

## sat-nms LSM Product Overview

The following pages show a complete overview of interconnections between RF-Distribution and RF-Switch Modules.

### L-Band Switch Model Number Matrix: *sat-nms* LSM MxN (Inputs\*Outputs)

#### RF-Distribution:

M defined number of distribution modules

N defined number of outputs

#### RF-Switch:

M defined number of inputs

N defined number of switch modules

#### Mechanical 19" configurations

3 RU	6 RU	9 RU
8x8	16x16	32x32
8x16	16x32	
8x32	32x16	
16x8		
32x8		

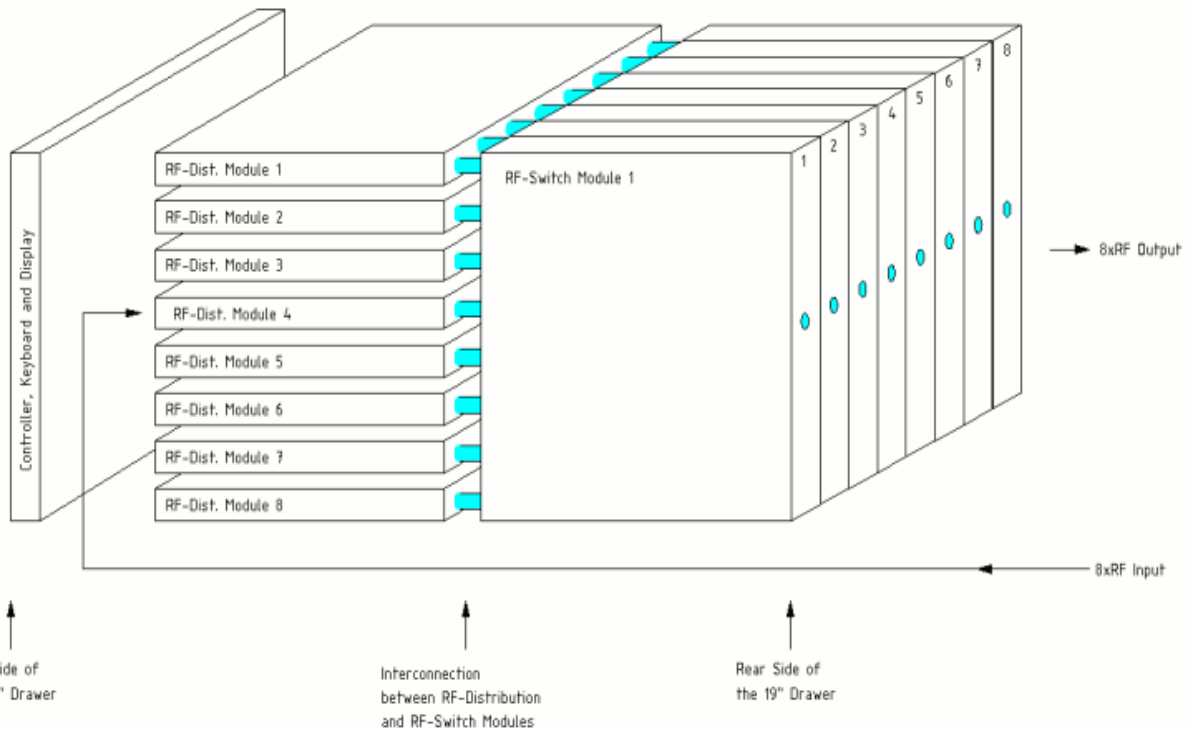
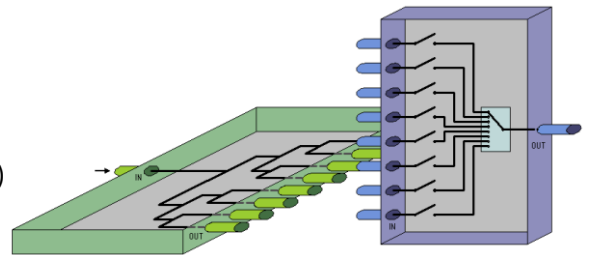
The following picture shows an example of an 8x8 matrix:

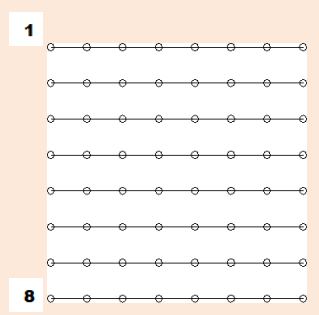
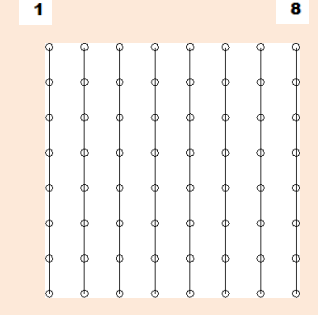
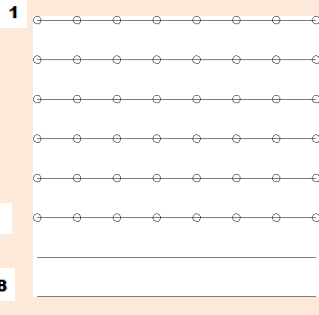
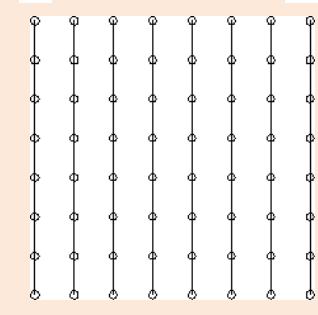
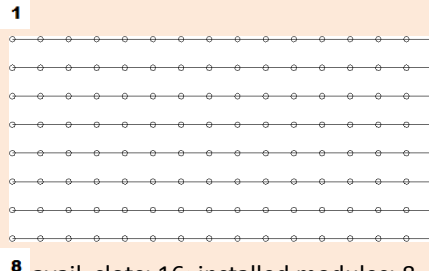
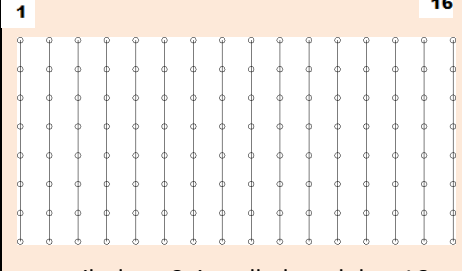
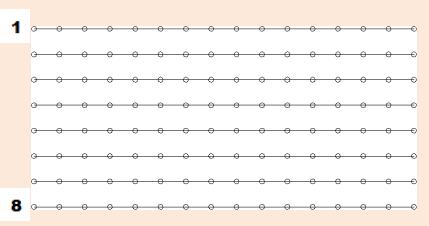
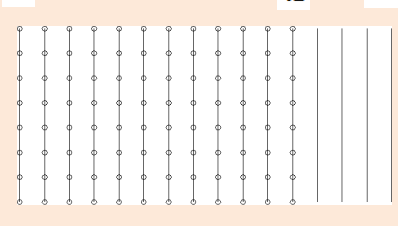
RF Distribution: M: 8 distribution modules (8x RF input)

N: 8 outputs per module

RF Switch: M: 8 inputs per module

N: 8 switch modules (8x RF output)



