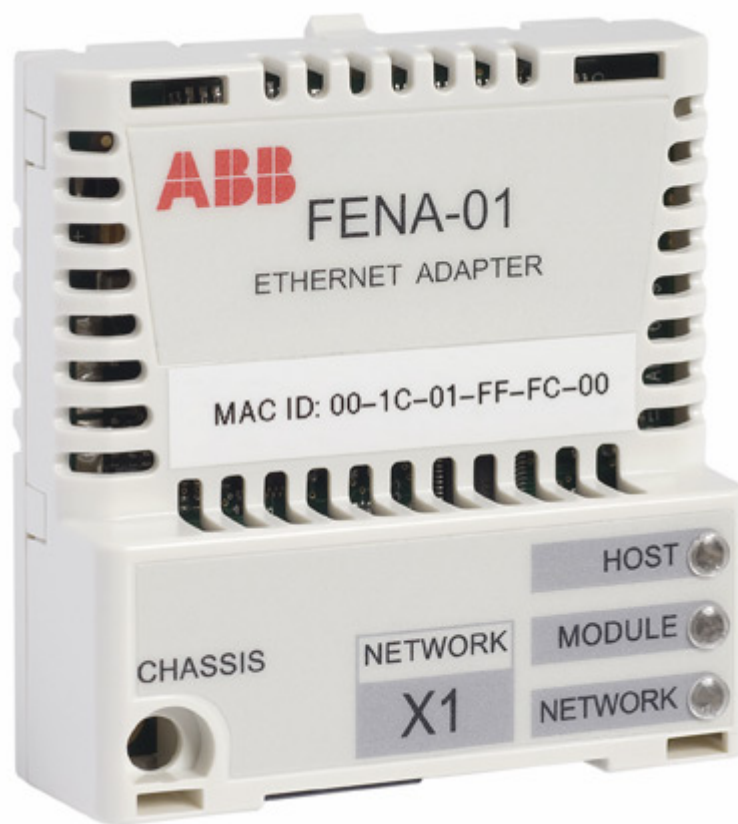


ABB Drives

Hardware Manual Ethernet Adapter Module FENA-01



Ethernet Adapter Module FENA-01

Hardware Manual

3AUA0000022986 REV A
EN
EFFECTIVE: 31.3.2008

Safety instructions

Overview

This chapter states the general safety instructions that must be followed when installing and operating the FENA-01 Ethernet Adapter module.

The material in this chapter must be studied before attempting any work on, or with, the unit.

In addition to the safety instructions given below, read the complete safety instructions of the specific drive you are working on.

General safety instructions



WARNING! All electrical installation and maintenance work on the drive should be carried out by qualified electricians.

The drive and adjoining equipment must be properly earthed.

Do not attempt any work on a powered drive. After switching off the mains, always allow the intermediate circuit capacitors 5 minutes to discharge before working on the frequency converter, the motor or the motor cable. It is good practice to check (with a voltage indicating instrument) that the drive is in fact discharged before beginning work.

The motor cable terminals of the drive are at a dangerously high voltage when mains power is applied, regardless of motor operation.

There can be dangerous voltages inside the drive from external control circuits even when the drive mains power is shut off. Exercise appropriate care when working on the unit. Neglecting these instructions can cause physical injury or death.

Table of contents

<i>Safety instructions</i>	5
Overview	5
General safety instructions	5
 <i>Table of contents</i>	 7
 <i>Introduction</i>	 9
Intended audience	9
Before you start	9
What this manual contains	10
 <i>Overview</i>	 11
Overview	11
Ethernet	11
The FENA-01 Ethernet Adapter module	12
Compatibility	14
Delivery check	14
 <i>Mechanical installation</i>	 15
Mounting	15
 <i>Electrical installation</i>	 17
Overview	17
General cabling instructions	17
Ethernet connection	17

Definitions and abbreviations 19

Technical data 21

FENA-01 21

Fieldbus link 22

Introduction

Intended audience

The manual is intended for people responsible for installing, commissioning and using the FENA-01 Ethernet Adapter module. The reader is expected to have a basic knowledge of electrical fundamentals, electrical wiring practices and how to operate the drive.

Before you start

It is assumed that the drive is installed and ready to operate before starting the installation of the extension module.

In addition to conventional installation tools, have the drive manuals available during the installation as they contain important information not included in this manual. The drive manuals are referred to at various points of this document.

What this manual contains

This manual contains information on the wiring, configuration and use of the FENA-01 Ethernet Adapter module.

Safety instructions are featured in the first few pages of this manual.

