

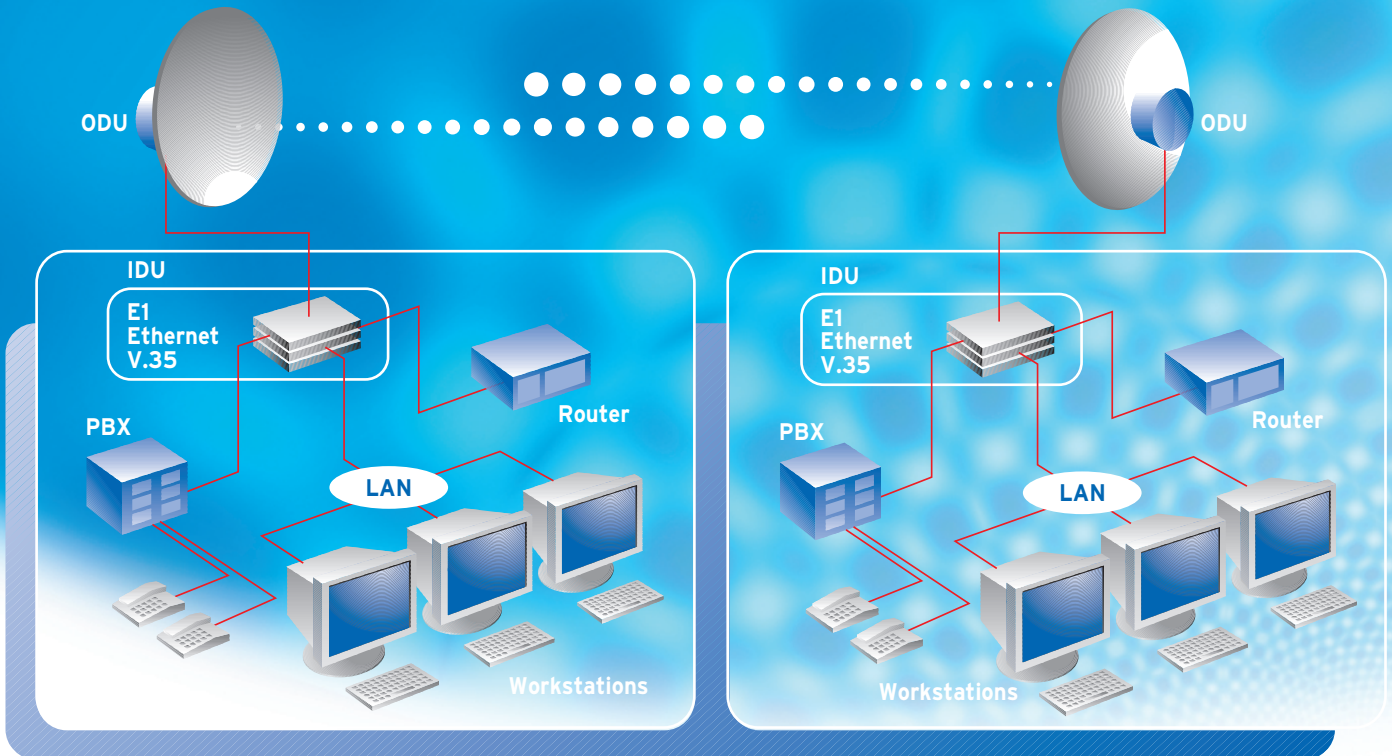


**WIRELESS SOLUTIONS**

**FOR TODAY'S BUSINESS**

**REQUIREMENTS**





## CFM product line

The widespread and growing use of microwave radio equipment in modern voice and data networks well deserves to be called a phenomenon of the last decade of the 20th century and beginning of the 21st century. The reasons behind that are numerous, like:

- increased demand for high data rate channels,
- growing pressure on operators to shorten the deployment times,
- the need to shorten time of the return on investments,
- changing demands for the services from the customers.

