



**MOTOROLA**

## Product Description

Motorola M930 & M930NAV  
In-Vehicle Phone with GPS



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Version 1.6

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## 1 Introduction

### **MAKING YOUR CONNECTIONS AS MOBILE AS YOU ARE**

The Motorola **M930NAV** is an advanced, in-vehicle mobile phone that supports GPS. It is uniquely designed for the car environment to deliver efficient, reliable and convenient GSM communication and navigation for those who are constantly on the move.

**M930NAV** boasts state-of-the-art technological advances to ensure that we are constantly meeting our customers' evolving business and operational needs. From commercial enterprises, such as corporations, rental car companies and fleet management organizations to public services such as transportation and emergency users – the need for greater connectivity on-the-road has never been more important.

From its superior audio quality to its user-friendly interface, the **M930NAV** offers an unrivalled set of features for in-vehicle enhanced communications:

#### ***PERFORMANCE:***

- Superior full duplex hands-free audio quality in GSM networks
  - Clear, sharp pick-up with background noise suppression and echo cancellation
  - Extended network coverage with external antenna and up to 2 watt power
  - Data connectivity with GPRS and EDGE
  - Java support for business and fun applications
  - An ultra sensitive Sirf-III based GPS accessory
- 

#### ***CONVENIENCE:***

- Large, widely-spaced keypad for quick dialing while on the road
  - Turn by turn navigation software
  - High resolution color display with full-size digit display fonts for easy reading in the vehicle environment
  - Privacy handset for passengers
- 

#### ***LEGALITY & SAFETY***

- The ultimate solution to the ban on handsets while driving
  - Compliant with environmental laws for end of life in vehicles (ELV)
  - Voice activated name and number dialing
  - One-Touch Operation keys for voice activation, name and number dialing so you can keep your eyes on the road
- 

**M930NAV** is the latest, complete in-vehicle solution from Motorola for customers requiring fast and dependable access to voice and data communication while on-the-move.

## 2 What is in the box

The M930NAV box is supplied with

- M930 head unit
- Navigation software pre-installed
- Quick start guide
- Installation guide
- User guide
- Octopus Cable
- Microphone
- Speaker
- Power cable with fuses
- Swivel holder

Specific models may optionally include

- Custom GPS
- Navigation guide
- Privacy Handset

Not included in any model

- External Antenna
- USB Cable

The GPS or the privacy handset can be purchased separately as accessories. The external vehicle antenna is not supplied and should be purchased from a 3<sup>rd</sup> party.

## 3 Optional Accessories

#	Description	Motorola P/N
1.	Mini USB Data cable with Mobile Phone Tool CD V3	CFLN1522AC
2.	Car phone privacy handset	FTN6494E
3.	Car phone privacy handset (3m cable)	FTN6495E
4.	M930NAV NAV GPS accessory 6 meter	FTN3148A

**Table 1: Optional Accessories**

## 4 Installation

Professional vehicle installation is required so the user fully enjoys the M930NAV features. This includes proper placement of microphone and speaker to fully enjoy the M930NAV's superb audio quality. Assembled to the head unit is the octopus cable to allow connecting to the power cable, microphone, speaker, vehicle antenna, and GPS. Its power cable is 1.5 meters long, with a 6 pin female Molex connector to connect the car battery and ignition line. Three fuse holders are supplied with this cable separately. This cable also routes the entertainment mute signal (open collector, active low). This line mutes the car entertainment radio for three seconds each time any key is activated and during a phone call.

The GPS smart antenna is installed on the dashboard and comes with a 6m or 3m cable that connects to the accessory connector of the wire harness (octopus cable). Step by step installation instructions are supplied in the M930 box.



