Quick start guide

X2 to BFI - iX script module

SER0051 - X2 ModBusRTU to BFI example

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1 Function and area of use

This document explains how to connect, configure and control one or multiple Beijer Frequency Inverters via ModBusRTU.

2 About this document

This quick start document should not be considered as a complete manual. It is an aid to be able to startup a normal application quickly and easily.

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Use the following hardware, software, drivers and utilities in order to obtain a stable application:

In this document we have used following software and hardware

- iX Developer 2.40 SP5 / SP6
- X2 series devices (X2 base/pro/marine/control/extreme)

For further information refer to

- iX Developer Reference Manual (MAxx831)
- iX Developer User's Guide (MAxx832)
- BFI-P2 User Guide
- BFI-P2 Start-Up Manual KI00306B
- BFI-H3 User Guide
- BFI-H3 Start-Up Manual KI00363C
- BFI-E3 User Guide
- BFI-E3 Start-Up Manual KI00369B
- Beijer Electronics knowledge database, HelpOnline

This document and other quick start documents can be obtained from our homepage.
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4 Preparing the Communication

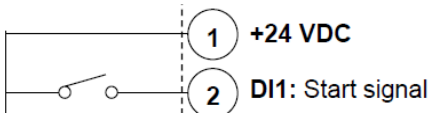
This section describes the settings both for the BFI and the iX ModBus Master controller and some other helpful information.

4.1 BFI parameter settings

BFI-E3:
P-12=3 Control by Modbus RTU
P-12=4 Control and Acceleration/Deceleration time by Modbus RTU
P-14=201 Open up all Parameters for Read/Write
P-36=Set first inverter to 1, 115,2K bps, t 3000 msec

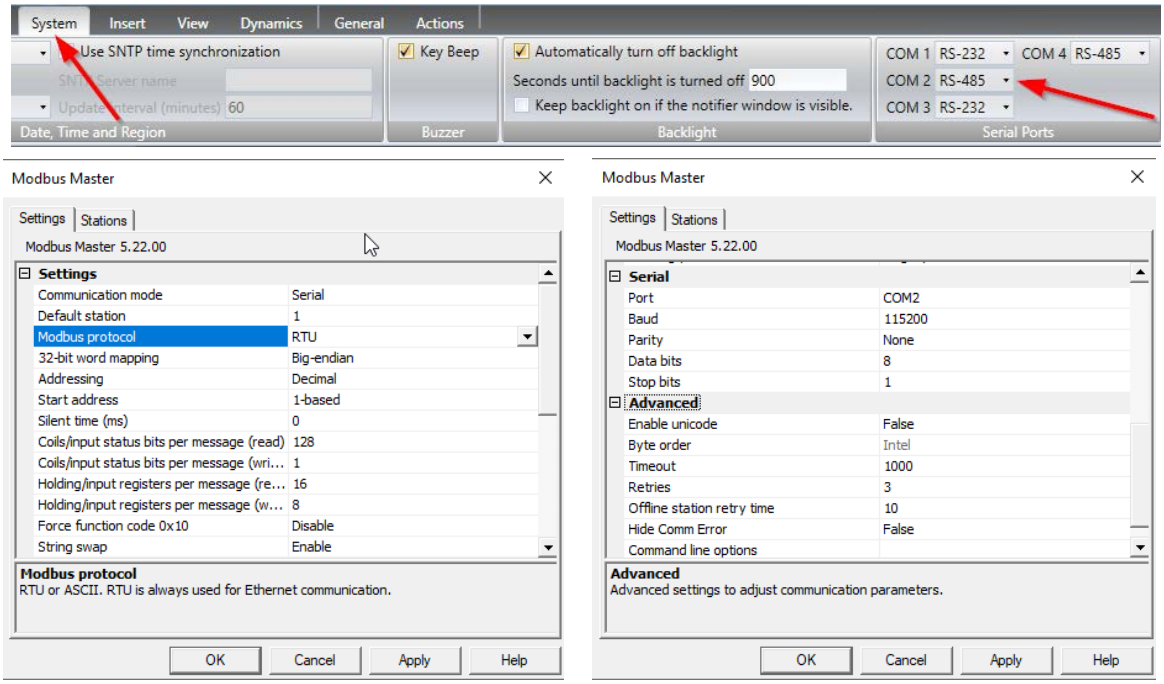
BFI-H3/P2:
P1-12=4 Start/Stop/Speed Control by Modbus RTU
P1-14=201 Open up all Parameters for Read/Write
P5-01=Set the first inverter to Node no 1
P5-03=115,2Kbps
P5-04=n-1 (Modbus Data Format)
P5-05=5.0s (Communications Loss Timeout)
P5-07=Acceleration/Deceleration time by bus or by parameter

Additionally, you either have to brige Pin1 and Pin2 or use the start/direction switch to set the start signal.