All of these issues are well solved using our wireless system CFM.

CFM is safe and economical wireless communications system operating in 13, 15, 18, or 23 GHz frequency bands and providing transmission of voice and data in both metropolitan and rural areas between sites up to 40\* km apart. System has modular structure, which means it can be adapted for the specific needs of your business. The system comprises radio (antenna and Outdoor Unit – ODU) and interface (Indoor Unit – IDU) blocks. By choosing CFM with the appropriate interface you can build transmission systems for voice (E1), data (Ethernet or V.35), as well as combined solutions for voice and data combination (E1+Ethernet or V.35). CFM is available with 4, 8, 16 and 34 Mbps data transmission rate.

The new addition to the CFM product family is 2xE1 Full Outdoor Unit. System initially is designed to provide 4 Mbps of traffic capacity implemented as 2xE1 (G.703) channels. FO unit has ultra compact – “all in one” design, making this product perfect for mobile operators and other users who have no must in equipment located indoors.

It is important to add, that microwave radio channel quality is at least as high, as good quality cooper or fiber cable channel quality, if the radios are installed properly, it features ultra low error rates and very high channel stability.

A convenient and modern management system has been created to provide complete configuration, control and monitoring of the equipment in operation locally and remotely. Information on operations can be obtained from LCD display on the IDU or a computer monitor. The CFM management system utilises Web, SNMP and Telnet/Terminal interfaces, it is based on TCP/IP protocol. Feature rich loopback functionality is available for all models of CFM equipment. The radio, baseband and interface (E1 and V.35) loopbacks are provided for testing the channels for client convenience. The product is made in accordance with ETSI standards (EC R&TTE directive) and conforms to set requirements. CFM is CE marked. To fully appreciate the quality and advantages of this product, your company may use it for trial period. We are sure you will be completely satisfied.

\* Depends on availability required, climatic zone, frequency band, system capacity etc.

## Indoor Units

### Ethernet Indoor Units

Specification	Capacity				
	4 Mbps	8 Mbps		16 Mbps	34 Mbps
Indoor Unit type	Remote Ethernet Bridge	Remote Ethernet Bridge II	Modular Remote Ethernet Bridge	Modular Remote Fast Ethernet Bridge	Modular Remote Ethernet Bridge
Model name	CFM-4-REB	CFM-22 REB II	CFM-8-REB M	CFM-16 REB M	CFM-34 REB M
Configuration options	Fixed configuration	Fixed configuration	Fixed 10/100 Ethernet Port +2 slots for E1, V.35 or additional Ethernet modules (4+2+2; 6+2; 8 Mbps)	Fixed 10/100 Ethernet Port +2 slots for E1, V.35 or additional Ethernet modules (12+2+2; 14+2; 16 Mbps)	Fixed 10/100 Ethernet Port +2 slots for E1, V.35 or additional Ethernet modules (30+2+2; 32+2; 34 Mbps)
Compatibility with following CFM Radio	CFM L4	CFM LM	CFM LM	CFM LM	CFM LM

### Indoor Units with E1 Interface

Specification	Capacity			
	4 Mbps	8 Mbps	16 Mbps	34 Mbps
Indoor Unit type	2xE1 Indoor Unit	4xE1 Indoor Unit	8xE1 Indoor Unit	16xE1 Indoor Unit
Model name	CFM-4-2E1	CFM-8-4E1	CFM-16-8E1	CFM-34-16E1
Configuration options	Fixed configuration	Fixed configuration	Fixed configuration	Fixed configuration
Compatibility with following CFM Radio	CFM L4	CFM LM	CFM LM	CFM LM

### Modular Indoor Units

Specification	Capacity	
	8 Mbps	16 Mbps
Indoor Unit type	Modular Flexible Multiplexer	
Model name	CFM-8-MUX	CFM-16-MUX
Configuration options	It is possible to combine 1-4 Ethernet, E1 and V.35 modules (slots using 1x8 Mbps; 4x2; 6+2; 4+2+2)	1 Fixed 8 Mbps slot for Ethernet or V.35 module + 3 configurable slots for combining Ethernet, V.35 modules (slots using 1x8 Mbps; 6+2; 4+2+2; 3x2)
Compatibility with following CFM Radio	CFM LM	CFM LM