**Figure 1: Octopus Cable & GPS**

## 5 M930NAV User Interface

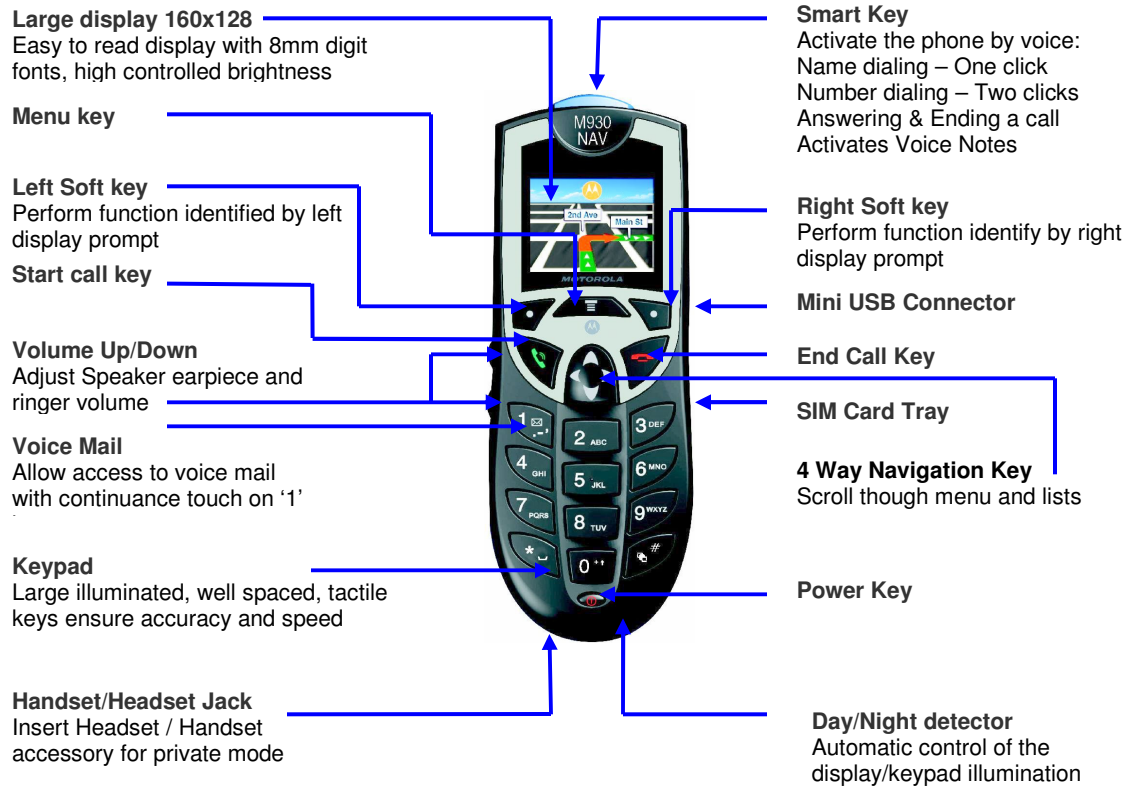


Figure 2: Getting to Know the M930NAV

## 6 M930NAV Reference Matrix

<b>Network Support</b>	
GSM Bands	900/1800 MHz or 850/1900 MHz
GPRS	Supported
EDGE (Enhanced GPRS)	Supported
Vocoders	Full Rate (FR); Enhanced Full Rate (EFR); Half Rate (HR); Adaptive Multi-Rate (AMR)
Power Classes	GSM 850 MHz: Class 4 (2W 33 dBm) GSM 900 MHz: Class 4 (2W 33 dBm) GSM 1800 MHz: Class 1 (1W 30 dBm) GSM 1900 MHz: Class 1 (1W 30 dBm)
Circuit Switched Data Rate	Up to 14.4 Kbps
Packet Switched Data Rate	Dependant on Data Coding Scheme used by the network
Receiver Sensitivity	850/900 MHz: 107 dBm nominal 1800/1900 MHz: 106 dBm nominal
Discontinuous Transmission and Reception (DTX, DRX)	Supported
<b>Physical Information</b>	
Dimensions	175×60×35mm (LxWxT)
Weight	250 g (fixed to and supported by vehicle)
Volume	250 cm <sup>3</sup>
Housings	Polycarbonate and ABS plastic V0 grade - non flammable
<b>Display</b>	
Resolution	160 x 128 pixels (w x h)
Size (Width x Height)	Viewing Area: 35.86 x 30.86 mm Active Area: 33.86 x 28.86 mm
Technology	CSTN Transflective
Number of Colors	65K
Number of Lines	5 Text lines plus 1 Icon line plus 1 soft-key line (6 total)
Maximum number of characters per line	50 characters
Pixel size	0.219 mm pixel pitch, square
Refresh rate	75 Hz
Backlight	6 White LED located at the top of the display
Default Idle Display	Operator name, date, and digital time
<b>GPS</b>	
General	Dashboard mount
Chipset	Highly sensitive Sirf-III with 20 parallel channels
Interface	Unique to the M930NAV data connector and voltage: HiRose 14 pin connector, Serial data CMOS Levels
Time To First Fix (TTFF)	Internal battery ensures TTFF is in "hot start" 5 sec' typical and 10 sec' maximal.
Accuracy	5.0m CEP (95%)
Sensitivity	-159dBm Tracking, -155dBm Navigation
Dimensions	60×42×17mm (LxWxT)
Cable length	6 meters

<b>User Interface</b>	
Software	Motorola Synergy 2.0
<b>Car interface</b>	
Car Radio mute	Open Collector, 150mA Max
Ignition Sense	Up to 24VDC
Auxiliary Alert	Open Collector, 300mA Max
Loudspeaker	40hm 10W
Antenna connector	Wireless operators can choose between FME, Mini-UHF or SMA
<b>Keys</b>	
Smart Key (on top of unit)	Voice Activation, start and end call
Soft keys	Two soft keys
Menu	Dedicated Menu key with context-sensitive options
Calling	Start Call (Green) and End Call (Red)
Power	Manual On/Off (in addition to automatic power switching by ignition)
Navigation	Four-way navigation key
DTMF Keypad	0-9, #, *
Side	Volume up/down (two)
Backlight	Blue
<b>Security</b>	
Phone Lock	Manual and Automatic supported
Keypad Lock	Supported
<b>Environmental</b>	
Operating Temperature	-20°C to + 60°C
Storage Temperature	-30°C to + 80°C
Type approval	PTCRB, FCC, DOC IC, R & TTE (BABT), GCF, EMC, Safety EN60950
Standard	ELV (End of Life Vehicles) compliant
Environment performance	12M05049A04 standards for mobile products
<b>Operating Voltage</b>	
DC Supply	13.8V +/- 20%
Ignition sense	24V +/- 20%
<b>Power Consumption</b>	
Off	<5mA
Receive	<200mA
Transmit	Hands Free Mode : < 1.5A Private mode: <0.5A

<b>SIM Capabilities</b>	
Voltage	3V supported; 1.8V and 5V not supported
SIM Type	All SIMs are supported (GSM, GPRS or 3G)
Preferred Networks	Up to 64 managed by the SIM Card
Service Dialing Number (SDN)	Up to 30 supported
Fixed Dialing Number (FDN)	Up to 50 supported
Abbreviated Dialing Number (ADN)	Up to 250 supported
Last Dialed Number (LDN)	Up to 10 supported
Short Messages (SMS)	Up to 40 supported, if phone is flexed to store SMS on the SIM
OTA Provisioning of SIM	Supported
<b>SIM Security</b>	
SIMLock	Supported
GID1	Supported
GID2	Supported
<b>SIM Toolkit</b>	
Bearer Independent Protocol	Supported (Motorola STK 3.1)
STK Commands Supported	Please see Appendix B for complete STK Command Support Listing
<b>Internal Memory</b>	
Stacked Flash (ROM)	32 MB (256 Mbit)
PSRAM	8 MB (64 Mbit)
User downloadable memory	Up to 8MB for Java applications, ringtones, images, wallpapers, screensavers, etc.
<b>External Memory</b>	
Removable Memory	Not Supported
<b>Haptics</b>	
Call Activated	Not Supported
Externally Activated	Not Supported
<b>Audio</b>	
THD	Total harmonic distortion less than 5%
Audio Quality	Full Duplex
<b>Standard Package Contents</b>	
M930NAV Transceiver	Included
Holder	Included
Power cable	Included with a fuse
Octopus cable (wire harness)	Included
External Microphone	Included
External speaker	Included
User's manual	Included
Getting Started leaflet	Included
Installation guide	Included
Warranty Card	Included
Box Dimensions	280x185x75mm weight: 250g

