

General Specifications

DARWIN Data Acquisition Instrument Modbus Interface Module

GS 4M1E1-91E

Outline

The DT300-31/S6 Modbus Interface module enables DARWIN hardware to be used with any Modbus RTU host device. Two unlike devices that support Modbus protocol can be linked together and exchange data. Using the Modbus Interface Module, DARWIN I/O can be used as a low cost alternative for adding inputs or outputs to an existing DCS or PLC.

Serial Interface

The DARWIN Modbus Interface module is based on the standard DARWIN DT300-31 RS-422-A/485 communications module and supports RS-422-A or RS485 serial connections. Up to 31 devices can be connected to a single host using slave address selected via a DIP switch on the module.

Module Modes

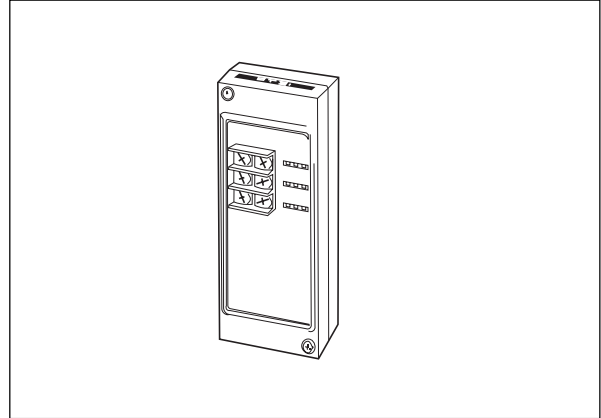
Two modes of operation are supported, Standard YOKOGAWA Protocol mode or Modbus RTU mode. The desired mode is selected via a DIP switch on the front of the module. When Standard YOKOGAWA mode is selected, the module supports all standard YOKOGAWA Protocol ASCII commands and can be used with all YOKOGAWA DARWIN software including DAQ32 (DP120-13) configuration software or DAQ32Plus (DP320-13) data acquisition software. When Modbus protocol mode is selected the module will respond to standard Modbus protocol commands. The module is configured as a Modbus slave and will wait for a Modbus host device to request data from one of the predefined registers. Measured data, Math channel data, Time and Date stamp can be acquired by requesting data from the registers listed below.

Modbus Functions

The module will respond to Modbus function 04 or 08. Function 04 is used to read the 30000 series of registers for Measured and Math input data. Function 08 is used for a Loop Back Test.

Modbus Registers

The following table lists the predefined Modbus registers supported by the Modbus interface module. These registers are fixed so the only configuration required to start communicating is the configuration of the points in the Modbus host device used to poll DARWIN.

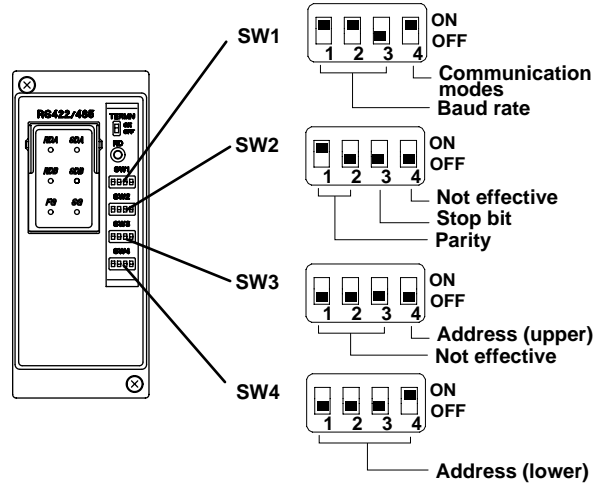


Assignment of Registers

Description	Modbus Register	Type	DARWIN Channel
Measured	30001 to 30060	16 bit integer	001 to 060
	30061 to 30120	16 bit integer	101 to 160

	30301 to 30360	16 bit integer	501 to 560
Math	32001 to 32120	32 bit integer	A01 to A60
Time Stamp	39001 to 39006	16 bit integer	YY/MM/DD HH:MM:SS

Dip Switch Assignment



Communication modes (No.4 of SW1)

Mode	No.4
Modbus RTU	ON
Standard YOKOGAWA Protocol	OFF

Baud rate (No.1 to 3 of SW1)

