Universal Communication Hub UCH-100
Quick Start Guide

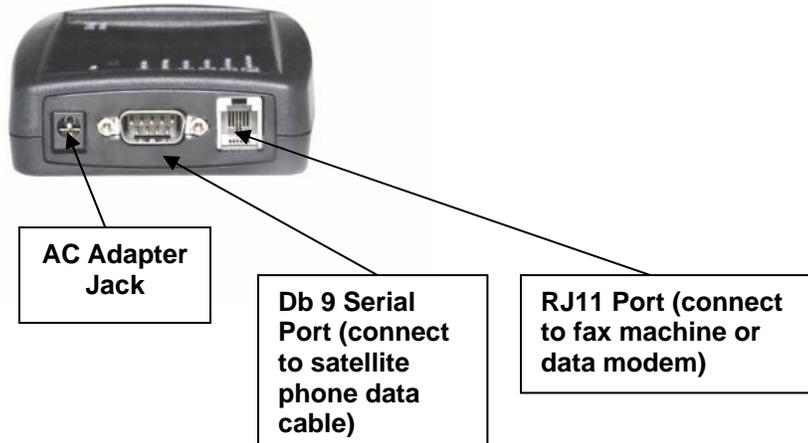

On-Go Inc.
P.O.Box 341726
Bethesda, MD 20817
USA
Tel: +1.301.765.8030
Fax: +1.301.765.8031
www.on-go.com

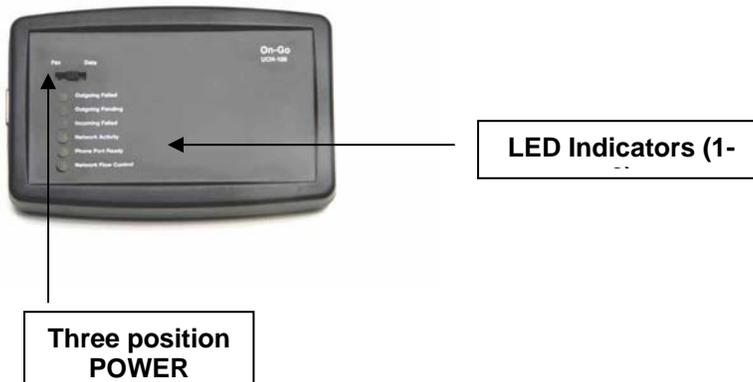**Note: The information in this document applies to UCH-100 product.**

Revision: 1.4
Revision Date: 9/5/2005

Universal Communication Hub (UCH-100) Interface

1. Front View

AC Adapter Jack

Db 9 Serial Port (connect to satellite phone data cable)

RJ11 Port (connect to fax machine or data modem)
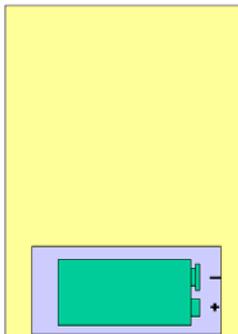
2. Top View

LED Indicators (1-

Three position POWER

3. Battery Orientation (Please ensure proper battery orientation to avoid damaging the unit)

1.1 General Concept

The Universal Communication Hub UCH-100 comes with two ports, Serial (DB9) and Modem (RJ11). It simply provides telephony interface to data/fax devices over digital network.

Equipment such as fax machine, credit card terminal, security alarm, data modem, which all uses RJ11 interface and requires fixed line telephony network, UCH-100 offers an alternative mechanism to utilize these devices in environment where fixed line telephony network is not readily available.

2 Application

2.1 Fax

3 Store and Forward Fax

Store and forward fax means the fax is stored and relayed over data network. This mechanism is typically preferred when

    a. The network bandwidth does not support fax protocol/encoding
    b. The network connectivity is not consistent/reliable. If a fax has to be sent multiple times before it can be successfully delivered, then Store and forward is the more economical method.

To enable the data capability, turn on the unit by pushing the switch to FAX.

3.1.1.1 Notification

The first step of configuration of store-and-forward faxing is to determine what type of notification is to be used.

Notification is used for two purposes:

    c. Indicating the delivery status (Mobile Originated Fax)
    d. Indicating the availability of incoming fax (Mobile Terminated Fax)

Several notification mechanisms are supports:

1. GSM style SMS: the SMS message length should be able to support 100+ characters. The Gateway will send the entire status message in the SMS.
2. Short SMS: for network with shorter SMS message length capability, this mechanism is used to simply "wake up" the Universal Communication Hub and the Universal Communication Hub will attempt to establish a data call to the Gateway to pick up the status
3. Direct Call: For system that does not support SMS, this mechanism is used for the Gateway to place a short data call to wake up the Universal Communication Hub

The appropriate notification mechanism needs to be provisioned at the central Gateway Business Management System interface to allow proper operation.