<b>Bigger Package with Handset or GPS</b>	<b>The larger package include in addition:</b>
box Dimensions	280X175X115mm (LxWxH) Weight: 550g
Privacy Handset	M930NAV with Privacy Handset
GPS	In specific M930NAV models
<b>Supported Accessories</b>	
Privacy handset or Headsets jack	Standard 2.5mm connector
USB Connectors	Mini USB Cable
Connecting Software	Motorola Phone Tools
ESN number	ESN number
Production date: MM/YYYY	Production date: MM/YYYY
Numbers bar-coded	39
<b>GPRS Capabilities</b>	
Multislot Class	Class 10 (4 downlink, 2 uplink, 5 active)
Mode of Operation	Class B
Data Coding Schemes	CS1, CS2, CS3, and CS4
Multiple PDP Context Support	2 (1 external, 1 internal)
PDP Context Activation Methods	Menu selection Application launch AT command SMS to trigger SIM Toolkit application
Access Point Names	10
Authentication Protocols	PAP and/or CHAP supported as needed
Packet Common Control Channel (PCCCH)	Supported
Packet Broadcast Control Channel (PBCCH)	Supported
GEA 1 and GEA 2 Encryption	GEA 1 and GEA 2 supported
V.42 bis Compression	Not supported
<b>EDGE Capabilities</b>	
Multislot Class	Class 10 (4 downlink, 2 uplink, 5 active)
Mode of Operation	Class B
Data Coding Schemes	MCS1 through MCS9

<b>Java</b>	
Mobile Information Device Profile	MIDP 2.0 (JSR118)
Connected Limited Device Configuration	CLDC 1.1 (JSR 139)
Java Heap Memory (available RAM)	2 MB
MIDP OTA Provisioning	Per Java Community Process (JCP) recommendations
File Types Supported	.JAD and .JAR
Maximum File Size	1 MB or less is recommended
Simultaneous key press	Supported
Simultaneous Socket Connections	Up to four sockets supported
Network Protocols Supported	HTTP, HTTPS, Datagram, Socket Stream, Secure Socket Stream, SSL
<b>JSRs Supported</b>	
JSR179	GPS support
JSR37	MIDP 1.0
JSR118	MIDP 2.0
JSR30	CLDC 1.0
JSR139	CLDC 1.1
JSR120	Wireless Messaging API – Support for SMS MO/MT, Cell Broadcast, and USSD within Java applications
JSR135	Mobile Media API – Support for sound interface and access to multimedia files
<b>Motorola APIs Supported</b>	
File System API	Supported (Allows MIDlets to access the phone's file management system)
Text Entry Method API	Supported (Allows MIDlets to use predictive text capability of the phone)
Backlight API	Supported (Allows MIDlets to enhance games and applications by controlling the phone's backlight)
Tone Generation and Playback API	Supported (Allows MIDlets to play back music clips and generate tones)
Status Icon API	Supported (Allows MIDlets to show and update the status icon area of the phone's main)
<b>Functional Enhancements</b>	
One-click Access	Supported (Allows MIDlets to appear on the phone's Main Menu)
Application Shortcuts	Supported (Allows user-programmable shortcuts to go directly to Java applications)
Background Applications	Supported (Allows MIDlets to resume or start even if the phone flip is closed, through a pushed or received data trigger; also suspends MIDlets once data transfer is complete to avoid unnecessary battery drain)
J2ME Invisible Net	Supported (Allows developers to embed URLs in applications that can then be accessed by the user)
<b>Multimedia Support</b>	
Audio Formats	MIDI, MP3, AAC, AMR, and iMelody
Image Formats	JPEG, GIF, PNG

<b>Browser</b>	
WAP Compliance	WAP 2.0 (WAP NG)
Protocol Stack	WTCP/IP/HTTP, WAP
Transport Layer	TCP, UDP, WDP
Markup Languages	xHTML Mobile Profile, WML 1.3, iHTML, cHTML
Security	WTLS Class 2, TLS 1.0/SSL 3.0
Style Sheet	WCSS
WAP Push	SI, SL, VO
User Agent	User Agent Profile and UAProf URI transport
User Agent Header	MOT-M930NAV/xx.xx.xxR MIB/2.2.2 Profile/MIDP-2.0 configuration/CLDC-1.1
WAP OTA Provisioning	Supported (Bootstrap Provisioning of WAP parameters via SMS Push)
WTAI	Make Call only
Access Key	Supported in both xHTML and WML
Digital Rights Management	OMA DRM Release 1 (Forward Lock, Combined Delivery, and Separate Delivery)
<b>Download</b>	
Methods	WSP GET + SAR and HTTP GET Supported
OMA Download Specifications	Supported
Maximum download size	Stack dependant – approximately 500 KB over WAP, limited only by available memory over HTTP
Content formats for download	WBMP, GIF 87/89A, JPEG, iMelody, MIDI, SP-MIDI, MP3, AAC
Image Download Options	Images can be downloaded to picture viewer; images rendered inline with browser content can be saved to picture viewer as well. Picture viewer further provides options to set as wallpaper etc. (Save, Save as Wallpaper, Save as Screensaver)
Ringtone Download Options	Supported via generic download (Save, Save as Ringtone)
<b>Content Rendering</b>	
Browser display size	121 x 106 pixels
Default font	7 pixel Happy font
Additional font support	Bold, underline, italics supported
Text Entry – predictive text	iTAP with T9 emulation, including User Dictionary and Word Completion
Tables	Text tables and tables that include images are supported (nested tables not supported)
Clickable images (images as a link)	Supported
Handling of content larger than the screen size	No horizontal scrolling; vertical scrolling possible; images greater than the horizontal width of the screen are resized to fit the screen width
Inline content image rendering limits	50 KB file size or 640 x 480 pixels (image is automatically resized to fit the width of the display)
Multiple objects on one line (image plus link)	Supported
GUI elements	Markup elements of type radio button, checkbox are presented.

