The FOUNDATION Fieldbus Linking Device LD 800HSE EX is registered according to class 42c of the HSE profile, therefore providing the following functions:

- 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

In each of the four H1 channels the Linking Device operates as the Link Master as well as the SM Time Publisher.

**Function**
LD 800HSE EX is a highly compact gateway between four FF H1 links and FF HSE suited for redundant use. The linking device meets protection class IP20 and is DIN rack mountable. It is powered by 24 Vdc and supports Ethernet 10 Mbit/s and 100 Mbit/s.
Functionality

General
- Linking device according to class 42c of FF HSE profile
- Connects up to four H1 links to an HSE subnet
- Certified for decentralized installation in hazardous areas Zone 2 / Division 2
  - cULus Class I, Division 2, Groups A, B, C, D
  - IECEx Ex nA IIC T4 Gc
  - ATEX II 3G Ex nA IIC T4 Gc
- G3 coated acc. to:
  - ANSI/ISA7104
  - EN 60068-2-60

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

H1
- System Management Manager
- Network Management Manager
- Client for object access
- Publisher and Subscriber of process data
- Reception of alarms and events
- Link Master, SM Time Publisher

Maximum Limits of the Linking Device on HSE

<table>
<thead>
<tr>
<th>Configuration</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Configured HSE sessions</td>
<td>64</td>
</tr>
<tr>
<td>Configured HSE VCRs</td>
<td>400</td>
</tr>
<tr>
<td>Automatic HSE sessions</td>
<td>32</td>
</tr>
<tr>
<td>Automatic HSE VCRs</td>
<td>256</td>
</tr>
<tr>
<td>H1-H1 republishings</td>
<td>64</td>
</tr>
</tbody>
</table>

Maximum Limits per H1 Channel

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connections (VCRs) - overall 1</td>
<td>128</td>
</tr>
<tr>
<td>- Source + Sink</td>
<td>20</td>
</tr>
<tr>
<td>- Client + Server</td>
<td>40</td>
</tr>
<tr>
<td>- Publisher + Subscriber</td>
<td>100</td>
</tr>
<tr>
<td>LAS schedules</td>
<td>2</td>
</tr>
<tr>
<td>Sub-schedules</td>
<td>4</td>
</tr>
<tr>
<td>Sequences per sub-schedule</td>
<td>64</td>
</tr>
<tr>
<td>Elements per sequence</td>
<td>4</td>
</tr>
<tr>
<td>Size of LAS schedule domain [octets]</td>
<td>2000</td>
</tr>
</tbody>
</table>

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

As the LD 800HSE does not generate alarms, there is no practical use case for Source VCRs.
Integration into the ABB Ability™ System Structure

Within a typical ABB Ability™ system structure as shown in Figure 1 a FOUNDATION Fieldbus subsystem is linked to the control system via the HSE subnet. The linking devices LD 800HSE EX serve as gateways between the field devices on the H1 links and the HSE subnet.

The FOUNDATION Fieldbus subsystem consists of linking devices and possibly other devices which 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 800HSE 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 800HSE 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 serial RS-232 null modem cable for exchanging redundancy control information.

Within a typical 800xA 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 which acts as HSE host on the HSE subnet.
## Technical Data

### Power Supply
- **Supply voltage**: 24 V DC (+− 20%)
- **Current consumption**: typ. 200 mA
- **Power dissipation**: typ. 4.8 W

### Mechanical Properties
- **Dimensions**: (length x height x width) 47 x 131 x 111 mm, mounted on DIN rail 35 mm
- **Weight**: approx. 0.4 kg
- **Degree of protection**: IP 20

### Environmental Conditions
- **Operating temperature**: 0° C ... +55° C, non-vertical mounting and hampered air convection may reduce upper temperature limit
- **Storage temperature**: −20° C ... +70° C
- **Relative humidity**: 0% ... 95%, non-condensing

### Ethernet Interface
- **Number of channels**: 1
- **Port**: Ethernet 10BASE-T/100BASE-TX, TJ45
- **Transfer rates**: 10 Mbit/s or 100 Mbit/s (autosensing)

### H1 Fieldbus Interface
- **Number of channels**: 4
- **Port**: FF H1 3-pole screw terminals (pluggable) transformer coupling, galvanically isolated
- **Physical layer profile**: type 114, standard power signalling, separately powered, not intrinsically safe
- **Transfer rate**: 31.25 kbit/s

### Serial Interface
- **Port**: 9-pole SubD male RS-232, 115.2 kbit/s

### Certifications
- **CE compliance**: acc. to EMC Directive 2004/108/EG (EMC), 2006/95/EG (Low Voltage) and 94/9/EG (ATEX)
- **Electro Magnetic Compatibility (EMC)**: acc. to FCC Part 15 Subpart B Class A, VCCI Class 2 Information Technology Equipment 2002
- **Shock and Vibration**: acc. to DIN IEC68 Part 2

### Certifications (LD 800HSE EX only)
- **G3 coated acc. to ANSI/ISA 71.04, EN60068-2-60**
- **Hazardous Location Certification**:
  - UL: Class I, Division 2, Groups A, B, C, D
  - IECEx: Ex nA IIC T4 Gc
  - ATEX: II 3G Ex nA IIC T4 Gc

### Accessories
- **Redundancy Link Cable 0.5 m** (to be ordered separately)