



AIS spol. s r.o.

Palackého tř. 258/73, 612 00 BRNO

Established 1990

Technical specification

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HATEL



HATEL serves as communication gateway. The device is equipped with two serial channels, serial service port and ETHERNET channel 10/100Mbps.

Technical parameters:

- | | |
|---------------------------------|---|
| ▪ dimensions | 168 x 118 x 54 mm |
| ▪ installation | DIN rail 35mm or wall mount |
| ▪ operating temperature | -5 to +50 °C |
| ▪ protection | IP 30 |
| ▪ power supply | 24V DC (20 to 30V), 0 level is grounded |
| ▪ consumption | max. 3VA |
| ▪ serial interfaces COM1, 2 | RS 232 (TxD, RxD, GND, RTS, CTS) |
| ▪ service serial interface COM0 | RS 232 (TxD, RxD, GND, RTS, CTS) |
| ▪ Ethernet | RJ45 |
| ▪ Processor | DS80C400 |
| ▪ RAM | 1 MB |
| ▪ Flash memory | 1 MB |

Connectors and interfaces:

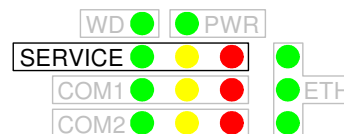
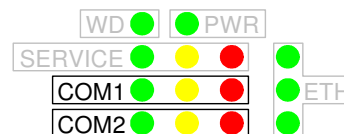
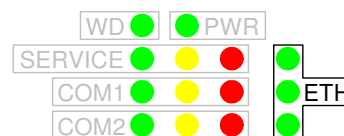
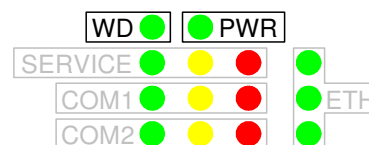
PWR :	screw terminals – power supply voltage
COM1 :	DB-9 M connector – serial communication interface
COM2 :	DB-9 M connector – serial communication interface
ETH :	RJ45 connector – Ethernet 10/100Mbps for download/upload of parameters and Ethernet communication
SERVICE:	DB-9 M connector – serial port for service purposes (download of system firmware)
OUT1, OUT2:	screw terminals – digital outputs (open collector, output of optocoupler)
INP1:	screw terminals – digital input (input of optocoupler)

Pin assignement of serial ports (DB-9 M connector):

Function	Signal	Pin
Data	TxD	3
	RxD	2
Handshake	RTS	7
	CTS	8
Sig. GND	Com	5

Description of LED signalization:

- POWER:
 - PWR – power supply voltage
- WATCHDOG:
 - WD – watchdog LED is flashing periodically
- ETHERNET - ETH:
 - reception of packet (upper)
 - connected 10 Mbps (middle)
 - connected 100 Mbps (lower)
- COM1, 2 (3 LEDs for each COM):
 - Tx – telegram transmission (left)
 - Rx – telegram reception (middle)
 - Err – communication error (right)
- SERVICE (for IEC870-5-104 communication only):
 - waiting for connection - listening (left)
 - onnection accepted - socket created (middle)
 - error on IEC870-5-104 (right)



SW equipment:

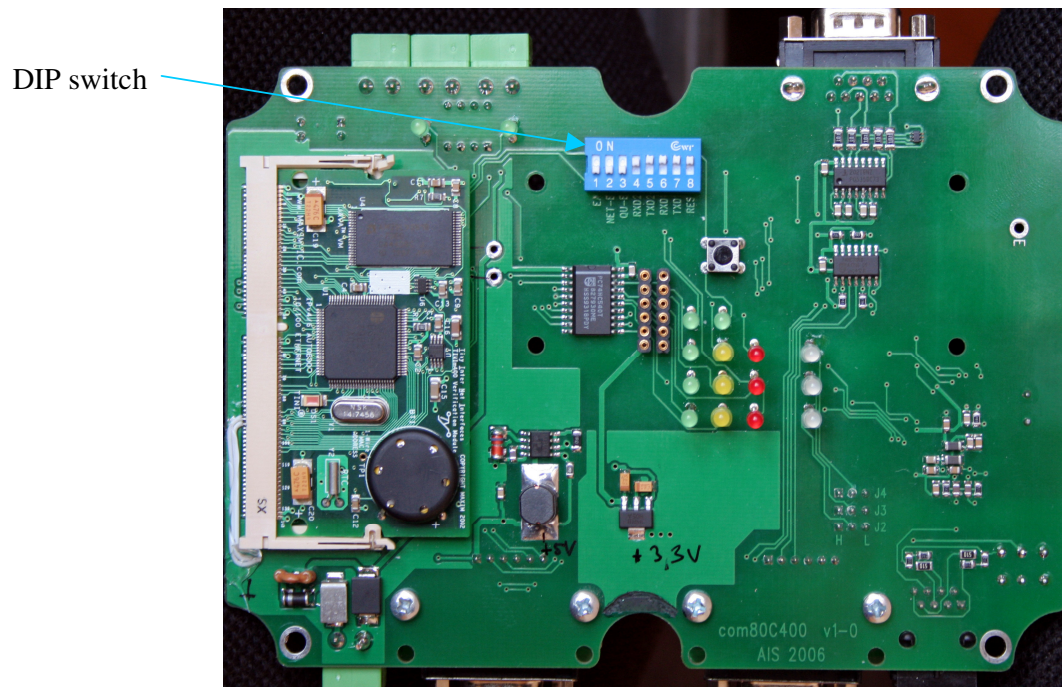
The device HATEL is equipped with boot program, real time operational system and application program.

