BUE-801 & 803
Gateway User Manual
V1.0

Model Name：	BUE-801(803)
SPEC	
Date	2013-3-
Version	1.

Content

1：Introduction(Hardware part)

801(803) Embedded industrial PC(communication gateway) has small size,low consumption and its embedded with Linux OS platform.It has high performance industrial grade powerPC processor inside it, which is 128MB DDR SDRAM,128MB NAND FLASH and 8MB NorFlash.803 has the ability of processing 2 copper ethernet and 2 fiber optic ethernet simultaneously,it has 4 nos of RS232/RS485 serial interfaces,whose transmission rate can reach 115.2kbps,it has also SD card socket which can be plugged into standard industrial grade SD card,in addition,803 has MG323 GSM module.

The 801 and 803 both has redundancy power supply function and dry contact alarm function and they are compatible with both AC and DC power supplies.the Power input is 9V to 48V.They support POWER GNU cross compilation tool and support,which is the guarantee of fast development and application.

The 801 and 803 are both reliable industrial grade PC product,they can be used as both industrial PC and substation communication gateways.They have the ability of 7X24 hours continuous work without any stop.They are most suitable for power automation,industrial control,smart grid,building automation,new energy system and other industrial sites.

The 801 and 803 can offer various memory ways,it's convenient for the customers to develop the self-healing function and system redundancy functions.

1.1 Main Features

Based on Freescale 400Mhz e300 MPC8308 400MHz CPU 16KB I-Cache，16KB D-Cache

128M SDRAM，128M NAND Flash，8MB Nor Flash

1xSD socket，support up to 32GB(803)

2x10/100/1000MBps RJ45 Ethernet port

2x1310 Multi mode 100MBps SFP Fiber Optic interface (803)

4xRS-232/485 Serial interface

1xGSM Module(803)

1x Power on relay output

1x COM port

linux 2.6.29.6 system(Optional)

DIN Mount

801 power consumption less than 8W@12VDC 803 power consumption less than 10W@12VDC

Work temperature：-20-70℃ Work voltage：9-48VDC or 9-48VAC

1.2 Packing list

801（803)Embedded PC(Communication gateway)

(803) with GSM antenna

User Manual

1.3 Optional parts

RJ45-DB9 Debug serial cable

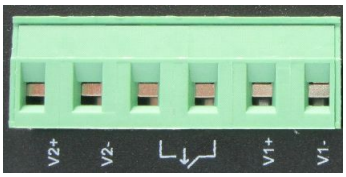
DIN mount bracket

1.4 Product photo

2.Hardware

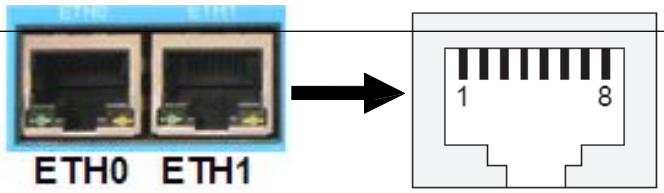
2.1 Power Interface

Power supply has no"+" or "-", 9-48VDC or 9-48VAC，3-4 pins are relay contact alarm for power， they are off when normal work，short circuit when there is no power.

No		
1	Power input 1	
2	Power input 1	
3	Relay contact+	
4	Relay contact-	
5	Power input 2	
6	Power input 2	6 5 4 3 2 1

2.2 Ethernet Interface

801 supports 2 x 10/100/1000MBps BASE-T Ethernet.

No	Definition	
1	TX+	
2	TX-	
3	RX+	
4	TX1+	
5	TX1-	
6	RX-	
7	RX1+	
8	RX1-	

2.3 SFP Fiber Optic Interface(803)

803 supports 2 x 100MBps SFP multi mode fiber optic interface （Single mode is optional）

