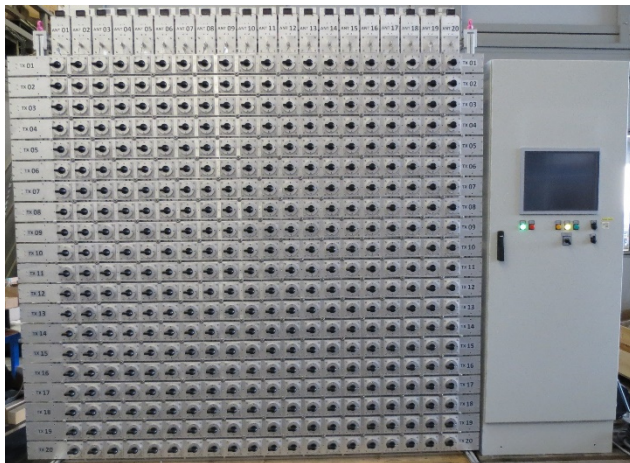


Transmit Antenna Matrix

Stripline Matrix Serie S31020-xx



The Transmit Antenna Matrix Series S31020-xx is used for connecting transmitters to antennas with a power up to 30 kW in the frequency range DC to 32 MHz.

The matrix is designed to allow only one transmitter to be switched to one antenna. During switching an interlock relay is opened and inhibits transmissions by the power amplifier.

If an antenna is not selected for a transmitter, the antenna is automatically grounded.

By means of a key-locked manual switch, each antenna output can be grounded.

Technical Data

Electrical	Supply voltage	110-230 VAC, 50 Hz, 1ph 24/7 operation
	RF	Frequency range Impedance VSWR Insertion Loss RF-power Connectors Isolation
		DC-32 MHz 50 Ohm nom. Typ. 1.1:1 with 50-Ohm load connected (depending on size) max. 0.12 dB (longest path at 20x20 matrix) Up to 30 kW avg. according power requirements Standard connectors: N, 7-16, 13-10, EIA 7/8", EIA 1 5/8", EIA 3 1/8" Other connectors available on request. 70 dB min.
Mechanical	Rack type	Self-supporting rack
	Standard connector configuration	Input (from transmitters): left side Output (to antennas, load): top Other configuration possible.
	Dimensions	depending on matrix size and RF- power requirement

Environmental	Operating temperature	0°C to +50°C
	Storage temperature	-10°C to +85°C
	Humidity	10% to 90%, non-condensing Indoor use
Options	Customer specific connectors and connector configuration Built in or external load Remote control unit with customer specific control interfaces (e.g. GPIB, TCP/IP, RS-232)	
Order information	Matrix sizes from 3 Inputs / 3 Outputs up to 30 inputs / 40 outputs possible	
Example	Matrix size 4 x 11	S31020-0411
	Matrix size 6 x 6	S31020-0606
	Matrix size 25 x 30	S31020-2530

Additional features:

- Local control of matrix functions.
- Non-blocking RF-lines: Each transmitter can be connected to any antenna without restrictions. One transmitter can be connected to only one antenna, one antenna can be connected to only one transmitter.
- An interlock circuit gives a signal to the transmitter to switch off the RF power before switching the crosspoint element of the matrix.
- On the shaft of the crosspoint switch a wafer switch is mounted. It gives the exact position of the crosspoint switch, even when the switch is manually actuated.
- The crosspoint switch is actuated by means of a stepping soleonid with 30° steps. This gives the possibility to monitor and control the switching process.
- On the frontpanel is an indication of the switch position of each cross-point.
- If manual operation is chosen and the required cross-point is selected the interlock circuit gives a signal to the transmitter to remove the RF power. The interlock circuit is independend from the local or remote control units.
- By means of a key-locked manual switch each antenna output can be grounded. when an antenna is grounded, the interlock circuit avoids to switch a transmitter to this antenna column.
- Three modes of operation:
 - Local control with touch-panel
 - Remote control via interface
 - Manual local control

