Instruction configure Modbus on Soloist (Master) with WAGO Modules

Content

Component list for this Test

Name	Type
PC	MotionServer (Win 10 – i7-7700k)
EthernetCable	Crossover cat 6e
Soloist	SoloistMP10-IO-MXU
Power supply	WAGO – 787-912
WAGO-module	750-842
WAGO-module	750-402
WAGO-module	750-504
WAGO-module	750-600

Configuration of Modules

Component	IP-address
PC Ethernet card	192.168.1.10
SoloistMP10-IO-MXU	192.168.1.14
WAGO 750-842	192.168.1.20 -> 1.16

Configure the PLC-Moduls

The WAGO-PLC 750-842 must be configured with the BootP Software from WAGO. With this Software, you can write the IP-Address, SubnetMask, Mac-Address and Gateway.

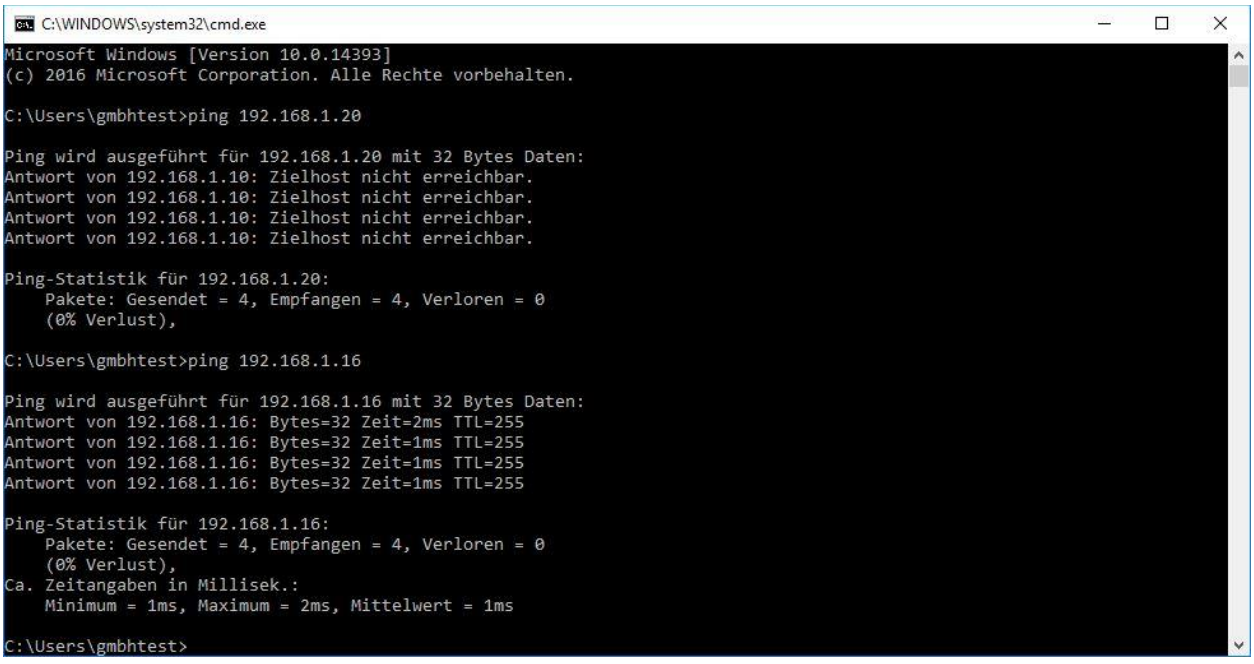
bootptab.txt

```
# Example of entry with no gateway
Wago1KP:ht=1:ha=0030DE0D846C:ip=192.168.001.020:sm=255.255.0.0:
```

Check if the module can be addressed by the PC

After I set up the IP-Address, I have to verify if I can connect to the IP-Address. You can verify it with the Windows command window. (Windows-key + r and enter “cmd”).

Here I hat the problem that the configured IP-address was not stored directly and it was changed to another IP-address. Nevertheless, I got the answer from the IP-address.



