

SAGEM LINK F

DIGITAL RADIO RELAY SYSTEM

Multi-rate: 2 E1 to 16 E1

Innovative data interface: Ethernet 100 base T
7, 8, 13, 15, 18, 23, 26 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 16 E1 with common IDU and ODU
- Optional 100 base T interface
- Integrated SNMP interface
- User-friendly with SAGEM LINK PILOT and IONOS NMS



SAGEM

Technology in Action



SAGEM LINK F

2 to 16 E1 and 100 base T



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 16QAM 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 16 E1 + 100 Base T
 - Common Indoor Unit (IDU) for all frequency bands
 - IDU able to operate from 2 E1 to 16 E1 + 100 Base T. 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

2 Mbit/s G703
10/100 base T, IEEE 802.3 U (option)

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 > 20 years for 1+0 terminal

Auxiliary interfaces

1 point to point engineering orderwire
2 V.28 (RS232) 9600 bit/s digital orderwires
1 V.11 (RS422) 64 kbit/s digital orderwire that can be connected to the optional EOW300 to offer a selective call orderwire
5 internal alarm relays
4 remote signaling and control loops
1x2 Mbit/s G703 (Ethernet option)

SNMP centralized management

Integrated 10 base T Hub with 3 ports
2 x V.11 or V.28 serial ports

Management interface (LCT)

V.28 interface for LCT

Mechanical specification

IDU 1U: 88x85x 300 mm, 4 kg
ODU: diameter 267 mm, height 89 mm
ODU: 5 kg

	7 GHz	8 GHz	13 GHz	15 GHz	18 GHz	23 GHz	26 GHz	38 GHz
Frequency bands (GHz)	7.1 – 7.9	8.0 – 8.5	12.7 – 13.2	14.4 – 15.3	17.7 – 19.7	21.2 – 23.6	24.5 – 26.5	37.0 – 39.5
Frequency agility (MHz)	63	63	63	>140	300	400	400	580
Frequency step	250 kHz							
Output power QPSK	27 dBm	27 dBm	26	26	26	24	20	20
Output power 16QAM	21 dBm	21 dBm	20	20	20	18	14	14
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	-92 dBm	-92 dBm	-92 dBm	-91 dBm
QPSK 4 E1	-90 dBm	-90 dBm	-90 dBm	-90 dBm	-89 dBm	-89 dBm	-89 dBm	-88 dBm
QPSK 8 E1	-87 dBm	-87 dBm	-87 dBm	-87 dBm	-86 dBm	-86 dBm	-86 dBm	-85 dBm
QPSK 16 E1	-84 dBm	-84 dBm	-84 dBm	-84 dBm	-83 dBm	-83 dBm	-83 dBm	-82 dBm
16 QAM 8 E1	-83 dBm	-83 dBm	-83 dBm	-83 dBm	-82 dBm	-82 dBm	-82 dBm	-81 dBm
16 QAM 16 E1	-80 dBm	-80 dBm	-80 dBm	-80 dBm	-79 dBm	-79 dBm	-79 dBm	-78 dBm

	Data flexibility			
Channel spacing QPSK	28 MHz		14 MHz	
Channel spacing 16QAM	14 MHz		7 MHz	
E1 Version	16 E1		8 E1	
Ethernet Version	2 E1 + 100BT / 34 Mbps		4 E1	
	2 E1 + 100BT / 32 Mbps		0 E1 + 100BT / 8 Mbps	
	3 E1 + 100BT / 29.5 Mbps		1 E1 + 100BT / 6 Mbps	
	5 E1 + 100BT / 25.5 Mbps		2 E1 + 100BT / 4 Mbps	
	7 E1 + 100BT / 21 Mbps			
	9 E1 + 100BT / 17 Mbps			
			0 E1 + 100BT / 4 Mbps	
			1 E1 + 100BT / 2 Mbps	

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