Nokia 7210 Service Access Switch satellites
SR OS Release 16, 7210 SAS OS Release 10

Nokia 7210 Service Access Switch (SAS) satellites offer both local and remote network port extension for 7750 Service Router (SR), 7450 Ethernet Service Switch (ESS) and 7950 Extensible Routing System (XRS) host nodes. Satellite-based, high-density Ethernet aggregation provides flexibility and improves the cost efficiency of the service router portfolio.

This data sheet focuses on the features and specifications of the 7210 SAS platforms when used in satellite mode. These platforms (except for the SONET/SDH model) can also be used in standalone mode, with the same functionality as other 7210 SAS models. For further information on these standalone capabilities, please see the Nokia 7210 Service Access Switch datasheet.

Benefits

Flexibility

Packaged in space-saving 1RU and 1.5RU chassis modules, the 7210 SAS satellite platforms offer additional high-density Ethernet, and SONET/SDH interfaces for the 7750 Service Router (SR), 7450 Ethernet Service Switch (ESS) and 7950 Extensible Routing System (XRS) host nodes. Satellites may be located locally or remotely from their host. There are options to fit a wide variety of deployment needs. Fiber, copper, and PoE/PoE+ capable copper models are available with Ethernet interfaces ranging from 10 Mb/s to 100 Gb/s. The SONET/SDH model provides OC-3/STM-1 and OC-12/STM-4 access interfaces for legacy services. With such a wide variety of interfaces and with high port densities, 7210 SAS satellite routers provide flexibility and excellent growth capacity.
**Cost efficiency**

Nokia satellite host systems have petabit switching capacities. Operators can maximize the host’s per slot bandwidth by connecting 7210 SAS satellites into its high-capacity interface cards. This avoids using high-capacity slots for low-speed interfaces and provides for more efficient usage of the high-throughput host switching capacity. Local switching between client systems connected to a satellite allows off-loading of low-revenue, high-bandwidth traffic away from the service-rich host, allowing operators to minimize the cost per bit for transport.

**Simple, elegant operation**

A 7210 SAS-S satellite is treated as an integrated part of the host chassis. All configuration and management are done on the host providing plug-and-play functionality, without using an additional IP address. As all service functionality is provided by the host system, services connecting through a satellite benefit from the rich feature set and high performance of Nokia’s edge and core service routers. All quality of service (QoS) functionality, buffering, multicasting, and service processing is done on the host nodes using their software suite with the performance of their advanced hardware platforms.

**Hardware features**

**Table 1. Hardware specifications**

The 7210 SAS-Sx 1/10 GE model is similar to the 7210 SAS-S but it is fully NEBS compliant with side-to-back airflow and air filters. It has two modular power supplies, supporting DC and AC at the same time, and has additional timing capabilities.

<table>
<thead>
<tr>
<th>Interfaces</th>
<th>7210 SAS-S 1/10GE (10 variants based on interfaces, PoE, and power supply)</th>
<th>7210 SAS-Sx 1/10GE (6 variants based on interfaces, PoE/PoE+)</th>
<th>7210 SAS-Sx 10/100GE (2 variants based on interface)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Timing</td>
<td>Sync-E</td>
<td>Sync-E</td>
<td>Sync-E</td>
</tr>
<tr>
<td>PoE/PoE+</td>
<td>1</td>
<td>1</td>
<td>1</td>
</tr>
<tr>
<td>Dimensions</td>
<td>• Height: 4.32 cm (1.7 in)&lt;br&gt;• Width: 44 cm (17.3 in)&lt;br&gt;• Depth: 38.7 cm (15.2 in)</td>
<td>• Height: 1 RU 4.37 cm (1.72 in)&lt;br&gt;• Width: 44 cm (17.3 in)&lt;br&gt;• Depth: 40.61 cm (15.99 in)</td>
<td>• Height: 1.5 RU 6.6 cm (2.6 in)&lt;br&gt;• Width: 44 cm (17.3 in)&lt;br&gt;• Depth: 45 cm (17.7 in)</td>
</tr>
<tr>
<td>Power supply options</td>
<td>• Two feeds. First fixed internal supply and one optional modular supply&lt;br&gt;• Supports concurrent use of AC and DC power supplies&lt;br&gt;• Hot swappable</td>
<td>• Two feeds. Modular AC and DC power supplies&lt;br&gt;• Supports concurrent use of AC and DC power supplies&lt;br&gt;• Hot-swappable</td>
<td>• Two feeds. Modular AC and DC power supplies&lt;br&gt;• Supports concurrent use of AC and DC power supplies&lt;br&gt;• Hot-swappable</td>
</tr>
<tr>
<td>Power requirements</td>
<td>• AC input: 100 V to 240 V, 50 Hz to 60 Hz&lt;br&gt;• DC input: -40 V DC to -72 V DC</td>
<td>• AC input: 100 V to 240 V, 50 Hz to 60 Hz&lt;br&gt;• DC input: -36 V DC to -72 V DC</td>
<td>• AC input: 100 V to 240 V, 50 Hz to 60 Hz&lt;br&gt;• DC input: -40 V DC to -72 V DC</td>
</tr>
<tr>
<td>Cooling</td>
<td>• Fan cooled with front-to-back airflow</td>
<td>• Fan cooled with side-to-back airflow&lt;br&gt;• Air filters on both sides of the chassis</td>
<td>• Fan cooled with side-to-back airflow&lt;br&gt;• Air filters on both sides of the chassis</td>
</tr>
<tr>
<td>Temperature operating range</td>
<td>0°C to 40°C (32°F to 104°F)</td>
<td>0°C to 50°C (32°F to 122°F)</td>
<td>0°C to 50°C (32°F to 122°F)</td>
</tr>
</tbody>
</table>

