

Enabling remote operation

When operating the chiller manually via the front panel it is said to be in LOCAL mode. To enable remote operation the chiller has to be put in SERIAL communication mode.

SERIAL mode can be enabled as follows:

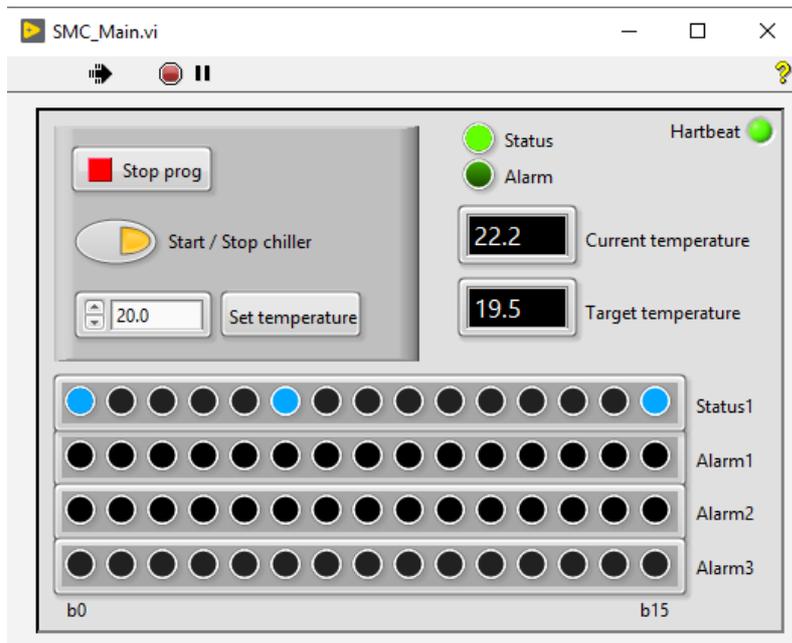
1. press and hold the [MENU] key for 2 secs. The digital display should show a new menu code. Repeat press and hold [MENU] for 2 secs until the communication setting screen (labelled as Co.01) appears in the display.
2. select `ser` with the [up] and [down] arrow-keys, then press [SEL] key to confirm. This sets serial communication mode.
3. in the next sub-menu (labelled as Co.02) select `ndbS` corresponding to the MODBUS protocol. Confirm by pressing the [SEL] key.
4. in the next sub-menu (labelled as Co.03) select `232C` corresponding to RS-232C standard. Confirm by pressing the [SEL] key.
5. keep pressing [SEL] key until sub-menu Co.05 is displayed. Select address `1` and confirm by pressing the [SEL] key.
6. in the next sub-menu (labelled as Co.06) select `9.6` corresponding to 9600 bps rate. Confirm by pressing the [SEL] key.
7. exit by pressing the [MENU] key.

To return to LOCAL mode, repeat steps 1 and 2 and select `Loc` in the Co.01 menu.

For more information read chapter 4 of the SMC Communication manual.

LabVIEW application

A LabVIEW (2019) application has been created to control the SMC chiller in b161. The chiller is connected to the PC via a USB-RS232 cable with a FTDI chip. The driver chosen is Virtual Com Port so that to make it easier its control in LabVIEW using standard VISA vis. The alias SMC is defined in NI MAX to the corresponding COM port of the VCP. If the chiller is correctly configured in SERIAL mode with MODBUS protocol as explained above, upon start of the LabVIEW application the proper serial port is initialized and the contents of the different registers are automatically monitored every 3 seconds. The figure below shows a screenshot of the main program.



The controls and indicators shown in the front-panel are explained below.

• Controls

- ◆ `Stop prog` control button: stops the main application, closes the VISA device session.
- ◆ `Start / stop chiller` control: allows to start (run mode) or stop the chiller.
- ◆ `Set temperature` control button: sends a command to set a new target temperature. The new value is reflected in the SV display of the chiller front-panel.

• Indicators

- ◆ `Status` boolean indicator: shows if the chiller is running or stopped.
- ◆ `Alarm` boolean indicator: shows if any bit of the different alarm registers is set.
- ◆ `Current temperature` indicator: shows the current fluid temperature (also shown in the PV display of the chiller front-panel).
- ◆ `Target temperature` indicator: shows the target set point (i.e. the temperature the chiller is trying to reach).
- ◆ `Status1`, `Alarm1`, `Alarm2` and `Alarm3` boolean array indicators: show the bit content of the corresponding 16-bit registers (bit 0 is shown left-most, bit 15 right-most). Refer to sections 4.10.4 and 4.10.5 of the SMC Communication manual for the meaning of the single bits.
- ◆ `HeartBeat` boolean indicator: it blinks every time the registers are monitored. This is just a visual help to be sure the automatic monitoring is running.

Note the user can only act on the controls.

Additional information

- SMC Operation manual
- SMC Communication manual

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