

1 Brief Description

Objective of the module:

In this module you learn about the screen layout of the display panel of the Sinumerik Operate, as well as the basic operation of the control using softkeys and buttons.

Description of the module:

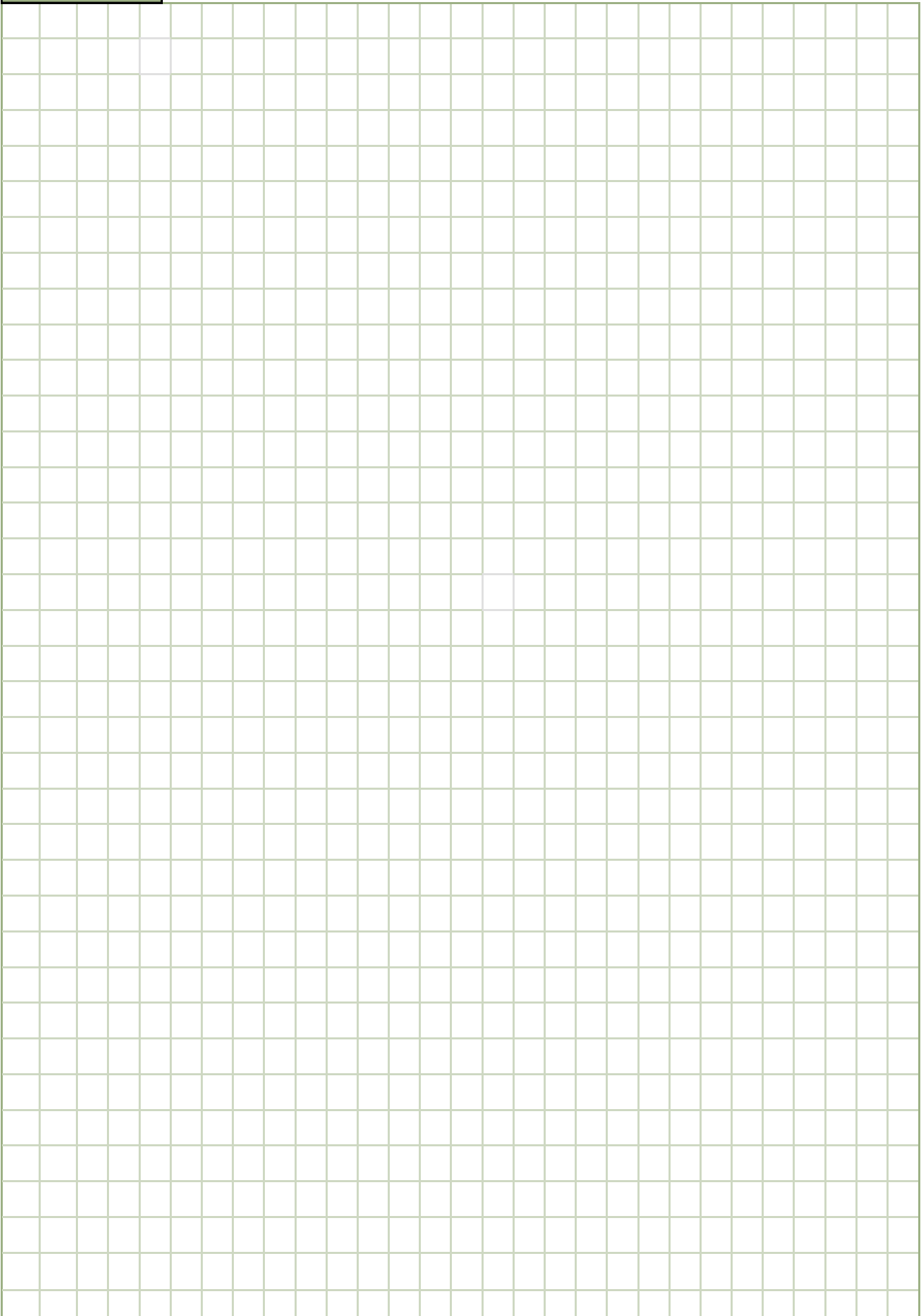
This module describes the relevant parts of the main screen with help of the basic screen layout. In addition to the topic above, this module covers the selection of parameters with respect to units (mm/inch) used and the usage of the calculator within the input masks.