<b>Network Requirements</b>	
WAP Profiles	Up to 10
GPRS to CSD Fallback	Automatic, with user permission (flexible at operator discretion)
WAP OTA Provisioning Data	Bearer Selection, User Name and Password, WAP Gateway IP Address and Port Number, Homepage URL, Basic Authentication (User Name and Password)
<b>HTTP State Management</b>	
HTTP State Management (cookies)	Supported per RFC 2109
Allowed cookie quantity	Up to 20
Maximum cookie size	4 KB
Cookie deletion by user	Supported
<b>MMS</b>	
3GPP	3GPP TS 23.140 V. 4.0 or higher
OMA	OMA MMS Conformance Document Version 1.2
MMS IOP	MMS IOP Conformance Document Version 2.0.0
OTA Provisioning	Supported
Fallback to CSD if GPRS is unavailable	At operator's discretion
<b>OMA MMS Content Class Support</b>	
Text	Text Only MMS SMIL Messages, 30 KB or less
Image Basic	Text, Speech Audio, and Image MMS SMIL Messages, 30 KB or less
Image Rich	Text, Speech Audio, Image, and Synth Audio MMS SMIL Messages with Forward Lock support, 300 KB or less
<b>Media Formats Supported</b>	
Text	USASCII, UTF-8 (Unicode), UTF-16 with Explicit Byte Order Mark
Images – MO	JPEG (up to VGA resolution), GIF 87A, GIF 89A, WBMP
Images - MT	JPEG (up to VGA resolution), GIF 87A, GIF 89A, WBMP
Audio – MO	AMR-NB, General MIDI, SP-MIDI, iMelody
Audio – MT	AMR-NB, General MIDI, SP-MIDI, iMelody, MP3
<b>Maximum Image Sizes Within MMS</b>	
JPEG	Up to VGA Resolution (640 x 480 pixels)
GIF	Up to QVGA resolution (320 x 240 pixels)
WBMP	Up to QVGA resolution (320 x 240 pixels)

<b>Mobile Originated Messages</b>	
Maximum Message Size	Recommend 300 KB (MO or MT; size is operator flexible)
Message Size Options	User may choose to restrict message size through the Messaging Menu (None, 30, 100, or 300KB). Operators may also request a smaller message maximum than 300 KB if desired.
Presentation Language	MMS SMIL
Number of slides	Up to 10 slides in an MMS SMIL message, provided max message size is not exceeded
Number of objects per slide	Maximum of 3 – 1 audio, 1 image/video, and 1 text field
Templates	Preloaded and downloadable
Predictive Text	iTAP with T9 emulation, including User Dictionary and Word Completion
Message Size Tracking	Real time counter visible during message composition (operator flexible)
Addressing	Multiple MSISDN and email addresses supported in To:, CC:, and BCC: fields
Addressing Field Limits	To: 750 characters CC: 500 characters BCC: 500 characters (Individual email or MSISDN addresses within these fields are limited to a maximum of 50 characters)
Message Priority	User settable
Message Expiration Timer	User settable
Delivery Reports	Available at user request
Digital Rights management	OMA Forward Lock supported for MO messages; OMA DRM Release 1 (Forward Lock, Combined Delivery and Separate Delivery) supported for MT messages
Action if delivery fails	Automatic Retry
<b>Mobile Terminated Messages</b>	
Maximum Message Size	Recommend 300 KB (MO or MT; size is operator flexible)
Presentation Language	MMS SMIL or non-SMIL
Number of slides	Up to 10 slides, provided 300 KB message size is not exceeded
Inbox	Shared with SMS and EMS messages
Download Options	Automatic, Automatic in Home Network, or Deferred
User Prompt Indicator	Supported
User Actions with Received Messages	Reply, Reply All, Forward, Delete
Memory Full	User is notified of the need to remove messages or content to allow delivery of the new message
Message Size Indication	Ignored in the incoming message notification, to support MMSCs capable of content adaptation
Filter List	Supported for sender MSISDN or email address, and for message size
Silent Mode Settings	Supported
Action if delivery fails	Automatic Retry
Digital Rights management	OMA Forward Lock, Combined Delivery, and Separate Delivery supported for MT messages

<b>MMS Action</b>	
Message Creation	Message Center, MMS Templates, Media Center
Network Storage	From Camera Mode, Message Center, Media Center
<b>EMS</b>	
EMS Version	EMS Release 5.0
Maximum Message Size	13 concatenated messages, or a maximum of 450 characters plus 10 embedded objects
Nokia Smart Messaging	Receive only of text and images (no ringtone support)
Digital Rights Management	EMS 5.0 Object Distribution Indicator (ODI) (EMS Release 5 copyright feature)
Predictive Text	iTAP with T9 emulation, including User Dictionary and Word Completion
Non-standard character support	Automatic SMS 16 bit encoding
<b>EMS Content Formats</b>	
Text	USASCII, UTF-8 (Unicode), UTF-16 with Explicit Byte Order Mark
Audio	iMelody, SP-MIDI (Receive only)
Image	EMS BMP
<b>SMS</b>	
Support	SMS MO and MT, with up to 13 message concatenation
Classes	SMS Class 0, Class 1, Class 2, and Class 3
Chat	SMS Peer-to-Peer Chat
Text Formats Supported	USASCII, UTF-8 (Unicode), UTF-16 with Explicit Byte Order Mark
Predictive Text	iTAP with T9 emulation, including User Dictionary and Word Completion
<b>SMS Cell Broadcast</b>	
Channels	Up to 5 simultaneous channels supported
GSM 04.12	Supported
Multi-page CB Messages	Supported
Geographical Scope	Supported
Display Mode	Supported
EMS Cell broadcast	Not supported
<b>USSD</b>	
Phase Support	Phase 1 and Phase 2 with cross-phase compatibility
Maximum characters	Up to 182
SMS Interaction	Receive and read SMS messages during a USSD session
<b>EMS Animations</b>	
Type: Small	Color, 8 x8 pixels
Type: Large	Color, 16 x 16 pixels
Frames	4 frames maximum (EMS animation restriction only)
Rate	500 ms
Loop	Continuous
<b>EMS Pictures</b>	
Type: Small	16 x 16 pixels
Type: Large	32 x 32 pixels
Type: Variable Size	255 x 255 pixels maximum
Format	.bmp
Color Options	Black and white, 2-bit grayscale, or 6-bit color

