

Honeywell UDC Serial Driver

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Honeywell UDC Serial Driver

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Overview

The Honeywell UDC Serial Driver provides a reliable way to connect Honeywell UDC Serial devices to OPC client applications; including HMI, SCADA, Historian, MES, ERP, and countless custom applications. It is intended for use with Honeywell UDC Serial devices that support the Modbus RTU protocol. The driver will support the UDC 3000 and UDC 3300. To support the Honeywell UDC Serial 3300, select Modbus 3K communications when configuring the UDC 3300.

This driver can also control the operation of the RTS line for use with radio modems that require specific RTS timing.

Device Setup

Supported Devices

Honeywell UDC Serial 3000, Honeywell UDC Serial 3300 (MODB3K mode).

Communication Protocol

Modbus RTU Protocol with Honeywell UDC Serial extensions.

Supported Communication Parameters*

The default settings are shown in **bold** where appropriate.

Baud Rate: 1200, 2400, 9600, 19200

Parity: Odd, Even, **None**

Data Bits: **8**

Stop Bits: **1,2**

*Not all devices support the listed configurations.

Ethernet Encapsulation

This driver supports Ethernet Encapsulation, which allows the driver to communicate with serial devices attached to an Ethernet network using a terminal server or device server. Ethernet Encapsulation mode may be invoked through the COM ID dialog in Channel Properties. For more information, refer to the main OPC Server help file.

Device ID (PLC Network Address)

Honeywell UDC Serial devices are assigned Device IDs in the range 1 to 99.

Flow Control

When using an RS232/RS485 converter, the type of flow control that is required will depend upon the needs of the converter. Some converters do not require any flow control and others will require RTS flow. Consult the converter's documentation in order to determine its flow requirements. We recommend using an RS485 converter that provides automatic flow control.

Note: When using the manufacturer's supplied communications cable, it is sometimes necessary to choose a flow control setting of **RTS** or **RTS Always** under the Channel Properties.

The Honeywell UDC Serial Driver supports the **RTS Manual** flow control option. This selection is used to configure the driver for operation with radio modems that require special RTS timing characteristics. For more information on RTS Manual flow control, refer to the main OPC Server help file topic "Channel Wizard."

See Also: [Block Sizes](#) and [Device Settings](#).

RS-485 to RS-232 Hardware Setup

The UDC communicates via RS-485, and the PC via RS-232. An RS-232 to RS-485 converter must be purchased separately.

Modem Setup

This driver supports modem functionality. For more information, please refer to the topic "Modem Support" in the OPC Server Help documentation.

Block Sizes

Coil Block Sizes

Coils can be read from 8 to 800 points (bits) at a time. A higher block size means more points will be read from the device in a single request. If data needs to be read from non-contiguous locations within the device, the block size can be reduced.

Register Block Sizes

Registers can be read from 1 to 125 locations (words) at a time. A higher block size means more register values will be read from the device in a single request. If the data needs to be read from non-contiguous locations within the device, the block size can be reduced.

Device Settings

Zero vs. One Based Addressing

If the device's address numbering convention starts at one as opposed to zero, specify so when defining the device's parameters. When frames are constructed to communicate with a Honeywell UDC Serial device, user-defined addresses will have one subtracted by default. This default behavior follows the convention of the Honeywell UDC Serial devices.

First Word Low in 32 Bit Data Types

Two consecutive registers addresses in a Honeywell UDC Serial device are used for 32 bit data types. Specify whether the driver should assume the first word is the low or the high word of the 32-bit value. The default, first word high, follows the convention of the Honeywell UDC Serial.

Note: For the best communication behavior, try the following UDC settings.

```
ComSTATE = MODB3K
ComADDR = 2
SHEDENAB = DISABLE
BAUD = 9600
DUPLEX = HALF
WS FLOAT = FP B
TX DELAY = 100
UNITS = ENG
CSP RATO = 1.00
CSP BIAS = 0.0
LOOPBACK = DISABLE
```

Data Types Description

The descriptions below assume first word low data handling of 32 bit data types.

Data Type	Description
Boolean	Single bit
Word	Unsigned 16 bit value bit 0 is the low bit bit 15 is the high bit
Short	Signed 16 bit value bit 0 is the low bit bit 14 is the high bit bit 15 is the sign bit
DWord	Unsigned 32 bit value bit 0 is the low bit bit 31 is the high bit
Long	Signed 32 bit value bit 0 is the low bit bit 30 is the high bit bit 31 is the sign bit
BCD	Two byte packed BCD Value range is 0-9999. Behavior is undefined for values beyond this range.
LBCD	Four byte packed BCD Value range is 0-99999999. Behavior is undefined for values beyond this range.
Float	32 bit floating point value. The driver interprets two consecutive registers as a floating point value by making the second register the high word and the first register the low word.
Float Example	If register 40001 is specified as a float, bit 0 of register 40001 would be bit 0 of the 32 bit word, and bit 15 of register 40002 would be bit 31 of the 32 bit word.

