# Honeywell UDC Ethernet Driver Help

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# Honeywell UDC Ethernet Driver Help

Help version 1.018

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## Overview

The Honeywell UDC Ethernet Driver provides an easy and reliable way to connect Honeywell UDC Ethernet controllers to OPC Client applications, including HMI, SCADA, Historian, MES, ERP and countless custom applications. It is intended for use with Honeywell UDC controllers.

## Device Setup

### Supported Devices

UDC 2500
UDC 3200
UDC 3500

### Communication Protocol

Modbus TCP/IP using Winsock V1.1 or higher

### Connect Timeout

This parameter specifies the time that the driver will wait for a connection to be made with a device. Depending on network load the connect time may vary with each connection attempt. The default setting is 3 seconds. The valid range is 1 to 30 seconds.

### Request Timeout

This parameter specifies the time that the driver will wait for a response from the device before giving up and going on to the next request. Longer timeouts only affect performance if a device is not responding. The default setting is 1000 milliseconds. The valid range is 100 to 30000 milliseconds.

### Fail After *x* Successive Timeouts

This parameter specifies the number of times that the driver will retry a message before giving up and going on to the next message. The default setting is 3 retries. The valid range is 1 to 10.

### Inter-Request Delay

The inter-request delay's default is 50 milliseconds. For more information on the inter-request delay setting, refer to the OPC Server Help documentation.

**Note:** The manufacturer of Honeywell UDC devices requires that the Inter-request Delay be set to 200 milliseconds or higher.

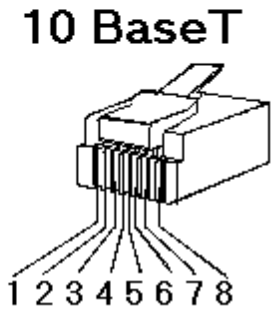
### Device ID (PLC Network Address)

The Device ID is used to specify the device IP in standard YYY.YYY.YYY.YYY format.

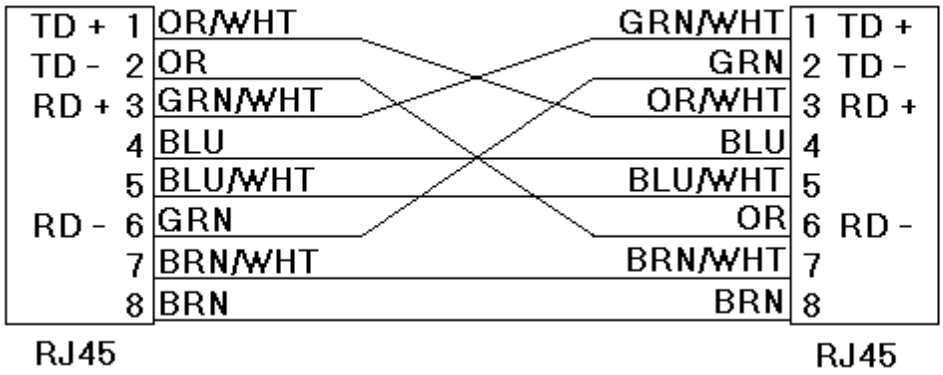
**See Also:** **TCP/IP**, **Block Sizes** and **Settings**.

### Cable Diagram

Patch Cable (Straight Through)


Crossover Cable




### Connection to UDC 2500/3200/3500

The following values use HUB with straight through cable or PC with crossover cable.

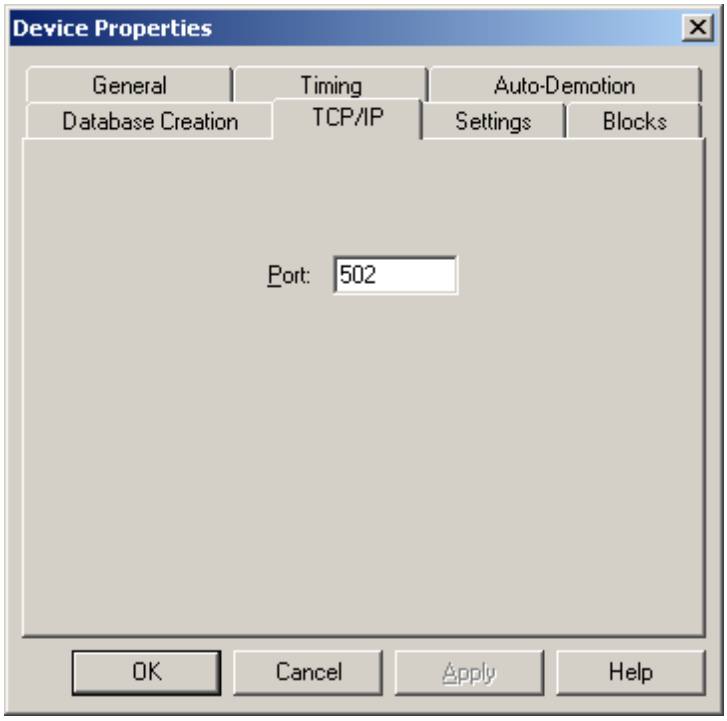
| UDC Terminal | UDC Signal | Wire Color | RJ45 Socket Pin # | Hub/PC Signal |
|---|---|---|---|---|
| 14 | Shield | Black/Bare | Shield | Shield |
| 15 | RD- | Orange | 6 | TD- |
| 16 | RD+ | White/Orange | 3 | TD+ |
| 17 | TD- | Brown | 2 | RD- |
| 18 | TD+ | White/Brown | 1 | RD+ |

The following values use PC with straight through cable.

| UDC Terminal | UDC Signal | Wire Color | RJ45 Socket Pin # | PC Signal |
|---|---|---|---|---|
| 14 | Shield | Black/Bare | Shield | Shield |
| 15 | RD- | Brown | 2 | TD- |
| 16 | RD+ | White/Brown | 1 | TD+ |
| 17 | TD- | Orange | 6 | RD- |
| 18 | TD+ | White/Orange | 3 | RD+ |

## TCP/IP Port Number

This parameter specifies the TCP/IP port number that the remote device is configured to use. The default port number is 502.




## Settings

### First Word Low in 32 Bit Data Types (Float)

Two consecutive register addresses are used for 32 bit data types such as floats. Users can specify whether the driver should treat the contents of the first register as the low or high word in 32 bit values.

**Note:** The UDC units can be configured to use a number of Double Register Formats.

### Double Register Format

| Format | Description | Byte Order | Notes |
|---|---|---|---|
| FP B | Floating Point Big Endian | 4, 3, 2, 1 | Honeywell default |
| FP BB | Floating Point Big Endian with byte-swap | 3, 4, 1, 2 | |
| FP L | Floating Point Little Endian | 1, 2, 3, 4 | |
| FP LB | Floating Point Little Endian with byte-swap | 2, 1, 4, 3 | Modbus standard |

### Examples of Data in "FP B" Format

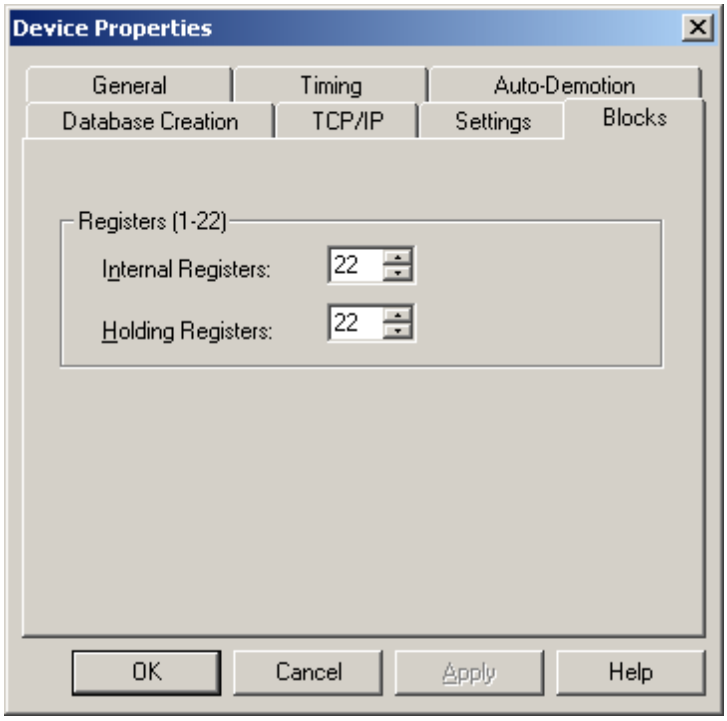
| Value (decimal) | Value (hex) | Register N | | Register N+1 | |
|---|---|---|---|---|---|
| | | high | low | high | low |
| 100.0 | 0x42C80000 | 0x42 | 0xC8 | 0x00 | 0x00 |
| 55.32 | 0x425D47AE | 0x42 | 0x5D | 0x47 | 0xAE |
| 2.0 | 0x40000000 | 0x40 | 0x00 | 0x00 | 0x00 |
| 1.0 | 0x3F800000 | 0x3F | 0x80 | 0x00 | 0x00 |
| -1.0 | 0xBF800000 | 0xBF | 0x80 | 0x00 | 0x00 |

The driver will use the Honeywell default "FP B" if this device property is left unchecked. If checked, the "FP LB" format will be used. The driver does not currently support the Honeywell "FP BB" and "FP L" double register formats.

## Blocks

### Register Block Sizes

Registers can be read from 1 to 22 locations at a time.




Given the overhead involved in sending data via TCP/IP, it is generally advantageous to keep the block size large. However, if data will be read from non-contiguous locations within the device, reducing the block size may increase performance.