1 Future software deliverable when used in satellite mode.
7210 SAS-Sx SONET/SDH  
7210 SAS-Mxp ETR  
(2 variants: normal and extended temperature range)

| Interfaces | 7210 SAS-Sx SONET/SDH | 7210 SAS-Mxp ETR  
(2 variants: normal and extended temperature range) |
|------------|-----------------------|---------------------------------------------------------------|
| Timing     | • Sync-E from GE uplinks  
• Node or differential-timed DS1/E1 channels | • SyncE from the host  
• 2 x BITS/ToD, 1PPS out, 10 MHz out¹ |
| PoE/PoE+   | None | ¹ |
| Dimensions | • Height: 1 RU 4.2 cm (1.72 in)  
• Width: 44.4 cm (17.4 in)  
• Depth: 24.1 cm (9.5 in) | • Height: 6.7 cm (2.64 in) 1.5 RU  
• Width: 43.6 cm (17.17 in)  
• Depth: 25.3 cm (9.96 in) |
| Power supply options | • Two feeds. Integrated DC power supplies | • Two feeds. Integrated AC and DC power supplies  
• Supports concurrent use of AC and DC power supplies |
| Power requirements | • DC input: +24 V DC to -60 V DC | • AC input: 100 V to 240 V, 50 Hz to 60 Hz;  
(ETR and non-ETR rated variants available)  
• DC input: -36 V DC to -72 V DC;  
(ETR and non-ETR rated variants available)  
• DC input: +20 V DC to +28 V DC; (ETR rated)  
• ETR variant requires a 200 W power supply |
| Cooling | Passively cooled | • Fan cooled with right-to-left air flow  
• Hot-swappable fan tray |
| Temperature operating range | -40°C to 65°C  
(-40°F to 149°F) | • Normal: 0°C to 50°C (32°F to 122°F)  
• ETR: -40°C to 65°C (-40°F to 149°F) |

¹ Future software deliverable when used in satellite mode.

Table 2. 7210 SAS-S satellite variants

The interface specifications and PoE/PoE+ capabilities for each satellite variant are listed below.

<table>
<thead>
<tr>
<th>Identifier</th>
<th>Interface</th>
<th>PoE/PoE+¹</th>
</tr>
</thead>
</table>
| 7210 SAS-S 1/10GE 48-port fiber AC | • 4 x SFP+ 10GE  
• 48 x SFP 100/1000 Mb/s | |
| 7210 SAS-S 1/10GE 48-port fiber DC | • 4 x SFP+ 10GE  
• 48 x SFP 100/1000 Mb/s | |
| 7210 SAS-S 1/10GE 24-port fiber AC | • 4 x SFP+ 10GE  
• 24 x SFP 100/1000 Mb/s | |
| 7210 SAS-S 1/10GE 24-port fiber DC | • 4 x SFP+ 10GE  
• 24 x SFP 100/1000 Mb/s | |
| 7210 SAS-S 1/10GE 48-port copper AC | • 4 x SFP+ 10GE  
• 48 x RJ-45 10/100/1000 Mb/s | |
| 7210 SAS-S 1/10GE 48-port copper AC PoE | • 4 x SFP+ 10GE  
• 48 x RJ-45 10/100/1000 Mb/s | 720 W maximum¹ |
| 7210 SAS-S 1/10GE 48-port copper DC | • 4 x SFP+ 10GE  
• 48 x RJ-45 10/100/1000 Mb/s | |
| 7210 SAS-S 1/10GE 24-port copper AC | • 4 x SFP+ 10GE  
• 24 x RJ-45 10/100/1000 Mb/s | |
| 7210 SAS-S 1/10GE 24-port copper AC PoE | • 4 x SFP+ 10GE  
• 24 x RJ-45 10/100/1000 Mb/s | 720 W maximum¹ |
### Identifiers and Interfaces

