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.

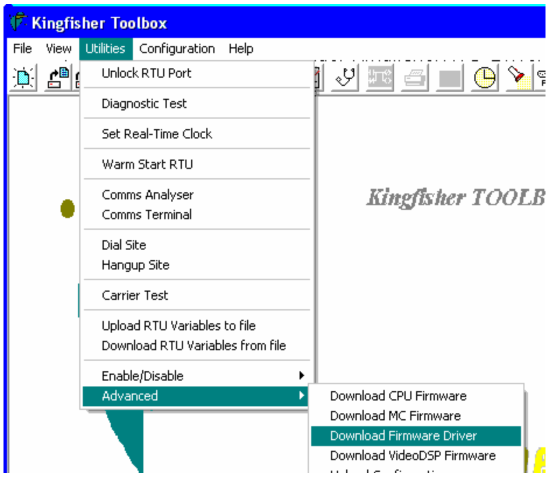
Configuring Kingfisher RTU

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.

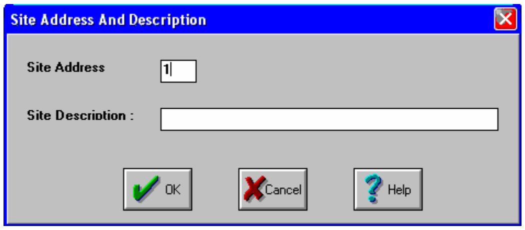
Follow the steps below to configure the Kingfisher RTU to perform as a Modbus Slave device:

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.

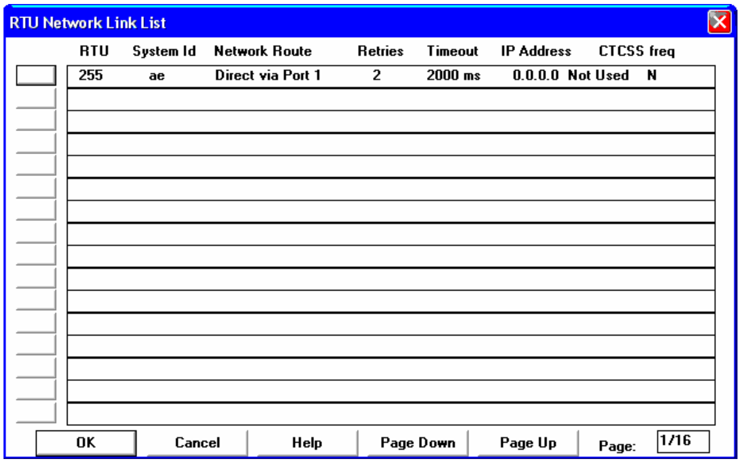
4. Create a new SDB (Site Database) file by the **File** → **New** menu. The SDB file contains the settings settings, such as RTU number, name, port list, network list, and so forth.
5. Select the **Configuration** → **Address & Description** menu and set the **Site Address** to `1`.



Site Address 1

Site Description :

6. Select the **Configuration** → **Port List** menu and configure the following parameters:
   - Type: RS-232
   - Protocol: Modbus Slave, S2
7. Select the **Configuration** → **PC Setup** and take note of the *PC's Network Address*.
8. Select the **Configuration** → **Network List** menu and add a new item. Fill the **IP Address** field with the PC's Network Address value from the previous step.



RTU	System Id	Network Route	Retries	Timeout	IP Address	CTCSS freq
255	ae	Direct via Port 1	2	2000 ms	0.0.0.0	Not Used N

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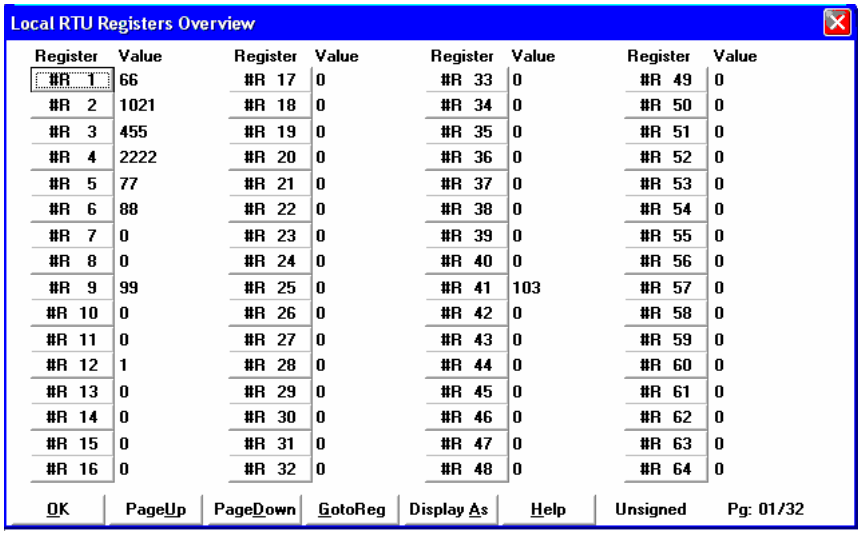
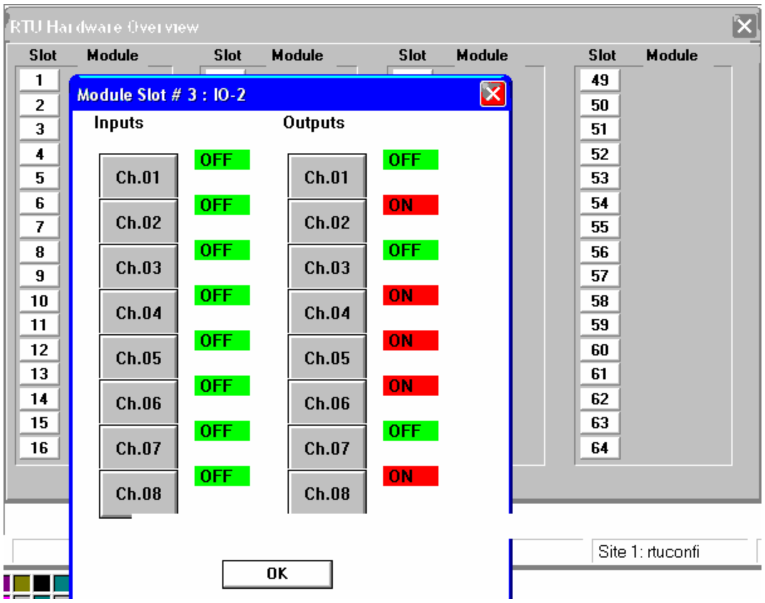
9. Select the **Configuration** → **Download RTU Config** menu to download the configure settings to the Kingfisher RTU device. Make sure that the device is properly connected to the computer before executing this command.

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

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



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

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)x16] + CH# = 10,001 to 11,024
Digital Output	00,000 + [(SLOT# -1)x16] + CH# + 8 = 00,001 to 01,024
Analog Input/Output	40,000 + [(SLOT# -1)x8] + CH#= 40,001 to 40,512
Register Bit (Read only)	12,000 + [(REG# -1)x16] + CH#= 12,001 to 19,999 *
Register Bit (Read/Write)	2,000 + [(REG# -1)x16] + CH#= 02,001 to 09,999 *
Register (Read/Write)	41,000 + REG#= 41,001 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:

Kingfisher Address			Modbus Equivalent Address
Data Type	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