MINE SITE
TECHNOLOGIES

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MP10-G2 Configuration Guide
v. 1.1-SNAPSHOT
Ref: MP10-G2_CG_1.1-SNAPSHOT

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1 Introduction

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The Mine Site Technologies MinePhone MP10-G2 is a Voice over Wireless LAN (VoWLAN) phone designed for use in hazardous environments. It is an integral component in the MST ImPact Coal product suite, allowing for two way voice and text communication over underground wireless networks.
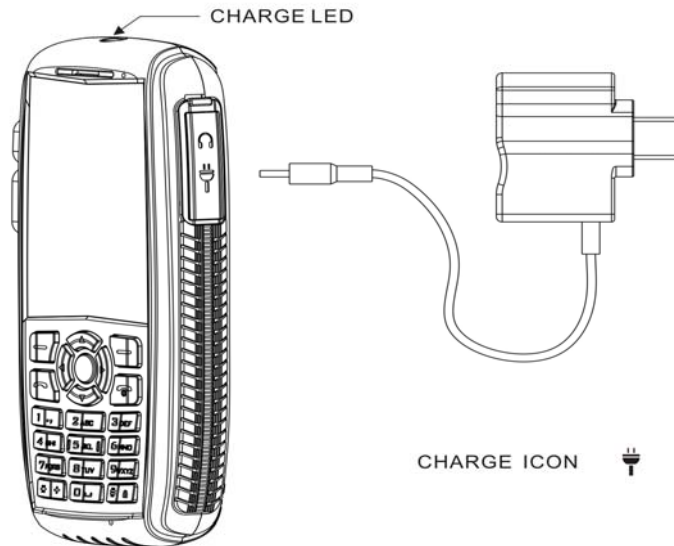
This document covers installation of charging infrastructure, network configuration of the handset, server side configuration, and the recurring maintenance required for reliable operation.

MinePhone MP10-G2

2 Charger Installation

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The MinePhone is supplied with a charging block that the handset is placed within to initiate charging.

MinePhone MP10-G2 in charging block

Correctly setting up a charger for the MinePhone requires consideration of a suitable location, and ensuring power is correctly connected.

2.1 Positioning

The charger provided for the MinePhone is not approved for use in hazardous areas

MinePhone Chargers should be located in a well ventilated non-hazardous area, with access to a clean Power supply. The ambient temperature should be within the range of 0 to 40 degrees Celcius.

Selecting a suitable charger position should account for the ease of physical access, and visibility of charge indicators on the charger unit, and the handset's screen.

While handsets should slide easily into the charger, some users are likely to apply considerably more force than required - the charger should be suitably supported to account for this.

2.2 Connectors

Due to regional differences there are several types of power connectors available for connecting the MinePhone charger to a power source. You should confirm that you have been shipped connectors of the appropriate voltage and type for your site prior to installation.

The power pack supplied will connect to either 110V or 240V AC power. The tail will terminate in a 2.5mm DC connector jack that fits into the charging block.

CHARGE LED

CHARGE ICON
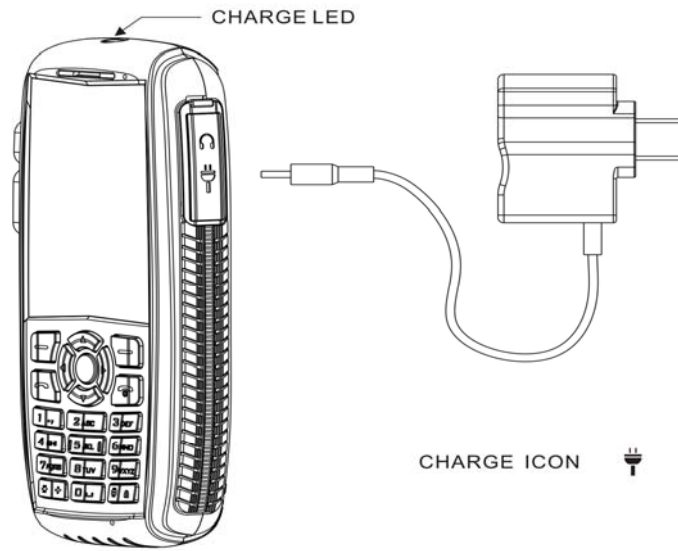
2.3 Indicators

The charger has one LEDs on the top to indicate status.

Showing	Meaning
Red	Charging in progress
Green	Charging completed successfully
Neither	Phone not in charger / Charger not connected to power / A problem has occurred during charging

Charging Block showing LED positioning

3 Phone Configuration

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MinePhones are designed to be deployed as a fleet with centralised management software, which reduces the configuration complexity operators are exposed to. Phones will by default attempt to connect to a TFTP server and download site and device specific configuration files at startup.