Honeywell UDC Serial 3000/3300 Address Descriptions

The default data types for dynamically defined tags are shown in **bold** where appropriate.

Honeywell UDC Serial Addressing Decimal Format

Address	Range	Data Type	Access
Output Coils [Function Codes (decimal): 01, 05, 15]	000001-065536	Boolean	Read/Write
Input Coils [Function Code (decimal): 02]	100001-165536	Boolean	Read Only
Internal Registers [Function Code (decimal): 04]	300001-365536 300001-365535 300001.0-365535.15	Short , Word, BCD Float, DWord, Long, LBCD Boolean	Read Only
Holding Registers [Function Codes (decimal): 03, 06, 16]	400001-465536 400001-465535 400001.0-465535.15	Short , Word, BCD Float, DWord, Long, LBCD Boolean	Read/Write

Honeywell UDC Serial Configuration ID Tags Decimal Format

Address	Range	Data Type	Access
Loop 1 Configuration Parameters (Floating Point)	GR0:0-GR0:127	Float	Read/Write*
Loop1 Configuration Parameters (Integer)	GR0:128-GR0:255	Short , Word, BCD	Read/Write*
Loop 2 Configuration Parameters (Floating Point)	GR1:0-GR1:127	Float	Read/Write*
Loop 2 Configuration Parameters (Integer)	GR1:128-GR1:255	Short , Word, BCD	Read/Write*

*Some Configuration ID Tags may be Read Only. For more information, refer to the UDC 3000/3300 documentation.

Honeywell UDC Serial Addressing Hexadecimal Format

Address	Range	Data Type	Access
Output Coils [Function Codes (decimal): 01, 05, 15]	H000001-H0FFFF	Boolean	Read/Write
Input Coils [Function Code (decimal): 02]	H100001-H1FFFF	Boolean	Read Only
Internal Registers [Function Code (decimal): 04]	H300001-H310000 H300001-H3FFFF	Short , Word, BCD Float, DWord, Long, LBCD	Read Only

Address	Range	Data Type	Access
	H30001.0- H3FFFF.F	Boolean	
Holding Registers [Function Codes (decimal): 03, 06, 16]	H400001- H410000 H400001-H4FFFF H40000.0- H4FFFF.F	Short , Word, BCD Float, DWord, Long, LBCD Boolean	Read/Write

Honeywell UDC Serial Configuration ID Tags Hexadecimal Format

Address	Range	Data Type	Access
Loop 1 Configuration Parameters (Floating Point)	HGR0:0-HGR0:7F	Float	Read/Write*
Loop1 Configuration Parameters (Integer)	HGR0:80-HGR0:FF	Short , Word, BCD	Read/Write*
Loop 2 Configuration Parameters (Floating Point)	HGR1:0-HGR1:7F	Float	Read/Write*
Loop2 Configuration Parameters (Integer)	HGR1:80-HGR1:FF	Short , Word, BCD	Read/Write*

*Some Configuration ID Tags may be Read Only. For more information, refer to the UDC 3000/3300 documentation.

Examples

1. Address 40001 will access the PV or Process Variable scaled by a factor of 10.
2. Address 40006 will access the PB Proportional Band (Gain).
3. Address GR0:120 will access the PV Process Variable in float format.
4. Address GR0:255 will access UDC error status.

Arrays

Arrays are supported for internal and holding register locations for all data types except Booleans or the Configuration ID Tags. There are two methods of addressing an array. Examples are given using holding register locations.

4xxxx [rows] [cols]

4xxxx [cols] this method assumes rows is equal to one

Rows multiplied by cols cannot exceed the block size that has been assigned to the device for the register type. For arrays of 32 bit data types, rows multiplied by cols multiplied by 2 cannot exceed the block size.

Error Descriptions

The following error/warning messages may be generated. Click on the link for a description of the message.