Overview contains short descriptions of the Ethernet networking, the FENA-01 Ethernet Adapter module and a delivery checklist.

Mechanical installation contains placing and mounting instructions for the module.

Electrical installation contains wiring, bus termination and earthing instructions.

Definitions and abbreviations explains definitions and abbreviations concerning the FENA-01 and Ethernet.

Technical data contains information on physical dimensions, configurable settings and connectors of the module and a specification of the Ethernet link.

Overview

Overview

This chapter contains a short description of the Ethernet, the FENA-01 Ethernet Adapter module, and a delivery checklist.

Ethernet

Ethernet standards support a variety of physical media (coaxial cable, twisted pair, fiber optics) and topologies (bus and star). The FENA-01 Ethernet Adapter supports twisted pair as the physical media in a star topology. An example of an allowable topology is shown in [Figure 1](#).

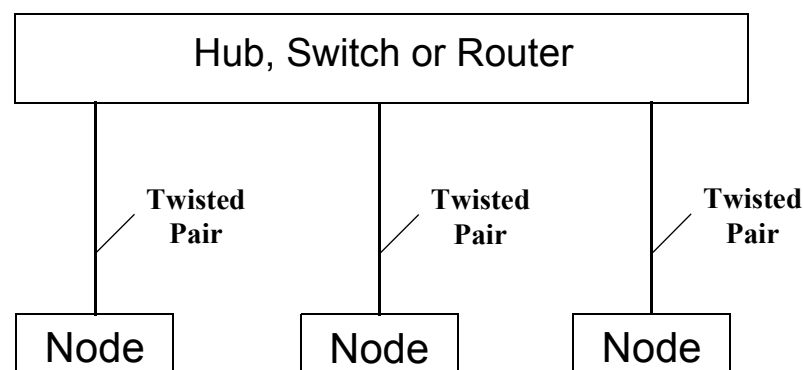


Figure 1. Ethernet star topology

The maximum length for an Ethernet segment on twisted pair media is 100 meters. All twisted pair media between the Ethernet node and the Hub, Switch or Router must be less than 100 meters, including media within patch panels (see chapter ["Technical data"](#)).

The FENA-01 Ethernet Adapter module

The FENA-01 Ethernet Adapter module is an optional device for ABB drives which enables the connection of the drive to an Ethernet network. Through the FENA-01 Ethernet Adapter module it is possible to:

- give control commands to the drive (Start, Stop, Run enable, etc.)
- feed a motor speed or torque reference to the drive
- give a process actual value or a process reference to the PID controller of the drive
- read status information and actual values from the drive
- change drive parameter values
- reset a drive fault.

Protocols used to access these functionalities over Ethernet (eg, Modbus/TCP) and configuration of the FENA-01 Ethernet Adapter module to use them are described in the respective Protocol Manual.

The adapter module is mounted into an available fieldbus adapter slot on the drive. See the drive documentation for module placement options.

