

Station Delay Monitor (SATSIM)

Part No: 10064



SATSIM Station Delay Monitor

Part # 10064



Station delay monitor: Indoor Unit (below) and Outdoor Unit (top) – here the rack-mountable option

Key features:

- Automated measurements
- Features unmanned, 24 hours / 7 days operation
- Integrates in SATRE software and stores results also in SATRE's database
- Quasi-continuous measurements (every hour, every half hour etc.)
- Available for X, C and Ku band G/S

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The Station Delay Monitor allows stability monitoring of a complete ground station and separating the sources of instabilities. It allows separate measurements of delays and delay variation in the uplink and downlink path of a ground station.

For the RF path up to C, X or Ku-band the Station Delay Monitor includes a test loop translator, which is capable of generating the requested translation frequency.

The equipment consists of three parts:

- **Indoor Unit**
This unit is co-located to the SATRE modem – typically immediately above or below the modem. It includes the first relay switch matrix.
- **Outdoor Unit**
This unit marks the ‘end’ of the IF section. It includes the second relay switch matrix.
- **Antenna Unit:**
This unit is a small feeder with an mixer, allowing to operate as test loop translator. For additional measurements, also other signals (like PN coded) can be routed through this unit.

The measurement of a single cable or path is performed by taking up to three measurements using different paths and then doing a linear combination of these measurements.

All measurements are taken with the SATRE modem. A set of – typically six – measurements is taken in ten minutes and then all relevant single paths are calculated. These results are stored in the SATRE modem, so also a historic view of the measurements is available – which is valuable for long term stability analysis.

The Outdoor unit offers an additional input for meteorological data, which may be collected simultaneously to the measurements, so that this can be stored along with the results in SATRE’s database.

The Outdoor unit is available in two case variants:

- **Free Outdoor mounting**
Allows mounting of the unit directly at the post of the antenna. This is used, when the U/C and D/C hardware is also located there.
- **Outdoor Rack mounting**
Allows integration of the Outdoor Unit in a rack, which is then typically located outside close to the antenna. This option is used, when U/C and D/C hardware are also rack mounted.

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Specification

Indoor Unit

Connectors	SATRE Tx, SATRE Rx	BNC
	Data to SATRE	Sub-D 9
	Data to Outdoor Unit	Sub-D 15
	Tx to Outdoor, Rx from Outdoor	N
	Tx monitor, Rx monitor	BNC

Outdoor Unit

Connectors	Tx from Indoor, Rx to Indoor	N
	Tx to U/C, Rx from D/C	N
	10 MHz Input / Output	N
	Data / Power	UG
	Meteo	MIL

Antenna Unit

Connectors	L-Band CW, PN Code	N
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Measurement loops

IF section	Cable IDU Tx → ODU Tx, Cable ODU Rx → IDU Rx	N
RF section	Tx Cable plus U/C between ODU and feed Rx Cable plus D/C between feed and ODU	
RF section	Cabling between ODU and AU	

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Data interface (Indoor unit)

Physical RS232 (9600 bps), to SATRE
SATRE Software V4.11.x minimum
(update included with SATSIM)
Single and multi channel SATRE supported.

Electrical

Indoor unit 95 to 265V, 45 to 65 Hz, max 50W
Outdoor Unit powered via Indoor Unit
Antenna Unit not powered

Frequency range (Tx)

Ku-Band 13.5 to 14.5 GHz
C-Band 6 to 7 GHz
X-Band 7 to 9 GHz

Frequency range (Rx)

Ku-Band 10.75 to 12.75 GHz
C-Band 3 to 5 GHz
X-Band 7 to 9 GHz

Translation Frequency Range

Ku-Band 900 MHz to 3200 MHz
C-Band 1800 MHz to 2500 MHz
X-Band 500 MHz to 1600 MHz
other contact factory

Environmental

Indoor Unit 0°C to +50°C, 10% to 90% RH
operation in climatized environment highly recommended.
Outdoor Unit -40°C to +70°C
Outdoor Case: IP 65
Rack Mountable: 0% to 100% RH (coated, active heaters in unit)
Antenna Unit -40°C to +85°C, IP 65

Mechanical

Indoor Unit 19" rack mountable, 2HU, 250 mm deep
Weight: ~ 2 kg
Outdoor Unit Outdoor case: 280 x 180 x 100 mm
Rack mountable: 19", 2 HU, 250 mm deep
Weight: ~ 3.4 kg
Antenna Unit depending on frequency
Weight: around 1 .. 2 kg