

general description

for GSM modem and antenna

type M1206

1 general

1.1 technical specifications



Picture 1: GSM modem

1.1.1 basic services

The basic services of the Fastrack modem M1206 are given in the table below.

standard

GSM	DCS
900 MHz.	1800 MHz
E-GSM compliant	E-GSM compliant
Class 4 (2W).	Class 1 (1W)
GSM phase 2.	GSM phase 2..

interface

Serial interface RS232 V.24/V.28	Serial interface RS232 V.24/V.28
AT command set based on V.25ter and GSM 07.05 & 07.07.	AT command set based on V.25ter and GSM 07.05 & 07.07.
Auto-bauding function between 2400 bits/s and 19200 bits/s	Auto-bauding function between 2400 bits/s and 19200 bits/s
No auto-framing available	No auto-framing available

SMS

Mobile Originated (MO) and Mobile Terminated (MT).	Mobile Originated (MO) and Mobile Terminated (MT).
Mode Text & PDU point to point.	Mode Text & PDU point to point.
Cell broadcast.	Cell broadcast.
In accordance with GSM 07.05	In accordance with GSM 07.05

data

Asynchronous 2400, 4800, 9600 and 14400 bits/s.	Asynchronous 2400, 4800, 9600 and 14400 bits/s.
Transparent and Non Transparent mode	Transparent and Non Transparent mode
In Non Transparent Mode: 300, 1200, 1200/75 bauds.	In Non Transparent Mode: 300, 1200, 1200/75 bauds.
Mode 3.1 kHz (PSTN) and V110 (ISDN)	Mode 3.1 kHz (PSTN) and V110 (ISDN)

Fax

2400/4800/7200/9600 bits/s, GSM teleservice 62 in Transparent Mode.	2400/4800/7200/9600 bits/s, GSM teleservice 62 in Transparent Mode.
Class 1 & Class 2.	Class 1 & Class 2.
Group 3 compatible.	Group 3 compatible.

Audio

Half rate / Full rate / Enhanced Full rate operation.	Half rate / Full rate / Enhanced Full rate operation.
Accessories (options): Handset, Car Kit.	Accessories (options): Handset, Car Kit.

GPRS

Class 10.	Class 10.
Coding schemes: CS1 to CS4	Coding schemes: CS1 to CS4
Compliant with SMG31bis	Compliant with SMG31bis

1.1.2 physical characteristics

Dimensions	98 x 54 x 25 mm (excluding connectors)
Overall Dimension	110 x 54 x 25 mm
Weight	<105 grams
Volume	132.3 cm ³
Housing	Aluminium profiled

1.1.3 electrical characteristics

power supply

electrical characteristics

Operating Voltage ranges	5 V to 32 V DC (GSM or DCS). 5.5 V to 32 V DC (GPRS Class 10).
Maximum current	480 mA Average at 5.5V. 1.7 A Peak at 5V.

Note: the modem is permanently powered once the power supply is connected. The following table describes the consequences of overvoltage and undervoltage with the Fastrack Modem.

Effects of power supply defect

If the voltage :	Then:
falls below 5V	The GSM communication is not guaranteed.
falls below 5.5V	The GPRS Class 10 is not guaranteed.

Voltage over 32V (Transient peaks)	The modem guarantees its own protection.
Voltage over 32V (continuous overvoltage)	Protection of the modem by the fuse (the supply voltage is disconnected).

The following table provides information on power consumption of the Fastrack modem, assuming an operating temperature of +25 °C and using a 3 V SIM card.

