represents not pressed. 0b0001 represents step 1, etc.*

4.6 REMOTE_AIN_00_01 – REMOTE_AIN_14_15

Address 9–16, read only

These registers hold the remote control’s analog inputs. The low byte of address 9 represents remote control analog input 0. The high byte of address 9 represents remote control analog input 1. Not all remote controls have all 16 analog outputs, and those not supported read “0.” Each remote control device maps physical proportional controls to analog inputs differently. See additional project documentation for mapping details.

Each byte is encoded as a signed 8-bit count. A neutral proportional control reports a value of “0.” A proportional control fully activated in the positive direction reports “127.” A proportional control fully activated in the negative direction reports “–127.”

4.7 REMOTE_COILS_00

Address 100, read and write

This coil represents the relay on the DIN module. This coil can always be read and reports the relay's current state. If DIP switch 0 is off (default), the DIN module controls the relay, and coil writes are ignored. In this case, the relay closes when a remote control establishes a radio frequency (RF) link and opens when the link is broken. If DIP switch 0 is ON, only the PLC host controls the relay.



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