

Product Information

ND 7013

Digital Readout for Manually Operated Machine Tools

ND 7013

– The convenient digital readout for milling, drilling, boring machines, and lathes

The ND 7013 digital readouts are suited for use on manual milling, drilling, and boring machines as well as lathes with up to three axes. Integrated switching inputs and outputs enable interaction with the machine. This makes it possible to perform simple tasks in automation.

Design

The ND 7013 digital readouts have been conceived for harsh workshop conditions. They feature a sturdy aluminum housing with touchscreen operation.

With its clearly organized and user-friendly user interface, operation of the ND 7013 is very simple. The 7-inch TFT monitor displays all the information you need to machine your workpieces.

Its low-profile aluminum housing with integrated power pack and fanless passive cooling is extremely sturdy and tolerant to negative influences. The unit's intuitive touchscreen made of specially hardened glass can even be operated with gloves.



Functions

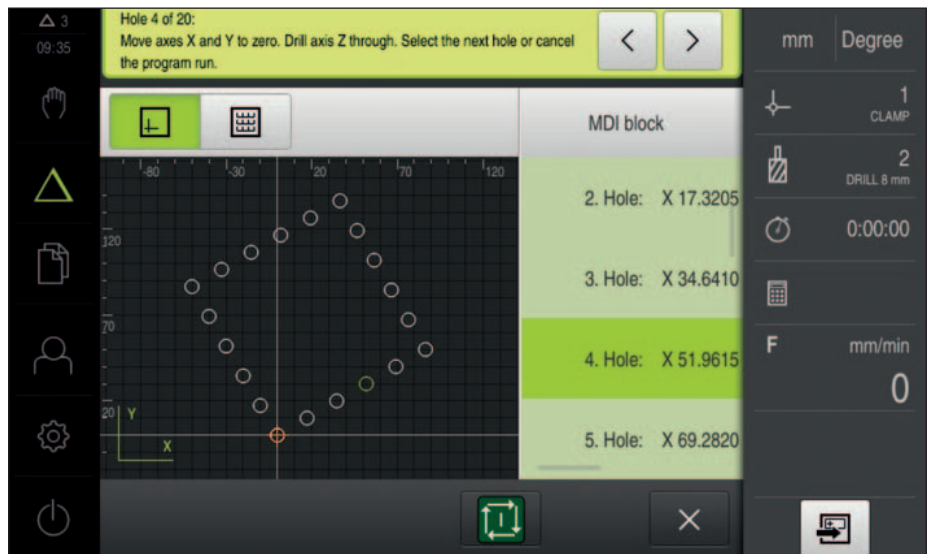
The ND 7013 digital readouts offer many useful functions for machining with manually operated machine tools. Self-explanatory operating elements and language-sensitive information in plain language permit context-sensitive operation.

The distance-to-go display facilitates positioning tasks. It enables you to approach the next position quickly and reliably by simply moving until the display reads zero. Of course the ND 7013 also offers special functions for milling and turning operations, such as:

- Hole patterns (linear, circular)
- Radius/diameter switching
- Sum display for the top slide

Presets can be determined quickly and accurately with an edge finder. The ND 7013 supports you with special probing functions.

You can individually configure the display of the ND 7013 and save your settings in the user management.

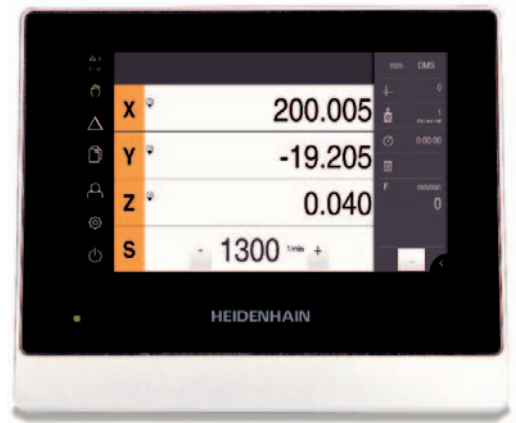


Data interface

A USB interface enables the digital readout to transfer measured values and import or export parameters and tables from or to a storage medium.

