Cybernetic Systems
Your partner in industrial automation

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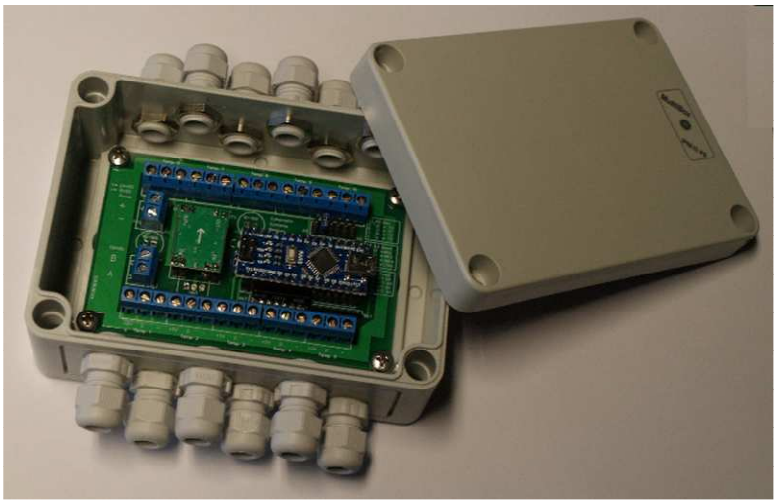
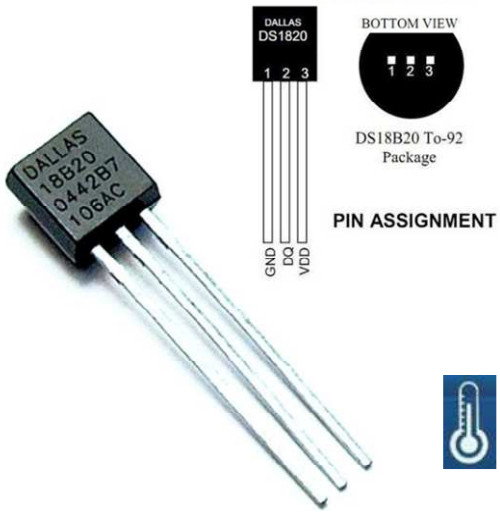
NEW

CYB-RTUtemp10

Read upto 10 temperatures via modbus RTU





This new device is used to read upto 10 independent temperature sensors via modbus RTU.
Easy and straight forward installation & configuration.

The CYB-RTUtemp10 controller is build in a polystyrene box (130 x 94 x 57 mm).
On the top & bottom, there are 2 x 6 cable glands M12.
2x5 for every temperature sensor, 1 for the communication and 1 for the power supply.
(24 VDC)

The RS485 serial communication port is used to readout the data.
The serial settings are fixed.
8bit, even partity and 1 stop bit.
(the modbus RTU standard)
Baudrate can be changed with 2 jumpers.
(9K6,19K2,38K4 or 57K6)
The protocol is modbus RTU (slave).
The modbus slave device n° can be set to 70,71,72 and 73. This also with 2 jumpers.
(4 units can be connected to 1 serial port)
There is a jumper to end the communication line with a 120 ohm resistor.

Only the modbus function code 03, Read Holding Registers, is used to readout the 10 temperature registers.
Registers start at modbus slave address 400001 and ends at 400021, so 20 registers.
The first 10, for the temperature in Celsius and the next 10 for the same temperature in Fahrenheit.
The integer value must be divided by 100 to have a result with 2 digits after decimal point.

The CYB-RTUtemp10 is designed to read a single one wire temperature sensor DS18B20 on every channel.
This sensor is available in different housings.
As a chip and even as a waterproof probe.

The DS18B20 digital thermometer provides 9-bit to 12-bit celsius temperature measurements.
Measures temperatures from -55°C to +125°C (-67°F to +257°F)
±0.5°C accuracy from -10°C to +85°C

The resolution from 9, 10, 11 & 12 Bits can be set on the CYB-RTUtemp10 with 2 jumpers.
12 bits is slower, but will still give a new result in less than 1 second.