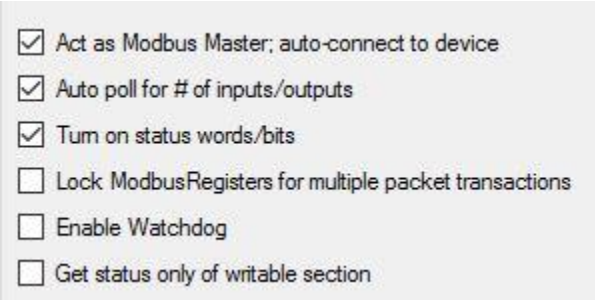
Setup the Parameter file for Modbus (Master)

After the WAGO-PLC is set up correctly, you can configure the parameter file on the SoloistMP as Modbus Master. The SoloistMP10 controller is setup as Master and the WAGO-PLC is a Slave controller.

Name	
ModbusMasterFunctions	0x00002F6B
ModbusMasterInputBits	8
ModbusMasterInputBitsOffset	0
ModbusMasterInputWords	0
ModbusMasterInputWordsOffset	0
ModbusMasterOutputBits	8
ModbusMasterOutputBitsOffset	0
ModbusMasterOutputBitsSections	0
ModbusMasterOutputWords	0
ModbusMasterOutputWordsOffset	0
ModbusMasterOutputWordsSections	0
ModbusMasterRWReadOffset	0
ModbusMasterRWWriteOffset	0
ModbusMasterSetup	0x00000007
ModbusMasterSlaveID	0
ModbusMasterSlaveIPAddress	192.168.1.16
ModbusMasterSlavePort	502
ModbusMasterSlaveType	0x00000000
ModbusMasterStatusBitsOffset	0
ModbusMasterStatusWordsOffset	0
ModbusMasterVirtualInputs	0
ModbusMasterVirtualInputsOffset	0
ModbusMasterVirtualOutputs	0
ModbusMasterVirtualOutputsOffset	0

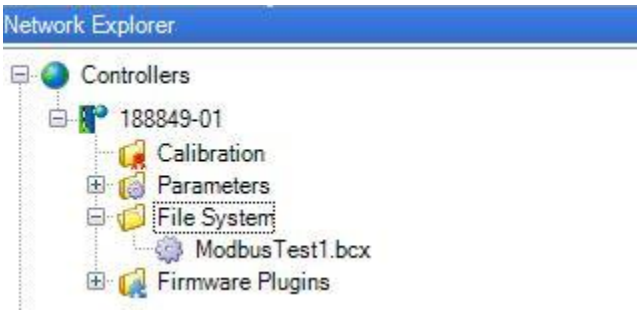
Here is the list of the Modbus parameter for the Modbus Master configuration

The parameter ModbusMasterSetup is configured like:



Also the ModbusMasterSlaveIPAddress, ModbusMasterSlaveType (if necessary) and ModbusOutputBits I configured.

At the end, the Modbus program must be stored in the File system of the controller and let it start in AutoRun of the Soloist.



Write a Program to control the PLC-Moduls from Soloist Master

Write a program to control the IOs and implement it in the File system of the SoloistMP10 controller.

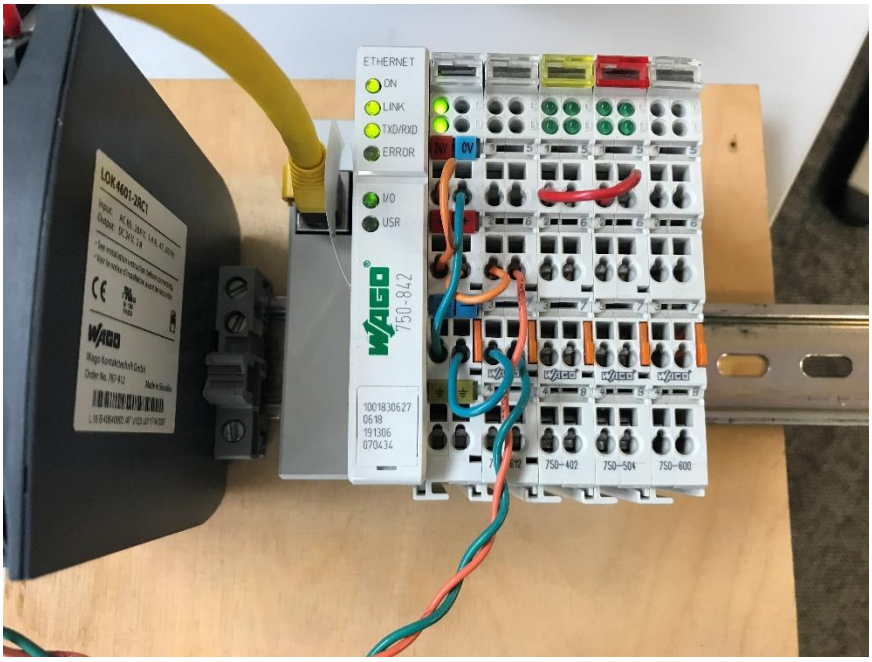
```
' ------------------------------------------------
' -------------- ModbusTCPMasterCoils.ab ----------
' ------------------------------------------------
'
' This program uses the Aerotech Modbus TCP
' library functions and Modbus Commands for
' Coils.
'
' ------------------------------------------------

HEADER
' library for status function on Modbus
INCLUDE "ModbusStatusLibHdr.abi"
' library for User Registers like
INCLUDE "ModbusUserRegistersHdr.abi"
' library for using Master Registers like Words
INCLUDE "ModbusMasterRegisterHdr.abi"
'INCLUDE "ModbusRTUMasterHdr.abi"
' library for using Slave Registers like Words
'INCLUDE "ModbusSlaveRegisterHdr.abi"

END HEADER


PROGRAM
' local variables
Dim Var0 As Integer
Dim SSpeed As Double

' Perform an initial startup wait to with
' enough time to activate ethernet communications.
'
DWELL 5
```