## Data Types Description

| Data Type | Description |
|---|---|
| Boolean | Single bit |
| Word | Unsigned 16 bit value<br><br>bit 0 is the low bit<br>bit 15 is the high bit |
| Short | Signed 16 bit value<br><br>bit 0 is the low bit<br>bit 14 is the high bit<br>bit 15 is the sign bit |
| DWord | Unsigned 32 bit value<br><br>bit 0 is the low bit<br>bit 31 is the high bit |
| Long | Signed 32 bit value<br><br>bit 0 is the low bit<br>bit 30 is the high bit<br>bit 31 is the sign bit |
| Float | 32 bit floating point value.<br><br>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. |

## Automatic Tag Database Generation

The Honeywell UDC Ethernet driver can automatically create most of the tags needed for the application. To do so, double-click on the device for which tags will be generated, and then select the **Database Creation** tab and click **Auto Create**. For a complete list of generated tags, see the addressing page for the specific device model.

**UDC 2500 Generated Tags**
**UDC 3200 Generated Tags**
**UDC 3500 Generated Tags**

**Note:** Click **Apply** or **OK** before attempting to generate tags after making changes to the device model selection.

## Address Descriptions

Address specifications vary depending on the model in use. Select a link from the following list to obtain specific address information for the model of interest.

**UDC 2500**
**UDC 3200**
**UDC 3500**

## UDC 2500 Addressing

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

### Modbus Addressing Decimal Format

| Memory Type | Range | Data Type | Access |
|---|---|---|---|
| Output Coils | 000001-000008 | **Boolean** | Read/Write |
| Input Coils | 100001-100008 | **Boolean** | Read Only |
| Internal Registers | 300001-365536<br>300001-365535<br>3xxxxx.00-3xxxxx.15 | **Word**, Short<br>DWord, Long, Float<br>Boolean | Read Only |
| Holding Registers | 400001-465536<br>400001-465535<br>4xxxxx.00-4xxxxx.15 | **Word**, Short<br>DWord, Long, Float<br>Boolean | Read/Write |

### Modbus Addressing Hexadecimal Format

| Memory Type | Range | Data Type | Access |
|---|---|---|---|
| Output Coils | 000001-000008 | **Boolean** | Read/Write |
| Input Coils | 100001-100008 | **Boolean** | Read Only |
| Internal Registers | 300001-310000<br>300001-30FFFF<br>3xxxxx.00-3xxxxx.15 | **Word**, Short<br>DWord, Long, Float<br>Boolean | Read Only |
| Holding Registers | 400001-410000<br>400001-40FFFF<br>4xxxxx.00-4xxxxx.15 | **Word**, Short<br>DWord, Long, Float<br>Boolean | Read/Write |

**Note 1:** Not all input coil and holding register addresses are writable in the UDC2500. See tables below and device user's manual for complete parameter mapping and access permission.

**Note 2:** Internal registers and Holding registers are mapped to the same memory range in the UDC2500.

**Note 3:** Addresses 307693, 307694, 407693, and 407694 are write only. Client applications will always read 0 for these tags.

### Parameter Mapping

The following tables describe the most important parameters and their Modbus addresses. These are the tags that will be automatically generated by this driver.

### Digital Inputs

| Name | Address | Type | Access | Description |
|---|---|---|---|---|
| Input1 | 100001 | Boolean | Read Only | Digital Input 1 |
| Input2 | 100002 | Boolean | Read Only | Digital Input 2 |

### Digital Outputs

| Name | Address | Type | Access | Description |
|---|---|---|---|---|
| Output1 | 000001 | Boolean | Read Only | Digital Output 1 |
| Output2 | 000002 | Boolean | Read Only | Digital Output 2 |
| Alarm2 | 000003 | Boolean | Read Only | Alarm Relay 2 |
| Alarm1 | 000004 | Boolean | Read Only | Alarm Relay 1 |

### Integer Registers

| Name | Address | Type | Access | Description |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| PV | 400001 | Short | Read Only | Present Value |
| RSPSP2 | 400002 | Short | Read Only | RSP SP2 |
| WSP | 400003 | Short | Read Only | Working Setpoint (LSP1, LSP2, or RSP) |
| Output | 400004 | Short | Read/Write | Output |
| Input1 | 400005 | Short | Read Only | Input 1 |
| Input2 | 400006 | Short | Read Only | Input 2 |
| Gain1PropBand1 | 400007 | Short | Read/Write | Gain 1 Prop Band 1 |
| Direction | 400008 | Short | Read Only | Direction (0=Direct, 1=Reverse) |
| Reset1 | 400009 | Short | Read/Write | Reset 1 |
| Rate1 | 400010 | Short | Read/Write | Rate 1 |
| CycleTime | 400011 | Short | Read/Write | Cycle Time |
| PVLowRange | 400012 | Short | Read Only | PV Low Range |
| PVHighRange | 400013 | Short | Read Only | PV High Range |
| Alarm1SP1 | 400014 | Short | Read/Write | Alarm1 SP1 |
| Alarm1SP2 | 400015 | Short | Read/Write | Alarm1 SP2 |
| Alarm1Action | 400016 | Short | Read Only | Alarm 1 Action |
| Gain2ProBand2 | 400017 | Short | Read/Write | Gain 2 Prop Band 2 |
| 2PosStepDeadband | 400018 | Short | Read/Write | 3 Pos Step Deadband (-5 to 25) |
| Reset2 | 400019 | Short | Read/Write | Reset 2 |
| Rate2 | 400020 | Short | Read/Write | Rate 2 |
| CycleTime2 | 400021 | Short | Read/Write | Cycle Time 2 |
| LSP1 | 400022 | Short | Read/Write | Local Set Point 1 |
| LSP2 | 400023 | Short | Read/Write | Local Set Point 2 |
| Alarm2SP1 | 400024 | Short | Read/Write | Alarm 2 SP 1 |
| Alarm2SP2 | 400025 | Short | Read/Write | Alarm 2 SP 2 |
| Alarm2Ev | 400026 | Short | Read/Write | Alarm 2 Events |
| SPLowLimit | 400027 | Short | Read/Write | SP Low Limit |
| SPHighLimit | 400028 | Short | Read/Write | SP High Limit |
| SP | 400029 | Short | Read/Write | SP Working Value |
| OutputLowLimit | 400030 | Short | Read/Write | Output Low Limit |
| OutputHighLimit | 400031 | Short | Read/Write | Output High Limit |
| OutputWorkingValue | 400032 | Short | Read/Write | Output Working Value |
| PVOverride | 400033 | Short | Read/Write | PV Override Value |
| SPOverride | 400034 | Short | Read/Write | SP Override Value |
| OutputOverride | 400035 | Short | Read/Write | Output Override Value |
| CSPRatio | 400036 | Short | Read/Write | CSP Ratio |
| CSPBias | 400037 | Short | Read Only | CSP Bias |
| Deviation | 400038 | Short | Read Only | Deviation |
| AutoManState | 400251 | Word | Read/Write | 0=Manual, 1=Auto |
| LSPSelectState | 400252 | Word | Read/Write | 0=LSP1, 1=LSP2 |
| RemLocSPState | 400253 | Word | Read/Write | 0=LSP, 1=RSP |
| TuneSetState | 400254 | Word | Read/Write | 0=Tune Set 1, 1= Tune Set 2 |
| LoopStatus_Register | 400255 | Word | Read Only | Loop Status Register |
| LoopStatus_Mode | 400255.00 | Boolean | Read Only | Loop Status Mode Bit (0=Manual, 1=Auto) |
| LoopStatus_SP | 400255.01 | Boolean | Read Only | Loop Status SP Bit (0=SP1, 1=SP2) |
| LoopStatus_RemLoc | 400255.02 | Boolean | Read Only | Loop Status Remote/Local Bit (0=LSP, 1=RSP) |
| LoopStatus_TuneSet | 400255.03 | Boolean | Read Only | Loop Status Tune Set Bit (0=Set1, 1=Set2) |
| LoopStatus_CSP | 400255.06 | Boolean | Read Only | Loop Status CSP In Use Bit |
| AlarmStatus_Register | 407153 | Word | Read Only | Alarm Status Register |
| AlarmStatus_Alarm1 | 407153.00 | Boolean | Read Only | Alarm Status Alarm 1 Bit |
| AlarmStatus_Alarm2 | 407153.01 | Boolean | Read Only | Alarm Status Alarm 2 Bit |

