



G24 and G24-L

CHANGES DOCUMENT

Revision 3.0, April 2008



Revision History

Version	Date	Author	Changes
1.0	25/09/2007	Nimrod Zarmi	Released SW 0.224
2.0	20/01/2008	Benzi Grossman	Updated SW 0.390
3.0	16/04/2008	Nimrod Zarmi	Updated SW 0.470



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Scope

The purpose of this document is to provide G24 customers with a general overview of the interface differences between G24 and G24-L, and provide a means to integrate the G24-L product on to a G24 compatible platform.

This document may be used as a reference which outlines the electrical, software and mechanical integration required for transforming a G24 platform to operate with G24-L.

For further information and detailed specifications please refer to the Developer Manuals of each product.



Electrical Interface

In general, G24-L is designed with maximum electrical, mechanical and functional compatibility to G24.

Power Supply

The G24-L current consumption values may be slightly different than G24. Refer to the Developer Guide for power consumption details.

Serial Interfaces

The G24-L incorporates 2 serial interfaces, UART and USB.

The G24-L USB interface supports USB revision 1.1 device specifications.

G24-L doesn't include a secondary UART interface (UART2), as in G24.

G24-L doesn't support simultaneous USB and UART operation.

G24-L does not include a data-logging port through the SPI interface, as in G24. G24-L data-logging may only be performed through the available Serial ports.

SIM Card

The G24-L SIM card interface is similar in to G24. G24-L also supports 1.8V SIM cards.

Audio

The G24-L digital audio (PCM) bus clock frequency is 520 kHz.

The G24-L Headset Speaker output gain levels are different than G24. The gains are lower than in G24, as described in the table below:

+CLVL Value	G24 Gain (dB)	G24-L Gain (dB)
0	-29	-36
1	-26	-33
2	-22	-30
3	-19	-27
4	-16	-24
5	-13	-21
6	-10	-18
7	-7	-15



ON/OFF

It is important to note that the ON_N signal voltage level is different between the modules.

In G24 the ON_N signal is referenced to the 2.75V logic level. In G24-L the ON_N signal is referenced to the supply level VCC (3.3V – 4.2V). It is important to follow the Developer Manual design recommendations for this signal.

The G24-L power-on timing sequence may be different than G24. This may be noticed in the interface signals waveforms during the power up process. The signals logic state will operate as expected after the power up process is complete and the module is fully operational (usually after the UART is enabled).

The G24-L does not power-on automatically, for a short period, when an external power supply is connected, unlike G24. The G24-L will only power up if the ON_N or IGN signals are activated.

A/D Interface

The G24-L does not incorporate an internal temperature measurement circuit, and therefore does not support the temperature A/D signal (ADC4), which is available in G24 through the +MMAD command.

VREF Regulator

The G24-L does not support the VREF regulator Standby or Off modes of operation. The output regulator is always active while G24-L is powered-on.

The G24-L VREF regulator current sourcing capability is 150 mA.



G24L vs. G24 Interface Connector Signals

The following table describes the differences between the G24 and G24-L interface connector signals.

Connector Pin #	G24-L	G24	Differences
1	GND	GND	
2	GND	GND	
3	GND	GND	
4	GND	GND	
5	VCC	VCC	
6	VCC	VCC	
7	VCC	VCC	
8	VCC	VCC	
9	RTS_N	RTS_N	
10	USB_VBUS	USB_VBUS	
11	RXD_N	RXD_N	
12	USB_DP	USB_DP	
13	DSR_N	DSR_N	
14	USB_DN	USB_DN	
15	CTS_N	CTS_N	
16	WKUPI_N	WKUPI_N	G24-L has 100K PU on this signal
17	DCD_N	DCD_N	
18	PCM_DIN	PCM_DIN	
19	DTR_N	DTR_N	
20	PCM_DOUT	PCM_DOUT	
21	TXD_N	TXD_N	
22	PCM_CLK	PCM_CLK	G24-L clock operates at 520 kHz
23	RI_N	RI_N	
24	PCM_FS	PCM_FS	
25	RESET_N	RESET_N	G24-L doesn't have a PD on this signal The G24-L Reset signal is not valid (set low) during SW programming
26	WKUPO_N	WKUPO_N	
27	VREF	VREF	G24-L VREF does not support Standby or Off modes



Connector Pin #	G24-L	G24	Differences
28	GPIO1	GPIO1	
29		RXD2_N	
30	GPIO2	GPIO2	
31		TXD2_N	
32	GPIO3	GPIO3	
33		RTS2_N	
34	GPIO4	GPIO4	
35		CTS2_N	
36	GPIO5	GPIO5	
37	ADC1	ADC1	
38	GPIO6	GPIO6	
39	TXEN_N	TXEN_N	
40	GPIO7	GPIO7	
41	ANT_DET	ANT_DET	
42	GPIO8	GPIO8	
43	ADC2	ADC2	
44	SIM_RST_N	SIM_RST_N	
45		UID	
46	SIM_CLK	SIM_CLK	
47	ADC3 *	ADC3	ADC3 operates as Battery Temperature measurement in the G24-LC model
48	SIM_VCC	SIM_VCC	G24-L supports also 1.8V SIM cards
49	GPRS	GPRS	
50	SIM_PD_N	SIMPD_N	
51	IGN	IGN	G24-L has a 15K PD on this signal
52	SIM_DIO	SIM_DIO	
53	ON_N	ON_N	G24-L reference voltage is VCC for this signal G24-L has 100K PU on this signal
54		LCD_CS	
55	HDST_INT_N	HDST_INT_N	
56		LCD_SD	
57	HDST_MIC	HDST_MIC	
58		LCD_CLK	
59	AGND	AGND	



