DATA SHEET

FOUNDATION™ Fieldbus Linking Device LD 810HSE Ex V1.0

The FOUNDATION™ Fieldbus Linking Device LD 810HSE Ex is registered as class 42c of the HSE profile, therefore providing the following functions:

- It supports up to 4 separate FF-H1 links. In each of these links, the Linking Device operates as Link Master as well as SM Time Publisher.
- Identification of devices connected to the H1 links
- Configuration of connected H1 devices through System Management and Network Management via HSE
- Access to the function blocks of connected H1 devices via HSE
- Republishing of process data between H1 links
- Republishing of process data from H1 to HSE and vice versa
- Distribution of alarms and events sent by H1 devices

Functions

The LD 810HSE Ex is a gateway between an FF High Speed Ethernet (FF-HSE) subnet and FF-H1 links. It supports device redundancy. The Linking Device meets protection class IP20 and is DIN rack mountable. It is powered by 24 V DC and supports Ethernet 10 Mbit/s or 100 Mbit/s.

Gateway

- Identification of devices connected to the H1 links
- Configuration of connected H1 devices through System Management and Network Management via HSE
- Access to the function blocks of connected H1 devices via HSE
- Republishing of process data between H1 links
- Republishing of process data from H1 to HSE and vice versa
- Distribution of alarms and events sent by H1 devices
- It supports up to 4 separate FF-H1 links

HSE

- System Management Agent
- Network Management Agent
- FMS Server providing object access to H1 devices
- Publishing/subscribing of process data from/to H1 devices
- Simple Network Time Protocol (SNTP) Server according to HSE specification (SM time synchronization)
- Simple Network Management Protocol (SNMP) is not supported
- Maintenance functions via web server
- Firmware update of Linking Device and H1 power supply modules via http or https

Maximum Limits on HSE	
Configured HSE sessions	64
Configured HSE VCRs	400
Automatic HSE sessions	32
Automatic HSE VCRs	128
H1-H1 republishing	64

H1 Links

- System Management Manager
- Network Management Manager
- FMS Client for object access
- Publisher and Subscriber of process data
- Support of alarms and events
- Link Master
- SM Time Publisher: The LD will distribute the system time, i. e. the base for alarm time stamps.
- Accesses to an H1 port MIB from H1 network is supported but write access from the H1 network is restricted.

Maximum Limits per H1 Channel

Connections (VCRs) – overall*	128
Sink connections (alarm receptions)	10
- Client + Server	39 + 1
- Publisher + Subscriber	100
LAS schedules	2
Sub-schedules	4
Sequences per sub-schedule	64
Elements per sequence	4
Size of LAS schedule domain [octets]	2000

* The total number of Source/Sink, Client/ Server, and Publisher/Subscriber VCRs in an H1 channel cannot exceed this value.

H1 Live List

- The H1 live list contains all H1 devices that are active on the H1 link.
- For each H1 device, the Linking Device records the node address, the PD tag, and the device ID.

Built-in Web Server

General information about the Linking Device can be queried via the web pages of the built-in web server. This requires a standard web browser supporting JavaScript on a PC that is connected to the Linking Device via Ethernet.

Installation in Hazardous Locations

The LD 810HSE Ex is suitable for use and installation in areas with potentially explosive atmosphere in accordance to both the Division model (North America) and the Zone model (Europe and IEC countries) of hazardous locations.

Hazardous Location - North American Approval (cULus)

If indicated on the device label, the LD810 HSE Ex is suitable for use in Class 1, Division 2, Groups A, B, C, and D hazardous or non-hazardous locations.

The Linking Device does not meet the requirements of impact protection or IP54 (according to IEC 60529). Thus, it must be installed in a protective enclosure that meets the requirements for resistance against impact and IP as stated in section 26.4 of IEC/EN 60079-0. This enclosure must be fully mounted and intact. If the enclosure is damaged, the operation is not permitted.

Hazardous Location - European and International Approval (ATEX, IECEx)

The equipment was assessed based on the following standards and editions:

a) IEC 60079-0:2011 Ed. 6, modified Cor. 2012 + Cor. 2013 / EN 60079-0:2012 + A11:2013
b) IEC 60079-11:2011 Ed. 6 + Corr. 2012 / EN 60079-11: 2012
c) IEC 60079-15:2010 Ed. 4 / EN 60079-15: 2010

If indicated on the device label or by technical documentation, the LD 810HSE Ex is suitable for use in gas- Ex atmospheres of Zone 2 in the explosion groups IIA, IIB and IIC in temperature class T4, if accommodated in a tested enclosure.

