

## Nokia 7210 Service Access Switch satellites

Release 11

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.



7210 SAS-S 1/10GE 48 port fiber



7210 SAS-Sx 1/10GE 24 port copper



7210 SAS-Sx 1/10 GE 48 port fiber



7210 SAS-Sx 10/100GE 64 port fiber



7210 SAS Mxp ETR



7210 SAS-Sx SONET/SDH

## 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.

## 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.

	7210 SAS-S 1/10GE (10 variants based on interfaces, PoE, and power supply)	7210 SAS-Sx 1/10GE (6 variants based on interfaces, PoE/PoE+)	7210 SAS-Sx 10/100GE
Interfaces	See table 2 for details		
Timing	<ul style="list-style-type: none"> <li>ITU-T SyncE from host</li> <li>IEEE 1588v2 TC on some variants. See table 2 for details.</li> </ul>		
PoE/PoE+	Hardware capable <sup>1</sup>	Hardware capable <sup>1</sup>	Hardware capable <sup>1</sup>
Dimensions	<ul style="list-style-type: none"> <li>Height: 4.32 cm (1.7 in)</li> <li>Width: 44 cm (17.3 in)</li> <li>Depth: 38.7 cm (15.2 in)</li> </ul>	<ul style="list-style-type: none"> <li>Height: 1 RU 4.37 cm (1.72 in)</li> <li>Width: 44 cm (17.3 in)</li> <li>Depth: 40.61 cm (15.99 in)</li> </ul>	<ul style="list-style-type: none"> <li>Height: 1.5 RU 6.6 cm (2.6 in)</li> <li>Width: 44 cm (17.3 in)</li> <li>Depth: 45 cm (17.7 in)</li> </ul>
Power supply options	<ul style="list-style-type: none"> <li>Two feeds. One fixed internal supply and one optional modular supply</li> <li>Supports concurrent use of AC and DC power supplies</li> <li>Hot swappable</li> </ul>	<ul style="list-style-type: none"> <li>Two feeds. Modular AC and DC power supplies</li> <li>Supports concurrent use of AC and DC power supplies</li> <li>Hot-swappable</li> </ul>	<ul style="list-style-type: none"> <li>Two feeds. Modular AC and DC power supplies</li> <li>Supports concurrent use of AC and DC power supplies</li> <li>Hot-swappable</li> </ul>
Power requirements	<ul style="list-style-type: none"> <li>AC input: 100 V to 240 V, 50 Hz to 60 Hz</li> <li>DC input: -40 V DC to -72 V DC</li> </ul>	<ul style="list-style-type: none"> <li>AC input: 100 V to 240 V, 50 Hz to 60 Hz</li> <li>DC input: -36 V DC to -72 V DC</li> </ul>	<ul style="list-style-type: none"> <li>AC input: 100 V to 240 V, 50 Hz to 60 Hz</li> <li>DC input: -40 V DC to -72 V DC</li> </ul>
Cooling	<ul style="list-style-type: none"> <li>Fan cooled with front-to-back airflow</li> </ul>	<ul style="list-style-type: none"> <li>Fan cooled with side-to-back airflow</li> <li>Air filters on both sides of the chassis</li> </ul>	<ul style="list-style-type: none"> <li>Fan cooled with side-to-back airflow</li> <li>Air filters on both sides of the chassis</li> </ul>
Temperature operating range	0°C to 40°C (32°F to 104°F)	0°C to 50°C (32°F to 122°F)	0°C to 50°C (32°F to 122°F)

<sup>1</sup> Future software deliverable when used in satellite mode.

7210 SAS-Sx SONET/SDH		7210 SAS-Mxp (2 variants: normal and extended temperature range)
Interfaces	See table 2 for details	
Timing	<ul style="list-style-type: none"> <li>• ITU-T SyncE from the host</li> <li>• Node or differential-timed DS1/E1 channels</li> </ul>	<ul style="list-style-type: none"> <li>• ITU-T SyncE from the host</li> </ul>
PoE/PoE+	None	Hardware capable <sup>1</sup>
Dimensions	<ul style="list-style-type: none"> <li>• Height: 1 RU 4.2cm (1.72 in)</li> <li>• Width: 44.4 cm (17.4 in)</li> <li>• Depth: 24.1 cm (9.5 in)</li> </ul>	<ul style="list-style-type: none"> <li>• Height: 6.7 cm (2.64 in) 1.5 RU</li> <li>• Width: 43.6 cm (17.17 in)</li> <li>• Depth: 25.3 cm (9.96 in)</li> </ul>
Power supply options	<ul style="list-style-type: none"> <li>• Two feeds. Integrated DC power supplies</li> </ul>	<ul style="list-style-type: none"> <li>• Two feeds. Integrated AC and DC power supplies</li> <li>• Supports concurrent use of AC and DC power supplies</li> </ul>
Power requirements	<ul style="list-style-type: none"> <li>• DC input: +24 V DC to -60 V DC</li> </ul>	<ul style="list-style-type: none"> <li>• AC input: 100 V to 240 V, 50 Hz to 60 Hz; (ETR and non-ETR rated variants available)</li> <li>• DC input: -36 V DC to -72 V DC; (ETR and non-ETR rated variants available)</li> <li>• DC input: +20 V DC to +28 V DC; (ETR rated)</li> <li>• ETR variant requires a 200 W power supply</li> </ul>
Cooling	Passively cooled	<ul style="list-style-type: none"> <li>• Fan cooled with right-to-left air flow</li> <li>• Hot-swappable fan tray</li> </ul>
Temperature operating range	-40°C to 65°C (-40°F to 149°F)	<ul style="list-style-type: none"> <li>• Normal: 0°C to 50°C (32°F to 122°F)</li> <li>• ETR: -40°C to 65°C (-40°F to 149°F)</li> </ul>