	(RS232)	
L	TX	
R	RX	

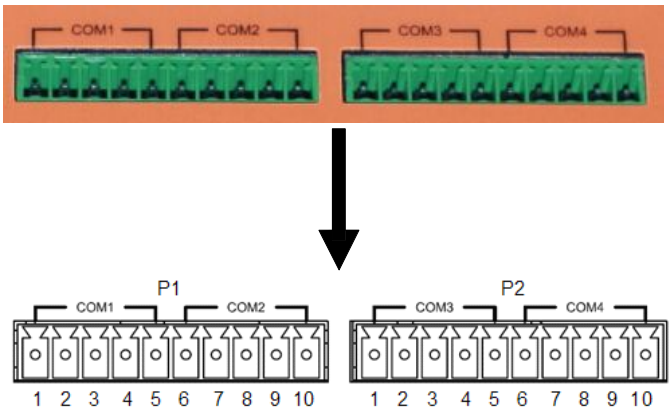
2.4 GSM Antenna(803)

803 has MG323 GSM module，it supports GPRS。MG323 connected with CPU via ttyS5 .

2.5 Serial Interface

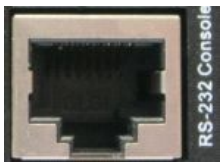
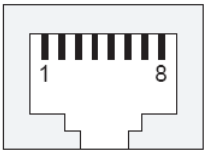
801 has 4 serial ports,COM1 is serial1 6550A， COM2-4 is serial TI16750 .

No	（P1）	Picture
1	UART1 TX	
2	UART1 RX	
3	UART1 A	
4	UART1 B	
5	GND	
6	UART2 TX	
7	UART2 RX	
8	UART2 A	
9	UART2 B	
1	GND	
No	（P2）	
1	UART3 TX	
2	UART3 RX	
3	UART3 A	
4	UART3 B	
5	GND	
6	UART4 TX	
7	UART4 RX	
8	UART4 A	
9	UART4 B	
1	GND	



2.6 Console (Debug) Port（RS232）

801 offers 1 DEBUG serial，the parameter is:115200 N 8 1 。

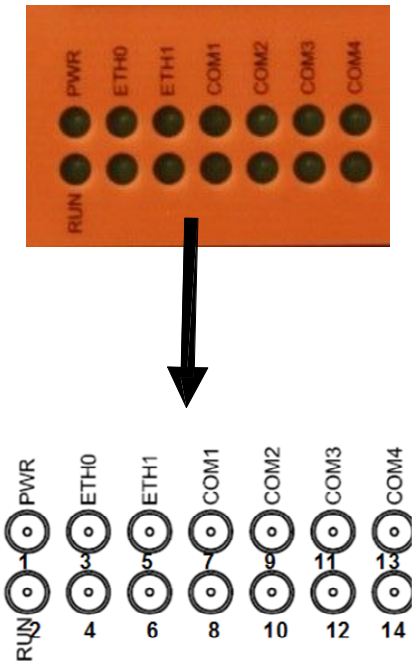
No		
1		 
2	T X	
3	R X	
4	N	
5	G N	
6	N	
7	N	
8	N	

2.7 Reset Button

The reset button is aside of Console port,press it with pin to restore the PC.

3.LED Indicators

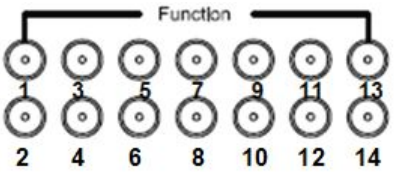
3.1 Power & Ethernet &Serial(801/803)

No		Sta		
1	Power LED on	on	Normal	
		off	No power	
2	Work status LED	Customer can set up the definition of the LED		
3	Eth0 Link	on	Eth0 connected	
		off	Eth0 unconnected	
4	Eth0 Act	on	Eth0 transmit & receive data	
		off	Eth0 no data	
5	Eth1 Link	on	Eth1 connected	
		off	Eth1 unconnected	
6	Eth1 Act	on	Eth1 transmit and receive data	
		off	Eth1 no data	
7	ttyS1 RX	on	ttyS1 serial receive data	
		off	ttyS1 serial no data	
8	ttyS1 TX	on	ttyS1 serial sending data	
		off	ttyS1 not sending data	
9	ttyS2 RX	on	ttyS2 serial receive data	
		off	ttyS2 serial not receiving data	
10	ttyS2 Tx	on	ttyS2 serial sending data	
		off	ttyS2 serial not sending data	
11	ttyS3 RX	on	ttyS3 serial receiving data	

		off	ttyS3 serial not receiving data	

12	ttyS3 TX	on	ttyS3 serial sending data	
		off	ttyS3 serial not sending data	
13	ttyS4 RX	on	ttyS4 serial receiving data	
		off	ttyS4 serial not receiving data	
14	ttyS4 TX	on	ttyS4 serial sending data	
		off	ttyS4 serial not sending data	