Power consumption

Power Consumption in E-GSM/GPRS 900MHz and DCS/GPRS 1800 MHz mode class 10	E-GSM 900	DCS 1800
	IMAX	IMAX
Input Peak Supply Current @ 5.5 V	1.7 A	1.04 A
Power = 32.8 dBm GSM900 @ 13.2 V	0.64 A	0.4 A
Power = 29.16 dBm DCS1800 During 2TX bursts @Pcl5 @ 32 V	0.3 A peak	0.2 A
Input average supply current @ 5.5 V communication mode @ 13.2 V	480 mA	340 mA
	164 mA	125 mA
Average 3Rx/2Tx @Pcl5 @ 32 V	78 mA	54 mA
Input Peak Supply Current @ 5.5 V	1.52 A	0.88 A
Power = 32.8 dBm GSM900 @ 13.2 V	0.56 A	0.36 A
Power = 29.16 dBm DCS1800 During 1TX bursts @Pcl5 @ 32 V	0.28 A	0.2 A
Input average supply current @ 5.5 V communication mode @ 13.2 V	250 mA	160 mA
	100 mA	70 mA
Average 1Rx/1Tx @Pcl5 @ 13.2 V	40 mA	30 mA
Input average supply current @ 5.5 V idle mode @ 13.2 V	26 mA	26 mA
	12 mA	12 mA
@ 32 V	5.1 mA	5.1 mA
Input average supply current @ 5.5 V idle mode with RS232 autoshtutdown(*) @ 13.2 V	8.8 mA	8.8 mA
@ 32 V	2.2 mA	2.2 mA
Input average supply current @ 5.5 V idle mode with full autoshtutdown(**) @ 13.2 V	5.1 mA	5.1 mA
@ 32 V	2.5 mA	2.5 mA
	1.5 mA	1.5 mA

(*) RS232 driver (MAX3238) automatically shuts down after 30 s of inactivity on the serial link. (**) RS232 driver in auto-shutdown and AT command. The power consumption might vary by 5 % over the whole operating temperature range (-20 °C to +55 °C).

1.1.4 RF characteristics

Frequency ranges

electrical characteristics	E-GSM 900	DCS 1800
Frequency TX	880 to 915 MHz	1710 to 1785 MHz
Frequency RX	925 to 960 MHz	1805 to 1880 MHz

1.1.5 RF performances

RF performances are compliant with the ETSI recommendation GSM 05.05. The RF performances for receiver and transmitter are given in the table below.

Receiver

E-GSM900 Reference Sensitivity	-104 dBm Static & TUHigh
DCS1800 Reference Sensitivity	-102 dBm Static & TUHigh
Selectivity @ 200 kHz	> +9 dBc
Selectivity @ 400 kHz	> +41 dBc
Linear dynamic range	63 dB
Co-channel rejection	>= 9 dBc

Transmitter

Maximum output power (E-GSM 900) at ambient temperature	33 dBm +/- 2 dB
Maximum output power (DCS1800) at ambient temperature	30 dBm +/- 2 dB
Minimum output power (E-GSM 900) at ambient temperature	5 dBm +/- 5 dB
Minimum output power (DCS1800) at ambient temperature	0 dBm +/- 5 dB

1.1.6 External antenna

The external antenna is connected to the modem via the SMA connector. The external antenna must fulfill the characteristics listed in the table below.

Antenna frequency range	Dual-band GSM 900/DCS 1800 MHz
Impedance	50 Ohms
Gain (antenna + cable)	0 dBi
VSWR (antenna + cable)	-10 dB

Note: refer to chapter 8 for recommended antenna.



Picture 2: external antenna

1.1.7 SIM card

SIM card	3V or 5V
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1.1.8 Audio interface

The audio interface is available through the Sub HD 15-pin connector. The following table provides electrical information of the audio interface for handset.

For GSM 900/DCS 1800	Min	Typ	Max	Unit
Microphone input voltage at minimum gain			43.8	mVrms
Speaker output voltage at maximum gain			1.74	Vrms
Speaker impedance	32	50		Ω

1.1.9 Environment characteristics

To ensure the proper operation of the Fastrack Modem, the operating environment must be within a specific temperature as described in the table below.

Operating temperature range	-20 °C to +55 °C
Storage temperature range	-25 °C to +70°C

1.1.10 Protections

The modem is protected by a fuse directly bonded on the power supply cable. The model of fuse used is: F 2.5 A L 250 V. The modem is also protected against voltage over +32 V. When input voltages exceed +32 V, the supply voltage is disconnected in order to protect the internal electronic components from an overvoltage. Filtering guarantees: EMI/RFI protection in input and output, Signal smoothing.