

G18 & G20

HARDWARE INTEGRATION DOCUMENT

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Revision History

Version	Date	Author	Changes
0.1	14/9/2005	Nimrod Zarmi	Initial Draft
1.0	3/10/2005	Goren Effi	Final version

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Overview

TBD

Scope

The purpose of this document is to provide the G18 customers with a general overview of the electrical and mechanical differences between G18 and G20, and provide a means to integrate the G20 product on a G18 compatible platform.

This document may be used as a reference manual which outlines the electrical and mechanical integration required for transforming a G18 platform to operate with G20.

For further information and detailed electrical specifications please refer to the Developer Guide (DG) of each product.

Electrical Interface

Power Supply

The G20 power supply specifications are different from G18. G20 operates from 3.3V to 4.2V, with a peak current of 1.9A, and maximum RMS current of 0.5A.

SIM Card

The G20 SIM card interface is similar to the G18, but G20 supports only 3V SIM cards, and does not support 5V. G20 does not incorporate an on-board SIM card socket, as in G18. The SIM card connector must be located on the customer application.

DSC Bus

The G18 DSC bus is a proprietary serial communications interface for audio and data transfer to external accessories, such as handsets or hands-free audio car kits. G20 does not include this interface. Digital audio data in G20 is transferred on a PCM bus, and other serial data may be transferred through the RS232 or USB ports.

The DSC_EN signal in G18 is used by some applications as a power-on indication for the customer application. In G20, a RESET signal is available (pin 25) that indicates when the unit is operating, similar to the G18 DSC_EN signal.

Wakeup In/Out

G18 and G20 both incorporate a power saving mode, known as sleep mode (standby). The sleep mode mechanism uses special signaling to switch on and off. These signals are Wakeup IN and Wakeup Out.

In G18, these signals are multiplexed onto a single line, together with a third function – GPRS coverage detection. Their operation is described in detail in the G18 DG.

In G20, these signals are separated to 3 different lines, each operating independently. Refer to the G20 DG for a detailed description of the sleep mode operation, and GPRS indication signal.

RS232

The G18 RS232 signals are buffered and therefore can tolerate up to 5V on the input signals (DTR, RTS, TXD). In G20 the signals are not buffered and can accept up to a 3V maximum input level.

The output signals (DSR, CTS, RXD, DCD, RI) operate at 2.8V nominal in both products.

Audio

The G18 analog audio interface includes a single speaker output line and a single microphone input line. The speaker signal is multiplexed with the On/Off switch function on the same pin. Both audio signals are referenced to ground, preferably AGND (analog ground).

The G20 incorporates several audio modes and devices.

The handset speaker (pins 67, 69) and microphone (pin 61) are the most compatible to G18. The speaker signals may be used differentially or single ended, with reference to ground.

TS / Ignition

The G18 TS signal is used to turn-on the unit, using a positive pulse or level. This signal is not used to turn the unit off.

In G20, the Ignition signal (pin 51) is used to turn the unit on and off, depending on the signal level. A high level will turn the G20 on, and a low level will turn it off.

G18 vs. G20 Interface Connector Pinout

The following table describes the differences between the G18 and G20 interface connector signals.

G18									G20								
ZIF	DIN	Function	I/O	Level (V)			Pu/Pd	Active	Pin	Name	Function	I/O	Level (V)			Pu/Pd	Active
				Min	Typ	Max							Min	Typ	Max		
1	16	TX Enable	O				open drain	L	39	TX_N	GSM Transmit indicator	O		2.775	3	22KΩ PU	L
2		GPS RXD ¹ (GPS models)	I			3		L									
3	15	GPS TXD	O			3		L									
4	25	RS232 – TXD ⁵	I		2.8	5	100KΩ PU	L	21	TXD_N	RS232 TXD	I		2.775	3	69KΩ PU	L
5	26	RS232 – RXD	O		2.8	3		L	11	RXD_N	RS232 RXD	O		2.775	3	69KΩ PU	L
6	7	RS232 – DTR ⁵	I		2.8	5	100KΩ PU	L	19	DTR_N	RS232 DTR	I		2.775	3	69KΩ PD	L
7	14	RS232 – DCD	O		2.8	3		L	17	DCD_N	RS232 DCD	O		2.775	3	69KΩ PU	L
8	28	RS232 – RTS ⁵	I		2.8	5	100KΩ PU	L	9	RTS_N	RS232 RTS	I		2.775	3	69KΩ PU	L
9	27	RS232 – CTS	O		2.8	3		L	15	CTS_N	RS232 CTS	O		2.775	3	69KΩ PU	L
10	21	RS232 – DSR	O		2.8	3		L	13	DSR_N	RS232 DSR	O		2.775	3	69KΩ PU	L
11	13	RS232 – RI ² 3V GPS Power (GPS models)	O		2.8	3		L	23	RI_N	RS232 RI	O		2.775	3	69KΩ PU	L