Connector Pin #	G24-L	G24	Differences
60		LCD_RS	
61	MIC	MIC	
62		SPI_IRQ_N	
63	ALRT_N	ALRT_N	
64		SPI_DIN	
65	ALRT_P	ALRT_P	
66		SPI_CLK	
67	SPKR_N	SPKR_N	
68		SPI_DOUT	
69	SPKR_P	SPKR_P	
70		SPI_CS	

(*) The ACD3 signal is allocated to the battery temperature measurement in the G24-LC module (with battery charger support).



SW differences between G24 and G24-L SW 4-0.470

Feature	Status in G24-L	Values
Features		
MUX	Will be supported in future release	
UART	Only UART1 is supported.	
Keypad & Display	Not supported	
Fax Feature	Will be supported in future release	
Cell Broadcast Message	Will be supported in future release	
Flashing Protocol	The flashing protocol was changed	
AT Commands – Removed		
EGPRS	EGPRS commands removed (CGEQREQ,CGEQMIN,CGEQNEG,CEG)	
+MEGA	Email Gateway Address Removed	
+GCAP	Request Overall Capabilities Removed	
+CVIB	Vibrator alert, Removed	
+MPDPM	PB dynamic Percentage Mem. Removed	
+TCLCC	List of current call Removed	
+MKPD	Keypad control Removed	
+TSMRET	SMS Sending Retry Removed	
+TWUS	Wakeup Reason Set Removed	
+TWUR	Wakeup Reason Request Removed	
+TASW	Antenna Switch Removed	
+TADIAG	Query antenna ADC value Removed	
+MVREF	Motorola Voltage Reference Removed	
+MCELL	Cell Description Removed	
+MNTFY	Notify Indication Removed	
+MPSU	Second UART Removed	
+CKPD	Keypad Control – Not supported	
+CKEV	Keypress Echo – Not supported	
+CDEV	Display Indication – Not supported	
+MREFALSH	Re-Flash Command – Not supported	
+MFIC	Filtering Incoming Calls – Not supported	
+MUPB	Phone Book Event - Not supported	
+CBM	New CB message receipt – Will be supported in future release	
+CSCB	Cell Broadcast messages - Will be	



Feature	Status in G24-L	Values
	supported in future release	
+MCI	Cell Information - Will be supported in future release	
AT Commands – Updated		
ATIn command	Values are added and changed	1- Added 2- Changed to 'Motorola GSM Module' 3- Changed to N5
AGC (Auto. Gain Control)	AGC was added to +MAFEAT command	8
+MBC command	Motorola Battery Charger added (Charger Model)	
+CGMI,+GMI,+FMI – Manufacture ID	Support only Execute Mode and not Read Mode	
+CGMM,+GMM,+FMM – Model ID	Support only Execute Mode and not Read Mode	
+CGMR,+GMR,+FMR – Request Revision	Support only Execute Mode and not Read Mode	
+MMAD	- Not support converter number 4 - Converters Values = 300-450	
+CFSN	Return Manufacture Serial Number	
+CRTT	18 Ring Tones instead of 41	
Sleep Mode	Wake up duration is 10 ms	
+CMER	<key>,<disp> parameters reserved for future implementation	
+CRLP	Radio Link Protocol, < Retransmission attempts> range is:(006-015) instead of (006-010)	
+CUSD	Support only USSD strings. User action 3,4,5 were added	
AT&K=?	G24-L return: &K: (0, 3-6) instead of &K: (0,3,4,5,6)	
AT+VTS=?	G24-L return: +VTS: (0,1,2,3,4,5,6,7,8,9,A,B,C,D,#,*),(0-600) instead of +VTS: (0-9,*,#,A-D),(0-600)	
AT&Y	G24-L must have a profile value AT&Y<n> instead of AT&Y[<n>]	
+MVC	- G24-L return in Test Mode: +MVC: (0,1),(1-5),(1-5),(1-5),(1-5),(1-5) instead of +MVC: (0-1),(1-5),(1-5),(1-5),(1-5),(1-5)	



Feature	Status in G24-L	Values
	- Must do reset after setting. It is not automatically.	
ATS	Not all the Status and the S-Registered are displayed	
+CFUN	Parameters 2,3 are not supported	
Direct Dial from PB	No need to add " before and after the name of the PB	
Baud rate	Auto baud rate is only working in specific range (≥ 1200 bps and $\leq 115.2K$ bps)	
CSD Call	Only non-transparent mode is supported	
CSD Call	Escape Sequence command (+++) don't pass to the remote side.	
Commands needs processing	Commands need process as atd,+cops=?,+MIPCALL can not be execute in one line with the ";" separator.	