**Float Registers**

| Name | Address | Type | Access | Description |
|---|---|---|---|---|
| PV | 400065 | Float | Read Only | Present Value |

| | | | | |
|---|---|---|---|---|
| RSPSP2 | 400067 | Float | Read Only | RSP SP2 |
| WSP | 400069 | Float | Read Only | Working Setpoint |
| Output | 400071 | Float | Read/Write | Output |
| Input1 | 400073 | Float | Read Only | Input 1 |
| Gain1PropBand1 | 400077 | Float | Read/Write | Gain 1 Prop Band 1 |
| Direction | 400079 | Float | Read Only | Direction (0=Direct, 1=Reverse) |
| Reset1 | 400081 | Float | Read/Write | Reset 1 |
| Rate1 | 400083 | Float | Read/Write | Rate 1 |
| CycleTime | 400085 | Float | Read/Write | Cycle Time |
| PVLowRange | 400087 | Float | Read Only | PV Low Range |
| PVHighRange | 400089 | Float | Read Only | PV High Range |
| Alarm1SP1 | 400091 | Float | Read/Write | Alarm1 SP1 |
| Alarm1SP2 | 400093 | Float | Read/Write | Alarm1 SP2 |
| Gain2ProBand2 | 400097 | Float | Read/Write | Gain 2 Prop Band 2 |
| 3PosStepDeadband | 400099 | Float | Read/Write | 3 Pos Step Deadband (-5 to 25) |
| Reset2 | 400101 | Float | Read/Write | Reset 2 |
| Rate2 | 400103 | Float | Read/Write | Rate 2 |
| CycleTime2 | 400105 | Float | Read/Write | Cycle Time 2 |
| LSP1 | 400107 | Float | Read/Write | Local Set Point 1 |
| LSP2 | 400109 | Float | Read/Write | Local Set Point 2 |
| Alarm2SP1 | 400111 | Float | Read/Write | Alarm 2 SP 1 |
| Alarm2SP2 | 400113 | Float | Read/Write | Alarm 2 SP 2 |
| SPLowLimit | 400117 | Float | Read/Write | SP Low Limit |
| SPHighLimit | 400119 | Float | Read/Write | SP High Limit |
| WSP | 400121 | Float | Read/Write | Working Setpoint (LSP1, LSP2, or RSP) |
| OutputLowLimit | 400123 | Float | Read/Write | Output Low Limit |
| OutputHighLimit | 400125 | Float | Read/Write | Output High Limit |
| OutputWorkingValue | 400127 | Float | Read/Write | Output Working Value |
| PVOverride | 400129 | Float | Read/Write | PV Override Value |
| SPOverride | 400131 | Float | Read/Write | SP Override Value |
| OutputOverride | 400133 | Float | Read/Write | Output Override Value |
| CSPRatio | 400135 | Float | Read/Write | CSP Ratio |
| CSPBias | 400137 | Float | Read Only | CSP Bias |
| Deviation | 400139 | Float | Read/Write | Deviation |
| AuxOutput | 400163 | Float | Read Only | Auxilary Output |
| SPRampTime | 400165 | Float | Read/Write | Setpoint Ramp Time |
| SetpointRampSP | 400167 | Float | Read/Write | Setpoint Ramp SP |
| In1Ratio | 400169 | Float | Read/Write | Input1 Ratio |
| In1Bias | 400171 | Float | Read/Write | Input1 Bias |
| In2Ratio | 400173 | Float | Read/Write | Input2 Ratio |
| In2Bias | 400175 | Float | Read/Write | Input2 Bias |
| SPSwitchValue | 400177 | Float | Read/Write | SP Switch Value |
| AnalogInp1 | 406145 | Float | Read Only | Analog Input 1 |
| AnalogInp2 | 406147 | Float | Read Only | Analog Input 2 |
| Alarm1SpVal1 | 407169 | Float | Read/Write | Alarm 1 Setpoint 1 |
| Alarm1SpVal2 | 407171 | Float | Read/Write | Alarm 1 Setpoint 2 |
| Alarm2SpVal1 | 407173 | Float | Read/Write | Alarm 2 Setpoint 1 |
| Alarm2SpVal2 | 407175 | Float | Read/Write | Alarm 2 Setpoint 2 |

**Set Point Programming**

| Name | Address | Type | Access | Description |
|---|---|---|---|---|
| ProgramOutput | 407681 | Float | Read Only | Program Output |
| SegmentNum | 407683 | Float | Read Only | Segment Number |
| SegTimeRemain | 407689 | Float | Read Only | Segment Time Remain |
| Status_Register | 407692 | Word | Read Only | Status Register |

| | | | | |
|---|---|---|---|---|
| Status_Ready | 407692.00 | Boolean | Read Only | Status Ready Bit |
| Status_Run | 407692.01 | Boolean | Read Only | Status Run Bit |
| Status_Hold | 407692.02 | Boolean | Read Only | Status Hold Bit |
| Status_End | 407692.03 | Boolean | Read Only | Status End Bit |
| Run | 407693 | Short | Write Only | Write 1 to Run |
| Hold | 407694 | Short | Write Only | Write 0 to Hold |
| TimeUnits | 407995 | Word | Read/Write | Time Units |
| RampUnits | 407996 | Word | Read/Write | Ramp Units |
| ProgEndSeg_Register | 407998 | Word | Read/Write | Program End Segment Register |
| ProgEndSeg_02 | 407998.00 | Boolean | Read/Write | Program End Segment 2 Bit |
| ProgEndSeg_04 | 407998.01 | Boolean | Read/Write | Program End Segment 4 Bit |
| ProgEndSeg_06 | 407998.02 | Boolean | Read/Write | Program End Segment 6 Bit |
| ProgEndSeg_08 | 407998.03 | Boolean | Read/Write | Program End Segment 8 Bit |
| ProgEndSeg_10 | 407998.04 | Boolean | Read/Write | Program End Segment 10 Bit |
| ProgEndSeg_12 | 407998.05 | Boolean | Read/Write | Program End Segment 12 Bit |
| PrgTermState | 407999 | Word | Read/Write | Program Termination State<br>(0=Last SP, 1=FailSafe) |
| PrgStateEnd | 408000 | Word | Read/Write | Program state at Program End<br>(0=Disable, 1=Hold) |
| EURampUnits_Reg-ister | 408001 | Word | Read/Write | Engineering Units for Ramp Segments Register |
| EURampUnits_HrMin | 408001.00 | Boolean | Read/Write | Engineering Units for Ramp Segments<br>Hours & Minutes Bit |
| EURampUnits_DegMin | 408001.01 | Boolean | Read/Write | Engineering Units for Ramp Segments Degrees/Minute Bit |
| EURampUnits_DegHr | 408001.02 | Boolean | Read/Write | Engineering Units for Ramp Segments Degrees/Hour Bit |
| PrgStartSeg_Register | 408002 | Word | Read/Write | Program Start Segment Register |
| PrgStartSeg_01 | 408002.00 | Boolean | Read/Write | Program Start Segment 1 Bit |
| PrgStartSeg_02 | 408002.01 | Boolean | Read/Write | Program Start Segment 2 Bit |
| PrgStartSeg_03 | 408002.02 | Boolean | Read/Write | Program Start Segment 3 Bit |
| PrgStartSeg_04 | 408002.03 | Boolean | Read/Write | Program Start Segment 4 Bit |
| PrgStartSeg_05 | 408002.04 | Boolean | Read/Write | Program Start Segment 5 Bit |
| PrgStartSeg_06 | 408002.05 | Boolean | Read/Write | Program Start Segment 6 Bit |
| PrgStartSeg_07 | 408002.06 | Boolean | Read/Write | Program Start Segment 7 Bit |
| PrgStartSeg_08 | 408002.07 | Boolean | Read/Write | Program Start Segment 8 Bit |
| PrgStartSeg_09 | 408002.08 | Boolean | Read/Write | Program Start Segment 9 Bit |
| PrgStartSeg_10 | 408002.09 | Boolean | Read/Write | Program Start Segment 10 Bit |
| PrgStartSeg_11 | 408002.10 | Boolean | Read/Write | Program Start Segment 11 Bit |
| PrgStartSeg_12 | 408002.11 | Boolean | Read/Write | Program Start Segment 12 Bit |
| PrgRcycl | 408003 | Word | Read/Write | Program Recycle |
| Seg01Ramp | 410241 | Word | Read Only | Segment 1 Ramp |
| Seg01TimeRate | 410243 | Float | Read/Write | Segment 1 Time Ramp |
| Seg02Soak | 410249 | Word | Read Only | Segment 2 Soak |
| Seg02SoakTime | 410251 | Float | Read/Write | Segment 2 Soak Time |
| Seg02SoakSpValue | 410253 | Float | Read/Write | Segment 2 Soak SP Value |
| Seg03Ramp | 410257 | Word | Read Only | Segment 3 Ramp |
| Seg03TimeRate | 410259 | Float | Read/Write | Segment 3 Time Ramp |
| Seg04Soak | 410265 | Word | Read Only | Segment 4 Soak |
| Seg04SoakTime | 410267 | Float | Read/Write | Segment 4 Soak Time |
| Seg04SoakSpValue | 410269 | Float | Read/Write | Segment 4 Soak SP Value |
| Seg05Ramp | 410273 | Word | Read Only | Segment 5 Ramp |
| Seg05TimeRate | 410275 | Float | Read/Write | Segment 5 Time Ramp |
| Seg06Soak | 410281 | Word | Read Only | Segment 6 Soak |
| Seg06SoakTime | 410283 | Float | Read/Write | Segment 6 Soak Time |
| Seg06SoakSpValue | 410285 | Float | Read/Write | Segment 6 Soak SP Value |
| Seg07Ramp | 410289 | Word | Read Only | Segment 7 Ramp |
| Seg07TimeRate | 410291 | Float | Read/Write | Segment 7 Time Ramp |

| | | | | |
|---|---|---|---|---|
| Seg08Soak | 410297 | Word | Read Only | Segment 8 Soak |
| Seg08SoakTime | 410299 | Float | Read/Write | Segment 8 Soak Time |
| Seg08SoakSpValue | 410301 | Float | Read/Write | Segment 8 Soak SP Value |
| Seg09Ramp | 410305 | Word | Read Only | Segement 9 Ramp |
| Seg09TimeRate | 410307 | Float | Read/Write | Segment 9 Time Ramp |
| Seg10Soak | 410313 | Word | Read Only | Segment 10 Soak |
| Seg10SoakTime | 410315 | Float | Read/Write | Segment 10 Soak Time |
| Seg10SoakSpValue | 410317 | Float | Read/Write | Segment 10 Soak SP Value |
| Seg11Ramp | 410321 | Word | Read Only | Segment 11 Ramp |
| Seg11TimeRate | 410323 | Float | Read/Write | Segment 11 Time Ramp |
| Seg12Soak | 410329 | Word | Read Only | Segment 12 Soak |
| Seg12SoakTime | 410331 | Float | Read/Write | Segment 12 Soak Time |
| Seg12SoakSpValue | 410333 | Float | Read/Write | Segment 12 SP Value |