G18									G20								
ZIF	DIN	Function	I/O	Level (V)			Pu/Pd	Active	Pin	Name	Function	I/O	Level (V)			Pu/Pd	Active
				Min	Typ	Max							Min	Typ	Max		
12	9	Man test	I		2.8	3	10K Ω PU										
13	19	Analog Audio In	I			0.5V _p	R _{in} = 10K Ω		61	MIC	Microphone input	I		Refer to D.G			
14	18	Power on/off ³	I			1.2V _p	R _o <1K Ω	L	53	ON_N	On/Off switch	I		3.6	VCC	22K Ω PU	L
		Analog Audio Out ³	O			1.2V _p	R _o <1K Ω		67	SPKR_N	Speaker inverted	O		Refer to D.G	2.5V _{pp}		
15	10	Wake Up OUT ⁴	O		2.8	3	100K Ω PU	L	26	WKUPO_N	Wakeup output	O		2.775	3	69K Ω PD	L
		Wake Up IN ⁴	I		2.8	3	100K Ω PU	L	16	WKUPI_N	Wakeup input	I		2.775	3	22K Ω PU	L
		GPRS coverage ⁴ indicator	O		2.8	3	100K Ω PU	L	49	GPRS	GPRS coverage indicator	O		2.775	3	69K Ω PU	L
16	6	SIM_PD_DET	I		2.8	3	100K Ω PU	L	50	SIM_PD	SIM presence detect	I		2.775	3	69K Ω PU	L
17	5	SIM VCC ⁶	O	3		5			48	SIM_VCC	SIM VCC	O		2.85	3.1		
18	4	SIM Reset ⁶	O		2.9	5		L	44	SIM_RST_N	SIM reset	O		2.85	3.1	69K Ω PD	L
19	3	SIM I/O Data ⁶	I/O		2.9	5	5.6K Ω PU	H	52	SIM_DIO	SIM serial data	I/O		2.85	3.1	22K Ω PU	H
20	24	SIM Clock ⁶	O		2.9	5		H	46	SIM_CLK	SIM clock	O		2.85	3.1	69K Ω PD	H
21	8	TS (Turn on) ⁷	I	3	3.6	16	47K Ω PD	H	51	IGN	Ignition input	I	3	3.6	16	47K Ω PD	H
22	20	DSC - Enable	O			5	10K Ω	H									

G18									G20								
ZIF	DIN	Function	I/O	Level (V)			Pu/Pd	Active	Pin	Name	Function	I/O	Level (V)			Pu/Pd	Active
				Min	Typ	Max							Min	Typ	Max		
							PU										
23	22	DSC - Downlink	O			5											
24	23	DSC - Uplink	I			5											
25	17	Analog Audio GND						59	AGND	Analog ground							
26	11	GND						1	GND	Ground							
27	12	GND						2	GND	Ground							
28		GND						3	GND	Ground							
29		GND						4	GND	Ground							
30	1	VCC	I	3	4.5	6		5	VCC	Power supply	I	3.3	3.6	4.2			
31	2	VCC	I	3	4.5	6		6	VCC	Power supply	I	3.3	3.6	4.2			
32		VCC	I	3	4.5	6		7	VCC	Power supply	I	3.3	3.6	4.2			
33		VCC	I	3	4.5	6		8	VCC	Power supply	I	3.3	3.6	4.2			
34	7	GPS Antenna Power	I	3		5											
35	10	DGPS RXD	I			3									L		
36	14	GPS 1 PPS	O			3											

See following section for special notices.

Notes

1. This signal replaces the TX Enable signal in The DIN type connector for G18 models with GPS.
2. This pin is used for GPS power supply in G18 models with GPS. All other G18 models use this pin as RS232 RI signal.
3. The G18 speaker audio is multiplexed together with the On/Off signal on the same connector pin. An external capacitor is necessary to separate the signals. In the G20, these signals are separated to two different pins (53, 67).
4. Three G18 signals, Wakeup In, Wakeup Out and GPRS indication, are multiplexed on the same connector pin. The signals operation is detailed in the G18 DG. In G20, these signals are separated to three different pins (16, 26, 49).
5. The G18 RS232 input signals, DTR, TXD, RTS, are 5V tolerant. In G20, these signals are 3V tolerant.
6. G18 SIM card interface supports 3V and 5V SIM cards. G20 supports only 3V SIM cards.
7. The G18 TS signal is used to turn-on the unit, by asserting it high. This signal does not turn the G18 off when asserted low. The G20 Ignition signal is used to turn-on and turn-off the unit, depending on its state: A high level will turn-on the G20, a low level will turn it off.

