

CORNET Microsystem ED78SPlus Data Logging/recording function description and user guide:

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Features:

- 1) Sending recorded data to PC computer by using USB to serial interface
- 2) 1000 data storage point memory for logging/recording measured RF signal level
- 3) Programmable time interval (0.5sec, 1sec, 10 sec, 30 sec, 1min, and 3min.(or 2min. depend on the revision)) for data recording. Up to 50 hours of recording time when using 3min. time interval.
- 4) The Maximum signal level will be recorded within each time interval
- 5) Recorded data is in Excel csv format, can be saved to PC computer and used with Excel spread sheet for data analysis, chart, and documentation purpose.
- 6) Can be powered by external USB Mobile Battery Pack for long data logging session.

Setup and enable the Data Logging/recording function in ED78SPlus and PC computer (*Note: the ED88TPlus uses either Holtek HT42B534 or WCH CH340 USB-to-Serial bridge chip. Use the CH340 driver when the LCD screen of your meter shown (CH340) when it is powered on):

- 1) If your meter uses HT42B534 USB to Serial chip, Download and install the Holtek USB-to-serial chip (HT42B534) software driver for Windows, [USBBridgeSetup_CA.zip](http://www.holtek.com/productdetail/-/vg/42B534-x) from Holtek website (<http://www.holtek.com/productdetail/-/vg/42B534-x>) in your PC computer with correct Windows version. The driver supports Windows7, and later version of Windows operation system. The Mac-OS/Linux/Android are also supported without the need of software driver
- 2) If your meter uses CH340 USB to Serial chip, Download and install WCH USB to serial chip (CH340)software driver for Windows from WCH.cn website (wch.cn/downloads/CH341SER_ZIP.html) instead. The CH340 chip driver supports all Windows versions, Linux, apple Mac-OS and Android devices.

- 3) Download and install the free Teraterm serial terminal software from <http://tssh2.osdn.jp/> in your PC computer, you will use the Teraterm serial interface mode as a host program to connect your PC computer to ED78SPlus.
- 4) After the Holtek HT42B534 driver and Teraterm terminal program is successfully installed in your PC computer, connect the ED78SPlus to the PC computer by using microUSB to USB cable. The ED78SPlus will be powered by the PC through USB cable (turn off the power switch on the ED78SPlus to save the battery inside ED78SPlus, the power switch is used to control the 9V battery inside ED78SPlus only). Run the Teraterm program, select the correct serial port devices detected by Teraterm to connect it to ED78SPlus's internal Holtek HT42B534 USB to serial UART bridge chip. (use Teraterm's setup/serial port command to setup the Teraterm serial port data rate to 9600, 8bit, no parity, 1 stop). If you do not find the Holtek USB to UART Bridge device in the Teraterm, you can use the Window's device manager in control panel/system and security/ to check the COM port# assigned by Windows. The ED78SPlus is setup to send the measured data to USB serial port automatically after powered on. The data is automatically recorded in the internal data Buffer of ED78SPlus all the time. You should be able to see the serial data sent by ED78SPlus in the Teraterm data window after selecting the serial mode with proper serial data rate in Teraterm.
- 5) Use the Log function in the Teraterm to Log and save the received data from ED78SPlus to the Log file in PC by using the File/Log command in the Teraterm. Teraterm will save/Log the received data in the file name specified by you. You can rename the saved Logged/saved file (teraterm.log by default) to xxx.csv and open it with Excel spread sheet program for analysis/chart and documentation purpose.
- 6) You can halt the ED78SPlus Data Logging/recording by HOLD button. Release the HOLD mode will continue the automatically data recording.
- 7) The measured data is recorded in the internal data Buffer automatically all the time (when the meter is not is in HOLD mode). 1000 data storage in the data Buffer is available to store the data, then it will wrap around and overwrite the old data when the data Buffer is full. 1000 previous measured data is stored in the data Buffer all the time.
- 8) Currently, the RF mode with dBm, or mw/m2 unit is supported for Data Loggin/recording only. The time interval is set to 0.5sec by default (you can change it).

Data Logging/Recording modes in ED78SPlus:

- 1) There are 3 data output modes in ED78SPlus Data Logging/recording function. (a) Real time mode (b) Buffer output mode (c) Flashmem output mode.
- 2) Six programmable recording time interval for Logging/recording is available. (0.5sec. 1 sec. 10 sec. 30 sec. 1 min. and 3 min.(or 2min. depend on the revision of the meter).) Measured data is recorded to the internal data Buffer by time interval, the Maximum signal level within each time interval is recorded and saved to the internal data Buffer. 1000 data storage location in the data Buffer is available, therefore if the time interval is 0.5 sec. you can record up to 500 second of data. It is possible to store 50 Hours of data if the time interval is set to 3 minutes. You can turn off the automatic data logging/recording by setting the time interval to "OFF"
- 3) In Real time mode, the meter output the real time measured data to serial port each time interval. Both signal level and frequency of the data is output to serial port in Real-time mode.
- 4) In Buffer output mode, the 1000 recorded data in data Buffer is sent to serial port. (only signal level is output to the serial port in Buffer output mode). The output data is sent from the current data first then the previous 1000 data in backward sequence.

The data Buffer is high speed SRAM memory, the data in data Buffer will get lost when the meter is power off. You can save the data Buffer data to Flash memory first if you want to keep the recorded data in the data Buffer after power off the meter.