## UDC 3200 Addressing

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

### Modbus Addressing Decimal Format

| Memory Type | Range | Data Type | Access |
|---|---|---|---|
| Output Coils | 000001-000008 | **Boolean** | Read/Write |
| Input Coils | 100001-100008 | **Boolean** | Read Only |
| Internal Registers | 300001-365536<br>300001-365535<br>3xxxxx.00-3xxxxx.15 | **Word**, Short<br>DWord, Long, Float<br>Boolean | Read Only |
| Holding Registers | 400001-465536<br>400001-465535<br>4xxxxx.00-4xxxxx.15 | **Word**, Short<br>DWord, Long, Float<br>Boolean | Read/Write |

### Modbus Addressing Hexadecimal Format

| Memory Type | Range | Data Type | Access |
|---|---|---|---|
| Output Coils | 000001-000008 | **Boolean** | Read/Write |
| Input Coils | 100001-100008 | **Boolean** | Read Only |
| Internal Registers | 300001-310000<br>300001-30FFFF<br>3xxxxx.00-3xxxxx.15 | **Word**, Short<br>DWord, Long, Float<br>Boolean | Read Only |
| Holding Registers | 400001-410000<br>400001-40FFFF<br>4xxxxx.00-4xxxxx.15 | **Word**, Short<br>DWord, Long, Float<br>Boolean | Read/Write |

**Note 1:** Not all input coil and holding register addresses are writable in the UDC3200. See tables below and device user's manual for complete parameter mapping and access permission.

**Note 2:** Internal registers and Holding registers are mapped to the same memory range in the UDC3200.

**Note 3:** Addresses 307693, 307694, 407693, and 407694 are write only. Client applications will always read 0 for these tags.

### Parameter Mapping

The following tables describe the most important parameters and their Modbus addresses. These are the tags that will be automatically generated by this driver.

### Digital Inputs

| Name | Address | Type | Access | Description |
|---|---|---|---|---|
| Input1 | 100001 | Boolean | Read Only | Digital Input 1 |
| Input2 | 100002 | Boolean | Read Only | Digital Input 2 |

### Digital Outputs

| Name | Address | Type | Access | Description |
|---|---|---|---|---|

| | | | | |
|---|---|---|---|---|
| Output1 | 000001 | Boolean | Read Only | Digital Output 1 |
| Output2 | 000002 | Boolean | Read Only | Digital Output 2 |
| Alarm2 | 000003 | Boolean | Read Only | Alarm Relay 2 |
| Alarm1 | 000004 | Boolean | Read Only | Alarm Relay 1 |

**Integer Registers**

| Name | Address | Type | Access | Description |
|---|---|---|---|---|
| PV | 400001 | Short | Read Only | Present Value |
| RSPSP2 | 400002 | Short | Read Only | RSP SP2 |
| WSP | 400003 | Short | Read Only | Working Setpoint (LSP1, LSP2, or RSP) |
| Output | 400004 | Short | Read/Write | Output |
| Input1 | 400005 | Short | Read Only | Input 1 |
| Input2 | 400006 | Short | Read Only | Input 2 |
| Gain1PropBand1 | 400007 | Short | Read/Write | Gain 1 Prop Band 1 |
| Direction | 400008 | Short | Read Only | Direction (0=Direct, 1=Reverse) |
| Reset1 | 400009 | Short | Read/Write | Reset 1 |
| Rate1 | 400010 | Short | Read/Write | Rate 1 |
| CycleTime | 400011 | Short | Read/Write | Cycle Time |
| PVLowRange | 400012 | Short | Read Only | PV Low Range |
| PVHighRange | 400013 | Short | Read Only | PV High Range |
| Alarm1SP1 | 400014 | Short | Read/Write | Alarm1 SP1 |
| Alarm1SP2 | 400015 | Short | Read/Write | Alarm1 SP2 |
| Alarm1Action_Register | 400016 | Word | Read Only | Alarm1 ActionRegister |
| Alarm1Action_AL11EV | 400016.00 | Boolean | Read Only | Alarm1 Actin AL11EV Bit |
| Alarm1Action_AL12EV | 400016.01 | Boolean | Read Only | Alarm1 Action AL12EV Bit |
| Gain2ProBand2 | 400017 | Short | Read/Write | Gain 2 Prop Band 2 |
| 2PosStepDeadband | 400018 | Short | Read/Write | 3 Pos Step Deadband (-5 to 25) |
| Reset2 | 400019 | Short | Read/Write | Reset 2 |
| Rate2 | 400020 | Short | Read/Write | Rate 2 |
| CycleTime2 | 400021 | Short | Read/Write | Cycle Time 2 |
| LSP1 | 400022 | Short | Read/Write | Local Set Point 1 |
| LSP2 | 400023 | Short | Read/Write | Local Set Point 2 |
| Alarm2SP1 | 400024 | Short | Read/Write | Alarm 2 SP 1 |
| Alarm2SP2 | 400025 | Short | Read/Write | Alarm 2 SP 2 |
| Alarm2Ev_Register | 400026 | Word | Read/Write | Alarm 2 Events Register |
| Akarn2Ev_AL11EV | 400026.00 | Boolean | Read/Write | Alarm 2 Events AL11EV Bit |
| Alarm2Ev_AL12EV | 400026.01 | Boolean | Read/Write | Alarm 2 Events AL12EV Bit |
| SPLowLimit | 400027 | Short | Read/Write | SP Low Limit |
| SPHighLimit | 400028 | Short | Read/Write | SP High Limit |
| SP | 400029 | Short | Read/Write | SP Working Value |
| OutputLowLimit | 400030 | Short | Read/Write | Output Low Limit |
| OutputHighLimit | 400031 | Short | Read/Write | Output High Limit |
| OutputWorkingValue | 400032 | Short | Read/Write | Output Working Value |
| PVOverride | 400033 | Short | Read/Write | PV Override Value |
| SPOverride | 400034 | Short | Read/Write | SP Override Value |
| OutputOverride | 400035 | Short | Read/Write | Output Override Value |
| CSPRatio | 400036 | Short | Read/Write | CSP Ratio |
| CSPBias | 400037 | Short | Read Only | CSP Bias |
| Deviation | 400038 | Short | Read Only | Deviation |
| LSP3 | 400039 | Word | Read/Write | LSP #3 |
| PerCO | 400040 | Word | Read/Write | Percent CO |
| DecimalPoint | 400041 | Short | Read/Write | Decimal Point Location |
| Alg1Bias | 400042 | Word | Read Only | Algorithm 1 Bias (prescale dependent on DP) |
| Fuzzy | 400056 | Short | Read/Write | Fuzzy Enable |
| ShedEnable | 400057 | Short | Read/Write | Shed Enable |

| | | | | |
|---|---|---|---|---|
| AutoManState | 400059 | Short | Read/Write | 0=Manual, 1=Auto |
| LSPSelectState | 400060 | Short | Read/Write | 0=LSP1, 1=LSP2, 2=LSP3 |
| RemLocSPState | 400061 | Short | Read/Write | 0=LSP, 1=RSP |
| TuneSetState | 400062 | Short | Read/Write | 0=Tune Set 1, 1=Tune Set 2 |
| LoopStatus_Register | 400063 | Word | Read Only | Loop Status Register |
| LoopStatus_Mode | 400063.00 | Boolean | Read Only | Loop Status Mode Bit (0=Manual, 1=Auto) |
| LoopStatus_SP | 400063.01 | Boolean | Read Only | Loop Status SP Bit (0=SP1, 1=SP2) |
| LoopStatus_RemLoc | 400063.02 | Boolean | Read Only | Loop Status Remote/Local Bit (0=LSP, 1=RSP) |
| LoopStatus_TuneSet | 400063.03 | Boolean | Read Only | Loop Status Tune Set Bit (0=Set1, 1=Set2) |
| LoopStatus_LSP3 | 400063.04 | Boolean | Read Only | Loop Status LSP3 In Use Bit |
| LoopStatus_CSP | 400063.06 | Boolean | Read Only | Loop Status CSP In Use Bit |
| AlarmStatus_Register | 407153 | Word | Read Only | Alarm Status Register |
| AlarmStatus_Alarm1 | 407153.00 | Boolean | Read Only | Alarm Status Alarm 1 Bit |
| AlarmStatus_Alarm2 | 407153.01 | Boolean | Read Only | Alarm Status Alarm 2 Bit |