When a sensor is not connected or damaged, you receive an impossible result, -174,00°C (-196,60 °F)

Applications include thermostatic controls, industrial systems, HVAC systems or any thermally sensitive system.

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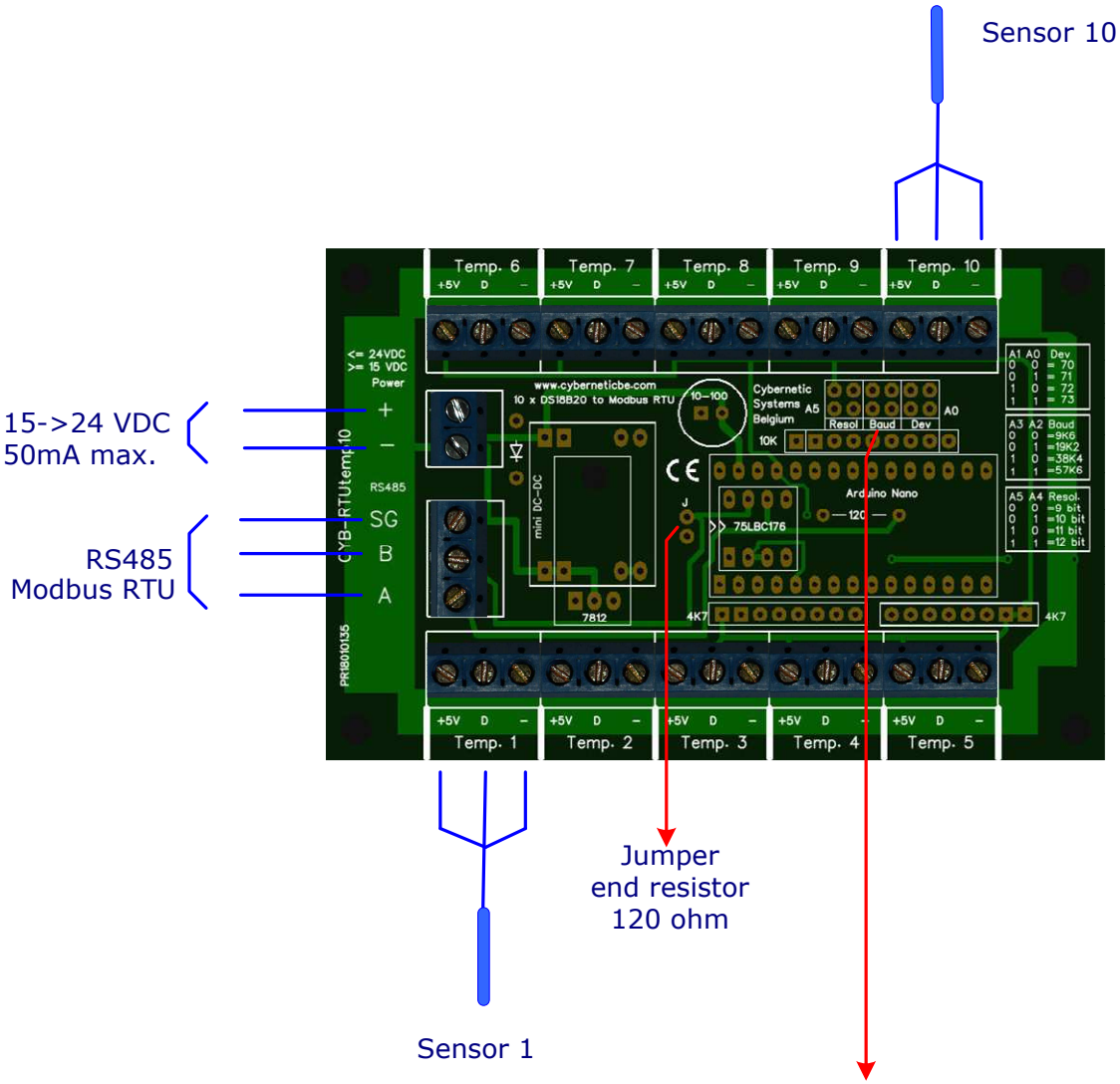
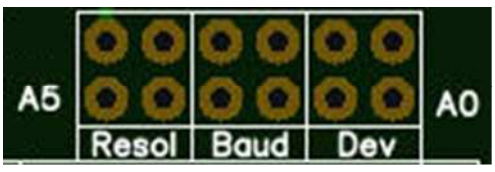
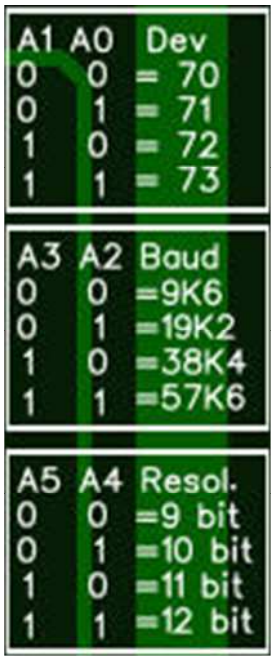
Connections and configuration



