

Kingfisher RTU Modbus Interface

Kingfisher RTU Configuration to Support
the Standard Modbus Serial Protocol

Introduction

Kingfisher RTU can be configured to behave as a Modbus Slave device. InduSoft Web Studio (IWS) provides the MODBU driver, which implements the Modbus Master protocol. Therefore, after following the instructions described in this document to configure the Kingfisher RTU device, IWS is able to exchange data with the device via Modbus serial protocol.

Note: Information in this document, such as URLs, may no longer be valid on the date that this document is being read.

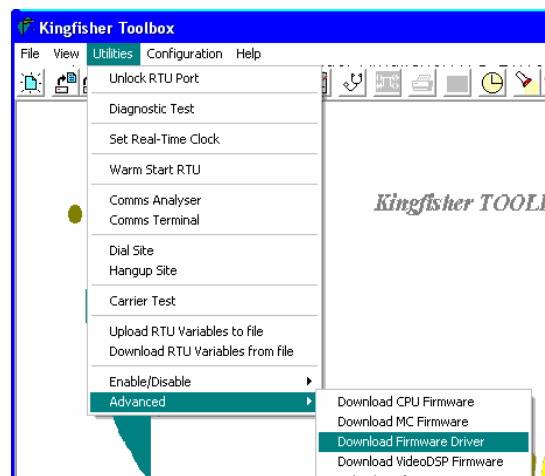
Configuring Kingfisher RTU

The Kingfisher RTU can be configured with the Kingfisher Toolbox utility, supplied by Kingfisher. Before configuring the device as a Modbus Slave, make sure you have the `modbu . 32` file. This file is available for download at the following URL: <http://www.rtunet.com/noframe/c-supp2.htm>.

Note: Click on the *CP-10/11 Firmware and Driver* from the URL mentioned previously and enter a valid User Name and Password to access the file. Consult Kingfisher if you have any problem accessing this file.

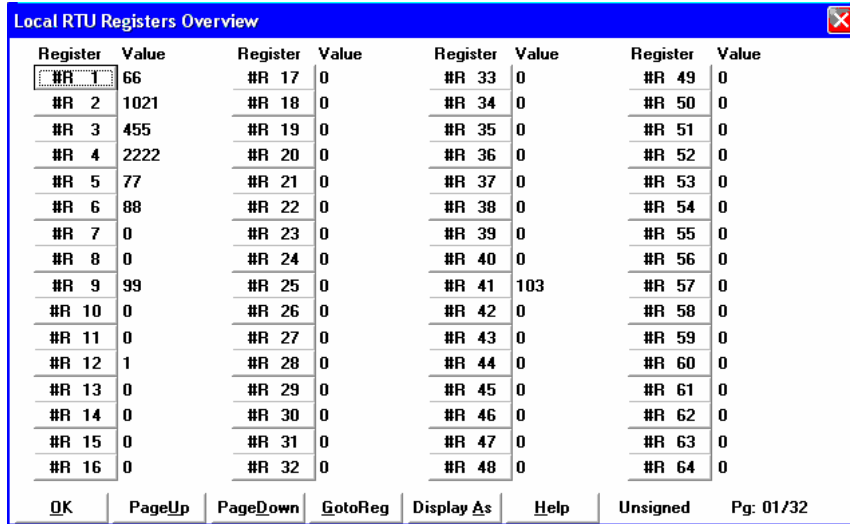
Follow the steps below to configure the Kingfisher RTU to perform as a Modbus Slave device:

1. Install and Run the Kingfisher Toolbox utility software.
2. Select the **Utilities** → **Advanced** → **Download Firmware Driver** menu.



3. Select the `modbus . 32` file from the `\KingfisherRTU\Drivers\` folder.

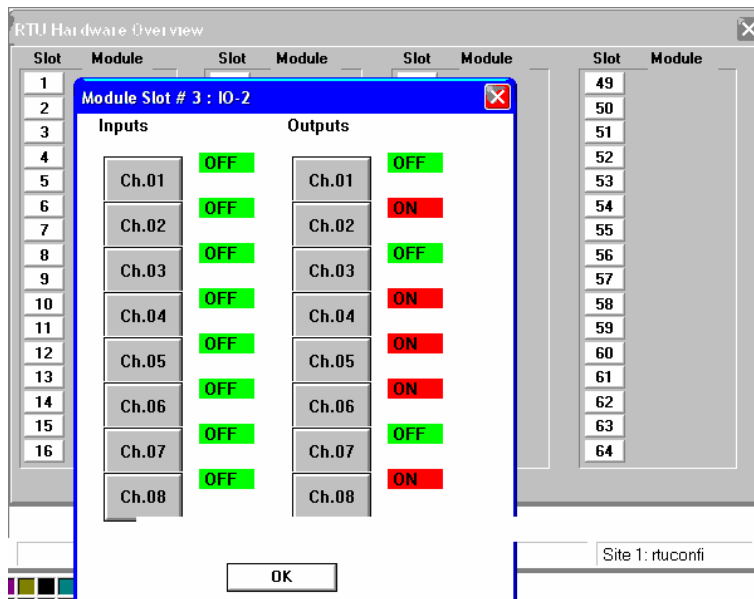
10. Select the Menu View → Local Registers menu option to monitor and/or force values to the RTU Registers.