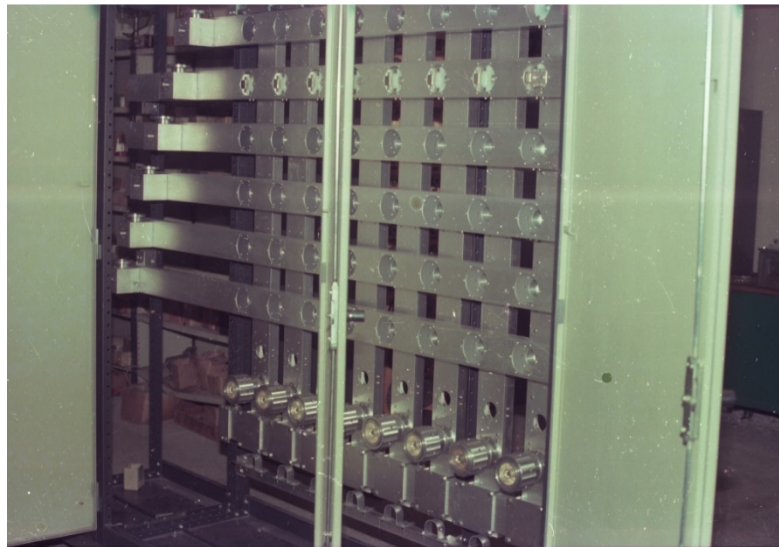


Figure 1: Assembly phase

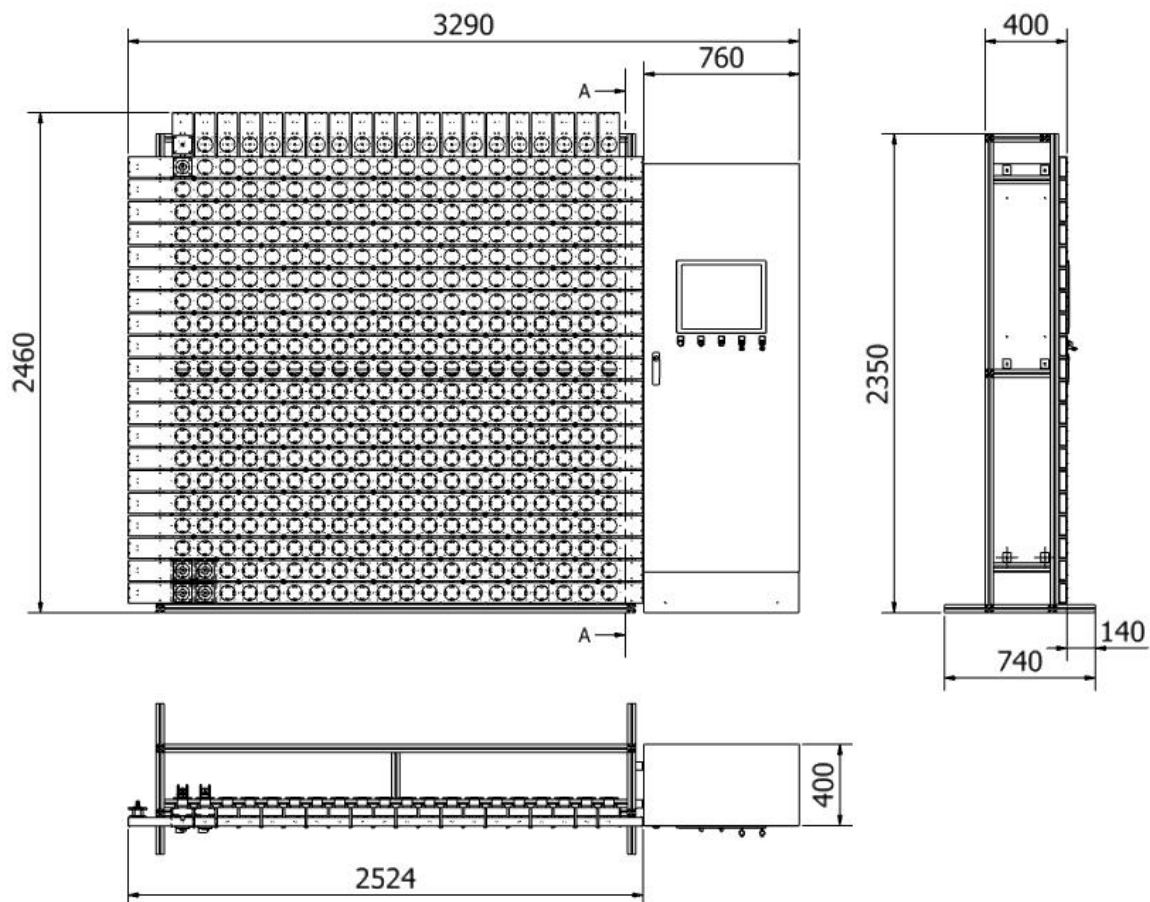


Figure 2: Matrix 20 x 20 with main dimensions

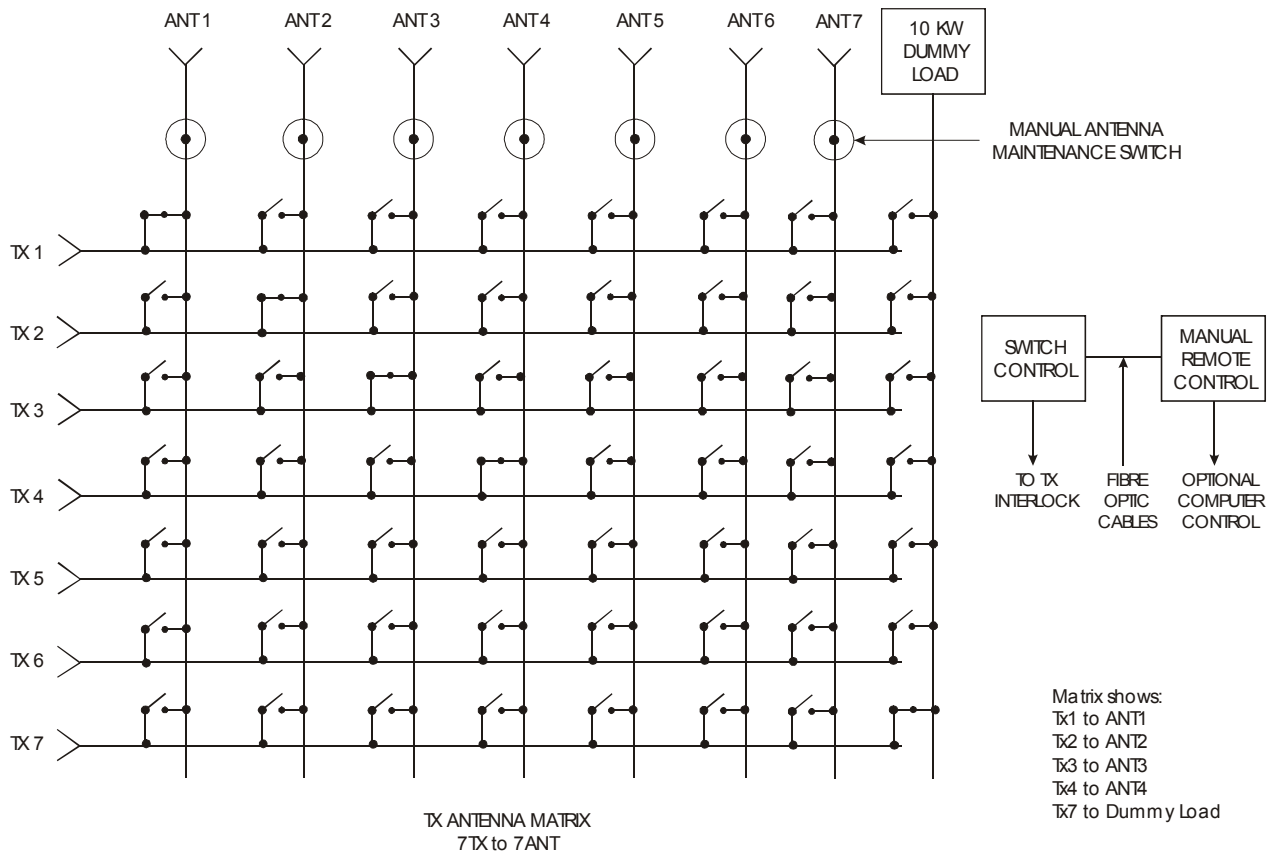


Figure 3: Example for RF-wiring of matrix 7 x 8 (with dummy load)

Matrix control

Figure 1 depicts the general block diagram concerning the Antenna Switch Matrix control structure. The main two parts are the *Antenna Switch Matrix Cabinet* (ASMC) and the *Matrix Control Unit* (MCU).