**Float Registers**

| Name | Address | Type | Access | Description |
|---|---|---|---|---|
| PV | 400065 | Float | Read Only | Present Value |
| RSPSP2 | 400067 | Float | Read Only | RSP SP2 |
| WSP | 400069 | Float | Read Only | Working Setpoint |
| Output | 400071 | Float | Read/Write | Output |
| Input1 | 400073 | Float | Read Only | Input 1 |
| Gain1PropBand1 | 400077 | Float | Read/Write | Gain 1 Prop Band 1 |
| Direction | 400079 | Float | Read Only | Direction (0=Direct, 1=Reverse) |
| Reset1 | 400081 | Float | Read/Write | Reset 1 |
| Rate1 | 400083 | Float | Read/Write | Rate 1 |
| CycleTime | 400085 | Float | Read/Write | Cycle Time |
| PVLowRange | 400087 | Float | Read Only | PV Low Range |
| PVHighRange | 400089 | Float | Read Only | PV High Range |
| Alarm1SP1 | 400091 | Float | Read/Write | Alarm1 SP1 |
| Alarm1SP2 | 400093 | Float | Read/Write | Alarm1 SP2 |
| Gain2ProBand2 | 400097 | Float | Read/Write | Gain 2 Prop Band 2 |
| 3PosStepDeadband | 400099 | Float | Read/Write | 3 Pos Step Deadband (-5 to 25) |
| Reset2 | 400101 | Float | Read/Write | Reset 2 |
| Rate2 | 400103 | Float | Read/Write | Rate 2 |
| CycleTime2 | 400105 | Float | Read/Write | Cycle Time 2 |
| LSP1 | 400107 | Float | Read/Write | Local Set Point 1 |
| LSP2 | 400109 | Float | Read/Write | Local Set Point 2 |
| Alarm2SP1 | 400111 | Float | Read/Write | Alarm 2 SP 1 |
| Alarm2SP2 | 400113 | Float | Read/Write | Alarm 2 SP 2 |
| SPLowLimit | 400117 | Float | Read/Write | SP Low Limit |
| SPHighLimit | 400119 | Float | Read/Write | SP High Limit |
| WSP | 400121 | Float | Read/Write | "Working Setpoint (LSP1, LSP2, or RSP) |
| OutputLowLimit | 400123 | Float | Read/Write | Output Low Limit |
| OutputHighLimit | 400125 | Float | Read/Write | Output High Limit |
| OutputWorkingValue | 400127 | Float | Read/Write | Output Working Value |
| PVOverride | 400129 | Float | Read/Write | PV Override Value |
| SPOverride | 400131 | Float | Read/Write | SP Override Value |
| OutputOverride | 400133 | Float | Read/Write | Output Override Value |
| CSPRatio | 400135 | Float | Read/Write | CSP Ratio |
| CSPBias | 400137 | Float | Read Only | CSP Bias |
| Deviation | 400139 | Float | Read/Write | Deviation |
| LSP3 | 400141 | Float | Read/Write | LSP #3 |
| Alg1Bias | 400159 | Float | Read Only | Algorithm 1 Bias (prescale dependent on DP) |
| AuxOutput | 400163 | Float | Read Only | Auxilary Output |

| | | | | |
|---|---|---|---|---|
| SPRampTime | 400165 | Float | Read/Write | Setpoint Ramp Time |
| SetpointRampSP | 400167 | Float | Read/Write | Setpoint Ramp SP |
| In1Ratio | 400169 | Float | Read/Write | Input1 Ratio |
| In1Bias | 400171 | Float | Read/Write | Input1 Bias |
| In2Ratio | 400173 | Float | Read/Write | Input2 Ratio |
| In2Bias | 400175 | Float | Read/Write | Input2 Bias |
| SPSwitchValue | 400177 | Float | Read/Write | SP Switch Value |
| AnalogInp1 | 406145 | Float | Read Only | Analog Input 1 |
| AnalogInp2 | 406147 | Float | Read Only | Analog Input 2 |
| Alarm1SpVal1 | 407169 | Float | Read/Write | Alarm 1 Setpoint 1 |
| Alarm1SpVal2 | 407171 | Float | Read/Write | Alarm 1 Setpoint 2 |
| Alarm2SpVal1 | 407173 | Float | Read/Write | Alarm 2 Setpoint 1 |
| Alarm2SpVal2 | 407175 | Float | Read/Write | Alarm 2 Setpoint 2 |

**Set Point Programming**

| Name | Address | Type | Access | Description |
|---|---|---|---|---|
| ProgramOutput | 407681 | Float | Read Only | Program Output |
| SegmentNum | 407683 | Float | Read Only | Segment Number |
| SegTimeRemain | 407689 | Float | Read Only | Segment Time Remain |
| Status_Register | 407692 | Word | Read Only | Status Register |
| Status_Ready | 407692.00 | Boolean | Read Only | Status Ready Bit |
| Status_Run | 407692.01 | Boolean | Read Only | Status Run Bit |
| Status_Hold | 407692.02 | Boolean | Read Only | Status Hold Bit |
| Status_End | 407692.03 | Boolean | Read Only | Status End Bit |
| Run | 407693 | Short | Write Only | Write 1 to Run |
| Hold | 407694 | Short | Write Only | Write 0 to Hold |
| TimeUnits | 407995 | Word | Read/Write | Time Units |
| RampUnits | 407996 | Word | Read/Write | Ramp Units |
| ProgEndSeg_Register | 407998 | Word | Read/Write | Program End Segment Register |
| ProgEndSeg_02 | 407998.00 | Boolean | Read/Write | Program End Segment 2 Bit |
| ProgEndSeg_04 | 407998.01 | Boolean | Read/Write | Program End Segment 4 Bit |
| ProgEndSeg_06 | 407998.02 | Boolean | Read/Write | Program End Segment 6 Bit |
| ProgEndSeg_08 | 407998.03 | Boolean | Read/Write | Program End Segment 8 Bit |
| ProgEndSeg_10 | 407998.04 | Boolean | Read/Write | Program End Segment 10 Bit |
| ProgEndSeg_12 | 407998.05 | Boolean | Read/Write | Program End Segment 12 Bit |
| PrgTermState | 407999 | Word | Read/Write | Program Termination State (0=Last SP, 1=FailSafe) |
| PrgStateEnd | 408000 | Word | Read/Write | Program state at Program End (0=Disable, 1=Hold) |
| EURampUnits_Register | 408001 | Word | Read/Write | Engineering Units for Ramp Segments Register |
| EURampUnits_HrMin | 408001.00 | Boolean | Read/Write | Engineering Units for Ramp Segments Hours & Minutes Bit |
| EURampUnits_DegMin | 408001.01 | Boolean | Read/Write | Engineering Units for Ramp Segments Degrees/Minute Bit |
| EURampUnits_DegHr | 408001.02 | Boolean | Read/Write | Engineering Units for Ramp Segments Degrees/Hour Bit |
| PrgStartSeg_Register | 408002 | Word | Read/Write | Program Start Segment Register |
| PrgStartSeg_01 | 408002.00 | Boolean | Read/Write | Program Start Segment 1 Bit |
| PrgStartSeg_02 | 408002.01 | Boolean | Read/Write | Program Start Segment 2 Bit |
| PrgStartSeg_03 | 408002.02 | Boolean | Read/Write | Program Start Segment 3 Bit |
| PrgStartSeg_04 | 408002.03 | Boolean | Read/Write | Program Start Segment 4 Bit |
| PrgStartSeg_05 | 408002.04 | Boolean | Read/Write | Program Start Segment 5 Bit |
| PrgStartSeg_06 | 408002.05 | Boolean | Read/Write | Program Start Segment 6 Bit |
| PrgStartSeg_07 | 408002.06 | Boolean | Read/Write | Program Start Segment 7 Bit |
| PrgStartSeg_08 | 408002.07 | Boolean | Read/Write | Program Start Segment 8 Bit |
| PrgStartSeg_09 | 408002.08 | Boolean | Read/Write | Program Start Segment 9 Bit |
| PrgStartSeg_10 | 408002.09 | Boolean | Read/Write | Program Start Segment 10 Bit |
| PrgStartSeg_11 | 408002.10 | Boolean | Read/Write | Program Start Segment 11 Bit |
| PrgStartSeg_12 | 408002.11 | Boolean | Read/Write | Program Start Segment 12 Bit |

| | | | | |
|---|---|---|---|---|
| PrgRcycl | 408003 | Word | Read/Write | Program Recycle |
| Seg01Ramp | 410241 | Word | Read Only | Segment 1 Ramp |
| Seg01TimeRate | 410243 | Float | Read/Write | Segment 1 Time Ramp |
| Seg02Soak | 410249 | Word | Read Only | Segment 2 Soak |
| Seg02SoakTime | 410251 | Float | Read/Write | Segment 2 Soak Time |
| Seg02SoakSpValue | 410253 | Float | Read/Write | Segment 2 Soak SP Value |
| Seg03Ramp | 410257 | Word | Read Only | Segment 3 Ramp |
| Seg03TimeRate | 410259 | Float | Read/Write | Segment 3 Time Ramp |
| Seg 04Soak | 410265 | Word | Read Only | Segment 4 Soak |
| Seg04SoakTime | 410267 | Float | Read/Write | Segment 4 Soak Time |
| Seg04SoakSpValue | 410269 | Float | Read/Write | Segment 4 Soak SP Value |
| Seg05Ramp | 410273 | Word | Read Only | Segment 5 Ramp |
| Seg05TimeRate | 410275 | Float | Read/Write | Segment 5 Time Ramp |
| Seg6Soak | 410281 | Word | Read Only | Segment 6 Soak |
| Seg06SoakTime | 410283 | Float | Read/Write | Segment 6 Soak Time |
| Seg06SoakSpValue | 410285 | Float | Read/Write | Segment 6 Soak SP Value |
| Seg07Ramp | 410289 | Word | Read Only | Segment 7 Ramp |
| Seg07TimeRate | 410291 | Float | Read/Write | Segment 7 Time Ramp |
| Seg8Soak | 410297 | Word | Read Only | Segment 8 Soak |
| Seg08SoakTime | 410299 | Float | Read/Write | Segment 8 Soak Time |
| Seg08SoakSpValue | 410301 | Float | Read/Write | Segment 8 Soak SP Value |
| Seg09Ramp | 410305 | Word | Read Only | Segment 9 Ramp |
| Seg09TimeRate | 410307 | Float | Read/Write | Segment 9 Time Ramp |
| Seg10Soak | 410313 | Word | Read Only | Segment 10 Soak |
| Seg10SoakTime | 410315 | Float | Read/Write | Segment 10 Soak Time |
| Seg10SoakSpValue | 410317 | Float | Read/Write | Segment 10 Soak SP Value |
| Seg11Ramp | 410321 | Word | Read Only | Segment 11 Ramp |
| Seg11TimeRate | 410323 | Float | Read/Write | Segment 11 Time Ramp |
| Seg12Soak | 410329 | Word | Read Only | Segment 12 Soak |
| Seg12SoakTime | 410331 | Float | Read/Write | Segment 12 Soak Time |
| Seg12SoakSpValue | 410333 | Float | Read/Write | Segment 12 SP Value |