<b>Screensavers</b>	
Dimensions	160 x 128 pixels
Recommended Number of Frames	9 – 15
Colors	65K
Recommended File Type	Animated GIF (GIF89A)
Recommended File Size	Up to 90 KB
<b>Wallpapers</b>	
Dimensions	160 x 128 pixels
Colors	65K
Recommended File Type	Static GIF (GIF87A), JPEG
Recommended File Size	Up to 15 KB
<b>MIDI Ringtones</b>	
MIDI Instruments	128 Melodic, 47 Percussion
Maximum Polyphony	24 Voices
Minimum Duration Per Note	20 ms
Maximum Duration	16-30 seconds (Network dependent)
Recommended File Size	Up to 15KB
<b>MP3 Ringtones</b>	
Bit Rate	64 kbps maximum
Recommended Bit Rate	64 or 40 kbps
Recommended File Size	Up to 100KB
<b>Transfer Method - Image Formats</b>	
JPEG	Receive via MMS, WAP download Send via MMS
GIF 87A / GIF 89A	Receive via EMS/MMS, WAP download Send via EMS/MMS
BMP / WBMP	Receive via EMS/MMS, WAP download Send via EMS/MMS
PNG	Supported within Java and Browser applications only
<b>Transfer Method - Audio Formats</b>	
AMR	Receive via MMS, WAP download Send via MMS
MIDI (SP MIDI, MIDI Type 0, MIDI Type 1, BAS)	Receive via EMS (SP MIDI only), MMS, WAP download Send via MMS
MP3	Receive via MMS, WAP download Send via email
iMelody	Receive via MMS, WAP download Send via MMS
WAV-PCM / WAV-ADPCM	Format not supported for transfer; WAV files are recognized by the device if preloaded

<b>Connectivity</b>	
USB	Version 2.0 Full Speed supported
Serial Com: UART	Used when GPS is connected Available when GPS not installed.
SyncML	Supported – additional details below
Built-in Modem	Supported
PC Connectivity Software	Motorola Phone Tools for sending emails, faxes and managing the phonebook.
Operating System Drivers Supported (Tethered Connections)	Windows 98SE, Windows ME, Windows 2000, Windows XP (supported over USB)
FAX	Using a PC with Motorola Phone Tool (MPT) Software
Power cable	13.8DC ± 20%
Headset Jack	2.5 mm mono supported
External RF Connector	Supported
<b>SyncML</b>	
Data Synchronization	SyncML DS Version 1.1 supported
Device Management	SyncML DM Version 1.1.1 supported; meets all mandatory requirements of the conformance test specification and will also support some additional objects beyond the standards
OTA Software Updates	Via SyncML DM
Connectivity Method	Via USB or Over The Air through WAP
<b>SyncML Data Synchronization</b>	
Modes	Type 200 (Client-initiated Fast Sync) and Type 201 (Client-initiated Full Sync) are supported; Type 205 (Client-initiated Server Refresh) is not supported
<b>Phonebook</b>	
Number of entries	Up to 500 average size entries (shared with Phonebook; approximately 60KB of space total)
SIM Card Contact Storage	Supported; number of entries dependent on SIM card (typically 255)
Caller Identification	Supported by number or contact name display, user-defined ringtone, user-defined icon or image, user-defined situational lights
SIM to Mobile Phonebook Transfer	Supported
Mobile to SIM Phonebook Transfer	Supported
Copy Entries	Supported
<b>New Entry Fields</b>	
Phone Number (Phone memory)	Name, Number, Type (Work, Home, Main, Mobile, Fax, Pager), Voice Name, Speed Number, Ringer ID, Picture ID
Phone Number (SIM Card)	Name, Number, Speed Number
Email Address (Phone memory only)	Name, Email, Voice Name, Speed Number, Ringer ID, Picture ID
Mailing List (Phone memory only)	Name, Members, Voice Name, Speed Number

<b>Datebook</b>	
Number of entries	Up to 500 average size entries (shared with Phonebook; approximately 60KB of space total)
Repeated entries	Supported (Daily, Weekly, Monthly, Annually)
Available User Views	Week and Month
Independent Datebook Alarm	Supported
Alarm Clock	Supported
Calculator	Supported
Currency Converter	Supported within Calculator function
vCard Version 2.1	Supported via WAP download
vCard with Images	Not supported
vCalendar Version 1.0	Supported via WAP download
iCalendar	Not supported
<b>Recent Call Listings</b>	
User Call Lists	Dialed Calls (typically most recent 10), Calls Received/Missed (typically most recent 10); quantities based on operator preference
Call Information	Calling number or name (if stored in Phonebook), Time and Date Stamp, Call Duration (if applicable)
<b>Call Timers</b>	
Active Call Timer	Supported; may be reset by the user
Last Call Timer	Supported; may be reset by the user
Dialed Calls Timer	Supported; may be reset by the user
All Calls Timer	Supported; may be reset by the user
Lifetime Call Timer	Supported
In-call Timer/Alarm	User may set to alert at 60 second intervals while on a call
<b>Advice of Charge</b>	
Advice of Charge Information (AoCI)	Supported for circuit-switched (CSD) calls only
Advice of Charge Charging (AoCC)	Supported for circuit-switched (CSD) calls only
<b>Voice Activation and Recognition</b>	
Voice Dialing	20 Voice tags for Phonebook entry's Name Dialing + Unlimited User Independent Number Dialing
Voice Shortcuts	5 voice Shortcuts
Voice Tag File Size	3.4 KB per tag
<b>Additional Features</b>	
Postcard	Supported
Instant Messaging	Wireless Village v1.2 IMPS client

**Table 2: Reference Matrix**

File systems supported on the SIM are based on GSM 11.11 for GSM files and GSM 11.14 for SIM Application Toolkit (SAT).

## 7 SIM Toolkit Command Support

File systems supported on the SIM are based on GSM 11.11 for GSM files and GSM 11.14 for SIM Application Toolkit (SAT).