Jumpers for configuration





A0 & A1 for Device setting

A2 & A3 for Baud Rate setting

A4 & A5 for Resolution setting

1= jumper placed

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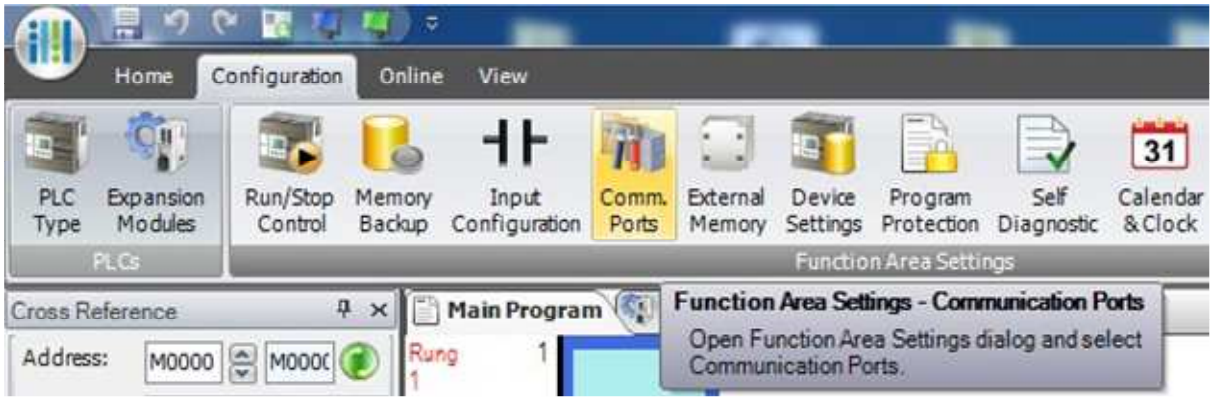
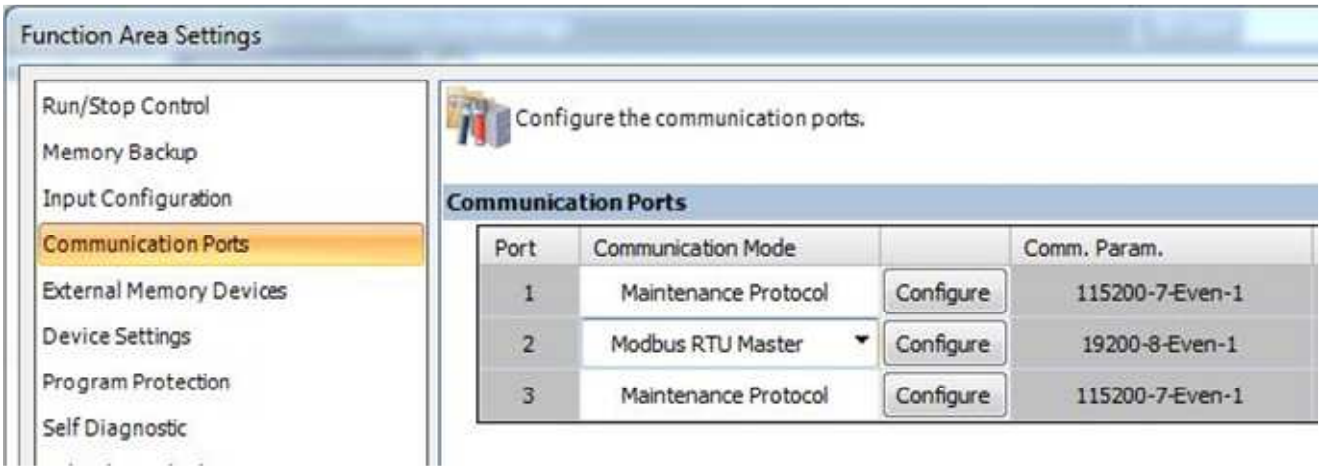
Example : Modbus read with Idec FC6A CPU

