

## 2xE1 Full Outdoor Unit



CFM Full Outdoor Units (FODU) have ultra compact "all in one" design comprising IDU and ODU units in one device. The system was initially designed to provide 4 or 8 Mbps of traffic capacity implemented as 2xE1 or 4xE1 (G.703) channels. The new item in CFM Full Outdoor series is 34 Mbps Ethernet Full Outdoor Unit equipped with 10/100Base-T Ethernet port and software configurable 2xE1 interfaces.

**4 Mbps Full Outdoor Unit** is offered with 2xE1 interface, providing 4 Mbps traffic capacity. Combination of Indoor and Outdoor Units' functionality in a single device makes CFM FODU very compact and convenient to use. There are two setup options for installing the FODU radio system in the network:

1) Directly by connecting the 18-pin cable directly from FODU to the user's equipment and splitting twisted pairs into E1, management 10Base-T Ethernet, power and alarm signals;

2) Through the passive patch panel. The panel converts balanced E1 signal coming from FODU to unbalanced, providing both, balanced 75Ohm E1 port with BNC connector and unbalanced 120Ohm port with RJ-45 socket.

SAF FODU can be connected to any DC power source with voltage from 20 to 60V (survival 68V). 4 Mbps FODU require CAT 3 or better 8-pair twisted cable (TP) to interconnect the unit with terminal equipment.

Full Outdoor equipment is perfect for:

- mobile network operators;
- any applications demanding E1 channels (PBX connectivity, etc.) for internal phone link creation and various other needs.
- any sites limited for set up of indoor equipment (e.g. all types of base stations).

Choose our microwave radio, if you are willing to:

- considerably reduce the payments to service providers;
- find a cost-effective substitute to fiber optic;
- consider a consistent alternative to 2,4 GHz and 5,8 GHz radio solutions.



SPECIFICATION		7 GHz	8 GHz	13 GHz	15 GHz	18 GHz	23 GHz	26 GHz	38 GHz	
Model name		CFM-7-F2E1	CFM-15-F2E1	CFM-13-F2E1	CFM-15-F2E1	CFM-15-F2E1	CFM-23-F2E1	CFM-26-F2E1	CFM-38-F2E1	
Traffic capacity		2x2 Mbps								
Traffic interfaces		2xE1 balanced 120 Ω								
Compatibility		CFM L4								
Interface port connectors		18-pin, BNC* (hermetically sealable)								
Channel bandwidth (MHz)		3.5								
Emission codes		3M50F7W								
Modulation		4 FSK								
Transmitter/receiver source		synthesized								
Frequency stability		+/- 10 PPM								
Background BER		<10 <sup>-11</sup>								
Noise figure (NF)		4dB	4dB	4dB	4dB	4dB	4dB	4dB	6dB	
Frequency bands (GHz)		7.4-7.75	7.9-8.5	12.75-13.25	14.4-15.35	17.70-19.7	21.2-23.6	24.5-26.5	37.0-39.5	
Duplex offset (MHz)		154;161	119;126;266	266	420;490;728	1010	1008;1232	1008	1260	
# of subbands/min tuning range (MHz)		3/52; 3/42	2/38; 2/105	2/112	2/206;2/220;1/108	2/467	1/587 2/550	2/444	2/556	
Transmitter power (dBm)		+27	+27	+20	+20	+19	+19	+19	+14	
Transmitter power attenuator; 1 dBm step		-10 to +27 dBm	0 to +27dBm	-10 to +20 dBm	-10 to +20 dBm	-10 to +19 dBm	-10 to +19 dBm	-10 to +19 dBm	-10 to +14dBm	
Flange type		UBR 84	UBR 84	UBR 140	UBR 140	UBR 220	UBR 220	UBR 260	UBR 320	
Receiver thresholds - guaranteed (dBm)		BER 10 <sup>-3</sup>	<-87	<-87	<-86	<-86	<-87	<-87	<-84.0	<-83.0
		BER 10 <sup>-6</sup>	<-84	<-84	<-83	<-83	<-83.5	<-83.5	<-82.0	<-79.5
Antenna gain (dBi)		0.25 m	-	-	-	-	32.8	34.0	-	-
		0.30 m	-	-	29.2	32.2	32.9	35.0	35.9	39.3
		0.60 m	30.9	30.9	36.0	36.9	38.3	39.9	41.0	44.3
		1.20 m	36.5	37.0	42.0	43.0	44.3	45.9	46.8	-
		1.80 m	40.7	41.2	45.2	46.2	48.1	49.5	-	-
		2.40 m	43.1	43.6	47.3	49.5	-	-	-	-
		3.00 m	45.1	45.6	-	-	-	-	-	-

Maximum input power at antenna port	0 dBm
Polarization	vertical or horizontal, field selectable
Mounting options	direct or via flexible waveguide
<b>MANAGEMENT</b>	
Network management	SAF NMS, built-in terminal management tools - web, SNMP, Telnet (local&remote)
Interface	RS-232 and 10/100 Base-T
Interface connector	Twin BNC for RS-232
Engineering orderwire	via optional VoIP handset
ASCII terminal	local
FODU alarm port	1 output
Service channel	+
SNMP monitoring (traps)	+
Performance monitoring	-
Loopback test facility	+
Loopbacks	Baseband, local& remote, E1, RF
<b>ELECTRICAL</b>	
Power consumption	from 13 to 23W
Power supply	20 to 60 V DC (survival 68 V), any polarity
Protection circuit	1.35A
<b>ENVIRONMENTAL</b>	
Ambient temperature	-33 °C to +55 °C
Altitude	up to 4500 meters (according with climatic standards)
Humidity	from 15% to 100%
<b>MECHANICAL</b>	
Dimensions mm/weight kg	280 x 85/ 3.0
<b>STANDARDS</b>	
Standard compliance	ETSI, ITU
EMC	EN 301 489
Operational	EN 300 019, class 4.1
Storage	EN 300 019, class 1.2

Transportation	EN 300 019, class 2.3
Safety	EN 60950

\*RSSI port with BNC socket for antenna alignment adjustment.

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