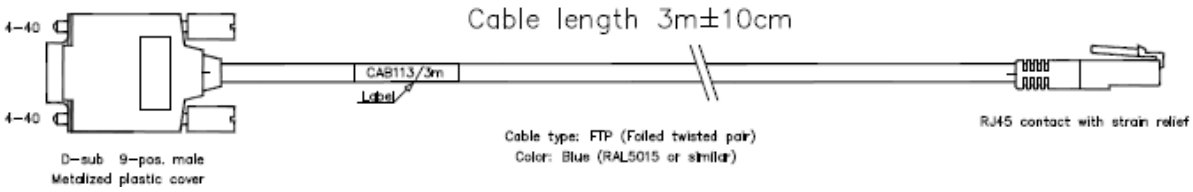
4.2 iX ModBusRTU settings

Set COM2 to RS-485 in the System menu and the serial parameters in the controller settings as shown below.



4.3 Communication cable

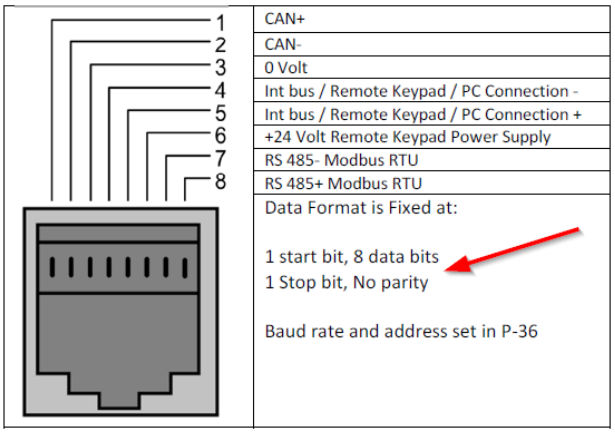
For the RS-485 communication between a X2 device and a BFI the cable CAB113 is used.



The RJ45 plug is connected to the serial port of the BFI, the D-sub is connected to the X2 device.

As you can see in the pinning – the data format is fixed, the Baudrate is set in parameter P-36 (E3) or P5-03(P2).

BFI - RJ45 pinning:



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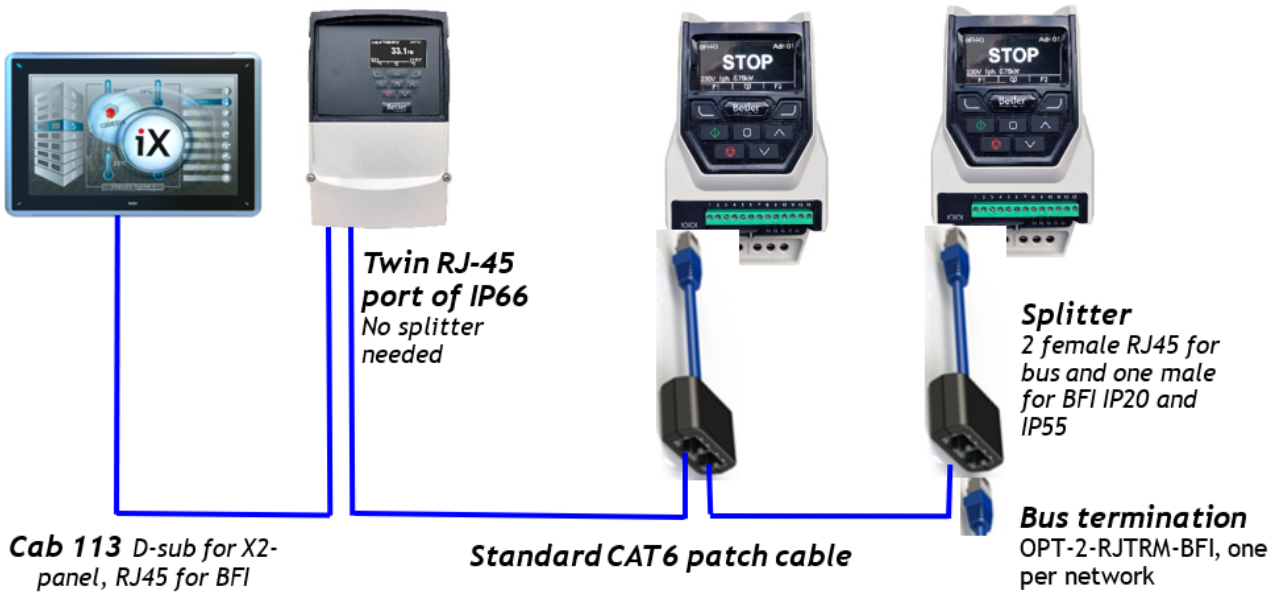
4.4 Connecting multiple BFI´s

Modbus RTU port in BFI depends on model. It has either one or two RJ45 connector with pin configuration as in figure below.