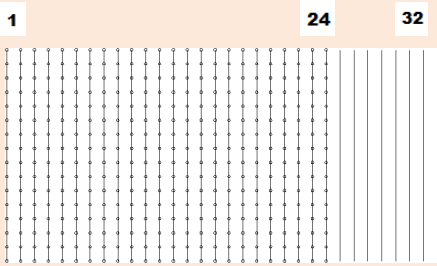
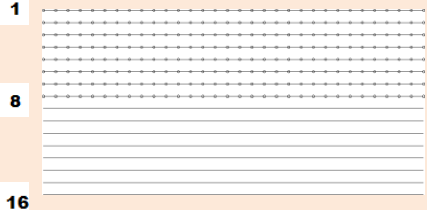
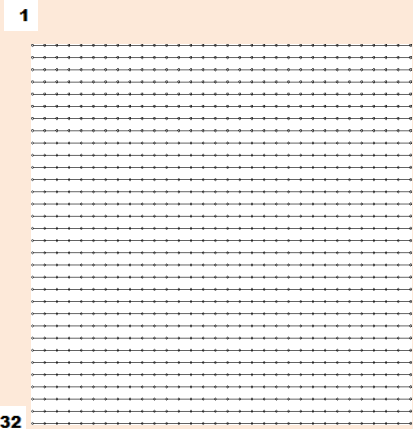
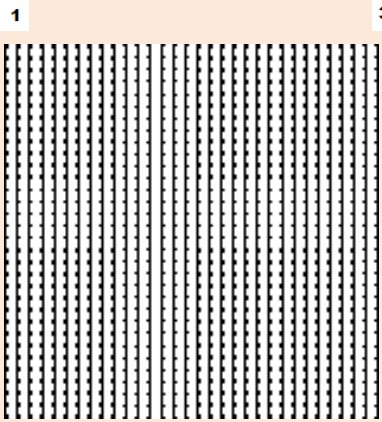
19" Rack Units	Number of Inputs/Outputs NxM	RF Distribution Modules/Inputs	RF Switch Modules/Outputs
3 RU	8x8  Power Consumption: 58W	 <p>avail. slots: 8; installed modules: 8</p>	 <p>avail. slots: 8; installed modules: 8</p>
	8x8 Matrix fitted with 6x8	 <p>avail. slots: 8; installed modules: 6</p>	 <p>avail. slots: 8; installed modules: 8</p>
	8x16  Power Consumption: 66W	 <p>avail. slots: 16; installed modules: 8</p>	 <p>avail. slots: 8; installed modules: 16</p>
	8x16 Matrix fitted with 8x12	 <p>avail. slots: 12; installed modules: 8</p>	 <p>avail. slots: 8; installed modules: 12</p>



19"Rack Units	Number of Inputs/Outputs NxM	RF Distribution Modules/Inputs	RF Switch Modules/Outputs
3 RU	8x32  Power Consumption: 88W	<p>avail. slots: 32; installed modules: 8</p>	<p>avail. slots: 8; installed modules: 32</p>
	8x32 Matrix fitted with 6x24	<p>avail. slots: 32; installed modules: 6</p>	<p>avail. slots: 8; installed modules: 24</p>
	16x8  Power Consumption: 83W	<p>avail. slots: 8; installed modules: 16</p>	<p>avail. slots: 16; installed modules: 8</p>
	32x8  Power Consumption: 143W	<p>avail. slots: 8; installed modules: 32</p>	<p>avail. slots: 32; installed modules: 8</p>
6 RU	16x16  Power Consumption: 95W	<p>avail. slots: 16; installed modules: 16</p>	<p>avail. slots: 16; installed modules: 16</p>



19"Rack Units	Number of Inputs/Outputs NxM	RF Distribution Modules/Inputs	RF Switch Modules/Outputs
6 RU	16x16 Matrix fitted with 12x16	<p>avail. slots: 16; installed modules: 12</p>	<p>avail. slots: 16; installed modules: 16</p>
	16x32  Power Consumption: 118W	<p>avail. Slots: 32; installed modules: 16</p>	<p>avail. slots: 16; installed modules: 32</p>
	16x32 Matrix fitted with 16x18	<p>avail. Slots: 32; installed modules: 16</p>	<p>avail. slots: 16; installed modules: 18</p>
	32x16  Power Consumption: 156W	<p>avail. slots: 16; installed modules 32</p>	<p>avail. slots: 32; installed modules: 16</p>

19"Rack Units	Number of Inputs/Outputs NxM	RF Distribution Modules/Inputs	RF Switch Modules/Outputs
6 RU	32x16 Matrix fitted with 24x8	 avail. slots: 16; installed modules: 24	 avail. slots: 32; installed modules: 8
9 RU	32x32  Power Consumption: 179W	 avail. slots: 32; installed modules: 32	 avail. slots: 32; installed modules: 32

### RF-Connectors:

In the standard configuration, all RF-connectors are SMA 50Ohm female connectors. If you need 75Ohm connectors, the *sat-nms* IMCLL-5 Impedance Converter Low Loss is what you need.