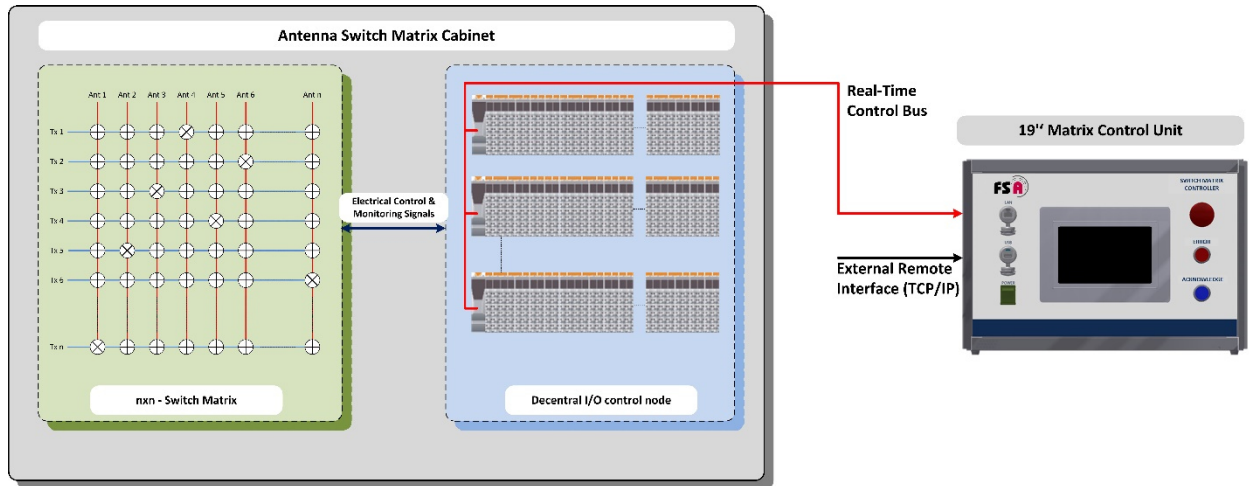


Figure 4: Block diagram for Antenna Switch Matrix Cabinet (ASMC) & Matrix Control Unit (MCU)

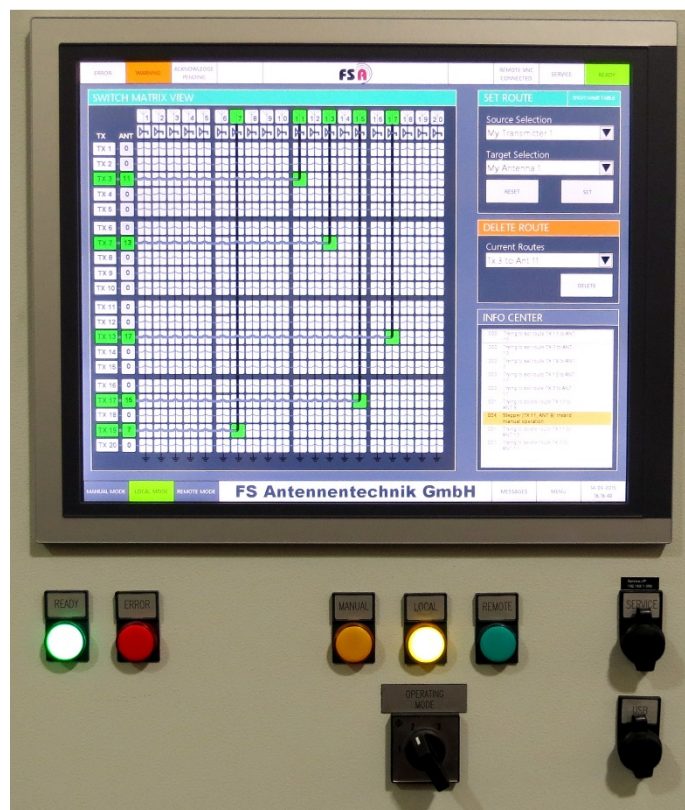


Figure 5: Antenna Switch Matrix Cabinet (ASMC) with built in Matrix Control Unit (MCU)

The ASMC includes the RF switch matrix and the decentralized control node for processing the necessary I/O signals. These two parts are interconnected via an adaptable electrical interface to provide and process the required control and monitoring signals.

The decentralized control is adaptable to the customer's needs, i.e. adaptable to the switch matrix size and is connected to the MCU via a real-time capable control bus. Generally this control node consists of standard control components to guarantee minimum downtime in case of damage or failure and to guarantee worldwide exchangeability and repair service.

The MCU is designed as a 19" rack chassis and can control the Antenna Switch Matrix in local mode as well as in remote mode, i.e. remote commanding via an Ethernet/TCP-IP connection is prepared.

MCU main features:

- Main controller based on industrial standard IPC technology
- Touch panel (TP) control for local operation mode. Touch panel sizes from 7,4" up to 15" available.
- Local monitoring of Antenna Switch Matrix status, warnings and errors via touch panel. Optional storage of monitoring information is available.
- Local mode / Remote mode selection switch (Remark: key switch available)
- Remote mode control via Ethernet/TCP-IP connection. Remote mode commanding protocol adaptable to the customer's needs.
- Connection to the decentralized I/O control node (i.e. part of the ASMC) via a real-time capable, industrial standard control bus
- Key lock to avoid unauthorized usage
- Optionally available including an Uninterruptible Power Supply (UPS)