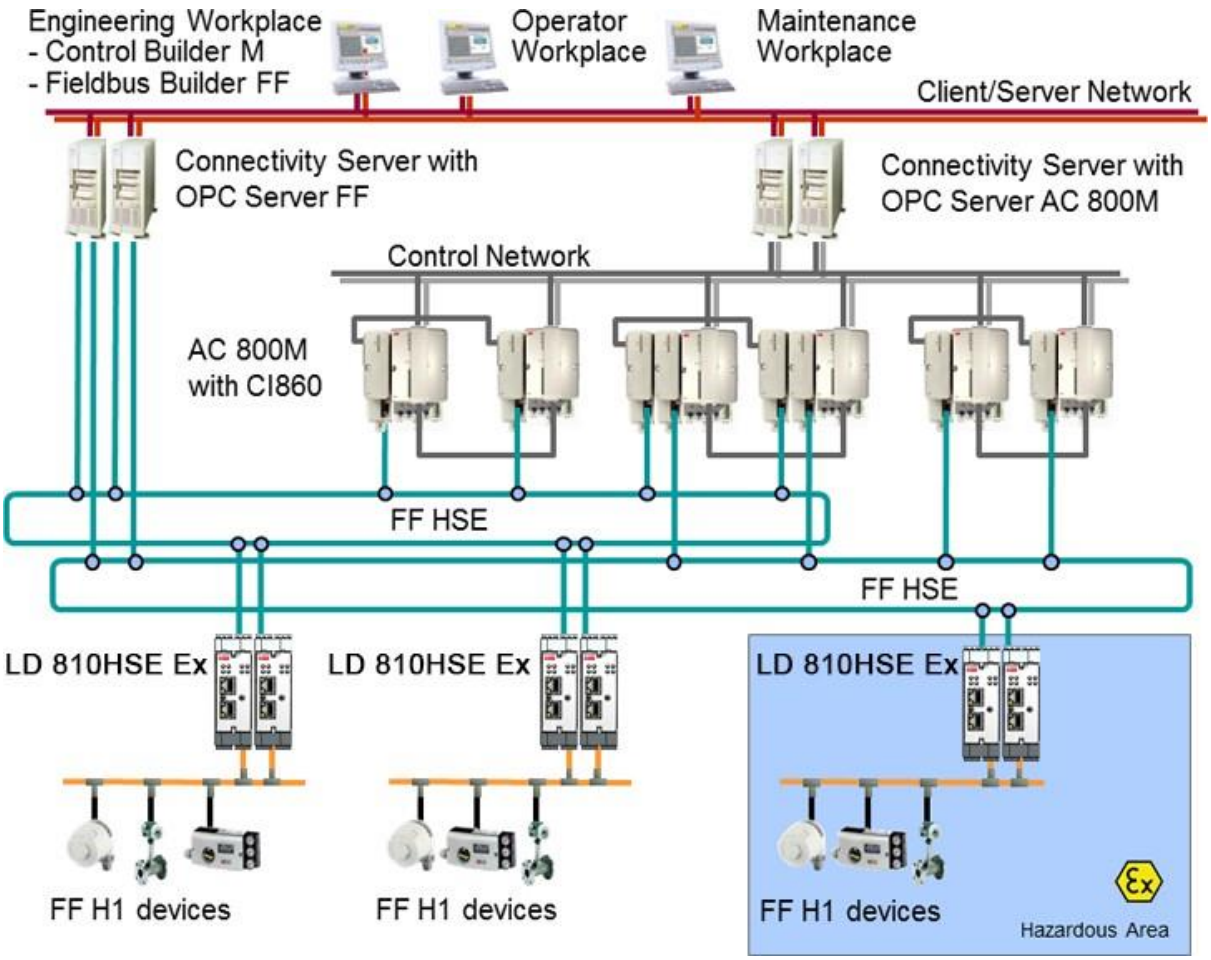
- IECEx marking for explosion protection: Ex nA [ic] IIC T4 Gc
- ATEX marking for explosion protection: II3G nA [ic] IIC T4 Gc

The Ex protection method [ic] corresponds only to the FF-H1 fieldbus interfaces.

The LD 810HSE Ex complies with the applicable standards and regulations and meets the requirements of Directive 2014/34/EU. The requirements for mounting the device as part of the system in potentially explosive atmospheres (e. g. IEC/EN 60079-14) must be strictly adhered to.

Integration into the ABB Ability™ IT System Structure

Within a typical 800xA system structure as shown in the Figure below, a FOUNDATION™ Fieldbus subsystem is linked to the control system via the HSE subnet. The Linking Devices serve as gateways between the field devices on the H1 links and the HSE subnet.



Sample System Structure with FF Network

The FOUNDATION™ Fieldbus subsystem consists of Linking Devices and possibly other devices that communicate with one another using the HSE protocol and subsidiary H1 links. As a device registered as a class 42c device of the HSE profile the LD 810HSE Ex allows process data that are being published cyclically on the subsidiary H1 links to be republished on the HSE subnet.

By using HSE republishing, it is possible to configure cyclical communication between field devices on different H1 links and devices on the HSE subnet. Furthermore alarms and events from H1 devices are communicated to the Connectivity Servers FF, thus allowing seamless integration in the overall 800xA alarm management philosophy.

The displayed system structure also includes redundant LD 810HSE Ex. The corresponding H1 ports of both physical Linking Devices making up a redundant set of Linking Devices are connected to the same H1 link. Both physical devices belonging to a redundant set are connected via a redundant link wiring for exchanging redundancy control information.

Within a typical Industrial IT system structure system structure the FOUNDATION™ Fieldbus subsystem is interfaced to the IEC 61131 controller using the communication interface module CI860 in the AC 800M that acts as HSE host on the HSE subnet.

Specification	Figure
Power supply	18 V DC … 32 V DC SELV/PELV supply mandatory Typical input current is 200 mA. The 4 FF-H1 channels' output current is 10 mA each. Maximum is 1 A (considering the rush-in current at switch-on).
FF-H1	4 FF-H1 channels Compliant with type 114 of the FF physical layer profile The Fieldbus voltage range is from 9 V DC … 32 V DC. Preferred value is 24 V DC.
Ethernet	IEEE 802.3 100BASE-TX/10BASE-T
Minimum ambient operating temperature	-40 °C
Storage temperature	-40 °C … +85 °C
Relative humidity	10 % … 95 % (non-condensing)
Altitude	Must not exceed 2,000 m
Location	Indoor use only No direct sunlight
Coating	Conformal coating based on ANSI/ISA-S71.04 G3
Safety standard	IEC/EN/UL 61010-1: Safety requirements for electrical equipment for measurement, control and laboratory use - Part 1: General requirements IEC/EN/UL 61010-2-201: Safety requirements for electrical equipment for measurement, control and laboratory use – Part 2-201: Particular requirements for control equipment (both with CB scheme)
Ingress protection	IP20

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