3.2 Ethernet & GSM LED(803)

No		Sta	明	明
1	Eth2 LINK	on	ETH2 connected	 
		off	ETH2 unconnected	
2	Eth2 ACT	flashes	ETH2 data sending	
		off	ETH2 data not	
3	Eth3 Link	on	ETH3 connected	
		off	ETH3 unconnected	
4	Eth3 ACT	flashes	ETH3 data send and receive	
		off	ETH3 not send or receive	
5	GSM UART TX	flashes	GSM UART sending data	
		off	GSM UART not sending data	
6	GSM UART RX	flashes	GSM UART receiving data	
		off	GSM UART not receiving data	
7	GSM LED	flash	GSM working	
		off	GSM not working	

4 Operation Guide

Please use Serial cable connect to the serial interface and open the serial debug tool and configure :

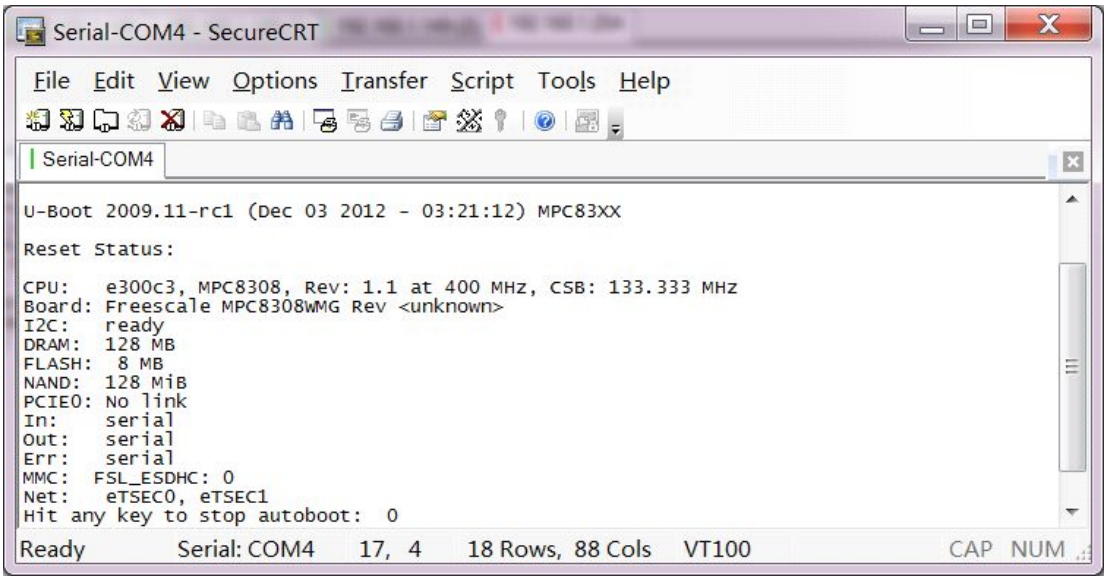
Baud rate:115200

Data bits:8

Parity:none

Stop bits:1 (terminal type vt100)

Power on 801(803) and see the following:



4.1 801(803) Default setting

ETH0 IP address：192.168.1.254

ETH1 IP address：192.168.2.254

ETH2 IP address：192.168.3.254（803） ETH3 IP Address：192.168.4.254

（803） User：root or user(telnet can only use user to log in)

4.2 ttyS1-4 Serial Configuration：

Baud rate：9600bps

Digit 8,No parity ， 1 digit halt1

Flow control：No

Terminal type：vt100

4.3 Power on

When the 801（803）are well connected，power on it，the system will automatically start linux OS， and mount the file system， the user can log in 801 or 803 via ethernet or serial interface,when the inner core finishes the loading,it will initialize the system according to /etc/init tab .Then it will be connected to 801(803) via telnet tool.