3.1.1.2 Mobile Originated Fax

Mobile Originated fax allows an off-the-shelf G3 fax machine to be used to send documents over the data network. After connecting the G3 fax machine to the RJ11 modem port, wait for the LED #2 to be ON (indicating modem port is ready), then take the fax offhook, and dial the number in

the format: COUNTRY_CODE + NUMBER. Do not dial any prefix like 00 or 011, the system will handle that automatically.

3.1.1.3   Mobile Terminated Fax

Mobile terminated fax is automatic. When the user subscribes to a service plan, a "MAILBOX" number will be assigned to the unit. When a fax is sent to that MAILBOX number (this number is not the same as the mobile data number), a notification is sent to the unit and the unit will connect to the Gateway to pick up that message. When the message is completely downloaded to the unit, it will simply RING the fax machine and print the message out.

If for some reason the fax is not powered on, out of paper or simply not connected, the user has to use the Message Management to get the fax to be printed. (see LOCAL COMMAND ##4).

3.2   *Data*

To enable the data capability, turn on the unit by pushing the switch to DATA.

Once in data mode, a data modem can be connected to the modem port. The user must dial the EXACT same number that the call is to be established, including the prefixes. The Universal Communication Hub will establish a data call based on that number.

4 Configuration and Status

The functionality of the UCH-100 is dictated by TWO settings, the SLIDE SWITCH setting and the DIP switch setting. The SLIDE switch setting position determines whether UCH-100 will be operating in DATA or FAX mode; this switch can be accessed easily. The DIP switch is not exposed externally and should normally be set by the Service Provider only. The DIP switch position will dictate the personality of the UCH-100.

4.1 LED indication

The UCH-100 has 6 LEDs that indicate the operational status of the unit. The LEDs status are:

| LED	Function	Off	Slow Blink	Fast Blink	On
1	Monitors Upstream link	Inactive	Requesting Upstream link	Connecting to Upstream link	Upstream link established successfully and connected
2	Monitors Phone Modem interface	Ready to place outgoing call on local PSTN	Placing outgoing call on local PSTN	Ready to send fax over upstream link	Accepting fax to be sent over upstream link
3	Monitors Serial interface	Configured for Serial Port use			Link is being flow controlled and transmission speed is automatically being regulated
4	Incoming Fax failed	Inactive	Incoming Fax failed	Not Applicable	Messages for locally attached device (fax) was not able to be delivered. Use the Network-Queue command to restart
5	Outgoing Pending		Outgoing message pending	Outgoing message transferred but awaiting for acknowledgement	
6	Outgoing Failed	No failure, DC power	Outgoing Message Failed DC POWER	Outgoing Message Failed BATTERY POWER	No failure BATTERY

4.2   LOCAL commands

Though the UCH-100 has no built-in keypad, the user can still command UCH-100 to perform certain tasks or retrieve internal status and report. This command is performed through a tone-based telephony device (such as a phone or fax machine). To enter the command, simply take the attached telephony device off hook, enter the key sequence and then hang up.

All the commands start with two "#" keys. The following is the supported commands. The only command user needs to remember is "###".

KEY SEQUENCE	COMMAND
##1	Connectivity command – requesting UCH-100 to connect to Network and/or On-Go server (##1#0# for connecting to On-Go Server, ##1#1# for connecting to the Internet, ##1#2 for disconnecting from the Internet
##2	Reserved
##3	Reserved
##4	Retry incoming command – requesting UCH-100 to retry printing incoming messages (need to have a fax machine attached to the RJ11 phone port)
##5	Prepaid command - ##5 to inquire balance, ##5#cardnumber#pin# to top up
##6	Print status command – requesting UCH-100 to print internal status (need to have a fax machine attached to the RJ11 phone port)
##7	Show Status command – requesting UCH-100 to print internal software version and DIP switch setting, mostly for diagnostic purpose (need to have a fax machine attached to the RJ11 phone port)
##8	Show Config command – requesting UCH-100 to print internal configuration setting, mostly for diagnostic purpose (need to have a fax machine attached to the RJ11 phone port)
##9	SERIAL DOWNLOAD command (only for qualified service provider technical staff)
##0	Reserved for future commands
##*	System Log command – requesting UCH-100 to print system log, mostly for diagnostic purpose (need to have a fax machine attached to the RJ11 phone port)
###	HELP command– requesting UCH-100 to print a command help summary (need to have a fax machine attached to the RJ11 phone port)