## Matrices bigger than 32x32:

Matrix systems bigger than 32x32 will be realized by a combination of n x 32x32 complete matrices.

possible combinations		
32x64	32x96	32x128
64x32	64x96	64x128
64x64	128x32	
96x32	128x64	
96x64		

### Combinations Logic:

- double input = 2 unit      64 x 32 consist of: 2 x (32 x 32) matrix
- double output = 2 unit      32 x 64 consist of: 2 x (32 x 32) matrix
- double input x double output = 4 unit      64 x 64 consist of: 4 x (32 x 32) matrix

The Bypass connector on the switch module is reserved for further extensions (e.g. a 64x64 Matrix). With software, for example, **sat-nms** MNC it is possible to switch the signal that is supplied to this.

The Bypass output connectors are available inside of the unit at the distribution cards. As you need this option only in some configurations, the cabling of these bypass outputs to the rear panel is an option and not equipped if not explicit mentioned!

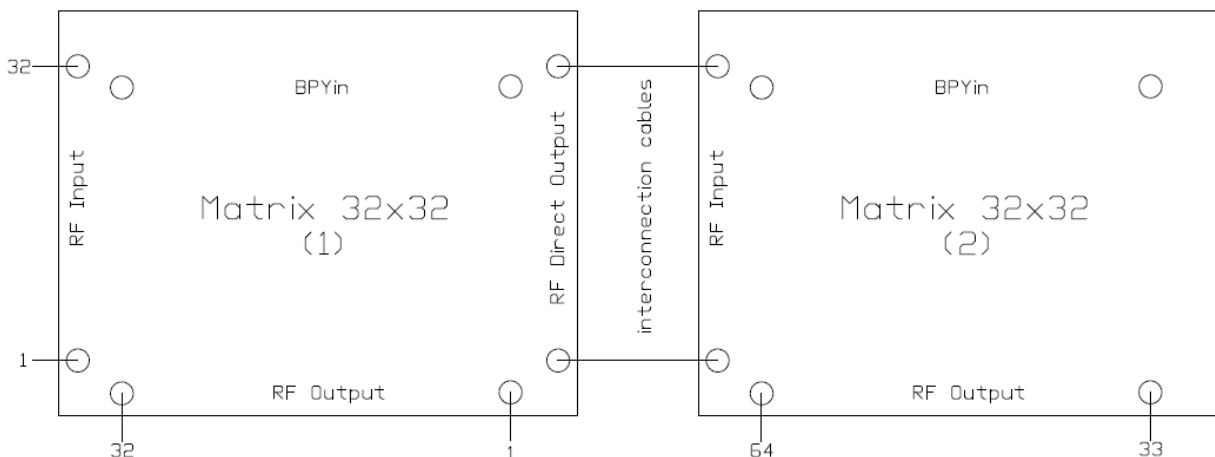
### Other possible Matrix Configurations:

- 64 inputs x 8 outputs
- 72 inputs x 8 outputs
- 96 inputs x 8 outputs
- 104 inputs x 8 outputs