Baud rate	No.1	No.2	No.3
300	OFF	OFF	ON
600	OFF	ON	OFF
1200	OFF	ON	ON
2400	ON	OFF	OFF
4800	ON	OFF	ON
9600	ON	ON	OFF

←Default Setting

Parity (No.1 to 2 of SW2)

Parity	No.1	No.2
None	OFF	OFF
ODD	OFF	ON
EVEN	ON	OFF

←Default Setting

Stop bit (No.3 of SW2)

Stop bit	No.3
1	OFF
2	ON

←Default Setting

Address (No.4 of SW3 and No.1 to 4 of SW4)

Address	No.4 (SW3)	No.1 (SW4)	No.2 (SW4)	No.3 (SW4)	No.4 (SW4)
1	OFF	OFF	OFF	OFF	ON
2	OFF	OFF	OFF	ON	OFF
3	OFF	OFF	OFF	ON	ON
4	OFF	OFF	ON	OFF	OFF
5	OFF	OFF	ON	OFF	ON
6	OFF	OFF	ON	ON	OFF
7	OFF	OFF	ON	ON	ON
8	OFF	ON	OFF	OFF	OFF
9	OFF	ON	OFF	OFF	ON
10	OFF	ON	OFF	ON	OFF
11	OFF	ON	OFF	ON	ON
12	OFF	ON	ON	OFF	OFF
13	OFF	ON	ON	OFF	ON
14	OFF	ON	ON	ON	OFF
15	OFF	ON	ON	ON	ON
16	ON	OFF	OFF	OFF	OFF
17	ON	OFF	OFF	OFF	ON
18	ON	OFF	OFF	ON	OFF
19	ON	OFF	OFF	ON	ON
20	ON	OFF	ON	OFF	OFF
21	ON	OFF	ON	OFF	ON
22	ON	OFF	ON	ON	OFF
23	ON	OFF	ON	ON	ON
24	ON	ON	OFF	OFF	OFF
25	ON	ON	OFF	OFF	ON
26	ON	ON	OFF	ON	OFF
27	ON	ON	OFF	ON	ON
28	ON	ON	ON	OFF	OFF
29	ON	ON	ON	OFF	ON
30	ON	ON	ON	ON	OFF
31	ON	ON	ON	ON	ON

←Default Setting

General specifications

Connectable main unit:

DA100 (stand alone, Expandable). DC100 (stand alone, Expandable). DR232 (Expandable). DR242 (Expandable)

Connection method:

Multi-drop 1:n (n=1 to 31)

Communication method:

Half duplex, 4 wire

Synchronization mode:

Synchronous mode (synchronized by a start and a stop bit)

Baud rate:

300, 600, 1200, 2400, 4800, 9600 bps

Start bit:

Fixed at 1 bit

Data length:

8 bits fixed

Parity bit:

EVEN, ODD, or none, selectable

Stop bit:

1 or 2, selectable

Transfer distance:

Max. 1200 m

Connector:

6 screws

Capacity of receiving buffer:

250 bytes

NOTE

YOKOGAWA DAQ32 or DAQ32Puls software doesn't support the Modbus protocol.

■RS-422-A/RS-485 Communications

General specifications

Connectable main unit:

DA100 (stand alone, Expandable). DC100 (stand alone, Expandable). DR232 (Expandable). DR242 (Expandable)

Electrical and mechanical specifications:

Conform to standards EIA RS-422-A, EIA RS-485

Connection method:

Multi-drop 1:n (n=1 to 31)

Communication method:

Half duplex, 4 wire

Synchronization mode:

Synchronous mode (synchronized by a start and a stop bit)

Baud rate:

300, 600, 1200, 2400, 4800, 9600 bps

Start bit:

Fixed at 1 bit

Data length:

8 bits fixed

Parity bit:

EVEN, ODD, or none, selectable

Stop bit:

1 or 2, selectable

Transfer distance:

Max. 1200 m

Connector:

6 screws

Capacity of receiving buffer:

250 bytes

ESC sequence:

Can be used for reception only

Talker functions:

Output of measurement data (ASCII, binary) and setting values (ASCII)

NOTE

Binary output is not available in multi-drop application.

Listener functions

Setting of measurement conditions, control of measurement start and stop, specifying causes of 'ESC S'(output of a status byte)
(excludes the setting and control of power on/off)

Contents of 'Status':

Syntax error, chart end, completion of A/D conversion, operation of interval timer, completion of saving in memory devices