4.3   DIP SWITCH SETTINGS
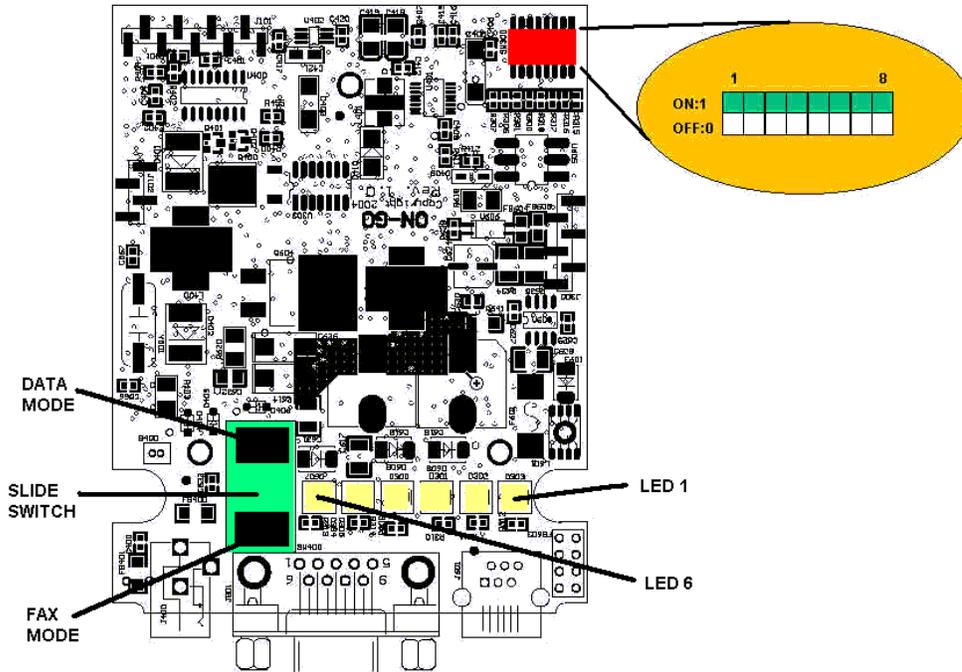
DIP switches are located on the top of the board close to the battery compartment.

FAX MODE:

5	6	7	8	
OFF	OFF	OFF	OFF	IRIDIUM 9505
OFF	OFF	OFF	ON	IRIDIUM 9500
OFF	OFF	ON	OFF	GLOBALSTAR 1600
OFF	OFF	ON	ON	GLOBALSTAR fixed
OFF	ON	OFF	OFF	GLOBALSTAR Celluar
OFF	ON	OFF	ON	IRIDIUM CREW CALLING
OFF	ON	ON	OFF	Aces FG190G
OFF	ON	ON	ON	Thuraya
ON	OFF	OFF	OFF	Reserved
ON	OFF	OFF	ON	AT&T Wireless GPRS
ON	OFF	ON	OFF	T-MOBILE GPRS
ON	OFF	ON	ON	Nextel GPRS

ON	ON	OFF	OFF	Verizon GPRS
ON	ON	OFF	ON	Cingular GPRS
ON	ON	ON	OFF	Sprint GPRS
ON	ON	ON	ON	USER CONFIGURATION

4	
OFF	No Printing
ON	Print Acknowledgement

2	3	
OFF	OFF	Dialtone length 0.75 s
OFF	ON	Dialtone length 1.5 s
ON	OFF	Dialtone length 1.2 s
ON	ON	Dialtone length 0.5 s

1	
ON	Bypass initial connect
OFF	Perform initial connect

DATA MODE:

5	6	7	8	
OFF	OFF	OFF	OFF	IRIDIUM 9505
OFF	OFF	OFF	ON	IRIDIUM 9500
OFF	OFF	ON	OFF	GLOBALSTAR 1600
OFF	OFF	ON	ON	GLOBALSTAR fixed
OFF	ON	OFF	OFF	GLOBALSTAR Celluar
OFF	ON	OFF	ON	Reserved
OFF	ON	ON	OFF	Aces FG190G
OFF	ON	ON	ON	Thuraya
ON	OFF	OFF	OFF	Reserved
ON	OFF	OFF	ON	AT&T Wireless GPRS
ON	OFF	ON	OFF	T-MOBILE GPRS
ON	OFF	ON	ON	Nextel GPRS
ON	ON	OFF	OFF	Verizon GPRS
ON	ON	OFF	ON	Cingular GPRS
ON	ON	ON	OFF	Sprint GPRS
ON	ON	ON	ON	USER CONFIGURATION

4	
ON	Quick Connect
OFF	No Quick Connect

1	2	3	
OFF	OFF	OFF	Auto
OFF	OFF	ON	1200 bps
OFF	ON	OFF	2400 bps
OFF	ON	ON	4800 bps
ON	OFF	OFF	9600 bps
ON	OFF	ON	19200 bps
ON	ON	OFF	38400 bps
ON	ON	ON	

4.4 SERIAL CONFIGURATION UTILITY

In some cases, where preloaded configuration templates do not provide sufficient flexibility, UCH-100 offers EXPERT users a way to enter/modify more specific configuration parameters via the SERIAL port.