The MinePhone does offer the ability for the network and configuration settings to be manually edited from the device itself. This functionality is exposed only when the phone is started in *Admin* mode.

3.1 Powering Up

A newly commissioned MinePhone should receive a full battery charge before deployment. Ensure that every new handset is charged for a minimum of eight hours before operation.

A MinePhone is powered on by holding down the power button, located on the top of the digital keyboard, for 5 seconds. If the handset is charged, it will turn on and the display will light up to show an introduction splash screen.

3.1.1 Administrator Mode

To power a unit into *Admin* mode, press the # key before pressing the power button and hold until after the splash screen is shown.

Power buttons

buttons

MinePhone power and # buttons

If started in *Admin* mode the text Admin will appear in the bottom left corner of the splash screen and the Network and Configuration menus will be available from the Main Menu.

3.2 User Configurable Settings

The majority of settings for the phone are site specific and are managed centrally. Users may however adjust volume and screen brightness during operation.

3.2.1 Volume

During operation a user may wish to adjust the volume of ringtone and communication. Changing the volume does not require *Admin* access.

If on a call, the volume may be adjusted using the up and down navigation button on the keypad.

Alternatively the volume may be adjusted from the Sound Setting accessible from the main menu. Select `Sound` -> `Volume Setting` and use the Up and Down navigation buttons to adjust the volume.
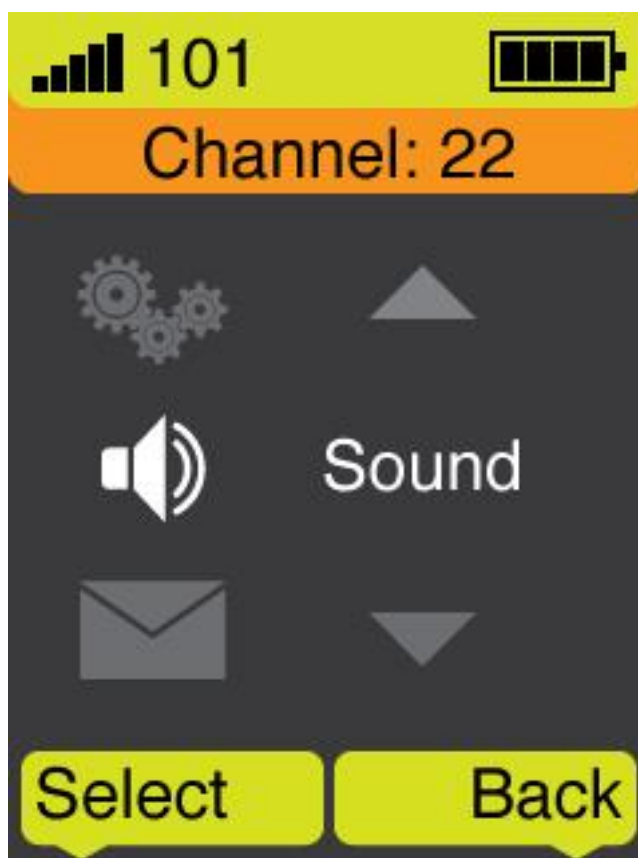
Sound configuration option in the main menu

3.2.2 Brightness

During operation a user may wish to adjust the brightness of the display, or change when the display goes into power-saving mode. Changing screen brightness does not require *Admin* access.

Screen brightness settings are accessed under Settings from the Main Menu.

Settings configuration option in the main menu

Setting	Value	Notes
Backlight	Menu select: 10s, 30s, 60s, Always	Defines how long the backlight will stay on without input, default is 30s
Backlight Brightness	Menu select: 5%, 10%, 20%, 40%, 60%, 80%, 100%	Controls the brightness of the main display, lover values conserve battery, default is 80%

3.3 Automatic Network Configuration

A MinePhone handset will use the last network settings it was configured with to attempt to connect to a network. Once connected to the network, the handset will request updates to its configuration from a TFTP server.

For a newly commissioned phone these settings are:

Setting	Value
SSID	impact-voice
Security	WEP128
WPA Key	impact-voice1

DHCP	Enabled

To assist with commissioning of new phones, it is suggested that sites have a Wireless Access Point configured with the above network settings in a convenient location. This allows for new handsets to be turned on in range of this Access Point (AP) and retrieve the mine's specific network settings.

3.4 Manually Configuring Network Settings

If not using an auto-configuration AP, or if auto-configuration fails then the Network settings may be defined manually from the handset.