All BFI IP66 has two RJ45 connectors for incoming and outgoing network cabling. All BFI IP20 and IP55 has one RJ45 for Modbus RTU connection.



4.5 ModBusRTU and ModBusTCP parallely

It is not possible to run ModBus RTU and ModBus TCP at the same time!
If a ModBus TCP module is plugged into the BFI only ModBus TCP will work.

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5 The iX Project

The most important screens of the iX are the Main menu (Demo_Main) and the All Parameters menu (Demo_AllPar).
Besides these 2 screens there are a couple of other nice to have screens.

5.1 Main Menu

On this screen you get feedback from the BFI concerning it´s type (BFI-E3) and you see the most import status and output data. In addition to that you can set the frequency, start/stop the BFI and you can also switch between multiple BFI´s by changing the Node Id.

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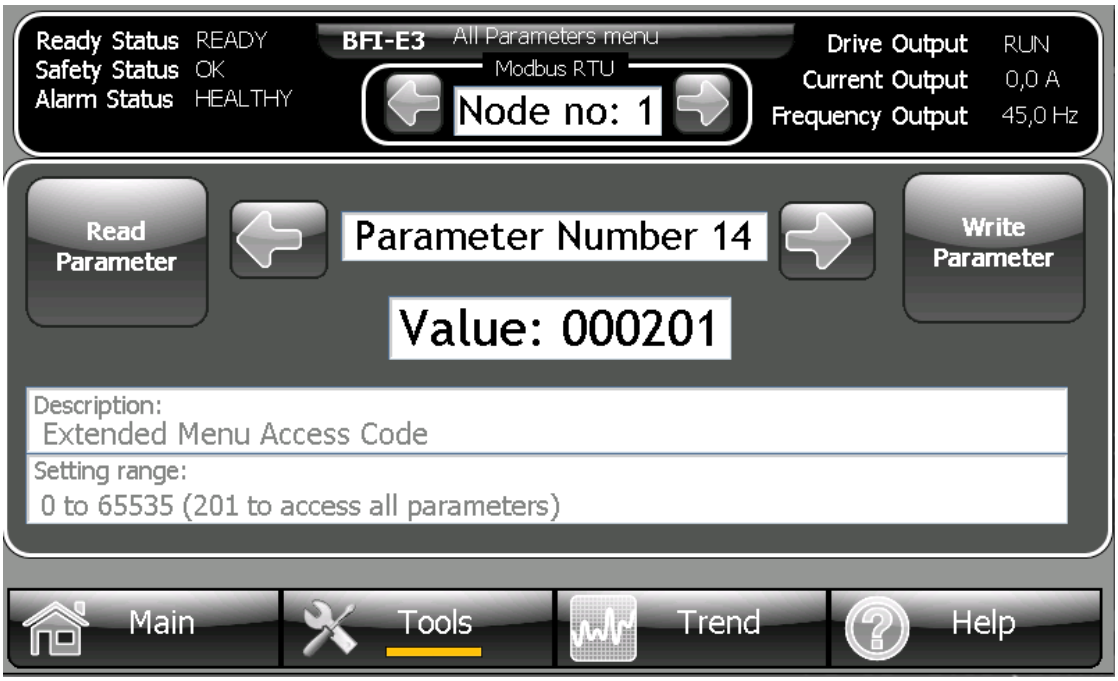
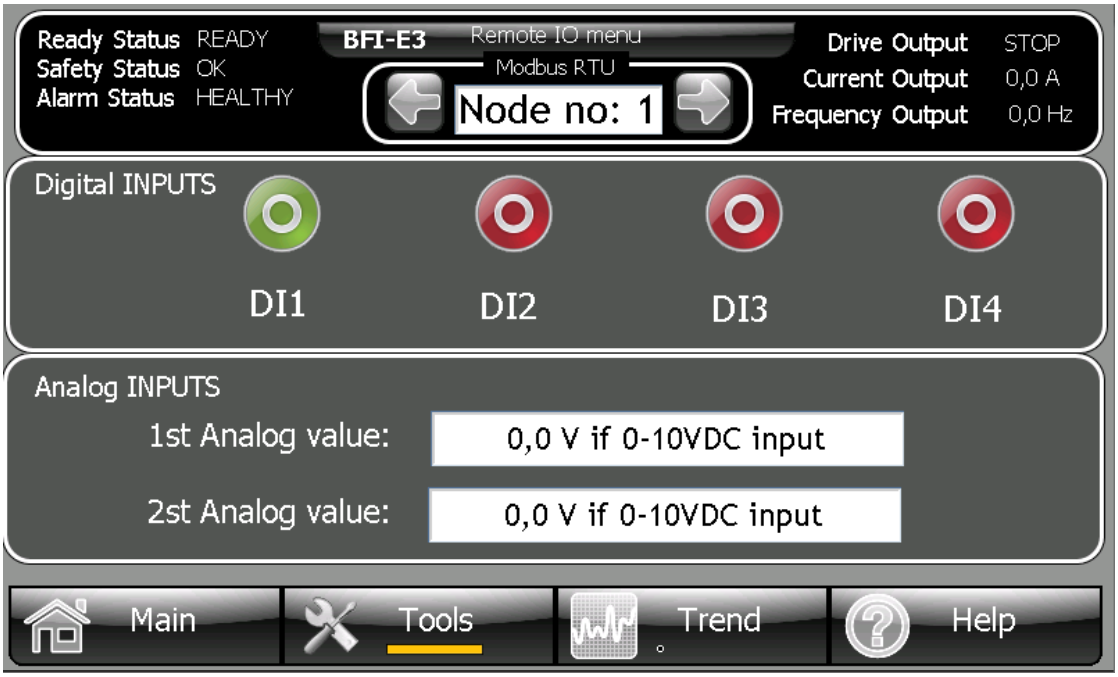
5.2 All Parameters Menu