### SIM Application Toolkit Revision 3.1.0

Toolkit Commands	GSM 11.14 Version	Compliance
Terminal Profile Download	7.1.0, SMG Only	Yes, Note 1,5,6,7
Terminal Response	6.2.0	Yes, Note 6,7
Display Text	6.2.0	Yes, Note 1,6,7
Get Input	6.2.0	Yes, Note 1,3,8
Select Item	6.2.0	Yes
Send Short Message	6.2.0	Yes
Send SS	6.2.0	Yes
Setup Call	6.2.0	Yes, Note 4,6,7
Setup Menu	6.2.0	Yes, Note 3,6,7
Envelope	6.2.0	Yes
Fetch	6.2.0	Yes
Menu Selection	6.2.0	Yes
Data Download to SIM – SMS-PP Download	6.2.0	Yes, Note 6,7
Get Inkey	8.3.0	Yes, Note 1,3
Call Control	6.2.0	Yes, Note 6,7,10
Refresh	6.2.0	Yes
Cell Identity in Call Control by SIM \$(CellidCC)\$	6.2.0	Yes
More Time	6.2.0	Yes
Play Tone	6.2.0	Yes
Polling Off	6.2.0	Yes
Poll Interval	6.2.0	Yes
Provide Local Information	6.2.0	Yes, but Timing advance is not supported.
Help Text Support \$(HelpInfo)\$	6.2.0	Yes
Data Download to SIM – CB Download	6.2.0	Yes
Network Measurement Results included in Provide Local Information \$(NMR)\$	6.2.0	Yes
Indication to be given to the user \$(Indication)\$	6.2.0	Yes
Default Selected Item \$(DefItem)\$	6.2.0	Yes
Default Choice for GET INPUT Command \$(DefChoice)\$	6.2.0	Yes
SEND USSD Command \$(SendUSSD)\$	6.2.0	Yes
MO Shot Message Control by SIM \$(MOSMControl)\$	6.2.0	Yes, Note 6,7
Event Driven Information \$(Event)\$	6.2.0	Yes, Note 12
Setup Event List	8.3.0	Yes, Note 12,13,14,15
Multiple Card management \$(MultipleCard)\$	7.1.0	Yes- for software, but not supported on the handset.

Toolkit Commands	GSM 11.14 Version	Compliance
Power OFF Card	7.1.0	Yes- for software, but not supported on the handset.
Power ON Card	7.1.0	Yes- for software, but not supported on the handset.
Perform Card APDU	7.1.0	Yes- for software, but not supported on the handset.
Get Reader Status	8.3.0	Yes
Universal Two Byte Coded Character Set \$(UCS2)\$	6.2.0	Note 1
Timer Management \$(Time)\$	7.2.0	Yes
Date, time and time zone included in PROVIDE LOCAL INFO \$(DTTinPLI)\$	7.2.0	Note 11
Sustained DISPLAY TEXT \$(Sustained Text)\$	7.2.0	Yes
Binary Choice for Get Inkey \$(BinChoice)\$	8.1.0	Yes
Idle Mode Text \$(IdleModeText)\$	8.1.0	Yes
Launch Browser	8.9.0	Yes, Note 16
Open Channel	8.9.0	Yes, Note 17
Close Channel	8.9.0	Yes
Receive Data	8.9.0	Yes
Send Data	8.9.0	Yes
Get Channel Status	8.9.0	Yes

**Table 3: SIM Application Toolkit Revision 3.1.0**

**Notes:**

1. The \$(UCS2)\$ Universal Two Byte Coded Character set is supported. This Feature will be supported in all products.
2. \$(CellidCC)\$ Cell Identity Information is supported in Call Control Envelope.
3. \$(HelpInfo)\$ Help Information facility is provided.
4. \$(Indication)\$ Indication to user is supported.
5. \$(MultiCard)\$ Multiple Card Management is supported.
6. Any other Release 97 features (GSM 11.14, Revisions 6.X.X and beyond) than the features noted in this section are not applicable.
7. Any other Release 98 features (GSM 11.14, Revisions 7.X.X and beyond) than the features noted in this section are not applicable.
8. \$(DefChoice)\$ Default Choice for Get Input is supported.
9. \$(DefItem)\$ Default Item for Select Item is supported.
10. \$(Indication)\$ Indication to user for Call Control by SIM is not supported.
11. \$(DTTinPLI)\$ The Date, Time and Time Zone in Provide Local Information is supported but the ME does not support the TimeZone information from network.
12. \$(Event)\$ Language Selection Event is not supported.
13. \$(Event)\$ Browser Termination Event is in progress.
14. \$(Event)\$ Data Available Event is in progress.
15. \$(Event)\$ Channel Status Event is in progress.
16. Provisioning File Reference is currently not supported by WAP Team.
17. Open Channel must contain data destination address and the SIM/ME interface.

## 8 AT Command Support

Supported in Mode = 0 (Handset)	AT Command
Answer call	ATA
Call originating	ATD
Hang-up a call	ATH
Request manufacturer identification	+CGMI
Request model identification	+CGMM
Request revision identification	+CGMR
Request product serial number identification	+CGSN
Select TE character set	+CSCS
Request international mobile subscriber identityI	+CIMI
Call mode	+CMOD
Hang-up call	+CHUP
Service reporting control	+CR
Cellular result codes	+CRC
Keypad control	+CKPD
Mobile Equipment event reporting	+CMER
Select phonebook memory storage	+CPBS
Read phonebook entries	+CPBR
Find phonebook entries	+CPBF
Clock	+CCLK
Mute control	+CMUT
Report Mobile Termination error	+CMEE
Mobile Termination error result code	+CME ERROR
Define PDP Context	+CGDCONT
Quality of Service Profile (Requested)	+CGQREQ
Quality of Service Profile (Minimum acceptable)	+CGQMIN
PS attach or detach	+CGATT
PDP context activate or deactivate	+CGACT
Show PDP address	+CGPADDR
GPRS mobile station class (GPRS only)	+CGCLASS
Select Message Service	+CSMS
Message Format	+CMGF
Service Centre Address	+CSCA
Set Text Mode Parameters	+CSMP
List Messages	+CMGL
Read Message	+CMGR
Send Message	+CMGS
Delete Message	+CMGD

Table 4: AT Command Support

## 9 Language Packages

The following table includes existing language packs as supported in phone menus. They do not cover the voice (spoken) number dialing. Additional languages can be added upon demand.

<b>Canada 001B</b>	<b>Nordic 002C</b>	<b>Middle East 0032</b>	<b>Israel 0033</b>	<b>Western / Southern 0039</b>	<b>Hong Kong 2 004D</b>
US English US Spanish Canadian French	UK English  Danish  Finnish German  Norwegian  Russian Swedish	Arabic UK English  French German  Russian  Spanish Turkish	Arabic UK English  French Hebrew  Russian  Spanish Turkish	UK English  Dutch  French German  Italian  Portuguese Spanish Turkish	UK English Chinese Complex Chinese Simple

**Table 5: Language Packages**

## **10 Power Cable Description**

The **M930NAV** Power cable is a 1.5 meters long, 6 pin female Molex connector, which connects the **M930NAV** to the car battery and ignition line. This cable also routes the entertainment mute and auxiliary alert signals.