### Examples of Matrix Configurations:

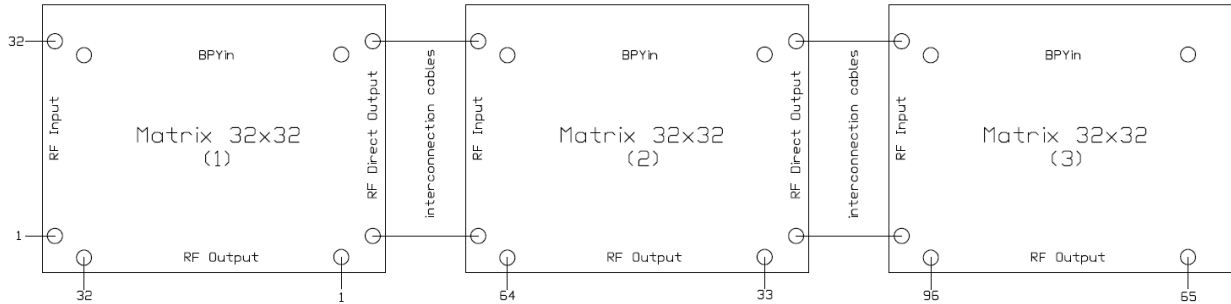
19" Rack Units	Number of Inputs/Outputs NxM	RF Distribution Modules/Inputs	RF Switch Modules/Outputs
2x 9 RU	32x64	avail. slots: 2x32; installed modules 2x32; inputs: 32	avail. slots: 2x32; installed modules: 2x32; outputs: 64

Front View:



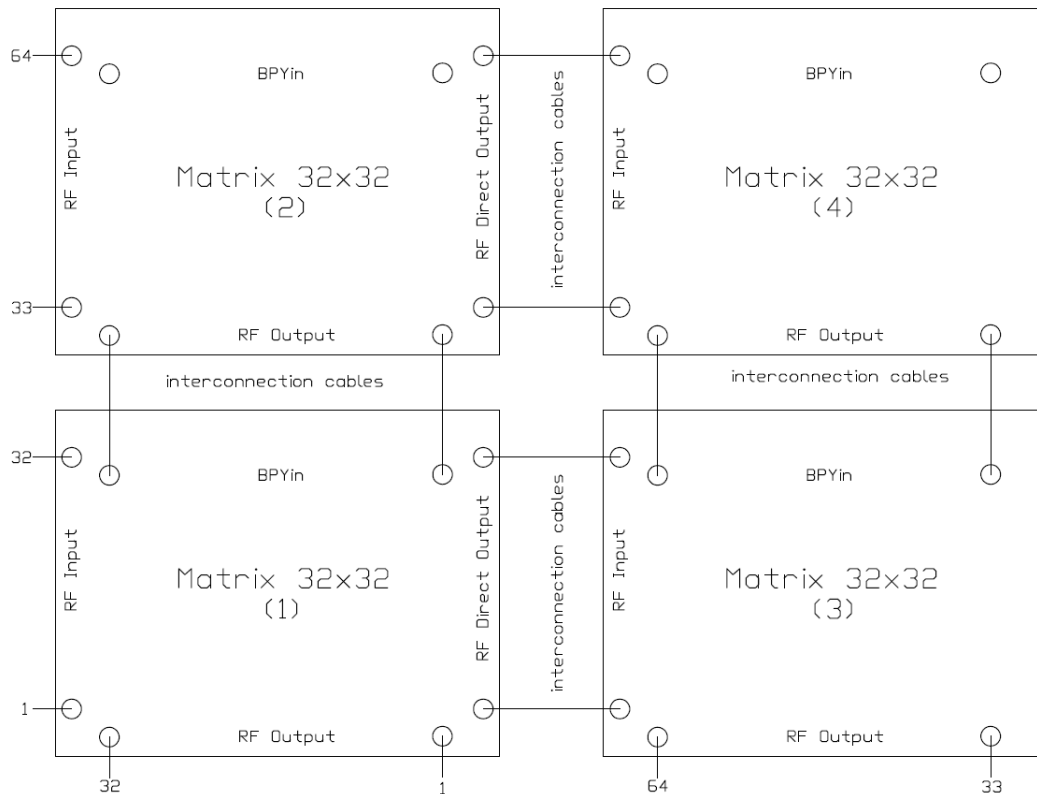
19'Rack Units	Number of Inputs/Outputs NxM	RF Distribution Modules/Inputs	RF Switch Modules/Outputs
3x 9 RU	32x96	avail. slots: 3x32; installed modules: 3x32; inputs: 32	avail. slots: 3x32; installed modules: 3x32; outputs: 96