Content:

Basics of operation

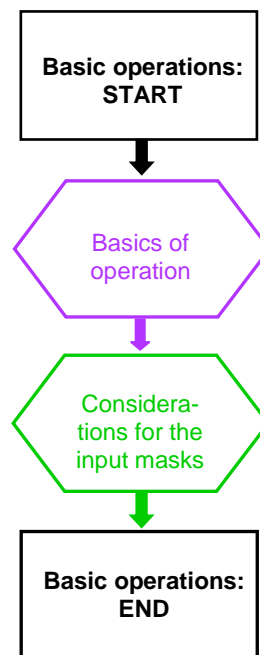
Considerations for the input masks

828D/840Dsl SINUMERIK Operate



Basic operations: Description

This module describes the relevant parts of the main screen with help of the basic screen layout. In addition to the topic above, this module covers the selection of parameters with respect to units (mm/inch) used and the usage of the calculator within the input masks.

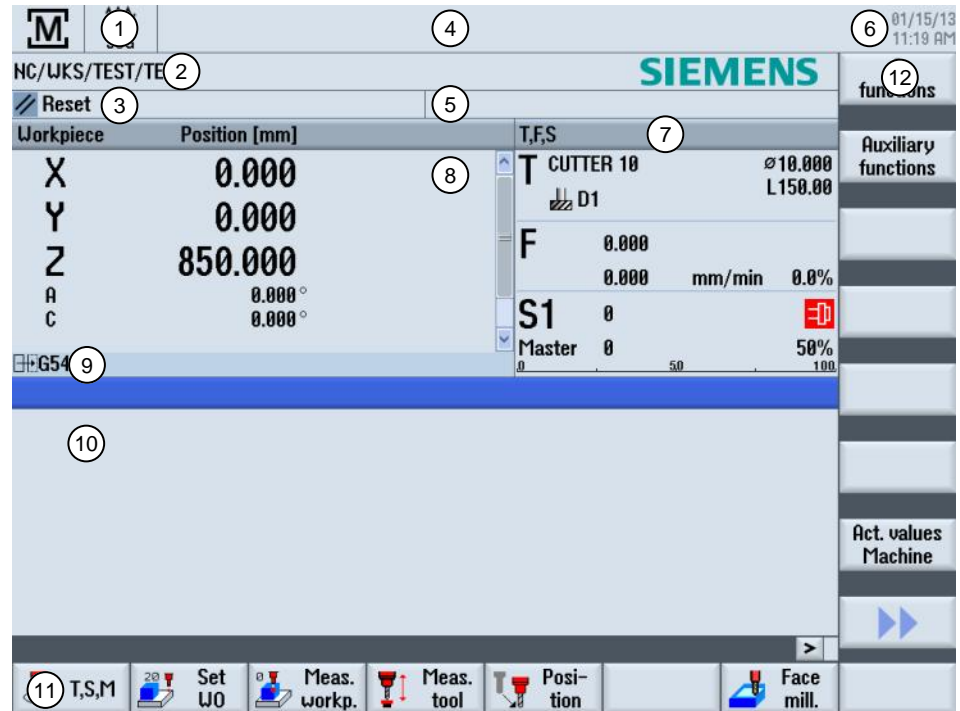


Notes

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2.1 Main screen of the HMI in the operating mode “JOG”

In this section the parts of the main screen will be declared.



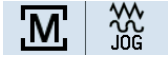
- | | |
|--|---|
| ① Active operating area and mode | ⑧ Position readout for the axes |
| ② Program path and name | ⑨ Display of the active zero point, rotation, mirroring and scaling |
| ③ Status, program influence and channel name | ⑩ Working window |
| ④ Alarm and message line | ⑪ Horizontal softkey bar |
| ⑤ Channel operation messages | ⑫ Vertical softkey bar |
| ⑥ Date and time | |
| ⑦ Display of: | |
| – T = Active tool | |
| – F = Present feedrate | |
| – S = Spindle | |
| – Spindle load factor in percent | |

① Active operating area and operating mode

(The display mode depends on the selected operating mode on the machine control panel (MCP)).