| Register | Value | Register | Value | Register | Value | Register | Value |
|----------|-------|----------|-------|----------|-------|----------|-------|
| #R 1 | 66 | #R 17 | 0 | #R 33 | 0 | #R 49 | 0 |
| #R 2 | 1021 | #R 18 | 0 | #R 34 | 0 | #R 50 | 0 |
| #R 3 | 455 | #R 19 | 0 | #R 35 | 0 | #R 51 | 0 |
| #R 4 | 2222 | #R 20 | 0 | #R 36 | 0 | #R 52 | 0 |
| #R 5 | 77 | #R 21 | 0 | #R 37 | 0 | #R 53 | 0 |
| #R 6 | 88 | #R 22 | 0 | #R 38 | 0 | #R 54 | 0 |
| #R 7 | 0 | #R 23 | 0 | #R 39 | 0 | #R 55 | 0 |
| #R 8 | 0 | #R 24 | 0 | #R 40 | 0 | #R 56 | 0 |
| #R 9 | 99 | #R 25 | 0 | #R 41 | 103 | #R 57 | 0 |
| #R 10 | 0 | #R 26 | 0 | #R 42 | 0 | #R 58 | 0 |
| #R 11 | 0 | #R 27 | 0 | #R 43 | 0 | #R 59 | 0 |
| #R 12 | 1 | #R 28 | 0 | #R 44 | 0 | #R 60 | 0 |
| #R 13 | 0 | #R 29 | 0 | #R 45 | 0 | #R 61 | 0 |
| #R 14 | 0 | #R 30 | 0 | #R 46 | 0 | #R 62 | 0 |
| #R 15 | 0 | #R 31 | 0 | #R 47 | 0 | #R 63 | 0 |
| #R 16 | 0 | #R 32 | 0 | #R 48 | 0 | #R 64 | 0 |

Buttons: OK, PageUp, PageDown, GotoReg, Display As, Help, Unsigned, Pg: 01/32

11. Select the View → Hardware Overview menu and chose a slot to monitor the Digital Inputs and Outputs status.



RTU Hardware Overview

| Slot | Module | Slot | Module | Slot | Module | Slot | Module |
|------|--------|------|--------|------|--------|------|--------|
| 1 | | | | | | 49 | |
| 2 | | | | | | 50 | |
| 3 | | | | | | 51 | |
| 4 | | | | | | 52 | |
| 5 | | | | | | 53 | |
| 6 | | | | | | 54 | |
| 7 | | | | | | 55 | |
| 8 | | | | | | 56 | |
| 9 | | | | | | 57 | |
| 10 | | | | | | 58 | |
| 11 | | | | | | 59 | |
| 12 | | | | | | 60 | |
| 13 | | | | | | 61 | |
| 14 | | | | | | 62 | |
| 15 | | | | | | 63 | |
| 16 | | | | | | 64 | |

Module Slot # 3 : IO-2

| Inputs | | Outputs | |
|--------|-----|---------|-----|
| Ch.01 | OFF | Ch.01 | OFF |
| Ch.02 | OFF | Ch.02 | ON |
| Ch.03 | OFF | Ch.03 | OFF |
| Ch.04 | OFF | Ch.04 | ON |
| Ch.05 | OFF | Ch.05 | ON |
| Ch.06 | OFF | Ch.06 | ON |
| Ch.07 | OFF | Ch.07 | OFF |
| Ch.08 | OFF | Ch.08 | ON |

Buttons: OK, Site 1: rtuconf1

Addressing

InduSoft Web Studio MODBU driver supports the standard Modbus addresses:

- 0x:0 – 0x:0 ~ 0x:9999 = Coil Status
- 1x:0 – 1x:0 ~ 1x:9999 = Input Status
- 3x:0 – 3x:0 ~ 3x:9999 = Input Register
- 4x:0 – 4x:0 ~ 4x:9999 = Holding Register

You can use the following expressions to convert Kingfisher’s register addresses to Modbus addresses and vice-versa:

| Data Type | Formula |
|---------------------------|--|
| Digital Input | $10,000 + [(SLOT\# - 1) \times 16] + CH\# = 10,001 \text{ to } 11,024$ |
| Digital Output | $00,000 + [(SLOT\# - 1) \times 16] + CH\# + 8 = 00,001 \text{ to } 01,024$ |
| Analog Input/Output | $40,000 + [(SLOT\# - 1) \times 8] + CH\# = 40,001 \text{ to } 40,512$ |
| Register Bit (Read only) | $12,000 + [(REG\# - 1) \times 16] + CH\# = 12,001 \text{ to } 19,999 *$ |
| Register Bit (Read/Write) | $2,000 + [(REG\# - 1) \times 16] + CH\# = 02,001 \text{ to } 09,999 *$ |
| Register (Read/Write) | $41,000 + REG\# = 41,001 \text{ to } 42,024$ |

* You can only access up to Ch15 of Register 500 (corresponding to address 09,999 or 19,999). Ch16 of R500 (and after) cannot be accessed as a digital input or output. However, it is possible to read and write to all of the local registers using integer values.

The following table provides some examples:

| Data Type | Kingfisher Address | | Modbus Equivalent Address |
|----------------|--------------------|------|---------------------------|
| | SLOT # | CH # | |
| Digital Output | 2 | 1 | 0x:33 |
| Digital Input | 2 | 3 | 1x:19 |
| Analog Input | 3 | 2 | 4x:18 |
| Analog Output | 4 | 1 | 4x:25 |

Further information about the Modbus addressing for the Kingfisher RTU device can be found at the Kingfisher Toolbox utility Help ([Help](#) → [Topics](#) → [Communication Drivers](#) → [Driver Modbus](#)).

Note: The expression to convert Kingfisher’s register Digital Output addresses to Modbus addresses (and vice-versa) described in the Kingfisher documentation (Help file) is not accurate. The expression described previously in this document is correct.

Map of Revision

| Revision | Author | Date | Comments |
|----------|--------------------|--------------------|------------------|
| A | Lidiane A. Moreira | September 12, 2003 | Initial revision |