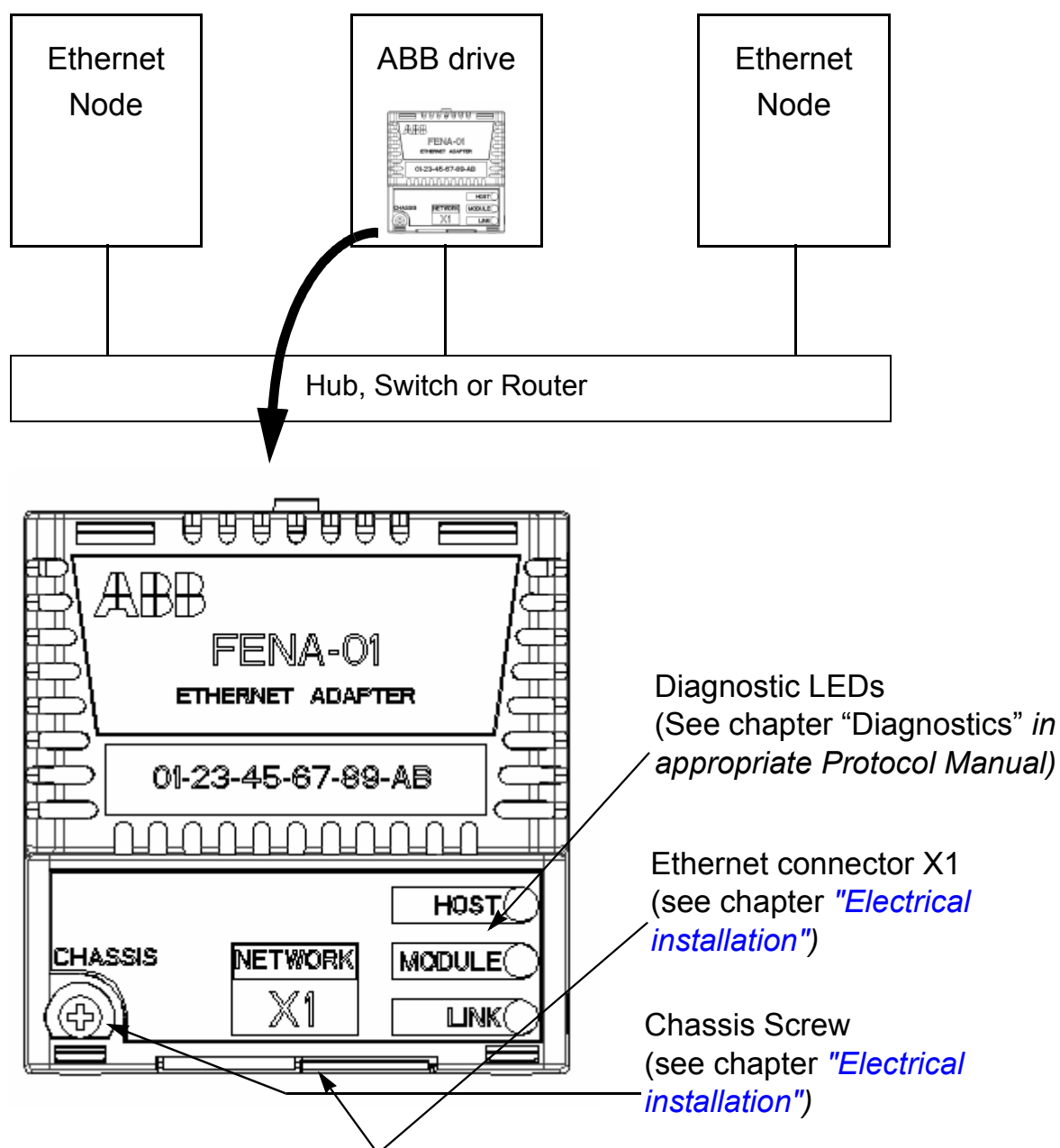


Figure 2. The construction of the Ethernet link and the FENA-01 Adapter module.

Compatibility

The FENA-01 is compatible with Ethernet standards IEEE 802.3 and IEEE 802.3u.

Note that compatibility with these Ethernet standards does not imply support for any higher level protocols (eg, Modbus/TCP). Verify support for desired protocol and features with the appropriate Protocol Manual.

Delivery check

The option package for the FENA-01 Ethernet Adapter module contains:

- Ethernet Adapter module, type FENA-01
- this manual.
- FENA-01 Ethernet Adapter module Protocol Manuals

Mechanical installation



WARNING! Follow the safety instructions given in this manual and the drive documentation.

Mounting

The FENA-01 is to be inserted into an available fieldbus adapter slot. The module is held in place with plastic pins and one screw. The screw also provides the electrical connection between the module and drive frame for cable shield termination.

On installation of the module, the signal and power connection to the drive is made through a 20-pin connector. (All drives do not use all the available signals so the connector on the drive may have fewer pins.)

Mounting procedure:

- Insert the module carefully into its position on the drive.
- Fasten the screw.

Note: Correct installation of the screw is essential for fulfilling the EMC requirements and for proper operation of the module.

Electrical installation

Overview

This chapter contains:

- general cabling instructions
- instructions for connecting the module to the Ethernet.



WARNING! Before installation, switch off the drive power supply. Wait 5 minutes to ensure that the capacitor bank of the drive is discharged. Switch off all dangerous voltages connected from external control circuits to the inputs and outputs of the drive.

General cabling instructions

Arrange the bus cables as far away from the motor cables as possible. Avoid parallel runs. Use bushings at cable entries.

Ethernet connection

The network cable is connected to the RJ45 connector (X1) on the FENA-01 module. Standard CAT5 UTP, FTP or STP cables can be used.

When CAT5 FTP or STP is used, jumper J1 connects the cable shield internally either:

- to the drive frame (position 1-2) or
- through an RC network to drive frame (position 2-3).

Definitions and abbreviations

Communication Module

Communication Module is a name for a device (eg, a fieldbus adapter) through which the drive is connected to an external serial communication network (eg, a fieldbus). The communication with the communication module is activated by a drive parameter.