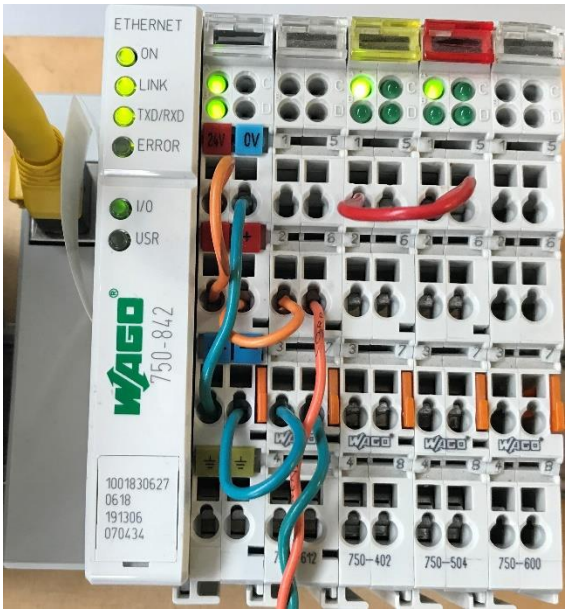
```
' infinite loop for testing
WHILE 1

      '-------------------------------------------------------
      ' Using Modbus Outputs
      '-------------------------------------------------------
      Dwell 4 ' waiting time for tests
      ' Register function to set one single Output
      CALL ModbusWriteSingleOutputBit(0, 1)
      Dwell 2     ' Display time for monitoring IOs
      ' Modbus command to set one single output
      ModbusBit MasterOutputBits, 1, 1
      Dwell 2     ' Display time for monitoring IOs
      ' Register function to set one single Output
      CALL ModbusWriteSingleOutputBit(2, 1)
      Dwell 2     ' Display time for monitoring IOs
      ' Modbus command to set one single output
      ModbusBit MasterOutputBits, 3, 1

      Dwell 2 ' Waiting time for tests

      ' Modbus command to set one single output back to 0
      ModbusBit MasterOutputBits, 0, 0
      Dwell 1 ' Display time for monitoring IOs
      ' Modbus command to set one single output back to 0
      ModbusBit MasterOutputBits, 1, 0
      Dwell 1     ' Display time for monitoring IOs
      ' Modbus command to set one single output back to 0
      ModbusBit MasterOutputBits, 2, 0
      Dwell 1     ' Display time for monitoring IOs
      ' Register function to set one single Output
      CALL ModbusWriteSingleOutputBit(3, 0)
      '-------------------------------------------------------


      '-------------------------------------------------------
      ' Using Modbus Inputs
      '-------------------------------------------------------
      REPEAT 5
      'Read the Discretes/ digital Input in the variable Var0
      Var0 = ModbusBit (MasterInputBits, 0)
      Dwell 0.01
      'Condition to check if the Var0 is set.
      IF Var0 = 0 Then
            ' Modbus command to set one single output
            ModbusBit MasterOutputBits, 0, 1
      End IF

      Dwell 2
      'Read the Discretes / digital Input 0 (first) in the variable Var0
      Var0 = ModbusBit (MasterInputBits, 0)
      Dwell 0.01
      'Condition to check if the Var0 is set.
      IF Var0 = 1 Then
            ' Modbus command to set one single output
            ModbusBit MasterOutputBits, 0, 0
```

```
      End IF

      Dwell 1

      ENDREPEAT
      '-------------------------------------------------------


    DWELL 0.2
' end of infinite loop
WEND

END PROGRAM
```