Dynamic zoom

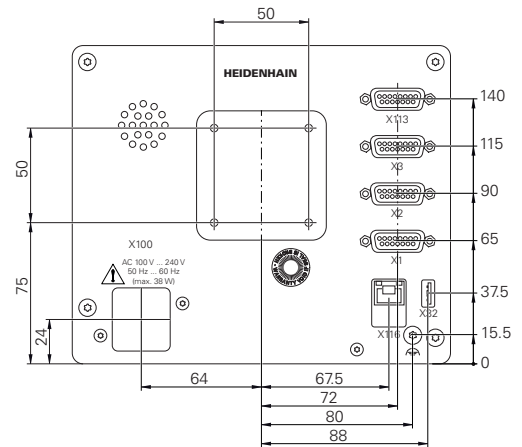
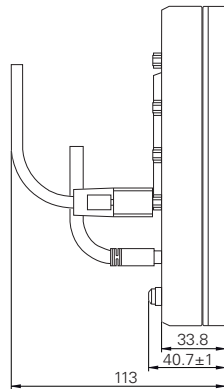
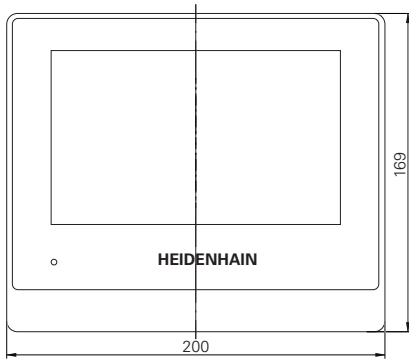
The position value is zoomed to its maximum size depending on the number of digits. This greatly improves legibility—especially from a great distance.



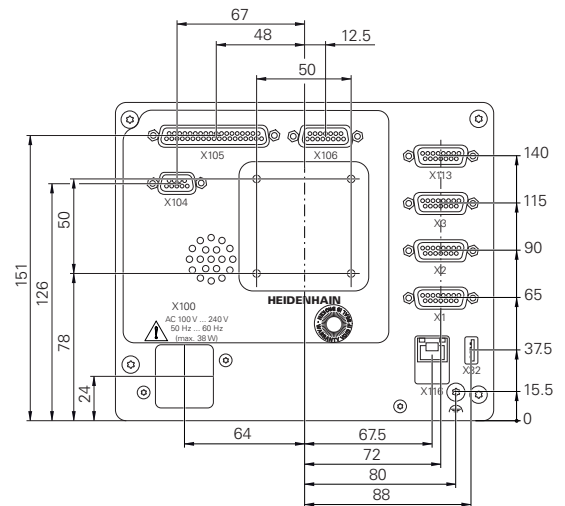
	ND 7013	ND 7013 I/O
Axes	Up to 3 axes	
Encoder inputs	$\sim 1 V_{PP} \sim 11 \mu A_{PP}$	
Display step¹⁾	Linear axis: 1 mm to 0.00001 mm	
Display	7-inch monitor for touch operation, resolution 800 x 480 pixels for position values, dialog messages, inputs and graphic functions	
Functions	<ul style="list-style-type: none"> • User and data management • 100 presets, 100 tools • Reference mark evaluation for distance-coded and single reference marks • Distance-to-go display with nominal position input in absolute or incremental values • Graphic positioning aid • Scaling factor, mirror image, magnifying function 	
For milling/drilling/boring	<ul style="list-style-type: none"> • Calculation of positions for hole patterns (bolt circles, linear hole patterns) • Tool radius compensation • Cutting data calculator • Probing functions to ascertain the preset (edge, center line and circle center) 	
	–	Controlling the spindle speed, switching functions
For turning	<ul style="list-style-type: none"> • Measuring the tool dimensions • Sum display of axes in the top slide • Taper calculator 	
	–	Constant surface speed, switching functions
Error compensation	Linear and segmented linear	
Data interface	1x Ethernet 100 Mbit / 1 Gbit (RJ45), 1x USB 2.0 (type A)	
Accessories	Single-Pos/Duo-Pos/Multi-Pos stands, Multi-Pos holder, mounting frame, power cable, adapter connector	
Power connector	AC 100 V (–10 %) to 240 V (+5 %), 50 Hz to 60 Hz (±5 %), ≤ 38 W	
Operating temperature	0 °C to +45 °C (storage temperature: –20 °C to +70 °C)	
Protection EN 60529	IP65, back panel IP40	
Mounting	Single-Pos/Duo-Pos/Multi-Pos stands, Multi-Pos holder, mounting systems with a hole pattern of 50 mm x 50 mm	
Mass		
Product	≈ 1.30 kg	≈ 1.50 kg
Product with Single-Pos stand	≈ 1.35 kg	≈ 1.55 kg
Product with Duo-Pos stand	≈ 1.45 kg	≈ 1.65 kg
Product with Multi-Pos stand	≈ 1.95 kg	≈ 2.15 kg
Product with Multi-Pos holder	≈ 1.65 kg	≈ 1.85 kg