Initialized process：/etc/inittab contains initializing configuration，system first excutes /etc/rc.d/rcS,rcS first reads the config of rc.conf and then initialize the service under /etc/rc.d/init.d and mounts to nand flash .

The second can write partition to/MNT/sys and/MNT/user, and run the/MNT/sys/net. Conf, user. Conf, users without modifying the file system can through the two configuration files to load the application or service, or in some users the environment Settings. User application should be on one of these two partitions.

The electrical service has the default startup

1：ftp server(vsftp)

2：ssh ftp server(openssh)

3：telnet server

4：ssh2 telnet server(openssh)

4.4 Serial Mode setting

Serial mode reads via DIO and uses acc dio set serial mode to set up,the user can refer to the user.conf in/mnt/sys to revise the serial mode， the the user wants to change the serial mode in his software,please refer to the software manual of 801/803.

4.5 Adjust the System Time

The user can do the follwing:

Date MMDDhhmmYYYY MM=month(01-12) DD=day(01-31)

Hh=hour

Mm=minute

YYYY=year

Hwclock -w

Write the command to RTC

4.6 Install Cross Compilation Tool Chain

Find a Linux OS PC and OS can be Debian,Fedora,ubuntu and so on. Use root as user to log in，copy the gcc-4.1.78-eglibc-2.5.78-1.tar.gz into the machine

And use tar xvf gcc-4.1.78-eglibc-2.5.78-1.tar.gz to unzip it， find the folder of gcc by”find -name powerpc-e300c3-linux-gnu-gcc”and add the folder toPATH，

Normally revise /etc/profile of PATH,then restart the computer,and verify if PATH is effective by powerpc-e300c3-linux-gnu-gcc -v.If the gcc indicates success,you can start to develop the software.

4.7 Inside Software List

addgroup	chgrp	cttyhack	df
gzip	ls	mount	ps
run-parts	stty	vi	adduser
chmod	date	dmesg	fgrep
hostname	mkdir	mv	pwd
sed	su	umount	watch
ash	chown	dd	echo
getopt	kill	mknod	netstat
rm	sh	sync	uname
zcat	busybox	cp	delgroup
ed	grep	ln	mktemp
rmdir	sleep	tar	uncompre
cat	cpio	deluser	egrep
gunzip	login	more	ping
rpm	stat	touch	usleep
acc_dio	fdisk	hdparm	ifup
klogd	losetup	mkswap	pivot_roo
route	sulogin	syslogd	arp
freeramdisk	hwclock	init	ldconfig
lsmod	modprobe	poweroff	setconsol
swapoff	udhcpc	depmod	getty
ifconfig	insmod	loadkmap	man
nameif	reboot	sln	swapon

vcon	devfs	hal	ifdo
fig ip	d	t	wn
rmmod	start-stop-daemon	sysctl	watchdog
chvt	dpk	ftpget	killall
microco	g	sftp	strings
m tty	prin	cksum	dpkg-
ftpput	tf	minico	deb
slog	xarg	m	readlin
in	s	tzselec	k
ar	killal	t dtc	xminico
la	l5	realpa	m
st	tail	th yes	gencat
te	clea	getcon	sort
unix2dos	awk	convert-dtsv0	dumpleases
geten	loadfo	noh	reset
t	nt test	up	basena
sprof	env	unzi	me
cront	resize	p	locale
ab od	bunzip	hea	tftp
upti	2	d	expr
me	localed	ssh	rpcg
hexdu	ef tftpd	cut	en
mp	fdform	open	bzca
ssh-	at	vt	t

iconv	logname	patch	runscript
ssh-keygen	top	which	cal
dirname	free	id	md5sum
pgrep	scp	ssh-keyscan	tr
who	catchsegv	dos2unix	ftdump
install	mesg	pkill	seq
startx	traceroute	whoami	chpasswd
chroot	crond	dhcprelay	ethtool
fbset	inetd	openssl	rdate
rpcinfo	sshd	telnetd	udhcpd
vsftpd	zdump	zic	

5.Auxilary

5.1 Console port cable