Monitor the results

Here is a Dia show, how the program above works on the WAGO-PLC.






ETHERNET
ON
LINK
TXD/RXD
ERROR
I/O
USR
WAGO
750-842
1001830627
0618
191306
070434
24V
0V
750-402
750-504
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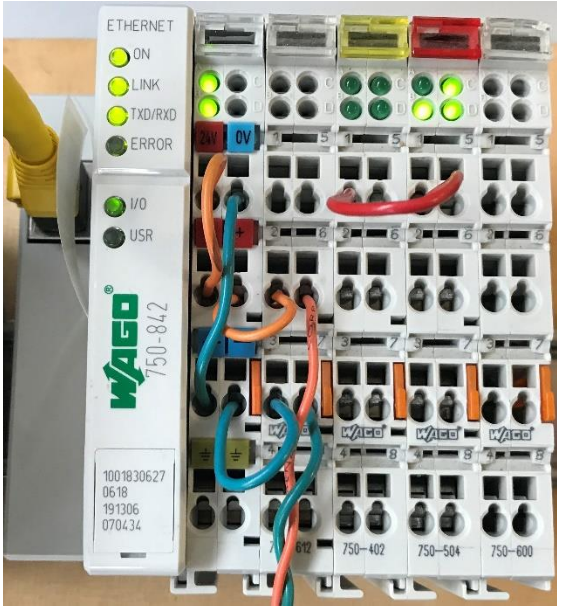
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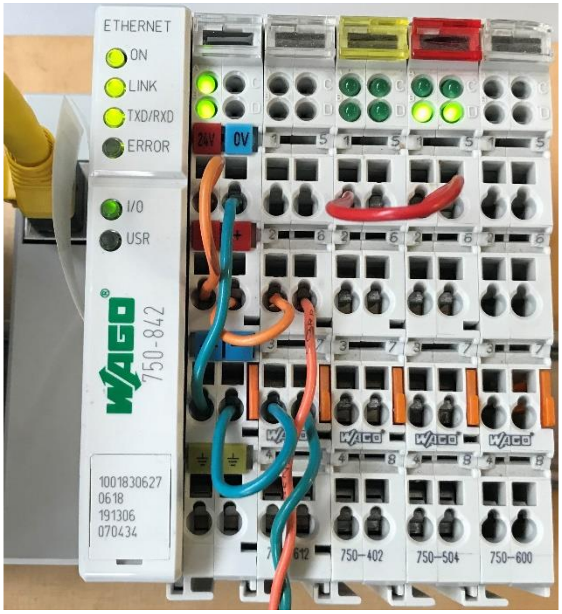
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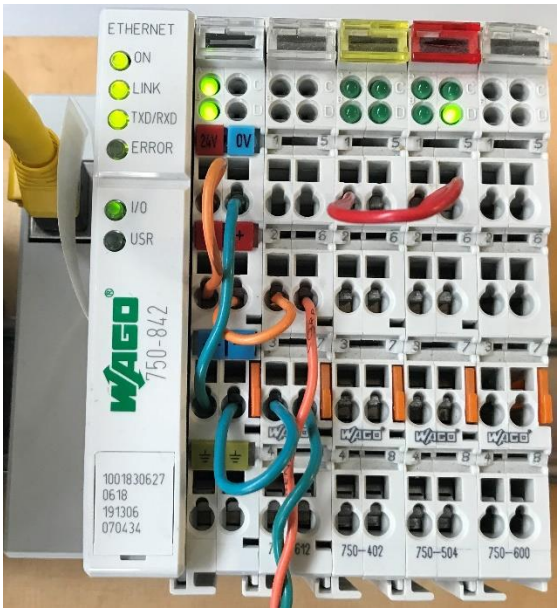
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