Honeywell UDC Ethernet Driver Help

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Honeywell UDC Ethernet Driver Help

Help version 1.017

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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)

```
TD + 1 | OR/WHT          OR/WHT | 1 TD +
TD - 2 | OR                  OR | 2 TD -
RD + 3 | GRN/WHT        GRN/WHT | 3 RD +
      4 | BLU              BLU | 4
      5 | BLU/WHT        BLU/WHT | 5
RD - 6 | GRN              GRN | 6 RD -
      7 | BRN/WHT        BRN/WHT | 7
      8 | BRN              BRN | 8
RJ45                          RJ45
```

10 BaseT

8-pin RJ45

1 2 3 4 5 6 7 8
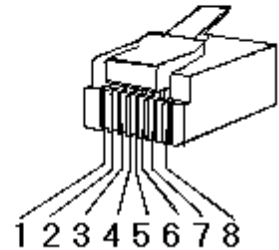
Crossover Cable

```
TD + 1 | OR/WHT          GRN/WHT | 1 TD +
TD - 2 | OR                  GRN | 2 TD -
RD + 3 | GRN/WHT          OR/WHT | 3 RD +
      4 | BLU              BLU | 4
      5 | BLU/WHT        BLU/WHT | 5
RD - 6 | GRN                  OR | 6 RD -
      7 | BRN/WHT        BRN/WHT | 7
      8 | BRN              BRN | 8
RJ45                          RJ45
```

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.
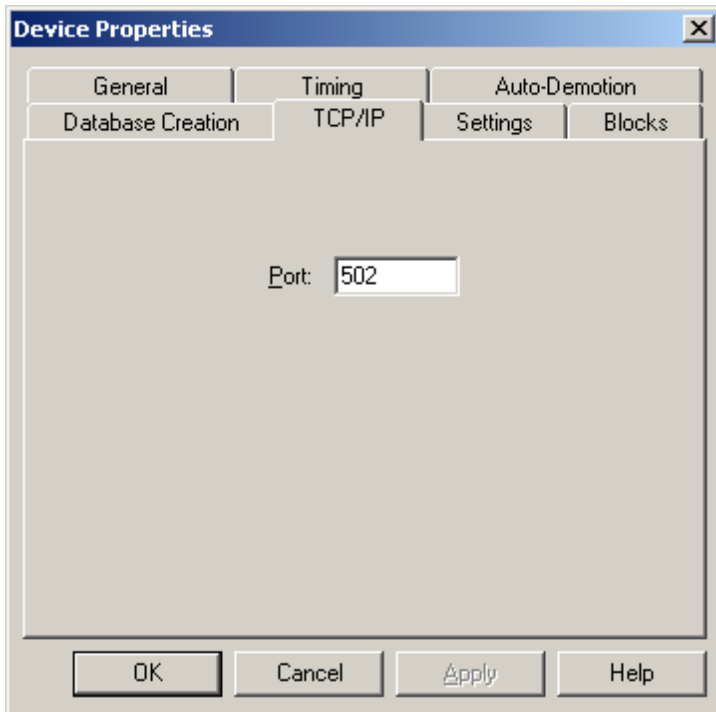
Settings

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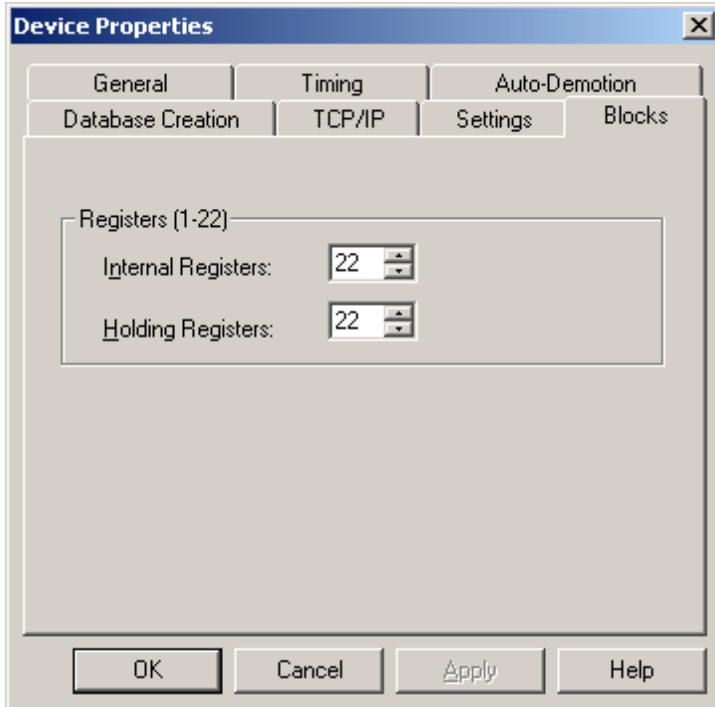
Given the overhead involved in sending data via TCP/IP, it is generally advantageous to keep the block size large. However, if data will be read from non-contiguous locations within the device, reducing the block size may increase performance.

