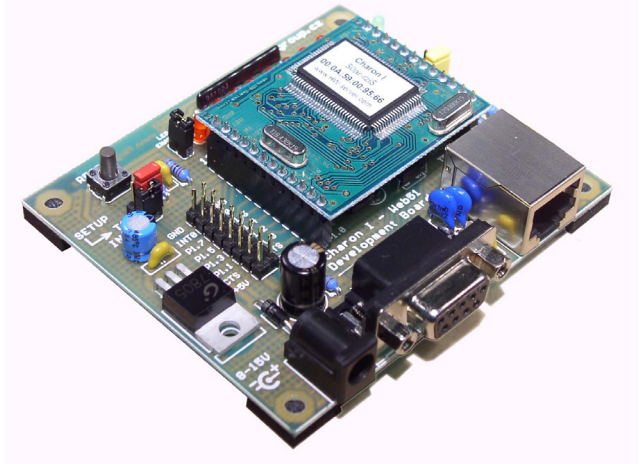


# Charon I Development Kit Starting guide

How to connect DK, SETUP module firmware and first steps to use Charon I module..



## Connecting the power supply

You need an unregulated power supply matching your local mains. It should supply **DC 9-15V, 150 mA** minimum, on a standard 2.1 mm barrel connector. Power polarity is specified on the board. ( GND - (o- Vcc)



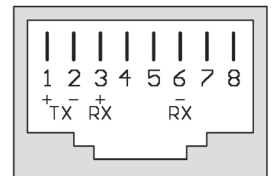
## RS232 and Ethernet cabling

A straight through serial communication cable with a DB-9 female on one end and a DB-9 male connector on the other – simply extension DB9 RS-232 cable. The available serial COM port on the PC might require a DB-25 connector, in which case a DB-9 to DB-25 serial connector adapter is additionally needed.

PC RS232 Port Cannon 9 - Male	
Pin	Signal
1 <-	CD
2 <-	RxD
3 ->	TxD
4 ->	DTR
5 --	GND
6 <-	DSR
7 ->	RTS
8 <-	CTS
9 <-	RI

RS232 DK Port Cannon 9 - Female	
Pin	Signal
1 <->	
2 ->	TxD
3 <-	RxD
4	
5 --	GND
6	
7 <-	CTS
8 ->	RTS
9 <->	

For the ethernet connection use straight-through twisted pair cable together with 10 Base-T hub or switch. If you don't get a hub or switch, and cable directly with PC network card, use a twisted pair cross cable.



## Connecting the power supply

Check the jumpers :

- PSEN jumper – **NOT** equipped
- LED ENABLE jumper – equipped
- **SETUP** (T0) – **equipped**
- INT0 – unnecessary

Remove the **LED ENABLE** jumper to reduce power consumption and turn the leds connected to P1.0 – P1.7 off.

Start the terminal emulation program (Hyper terminal or TeraTerm for example) at 9600 baud no parity, 8 data bits, and 1 stop bit (**9600 8N1**). Disable hardware (RTS/CTS) and software (XON/XOFF) flow control (**Flow : NONE**).

**Connect the power supply (9 -15V DC) to the barrel connector.**

The green POWER led have to turn on, there will be first SETUP screen on your terminal program. Press enter to end off the options list and reach the prompt line „WEB51>“ with the cursor. For IP address of the Charon I module enter the „192.168.6.15“ sequence. Enter empty line, to list the options on two screens once again. There will be use new specified IP address in the list.

#### Notes :

- For HELP use „I?“ or „&B?“
- The backspace key works, but depends on the used RS-232 terminal.
- All setup parameters are described in the green “RS-232 Ethernet Converter” datasheet. Charon I module datasheet doesn’t contain this data, because there can be another firmware loaded in the Charon I modules than this RS-232 Converter application. (SNMP agent, I/O Controller lite, ...)

After setting all necessary parameters (IP, MASK, GW at least) remove the SETUP jumper on the development board and reset the SETUP by the “R: Reboot” command, or RESET button on the board.

## Networking

Now, try to connect to IP address (specified in the SETUP mode) using any Telnet program.

Everything sent to the IP address over Telnet program is transmitted from the development kit serial port with using SETUP specified serial port parameters (Baudrate, bits, parity..).