With the Idec FC6A plc, you don't have to write a program to transfer the temperture values to the CPU.
Only the configuration of the PLC communication port is necessary.

The next example shows how easy the setup can be.



Open WindLDR, en select in the Configuration menu, Comm. Ports.



Set the communication Mode of the connected port to Modbus RTU Master, and push on the Configure button.

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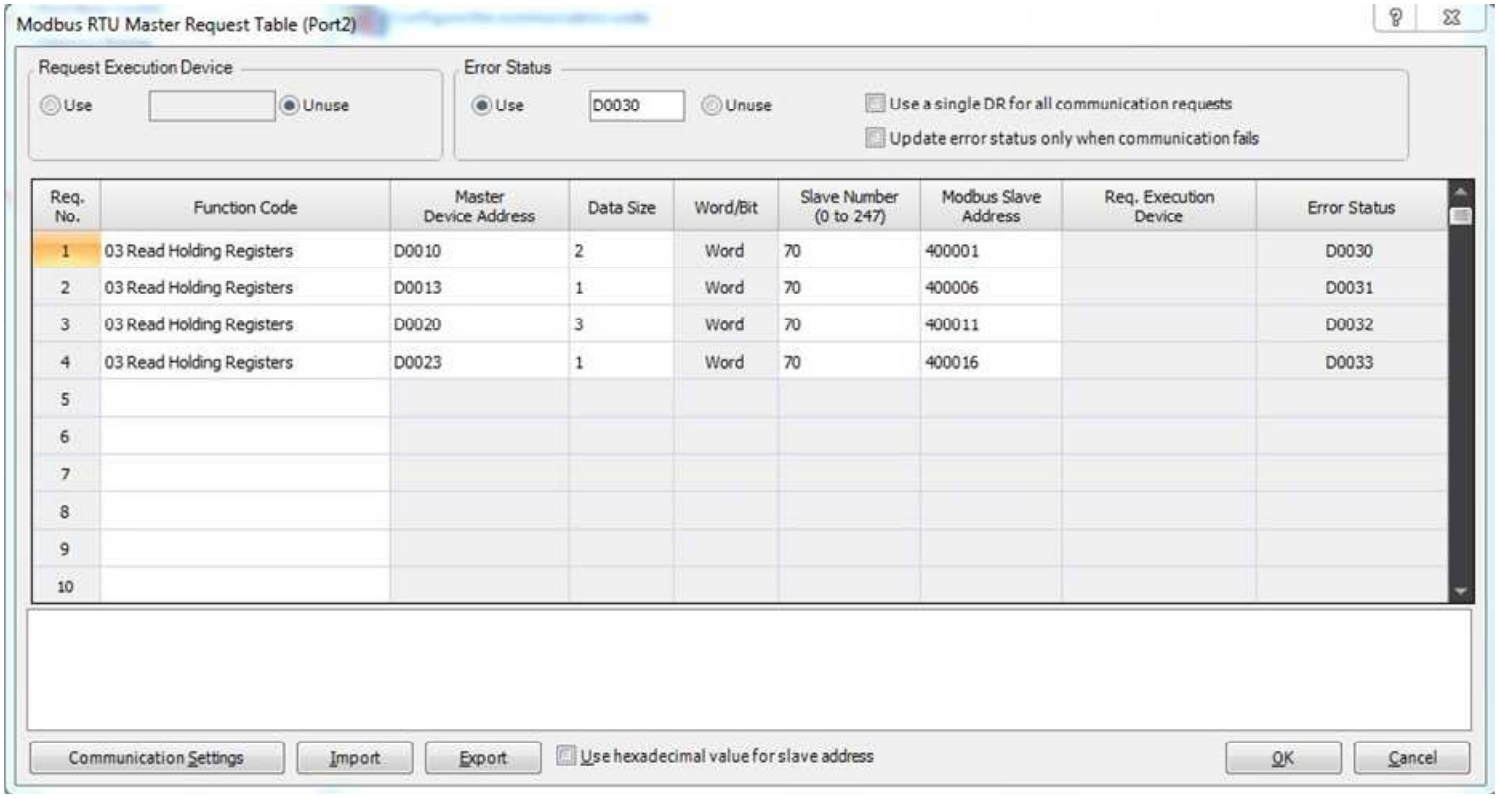