<sup>1</sup> Future software deliverable when used in satellite mode.

## Table 2. 7210 SAS satellite variants

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

Identifier	Interface	PoE/PoE+ <sup>1</sup>	IEEE 1588v2
7210 SAS-S 1/10GE 48-port fiber AC	<ul style="list-style-type: none"> <li>• 4 x SFP+ 10GE</li> <li>• 48 x SFP 100/1000 Mb/s</li> </ul>		Transparent clock (TC) <sup>2</sup>
7210 SAS-S 1/10GE 48-port fiber DC	<ul style="list-style-type: none"> <li>• 4 x SFP+ 10GE</li> <li>• 48 x SFP 100/1000 Mb/s</li> </ul>		TC <sup>2</sup>
7210 SAS-S 1/10GE 24-port fiber AC	<ul style="list-style-type: none"> <li>• 4 x SFP+ 10GE</li> <li>• 24 x SFP 100/1000 Mb/s</li> </ul>		
7210 SAS-S 1/10GE 24-port fiber DC	<ul style="list-style-type: none"> <li>• 4 x SFP+ 10GE</li> <li>• 24 x SFP 100/1000 Mb/s</li> </ul>		
7210 SAS-S 1/10GE 48-port copper AC	<ul style="list-style-type: none"> <li>• 4 x SFP+ 10GE</li> <li>• 48 x RJ-45 10/100/1000 Mb/s</li> </ul>		
7210 SAS-S 1/10GE 48-port copper AC PoE	<ul style="list-style-type: none"> <li>• 4 x SFP+ 10GE</li> <li>• 48 x RJ-45 10/100/1000 Mb/s</li> </ul>	720 W maximum <sup>1</sup>	
7210 SAS-S 1/10GE 48-port copper DC	<ul style="list-style-type: none"> <li>• 4 x SFP+ 10GE</li> <li>• 48 x RJ-45 10/100/1000 Mb/s</li> </ul>		
7210 SAS-S 1/10GE 24-port copper AC	<ul style="list-style-type: none"> <li>• 4 x SFP+ 10GE</li> <li>• 24 x RJ-45 10/100/1000 Mb/s</li> </ul>		
7210 SAS-S 1/10GE 24-port copper AC PoE	<ul style="list-style-type: none"> <li>• 4 x SFP+ 10GE</li> <li>• 24 x RJ-45 10/100/1000 Mb/s</li> </ul>	720 W maximum <sup>1</sup>	

Identifier	Interface	PoE/PoE+ <sup>1</sup>	IEEE 1588v2
7210 SAS-S 1/10GE 24-port copper DC	<ul style="list-style-type: none"> <li>4 x SFP+ 10GE</li> <li>24 x RJ-45 10/100/1000 Mb/s</li> </ul>		
7210 SAS-Sx 1/10GE 48-port fiber	<ul style="list-style-type: none"> <li>4 x SFP+ 10GE</li> <li>46 x SFP 100/1000 Mb/s</li> <li>2 x combo SFP or RJ-45 10/100/1000 Mb/s</li> </ul>	60 W maximum on combo RJ-45 ports <sup>1</sup>	TC <sup>2</sup>
7210 SAS-Sx 1/10GE 24-port fiber	<ul style="list-style-type: none"> <li>4 x SFP+ 10GE</li> <li>22 x SFP 100/1000 Mb/s</li> <li>2 x combo SFP or RJ-45 10/100/1000 Mb/s</li> </ul>	60 W maximum on combo RJ-45 ports <sup>1</sup>	
7210 SAS-Sx 1/10GE 48-port copper	<ul style="list-style-type: none"> <li>4 x SFP+ 10GE</li> <li>48 x RJ-45 10/100/1000 Mb/s</li> </ul>		
7210 SAS-Sx 1/10GE 48-port copper PoE <sup>3</sup>	<ul style="list-style-type: none"> <li>4 x SFP+ 10GE</li> <li>48 x RJ-45 10/100/1000 Mb/s</li> </ul>	720 W maximum <sup>1</sup>	
7210 SAS-Sx 1/10GE 24-port copper	<ul style="list-style-type: none"> <li>4 x SFP+ 10GE</li> <li>24 x RJ-45 10/100/1000 Mb/s</li> </ul>		
7210 SAS-Sx 1/10GE 24-port copper PoE <sup>2</sup>	<ul style="list-style-type: none"> <li>4 x SFP+ 10GE</li> <li>24 x RJ-45 10/100/1000 Mb/s</li> </ul>	720 W maximum <sup>1</sup>	
7210 SAS-Sx 10/100GE QSFP28	<ul style="list-style-type: none"> <li>4 x QSFP28</li> <li>64 x SFP+ GE or 10GE</li> </ul>		TC <sup>2</sup>
7210 SAS-Sx SONET/SDH	<ul style="list-style-type: none"> <li>4 x SFP configurable as 4 x OC-3/STM-1 or 1 x OC-12/STM-4</li> <li>1 x SFP GE</li> <li>Other ports for future use</li> <li>Supports TDM services in channelized mode</li> </ul>		
7210 SAS-Mxp	<ul style="list-style-type: none"> <li>4 x SFP+ 10GE</li> <li>22 x SFP 100/1000 Mb/s</li> <li>2 x combo SFP or RJ-45<sup>1</sup> 10/100/1000 Mb/s</li> </ul>	<ul style="list-style-type: none"> <li>60 W maximum on combo RJ-45 ports<sup>1</sup></li> </ul>	