Display area

Description



The operating mode “Machine Manual” (setup mode) can be selected by pressing the “JOG”-button on the machine control panel.
 Functions adjusted under “T,S,M“ like tool selection, work offset and spindle control affect all movements in the manual operating mode.
 Another function using the “JOG“-Mode is the approaching of the reference point (REF.POINT).

② Program path and name

NC programs can be created, modified and selected in the three main directories on the NC of the type **DIR**.

Part programs	DIR
Subprograms	DIR
Workpieces	DIR

③ Status, program influence and channel name

Display area

Description



Reset



Interrupted



Activated

Notes

Notes

④ Alarm and message line

In case of a syntax error in the program code or a hardware malfunction (e.g. emergency stop) an alarm number with explaining text shows up.

MCP	Display area	Description
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3000 Emergency stop

After correcting the error (correction of the hardware malfunction) you can reset the error message with the "RESET"-button.

CNC-keyboard



By pressing the "ALARM"-key on the keyboard the "Alarm list"-window shows up, with a list of all active alarm messages.



12000 Channel 1 block N856 syntax error in text 300

After correcting the error (correction of the syntax error) you can reset the error message with the "ALARM CANCEL"-key on the keyboard.

⑤ Chanel operation messages

Display of operation messages with symbols.

Display area	Description
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Attention: In case of conditions with this symbol a manual operation is required.

- Operation in case of the message "Stop":

After the fault remedy the machining program will be continued after pressing "NC-Start".

- Operation in case of the message "Wait":

After a successful acknowledgement of the fault the machining program will be continued automatically.

- Stop: EMERGENCY-STOP activated
- Stop: M0/M1 activated



In case of conditions with this symbol, a manual operation is usually not necessary.

- Wait: Remaining dwell time in seconds or in spindle revolutions
- Wait: Exact stop not reached
- Wait: for positioning axis

⑥ **Date/Time**

Current date and time are shown in the upper right corner of the screen.

⑦ **Display of T,F,S and spindle-value**

Display area



Description

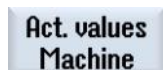
T: (Tool) Name of the active tool. The optional display of “TC” is only available if a swivel head table is present.

F: (Feed) Display of the active feed rate for the current machining (top: actual feed rate, large digits during machining), as well as the display of the programmed feed rate (bottom) and the feed override in %.

S: (Spindle) Display of the active spindle speed for the current machining (top: actual speed, large digits during machining), as well as the display of the programmed spindle speed (bottom) and the speed override in %.

⑧ **Position display for the axes**

MCP/Display area



Description

With the key “**WCS MCS**” on the MCP or the VSK 7 “**Act. values. Machine**” it is possible to switch between the machine coordinate system (MCS) and the workpiece coordinate system (WCS).

⑨ **Display of the active zero point offsets, rotation, mirroring and scaling**

The machine coordinate system (MCS) does not consider zero point offsets in comparison to the workpiece coordinate system (WCS).

Display area



Description

Name of the currently active work offset, rotation, mirroring, rotation and scaling for the present machining sequence.

Notes

⑩ Work window

T,S,M	
T	D 1
Spindle	rpm
Spindle M function	
Other M funct.	
Work offset	
Unit of measure.	
Machining plane	

⑪ Horizontal softkey bar (HSK)

The user interface consists of different subsections. At the bottom of the screen is the horizontal softkey bar (HSK) containing 8 softkeys (see Section 2.2.1 in this module). The selection of a new window is made by pressing the buttons just under the softkeys. If the number of functions exceeds the representation capacities of the maximum of 8 softkeys than a partitioning in two different horizontal softkey bars occurs.



The change over forth and back takes place with the “Menu extend“-key on the operator panel.

⑫ Vertical softkey bar (VSK)

The available functions and operating modes can be selected from the keys right beside the vertical softkey bar (VSK) on the right hand side of the screen. If the number of functions exceeds the representation possibility capacity of the maximum of 8 softkeys than a partitioning in two different vertical softkey bars occurs.



The changeover takes place with the:
“Forward“-key or the



“Backward“-key (VSK 8).