There are TWO user definable configuration templates, one is when the power switch is set to FAX mode and one is when power switch is set to DATA mode. To enter the configuration mode, all the DIP switches should be turn to ON. Depending on the position of the power switch, the corresponding configuration template will be used. To activate the user defined configuration template after the change, simply turn OFF the unit, toggle the DIP switch position from ON to OFF and then turn back on the unit.

To connect the computer/terminal to the SERIAL PORT, a NULL MODEM and a GENDER CHANGER must be used, as both end of the connection are in DTE mode.   The setting on the computer/terminal end should be 38400 bps, 8 bit, no parity, no hardware/software flow control.

The users must be familiar with UCH-300 configuration structure. UCH-300 comes with a 16-key keypad. The command input mapped to the keys are:

UCH-300 keypad	UCH-100 command input
0 – 9, *, #	0 – 9, *, #
CONFIG/SELECT	M
NEXT	>
PREVIOUS	<
CANCEL	C

In addition, two other commands are available:

Write out configuraiton	W
Quit	Q

A typical configuration session includes the following steps:

1. TURN OFF the unit
2. SWITCH all DIP switch position to ON.
3. Connect a computer to the SERIAL PORT with NULL modem and GENDER changer in between.
4. TURN ON the unit
5. Select a known template as the baseline by choosing a factory supplied configuration template as the baseline.
6. Make modifications
7. Use 'W' command to write out the configuration in the FLASH. This may take a few minutes.
8. TURN OFF the unit.
9. TOGGLE DIP switch POSITION 1 to OFF position
10. TURN BACK ON the unit.

Since the configuration can drastically change the behavior of the unit, we do not recommend using this feature.

In some cases, where software needs to be updated, UCH-100 provides a field update capability. This capability is only available from APPLICATION software version 1.6.x. This should only be performed by qualified technical staff, otherwise it could cause irreversible damage to the software and can only be repaired by the manufacturer.

In order to activate this, first valid software needs to be obtained. This filed needs to be stored on a computer with XMODEM capability. Then the following instructions need to be followed carefully:

a. Power up the UCH-100 and connect a phone/fax machine to RJ11 connector
b. Connect UCH-100 to the computer with the file via a CROSS-OVER (NULL MODEM) cable
c. The computer needs to set the port to 115,200 baud rate, 8 bit, no parity and hardware (RTS/CTS) flow control
d. Take the phone/fax machine offhook, enter **##9*PIN*** then hangup (PIN is provided only to qualified service provider technical staff)
e. The computer connected to UCH-100 over CROSS OVER serial cable should display instruction:
f. Select appropriate file to download and then activate XMODEM process (for example, from HYPERTERMINAL, select TRANSFER->SEND FILE and enter appropriate file name and choose XMODEM protocol).
g. After successful downloading the file, answer Y or y to start programming the software to FLASH memory chip
h. Repeat this process for various files
i. When completing all the files, power cycle UCH-100 to activate the new software.

Example of how to update OPERATING SYSTEM: (as viewed on HYPERTERMINAL connecting to UCH-100 SERIAL PORT)

Select:
 0:exit
 1:bootloader (armboot.bin)
 2:operating system (kernel.bin)
 3:applcation (romfs.bin)
 4:configuration (cfg.bin)
Download: **2**
...Ready to receive...
                   ← **when seeing this character, should select TRANSFER/SEND FILE/XMODEM protocol**
(after file transfer completes)
Done: 988032 bytes received, write to flash (y/n)? **y**
OPERATING SYSTEM:
UNLOCKING flash: status 0
ERASING flash: status 0
PROGRAMMING flash: status 0
VERIFY flash at 180000: status 0
LOCKING flash: status 0
Select:
 0:exit
 1:bootloader (armboot.bin)
 2:operating system (kernel.bin)
 3:applcation (romfs.bin)

   4:configuration (cfg.bin)

Download: **0**

Bye...

At this time, it is necessary to restart the system for new software to take effect. It is very important to make sure software is loaded properly… otherwise, the system will not come back up again.