



SAGEM LINK F

DIGITAL RADIO RELAY SYSTEM

MULTI-RATE: 2 E1 TO 34 E1

Ethernet 100 base T

E3 interface

7, 8, 11, 13, 15, 18, 23, 26, 32 and 38 GHz

- 1+0, 1+1 configuration (hotstandby, space and frequency diversity)
- Very compact IDU and ODU
- 16 QAM and QPSK modulation including efficient forward error correction and time domain equalizer
- Capacity agility from 2 to 34 E1 with common IDU and ODU
- Optional 100 base T interface
- Integrated SNMP interface
- User-friendly with SAGEM LINK PILOT and IONOS NMS



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This **SAGEM LINK** product offers more flexibility and covers all frequency bands between 7 and 38GHz. It also provides an improvement of spectrum efficiency, and higher transmitting power output. SAGEM LINK F offers the possibility to multiplex several E1 interfaces and one 100 base T interface at the same time, by configuring the number of E1 and the Ethernet's bit rate by using SAGEM LINK PILOT. In order to improve the spectrum efficiency of the links and to divide the transmit bandwidth in half, the modulation scheme QPSK or 16 QAM can be selected with SAGEM LINK PILOT (option).

Speed and ease of installation

Thanks to the user-friendly software, the integrated installation tools, such as analysis of received spectrum or automatic measurement of the link margin, and the improved features, the installation and commissioning of the link are easier, and at the same time link availability is improved and operational cost are minimised.

- The main key features of the SAGEM LINK family are maintained and improved:
 - Common compact OutDoor Unit (ODU) for 1+0 and 1+1 configuration
 - ODU able to operate from 2 E1 to 34 E1 or Ethernet
 - Common InDoor Unit (IDU) for all frequency bands
 - IDU able to operate from 2 E1 to 34 E1 or Ethernet. Changing the capacity from one bit rate to the other is made, at no additional cost, by the Software
 - The impedance of the E1 tributaries can be set to either 75 or 120 Ohm by the software
 - TX Output Power control over 30 dB with ATPC functionality. This feature eliminates the need for fixed attenuators and ATPC allowing the link to operate, most of the time, at minimum power output, thus limiting the risk of network interference,
 - IONOS NMS is a common management platform for all transmission equipment from SAGEM (Radio, Copper and Optic)
 - The low power consumption of SAGEM LINK F terminals and the compactness of the IDU enable the integration in a majority of BTSs and Node B.
 - Standard SNMP Network Management Interface allows SAGEM LINK F to be managed by an external Network Management System.

SPECIFICATION

MAIN INTERFACE

- E1: 2 Mbps / G703
- E3: 34 Mbps / G703
- Ethernet: 100 Base T ISO8802-3

ENVIRONMENT

- Input voltage range: - 36 to - 60 V
- Power consumption: < 50 W (1+0 terminal)
- Operating temperature range
 - - 10 to + 50°C (IDU)
 - - 33 to + 55°C (ODU)

RELIABILITY

- MTBF > 30 years for 1+0 terminal

AUXILIARY INTERFACES

- 1 V.11 (RS422) 64 kbit/s digital orderwire
- 5 input alarm
- 4 interface relay contacts

SNMP CENTRALIZED MANAGEMENT

- 10 base T: ISO 8802-3, 3 x RJ45 (Hub)
- 1 x V.11 or V.28 serial ports

MANAGEMENT INTERFACE (LCT)

- V.28 interface for LCT

MECHANICAL SPECIFICATION

- IDU 1U : 44 (H) x 485 (L) x 300 (P) mm, 4 kg
- ODU: diameter 267 mm, height 89 mm
- ODU: 5 Kg

Data flexibility

Channel spacing	28 MHz	14 MHz	7 MHz	3.5 MHz
Sagem Link F / E1	34 E1 (16 QAM) 17 E1 (QPSK)	17 E1 (16 QAM) 8 E1 (QPSK)	8 E1 (16 QAM) 4 E1 (QPSK)	2 E1 (QPSK)
Sagem Link F / Ethernet + E1	1 to 9 E1 FE: up to 68 Mbps	1 to 9 E1 FE: up to 34 Mbps	0 to 4 E1 FE: up to 17 Mbps	0 or 1 E1 FE: up to 4 Mbps
Sagem Link F / E3	E3 + E1 (QPSK)	E3 + E1 (16 QAM)	-	-

	7 GHz	8 GHz	11 GHz	13 GHz	15 GHz	18 GHz	23 GHz	26 GHz	32 GHz	38 GHz
Frequency bands (GHz)	7.1 - 7.9	8.0 - 8.5	10.7 - 11.7	12.7 - 13.2	14.4 - 15.3	17.7 - 19.7	21.2 - 23.6	24.5 - 26.5	31.8 - 33.4	37.0 - 39.5
T-R spacing (MHz)	154, 160, 161	119, 126, 151, 208, 266, 311	490, 530	266	315, 420, 490, 644, 728	1010, 1560	1008, 1200, 1232	1008	830	1260
Output power QPSK	27 dBm	27 dBm	25 dBm	25 dBm	25 dBm	25 dBm	24 dBm	20 dBm	20 dBm	20 dBm
Output power 16QAM	21 dBm	21 dBm	19 dBm	19 dBm	19 dBm	19 dBm	18 dBm	15 dBm	15 dBm	15 dBm
Receiver threshold @ 10-3	1+0, 1+1 SD, 1+1 FD, antenna access, typical value									
QPSK 2 E1	- 93 dBm	- 93 dBm	- 93 dBm	- 93 dBm	- 93 dBm	- 92 dBm	- 92 dBm	- 92 dBm	- 91 dBm	- 91 dBm
QPSK 4 E1	- 90 dBm	- 90 dBm	- 90 dBm	- 90 dBm	- 90 dBm	- 89 dBm	- 89 dBm	- 89 dBm	- 88 dBm	- 88 dBm
QPSK 8 E1	- 87 dBm	- 87 dBm	- 87 dBm	- 87 dBm	- 87 dBm	- 86 dBm	- 86 dBm	- 86 dBm	- 85 dBm	- 85 dBm
QPSK 17 E1	- 84 dBm	- 84 dBm	- 84 dBm	- 84 dBm	- 84 dBm	- 83 dBm	- 83 dBm	- 83 dBm	- 82 dBm	- 82 dBm
16 QAM 8 E1	- 83 dBm	- 83 dBm	- 83 dBm	- 83 dBm	- 83 dBm	- 82 dBm	- 82 dBm	- 82 dBm	- 81 dBm	- 81 dBm
16 QAM 17 E1	- 80 dBm	- 80 dBm	- 80 dBm	- 80 dBm	- 80 dBm	- 79 dBm	- 79 dBm	- 79 dBm	- 78 dBm	- 78 dBm
16 QAM 34 E1	- 77 dBm	- 77 dBm	- 77 dBm	- 77 dBm	- 77 dBm	- 76 dBm	- 76 dBm	- 76 dBm	- 75 dBm	- 75 dBm

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