## UDC 3500 Addressing

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

### Modbus Addressing Decimal Format

| Memory Type | Range | Data Type | Access |
|---|---|---|---|
| Output Coils | 000001-000008 | **Boolean** | Read/Write |
| Input Coils | 100001-100008 | **Boolean** | Read Only |
| Internal Registers | 300001-365536<br>300001-365535<br>3xxxxx.00-3xxxxx.15 | **Word**, Short<br>DWord, Long, Float<br>Boolean | Read Only |
| Holding Registers | 400001-465536<br>400001-465535<br>4xxxxx.00-4xxxxx.15 | **Word**, Short<br>DWord, Long, Float<br>Boolean | Read/Write |

### Modbus Addressing Hexadecimal Format

| Memory Type | Range | Data Type | Access |
|---|---|---|---|
| Output Coils | 000001-000008 | **Boolean** | Read/Write |
| Input Coils | 100001-100008 | **Boolean** | Read Only |
| Internal Registers | 300001-310000<br>300001-30FFFF<br>3xxxxx.00-3xxxxx.15 | **Word**, Short<br>DWord, Long, Float<br>Boolean | Read Only |
| Holding Registers | 400001-410000<br>400001-40FFFF<br>4xxxxx.00-4xxxxx.15 | **Word**, Short<br>DWord, Long, Float<br>Boolean | Read/Write |

**Note 1:** Not all input coil and holding register addresses are writable in the UDC3500. See tables below and device user's manual for complete parameter mapping and access permission.

**Note 2:** Internal registers and Holding registers are mapped to the same memory range in the UDC3500.

**Note 3:** Addresses 307693, 307694, 407693, and 407694 are write only. Client applications will always read 0 for these tags.

### Parameter Mapping

The following tables describe the most important parameters and their Modbus addresses. These are the tags that will be automatically generated by this driver.

### Digital Inputs

| Name | Address | Type | Access | Description |
|---|---|---|---|---|
| Input1 | 100001 | Boolean | Read Only | Digital Input 1 |
| Input2 | 100002 | Boolean | Read Only | Digital Input 2 |

### Digital Outputs

| Name | Address | Type | Access | Description |
|---|---|---|---|---|
| Output1 | 000001 | Boolean | Read Only | Digital Output 1 |
| Output2 | 000002 | Boolean | Read Only | Digital Output 2 |
| Alarm2 | 000003 | Boolean | Read Only | Alarm Relay 2 |
| Alarm1 | 000004 | Boolean | Read Only | Alarm Relay 1 |

### Integer Registers

| Name | Address | Type | Access | Description |
|---|---|---|---|---|
| PV | 400001 | Short | Read Only | Present Value |
| RSPSP2 | 400002 | Short | Read Only | RSP SP2 |
| WSP | 400003 | Short | Read Only | Working Setpoint (LSP1, LSP2, or RSP) |
| Output | 400004 | Short | Read/Write | Output |
| Input1 | 400005 | Short | Read Only | Input 1 |
| Input2 | 400006 | Short | Read Only | Input 2 |
| Gain1PropBand1 | 400007 | Short | Read/Write | Gain 1 Prop Band 1 |
| Direction | 400008 | Short | Read Only | Direction (0=Direct, 1=Reverse) |
| Reset1 | 400009 | Short | Read/Write | Reset 1 |
| Rate1 | 400010 | Short | Read/Write | Rate 1 |
| CycleTime | 400011 | Short | Read/Write | Cycle Time |
| PVLowRange | 400012 | Short | Read Only | PV Low Range |
| PVHighRange | 400013 | Short | Read Only | PV High Range |
| Alarm1SP1 | 400014 | Short | Read/Write | Alarm1 SP1 |
| Alarm1SP2 | 400015 | Short | Read/Write | Alarm1 SP2 |
| Alarm1Action_Register | 400016 | Word | Read Only | Alarm1 ActionRegister |
| Alarm1Action_AL11EV | 400016.00 | Boolean | Read Only | Alarm1 Actin AL11EV Bit |
| Alarm1Action_AL12EV | 400016.01 | Boolean | Read Only | Alarm1 Action AL12EV Bit |
| Gain2ProBand2 | 400017 | Short | Read/Write | Gain 2 Prop Band 2 |
| 2PosStepDeadband | 400018 | Short | Read/Write | 3 Pos Step Deadband (-5 to 25) |
| Reset2 | 400019 | Short | Read/Write | Reset 2 |
| Rate2 | 400020 | Short | Read/Write | Rate 2 |
| CycleTime2 | 400021 | Short | Read/Write | Cycle Time 2 |
| LSP1 | 400022 | Short | Read/Write | Local Set Point 1 |
| LSP2 | 400023 | Short | Read/Write | Local Set Point 2 |
| Alarm2SP1 | 400024 | Short | Read/Write | Alarm 2 SP 1 |
| Alarm2SP2 | 400025 | Short | Read/Write | Alarm 2 SP 2 |
| Alarm2Ev_Register | 400026 | Word | Read/Write | Alarm 2 Events Register |
| Akarn2Ev_AL11EV | 400026.00 | Boolean | Read/Write | Alarm 2 Events AL11EV Bit |
| Alarm2Ev_AL12EV | 400026.01 | Boolean | Read/Write | Alarm 2 Events AL12EV Bit |
| SPLowLimit | 400027 | Short | Read/Write | SP Low Limit |

| | | | | |
|---|---|---|---|---|
| SPHighLimit | 400028 | Short | Read/Write | SP High Limit |
| SP | 400029 | Short | Read/Write | SP Working Value |
| OutputLowLimit | 400030 | Short | Read/Write | Output Low Limit |
| OutputHighLimit | 400031 | Short | Read/Write | Output High Limit |
| OutputWorkingValue | 400032 | Short | Read/Write | Output Working Value |
| PVOverride | 400033 | Short | Read/Write | PV Override Value |
| SPOverride | 400034 | Short | Read/Write | SP Override Value |
| OutputOverride | 400035 | Short | Read/Write | Output Override Value |
| CSPRatio | 400036 | Short | Read/Write | CSP Ratio |
| CSPBias | 400037 | Short | Read Only | CSP Bias |
| Deviation | 400038 | Short | Read Only | Deviation |
| LSP3 | 400039 | Word | Read/Write | LSP #3 |
| PerCO | 400040 | Word | Read/Write | Percent CO |
| DecimalPoint | 400041 | Short | Read/Write | Decimal Point Location |
| Alg1Bias | 400042 | Word | Read Only | Algorithm 1 Bias (prescale dependent on DP) |
| Fuzzy | 400056 | Short | Read/Write | Fuzzy Enable |
| ShedEnable | 400057 | Short | Read/Write | Shed Enable |
| AutoManState | 400059 | Short | Read/Write | 0=Manual, 1=Auto |
| LSPSelectState | 400060 | Short | Read/Write | 0=LSP1, 1=LSP2, 2=LSP3 |
| RemLocSPState | 400061 | Short | Read/Write | 0=LSP, 1=RSP |
| TuneSetState | 400062 | Short | Read/Write | 0=Tune Set 1, 1=Tune Set 2 |
| LoopStatus_Register | 400063 | Word | Read Only | Loop Status Register |
| LoopStatus_Mode | 400063.00 | Boolean | Read Only | Loop Status Mode Bit (0=Manual, 1=Auto) |
| LoopStatus_SP | 400063.01 | Boolean | Read Only | Loop Status SP Bit (0=SP1, 1=SP2) |
| LoopStatus_RemLoc | 400063.02 | Boolean | Read Only | Loop Status Remote/Local Bit (0=LSP, 1=RSP) |
| LoopStatus_TuneSet | 400063.03 | Boolean | Read Only | Loop Status Tune Set Bit (0=Set1, 1=Set2) |
| LoopStatus_LSP3 | 400063.04 | Boolean | Read Only | Loop Status LSP3 In Use Bit |
| LoopStatus_CSP | 400063.06 | Boolean | Read Only | Loop Status CSP In Use Bit |
| AlarmStatus_Register | 407153 | Word | Read Only | Alarm Status Register |
| AlarmStatus_Alarm1 | 407153.00 | Boolean | Read Only | Alarm Status Alarm 1 Bit |
| AlarmStatus_Alarm2 | 407153.01 | Boolean | Read Only | Alarm Status Alarm 2 Bit |

