1 General

HHT 275 is a compact, hand-held terminal for operating the TZID-C/TZID-C200 positioner via an FSK modem (see Data Sheet 18-0.22 EN for ordering details) using the HART®-Protocol. It provides a local operating option which adds up to direct local operation via the TZID-C/TZID-C200 front panel and remote configuration by using the appropriate configuration program on a PC.

2 Connection

Connect the communicator to the positioner using the cable with 4 mm plug delivered with it. The connection is made in parallel to the positioner's connection terminals. When you are using a power supply with FSK bus connection, the communicator can also be connected to the FSK bus.
3 Operation

<table>
<thead>
<tr>
<th>Key</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>[O]</td>
<td>On/Off key</td>
</tr>
<tr>
<td>[L]</td>
<td>Move cursor to next menu item</td>
</tr>
<tr>
<td>[H]</td>
<td>Move cursor to previous menu item</td>
</tr>
<tr>
<td>[S]</td>
<td>Select function/menu item</td>
</tr>
<tr>
<td>[R]</td>
<td>Return to previous selection</td>
</tr>
<tr>
<td>[F]</td>
<td>Hot key</td>
</tr>
<tr>
<td>[F] ... [F]</td>
<td>Function keys, function depending on menu (see list below):</td>
</tr>
<tr>
<td>ABORT</td>
<td>Abort current function</td>
</tr>
<tr>
<td>BACK</td>
<td>Return to current function</td>
</tr>
<tr>
<td>DEL</td>
<td>Delete character right of cursor</td>
</tr>
<tr>
<td>ENTER</td>
<td>Accept user-entered data</td>
</tr>
<tr>
<td>ESC</td>
<td>Leave function, ignore changes</td>
</tr>
<tr>
<td>EXIT</td>
<td>Exit menu / return to prev. level</td>
</tr>
<tr>
<td>HELP</td>
<td>Call up context-sensitive help</td>
</tr>
<tr>
<td>HOME</td>
<td>Return to main menu</td>
</tr>
<tr>
<td>NEXT</td>
<td>Call up next display</td>
</tr>
<tr>
<td>NO</td>
<td>Negative answer to yes/no question</td>
</tr>
<tr>
<td>OK</td>
<td>Acknowledge displayed message</td>
</tr>
<tr>
<td>PGDN</td>
<td>Page down</td>
</tr>
<tr>
<td>PGUP</td>
<td>Page up</td>
</tr>
<tr>
<td>PREV</td>
<td>Return to previous display</td>
</tr>
<tr>
<td>SEND</td>
<td>Transmit data to TZID-C/TZID-C200</td>
</tr>
<tr>
<td>YES</td>
<td>Positive answer to yes/no question</td>
</tr>
</tbody>
</table>

Selecting the "SAVE" function will only save data in the communicator's RAM. No data transmission to the TZID-C/TZID-C200 nor data storage in the TZID-C/TZID-C200 non-volatile memory takes place.

The active (i.e. selected) item of a displayed menu is highlighted and marked with a right arrow (->).

A down arrow to the left of the last menu item displayed indicates that the menu contains further items which can be called up by pressing the [F] key.

Pressing the [F] key will call up the Hot Key Menu which provides the following option:

<table>
<thead>
<tr>
<th>Menu item</th>
<th>Function</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 Master reset</td>
<td>Resets the positioner</td>
</tr>
</tbody>
</table>
After power-on, the communicator performs a self-test. Then the communication to the connected TZID-C/TZID-C200 is set up automatically, and the Online Menu seen below is displayed:

<table>
<thead>
<tr>
<th>Serve/Watch</th>
<th>Settings</th>
<th>Diagnostics</th>
<th>Simulation</th>
<th>Information</th>
</tr>
</thead>
</table>

The Online Menu provides five menu options:

- **Serve/Watch**
  - for display of several operating parameters
- **Settings**
  - for setting the TZID-C/TZID-C200 parameters
- **Diagnostics**
  - at present only providing an option for resetting the stroke and travel counters
- **Simulation**
  - for simulating situations
- **Information**
  - for entering/displaying device information

There are two ways to select a menu. You can either enter the number of the menu item via the alphanumeric keypad or mark the option with the key and then select it with the key.

Pressing the or (HOME) key will return you to the main menu.
"Serve/Watch" menu

5 "Serve/Watch" menu

In this menu you can call up several parameters for display in order to monitor the process. Some of them are shown directly in the menu line, others have to be called up by entering the item No. Pressing (EXIT) will return you to the "Serve/Watch" menu.

The following parameters cannot be called up on the communicator:
- Travel counter
- Travel counter limit
- Stroke counter
- Stroke counter limit
- Hysteresis

Use the configuration program on the PC to display or edit these parameters.

The following parameters are not automatically polled/updated:
- Tolerance band
- Shut off value
- Setpoint range
- Alarmmask

Switch the communicator off and on again to display the latest parameter values.

1 Setpoint
Display the setpoint.

2 Position
Display the current position as a percentage of the stroke range.

3 Difference
Display the control deviation as a percentage of the stroke range.

4 Tolerance band
Display the tolerance band as a percentage of the stroke range.

5 Shut off value
Display the shut off value as a percentage of the stroke range.

6 Temperature
Display the temperature in °C.

7 Setpoint range
   1 Lower current value
   Display the low setpoint range limit.
   2 Upper current value
   Display the high setpoint range limit.

8 Operating mode
Display the currently active operating mode as a plain text message.
9 Messages
Enter the item No. to display the desired message(s). Pressing HOME (HOME) will return you to the main menu.

1 General messages
Display general device messages.
Press OK (OK) to acknowledge.

2 Alarms
Display the current alarm messages. If no alarms are present, the message "No alarms" is seen.
Press OK (OK) to acknowledge.

3 Alarmmask
Display the current alarm mask.

6 "Settings" menu
In this menu you can edit various parameters which are then saved automatically in the non-volatile memory of the TZID-C/TZID-C200 positioner.

The following parameters **cannot** be called up on the communicator:
- Travel counter
- Travel counter limit
- Stroke counter
- Stroke counter limit
- Hysteresis

Moreover, it is not possible to initiate a setpoint jump or configure a user-defined characteristic curve via the communicator. Use the PC configuration program.

The following parameters are only updated when the communicator is switched off and on again:
- Tolerance band
- Shut off value
- Setpoint range
- Alarmmask
- Control parameters
- Auto conf mode

The parameters listed on the next pages can be edited via the communicator. Select the digit to be changed with or (selected digit flashes). Press or to increase or decrease the flashing number. You can also enter the new number via the numerical keys.
1 TZID-C parameter

1 Setpoint range
   1 Lower current value
      Enter the low setpoint range limit.
   2 Upper current value
      Enter the high setpoint range limit.

2 Tolerance band
   Enter the tolerance band in %.

3 Travel range
   1 Travel range min
      Enter the minimum stroke range (travel) as a percentage of the valve range.
   2 Travel range max
      Enter the maximum stroke range (travel) as a percentage of the valve range.
   4 Shut off value
      Enter the shut off value as a percentage of the stroke range (travel).

5 Dead band time limit
   Enter a time limit for the dead band in seconds.

6 Adjusted speed
   1 Adjusted speed up
      Adjust the up travel speed in seconds
   2 Adjusted speed dn
      Adjust the down travel speed in seconds

7 Alarmmask
   Enable/disable the individual alarm messages (e.g. "Leakage towards actuator").
   Press the key to toggle, i.e. to enable or disable the respective alarm.

8 Characteristic curve
   Select the characteristic curve to be used.
   It is not possible to configure a user-defined characteristic curve via the communicator.

9 Valve action
   Select direct or reverse action
10 Alarm limits

1 **Alarm limit 1**
Enter alarm limit 1 as a percentage of the stroke range.

2 **Alarm limit 2**
Enter AL2 as a percentage of the stroke range.

3 **Alarm, S1 and S2**
Select the alarm and switching outputs according to the following table:

<table>
<thead>
<tr>
<th>AlarmOn=active low</th>
<th>OFF = alarm output HIGH active</th>
<th>ON = alarm output LOW active</th>
</tr>
</thead>
<tbody>
<tr>
<td>S_1ON=active low</td>
<td>OFF = switching point 1 HIGH active</td>
<td>ON = switching point 1 LOW active</td>
</tr>
<tr>
<td>S_2ON=active low</td>
<td>OFF = switching point 2 HIGH active</td>
<td>ON = switching point 2 LOW active</td>
</tr>
<tr>
<td>S1ON=act below</td>
<td>Off = switching output 1 active when exceeded</td>
<td>ON = switching output 1 active when below</td>
</tr>
<tr>
<td>S2ON=act below</td>
<td>Off = switching output 2 active when exceeded</td>
<td>ON = switching output 2 active when below</td>
</tr>
</tbody>
</table>

10 Digital input
The digital input defines six functions in the TZID-C/TZID-C200 positioner that can be selected locally. If, for example, locks are activated, the positioner only works in the selected operating mode when a voltage < 12 V is applied to the digital input. Please refer to the manual for the TZID-C positioner (42/18-64 EN) or for the TZID-C200 positioner, respectively (42/18-73 EN) for a detailed description of the digital input functions.
2 Valve parameters
  1 Manual
  1 Valve range
    1 Min valve range
    Enter the low valve range limit as a percentage of the lever range.
    2 Max valve range
    Enter the high valve range limit as a percentage of the lever range.
  2 Digital setpoint
    1 Setpoint mode
    This item is used to define the setpoint (analog or digital) to be used by the
    positioner. When the "Analog setp mode" option is selected, the positioner
    will use the analog setpoint derived from the input current. When selecting
    "Digital setp mode", the setpoint will be given externally using the HART-Pro-
    tocol. Note that the "Travel setpoint" has to be defined for the "Digital setp.
    mode" (see next item.
    2 Travel setpoint
    This item is used to define the digital setpoint as a percentage. Note that this
    setting can only be activated when the TZID-C/TZID-C200 is currently work-
    ing in mode 1.0 or 1.1. Otherwise, an error message pops up.
  3 Lever zero position
The lever zero position can be displayed/edited with this menu item. Options:
- Stop turning clockwise
- Stop turning counterclockwise
(see from the front with the case open)
  4 Spring action actuator
The spring action of the actuator can be displayed/edited with this menu item.
Options:
- Actuator turning counterclockwise
- Actuator turning clockwise
(see from the front with the case open)
  5 Actuator
This menu item is used to display/edit the actuator type (linear or rotary).
  6 Control parameters
    1 kpUp
    Edit the kp value up.
    2 kpDn
    Edit the kp value down.
    3 tvUp
    Edit the tv value up.
    4 tvDn
    Edit the tv value down.
    5 Go pulse up
    Edit the go pulse up.
6 Go pulse dn
   Edit the go pulse down.
7 Offset up
   Edit the up offset.
8 Offset down
   Edit the down offset.
9 ADC noise
   Edit the noise band.

2 Auto configuration
1 Auto conf modes
   With this menu item you can select the desired auto-configuration mode. Options:
   - Complete auto-configuration
   - Control parameters only
   - Valve range only
   - Zero only
2 Auto conf locked
   With this option you can disable auto-configuration. Press \( \text{F}4 \) to activate (ON) or
deactivate (OFF) the lock.
3 Start auto conf
   Press \( \text{F}2 \) to select this option. The message "Initialized" appears in the display,
   unless auto-configuration has been locked. Press \( \text{F}4 \) (OK) to confirm and start
   the auto-configuration function. The message "Auto configuration is running" is
   seen in the display. After successful completion the message "Auto configuration
done" appears. You can either press \( \text{F}4 \) (OK) to save the data in the TZID-C/
   TZID-C200's non-volatile memory, or press \( \text{F}3 \) (ABORT) to reject the data. Note
   that a running auto-configuration can be stopped at any time by pressing \( \text{F}3 \)
   (ABORT).