<sup>1</sup> Future software deliverable when used in satellite mode.

<sup>2</sup> When used in satellite mode.

<sup>3</sup> 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<sup>1</sup>

### Environmental specifications

- ATT-TP-76200<sup>2</sup>
- ETSI EN 300 019-2-1 Storage<sup>2</sup>
- ETSI EN 300 019-2-2 Transportation<sup>2</sup>
- ETSI EN 300 019-2-3 Operational<sup>2</sup>
- ETSI EN 300 753 Acoustic Noise<sup>2</sup>
- GR-63-CORE<sup>2</sup>

<sup>1</sup> System design intent is according to the listed standards. Certifications vary on different models as noted. Refer to product documentation for detailed compliance status.

<sup>2</sup> Not applicable to 7210 SAS-S variants

- VZ.TPR.9205<sup>2</sup>
- RoHS 6/6 design

### Safety

- IEC/EN 60825-1
- IEC/EN 60825-2
- AS/NZS 60950-1
- IEC/EN/UL/CSA 60950-1 Ed2

## Electromagnetic compatibility

- AS/NZS CISPR 32 Class A
- BSMI CNS13438 Class A<sup>3</sup>
- BT GS-7<sup>3</sup>
- EN 55024
- EN 55032 Class A
- EN 55035 Class A (7210 SAS-S non-PoE)
- ETSI EN 300 132-2 (LVDC)<sup>4</sup>
- ETSI EN 300 132-3 (AC)<sup>3,5</sup>
- ETSI EN 300 386
- ETSI ES 201 468<sup>3</sup>
- FCC Part 15 Class A
- GR-1089-CORE<sup>2</sup>
- ICES-003 Class A
- IEC CISPR 24
- IEC CISPR 32 Class A
- IEC/EN 61000-3-2 Power line harmonics<sup>5</sup>
- IEC/EN 61000-3-3 Voltage fluctuations<sup>5</sup>
- IEC/EN 61000-4-2 ESD
- IEC/EN 61000-4-3 Radiated Immunity
- IEC/EN 61000-4-4 EFT
- IEC/EN 61000-4-5 Surge
- IEC/EN 61000-4-6 Conducted Immunity
- IEC/EN 61000-4-11 Voltage Interruptions
- IEC/EN 61000-6-2 Industrial (7210 SAS-Sx series, SAS-S copper PoE)
- IEC/EN 61000-6-4 (7210 SAS-Sx series, SAS-S copper PoE)
- KCC Korea-Emission & Immunity (in accordance with KN32/KN35)
- VCCI Class A

## Wireless

(7210 SAS-Sx 1/10GE, SAS-Sx 10/100GE)

- ETSI EN 301 489-1
- ETSI EN 301 489-17 (Bluetooth)
- KN 301 489-1
- KN 301 489-17 (Bluetooth)

## Power utility substations

(7210 SAS-Mxp)

- IEC 61850-3
- IEEE 1613

## Railway

(7210 SAS-S, SAS-Mxp)

- EN 50121-4
- IEC 62236-4

## Directives, regional approvals and certifications

- DIRECTIVE 2011/65/EU RoHS
- DIRECTIVE 2012/19/EU WEEE
- DIRECTIVE 2014/30/EU EMC
- DIRECTIVE 2014/35/EU LVD
- DIRECTIVE 2014/53/EU RED (7210 SAS-Sx 1/10GE, SAS-Sx 10/100GE)
- NEBS Level 3<sup>2</sup>
- Australia - RCM Mark
- China RoHS - CRoHS
- Europe - CE Mark
- Japan - VCCI Mark
- South Korea - KC Mark

<sup>2</sup> Not applicable to 7210 SAS-S variants

<sup>3</sup> Not applicable to 7210 SAS-Mxp

<sup>4</sup> Not applicable on AC-only models: 7210 SAS-Sx 1/10GE copper PoE and SAS-S AC variants

<sup>5</sup> Not applicable on DC-only models: 7210 SAS-S DC variants



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