

## **GW1000-MODTCP: ModTCP gateway to DH+**

The GW1000-MODTCP is a gateway between up to 5 Modbus TCP/IP devices to multiple DH+ nodes.

Our GW1000 is a multi-protocol gateway which can easily be converted to several protocols with a firmware change (ie. DF1, ASCII, Modbus, ModTCP, AB Ethernet or Ethernet/IP to multiple DH+ nodes).

You may wish to program via RSLINX (AB Ethernet driver) remotely over Ethernet with our GW1000-ABEIP firmware or switch to our ModTCP firmware for Modbus TCP/IP devices interfacing to DH+.

In Ethernet mode, the GW1000 has the ability to communicate with 5 Ethernet connections simultaneously to DH+ (ie. up to 5 Modbus TCP devices, RSLINX workstations, SLC 5/05, Compactlogix etc. connections)

The **GW1000-ModTCP** is, in essence, a Modbus Slave to the ModTCP Master on the Ethernet network (There can be up to 5 unique sockets) which initiates communication with one or many Allen Bradley (AB) DH+ PLC Type devices.

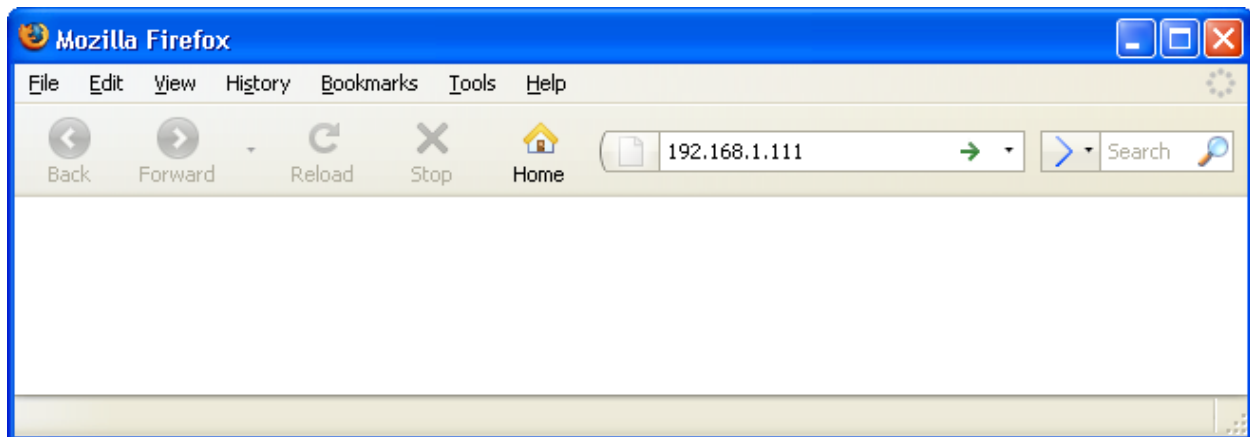
### **Notes:**

- Be sure to fully test the hardware and software off-line to ensure that you understand its configuration and operation. Prior to putting the GW1000 on-line in production process, the operation of the complete system should be fully tested on-line in a safe "test" environment.
- Due to differences between DH+, Modbus and the hardware and software there are differences between the lengths of messages, error handling and addressing which have to be carefully considered by the Systems Designer, Programmer and Installer.
- Additional literature regarding DH+, Modbus and PLC products can be obtained from Modicon and A-B. Suggested reference materials for A-B DH+ protocol is shown in section 1.7 of the User's Guide.