2.2 Operating with softkeys and buttons

The Sinumerik Operate separates into **6 different operating areas** (“Machine“, “Parameter“, “Program“, “Program Manager“, “Diagnostics“, “Start-up“), **3 operating modes** (“JOG“, “MDA“, “AUTO“) and **2 functions** (“REPOS“, “REFPOINT“).



By pressing the button “**MENU SELECT**“ on the operator panel the active screen will be overlaid with the display of a yellow horizontal softkey bar at the bottom and a yellow vertical softkey bar on the left side of the screen. They consist of 6 operating area softkeys in the HSK and 3 operating mode-, as well as 2 function softkeys in the vertical softkey bar.

2.2.1 Horizontal softkey bar (HSK)

Display area	Description
 <p>Machine</p>	<p>By pressing HSK 1 “Machine“ the operating are “Machine“ will be called up.</p>
 <p>Parameter</p>	<p>By pressing the HSK 2 “Parameter“ the operating area “Parameter“ will be called up.</p>
 <p>Program</p>	<p>By pressing the HSK 3 “Program“ the operating area “Program“ will be called up.</p>
 <p>Program manager</p>	<p>By pressing the HSK 4 “Program-Manager“ the operating area “Program-Manager“ will be called up.</p>
 <p>Diag-nostics</p>	<p>By pressing the HSK 5 “Diagnose“ the operating area “Diagnose“ will be called up.</p>
 <p>Setup</p>	<p>By pressing the HSK 6 “Setup“ the operating area “Setup“ will be called up.</p>

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2.2.2 Vertikale Softkey-bar (VSK)

Display area

Description



By pressing the VSK 1 "AUTO" the operating mode "AUTO" will be called up



By pressing the VSK 2 "MDA" the operating mode "MDA" will be called up.



By pressing the VSK 3 the operating mode "JOG" will be called up.



By pressing the VSK 4 „REPOS“ the function „REPOS“ will be called up.



By pressing the VSK 5 „REF POINT“ the function "REF POINT" will be called up.

3.1 Measurement units [metric/imperial]

The measurement units of all parameters used in the entire documentation are defined in the metric system (mm). The following table compares the equivalent imperial measuring units (inch and foot) with the metric system.

Note:

A description how to change between metric (mm) and imperial system (inch) can be found in the module B570 - "Operating mode JOG".

Metric	Inch/foot
mm	in
mm/tooth	in/tooth
mm/min	in/min
mm/rev	in/rev
m/min	ft/min

3.2 Parameter selection

The following described selection of parameters in an input mask can be called in every entry field where parameter selection is possible and numerical input is not possible.



A list of possible parameters is displayed by pressing "INSERT"-key on the keyboard
Navigation through the menu occurs with the blue cursor-keys.

Hint:

Navigation in long lists can be short cutted by pressing the initial letter or number of the parameter directly on the keyboard. Each additional pressed letter continuous to restrict the selection.



If the selected entry is orange highlighted (actual cursor position) then with pressing on of the yellow "INPUT"-keys on the keyboard the chosen value is taken over into the input field.

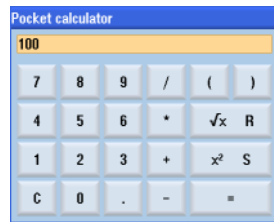


Alternatively you can switch through a list of possible choices in the input field by pressing the blue "SELECT"-key repeatedly.

Notes

3.3 Pocket calculator

The calculator can be called-up from every part of the operating area.



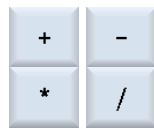
If a numerical entry is necessary in an input field you can open the pocket calculator by pressing the **equal sign (=)** on the keyboard.

If there is already a value existing in the input field e.g. 100, then the value will be captured into the calculator window.

Softkeys



By pressing the softkey "Delete" every input or outcome value in the calculator will be deleted.



For calculating values the four basic arithmetical operators are available,

as well as.....



square root (R) and....



Square (S).



If you enter the letter "R" with a following number in the calculator and press the "Calculate" button then the square root of the entry will be calculated. If you place first a "S" instead of a "R" in front of the number, the square will be calculated.



A mathematical function with values in parenthesis allows the calculation of complex mathematical expressions.



The softkey "Accept" transfers the result to the input field and closes the pocket calculator independently.



The button "Cancel" closes the pocket calculator.