MAC ID

Every node on an Ethernet network has to have a unique identifier. This node number is called MAC ID (Media Access Control ID).

FENA-01 Ethernet Adapter module

The FENA-01 Ethernet Adapter module is one of the optional fieldbus adapter modules available for ABB drives. The FENA-01 is a device through which an ABB drive is connected to an Ethernet network.

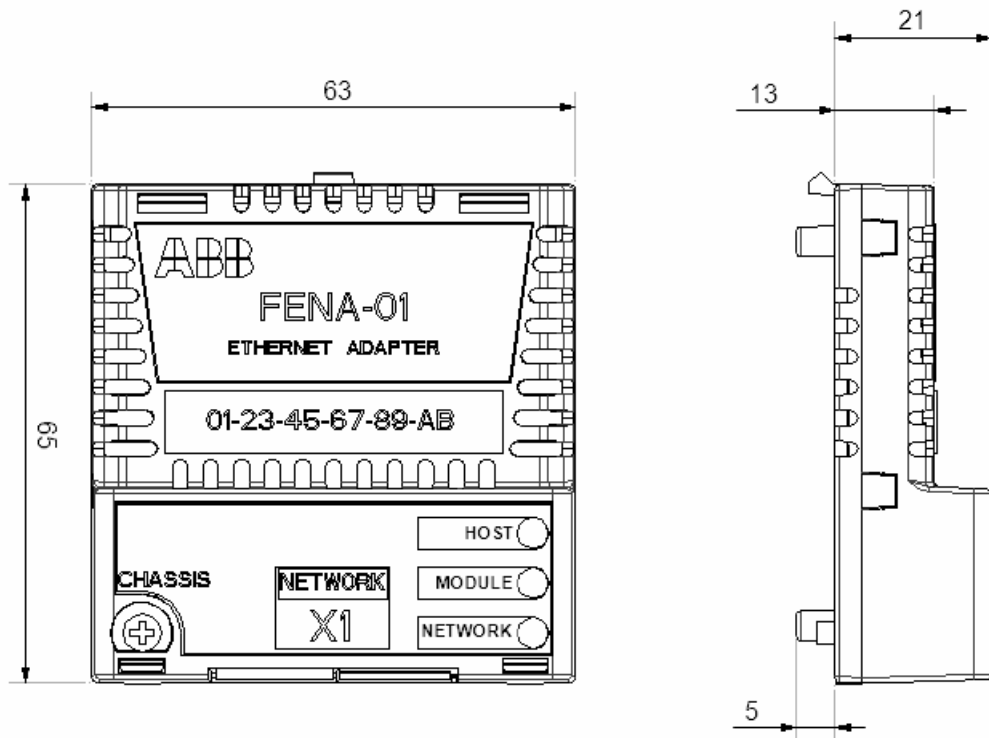
Parameter

A parameter is an operating instruction for the drive. Parameters can be read and programmed using the drive control panel, or through the FENA-01 module.

Technical data

FENA-01

Enclosure:



Mounting: Into the option slot on the drive.

Degree of protection: IP20

Ambient conditions: The applicable ambient conditions specified for the drive in its manuals are in effect.

Indicators: Three bicolor LEDs (HOST, MODULE, NETWORK)

Connectors:

- 20-pin connector to drive
- RJ-45 connector to Ethernet

Power supply: +3.3 V \pm 5% max. 400 mA (supplied by the drive)

General:

- Estimated min. lifetime: 100 000 h
- All materials UL/CSA-approved
- Complies with EMC standards EN 61000-6-4:2001 and EN 61800-3

Fieldbus link

Compatible Devices: Ethernet Standard IEEE 802.3 and IEEE 802.3u devices.

Medium: 10BASE-TX or 100Base-TX with Auto-negotiation and Auto-MDIX (Auto-crossover)

Termination: Internal

Media:

- CAT5 UTP
- CAT5 FTP
- CAT5 STP

Maximum Segment Length: 100 m / 328 ft

Topology: Star

Serial Communication Type: Half or Full Duplex

Transfer Rate: 10Mbps or 100Mbps

Protocol: See Protocol Manuals



ABB Oy

AC Drives

P.O. Box 184

FI-00381 HELSINKI

FINLAND

Telephone +358 10 22 11

Fax +358 10 22 22681

Internet <http://www.abb.com>

ABB Inc.

Automation Technologies

Drives & Motors

16250 West Glendale Drive

New Berlin, WI 53151

USA

Telephone 262 785-3200

800-HELP-365

Fax 262 780-5135

3AUA0000022986 REV A EN
EFFECTIVE: 31.3..2008