Front View:



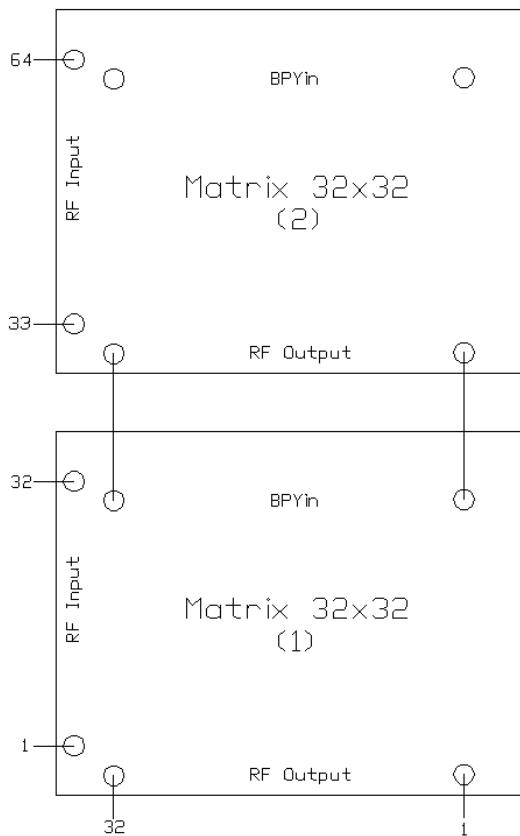
19'Rack Units	Number of Inputs/Outputs NxM	RF Distribution Modules/Inputs	RF Switch Modules/Outputs
4x 9 RU	64x64	avail. slots: 4x32; installed modules: 4x32; inputs: 64	avail. slots: 4x32; installed modules: 4x32; outputs: 64

Front View:



19'Rack Units	Number of Inputs/Outputs NxM	RF Distribution Modules/Input	RF Switch Modules/Outputs
2x 9 RU	64x32	avail. slots: 2x32; installed modules: 2x32; inputs: 64	avail. slots: 2x32; installed modules: 2x32; outputs: 32

Front View:



19'Rack Units	Number of Inputs/Outputs	RF Distribution Modules	RF Switch Modules
16x 9 RU	128x128	QTY 128; DIST 128	QTY 128; SW 128

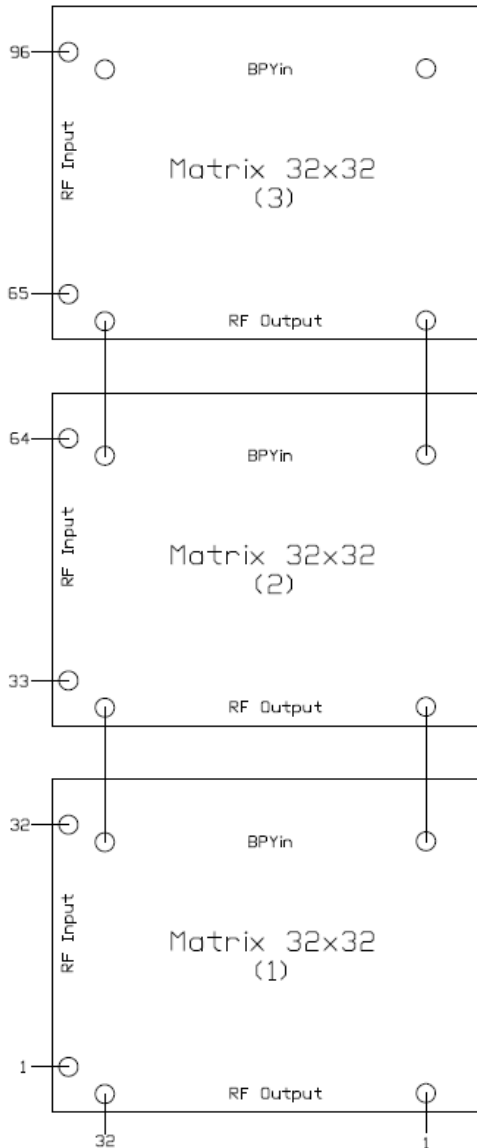
- Matrix consists of 16 times 32 x 32 Matrices
- Plus a set of 8 32:1 Switch Boards



### 96 Inputs x 8 Outputs

This will consist of qty. 3 *sat-nms* LSM 32x8 Matrices.