Mechanical Interface

Connectors

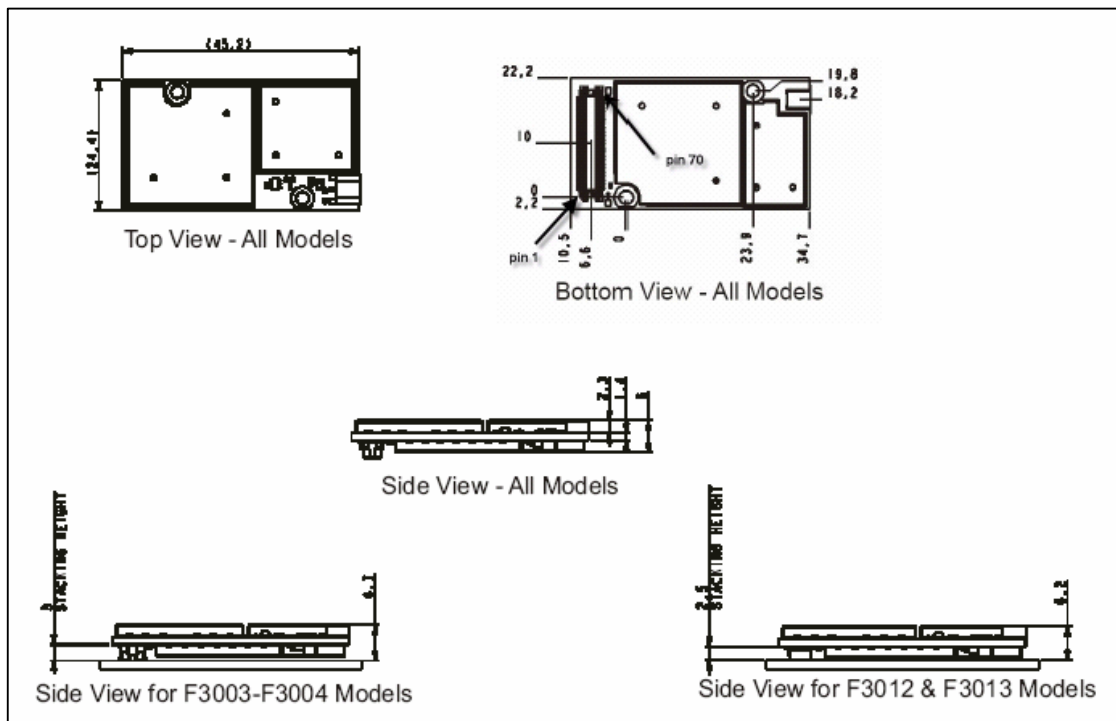
The G20 and G18 use a standard MMCX connector for the radio RF interface.

The G20 does not incorporate an on-board SIM card connector. The SIM card must be located on the customer application board.

G18 includes 2 optional logic interface connectors: a 36-pin, single row, ZIF type connector with flex cable wire; Or a 28-pin, 0.5mm pitch, 2 rows, board-to-board DIN type connector. The G20 logic interface connector is a single 70-pin, 0.5mm pitch, 2 rows, board-to-board interconnect type.

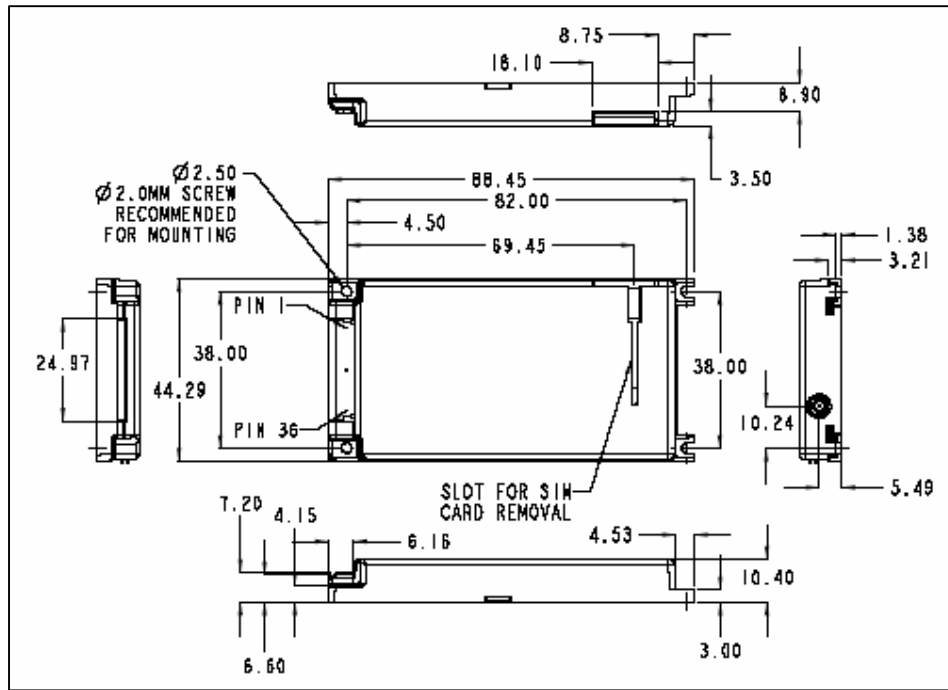
Dimensions

G20:



G18:

G18 Models with plastic cover.



G18 SLIM models:

