



DLC 0080



USER MANUAL



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WARNING :

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1 HARDWARE CHARACTERISTICS

This chapter describes the hardware characteristics of “DLC_0080” :

1.1 Electric Characteristics

ELECTRIC CHARACTERISTICS	
Power supply voltage	24 Vdc +/- 10 %
Maximum Permitted Power Supply	27 Vdc
Current Consumption	Under 50 mA without loads [Power Supply = 24 Vdc]
Microprocessor	Hitachi H8
Digital Inputs	x
Analog Inputs	x
Digital Outputs	x
Analog Outputs	8 analog outputs from -10 to +10 V with 12 bit resolution [0 ... 4095]
Serial Lines	1 Serial Line : RS_422 / RS_485 Supports the communication protocols : KERNEL / KNP / EXPA and MODBUS RTU
Leds	2 Leds for communication signalling
Addressing	8 Dip-switches (of which only 5 for the addressing from 1 to 31)

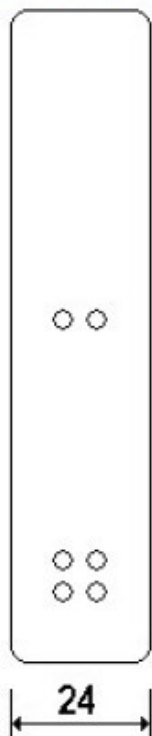
1.2 Mechanics Characteristics

MECHANICS CHARACTERISTICS	
Temperature Range	From -10 ^C to +70^C
Humidity Range	From 10 % to 90 % (non-condensing)
Operating Atmosphere	Without corrosive gas
Noise Immunity	According to rules in force
Fixing System	On din rail
Weight	130 g
Keyboard	No Keyboard
Display	No Display

