# 774 Oven Sample Processor

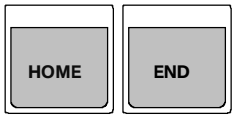
Metrohm

## Quick Reference

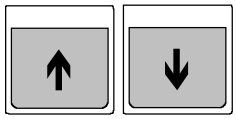
**8.774.1013**

## Manual Operation

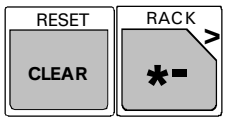
**Normal state**



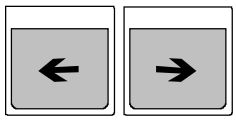

**Lift position**
Raises or lowers the lift of the active tower to rest position (HOME) or work position (END).



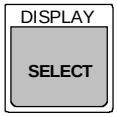
**Lift control**
Raises or lowers the lift.




**Initialize sample processor**
Initializes sample processor and dosing drives (RESET) or resets the rack to initial position (RACK).



**Shifting the rack**
Shifts the rack by one position to the left (anticlockwise) or to the right (clockwise).




**Changing the display**
Changes the display mode.


**Stop**
Stops all current device functions. See also [PARAM] >manual stop options

| *Key* | *Display* *Entry range* | *Function* |
|---|---|---|
| LIFT 9 | **LIFT : 1 : rest mm**<br>**rest**, work, rinse, shift, special, 0…100 mm | **Lift control**<br>Raises or lowers the lift to the specified position. |
| MOVE 8 | **MOVE 1 : sample**<br>**sample**, spec.1…8, 1…999 | **Moving a beaker**<br>Shifts the rack to place the specified vial to the tower. |
| SAMPLE 7 | **SAMPLE: = 1**<br>**1**…999 | **Definition of the first sample position of a series**<br>Defines the rack position of the first sample beaker of a series . |
| FLOW 4 | **FLOW: pump : ON**<br>**pump**, valve<br>**ON**, OFF | **Flow control**<br>Switches on/off the pump or the magnetic valve. |
| HEATER 5 | **HEATER:INIT°C min**<br>50…250°C, INIT, OFF<br>0…999 | **Heater control**<br>Sets the oven temperature and the heating interval to reach the specified temperature. If no heating interval is set, the maximum heating rate is applied. Cooling is possible as well. |
| DOS 6 | **DOS: 1 : 1 ml**<br>*Dosing unit*<br>**1**…12, *<br>*Volume/Function*<br>±0.001…999.999 ml, fill, release, prepar., empty,… | **Dosimat / Dosino control**<br>Controls a connected dosing drive.<br>Enter a volume to be dispensed or select a function to execute (only 'fill' with 685 Dosimat ). With the Dosino 700, also negative volumes can be dispensed i.e. the solution can be aspired. |
| PRINT . | **PRINT: full**<br>**full**, short, config, param, usermeth, all | **Print a report**<br>Prints out a report. |
| SCAN 1 | **SCN:Rm : 00000000**<br>*Interface* *Signal/Data*<br>**Rm** 14 x 1,0 or *<br>RS 14 ASCII-characters | **Interface scan**<br>Displays the state of the remote control lines (Input0…7) or the received data of the serial interface (RS232). |
| CTRL 2 | **CTL:Rm : INIT**<br>*Interface* *Signal/Data*<br>**Rm** 14 x 1,0 or *<br>RS 14 ASCII-characters | **Interface control**<br>Sends the specified signal via remote control lines (Output0…13) in order to control (e.g. start) peripheral devices or transmits data via serial interface (RS232).<br><SELECT>-options see sample processor commands. |

# Manual Operation

Continued

DEF 0

**Definition of various settings**
Defines basic settings of dosing units, lifts or rack .
**Roll-up selection**; press **<DEF>**-key several times.

| *Display* *Default value* | *1. Parameter* | *2. Parameter* | *Function* |
|---|---|---|---|
| **FILLRATE 1 160** | *Address* 1…12 | *Rate* 0.01…160 ml/min | **Filling rate** |
| **LIFTRATE 1 12 mm/s** | *Tower* 1,2 | *Rate* 3…12 mm/s | **Lift rate** |
| **SHIFTRATE : auto. 20** | *Direction* auto., +, – | *Rate* 3…20 w/s | **Shift direction and shift rate** |
| **DRIVE.PORT 1.1 : dos.** | *Port* 1.1…12.4 | *Function* dos., fill, rinse, prep., drain | **Function assignment of Dosino ports** |
| **DOSRATE 1 160** | *Address* 1…12 | *Rate* 0.01…160 ml/min | **Dosing rate** |

# Editing

Key functions

↓ ↑ **Next / previous menu item**
Displays next or previous menu item.