Req. No.	Function Code	Master Device Address	Data Size	Word/Bit	Slave Number (0 to 247)	Modbus Slave Address	Req. Execution Device	Error Status
1	03 Read Holding Registers	D0010	2	Word	70	400001		D0030
2	03 Read Holding Registers	D0013	1	Word	70	400006		D0031
3	03 Read Holding Registers	D0020	3	Word	70	400011		D0032
4	03 Read Holding Registers	D0023	1	Word	70	400016		D0033
5								
6								
7								
8								
9								
10								

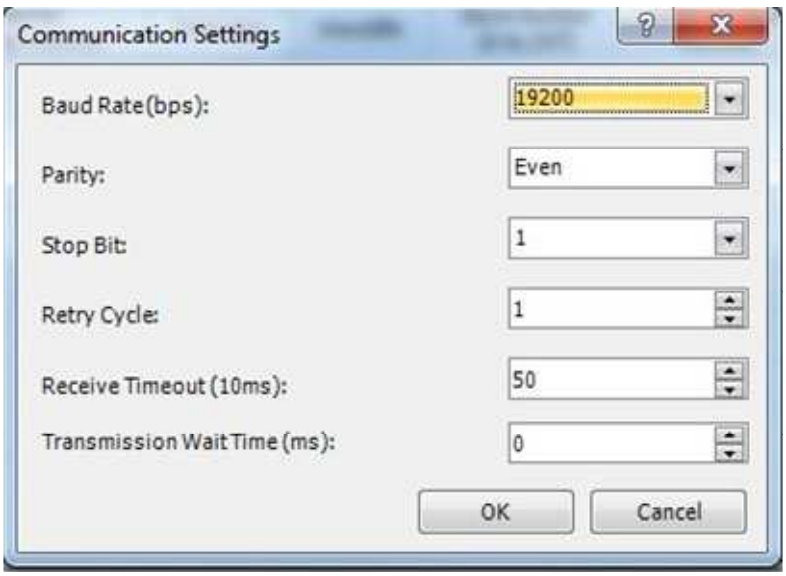
In the Function Code, select 03 Read Holding Registers.
As Master Device Address, we have to introduce the starting Data Register where we like to see the temperature data.
In Data Size, how many sonsecutively registers you like to read in this line.
As Slave Number, the CYB-RTUtemp10 device number
First Modbus Slave Address = 400001.