### Full Outdoor Unit

Specification	Capacity
	4 Mbps
Unit type	2xE1 Full Outdoor Unit
Model name	CFM-13-FO2E1; CFM-15-FO2E1; CFM-23-FO2E1
Configuration options	Fixed configuration
Compatibility options	CFM L4

### Main advantages of CFM

- Excellent reliability,
- Flexible interface adjustable for client needs,
- User friendly management system,
- Good price,
- Simple and quick installation,
- Total system integration savings

### We are offering to clients

- Flexible business approach and continuous support,
- Fast warranty and after sales service

## Technical specifications

### CFM LM Outdoor Unit

Specification	13 GHz	15 GHz	18 GHz	23 GHz
Frequency bands (GHz)	12.75-13.25	14.5-15.35	17.7-19.76	22.0-23.6
Duplex spacing (MHz)	266	420/728	1010	1008
Channel spacing (MHz): Capacity 8/16/34 Mbps	7/14/--	7/14/28	--/13.75/27.5	7/14/28
Receiver Threshold (dBm): Capacity 8/16/34 Mbps	BER 10 <sup>-3</sup> BER 10 <sup>-6</sup>	-84/-81/-- -81/-78/--	--/-80/-78 --/-77/-74	-84/-82/-79 -80.5/-78.5/-75.5
Transmitter power (dBm)	+20	+20	+19	+19
Waveguide flange	UBR 140	UBR 140	UBR 220	UBR 220
Antenna gain (dBi)				
0.25 m	-	-	32.8	34.0
0.3 m	-	32.2	32.9	35.0
0.6 m	36.0	36.9	38.3	39.9
1.2 m	42.0	43.0	44.3	45.9

### CFM L4 Outdoor Unit

Specification	13 GHz	15 GHz	23 GHz
Frequency bands (GHz)	12.75-13.25	14.5-15.35	22.0-23.6
Duplex spacing (MHz)	266	420/728	1008
Channel spacing (MHz): Capacity 4 Mbps	3.5	3.5	3.5
Receiver Threshold (dBm): Capacity 4 Mbps	BER 10 <sup>-3</sup> BER 10 <sup>-6</sup>	-86 -83	-87 -83.5
Transmitter power (dBm)	+20	+20	+19
Waveguide flange	UBR 140	UBR 140	UBR 220
Antenna gain (dBi)			
0.25 m	-	-	34.0
0.3 m	-	32.2	35.0
0.6 m	36.0	36.9	39.9
1.2 m	42.0	43.0	45.9

### Common features

Modulation	4 FSK
Frequency stability	+/- 10 PPM
Transmitter power attenuator	-10 to +20 dBm; 1dB step
Max. input power at antenna port	+15 dBm
Background BER	<10 <sup>-11</sup>
Spurious emissions at antenna port	30 MHz to 21.2 GHz: <-50 dBm / 21.1 GHz to 55.0 GHz: <-30 dBm
Cable (IDU-ODU): single coaxial	Single up to 300 m long (LMR 400) or up to 100 long (RG-213), N-type connectors
Standard compliance	ITU, ETSI
Mechanical parameters mm/weight kg	ODU: 280x85 / 2.5; IDU: 483x290x43 / MAX 2.1
Ambient Temperature	ODU: -33°C to +40°C; IDU: -5°C to +40°C

All equipment specifications are subject to change without prior notice.

To find out more visit us on web site – [www.saftehnika.com](http://www.saftehnika.com).  
We will also be glad to provide you with information about the prices  
and answer your questions by e-mail: [sales@saftehnika.com](mailto:sales@saftehnika.com)





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