HOME END **First / last menu item**
Displays first or last menu item.

← → **Cursor shift**
Shifts the cursor in between the parameters of a menu line.

RESET CLEAR **Default value**
Deletes an entry and sets its default value.

ENTER **Data entry**
Accepts data entry; opens submenus. Data modifications will only be accepted when confirmed with <ENTER>.

DISPLAY SELECT **Roll-up selector**
Displays each entry of a given list of data to select from. Roll-up selections are marked with a colon (:).

QUIT **Quit**
Quits data entry; branches dialog to a higher menu level or normal state resp.

INSERT DELETE **Insert / delete command line**
Inserts an empty sequence command line (NOP) or deletes the current command line.

START **Trace function**
Executes the actual sequence command line and displays next line.

PRINT < RACK > **Text edit mode**
Enters text edit mode. Places text cursor at start (<) or end (>) of the text string.

LEARN HOLD **LEARN mode**
Starts or ends the interactive LEARN mode. It allows fine tuning of the parameters of most sample changer commands in operating sequences.

**Adaptive sample changer commands:**
LIFT, DOS, SCAN, WAIT

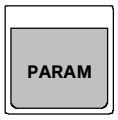
# Basic Configuration


General settings
Heater settings
Rack configuration
Dosing unit settings
RS232 interface settings

**Configuration menu**

| *Display* | *Default value* | *Entry range* | *Function* |
|---|---|---|---|
| **>auxiliaries** | | | **General settings** |
| **dialog:** | **english** | e/d/f/s | Selection of the dialog language |
| **display contrast** | **3** | 0…7 | Adjust display contrast |
| **beeper:** | **ON** | ON,OFF | Switch on/off acoustic warning signal |
| **device label** | ************ | 8 ASCII-chars | Entry of device label |
| **program** | **5.774.0010** | read only | Program version |
| **max. lift way** | **90 mm** | 0…100 mm | Maximum lift way. Defines lowest lift position possible. <CLEAR> enters actual lift position. RESET required to effect. |
| **beaker sensor:** | **ON** | ON,OFF | Switch on/off beaker sensor. RESET required to effect. |
| **>oven settings** | | | **Heater and temperature settings** |
| **initial temp.:** | **OFF°C** | 50…250, OFF | Temperature to be set after switching on |
| **max. temperature** | **275°C** | 50…275 | Maximum temperature limit for oven emergency stop.. |
| **temp.correction** | **0°C** | -20…0…20 | Correction of the temperature displayed |
| **>rack definitions** | | | **Rack configuration** |
| **rack number** | **1** | 1…16 | Number of rack |
| **code** | **000001** | 000001…111111 | Binary ID code for rack identification |
| **type:** | **M12-0** | M12-0 … | Predefined rack type |
| **work position** | **0 mm** | 0…100 mm | Working position of the lift. <CLEAR> enters actual position. |
| **-** | | … | … |
| **shift position** | **0 mm** | 0…20 mm | Shift position of the lift. <CLEAR> enters actual position. |
| **>rack definitions >>special positions** | **1** | | **Submenu for special beaker definitions** |
| **special beaker 1** | **0** | 0…max.pos. | Rack position of special beaker 1 |
| **… up to special beaker 8** | | … | … |
| **>dosing units** | | | **Dosing unit settings** |
| *see user manual* | | | |
| **>RS232-settings** | | | **RS 232 interface settings** |
| **baud rate:** | **9600** | 300,600,1200,2400, 4800,9600 | Data transmission rate |
| **data bit:** | **8** | 7, 8 | Data bits |
| **stop bit:** | **1** | 1, 2 | Stop bits |
| **parity:** | **none** | none, odd, even | Parity |
| **handshake:** | **HWs** | HWs, HWfull, SWchar, SWline, none | Handshake |
| **character set:** | **IBM** | IBM, Epson, Seiko,Citizen, HP | Character set for printer or PC |
| **RS control:** | **ON** | ON, OFF | Switch on/off data receiving via serial Interface (RS 232) |