So on the fisrt line, we are reading the first two temperature sensors of the CYB-RTUtemp10 in °C.
The data will be saved in D0010 & D0011 of the PLC.
On the second line we read tempearture sensor 6 and save the data in D0013 of the PLC. Also in °C.

In the 3th & 4th line we read the same temperature sensors, but in °F and save the data starting at D0020

The error status of the communication can be checked for every line, starting at D0030

Now you only have to set the Communication settings, according what you have selected with the jumpers on the CYB-RTUtemp10 and transfering the (empty) program to the PLC.



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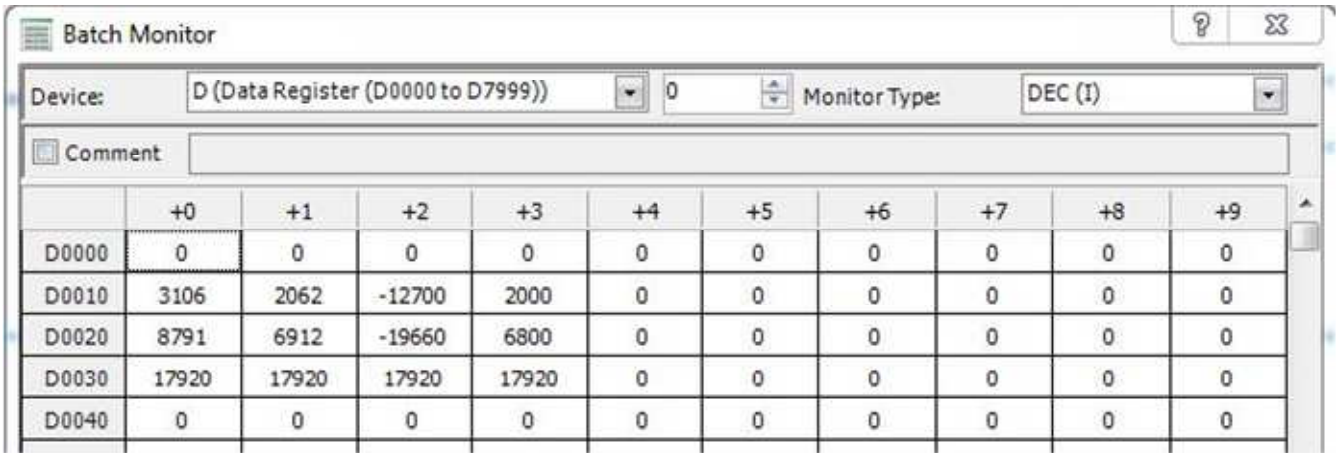
When the program is transfered and the PLC is in RUN, the communication LEDs on the CYB-RTUtemp10 will flicker quickly. This means that the communication is OK.

Go now to the Monitor mode in WindLDR and select Batch Monitor (start at D0000, default) and set Monitor Type to DEC(I) (integer values)

On D0010 to D0013 you can read the temperatures (remember that you have to devide by 100).
On D0012 we have an out of range value -127.00°C . This is because there is no sensor connected.
On D0020 to D0023 we have the same in °F



	+0	+1	+2	+3	+4	+5	+6	+7	+8	+9
D0000	0	0	0	0	0	0	0	0	0	0
D0010	3106	2062	-12700	2000	0	0	0	0	0	0
D0020	8791	6912	-19660	6800	0	0	0	0	0	0
D0030	17920	17920	17920	17920	0	0	0	0	0	0
D0040	0	0	0	0	0	0	0	0	0	0

On D0030 to D0033 we have 17920, the error status value.
When we convert 17920 to HEX, we have H 4600.
The first 2 digits are referring to the device number. H 46 = 70 in decimal
The last 2 digits are 00, so no errors.