3 Options
1 Analg pos feedback
   1 Output min
      Enter the current for 0 % stroke (travel). The current is entered as a percentage of
      the 4...20 mA range (= 16 mA) , plus 4 mA offset.
      Example:
      100% = 20 mA (16 mA range + 4 mA offset)
      0% = 4 mA (0 mA range + 4 mA offset)
      10% = 5.6 mA (1.6 mA range + 4 mA offset)
   2 Output max
      Enter the current for 100% stroke (travel). The current is entered as a percentage
      (see item 1).
   3 Output action
      Select the output action for the module for "analog position feedback".
   4 Alarm messages
      Select the alarm current for alarm reporting of the module for "analog position
      feedback". Options: "> 20 mA" or "< 4 mA"
2 Dig pos feedback
   1 Alarm S1 and S2
      Select the alarm and switching outputs for the module for "digital position feedback":

<table>
<thead>
<tr>
<th>AlarmOn=active low</th>
<th>OFF = alarm output HIGH active</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>ON = alarm output LOW active</td>
</tr>
<tr>
<td>S_1ON=active low</td>
<td>OFF = switching point 1 HIGH active</td>
</tr>
<tr>
<td></td>
<td>ON = switching point 1 LOW active</td>
</tr>
<tr>
<td>S_2ON=active low</td>
<td>OFF = switching point 2 HIGH active</td>
</tr>
<tr>
<td></td>
<td>ON = switching point 2 LOW active</td>
</tr>
<tr>
<td>S1ON=act below</td>
<td>Off = switching output 1 active when exceeded</td>
</tr>
<tr>
<td></td>
<td>ON = switching output 1 active when below</td>
</tr>
<tr>
<td>S2ON=act below</td>
<td>Off = switching output 2 active when exceeded</td>
</tr>
<tr>
<td></td>
<td>ON = switching output 2 active when below</td>
</tr>
</tbody>
</table>

3 Options installed
   Shows the connected option modules:
   - Display
   - Analog Pos. Feedback
   - Dig. Pos. Feedback
   - FSK Modem
   - Pressure sensor
   - Valve analysis

7 "Diagnostics" menu
   1 Reset counter
      Press [ ] to toggle the reset option for the stroke counter and/or travel counter between ON (reset) and OFF (do not reset).
"Simulation" menu

8 "Simulation" menu

1 Simulation
Switches the simulation in the TZID-C/TZID-C200 on ("active") or off ("inactive").

Two minutes after the last user actions the TZID-C/TZID-C200 positioner returns to the local mode. Note that the values are not polled automatically. Switch the communicator off and on again to update the display.

2 Operating mode
Display the current operating mode.

3 Options installed
Display the currently connected optional modules.

4 Position
Simulate analog position feedback.
When simulation is disabled, a corresponding error message is displayed.

5 Failure
Simulate alarm outputs and switching points. Press [ ] to activate/deactivate the respective function.

9 "Information" menu

1 Device Tag

1 Message
Enter the device tag.

2 Tag
Enter the address on the bus.

3 Description
Enter the plant description.

4 Measuring task
Enter the measuring task.

5 Date
Enter the date (format MMDDYY).

2 HART

1 Universal rev
Display the HART universal revision.

2 Fid dev rev
Display the field device revision.

3 Num req preams
Display the preambles used.

4 Poll addr
Display the polling address.
### 3 TZID-C
1. **Ident no.**
   Display the TZID-C/TZID-C200 serial number.
2. **Hardware rev**
   Display the TZID-C/TZID-C200 hardware revision.
3. **Software rev**
   Display the TZID-C/TZID-C200 software revision.
4. **Valve ID no**
   Display the TZID-C/TZID-C200 manufacturing number.
5. **Sensor type**
   Display the sensor type.
6. **PV Snsr s/n**
   Display the sensor number.
7. **Actuator**
   Display the actuator type (linear or rotary actuator).

### 10 Troubles and Errors

If the communicator cannot set up the communication with the positioner, the message "No device found" is displayed. Check the connection (cables) to the device, and acknowledge the message with (OK). Restart communication setup by selecting the "Online" option from the displayed menu.

If the communicator displays the message "Device busy" while attempting to transmit a changed parameter value to the TZID-C/TZID-C200, this indicates that another connection (e.g. via the configuration program on the PC) to the connected device is currently active. Press (Retry) to restart transmission.