# Operating Sequences and Method Parameters



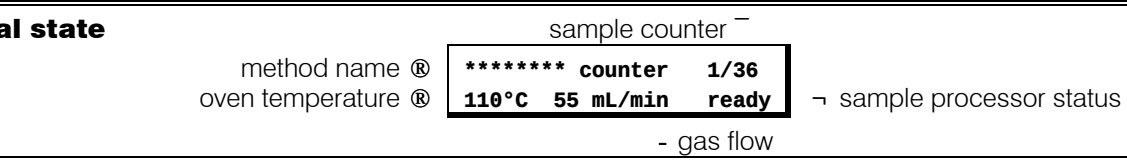

Number of samples
Start sequence
Sample sequence
Final sequence
Report definitions
Sample changer settings
Timeout settings
Gas flow settings
Dosing unit definitions
Manual stop options

**Parameter menu**
**Method**

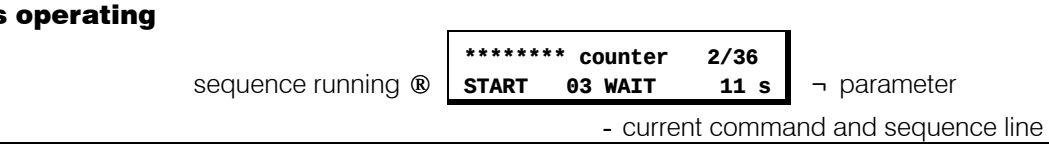
| *Display* *Default value* | *Entry range* | *Function* |
|---|---|---|
| **number of samples: rack** | rack, *, 1…999 | Number of samples in a series |
| **>start sequence** | | **Start sequence of a series** |
| **>sample sequence** | | **Sample sequence of a series** |
| **>final sequence** | | **Final sequence of a series** |
| **>changer settings** | | **Sample changer settings** |
| **rack number 0** | 0…32 | Number of rack for current method |
| **lift rate 1 25 mm/s** | 3…25 mm/s | Lift rate tower 1 |
| **lift rate 2 25 mm/s** | 3…25 mm/s | Lift rate tower 2 |
| **shift rate 20** | 3…20 | Rack shift rate (in degree/sec) |
| **shift direction: auto.** | auto., +, – | Shift direction of the rack |
| **on beaker error: MOVE** | MOVE, display | Sample changer reaction on missing beaker |
| **>timeout settings** | | **Timeout settings** |
| **HEATER timeout: off min** | 0…999, off | Delay time, if the temperature is not reached within heating interval |
| **on HEAT.timeout: STOP** | STOP, cont. | Reaction after HEATER timeout |
| **SCAN timeout: off min** | 0…999, off | max. time interval allowed for SCAN command |
| **on SCAN timeout: error** | error, cont. | Reaction after SCAN timeout |
| **>gas flow** | | **Gas flow settings** |
| **unit gas flow: mL/min** | mL/min, L/h | Unit for the display of gas flow |
| **min. gas flow 0.0 mL/min** | 0…999 | Lower limit of gas flow |
| **max. gas flow 900 mL/min** | 0…999 | Upper limit of gas flow |
| **gas type: air** | air, others, N2 | Type of gas |
| **gas flow factor: 1** | 0.001…9.999 | Correction factor for the flow measuring of 'other' gases |
| **>dosing unit def.** | | **Dosing unit definitions** |
| *see user manual* | | |
| **>manual stop** | | **Manual stop options** |
| **CTL Rmt: **************** | STOP device1, 14 bit (1,0 or *) | Remote output signal on manual stop command |
| **CTL RS232:** | &M;$S,14 characters | Data output via serial interface (RS232) on manual stop command |
| **FLOW: cont.** | cont., off | Gas flow on manual <STOP> |
| **HEATER: init°C** | init, off, 50…250 | Temperature to be set on manual <STOP> |

# LCD Display

**Normal state**




**Series operating**




**Measured values**


DISPLAY SELECT **<SELECT/DISPLAY>** switches the display of the measured values on or off.

# Series Operating

## Preparation

| *Key* | *Display* *Entry range* | *Function* |
|---|---|---|
| SAMPLE 7 | **SAMPLE: = XXX**<br>1…999 | Definition of the first sample vial of a series.<br>(optional, if undefined SAMPLE=1)<br>Definitions in sequences are dominant e.g. : 01 SAMPLE = rack<br>(optional; if undefined in sequence, manual setting is valid) |
| PARAM | **>parameters**<br>**number of samples : rack**<br>rack,*,<br>1…999 | Number of samples (will be saved with the method). |