Front View:



### 64 Inputs x 8 Outputs

This will consist of qty. 2 *sat-nms* LSM 32x8 Matrices.

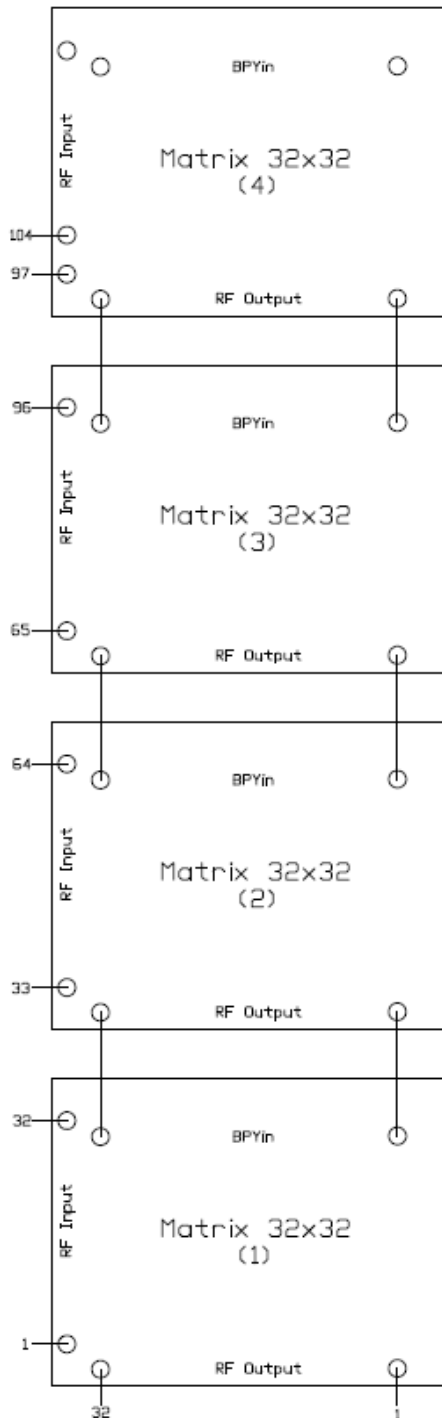
### 72 Inputs x 8 Outputs

This will consist of 3 *sat-nms* LSM 32x8 matrices, 3 fully equipped with all distributor and switch boards. The 3<sup>rd</sup> matrix is equipped with 8 input cards only and 8 switch cards. So they immediately also have the expansion capability to 96 inputs.

### 104 Inputs x 8 Outputs

This will consist of 4 *sat-nms* LSM 32x8 matrices, 3 fully equipped with all distributor and switch boards. The 4<sup>th</sup> matrix is equipped with 8 input cards only and 8 switch cards. So they immediately also have the expansion capability to 128 inputs.