¹⁾ Depends on the signal period or line count of the connected encoder

Mounting and accessories



Rear panel of the ND 7013



Rear panel of the ND 7013 I/O

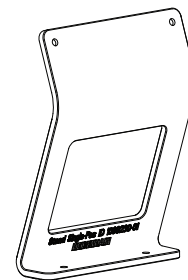
Types of mounting

The ND 7013 and ND 7013 I/O readouts can be flexibly positioned with the Single-Pos stand. By means of the Multi-Pos or Duo-Pos stand, the digital readouts can be mounted flexibly at various angles. For mounting on the machine, the Multi-Pos holder and mounting systems with a hole pattern of 50 mm x 50 mm are suitable.

Single-Pos stand

Included in delivery.
For setup and fastening to a base (display angled 20°)

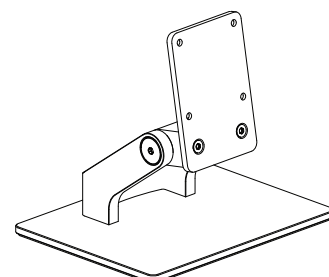
ID 1089230-05



Multi-Pos stand

For setup and fastening to a base, freely tiltable within an angle of 90°

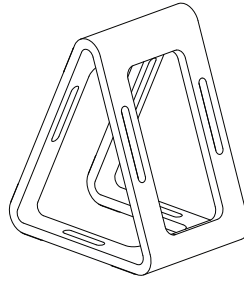
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Duo-Pos stand

For setup and fastening to a base in two positions (20° or 45° tilt)

ID 1089230-06



Mounting arm

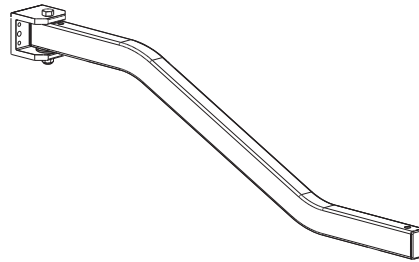
For attachment to a machine

Mounting arm, offset

ID 382929-01

Mounting arm, straight

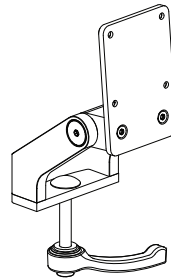
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Multi-Pos holder

For mounting to an arm, freely tiltable within an angle of 90°

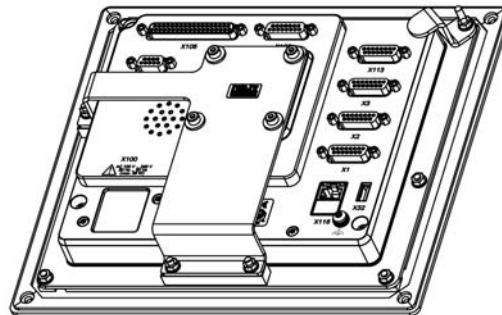
ID 1089230-08



Mounting frame

For integration in a panel

ID 1089208-01



Accessories

Adapter connectors

For pin layout adaptation during conversion from the ND 780 to the ND 7013

ID 1089214-01

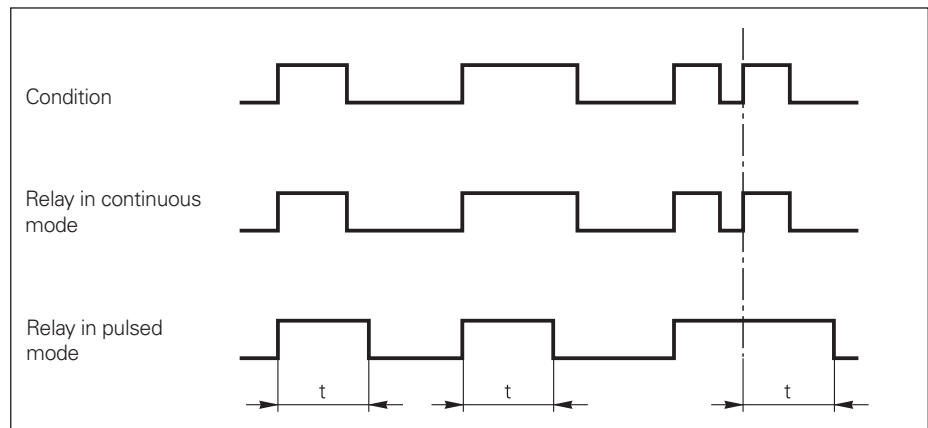
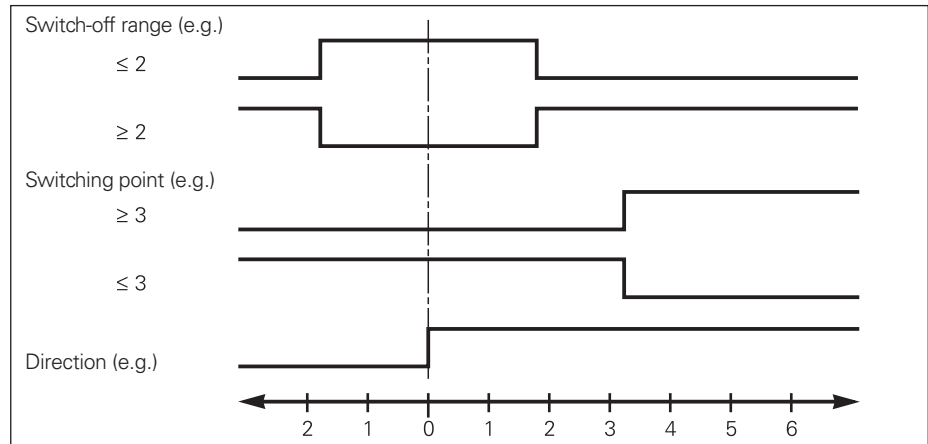