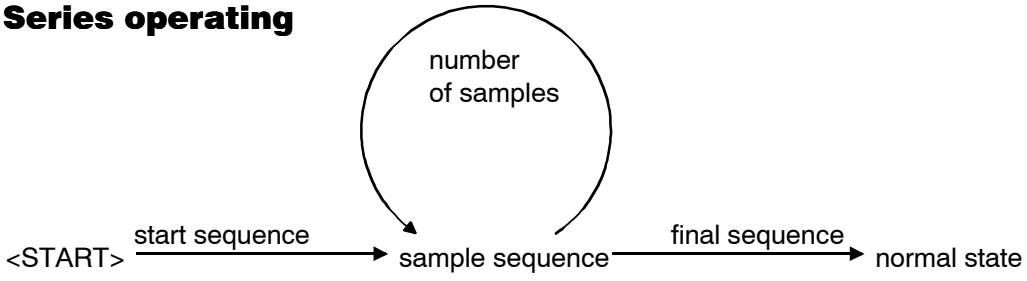
## Series Operating / Key functions

**START**
- starts a method
- restarts a method from 'hold' state

- stops a method (final sequence will not be executed)

**STOP**

### Series operating




LEARN **HOLD**
- holds a running method
- may be continued with <START>

**QUIT**
- quits a running command
- quits error messages

RESET **CLEAR**
- stops a series after the current sequence (final sequence will not be executed)

# Sample Processor Commands

| *Command* *Default value* | *1. Param.* | *2. Parameter* | *Function* |
|---|---|---|---|
| **SAMPLE: = 1** | *Function*<br>=, +, – | *Value*<br>1…999 | **Definition of the first sample vial of a series** |
| **MOVE 1 : sample** | *Tower*<br>1,2 | *Beaker*<br>sample, spec.1…8, 1…999 | **Shift the rack to place a vial to the tower** |
| **LIFT: 1 : rest mm** | *Tower*<br>1,2, * | *Position*<br>work, rinse, shift, special, rest, 0…325 mm | **Setting a lift position** |
| **FLOW: pump: on** | *Gas flow*<br>pump, valve | *State*<br>on,off | **Gas flow control**<br>*Switches on/off the pump or valve* |
| **HEATER:init°C min** | *Temp.*<br>30…250°C, init, off | *Heating interval*<br>0,1…999, blank | **Heater control**<br>The temperature will be reached within the heating interval set. The temperature is remained. Max. heating rate is 15°C/min. |
| **DOS: 1 : 1 ml** | *Address*<br>1…12,* | *Function/Volume*<br>fill, release, prepar., empty, ejct, adjust, level<br>±0.001…999.999 ml | **Dosimat / Dosino control**<br>Dosing drives:<br>700 Dosinos or 685 Dosimats |
| **SCN:Rm : ready1** | *Interface*<br>Rm,<br><br>RS | *Input signal/data*<br>Ready1, End1, Cond ok, Cond 737, no error, 8 bit (1,0 or *)<br>'clear' value: *R", 14 ASCII-chars<br>(*= any character or string) | **Interface scan**<br>Scans the 'remote' interface until the specified signal is received.<br>Scans the serial interface (RS 232) until the specified data are received. |
| **CTL:Rm: INIT** | *Interface*<br>Rm,<br><br>RS | *Output signal/data*<br>START device1, START dos1, STOP device1, START 737, ENTER, INIT, 14 x 1,0 or *<br>clear value: &M;$G 14 ASCII-chars | **Interface control**<br>Sets the specified remote output signal. May be defined as binary pattern.<br>Transmits the specified data via serial interface (RS232). Use text edit mode. |
| **WAIT 1 s** | *Time*<br>0…9999 s | | **Waiting time in series operation** |
| **RACK** | | | **Rack initialization** |

*More commands (DEF commands) see user manual.*

# Method Memory


Recall a method
Store a method
Delete a method

**User method menu**

| *Display* *Default value* | *Entry range* | *Function* |
|---|---|---|
| **>recall method** | | **Recalling a method** |
| **method: XXXXXXXX** | 8 ASCII-characters, ******** | Selection of a method to recall (<SELECT> or enter text )<br>******** = blank method (<CLEAR> ) |
| **>store method** | | **Storing a method** |
| **method: XXXXXXXX** | 8 ASCII-characters | Name of a method to store (<SELECT> or enter text) |
| **XXXXXXXX overwrite ?** | <ENTER>, <QUIT> | Overwriting confirmation <ENTER>, cancel with <QUIT> |
| **>delete method** | | **Deleting a method** |
| **method: XXXXXXXX** | 8 ASCII-characters | Selection of a method to delete (<SELECT> or enter text ) |
| **delete XXXXXXXX ?** | <ENTER>, <QUIT> | Deletion confirmation <ENTER>, cancel with <QUIT> |