On this screen you can read and write the BFI parameters.



5.3 Remote IO Menu

On this screen you can see the sate of the digital and analog Inputs.



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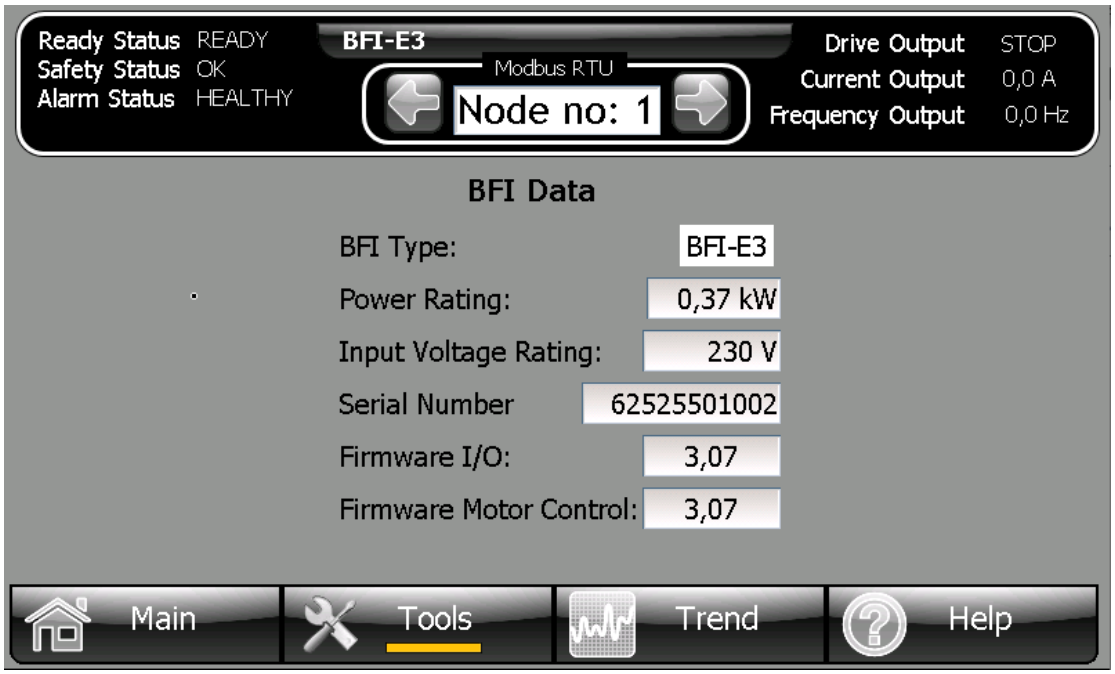
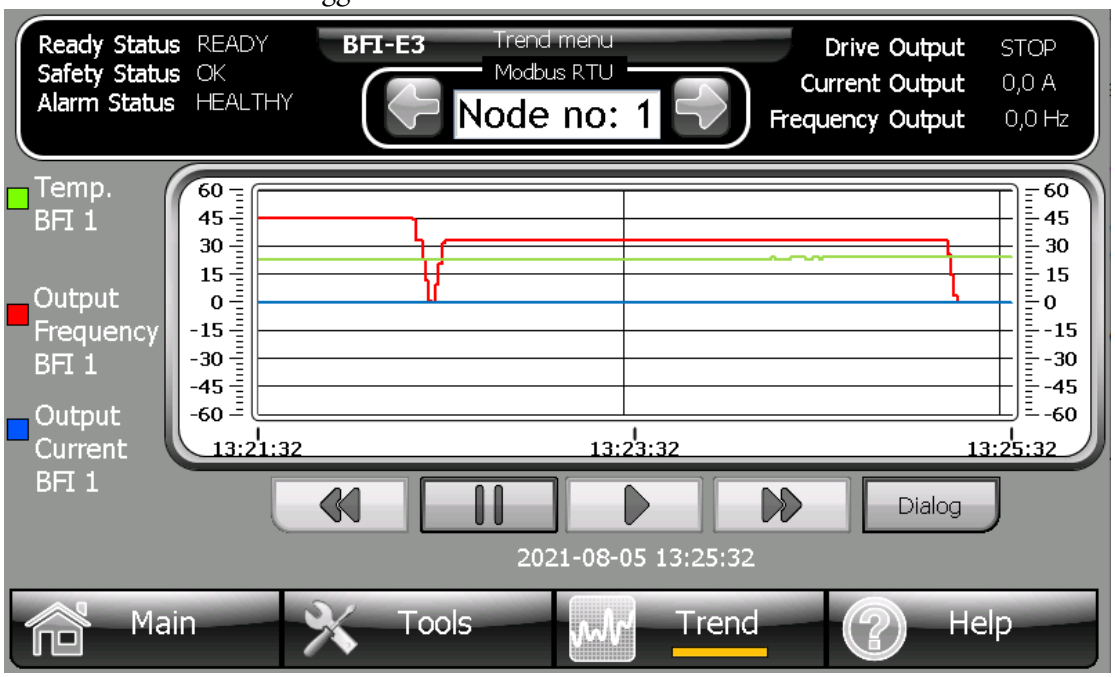
5.4 Other Screens