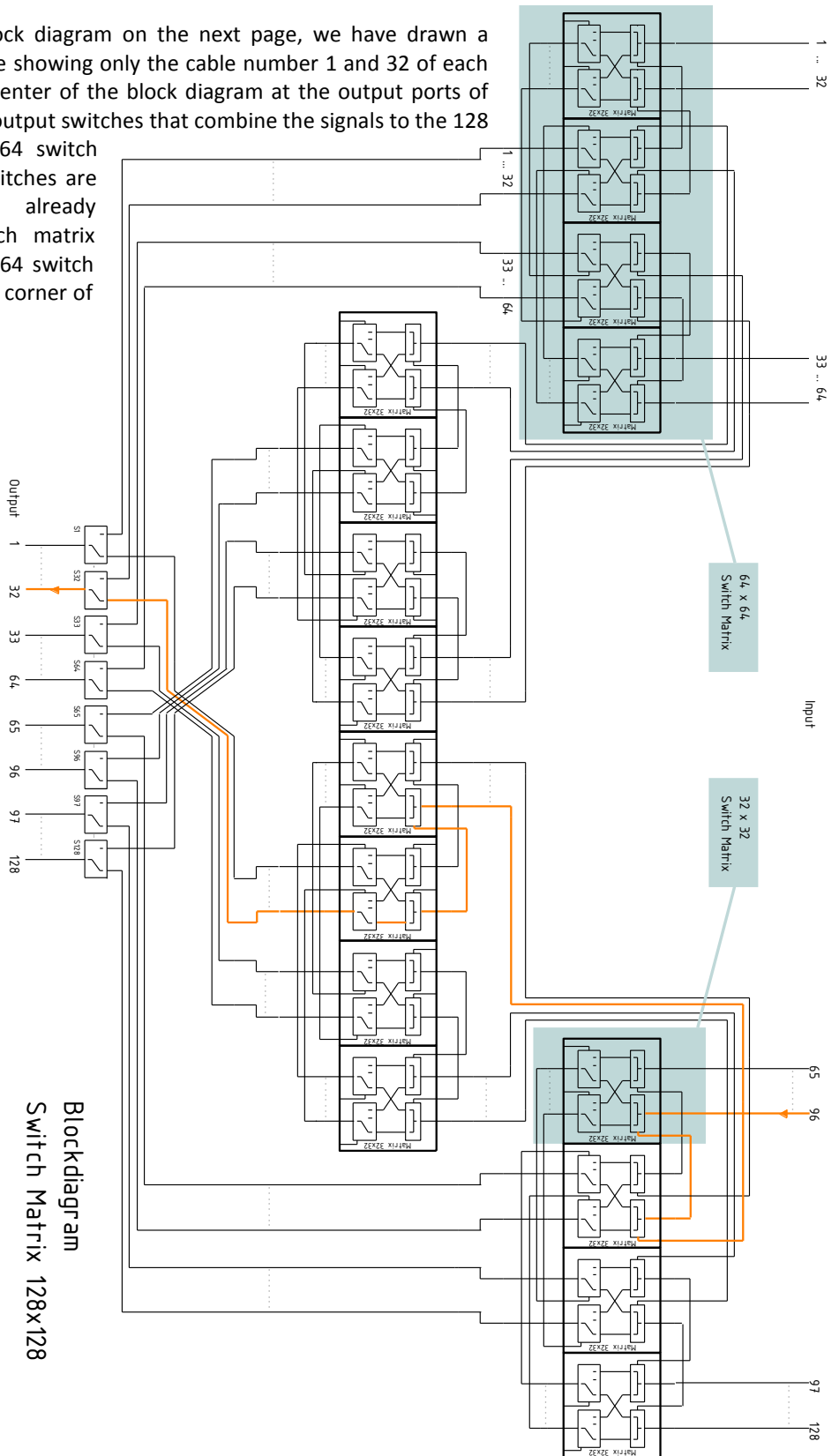
Front View:



**Note:**

Up to four 32x32 matrices can be installed in one rack. In this case you need 4 racks for a 128x128 matrix.

In order not to overload the block diagram on the next page, we have drawn a simplified interconnection scheme showing only the cable number 1 and 32 of each switch matrix box. In the lower center of the block diagram at the output ports of the switch matrix, you find the 8 output switches that combine the signals to the 128 output ports. In case of a 64x64 switch matrix, this additional output switches are not necessary as they are already integrated in each 32x32 switch matrix itself. The configuration of a 64x64 switch matrix is marked in the upper left corner of the same block diagram.



**Contact Information:**

If you need matrices configured in a different way, do not hesitate to contact us. SatService is able to offer the desired configuration.

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