Switching outputs

Switching functions (for milling applications)
One or more switching ranges or switching points can be defined for an axis. The **switch-off ranges** are located symmetrically around the display value 0. If **switching points** are used, the relay activates when the position display reaches a specific value. The **direction** function switches when the algebraic sign is changed.

You can set whether

- the switching function should apply to the actual value or distance-to-go mode,
- the relays will open or close when the condition is met,
- or the respective relay remains activated as long as the switching condition is met (continuous mode) or for a specified duration (pulsed mode).



Switching inputs

Zero reset

In the milling mode, each axis can be set to the display value 0 over an external signal.

Detection of gear ranges

In turning mode, four switching inputs are available for the recognition of gear stages.

Connectivity of ND 7013 compared to ND 7013 I/O

	Connection	ND 7013	ND 7013 I/O	Remark
Encoder inputs Position measurement	X1, X2, X3	3	3	–
Switching functions				
Edge finder ¹⁾	X113	✓	✓	<ul style="list-style-type: none"> • Position-dependent switching functions • Import of error messages
4 logic inputs				
1 logic output				
24 logic inputs	X105	–	✓	<ul style="list-style-type: none"> • Position-dependent switching functions • Import of error messages • Spindle-speed command value • Constant surface speed
8 logic outputs				
2 relay outputs	X104			
4 analog inputs	X106			
4 analog outputs				
USB type A Import and export of data	X32	✓	✓	–
Ethernet Network connection	X116	✓	✓	–
Power connector Power supply	X100; AC 100 V to 240 V, 50 Hz/60 Hz	✓	✓	–

¹⁾ Connection of KT 130



Further information:

ND 7000


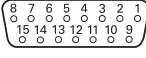

Operating Instructions

ID 1244208

User-controlled functions

Type	Function	ND 7013	ND 7013 I/O
Logo	Call the operating instructions or OEM service information	✓	✓
Spindle speed	Preset spindle speeds ("radio buttons")	–	✓
M function	Freely definable functions	✓	✓
Special functions	Selecting thread cutting, direction of spindle rotation, coolant during spindle operation, or clamping the axes	–	✓
	Coolant, setting the tool axis to zero	✓	✓
Document	Display tables, e.g. thread tables, cutting speeds	✓	✓

Pin layout

15-pin D-sub flange socket (female)												
 												
	Power supply				Incremental signals						Others	
	4	12	2	10	1	9	3	11	14	7	5/6/8/ 13/15	
$\sim 1V_{PP}$	U_P	Sensor U_P	0V	Sensor 0V	A+	A-	B+	B-	R+	R-	/	
$\sim 11 \mu A$	1	/	2	/	3	4	6	7	10	12	/	

Cable shield connected to housing; U_P = Power supply voltage

Sensor: The sense line is connected in the encoder with the corresponding power line.

Vacant pins or wires must not be used!

HEIDENHAIN

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This Product Information supersedes all previous editions, which thereby become invalid. The basis for ordering from HEIDENHAIN is always the Product Information document edition valid when the order is made.



Further information:

Comply with the requirements described in the following documents to ensure correct operation:

- Operating Instructions ID 1244208-xx
- Installation Instructions ID 1244207-xx