**Float Registers**

| Name | Address | Type | Access | Description |
|---|---|---|---|---|
| PV | 400065 | Float | Read Only | Present Value |
| RSPSP2 | 400067 | Float | Read Only | RSP SP2 |
| WSP | 400069 | Float | Read Only | Working Setpoint |
| Output | 400071 | Float | Read/Write | Output |
| Input1 | 400073 | Float | Read Only | Input 1 |
| Gain1PropBand1 | 400077 | Float | Read/Write | Gain 1 Prop Band 1 |
| Direction | 400079 | Float | Read Only | Direction (0=Direct, 1=Reverse) |
| Reset1 | 400081 | Float | Read/Write | Reset 1 |
| Rate1 | 400083 | Float | Read/Write | Rate 1 |
| CycleTime | 400085 | Float | Read/Write | Cycle Time |
| PVLowRange | 400087 | Float | Read Only | PV Low Range |
| PVHighRange | 400089 | Float | Read Only | PV High Range |
| Alarm1SP1 | 400091 | Float | Read/Write | Alarm1 SP1 |
| Alarm1SP2 | 400093 | Float | Read/Write | Alarm1 SP2 |
| Gain2ProBand2 | 400097 | Float | Read/Write | Gain 2 Prop Band 2 |
| 3PosStepDeadband | 400099 | Float | Read/Write | 3 Pos Step Deadband (-5 to 25) |
| Reset2 | 400101 | Float | Read/Write | Reset 2 |
| Rate2 | 400103 | Float | Read/Write | Rate 2 |
| CycleTime2 | 400105 | Float | Read/Write | Cycle Time 2 |
| LSP1 | 400107 | Float | Read/Write | Local Set Point 1 |
| LSP2 | 400109 | Float | Read/Write | Local Set Point 2 |

| | | | | |
|---|---|---|---|---|
| Alarm2SP1 | 400111 | Float | Read/Write | Alarm 2 SP 1 |
| Alarm2SP2 | 400113 | Float | Read/Write | Alarm 2 SP 2 |
| SPLowLimit | 400117 | Float | Read/Write | SP Low Limit |
| SPHighLimit | 400119 | Float | Read/Write | SP High Limit |
| WSP | 400121 | Float | Read/Write | "Working Setpoint (LSP1, LSP2, or RSP) |
| OutputLowLimit | 400123 | Float | Read/Write | Output Low Limit |
| OutputHighLimit | 400125 | Float | Read/Write | Output High Limit |
| OutputWorkingValue | 400127 | Float | Read/Write | Output Working Value |
| PVOverride | 400129 | Float | Read/Write | PV Override Value |
| SPOverride | 400131 | Float | Read/Write | SP Override Value |
| OutputOverride | 400133 | Float | Read/Write | Output Override Value |
| CSPRatio | 400135 | Float | Read/Write | CSP Ratio |
| CSPBias | 400137 | Float | Read Only | CSP Bias |
| Deviation | 400139 | Float | Read/Write | Deviation |
| LSP3 | 400141 | Float | Read/Write | LSP #3 |
| Alg1Bias | 400159 | Float | Read Only | Algorithm 1 Bias (prescale dependent on DP) |
| AuxOutput | 400163 | Float | Read Only | Auxilary Output |
| SPRampTime | 400165 | Float | Read/Write | Setpoint Ramp Time |
| SetpointRampSP | 400167 | Float | Read/Write | Setpoint Ramp SP |
| In1Ratio | 400169 | Float | Read/Write | Input1 Ratio |
| In1Bias | 400171 | Float | Read/Write | Input1 Bias |
| In2Ratio | 400173 | Float | Read/Write | Input2 Ratio |
| In2Bias | 400175 | Float | Read/Write | Input2 Bias |
| SPSwitchValue | 400177 | Float | Read/Write | SP Switch Value |
| AnalogInp1 | 406145 | Float | Read Only | Analog Input 1 |
| AnalogInp2 | 406147 | Float | Read Only | Analog Input 2 |
| Alarm1SpVal1 | 407169 | Float | Read/Write | Alarm 1 Setpoint 1 |
| Alarm1SpVal2 | 407171 | Float | Read/Write | Alarm 1 Setpoint 2 |
| Alarm2SpVal1 | 407173 | Float | Read/Write | Alarm 2 Setpoint 1 |
| Alarm2SpVal2 | 407175 | Float | Read/Write | Alarm 2 Setpoint 2 |

**Set Point Programming**

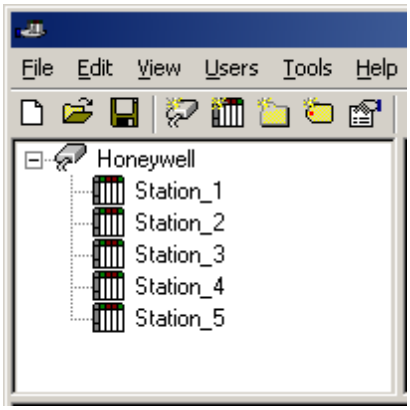
| Name | Address | Type | Access | Description |
|---|---|---|---|---|
| ProgramOutput | 407681 | Float | Read Only | Program Output |
| SegmentNum | 407683 | Float | Read Only | Segment Number |
| SegTimeRemain | 407689 | Float | Read Only | Segment Time Remain |
| Status_Register | 407692 | Word | Read Only | Status Register |
| Status_Ready | 407692.00 | Boolean | Read Only | Status Ready Bit |
| Status_Run | 407692.01 | Boolean | Read Only | Status Run Bit |
| Status_Hold | 407692.02 | Boolean | Read Only | Status Hold Bit |
| Status_End | 407692.03 | Boolean | Read Only | Status End Bit |
| Run | 407693 | Short | Write Only | Write 1 to Run |
| Hold | 407694 | Short | Write Only | Write 0 to Hold |
| TimeUnits | 407995 | Word | Read/Write | Time Units |
| RampUnits | 407996 | Word | Read/Write | Ramp Units |
| ProgEndSeg_Register | 407998 | Word | Read/Write | Program End Segment Register |
| ProgEndSeg_02 | 407998.00 | Boolean | Read/Write | Program End Segment 2 Bit |
| ProgEndSeg_04 | 407998.01 | Boolean | Read/Write | Program End Segment 4 Bit |
| ProgEndSeg_06 | 407998.02 | Boolean | Read/Write | Program End Segment 6 Bit |
| ProgEndSeg_08 | 407998.03 | Boolean | Read/Write | Program End Segment 8 Bit |
| ProgEndSeg_10 | 407998.04 | Boolean | Read/Write | Program End Segment 10 Bit |
| ProgEndSeg_12 | 407998.05 | Boolean | Read/Write | Program End Segment 12 Bit |
| PrgTermState | 407999 | Word | Read/Write | Program Termination State (0=Last SP, 1=FailSafe) |
| PrgStateEnd | 408000 | Word | Read/Write | Program state at Program End (0=Disable, 1=Hold) |

| | | | | |
|---|---|---|---|---|
| EURampUnits_Register | 408001 | Word | Read/Write | Engineering Units for Ramp Segments Register |
| EURampUnits_HrMin | 408001.00 | Boolean | Read/Write | Engineering Units for Ramp Segments Hours & Minutes Bit |
| EURampUnits_DegMin | 408001.01 | Boolean | Read/Write | Engineering Units for Ramp Segments Degrees/Minute Bit |
| EURampUnits_DegHr | 408001.02 | Boolean | Read/Write | Engineering Units for Ramp Segments Degrees/Hour Bit |
| PrgStartSeg_Register | 408002 | Word | Read/Write | Program Start Segment Register |
| PrgStartSeg_01 | 408002.00 | Boolean | Read/Write | Program Start Segment 1 Bit |
| PrgStartSeg_02 | 408002.01 | Boolean | Read/Write | Program Start Segment 2 Bit |
| PrgStartSeg_03 | 408002.02 | Boolean | Read/Write | Program Start Segment 3 Bit |
| PrgStartSeg_04 | 408002.03 | Boolean | Read/Write | Program Start Segment 4 Bit |
| PrgStartSeg_05 | 408002.04 | Boolean | Read/Write | Program Start Segment 5 Bit |
| PrgStartSeg_06 | 408002.05 | Boolean | Read/Write | Program Start Segment 6 Bit |
| PrgStartSeg_07 | 408002.06 | Boolean | Read/Write | Program Start Segment 7 Bit |
| PrgStartSeg_08 | 408002.07 | Boolean | Read/Write | Program Start Segment 8 Bit |
| PrgStartSeg_09 | 408002.08 | Boolean | Read/Write | Program Start Segment 9 Bit |
| PrgStartSeg_10 | 408002.09 | Boolean | Read/Write | Program Start Segment 10 Bit |
| PrgStartSeg_11 | 408002.10 | Boolean | Read/Write | Program Start Segment 11 Bit |
| PrgStartSeg_12 | 408002.11 | Boolean | Read/Write | Program Start Segment 12 Bit |
| PrgRcycl | 408003 | Word | Read/Write | Program Recycle |
| Seg01Ramp | 410241 | Word | Read Only | Segment 1 Ramp |
| Seg01TimeRate | 410243 | Float | Read/Write | Segment 1 Time Ramp |
| Seg2Soak | 410249 | Word | Read Only | Segment 2 Soak |
| Seg02SoakTime | 410251 | Float | Read/Write | Segment 2 Soak Time |
| Seg02SoakSpValue | 410253 | Float | Read/Write | Segment 2 Soak SP Value |
| Seg3Ramp | 410257 | Word | Read Only | Segment 3 Ramp |
| Seg03TimeRate | 410259 | Float | Read/Write | Segment 3 Time Ramp |
| Seg04Soak | 410265 | Word | Read Only | Segment 4 Soak |
| Seg04SoakTime | 410267 | Float | Read/Write | Segment 4 Soak Time |
| Seg04SoakSpValue | 410269 | Float | Read/Write | Segment 4 Soak SP Value |
| Seg05Ramp | 410273 | Word | Read Only | Segment 5 Ramp |
| Seg05TimeRate | 410275 | Float | Read/Write | Segment 5 Time Ramp |
| Seg06Soak | 410281 | Word | Read Only | Segment 6 Soak |
| Seg06SoakTime | 410283 | Float | Read/Write | Segment 6 Soak Time |
| Seg06SoakSpValue | 410285 | Float | Read/Write | Segment 6 Soak SP Value |
| Seg07Ramp | 410289 | Word | Read Only | Segment 7 Ramp |
| Seg07TimeRate | 410291 | Float | Read/Write | Segment 7 Time Ramp |
| Seg08Soak | 410297 | Word | Read Only | Segment 8 Soak |
| Seg08SoakTime | 410299 | Float | Read/Write | Segment 8 Soak Time |
| Seg08SoakSpValue | 410301 | Float | Read/Write | Segment 8 Soak SP Value |
| Seg9Ramp | 410305 | Word | Read Only | Segment 9 Ramp |
| Seg09TimeRate | 410307 | Float | Read/Write | Segment 9 Time Ramp |
| Seg10Soak | 410313 | Word | Read Only | Segment 10 Soak |
| Seg10SoakTime | 410315 | Float | Read/Write | Segment 10 Soak Time |
| Seg10SoakSpValue | 410317 | Float | Read/Write | Segment 10 Soak SP Value |
| Seg11Ramp | 410321 | Word | Read Only | Segment 11 Ramp |
| Seg11TimeRate | 410323 | Float | Read/Write | Segment 11 Time Ramp |
| Seg12Soak | 410329 | Word | Read Only | Segment 12 Soak |
| Seg12SoakTime | 410331 | Float | Read/Write | Segment 12 Soak Time |
| Seg12SoakSpValue | 410333 | Float | Read/Write | Segment 12 SP Value |

