Application Note:
Hitachi CS-Net Web

This application note describes how to connect to a Hitachi CS-Net Web system.

Please read the *ModbusTCP Driver Manual*, and *Commander Manual* or *ObSys Manual* alongside this document, available from *www.northbt.com*

Contents

Compatibility with the Hitachi CS-Net System

Connect the Hitachi CS-Net Web system to North using the ModbusTCP driver.

The Hitachi CSNet-Web controller connects to a TCP/IP network. It has a BMS configuration option to enable Modbus and present values from its indoor units.

CSNet-Web controls a network of air conditioning units using H-Link. Up to 160 packaged indoor units are supported.

Equipment

The physical Hitachi CS-Net Web controller is called PSC-A160WEB1. This supports the following Hitachi air conditioning ranges:

- Utopia
- Utopia G
- Utopia N
- DC Inverter
- Mini Set-Free
- Set-Free FS
- Set-Free FX
- DX-Kit
- RAS units
- KPI

Values

The driver can typically access the following values for an indoor unit:

- On/Off status
- Mode
- Temperature setpoint
- Fan speed
- Louvre position
- Air outlet temperature
- Air inlet temperature

Prerequisites

Configure the CS-Net Web network settings, and enable the BMS configuration. As part of the BMS configuration, indoor units are assigned an ID. This ID is required to access a unit's values in Modbus.

This application note is based on information available in Hitachi document TCGB0089 rev.0 issued 07/2013.

Using the Driver

On ObSys and Commander, the ModbusTCP driver is pre-installed. Using all of these North devices, you can use the driver to create an interface to a ModbusTCP system. Once started, you will need to set up the driver before it can communicate with the ModbusTCP system.

The ModbusTCP driver uses zero licence units.

Starting the Interface

💻 To start an interface using the ModbusTCP driver, follow these steps:

→ **Start Engineering** your North device using ObSys

→ Navigate to **Configuration, Interfaces,** and set an unused **Interface** to 'ModbusTCP' to start the particular interface

→ Navigate to the top-level of your North device and re-scan it

The driver setup object (Mc), labelled **ModbusTCP Setup**, should now be available.

Setting up the Driver

💻 To set up the driver, follow these steps:

→ Navigate to the **ModbusTCP Setup** object (Mc). For example, if you started interface 1 with the driver earlier, then the object reference will be 'M1'

→ Navigate to **Unit 1 Details** object and set the **IP Address** of the CS-Net Web controller that you wish to communicate. Set **Device Type** to 'HitachiCSNet'. **Serial Address** should remain at the default value of '255'.

Checking Communications

Scanning the Modbus System will respond with the connected CS-Net Web controller. You can check the interface is communicating by viewing values within an ID.

Object Specifications

Once an interface is started, one or more extra objects become available within the top-level object of the device. As with all North objects, each of these extra objects may contain sub-objects, (and each of these may contain sub-objects, and so on) – the whole object structure being a multi-layer hierarchy. It is possible to navigate around the objects using the ObSys Engineering Software.

Refer to the *ModbusTCP Driver Manual* for a complete list of objects for this interface.

Modbus System

Object Type: *[ModbusTCP]*

The Modbus system contains objects to access the Modbus TCP client devices available.

Description	Reference	Type
Unit x The unit address, *x,* can be in the range 1…30	U*x*	Fixed container, one of the following: CS-Net Web controller *[Modbus\HitachiCSNet]* Default Modbus Device *[Modbus\Default]*

Hitachi CS-Net

Object Type: [Modbus\HitachiCSNet]

A CS-Net Web controller contains a list of IDs. An ID is assigned to each indoor unit when enabling the BMS configuration within the CS-Net controller. Export the ID list from CS-Net to identify the outdoor/indoor unit address.

The register base address is calculated by multiplying the ID number by 32.