General BFI information.



Trend based on a DataLogger.



Additionally there are a Help screen and a System Information screen.

This example works well for X2 baseV2/pro/marine/control/extreme series devices.

Please follow below guidelines how to install into your application.

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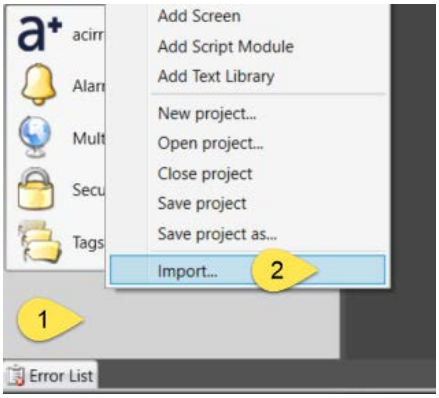
6 Import the project parts



Follow the steps to add the enclosed screenS and the script module to your iX project:

1. Unpack the enclosed example ZIP-file to a temporary folder.
2. Start iX Developer and load your project.
3. In the Project Explorer, right-click in the lower left corner (1. in the picture)
4. In the list, select Import... (2. in the picture)
5. Navigate to the temporary folder, where you unpacked the ZIP-file and select ScriptModule_iX_Bfi_E3_H3_P2_ModbusRTU.neo, click [Open].
6. Select TextLibrary.neo, click [Open].
7. Select Background.neoxaml, click [Open].
8. Select Demo_Main.neoxaml, click [Open].
9. Select Demo_AllPar.neoxaml, click [Open].
10. Optionally Select Demo_Drive_Info.neoxaml, click [Open].
11. Optionally Select Demo_Help.neoxaml, click [Open].
12. Optionally Select Demo_RemoteIO.neoxaml, click [Open].
13. Optionally Select Demo_Tools.neoxaml, click [Open].
14. Optionally Select Demo_Trend.neoxaml and DataLogger1.neo, click [Open].
15. Optionally Select Diagnostic.neoxaml, click [Open].
16. Assign the Background screen to all imported screens.
17. If you get validation errors when building the project, export the all Tags of the example project and import/merge it with your project Tags.
18. Check the DataTypes of all Tags, Scaling, Initial Values, Index Registers and connected Tag Actions as some properties are not exported/imported!
19. Done!

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