

HE Valve - SIMULATION MODE:

Communication between Panel and SCH001 Electronic board

This document gives information about the configuration of control board SCH001 in Simulation mode, in order to test the wirings scheme and logic of the Control Panel (main command board).

Please refer even to the User Manual of the HE valve (Instruction manual).

1 Simulation-mode generalities

The SCH001 HE Electronic board can be supplied from HEVOS with a specific parameters setup to operate in simulation-mode, and with two jumpers: on the connector CN1 and on the connector CN8.

⚠ATTENTION: A board in simulation-mode cannot be freely used in normal mode!

It is mandatory to perform specific parameters settings in order to use the board in standard-mode, otherwise the fault Er41 appears when you start the manoeuvre.

Simulation-mode→Standard mode conversion can be performed only by HEVOS, when provided (contact your HEVOS partner for more info)

In case of simulation-mode activated:

- Feed the M1 connector, with a voltage 24VDC stabilized, and connect the pin GND to ground
- Connect the input connector M2 of electro-valves with a voltage 24VDC.
- The CN1 sensor input is not considered and the temperature is fixed to 22.4°C.
- The CN2 sensor input is not considered and the pressure is fixed to 14.8bar.
- The CN4 input of the measuring sensor related to the valve VNR is not considered.
- The CN5 input of the position of the VSC-valve is not considered.
- The current absorption of the electro-valves on the output M3 is not considered.
- The WiFi module is usable.

⚠It is possible to connect multiple control boards if it is needed a simulation for a multi-valve system (contact your HEVOS partner).

The electronic board SCH001 accepts the signals UP-DOWN-HSP-MSP-SFY-SP2-SP3 coming from the Control Panel (main board) and reacts with a cycle parameterized with pre-defined duration times for each phase.

If a stepper motor (MPP) is connected, it will perform some movements that simulate those executed during the speed control in a real installation on the HE valve.

2 Communication

2.1 Communication Control Panel → Electronic Board

The signals communication from the Control Panel to the Electronic Board can be performed by following these strategies:

- 1) Digital signals in parallel, on the input connectors CN6 and CN7 and using the positive +24VDC taken from CN8 connector. In this case, set P480=0 and restart the electronic board after the setting.
- 2) Serial signals, using the CAN bus connection and respecting the requirements of CAN communications specified in the HE-CAN Communication manual.

The parameter P113(P479) that indicate the starting offset for the addresses dedicated to SCH001 board, is set to P113(P479)=0 as default setting, and it corresponds to 1360(0x550).

In this case, the parameter P114(P480)=49 (0x31=0x581-0x550) corresponds to the identifier 0x581 of the main board node.

⚠ Don't modify the 49th address which specifies the main control board node and restart the electronic board after the setting.

- 3) In case of CAN connection between the Control Panel and the Electronic Board, by setting P498=1, the acquisition of digital signals from the input connectors CN6 and CN7 and using the positive +24VDC taken from CN8 connector, is in any case allowed, even if the CAN bus connection with the Control Panel is activated, with Control Panel address P114(P480)=49.

⚠ In this case, any manoeuvre input transmitted using CAN messages will be ignored

2.2 Communication Electronic Board → Control Panel

On the other side, the signals coming back from the Electronic Board SCH001 to the Control Panel (main control board), during simulation-mode operation, are:

- CN9 Commutation of AVV relay for motor start/stop command (output)
- CN10 Commutation of T1 relay for temperature limit signal (output),
- CN11 Commutation of P1 relay for first pressure limit signal (output),
- CN12 Commutation of P2 relay for second pressure limit signal (output),
- CN13 Commutation of ERR relay for board under error condition signal (output),
- CN14 Commutation of RDY relay for board in ready condition signal (output)
- CN15 voltage exit PNP1 activation
- CN16 voltage exit PNP2 activation
- The relays signal and the voltage outputs status are replicated also by CAN bus connection, in case of parameter P480 = 49.

2.3 CAN Communication

HEVOS can supply a CAN connection cable that could be used for multiple boards connection in multi-valve system, or it has to be adapted to the main control board connector to establish the CAN communication between Control Panel and Electronic Board, considering this colour code for the cables:

green= GND

brown= CAN-L

white= CAN-H

When the CAN connection is correctly done, the led LD30 with orange colour is fixed.

If the connection is not established, the led LD30 flashes quickly and the display shows a specific fault code.

2.4 Errors

If there isn't any error, the display DSP1-DSP2 shows "Si", to indicate Simulation-mode activated.

If there isn't any error, the display DSP1-DSP2 shows "Er" followed by the error code.

Er41 identifies a board in Simulation-mode that is attempted to be used in standard mode

Er49 identifies a CAN connection fault: check connections and settings.

Er4, Er5, Er18, Er24 identify sensors errors

Refer to the user manual of the HE valve, to verify the error code, its causes and to reset the status.


Under simulation-mode operation, the errors signals don't auto-reset; this consents to easier evaluate the errors and find their causes.

If you need, to activate in simulation-mode too the auto-reset fault functionality, as per normal applications (parameter P894=1), it is necessary to set the parameter P894=2.

3 Electrovalves management

The connection of the ENR and ERS electro-valves to the M2 input plug, has to be performed by the Control Panel by managing the electrovalves ON/OFF timing on M2 pin, as during normal operation (see HE valve-instruction manual).

In this way it is possible to verify the correctness of the sequence and to simulate both, the functional self-check test of the redundancy and the self-check test of the monitoring PNP1 signal.

 Alternatively, it is possible even a test with M2 pin always connected to +24VDC, by a specific board setup (NOT recommended, ask your HEVOS partner) (P488=1).


4 Outputs test procedure


The HE Electronic Board offers the possibility to test all the outputs of the electronic board SCH001 in sequence, in order to verify their detection from the Control Panel's electronic board (main board).

Press the S1 push button on the electronic board, the display will show "Sc", instead of "Si"

Then an automatic sequence starts, during which all relays on the connectors from CN9 to CN14 will be activated and the voltage outputs CN15 and CN16 will be activated at one at a time for 4second after a delay of 4 seconds.

The AVV, T1, P1, P2, ERR, RDY, PNP1, PNP2 signals are replicated also by the CAN bus connection in case of parameter set to P480 = 49.

 Disconnecting the jumper on the connector CN1, the electronic board SCH001 shift to a specific mode that makes possible to evaluate the faults signals related to the pressure-, flow-, zero-VSC- and temperature-sensors, if not connected (generating respectively Er4, Er5, Er18, Er24).

 **ATTENTION:** A board in simulation-mode cannot be freely used in normal mode! A special procedure it is required.