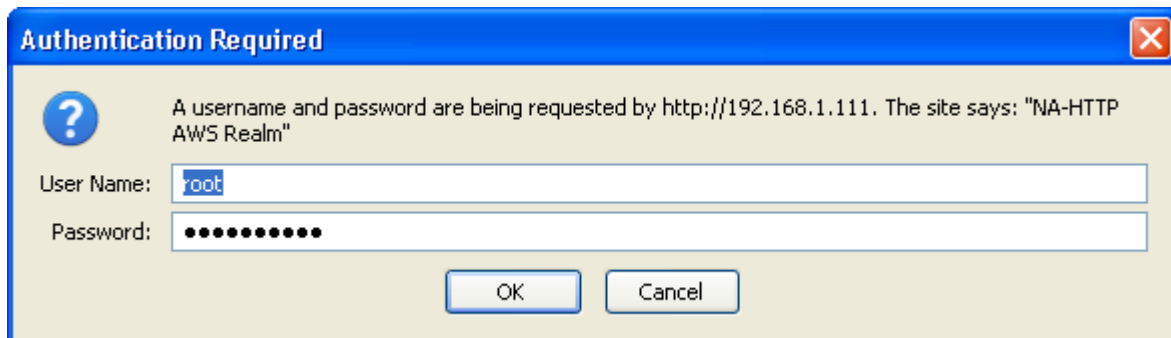
## Configuration of GW1000-ModTCP.

Connect the GW1000 ethernet port to a switch or hub on the same network as your PC using a CAT5 network patch cord. Power on the GW1000 and wait 30 seconds for the bootup sequence to complete. Note the LAN LINK indicator LED should be on and the LAN ACTIVITY LED may be blinking.

Open a web browser such as Firefox or Internet Explorer. In the address bar, type the IP address of the GW1000. (The default IP address is 192.168.1.111). (note: if you have changed the default IP address of the GW1000, enter the new address in the address bar. If you do not know the IP address programmed into the GW1000, first restore factory defaults.)



At the login prompt, type User Name "root" and Password "Netsilicon". Please note logins and passwords are case-sensitive. If you do not see the login window appear, please see additional detail in the user manual. You may need to adjust your network settings.



The Home page is displayed...



## DataLink DL-GW1000-ModTCP : Modbus TCP to DH+ Interface

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### Home

Welcome to the management and configuration web interface.

You can use the navigation menus on the left to access additional pages.

Name: DataLink DL-GW1000-ModTCP : Modbus TCP to DH+ Interface  
Revision: 1009.2.21

IP Address: 192.168.1.112  
MAC Address: 00:50:C2:89:F6:3A  
Serial Number: B01001694

CPU Utilization: 25%  
Up Time: 8 minutes 26 seconds

Here you can see some information about the device, such as the firmware revision, up time, and IP address.

## Configure the IP address of the GW1000

Click “Network IP Settings” to display the current IP address and subnet mask...



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#### Network Settings

Obtain an IP address automatically

Use the following IP address

IP v4 Address:

IP v6 Address:

Subnet Mask:

Default Gateway:

Primary DNS:

Secondary DNS:

Change the IP address and subnet mask to any values desired, and click **APPLY**.

For settings to take effect, you must click “**Reboot**” in the left margin and Click the “Reboot” button to confirm.

## Configure DH+ settings

To change the DH+ node address and baud rate of the GW1000, click “Standard Parameters” and choose a different node address if necessary. Be sure to click **APPLY**.

For settings to take effect, you must click “**Reboot**” in the left margin and Click the “Reboot” button to confirm.



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#### GW1000 Standard Online Operating Parameters

##### DH+ Parameters

Node Address:   Octal    2 Decimal

Network Speed:

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To access the configuration of ModTCP protocol translation, click the option: "ModTCP Server to DH+ translation" in the left margin of the screen. Please read explanation:

<b>GW1000 ModTCP Server (Slave) Protocol Parameters</b>						
<b>ModTCP Server to AB DH+ Translation Table</b>						
<b>NOTES:</b>						
<b>IMPORTANT! Fill undefined slots with zero value in the Starting Register/Coil Column to mark the end of the table.</b>						
It is important as the table is a lookup table used in a linear fashion starting from slot 1 until the last slot or a zero starting register.						
A match is looking to be made from the ModTCP request starting element (register or coil) and length to fit in the range defined in a particular slot of the Translation Table.						
If a match can't be made to the range defined in any slot in the table before the end or a zero'd slot is encountered, an error response is sent to the initiating ModTCP Client.						
<b>COILS versus HOLDING REGISTERS</b>						
If Coils are selected as a Data Type you must choose either PLC5 Only or SLC Only Type for single bit modbus support!						
Holding registers work with the PLC or SLC option. The Number of Sequential Coil words refers to number of 16 coil(bits) groups. So 2 coil words = 32 coils.						
A-B is word based so need to keep multiples of 16.						
<b>FLOATING POINT TRANSLATION</b>						
Select "Floating Point Holding Registers (40001-49999)" Data Type if using Modbus Floating Point to AB floating point reads/writes.						
Using 2 holding registers (2 words/ 32 bits) per Floating Point element.						
Note: The Number of Sequential Holding Registers represents the number of Actual registers not Floating Point Elements, so this column will be 2x the number of elements.						
ie. One Floating Point Element = 2 Holding Registers (words)						
<b>Refer to Help screen for more details.</b>						
Slot	Modbus Data Type (select one)	Starting Register/Coil (1 to 9999) <b>Exclude Ten Thousands Digit</b>	Number of Sequential Registers or Coil Words(16 coils per) for this slot (1 to 250 )	A-B Destination PLC Type (slot is for)	A-B Destination File Number (1 to 9999)	A-B Destination Word Offset (0 to 9999)
1	Discrete Inputs (10001-19999)	0	0	PLC or SLC	0	0
2	Coils (00001-09999)	0	0	PLC or SLC	0	0
3	Discrete Inputs (10001-19999)	0	0	PLC or SLC	0	0
	Input Registers (30001-39999)	0	0	PLC or SLC	0	0
	Holding Registers (40001-49999)	0	0	PLC or SLC	0	0
	Floating Point Holding Registers (40001-49999)	0	0	PLC or SLC	0	0
4	Discrete Inputs (10001-19999)	0	0	PLC or SLC	0	0
5	Discrete Inputs (10001-19999)	0	0	PLC or SLC	0	0

## ***ModbusTCP/DH+ Translation Table Help***

### **ModTCP to DH+ Operation**

The **GW1000-ModTCP** is, in essence, a Modbus Slave to the ModTCP Master on the Ethernet network (there can be up to 5 unique sockets) which initiates communication with one or many Allen Bradley (AB) DH+ PLC Type devices.

### **ModTCP to AB Format Translation**

The GW1000-ModTCP allows communications between (up to five) Modbus TCP Master devices and multiple DH+ PLC type nodes.

The GW1000 Modbus slave accepts all ModTCP master requests to remote Modbus Slave addresses 1 to 63 decimal, which correspond to PLC's at DH+ nodes 1 to 77 octal.

**Note:** Broadcast messaging is not supported as it uses modbus address 0. For this reason, sending requests to a PLC Type device at DH+ address 0 is not allowed.

The PLC5/SLC500 type device is processing requests from the GW1000 **MUST** not be "protected" and the full range of elements in a particular file must have been previously created.

The Modbus read and write bit/coil commands are used with the Allen Bradley **Binary (B)** file type and word/register commands are used with the Allen Bradley **Integer (N)** file type.

The GW1000 accepts the following MODBUS Commands:

Coils - 01 and 05; Registers - 03,04,06,16; Inputs - 02

## **Modbus TCP Slave Lookup Translation Table Usage**

The received Modbus Master request is examined against the configured slave lookup table.

The search is done starting with the Data Type in the slave request, based on the Modbus command, and then the register range is checked based on the start register and size.

if the slot is a match, a DH+ Read/Write request is sent to the DH+ node corresponding to the Modbus slave address in the Master's Request.

The PLC File Number and Starting Offset in the table slot is then used to complete the DH+ Read/Write request to the PLC Type device.

## **Coil versus Register Support**

For Coil support you must select the Allen Bradley PLC type you are wanting to communicate with for that slot. PLC5 and SLC5/04's support different DH+ commands so this has to be known.

The number of Coils must be represented in 16 bit word groupings in the Lookup Table slot as this is the resolution of Allen Bradley B(binary) and N(Integer) file types.

Holding Register commands are supported by both the PLC5 / SLC5 so the "PLC or SLC" Option can be selected.

## **DH+ Function Support**

The following DH+ functions will be issued to the PLC Type device:

For PLC5 or SLC support, a PLC5 Type Write and Read function (0x67 or 0x68) will be issued for Coil and Register Modbus commands.

For PLC5 Coils, a Read/Modify word function (0x26) will be issued. For SLC Coil support, the Bit Write (0xAB) Function will be used.