- 5) In Flashmem output mode, the 1000 saved data in the internal Flash memory will be sent out to serial port. The output data is sent from current data first then the previous 1000 data in backward sequence. The recorded data in Flashmem will not get lost after meter power off.
- 6) The Typical application sequence for Data Logging/recording in the field is: power-on meter-->measure the signal around area-->get into Logger setup mode-->save the data in Buffer to Flashmem--> power off the meter--> Go back to office--> connect the MicroUSB cable from ED78SPlus to PC computer--> run Teraterm program in PC--> enable the file Log function in Teraterm--> get into meter's Logger setup mode--> select the Flashmem output mode--> start sending data to PC--> change the Logged file name from xxx.log in PC to xxx.csv --> open the renamed logged file in Excel spread sheet program using .csv format--> analyze and chart the data in Excel spread sheet.

ED78SPlus Data Logger/Recording setup command:

- 1) Push and hold the "->" key and click the "MODE" key then release the -> key to get into the ED78SPlus Logger setup mode, use the "->" key to move the cursor, use the "<" key to activate the selection.
- 2) Logger Setup menu:
(EXIT) Logger Setup --- exit the setup mode
 - 1) Data2Send -- select data from Realtime, or data Buffer or Flashmem to serial port
 - 2) Send data -- start sending the 1000 logged data from selected source to serial port, It might take a while, please wait until it is finished
 - 3) Logg time -- change the time interval of recording, (0.5 sec, 1 sec, 10 sec, 30 sec, 1 min, 3 min. (or 2min. depend on the revision of the meter). and OFF)
 - 4) Clear buffer – clear data Buffer to all zero
 - 5) Save config -- save the new Logger setup/configuration
 - 6) RESET config – RESET the Logger setup/configuration to default
 - 7) Save to Flashmem --- save the recorded data in data Buffer to Flash memory, so data will not get lost after meter power off

Note1: You can have both 1000 new data stored in data Buffer and 1000 old data already stored in Flashmem at the same time, each with its own recording time interval. You do not have to save the new data in the data Buffer to Flashmem (overwrite the data already in Flashmem) if you can connect the ED78SPlus to PC computer's USB port without losing the power of meter, (use the internal 9v battery) and then send both the data in Buffer and in Flashmem to PC computer for analysis. This way you can effectively have 2000 data storage for Logging/recording.

Note2: Check your MicroUSB cable to make sure it is the "sync cable" for PC communication (not battery charging only cable), some of the MicroUSB cable included in USB Mobile Battery Pack is only for battery charging only, not for communication to PC computer.

Note3: Check your USB Mobile Battery Pack to see if it will power down by itself when the output current is lower than some number. Avoid the older type of USB Mobile Battery Pack which is designed for charging the mobile phone internal battery and it will auto power down itself when the charging is done or output current is lower to some threshold. Use a USB Mobile Battery Pack (ex. PNY AD5200) which will "not" auto power down for ED78SPlus for long data logging session. (the typical current consumption of ED78SPlus is 55mA in RF mode)

Note4: In Logger Setup menu, after changing the new Logg time. you need to select "EXIT" from the Logger Setup menu first to activate the new configuration then back to the Logg Setup menu again (Push and hold the "->" key and click the "MODE" key then release the -> key) then use the "Save config" to save the configuration data to memory.

Note5: In Realtime mode, when the meter is sending the serial data to USB-to-serial chip in the end of each time interval, the audio speaker of the meter will generate "chipping" noise. Setting the Data2Send in Logger Setup to "buffer" can disable the "chipping" noise. (the meter default is in Realtime mode).

Working with Android smart phone by using USB OTG serial cable :

- Download and install Android app " USB Serial Console" from google play website,
- Connect USB OTG serial cable or USB OTG adaptor to Android smart phone and ED78Plus USB connector. Set Android phone to "flymode".
- Run " USB Serial Console", setup serial port data rate to (9600, 8bit, no parity, 1 stop)
- Save the logged data to file by using "SAVE" in " USB Serial Console"

Working with Apple Mac-OS computer :

-For meter with CH340 serial to USB chip: Download and install USB to serial chip (CH340)software driver for Mac-OS and install it in your Mac-OS computer. (make sure you got the correct version of driver if you are using older version of Mac-OS). the meter serial port name is /dev/tty.wchusbserialxxxx You can use the "screen" or "minicom" command to talk to it.

-For meter with HT42B534 serial to USB chip: software driver is not required for Mac-OS computer. the meter serial port name is /dev/tty.usbmodem0001. You can use the "screen" or "minicom" command to talk to it.

- 1)Connect the ED78SPlus to Mac computer USB port using MicroUSB to USB communication cable or "Sync Cable" (not battery charging only cable),
- 2)In Mac "Terminal" window, type "screen /dev/tty.usbmodem0001 9600" (for HT42B534 chip version) or "screen /dev/tty.wchusbserialxxxx 9600" (for CH340 chip version) you will see the data sent from ED78Plus to Mac computer
- 3) you can also use the free "CoolTerm" serial terminal program for Mac-OS to save the logged data from ED78SPlus, just scan and select the serial device as /dev/tty.usbmodem0001 or /dev/tty.wchusbserialxxxx" and the baud rate 9600 in the CoolTerm setup. then "connect" command in the CoolTerm to talk to serial device (the ED78SPlus) just google search "CoolTerm for Mac" to get the CoolTerm program.