The Ethernet unit FOX615 EPOI1 offers 12 Ethernet ports with Power over Ethernet (PoE) capabilities, providing up to 30 W per port (PoE+). Default unit (factory) software and mode provides Ethernet services using FOX615 chassis switch. An alternative optional unit software can be loaded to allow standalone bridge (SAB) mode for segregation of Ethernet services. In SAB mode, on-unit VLAN wire speed switching functionality allows segregation of one layer-2 switching instance dedicated to select service(s), isolated from other switch instances running on either other Standalone units or FOX615 chassis switch.

The EPOI1 capability to distribute PoE, together with its switching functions, makes it particularly suitable for addressing the need for Ethernet connectivity on locations where powering facilities are not easily accessible.  
- 12 x 10/100/1000BASE-T ports with PoE support (PoE+)
- Synchronous Ethernet readiness
- For FOX615 family subracks
- Supports FOX615 chassis switch mode or optional standalone bridge mode (optional software)
- Combined with central unit, can be part of MPLS-TP or ERPS networking (system software dependent)
- Fanless operation supported

All functions managed out of one management system

Power over Ethernet in FOX615
On many locations, Ethernet connections must be provided to a variety of devices like video cameras, IP telephones, access systems, wireless access points. Sometimes, providing a power outlet to these devices would imply additional investment to get the infrastructure in place. In these cases, having the power delivered to the devices using the Ethernet cable is of great advantage. Additional to providing power without the need for additional infrastructure, PoE installations also allow having a single centralized backup system in the case of
power failure. The backup for the telecommunication equipment also serves as the backup for all the devices powered by it. Some of the applications that can be served by PoE capabilities are video surveillance, security access control, Voice over IP telephony, and industrial automation.

EPOI1 provides an embedded PoE capability in order to solve the issue of lack of powering infrastructure, plus the advantage to make installations of this type a lot faster.

Chassis switch mode with default unit software
EPOI1 unit loaded with its (factory) default unit software allows the unit to be part of FOX615 chassis switch architecture. This means that FOX615 is one switch and an expandable number of ports. Every inserted Ethernet unit will expand the switch. With it one can adapt network access point to the local demands.

Standalone bridge mode with optional unit software
EPOI1 unit can alternatively be loaded with SAB unit software to provide on-unit VLAN Bridge function (independent switching instance). This allows for segregation of services on this switch instance from other instances, including FOX615 chassis switch. The EPOI1-SAB can be used either using EoS (front connection) or MPLS-TP (backplane) uplink. Each EPOI1-SAB option allows creation of VLAN enabled and independent switching instance, therefore allowing the creation of separate Ethernet network and separation of traffic into different SDH channel or MPLS-TP link. Multiple EPOI1-SAB option create multiple segregated instances. ETOP1-SAB also enables higher flexiblity of (CE) VLAN bundling and service multiplexing.

Ethernet services
The EPOI1 hardware has been prepared for Synchronous Ethernet (SyncE) to synchronize on NE clock and achieve accurate transmission times and reduce jitter/wander as well as asymmetric delay. EPOI1 delivers advanced Ethernet functionalities such as VLAN tagging/stacking, jumbo frames, VLAN QoS, RSTP, and port security.

EPOI1 provides high bandwidths of up to 1,000 Mbps via standard RJ45 connectors. Each of the electrical Ethernet interfaces can be configured individually. In addition to the 10 GbE backplane access, which can be used with FOX615 Central unit. This provides sufficient capacity for future requirements.

Ethernet services aggregated on EPOI1 can also take advantage of the different FOX615 multi-service capabilities and the variety of interfaces and transport technologies, e.g. optical and electrical Ethernet and the SDH uplink via Ethernet over SDH.

ERPS for protection switching
In Chassis switch mode, combined with chassis central unit, EPOI1 can be part of system solution of Ethernet Ring Protection Switching (ERPS) for rapid restoration within Ethernet networks in ring topologies. ERPS support is installed software dependent.

ERPS compliance with ITU-T G.8032v2 allows ring interconnections supporting major/subring configurations and multiple ERP instances (or multiple logical rings).

MPLS-TP
Ethernet ports can be used as Pseudo Wire Attachment Circuit (PWAC) ports or Customer VLAN (CVP) ports in MPLS-TP networks (installed software dependence).

Safety concept
FOX615 offers highest reliability and quality. For this purpose all modules come with an onboard power supply and high MTBF values.

Management
All services are managed centrally via the management system FOXMAN-UN or via local management access (FOXCST).
## Technical Data

### Data Transmission

<table>
<thead>
<tr>
<th>Number of ports</th>
<th>12 x 10/100/1000BASE-T, acc. to IEEE Std. 802.3-2008.</th>
</tr>
</thead>
<tbody>
<tr>
<td>Connector</td>
<td>RJ45</td>
</tr>
</tbody>
</table>

### Power over Ethernet

<table>
<thead>
<tr>
<th>Standards supported</th>
<th>PoE acc. to IEEE 802.3af-2003, PoE+ acc. to IEEE 802.3at-2009 Electrical Isolation (Environment A) acc. to IEEE Std. 802.3-2008</th>
</tr>
</thead>
<tbody>
<tr>
<td>Supported functionality (on each port)</td>
<td>PoE ports functioning as power sourcing equipment (PSE) supporting detection/ classification of Powered Devices (PDs)</td>
</tr>
<tr>
<td>Total power feeding</td>
<td>Up to 84 W of accumulate power budget for all PoE ports (measured at the outputs)</td>
</tr>
</tbody>
</table>

### Synchronization

| SyncE | Synchronous Ethernet ready for downstream mode |

### Ethernet Functionality

| Port mirroring (chassis switch mode only) | Up to 32 source ports (RX/TX traffic) to a single mirror port |
| Port Security | Ingress Storm Control (flood control, flood rate limiting) |
| Spanning tree protocols | RSTP (Rapid Spanning Tree Protocol), acc. to IEEE 802.1D-2004 MSTP (Multiple Spanning Tree Protocol), acc. IEEE 802.1Q-2011 (depending on installed software) |
| ERPS | Chassis switch mode with ERPS on central unit (installed software dependent) |
| MPLS-TP | Ethernet ports can be used as Pseudo Wire Attachment Circuit (PWAC) ports or Customer VLAN (CVP) ports in MPLS-TP networks (installed software dependence) |

### Standalone mode (SAB Software option) Functionality

| Switching capacity | 22 Gbits/s, 33 M frames/s, wire speed traffic forwarding @ 84 bytes/frame |
| MAC Table | Wire speed MAC address learning |

### Management

| FOXCST | For local management and offline configuration |
| FOXMAN-UN | For central management |

### Power Supply & Other

| Input voltage nominal (min/max) | –48/–60 V DC (–39.5 V DC … –72 V DC) |
| MTBF | 50 years at 35 °C |

### Operation Environment

| Temperature range and humidity | According to FOX615 environmental specifications |