3 fuse holders are supplied with this cable separately.

The entertainment mute signal (open collector, active low) mutes the car entertainment radio upon incoming call and initiate call Send call established for the entire phone call.

The auxiliary alert signal (open collector, active low) alerts the driver for incoming call while he is outside of the vehicle. Alert is achieved by connecting this signal to the vehicle lights or horn.

## **11 Operator Escutcheon**

Customer's escutcheon will be located on the top of the product front panel (above the display)

## 12 Keypad Description

Each key contains large alphanumeric fonts. The color of the keyboard is black with white fonts. Key Pad Backlight illumination is blue.

Keys description:

- Left Soft Key – Performs functions identified by left display prompt.
- Right Soft Key – Performs functions identified by right display prompt.
- Menu Key – Records voice notes, phonebook and shortcut names.
- SEND Key – Sends and answers calls, views recent dialed calls list.
- END Key – Ends phone calls, exits menu system.
- Scroll Key – Moves through menus and lists. Scroll UP activates micro browser
- Power Key – Unit ON / OFF.
- Volume Keys – Adjusts audio volume and ringer volume.
- Number Keys – 10 keys.
- Smart Key – Voice activation dialing, start/ end call, start Voice Notes
- Navigation key – four way
- [#] Key.
- [\*] Key.

## 13 Phone User interface

The following section describes the **M930NAV** menu tree.

### Main menu



#### Phonebook



#### Recent Calls

- Received Calls
- Dialed Calls
- Notepad
- Call Times\*
- Call Cost\*
- Data Times\*
- Data Volumes\*



#### Messages

- Create Message
- Message Inbox
- Outbox
- Drafts
- Info Services\*
- Voicemail
- Quick Notes
- MMS Templates



#### Tools

- Calculator
- Datebook
- Shortcuts
- Alarm Clock
- Dialing Services

- Browser Msgs



## Games & Apps



## Web Access

- Browser
- Web Shortcuts
- Stored Pages
- History
- Go To URL
- Browser Setup
- Web Sessions



## Multimedia

- Pictures
- Sounds



## Voice Records\*\*



## Settings



### Personalize

- Home Screen
- Main Menu
- Color Style
- Greeting
- Wallpaper
- Screen Saver



### Ring Styles



### Connection

- Sync



### Call Forward \*

- Voice Calls
- Fax Calls
- Data Calls
- Cancel All
- Forward Status



### In-Call Setup

- In-Call Timer
- Call Cost Setup
- My Caller ID
- Talk and Fax
- Answer Options
- Call Waiting



### Initial Setup

- Time and Date
- 1-Touch Dial
- Auto Redial\*
- Backlight
- Scroll
- Language
- Contrast



### Phone Status

- My Tel. Numbers
- Active Line\*
- Software Update
- Other Information



### Headset

- DTMF
- Master Reset
- Master Clear

- Auto Answer
- Voice Dial



### Car Settings

- Auto Answer



### Network

- New Network
- Network Setup
- Available Networks
- My Network List\*
- Service Tone\*
- Network Jingle \*
- Call Drop Tone



### Security

- Phone Lock
- Lock Application
- Fixed Dial
- Restrict Calls\*
- Call Barring\*
- SIM PIN\*
- New Passwords
- Certificate Mgmt\*



### Java Settings

- Java System
- Delete All Apps
- App Volume
- App Backlight

- **\*Optional feature**

- **\*\* This feature may appear under the  Tools menu, depending on your carrier.**

## 14 Packing Content

This basic package will contain:

- M930NAV unit, plastic holder, power cable, octopus cable, external Microphone, external speaker, user's manual, getting started leaflet, installation guide and Warranty card
- External box dimensions: 252X170X76mm (LxWxH)
- Weight: 1.1kgr

Package with Handset:

There will be a larger package aimed for NA and Europe markets that will include:

- M930NAV unit, plastic holder, power cable, octopus cable, external Microphone, external speaker, user's manual, getting started leaflet and installation guide.
- External box dimensions: 242X172X114mm (LxWxH)
- Weight: 1.4kg
- Privacy Handset.

The packages will be labeled with the product name, model number and transceiver ESN number.  
Numbers will be bar-coded.

## **15 Labeling**

Each M930NAV unit will be labeled with the following details:

- E-Marking number
- Model number
- Serial number
- ESN number
- Production date: MM/YYYY
- Numbers will be bar-coded: 39

## **16 User Manual**

Motorola will provide a language-specific M930NAV User Manual and Getting Started Leaflet in English.

## **17 Service Manual**

Motorola will provide a language-specific M930NAV Service Manual to the customer.

The manual will contain installation instructions, product description, bill of materials, PCB layout, troubleshooting etc.

## **[www.hellomoto.com/M930NAV](http://www.hellomoto.com/M930NAV)**

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## 18 Common Telecommunications Acronyms

Acronym	Meaning
3GPP	Third Generation Partnership Project
AMR	Adaptive Multi Rate
AMR-NB	Adaptive Multi Rate Narrow Band
AoCC	Advice of Charge Charging (data/voice)
AoCI	Advice of Charge Information (data/voice)
APDU	Application Protocol Data Unit
APN	Access Point Name
AT	Attention (Tells the modem that a command follows)
BAIC	Barring of All Incoming Calls supplementary service
BAOIC	Barring of All Outgoing International Calls
Bluetooth	Bluetooth (wireless personal area networking technology)
BMP	Bit Map (A standard file format for still images)
BT	Bluetooth (wireless personal area networking technology)
CB	Cell Broadcast
CD-ROM	Compact Disk - Read Only Memory
CENELEC	European Committee for Electrotechnical Standardisation (European Union standards body)
CF	Conversion Facility
CFB	Call Forwarding on Mobile Subscriber Busy
CFNRc	Call Forwarding on Mobile Subscriber Not Reachable
CFNRC	Call Forwarding on mobile subscriber Not Reachable supplementary service
CFNRy	Call Forwarding on No Reply
CFU	Call Forwarding Unconditional
CHAP	Challenge-Handshake Authentication Protocol
CHV1	CHV = Card Holder Verification?
CLDC	Connected Limited Device Configuration (Sun J2ME)
CLIP	Calling Line Identification Presentation
CLIR	Calling Line Identification Restriction
CMOS	Complementary Metal Oxide Substrate
COLP	Connected Line identification Presentation supplementary service
COLR	Connected Line identification Restriction supplementary service
CPHS	Common PCN Handset Specification
CS1-4	Data coding schemes as defined in GSM 05.03.
CSD	Circuit Switched Data
CSP	Customer Service Profile
CW	Call Waiting supplementary service
DCT	Discrete Cosine Transform
DL	Down Link
DoC	Declaration of Conformity
Download Fun	Download package written by Openwave
DRM	Digital Rights Management
DTX	Discontinuous Transmission
EDGE	Enhanced Data for GSM Evolution