To do this, ensure that the phone is started in *Admin* mode as described above. This will give access to the Network configuration menu from within the main menu.

Network configuration option in the main menu

The Network menu provides access to settings and modes specific to wireless connectivity and remote server locations. Selecting a setting will open the current value in a text editable field, the following controls can be used:

- OK to accept the current text and return to the last menu
- Back to backspace and edit the text.
- The * key to toggle between character and numeric entry
- Keypad buttons to enter numbers or cycle through characters
- The # key accesses extended punctuation

3.4.1 AP Config

The AP Config settings define the wireless network the handset will attempt to connect to.

Field	Values	Notes
SSID	String of up to 32 ASCII characters	The phone will scan channels 1,6, and 11 for the best connection on this SSID
Set Security	Menu select: Open, WEP, WPA-TKIP, WPA-AES, WPA2	Only one security model may be defined and should be consistent across all APs
WEP Key	Menu Select: 64 or 128 bit encryption, string of up to 5 or 13 characters respectively	Ignored if security set to Open or WPA
WPA/WPA2 Key	Up to 32 character string	Ignored if security set to Open or WEP
Activate		Select to enable current AP setting changes without requiring a restart. Please wait up to 60 seconds for changes to take effect.

3.4.2 Signal Protocol

The Signal Protocol settings define the locations of servers and protocols that the MinePhone handset uses to communicate.

3.4.2.1 SIP

Session Initiation Protocol settings. These settings are currently loaded only at startup, the phone must be restarted for changes to take effect. The SIP server and Port may be provided from a DHCP server.

field	Values	Notes
SIP User Name	String of up to 50 characters	Name of user as it appears to other devices, traditionally same as Auth User Name
SIP Password	String of up to 50 characters	Password used for authenticating this user on the SIP server
Auth User Name	String of up to 50 characters	Username for authenticating to the SIP server
SIP Server	Server name or IP address	Location of SIP server
SIP Port	String of up to 5 digits	Port for accessing SIP server, default is 5060
Outbound Proxy Mode	Menu select: Enable, Disable	Default is Enabled
Outbound Server	Server name or IP address	This must be set to same as SIP server if not in use
Outbound Port	String of up to 5 digits	This must be set to same as SIP server if not in use

| SIP Register Duration | String of up to 5 digits | Seconds duration between registrations, default is 120 |

3.4.2.2 RTP

Real-time Transport Protocol settings. This settings here are specific to RTP as used by the Push to Talk functionality, and should be consistent across all phones in a fleet. The phone will require a restart to activate changes to these settings.

field	Values	Notes
RTP Port	String of up to 5 digits	Default is 9090
Codec Setting	Menu select: g.711a, g.711mu, g.729a	Default is g.711a
DTMF Mode	Menu select: RFC2833, Inband	Default is RFC2833

3.4.2.3 TFTP

Trivial File Transfer Protocol settings. The phone uses TFTP to attempt to download firmware and configuration settings at startup. A DHCP server can be configured to provide the TFTP server address to the phone.

field	Values	Notes
TFTP Mode	Menu Select: Enable, Disable	Default is Enabled
TFTP Server	Server name or IP address	
TFTP Download		Select to force a TFTP connection and configuration download with current settings

3.4.2.4 NTP

Network Time Protocol settings. This defines a remote server that the phone will attempt to retrieve time and timezone settings from at startup. The RTP server address may be provided by a DHCP server.

field	Values	Notes
NTP Mode	Menu select: Enable, Disable	Default is Enabled
NTP Server	Server name or IP address	

3.4.2.5 Tracker

A Tracker Server is an MST appliance that can provide positioning information of RFID tags and WiFi devices on the network. If enabled, the phone will display its current location on the home screen and allow a phone operator to issue queries for the location of assets in the mine.

field	Values	Notes

Tracker Mode	Menu select: Enable, Disable	Default is Enabled
Tracker Server	Server name or IP address	

3.4.3 Internet Protocol

Allows for the setting of the phone's IP address via either DHCP, or manually.

field	Values	Notes
DHCP	Menu select: Enable, Disable	If enabled other settings defined here are ignored, default is Enabled
IP Address	IP address	IPv4 only
Subnet Mask		
Default Gateway	IP address	
Primary DNS	IP address	
Secondary DNS	IP address	
Activate		Select to enable current IP setting changes without requiring a restart. Please wait up to 60 seconds for changes to take effect.