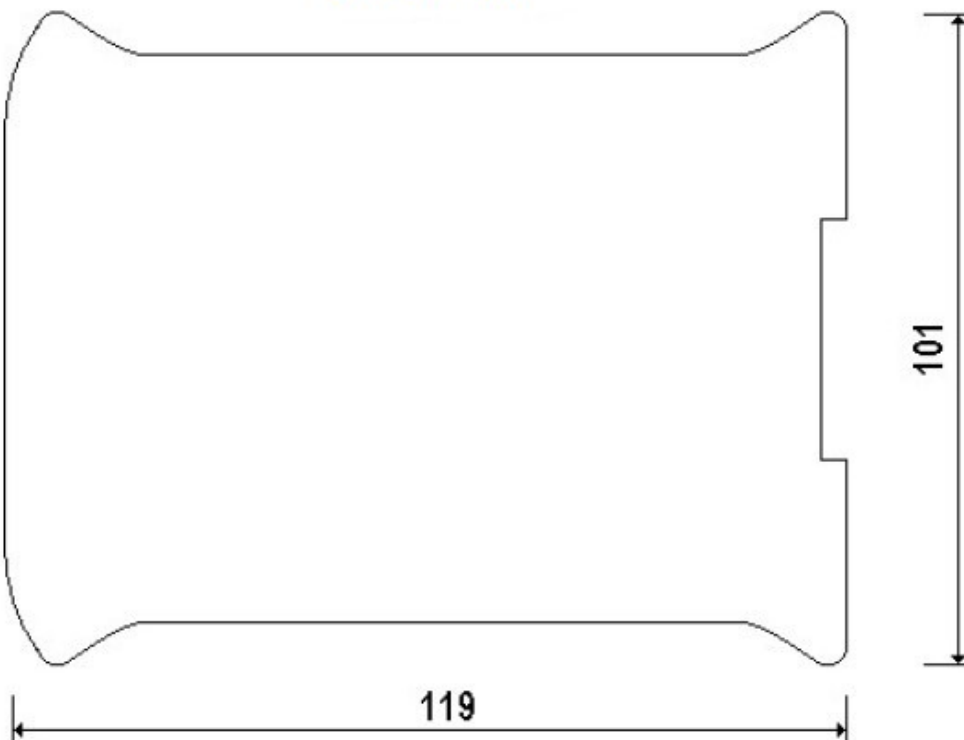
1.3 Dimensions

Front View 24x101 mm, Depth 119 mm

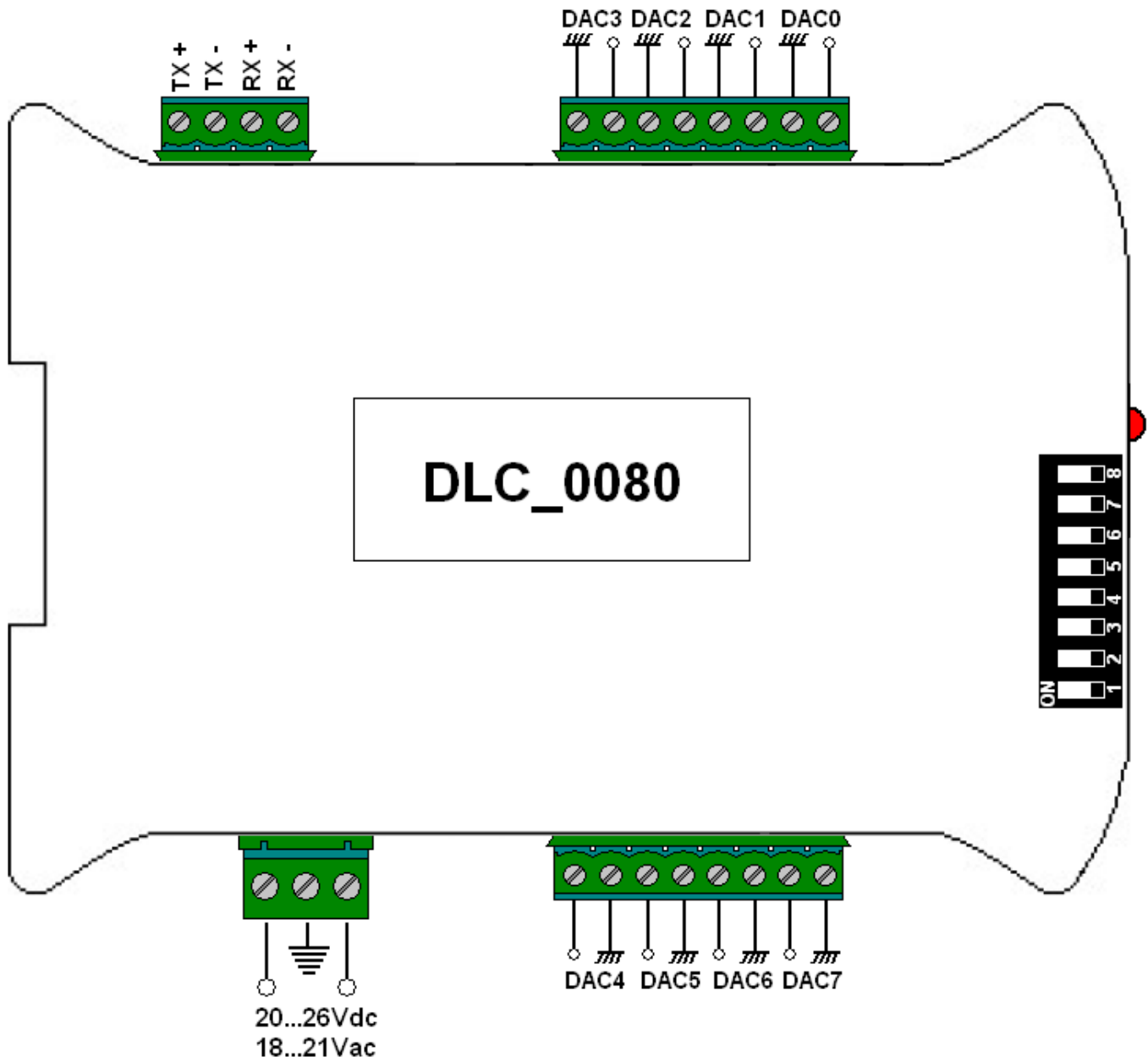
FRONT VIEW



SIDE VIEW



1.4 I/O Connections

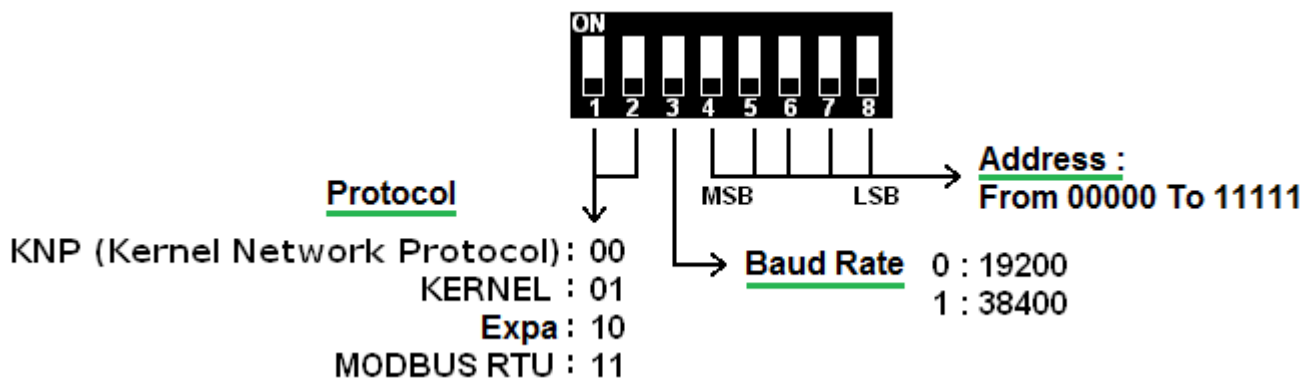


2 GENERAL NOTES

To have a complete idea about the DLC_0080 use, and about how work with this device, is necessary give some general notes. The DLC_0080 is an expansion module which can be connected to Kernel Sistemi devices (or even other devices) and its have eight analog 12 bits outputs from -10 V to +10 V. The DLC_0080 expansion read the 12 bits value of each analog output on eight different DATA MEMORY on the internal memory map. Furthermore with a 5 bits addressing system, is possible give at DLC_0080 a node address from 1 to 31.