<table>
<thead>
<tr>
<th>Identifier</th>
<th>Interface</th>
<th>PoE/PoE+¹</th>
</tr>
</thead>
</table>
| 7210 SAS-S 1/10GE 24-port copper DC | • 4 x SFP+ 10GE  
• 24 x RJ-45 10/100/1000 Mb/s |          |
| 7210 SAS-Sx 1/10GE 48-port fiber | • 4 x SFP+ 10GE  
• 46 x SFP 100/1000 Mb/s  
• 2 x combo SFP or RJ-45 10/100/1000 Mb/s | 60 W maximum on combo RJ-45 ports¹ |
| 7210 SAS-Sx 1/10GE 24-port fiber | • 4 x SFP+ 10GE  
• 22 x SFP 100/1000 Mb/s  
• 2 x combo SFP or RJ-45 10/100/1000 Mb/s | 60 W maximum on combo RJ-45 ports¹ |
| 7210 SAS-Sx 1/10GE 48-port copper | • 4 x SFP+ 10GE  
• 48 x RJ-45 10/100/1000 Mb/s |          |
| 7210 SAS-Sx 1/10GE 48-port copper PoE² | • 4 x SFP+ 10GE  
• 48 x RJ-45 10/100/1000 Mb/s | 720 W maximum¹ |
| 7210 SAS-Sx 1/10GE 24-port copper | • 4 x SFP+ 10GE  
• 24 x RJ-45 10/100/1000 Mb/s |          |
| 7210 SAS-Sx 1/10GE 24-port copper PoE² | • 4 x SFP+ 10GE  
• 24 x RJ-45 10/100/1000 Mb/s | 720 W maximum¹ |
| 7210 SAS-Sx 10/100GE CFP4      | • 4 x CFP        
• 64 x SFP+ GE or 10GE |          |
| 7210 SAS-Sx 10/100GE QSFP28    | • 4 x QSFP28      
• 64 x SFP+ GE or 10GE |          |
| 7210 SAS-Sx SONET/SDH         | • 4 x SFP configurable as 4 x OC-3/STM-1  
or 1 x OC-12/STM-4  
• 1 x SFP GE  
• Other ports for future use  
• Supports TDM services in channelized mode |          |
| 7210 SAS-Mxp                  | • 4 x SFP+ 10GE  
• 22 x SFP 100/1000 Mb/s  
• 2 x combo SFP or RJ-45 10/100/1000 Mb/s | 60 W maximum on combo RJ-5 ports¹ |

¹ Future software deliverable when used in satellite mode.
² 7210 SAS-S and SAS-Sx 1/10GE 48-port and 24-port copper PoE variants must use AC power supplies.

### Host system requirements

Satellites are supported on the 7750 SR, 7950 XRS and the 7450 ESS (when it is mixed mode). On the 7750 SR-7/12/12e and 7450 ESS-7/12, the minimum requirements are a CPM5 and an uplink via an FP2-based IOM/IMM.

### Technical specifications

#### Standards certification and compliance

**Safety**
- CAN/CSA–C22.2 No 60950-1
- ANSI/UL 60950-1
- EN 60950-1
- IEC 60950-1
- FDA CDRH 21-CFR 1040

**EMC**
- IEC/EN 60825-1
- IEC/EN 60825-2
- AS/NZS 60950.1

- FCC Part 15 Class A
- ICES-003 Class A
- VCCI Class A
- EN 300 386

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Data sheet
Nokia 7210 Service Access Switch (SAS) satellites
• IEC CISPR 32
• AS/NZS CISPR 32
• KCC Korea-Emissions & Immunity (in accordance KN32/35)
• ETSI EN 300 132-2
• ETSI EN 300 132-3
• EN 55024
• BT GS-7
• ES 201 468
• IEC CISPR 32 Class A
• EN55032 Class A
• AS/NZS CISPR 32 Class A
• IEC CISPR 24
• IEC 61000-6-2
• IEC 61000-6-4

NEBs Level 3
• GR-1089-CORE
• GR-63-CORE
• GR-295-CORE
• ATIS-0600020
• ATIS-0600019
• ATIS-0600010.03
• ATIS-0600015
• ATIS-0600015.03

RBOC
• ATT-TP-76200
• VZ-TPR-9205
• VZ-TPR-9307
• VZ-TPR-9305

Environmental
• ETSI EN 300 019-2-1; Storage Tests, Class 1.2
• ETSI EN 300 019-2-2; Transportation Tests, Class 2.3
• ETSI EN 300 019-2-3; Operational Tests, Class 3.2
• ETSI EN 300 753 Acoustic Noise

Certifications
• EU Directive 2014/35/EU Low Voltage Directive (LVD)
• EU Directive 2012/19/EU Waste Electrical and Electronic Equipment (WEEE)
• EU Directive 2011/65/EU Restriction of the use of certain Hazardous Substances in Electrical and Electronic Equipment (RoHS2)
• CE Mark - Common Europe
• KC Mark - South Korea
• RCM Mark - Australia
• VCCI Mark - Japan

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Nokia Oyj
Karaportti 3
FI-02610 Espoo, Finland
Tel. +358 (0) 10 44 88 000

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