## Optimizing Your Honeywell UDC Ethernet Communications

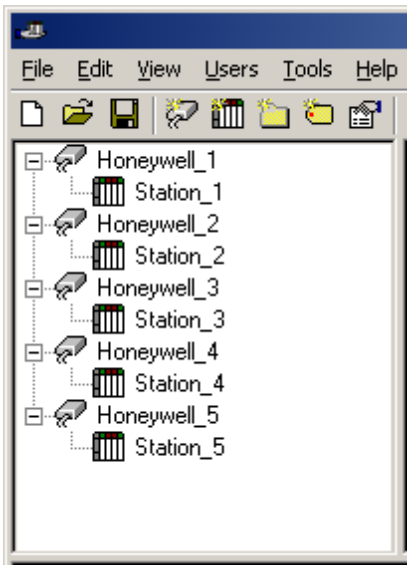
The Honeywell UDC Ethernet driver has been designed to provide the best performance with the least amount of impact on the system's overall performance. While the Honeywell UDC Ethernet driver is fast, there are a couple of guidelines that can be used in order to control and optimize the application and gain maximum performance.

Our server refers to communications protocols like Honeywell UDC Ethernet as a channel. Each channel defined in the application represents a separate path of execution in the server. Once a channel has been defined, a series of devices must then be defined under that channel. Each of these devices represents a single Honeywell UDC Ethernet from which data will be collected. While this approach to defining the application will provide a high level of performance, it won't take full advantage of the Honeywell UDC Ethernet driver or the network. An example of how the application may appear when configured using a single channel is shown below.




Each device appears under a single Honeywell UDC Ethernet channel. In this configuration, the driver must move from one device to the next as quickly as possible in order to gather information at an effective rate. As more devices are added or more information is requested from a single device, the overall update rate begins to suffer.

If the Honeywell UDC Ethernet driver could only define one single channel, then the example shown above would be the only option available; however, the Honeywell UDC Ethernet driver can define up to 100 channels. Using multiple channels distributes the data collection workload by simultaneously issuing multiple requests to the network. An example of how the same application may appear when configured using multiple channels to improve performance is shown below.




Each device has now been defined under its own channel. In this new configuration, a single path of execution is dedicated to the task of gathering data from each device. If the application has 100 or fewer devices, it can be optimized exactly how it is shown here.

The performance will improve even if the application has more than 100 devices. While 100 or fewer devices may be ideal, the application will still benefit from additional channels. Although by spreading the device load across all channels will cause the server to move from device to device again, it can now do so with far less devices to process on a single channel.

Block Size, which is available on each defined device, can also affect the Honeywell UDC Ethernet driver's performance. Block Size refers to the number of bytes that may be requested from a device at one time. To refine the performance of this driver, configure Block Size to 1 to 22 registers.

## Error Descriptions

The following error/warning messages may be generated. Click on the link for a description of the message. The errors are listed in alphabetical order.



**See Also:**
**Modbus Exception Codes**

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

## 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.

## Bad address in block [x to y] on device '<device name>'

**Error Type:**
Fatal addresses falling in this block.

**Possible Cause:**
This error is reported when the driver attempts to read a location in a PLC that does not exist. For example in a PLC that only has holding registers 40001 to 41400, requesting address 41405 would generate this error. Once this error is generated, the driver will not request the specified block of data from the PLC again. Any other addresses being requested that are in this same block will also go invalid.

**Solution:**
The client application should be modified to ask for addresses within the range of the device.

## Bad received length [x to y] on device '<device name>'

**Error Type:**

Fatal addresses falling in this block.

**Possible Cause:**
The driver attempted to read a block of memory in the PLC. The PLC responded with no error, but did not provide the driver with the requested block size of data.

**Solution:**
Ensure that the range of memory exists for the PLC.

## 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 '<device name>' block request [x to y] responded with exception <code>

**Error Type:**
Fatal addresses failing in this block

**Possible Cause:**
This error is reported when the driver attempts to read a location in a PLC that does not exist. For example, in a PLC that only has holding registers 40001 to 41400, requesting address 41405 would generate this error. Once this error is generated, the driver will not request the specified block of data from the PLC again. Any other addresses being requested that are in this same block will also go invalid.

**Solution:**
The client application should be modified to ask for addresses within the range of the device.

## Device '<device name>' is not responding

**Error Type:**
Serious

**Possible Cause:**
1. The connection between the device and the host PC is broken.
2. The communication parameters for the 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 setting.

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

## Device address '<address>' contains a syntax error

**Error Type:**
Warning

**Possible Cause:**
An invalid tag address has been specified in a static request.

**Solution:**
Re-enter the address in the server.

## Device address '<address>' is not supported by model '<model name>'

**Error Type:**
Warning

**Possible Cause:**
A tag address that has been specified statically references a location that is valid for the communications protocol but not supported by the target device.

**Solution:**
Verify that the address is correct; if it is not, re-enter it in the client application. Also verify that the selected model name for the device is correct.

## 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.

## Failure to initiate 'winsock.dll'

**Error Type:**
Fatal

**Possible Cause:**
Could not negotiate with the operating system's winsock 1.1 functionality.

**Solution:**
Verify that the winsock.dll is properly installed on the system.

## 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.

## Unable to write to address '<address>' on device '<device>': Device responded with exception code '<code>'

**Error Type:**
Warning

**Possible Cause:**
See **Modbus Exception Codes** for a description of the exception code.

**Solution:**
See **Modbus Exception Codes**.

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

**Error Type:**
Serious

**Possible Cause:**

1. The named device may not be connected to the network.
2. The named device may have been assigned an incorrect Network ID.
3. The named device is not responding to write requests.
4. The address does not exist in the PLC.

**Solution:**

1. Check the PLC network connections.
2. Verify the Network ID given to the named device matches that of the actual device.

## Modbus Exception Codes

The following data is taken from Modbus Application Protocol Specifications documentation.

| Code Dec/Hex | Name | Meaning |
|---|---|---|
| 01/0x01 | ILLEGAL FUNC-TION | The function code received in the query is not an allowable action for the server (or slave). This may be because the function code is only applicable to newer devices, and was not implemented in the unit selected. It could also indicate that the server (or slave) is in the wrong state to process a request of this type, for example because it is unconfigured and is being asked to return register values. |
| 02/0x02 | ILLEGAL DATA ADDRESS | The data address received in the query is not an allowable address for the server (or slave). More specifically, the combination of reference number and transfer length is invalid. For a controller with 100 registers, a request with offset 96 and length 4 would succeed, a request with offset 96 and length 5 will generate exception 02. |
| 03/0x03 | ILLEGAL DATA VALUE | A value contained in the query data field is not an allowable value for server (or slave). This indicates a fault in the structure of the remainder of a complex request, such as that the implied length is incorrect. It specifically does NOT mean that a data item submitted for storage in a register has a value outside the expectation of the application program, since the MODBUS protocol is unaware of the significance of any particular value of any particular register. |
| 04/0x04 | SLAVE DEVICE FAILURE | An unrecoverable error occurred while the server (or slave) was attempting to perform the requested action. |
| 05/0x05 | ACKNOWLEDGE | The slave has accepted the request and is processing it, but a long duration of time will be required to do so. This response is returned to prevent a timeout error from occurring in the master. The master can next issue a Poll Program Complete message to determine if processing is completed. |
| 06/0x06 | SLAVE DEVICE BUSY | The slave is engaged in processing a long-duration program command. The master should retransmit the message later when the slave is free. |
| 07/0x07 | NEGATIVE ACKNOWLEDGE | The slave cannot perform the program function received in the query. This code is returned for an unsuccessful programming request using function code 13 or 14 decimal. The master should request diagnostic or error information from the slave. |
| 08/0x08 | MEMORY PARITY ERROR | The slave attempted to read extended memory, but detected a parity error in the memory. The master can retry the request, but service may be required on the slave device. |
| 10/0x0A | GATEWAY PATH UNAVAILABLE | Specialized use in conjunction with gateways, indicates that the gateway was unable to allocate an internal communication path from the input port to the output port for processing the request. This usually means that the gateway is misconfigured or overloaded. |
| 11/0x0B | GATEWAY TARGET DEVICE FAILED TO RESPOND | Specialized use in conjunction with gateways, indicates that no response was obtained from the target device. Usually means that the device is not present on the network. |

**Note:** For this driver, the terms Slave and Unsolicited are used interchangeably.

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