The application program performs conversion of communication protocols. Handshake signals can be also used on serial interfaces. Generator of parameters for MS Windows is also available and can be modified for the purposes of concrete communication protocol. Firmware and parameters can be downloaded by the Ethernet port.

DIP switch settings:

The DIP switch is accessible after device cover removal.

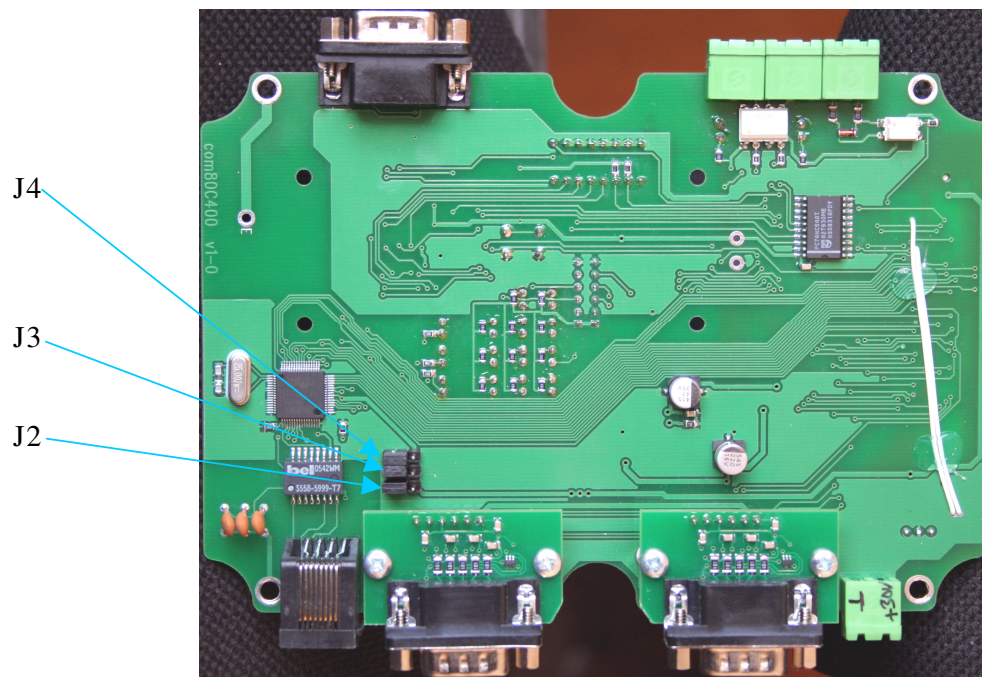
SW	Desc.	Meaning	Default setting	Remark
1	EA	processor signal	OFF	special use
2	NET-B	ROM net boot	OFF	special use
3	QU-B	ROM serial boot	OFF	serial boot in processor ROM enabled
4	RxD2	inverse Rx data 2	ON	
5	TxD2	inverse Tx data 2	ON	
6	RxD1	inverse Rx data 1	ON	
7	TxD1	inverse Tx data 1	ON	
8	RES	reset enable	ON	reset via service COM



Jumper settings:

3 jumpers are available for ETHERNET setting. These jumpers are accessible when main board is removed from housing. It is not recommended to change setting of these jumpers.

- J 2 autonegotiation enabled/disabled, default is enabled = Jumper in the left position
- J 3 10/100Mbps if negotiation disabled = Jumper in the left position
- J 4 full duplex/half duplex, default is full duplex = Jumper in the left position



ETHERNET bootloader:

Ethernet bootloader is standard firmware flashed in memory. Bootloader is built to cooperate with generator of parameters. Bootloader runs after reset. Reset can be done either by break and restoration of power supply voltage or by pushing the reset button.

Default IP address of bootloader: 10.1.10.121

Default port: 6543

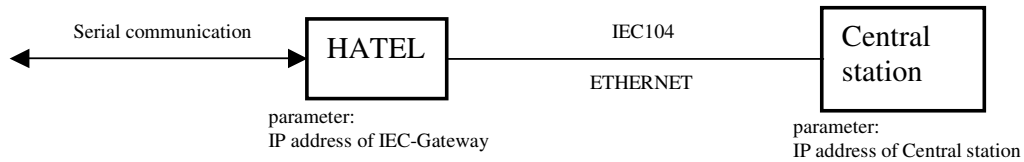
Loading process is indicated by LEDs:

Waiting for connection	alternate flashing of green and red SERVICE LEDs
Data transfer	successive flashing of all COM LEDs
Flashing in the memory	green LED of COM1
Moving parameters into RAM	green LED of COM2
Moving program into RAM	yellow LED of COM2

Bootloader and generator can be used both for download of parameter file and program file and for upload of parameters from gateway.

Examples of connection of HATEL device for IEC104 communication

- ***Point – point mode:***



- ***Connection to existing LAN:***