Description	Reference	Type
ID *a* Hitachi indoor unit. The ID number, *a*, is assigned when enabling the BMS configuration within the CS-Net. *a* is in the range 0…159	X(*a**32)	Fixed container: *[Modbus\HitachiCSNet\ID]*

Hitachi ID

Object Type: [Modbus\HitachiCSNet\ID]

An ID represents the values available from an indoor unit.

Register addresses are added to the base address for the ID.

Description	Reference	Type
Unit Present	D20000.B	Obj\NoYes
System Address Is this the outdoor unit?	D20001.B	Obj\Num: 0…63
Unit Address Is this the indoor unit?	D20002.B	Obj\Num: 0…63
RCS Group Remote controller group number	D20014.B	Obj\Num: 0…255
On/Off Status	D20003.B	Obj\OffOn; Adjustable
Mode	D20004.B	Obj\ENum; Adjustable Values: 0=Cool, 1=Dry, 2=Fan, 3=Heat, 4=Auto
Temperature Setpoint (°C)	D20006.B	Obj\Num: 17…30; Adjustable
Fan Speed	D20005.B	Obj\ENum; Adjustable Values: 0=Low, 1=Medium, 2=High, 3=Super High, 4=Auto
Louvre Position	D20007.B	Obj\ENum; Adjustable Values: 0, 1 (Horizontal), 2..6, 7=Vertical, 8=Auto
Timer Enabled	D20026.B	Obj\NoYes; Adjustable
Air inlet temperature (°C)	D20015.C	Obj\Float
Air outlet temperature (°C)	D20016.C	Obj\Float
Optional remote thermistor (°C)	D20031.C	Obj\Float
Gas pipe temperature (°C)	D20017.C	Obj\Float
Liquid pipe temperature (°C)	D20018.C	Obj\Float
Expansion valve opening (%)	D20021.B	Obj\Num: 0…100
Remote switch temperature (°C)	D20025.C	Obj\Float
Real On/Off Status Read-back value indicating current state	D20009.B	Obj\OffOn
Real Mode Read-back value indicating current mode	D20010.B	Obj\ENum Values: 0=Cool, 1=Dry, 2=Fan, 3=Heat, 4=Auto
Real Setpoint (°C) Read-back value indicating current setpoint	D20012.B	Obj\Num: 17…30; Adjustable
Real Fan Speed Read-back value indicating current speed	D20011.B	Obj\ENum Values: 0=Low, 1=Medium, 2=High, 3=Super High, 4=Auto
Real Louvre Position Read-back value indicating current position	D20013.B	Obj\ENum Values: 0, 1 (Horizontal), 2..6, 7=Vertical, 8=Auto
RCS lock: On/Off Lock remote control to prevent on/off changes	D20008.K8	Obj\NoYes; Adjustable
RCS lock: Mode Lock remote control to prevent mode changes	D20008.K9	Obj\NoYes; Adjustable
RCS lock: Setpoint Lock remote control to prevent temperature setpoint changes	D20008.K10	Obj\NoYes; Adjustable
RCS lock: Fan Lock remote control to prevent fan changes	D20008.K11	Obj\NoYes; Adjustable

Description	Reference	Type
Alarm Code Last error code	D20019.B	Obj\Num
Compressor Stop: Last cause Reason code for last compressor stop	D20020.B	Obj\Num
Operating Condition	D20022.B	Obj\ENum Values: 0=Off, 1=Thermo Off, 2=Thermo On, 3=Alarm
Defrost	D20023.B	Obj\NoYes
Compressor Frequency (Hz)	D20030.B	Obj\Num
Number of compressors operating	D20029.B	Obj\Num
Ambient temperature (°C)	D20024.C	Obj\Float
Power (kW)	D20028.B	Obj\Num
Option switch setting	D20027.B	Obj\Num

Document Versions

Version	Issue Date	Details
1.0	27/7/2017	Document released

Next Steps…

If you require help, contact support on 01273 694422 or visit *www.northbt.com/support*

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