Address Validation

[Missing address](#)

[Device address '<address>' contains a syntax error](#)

[Address '<address>' is out of range for the specified device or register](#)

[Data Type '<type>' is not valid for device address '<address>'](#)

[Device address '<address>' is Read Only](#)

[Array size is out of range for address '<address>'](#)

[Array support is not available for the specified address: '<address>'](#)

Serial Communications

[COMn does not exist](#)

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[Communications error on '<channel name>' \[<error mask>\]](#)

Device Status Messages

[Device '<device name>' is not responding](#)

[Unable to write to '<address>' on device '<device name>'](#)

Honeywell UDC Serial Device Specific Messages

[Bad address in block \[<start address> to <end address>\] on device '<device name>'](#)

Missing address

Error Type:

Warning

Possible Cause:

A tag address that has been specified statically has no length.

Solution:

Re-enter the address in the client application.

Device address '<address>' contains a syntax error

Error Type:

Warning

Possible Cause:

A tag address that has been specified statically contains one or more invalid characters.

Solution:

Re-enter the address in the client application.

Address '<address>' is out of range for the specified device or register

Error Type:

Warning

Possible Cause:

A tag address that has been specified statically references a location that is beyond the range of supported locations for the device.

Solution:

Verify the address is correct; if it is not, re-enter it in the client application.

Data Type '<type>' is not valid for device address '<address>'

Error Type:

Warning

Possible Cause:

A tag address that has been specified statically has been assigned an invalid data type.

Solution:

Modify the requested data type in the client application.

Device address '<address>' is Read Only

Error Type:

Warning

Possible Cause:

A tag address that has been specified statically has a requested access mode that is not compatible with what the device supports for that address.

Solution:

Change the access mode in the client application.

Array size is out of range for address '<address>'

Error Type:

Warning

Possible Cause:

A tag address that has been specified statically is requesting an array size that is too large for the address type or block size of the driver.

Solution:

Re-enter the address in the client application to specify a smaller value for the array or a different starting point.

Array support is not available for the specified address: '<address>'

Error Type:

Warning

Possible Cause:

A tag address that has been specified statically contains an array reference for an address type that doesn't support arrays.

Solution:

Re-enter the address in the client application to remove the array reference or correct the address type.

COMn does not exist

Error Type:

Fatal

Possible Cause:

The specified COM port is not present on the target computer.

Solution:

Verify that the proper COM port has been selected in the Channel Properties.

Error opening COMn

Error Type:

Fatal

Possible Cause:

The specified COM port could not be opened due to an internal hardware or software problem on the target computer.

Solution:

Verify that the COM port is functional and may be accessed by other Windows applications.

COMn is in use by another application

Error Type:

Fatal

Possible Cause:

The specified COM port is not present on the target computer.

Solution:

Verify that the proper COM port has been selected in the Channel Properties.

Unable to set comm parameters on COMn

Error Type:

Fatal

Possible Cause:

The serial parameters for the specified COM port are not valid.

Solution:

Verify the serial parameters and make any necessary changes.

Communications error on '<channel name>' [<error mask>]

Error Type:

Serious

Error Mask Definitions:

B = Hardware break detected.

F = Framing error.

E = I/O error.

O = Character buffer overrun.

R = RX buffer overrun.

P = Received byte parity error.

T = TX buffer full.

Possible Cause:

1. The serial connection between the device and the Host PC is bad.
2. The communications parameters for the serial connection are incorrect.

Solution:

1. Verify the cabling between the PC and the PLC device.
2. Verify that the specified communications parameters match those of the device.

Device '<device name>' is not responding

Error Type:

Serious

Possible Cause:

1. The serial connection between the device and the Host PC is broken.
2. The communications parameters for the serial connection are incorrect.
3. The named device may have been assigned an incorrect Network ID.
4. The response from the device took longer to receive than the amount of time specified in the "Request Timeout" device property.

Solution:

1. Verify the cabling between the PC and the PLC device.
2. Verify the specified communications parameters match those of the device.
3. Verify the Network ID given to the named device matches that of the actual device.
4. Increase the Request Timeout property so that the entire response can be handled.

Unable to write to '<address>' on device '<device name>'

Error Type:

Serious

Possible Cause:

1. The serial connection between the device and the Host PC is broken.
2. The communications parameters for the serial connection are incorrect.
3. The named device may have been assigned an incorrect Network ID.

Solution:

1. Verify the cabling between the PC and the PLC device.
2. Verify the specified communications parameters match those of the device.
3. Verify the Network ID given to the named device matches that of the actual device.

Bad address in block [<start address> to <end address>] on device '<device name>'

Error Type:

Serious

Possible Cause:

An attempt has been made to reference a nonexistent location in the specified device.

Solution:

Verify the tags assigned to addresses in the specified range on the device and eliminate ones that reference invalid locations.

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