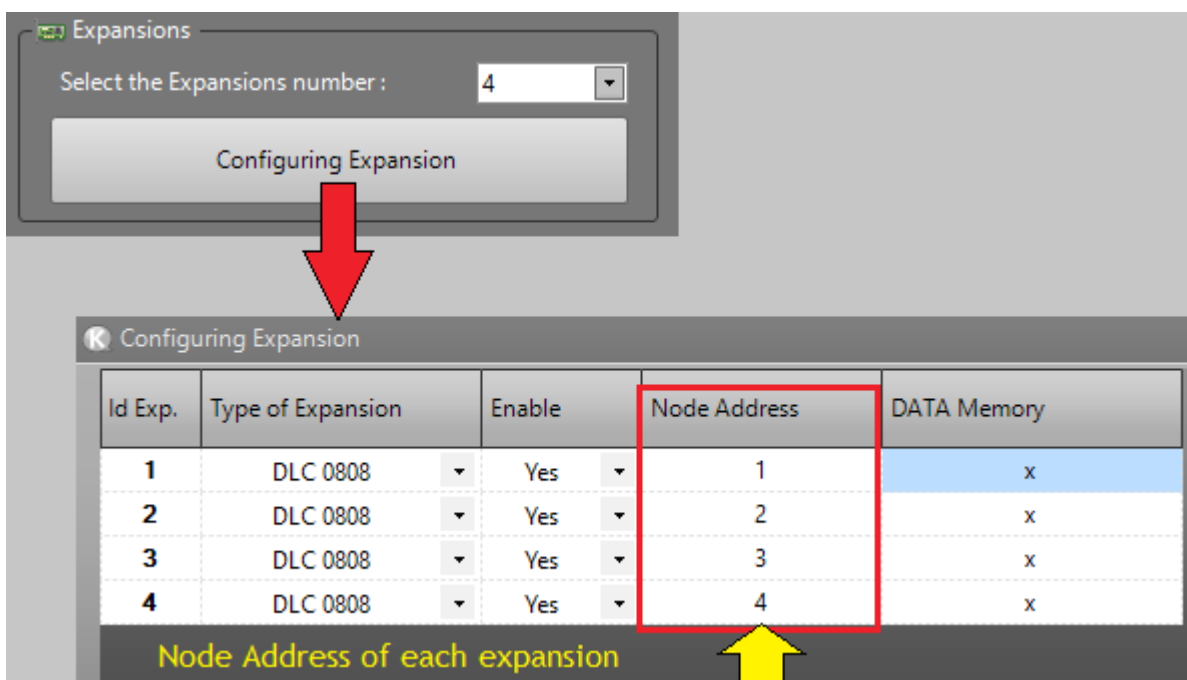
2.1 Addressing

You can configure for each DLC_0080 its own node address from 1 (00001) to 31 (11111), baud rate and protocol, through the 8 suitable dip-switches (see hardware characteristics and the following figure) :



In the application program of the Kernel Sistemi PLC, you need to set the NUMBER and the TYPE of EXPANSIONS that are connected. To do this it's necessary to open the project and go into the menu "Project Options" >> table "Serials" to set the number of expansions; click on the button "Configuring Expansion" to choose the type of expansions connected.

IMPORTANT : the node address of each expansion set with the dip-switches must MATCH the one assigned automatically by the application program of the Kernel Sistemi PLC [see figure below] :



2.2 Communication

The serial communication occurs via RS 422 or RS 485. It will be necessary to set the protocol KNP MASTER 19200, N, 8, 1, on the PLC Kernel Sistemi.

With the dip-switches 1 and 2 you select the COMMUNICATION PROTOCOL and with the dip-switch 3 you choose the BAUD RATE; according to the protocol set with the dip-switches, you need to select the corresponding protocol (within the PLC project) in the COM used between PLC and expansions. Also in this case it's necessary to open the PLC project and go to the menu "Project Options" >> table "Serials" to select the correct protocol :

DIP-SWITCH 1 and 2	- Project Options >> "Serials" of the PLC project
00 = KNP (Kernel Network Protocol)	- KNP MASTER
01 = KERNEL Protocol	- KERNEL
10 = EXPA Protocol	- x
11 = MODBUS RTU Protocol	- RTU MASTER

Also the Baud Rate set with the dip-switches must obviously coincide with the one selected in the "Project Options" >> table "Serials" in the COM used between PLC and expansions.

ATTENTION

The "Expa" protocol (switch code "10") serves for the connection of the expansion with the STANDARD PLC!
For more clarification on this particular protocol, directly consult the technical office of the KERNEL Sistemi s.r.l.

3 Memory

DLC_0080 has a series of internal memory locations, anyone at 16 bits (1 WORD). These locations are intended to contain the variables of the program in execution and are named by DATA_00 to DATA_07. Each DATA in this table is a 16 bits DATA, each DATA which isn't in this table don't exists.

Operand	Description	
DATA.00 (Modbus - 40001)	Value Output DAC 0 Instantaneous bits value of the analog output 0	WO
DATA.01 (Modbus - 40002)	Value Output DAC 1 Instantaneous bits value of the analog output 1	WO
DATA.02 (Modbus - 40003)	Value Output DAC 2 Instantaneous bits value of the analog output 2	WO
DATA.03 (Modbus - 40004)	Value Output DAC 3 Instantaneous bits value of the analog output 3	WO
DATA.04 (Modbus - 40005)	Value Output DAC 4 Instantaneous bits value of the analog output 4	WO
DATA.05 (Modbus - 40006)	Value Output DAC 5 Instantaneous bits value of the analog output 5	WO
DATA.06 (Modbus - 40007)	Value Output DAC 6 Instantaneous bits value of the analog output 6	WO
DATA.07 (Modbus - 40008)	Value Output DAC 7 Instantaneous bits value of the analog output 7	WO

Legend	
Comment	Icon
Write Only DATA	WO
Read Only DATA	RO
Read / Write DATA	WR

4 CONTACTS

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