Data Types Description

Data Type	Description
Boolean	Single bit
Word	Unsigned 16 bit value 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
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.

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 300001-365535 3xxxxx.00-3xxxxx.15	**Word**, Short DWord, Long, Float Boolean	Read Only
Holding Registers	400001-465536 400001-465535 4xxxxx.00-4xxxxx.15	**Word**, Short DWord, Long, Float 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 300001-30FFFF 3xxxxx.00-3xxxxx.15	**Word**, Short DWord, Long, Float Boolean	Read Only
Holding Registers	400001-410000 400001-40FFFF 4xxxxx.00-4xxxxx.15	**Word**, Short DWord, Long, Float 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 (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
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 300001-365535 3xxxxx.00-3xxxxx.15	**Word**, Short DWord, Long, Float Boolean	Read Only
Holding Registers	400001-465536 400001-465535 4xxxxx.00-4xxxxx.15	**Word**, Short DWord, Long, Float 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 300001-30FFFF 3xxxxx.00-3xxxxx.15	**Word**, Short DWord, Long, Float Boolean	Read Only
Holding Registers	400001-410000 400001-40FFFF 4xxxxx.00-4xxxxx.15	**Word**, Short DWord, Long, Float 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 300001-365535 3xxxxx.00-3xxxxx.15	**Word**, Short DWord, Long, Float Boolean	Read Only
Holding Registers	400001-465536 400001-465535 4xxxxx.00-4xxxxx.15	**Word**, Short DWord, Long, Float 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 300001-30FFFF 3xxxxx.00-3xxxxx.15	**Word**, Short DWord, Long, Float Boolean	Read Only
Holding Registers	400001-410000 400001-40FFFF 4xxxxx.00-4xxxxx.15	**Word**, Short DWord, Long, Float 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.
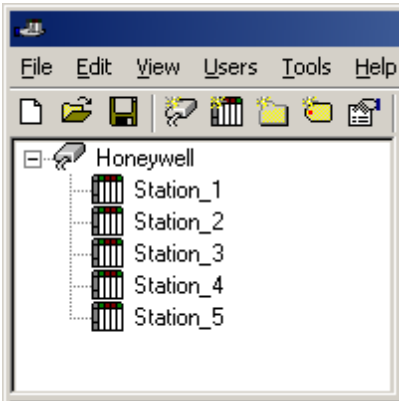
Each device appears under a single Honeywell UDC Ethernet channel. In this configuration, the driver must move from one device to the next as quickly as possible in order to gather information at an effective rate. As more devices are added or more information is requested from a single device, the overall 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.
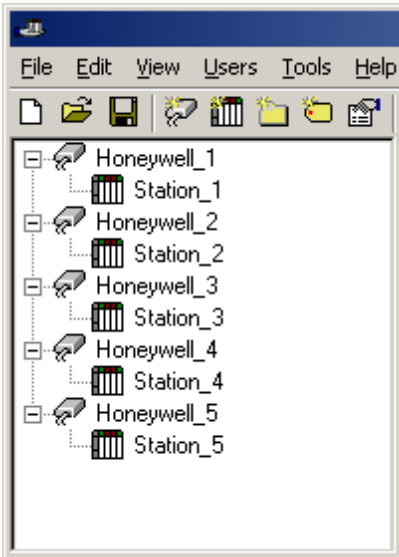
Each device has now been defined under its own channel. In this new configuration, a single path of execution is dedicated to the task of gathering data from each device. If the application has 100 or fewer devices, it can be optimized exactly how it is shown here.

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.

Address '<address>' is out of range for the specified device or register
Array support is not available for the specified address: '<address>'
Bad address in block [x to y] on device '<device name>'
Bad received length [x to y] on device '<device name>'
Data Type '<type>' is not valid for device address '<address>'
Device '<device name>' block request [x to y] responded with exception <code>
Device '<device name>' is not responding
Device address '<address>' contains a syntax error
Device address '<address>' is not supported by model '<model name>'
Device address '<address>' is Read Only
Failure to initiate 'winsock.dll'
Missing address
Unable to write to address '<address>' on device '<device>': Device responded with exception code '<code>'
Unable to write to '<address>' on device '<device name>'

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.

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.

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 mis-configured 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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