3.4.4 Advanced Settings

These variables define 802.11 and hardware specific settings. Phones must be restarted for changes to these settings to take effect.

field	Values	Notes
Speed	Menu select: 1, 2, 5.5, 11, 24, 36, 54 Mbps	Faster speeds can improve call quality but will result in greater network usage and lower battery life, default is 11 Mbps
Link Mode	Menu select: Auto, 802.11b, 802.11g	Default is Auto
Network Type	Menu select: AP Mode, Adhoc Mode	Manually change from Adhoc to AP connection, default is AP Mode
DTIM Setting	Number in range 1-16	How often the phone will check the AP for buffered packets, default is 1
Roaming Policy	Menu select: By RSSI, When disconnect	Defines how the phone handles need to transition between APs, default is By RSSI
Channel Select	Number, dash, number (eg 1-11)	Allows limiting channels scanned if network works on restricted channel range, default is 1-11

PTT Status when Keylocked	Menu select: Enabled, Disabled	Defines whether the PTT button will still work if the phone has been keylocked, default is Enabled
Default Settings		Select to restore all Advanced settings to defaults

3.4.5 Net Search

This will display a list of wireless networks the phone has detected along with current signal strength. Selecting one of the listed networks and selecting Save will autofill the SSID value under the AP Config menu to match.

3.5 Manually Configure Phone Settings

Phone Settings are designed to be set and managed from a central server using TFTP configuration files. If these settings must be edited manually, the phone must be started in *Admin* mode.

Settings configuration option in the main menu

3.5.1 Phone Setup

These options control the screen and interface settings. Date and Time settings can be configured using NTP. Changes here will take effect immediately.

field	Values	Notes

Set Date and Time	Adjust using navigation buttons	
Date Format	Menu select: Y/M/D, M/D/Y, D/M/Y	
Time Format	Menu select: 12h, 24h	Default is 12h
Language	Menu select: English, Chinese	Default is English
Auto Lock Key	Menu select: Enable, Disable	Defines whether the keypad will lock after backlight turns off, default is Enabled
Backlight	Menu select: 10s, 30s, 60s, Always	Defines how long the backlight will stay on without input, default is 30s
Backlight Brightness	Menu select: 5%, 10%, 20%, 40%, 60%, 80%, 100%	Controls the brightness of the main display, lover values conserve battery, default is 80%
Time Zone	Menu select: GMT offset	Default is -8 hours
Version	Non editable text	Displays the current hardware, firmware and resource versions in use
ON/OFF Time	Non editable text	Lists the power up and power times of this handset

3.5.2 Restore Factory Config

This option will restore all configuration and network settings to factory default. User will be asked to confirm action, after which changes will be immediate and the phone should be restarted.

4 Maintenance

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The MinePhone is an important communication device that is relied upon for safety and productivity. As such it should be treated with care and regularly maintained.

4.1 Pre-Use Inspection

Before taking a MinePhone into a hazardous environment, it is the responsibility of the user to ensure that the hardware appears fit for use.

1 Check the integrity of the enclosure. Report any issues immediately
2 Check the screen legibility
3 Ensure it is wirelessly connected to a network
4 Ensure it has been assigned a phone extension

4.2 Battery Management

For safety the MinePhone has an inbuilt battery that should only be accessed by a qualified technician. The phone battery has a life of 36 months, after which it is not assured to provide sufficient operational runtime from a full charge.

It is recommended that a register be kept on site indicating the last date of battery change for each device so that the 36 month replacement schedule can be adhered to.

FCC Caution.

§ 15.19 Labelling requirements.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

§ 15.21 Changes or modification warning

Any Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

§ 15.105 Information to the user.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

-Reorient or relocate the receiving antenna.

-Increase the separation between theequipment and receiver.

-Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.

-Consult the dealer or an experienced radio/TV technician for help.

*RF warning for Portable device:

The device has been evaluated to meet general RF exposure requirement. Th e device can be used in portable exposure condition without restriction.

This Class [*] digital apparatus complies with Canadian ICES-003.

Cet appareil numérique de la classe [*] est conforme à la norme NMB-003 du Canada.

RSS-Gen Issue 3 December 2010"&"CNR-Gen 3e éditionDécembre 2010:

 - English: This device complies with Industry Canada licence-exempt RSS standard(s).

 Operation is subject to the following two conditions:

(1) This device may not cause interference, and

 (2) This device must accept any interference, including interference that may cause undesired operation of the device.

 - French: Le présentappareilestconforme aux CNR d'Industrie Canada

 applicables aux appareils radio exempts de licence. L'exploitationestautorisée aux deux conditions

 suivantes: (1) l'appareil ne doit pas produire de brouillage, et   (2) l'utilisateur de l'appareildoit

accepter tout brouillageradioélectriquesubi, mêmesi le   brouillageest susceptible d'encompromettre

le fonctionnement.