COMMUNICATION NETWORKS

We are securing the past in a fast moving future. FOX605 multiservice platform.

All in one solution.

FOX605 is a comprehensive combination of latest MPLS & L2 packet-switched technology with traditional legacy interfaces and complemented with state of the art synchronization - and cyber security. FOX605 addresses a wider range of applications in harsh environments where traditional TMN services and packet switch technology coexist.

Selected technical highlights.

Fox605’s Versatility

Central part of FOX605 is a highly versatile, wire-speed switch that supports native L2 Ethernet as well as MPLS-TP. Legacy interfaces can be grommed in the TDM cross-connect before emulated via SATOP. AES 256-bit traffic encryption can be enabled for the typical configuration of circuit emulation or via the digital cross-connect (DXc-64k) that also bundles/grooms services into one or several E3-equivalent streams for SATOP (max. 12 flows).

The timing block is closely interlinked with the PHY because SyncE and PtP information have to be derived from the layer 3/4 to make use of iPsec. Information transmitted similarly to earlier SDH/SSM functionalities. The latter can make use of Quality Level information transmitted similarly to earlier SDH/SSM technology.

Network Synchronization

FOX605 offers the latest technology for network synchronization. Reliable distribution of timing information across a network is essential and helps reduce dependence on GPS-time that is a security risk especially for mission critical applications. For demanding network synchronization tasks, FOX605 supports latest PtP/IEEE1588v2 (boundary & ordinary mode) and SyncE functionalities. The latter can make use of Quality Level information transmitted similarly to earlier SDH/SSM technology.

For traditional time-distribution schemes, FOX605 can be connected directly to the functional block that supports native L2 Ethernet as well as L2 packet switched technology with traditional legacy interfaces and packet switch technology. FOXView & FOXMAN-UN are two key components of aBB’s NMS-suite that supports not only FOX but the full range of aBB’s wired and wireless communication networks. Two key components are included: aBB’s NMS-suite and FOXView & FOXMAN-UN.

Flexible management tools.

FOX605 complies with latest expectations in terms of managing a communication network in a secure way by using appropriate protocols and tools. FOX605 is supported by aBB’s NMS-suite but depending on customers’ preferences and management tasks a browser-based GUI or a highly efficient CLI can be used. The ABB NMS-Guide supports not only FOX but the full range of ABB’s wired and wireless communication portfolio.

Browser – Interface

Local/Remote via HTTPS

FOX605 has an embedded server providing a browser-based graphical user interface (GUI). Standard browsers like Firefox or IE can be used. The GUI offers strong monitoring and diagnostic functionalities and is recommended to be used for the typical Configuration user-case.

NMS-Guide

FOXView & FOXMAN-UN

FOXView and FOXMAN-UN are the key components of aBB’s overall NMS-suite, supporting a wide range of ABB’s communication portfolio of box devices but also the CLI and NMS – devices for Power Line Carrier and protection applications, Wireless devices and the ABB factory of automation oriented switches/routers/ firewalls.

CLI – Interface

Local/Remote via SSH

FOX605 offers a Command Line interface including comprehensive help functionalities. It is a very efficient way especially for complex tasks and configurations. Its usage is further facilitated by documentation like the ‘Command Reference Guide’ and an Application/Use case manual.
Type-tested for harsh environments.

Like all members of ABB’s FoX-family, FOX605 was successfully type-tested by an independent, internationally accredited European test-lab for EMC, climatic and mechanical compliance according to following standards.

Basic standards (excerpts)

- **SAFETY**
  - IEC 61010-1 2nd ed. international safety standard
  - IEC 61010-1 2nd ed. equipment for measurement, control and laboratory use

- **EMC**
  - IEC 61000-6-1 2nd ed. utility systems with the latest packet switching technology
  - IEC 61000-6-3 3rd ed. conducted interference
  - IEC 61000-6-4 3rd ed. conducted radio emissions
  - IEC 61000-6-5 3rd ed. test contact/air
  - IEC 61000-6-6 4th ed. test terminals

- **EN**
  - IEC 60950–1 2nd ed. measuring relays and protection装置
  - IEC 60255–27 3rd ed. measuring relays and protection

- **STANDARDS**
  - IEC 60068 – 2-6 4th ed. climatic conditions
  - IEC 60068 – 2-6 4th ed. flammability