During open TCP/IP connection (there is fixed timeout 50s) all data from serial port will be transmitted to the TCP/IP client. In passive mode (Out IP Setup, S = 0.0.0.0), all incoming data during closed TCP/IP connection are saved in the internal buffer (up to 32 kb) and if “E: Erase buffer on : None”, stored data are transmitted to the ethernet after opening TCP/IP connection.

Enabling NVT by “v: NetworkVirtualTerminal On” with use the command “v1” you can use almost all RFC2217 NVT commands (change baudrate or 9. communication bit over the TCP/IP connection..) and control directly I/O pins P1.0 – P1.7. With NVT enable, SETUP allow you to set the power up init value for this 8. bit port by “#A” command.

Go back to the SETUP mode, SET “v1” and “#A254” and reset the kit. Because of 254 dec value, only led on P1.0 will turn on, after resetting the board.

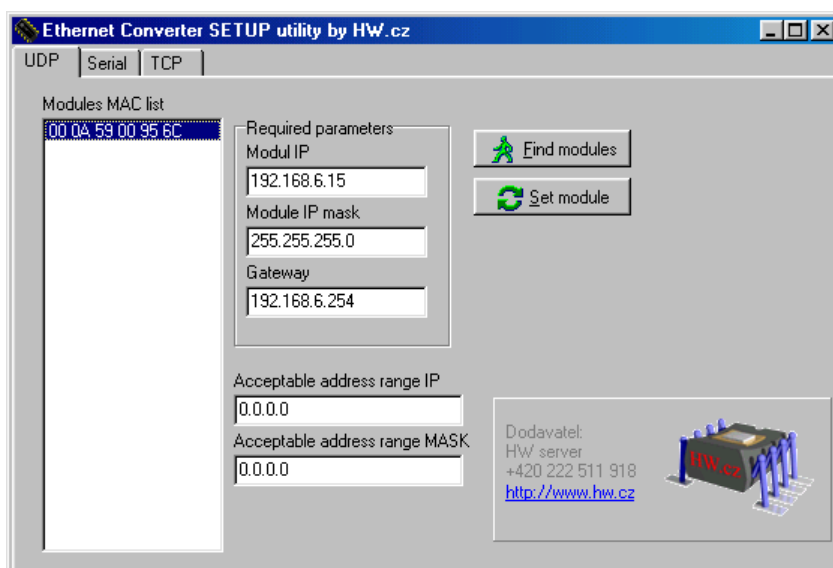
**Using NVT :** Open raw TCP/IP connection (for example putty.exe program) and send „FF F6“ hex sequence. In the TeraTerm use Alt + T (Control / Are You There). The Charon I will answer “<WEB51 HW 6.0 SW 2.4 SN 00954C #01>” – it’s NVT device report. SN means the last 3 bytes of the device’s MAC address.

Send the “FF FA 2C 33 AA F0 FF” sequence to the open raw TCP/IP connection and the Charon I (if NVT is enabled) sets the AA hex value on the P1 port. The 00 turns on all leds, FF turns off all leds. With really raw TCP/IP connection, this command are not sent to the serial port of the Development Kit.

## UDP & TCP/IP remote SETUP

Three configuration (SETUP) methods are available:

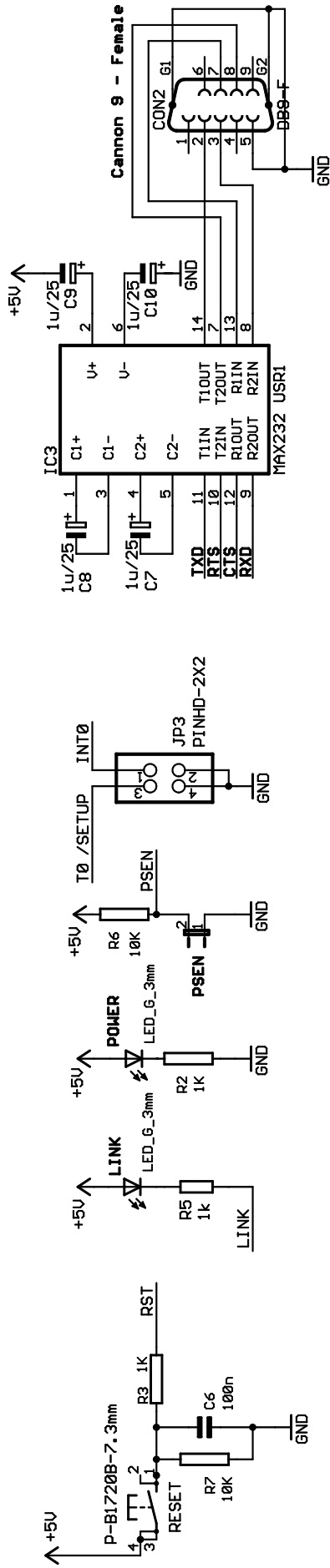
- **Locally over a RS232 serial line.** All parameters can be configured using a textual setup menu on fixed 9600 8N1.
- **Over the network, using an UDP application “Ethernet Converter SETUP utility” for Windows** (download it from [www.HWgroup.cz](http://www.HWgroup.cz)). Basic network parameters are configurable. **Limited to a local Ethernet segment only.**
- **Over the network using TCP** (everything can be configured and the device can be anywhere; however, the netmask, GW and IP address must be pre-configured and cannot be changed in this mode). Remote configuration over TCP/IP has to be enabled through a special option accessible in the RS232 SETUP. Reboot device to load setted paramethers.