<b>Acronym</b>	<b>Meaning</b>
EFR	Enhanced Full Rate
EGSM	Enhanced Global System for Mobile Communications
E-mail	Electronic Mail
EMS	Enhanced Messaging Service
ETSI	European Telecommunications Standards Institute
EU	European Union
EXIF	Exchangeable Image File Format (Japan Electronic Industry Development Association, JEIDA, compressed image format used in digital cameras)
FR	Full Rate
GID1	Group Identifier Level 1
GID2	Group Identifier Level 2
GIF	Graphics Interchange Format
GIF 87a	Graphics Interchange Format, a standard file format of still images. It is used to display static images and is the preferred format for pictures
GIF 89a	The GIF 89a standard is a superset of the GIF 87a specification. It allows a sequence of GIF images to be displayed in succession that generates an animation.
GPRS	General Packet Radio Service
GSM	Global System for Mobile communications
H.263	ITU-T Video Coding standard
HOLD	Call Hold
HR	Half Rate
HSCSD	High Speed Circuit Switched Data
HTML	Hyper Text Markup Language (and a file extension)
HTTP	Hyper Text Transfer Protocol (world wide web protocol)
iCalendar	Internet Calendaring and Scheduling Core Object Specification
IEC	International Electrotechnical Commission
IM	Instant Message
IMAP4	Internet Message Access Protocol
iMelody	A rich ringtone format featuring volume modifiers, codes to flash a phone's backlight and other advanced features.
IMSI	International Mobile Subscriber Identity
IP	Internet Protocol
IrDA	Infrared Data Association
ISDN	Integrated Services Digital Network
ISO	International Organization for Standardization
iTAP	Text entry software developed by Motorola's Lexicus division
ITU-T	International Telecommunication Union - Telecommunication Standardization Sector
J2ME	Java 2 Micro Edition (Sun)
JFIF	JPEG File Interchange Format
JPEG	Joint Photography Expert Group standard
JSR	Java Specification Request
KBPS	Kilo Bits Per Second

<b>Acronym</b>	<b>Meaning</b>
KJAVA	KJava, is version of the Java platform that Sun made available for the Palm in 1999 (JAVA for portable devices)
ME	Mobile Equipment
MIB	Motorola Internet Browser
MIDI	Musical Instrument Digital Interface
MIDI 1.0	Musical Instrument Digital Interface
MIDlet	A MIDlet is a MID (Mobile Information Device) Profile application.
MIDP	Mobile Information Device Profile (Sun Java APIs) Mobile Information Device Protocol (Sun Wireless Java support)
MIME	Multipurpose Internet Mail Extension
MMI	Man Machine Interface
MMS	Multi media message service
MO	Mobile Originated
MP3	MPEG-1 audio layer 3 (audio file format/extension)
MPEG	Moving Pictures Experts Group
MS	Mobile Station
MSISDN	Mobile Station Integrated Services Digital Network
MT	Mobile Terminated
OMA	Open Mobile Alliance
OTA	Over the Air
PAP	Password Authentication Protocol
PBCCH	Packet Broadcast Control Channel
PC	Personal Computer
PCCCH	Packet Common Control Channels
PDP	Packet Data Protocol
PIM	Personal Information Manager
PIN	Personal Identity Number
PLMN	Public Lands Mobile Network
PNG	Portable Network Graphics (graphic file standard/extension)
POP3	Post Office Protocol 3
QCIF	Quarter Common Intermediate Format
QQVGA	Quarter Quarter Video Graphics Array
QVGA	Quarter Video Graphics Array
SAR	Suspicious Activity Report
SAT	SIM Application Toolkit
SDN	Service Dialing Number
SI	Service Indication
SIM	Subscriber Identity Module
SIMlock	Lock phone to SIM card
SMF	Standard Midi Format
SMG	Special Mobile Group
SMIL	Synchronized Multimedia Integration Language
SMS	Short Message Service
SMS-PP	Short Message Service Point to Point

<b>Acronym</b>	<b>Meaning</b>
SMTP	Simple Mail Transfer Protocol
SP	Service Provider
SP MIDI	Scalable Polyphonic MIDI
SQCIF	Sub-Quarter Common Interchange Format (128x96 pixel image size)
STK	SIM Toolkit
SW	Software
SyncML	Synchronized Markup Language
T9	Text input on 9 Keys (Tegic Communications)
TCP	Transmission Control Protocol
TFT	Thin Film Transistor (Liquid Crystal Display, LCD technology)
TLS	Transport Layer Security
TMSI	Temporary Mobile Subscriber Identity
UA	User Agent
UDI	Unrestricted Digital Information
UL	Up Link
UMTS	Universal Mobile Telecommunications System
URI	Uniform Resource Identifier
URL	Uniform Resource Locator
USB	Universal Serial Bus
USSD	Unstructured SS Data
UTF	Unicode Transformation Format
VAD	Voice Activated Dialing
vCalendar	Format for exchanging calendar information between phones
vCard	Format for exchanging vcard information between phones
VGA	Video Graphics Array (640 by 480 pixels)
WAP	Wireless Application Protocol
WAV-ADPCM	WAV - Adaptive Differential Pulse-Code Modulation
WAV-PCM	WAV - Pulse Code Modulation
WBMP	Wireless Bit Map
WCSS	Wireless Cascading Style Sheet
WML	Wireless Markup Language
WSP	Wireless Session Protocol (WAP)
WTAI	Wireless Telephony Application Interface Heading
WTCP	Wireless Transport Control Protocol
WTLS	Wireless Transport Layer Security

**Table 6: Common Telecommunications Acronyms**