- **EN**
  - IEC 61000-4-2 3rd ed. frequency variations on Dc input power port
  - IEC 61000-4-3 3rd ed. oscillatory wave immunity
  - IEC 61000-4-5 2nd ed. electrical fast transients
  - IEC 61000-4-8 3rd ed. power frequency magnetic field

- **Climatic conditions**

<table>
<thead>
<tr>
<th>Operation</th>
<th>Test name</th>
<th>Description</th>
<th>Basic standard</th>
<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>E2</td>
<td>EN55022</td>
<td>(CISPR–22)</td>
<td>EN 55022</td>
<td></td>
</tr>
<tr>
<td>E3</td>
<td>EN55032</td>
<td>(Pty)</td>
<td>EN 55032</td>
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<td>E4</td>
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<td>(IEC/EN)</td>
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<td>IEC/EN</td>
<td>(IEC/EN)</td>
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</table>

## Shock and Vibration

**Fox605 Technical Data.**

As FOX605 combines traditional TDM-services with the latest packet switching technology it complies to applicable parts of a wide range of standards and recommendations of both worlds.

Physical Interface

- **Legacy TDM ports**
  - FOX605 provides following TDM interfaces for use with legacy TDM networks:
  - FX/1000BASE-X ports for use with Ethernet networks
  - E1/2303-8A\(\times\)4 ports for use with E1’reach networks
  - G.703 30\(\times\)MHz to 1GHz variation on Dc input power port

### Dimensions

<table>
<thead>
<tr>
<th>Type</th>
<th>Width</th>
<th>Height</th>
<th>Depth</th>
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</thead>
<tbody>
<tr>
<td><strong>incl. lateral mounting</strong></td>
<td>2.52 m</td>
<td>1.08 m</td>
<td>0.90 m</td>
</tr>
<tr>
<td><strong>incl. front panel</strong></td>
<td>2.52 m</td>
<td>1.08 m</td>
<td>0.46 m</td>
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</tbody>
</table>

### Power supply

- **Safety**
  - IEC 60950–1 2nd ed. measuring relays and protection

- **Cooling**
  - ISO 7726 3rd ed. cooling requirements

- **Mechanical/thermal Transport** (85°C to -40°C, 1.5 m/s²)
  - **Shock**
    - 3g 11 ms
    - 5g 8 ms

- **Vibration**
  - 0.25g 10–200 Hz

- **Other**
  - Voltage range: 38.4 VDC to 72 VDC (nominal 48 VDC to 60 VDC)
  - Maximum power consumption: 123 W max.
  - Maximum power consumption of auxiliary power supply units (PSP): 20 W max.

- **Mechanical limits**

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<th>Level</th>
</tr>
</thead>
<tbody>
<tr>
<td>E1</td>
<td>Power Source Input</td>
<td>IEC 61000–4–5 2nd ed.</td>
<td>2kV</td>
</tr>
<tr>
<td>E2</td>
<td>Power Source Output</td>
<td>IEC 61000–4–5 2nd ed.</td>
<td>2kV</td>
</tr>
<tr>
<td>E3</td>
<td>Power Source Input</td>
<td>IEC 61000–4–5 2nd ed.</td>
<td>2kV</td>
</tr>
<tr>
<td>G.704</td>
<td>Emission class B</td>
<td>IEC/EN 60950–1 2nd ed.</td>
<td></td>
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</tbody>
</table>

### Environmental

- **Shock**
  - 2048kbit/s is supported
  - Synchronous mode (always as transparent) or framed (PCM31, PCM32, G.703, E1 ports), unframed (32 timeslots, G.704, E1 ports), unframed (32 timeslots, G.704, E1 ports)

### Security

- **Cyber Security Reduce testing**
  -狐狸605 is designed to provide cyber security information in accordance with the standard

### Power supply

- **Power supply**
  - FOX605 has a flexible power supply, which can be associated with:
  - 90–264 V input power
  - 170–265 Hz power frequency

### Dimensions

- **Weight**
  - Include the following parts of aBB’s Defence in Depth protection concept.

### Power supply

- **Power supply**
  - FOX605 PSU
  - Model (FOX605)
  - Weights

### Cooling

- **Cooling**
  - ISO 7726 3rd ed. cooling requirements

### Shock and Vibration

- **Shock and Vibration**
  - FOX605 has one or two inserted Power supply units (PSP)
  - 802.1d media access control (MAC) Bridge
  - IEE 802.1Q tag protocol

### Power supply

- **Power supply**
  - Power over Ethernet (PoE)

### Dimensions

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  - Include the following parts of aBB’s Defence in Depth protection concept.

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