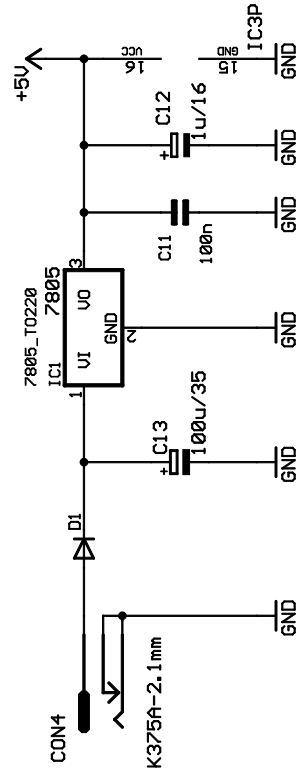
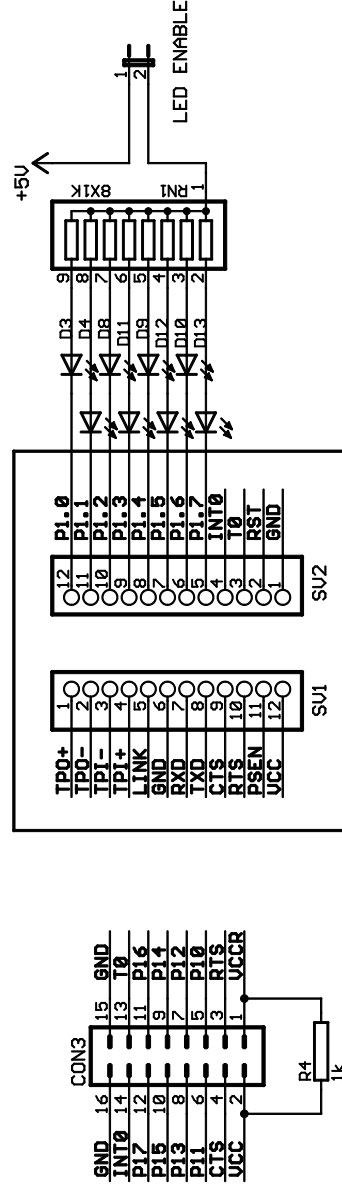
## Recommended literature and references

- **Programming Ethernet Applications (21 pages)**  
Detailed how-to for Ethernet application programming. Documented examples of the source codes supplied with our devices. Description of the NVT and the TEA algorithms.
- **Charon I - datasheet (12 pages)**  
Datasheet for the Charon I web51 based modules. Contains in particular the electrical parameters, connector descriptions, programming procedures, etc. Circuit diagram is available for download at our website.  
Detailed informations for every application (for example the RS232-Ethernet Converter) is not part of this datasheet.
- **RS232 - Ethernet Converter**
  - Physical description of the "boxed" converter.
  - Details and the SETUP description of the "RS232-Ethernet Converter" application available for the "Charon I" modules as well.
- WWW pages of the **HW Group** about final products: [www.HWgroup.cz](http://www.HWgroup.cz)
- For professionals and developers: **Web51 Project** - <http://Web51.HW-server.com>

# Charon I Development Kit



## Charon I



Charon I module Development Board

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