DIGITAL POSITION READOUT SYSTEM

Standard version for lathes with analog output for main spindle

NP 20T-V

X **Z**	axis selection keys	**Vc** — S/Vc mode selection
S	main spindle velocity selection key	**REF** — reference point mode
Δ	measuring of relative position	**T** — tool selection
inc	mm/inch measuring	measuring relative to datum points
R	diameter/radius selection	delete
L	special function	enter
P	parameter selection	**0** ... **9** — numeric value selection keys
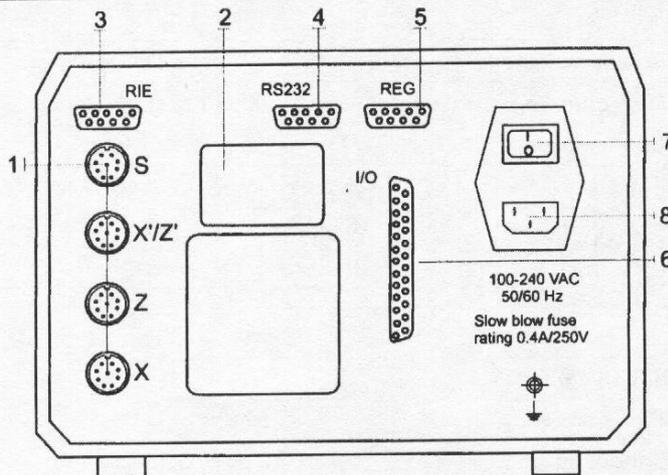
1	connectors for axes
2	inscription label
3	connector for RIE switces
4	connector for RS232C interface
5	analog output for main spindle
6	input/putput control signals
7	power ON/OFF switch
8	plug for main supply voltage

Diagram labels: RIE, RS232, REG, S, X'/Z', Z, X, I/O, 100-240 VAC 50/60 Hz, Slow blow fuse rating 0.4A/250V

GENERAL DESCRIPTION AND FUNCTIONS:

The position readout device NP20T-V is used in conjunction with different incremental transducers (linear scales, rotary encoders) as a system for measuring position and length on lathes with analog output for main spindle. The microcomputer based structure guarantees high operating reliability while software enables the introduction of additional new functions in order to simplify operation and to adapt the device to users. Digital readout systems make the work on conventional controlled manual lathes easier.

FUNCTIONS:

- Reset
- Preset
- Reference point
- ABS/Rel measuring
- Inch/mm measuring

- Radius/Diameter selection
- 9 Datum points
- Machine tool error compensation
- 9 Tool dimension parameters

- Analog output for main spindle drive
- Constant cuting speed Vc
- Special functions L
- Parameter entry and display
- Input/output control signals

OPTIONS:

- RS 232 C
- Built-in sine interpolator
- Additional parallel axis

ACCESSORIES:

- Stand C

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▶ TECHNICAL DATA:

Supply voltage	85 - 250 VAC
Supply voltage frequency	48 Hz - 52 Hz
Power consumption	cca 20 VA
Operating temperature	0 - 45°C
Relative humidity	5 - 75%
Mechanical protection	IP 54 (front plate) IP 42 (back plate, housing, connectors, switch)
Vibrations	1 g from 10 to 150 Hz
Shocks	15 g
EMC:	
Immunity	EN 50 082/2
Emission	EN 50 081/1
Dimensions	W x H x D = 294 x 228 x 100 mm
Weight	4.70 kg

▶ MEASURING SIGNALS:

Square-wave inverted signals (DI, DS):
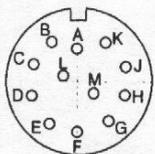
Axes X, Z, X'/Z'

Supply voltage	5 V (from device)
Max. counting frequency	500 Khz
Connector	12 pole, Amphenol

pin	A	B	C	D	E	F	G	H	J	K	L	M
signal for axis X, Z, X'/Z'	shield	0V	A	$\overline{A}$	B	–	RI	$\overline{RI}$	–	+5V	$\overline{B}$	–
signal for main spindle	shield	0V	A	$\overline{A}$	B	–	RI	$\overline{RI}$	–	+5V	$\overline{B}$	–

Sine-wave current signals (SI - option):
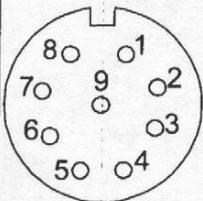
Supply voltage	5 V
Max. frequency	50 Khz
Connector	9 pole, Contact
Amplitude of measuring signals	7 to 16 µApp (1 kOhm)
Amplitude of ref. signal	2 to 8 µApp (1 kOhm)

pin	1	2	3	4	5	6	7	8	9
signal for axis X, Z, X'/Z'	I_a+	I_a-	+5 V	0 V	I_b+	I_b-	$I_{ri}+$	$I_{ri}-$	shield
signal for main spindle	A	$\overline{A}$	+5 V	0 V	B	$\overline{B}$	–	–	shield

▶ CONNECTOR FOR RIE:

external switches on machine tool
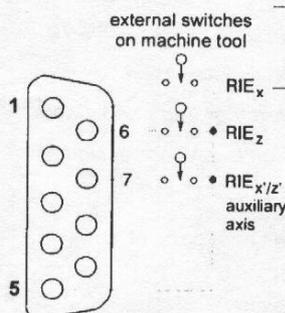
| pin	1	2	3	4	5	6	7	8	9
signal	input RIE_x	–	-24 V	+24 V	+24 V	RIE_z	$RIE_{x'/z'}$	+24 V	+24V

Remark:

The RIE connector is used in the case of using rotary encoders . A rotary encoder emits one reference pulse at each turn of the axis, therefore, a selection switch RIE has to be mounted on the machine tool for each axis. This switch allows only one of many reference pulses in a whole measuring range to reach the readout device for calibrating purposes. The pulse is enabled when the switch is open.

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CONNECTOR FOR RS 232 C:

pin	1	2	3	4	5	6	7	8	9
signal	shield	RXD	TXD	–	GND	–	RTS	CTS	–

device NP | computer/printer

+V$_{cc}$
10k

1 — shield
6 — RXD
2
7 — RTS
3 — TXD
8 — CTS
4
9
5 — GND

CONNECTOR FOR MAIN SPINDLE DRIVE:

to regulator for

shield

external potentiometer
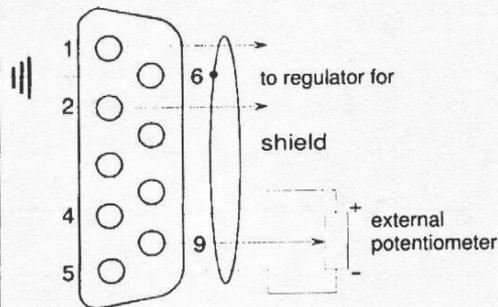
Pi:	Signals:	Pin:	Signals:
1	analog output - ±10V	6	shield
2	GND (0V)	7	+15V (for control only)
3	NC	8	-15V (for control only)
4	+5V - for potentiometer	9	to potentiometer
5	GND (0V) -for potentiometer		

CONNECTOR FOR CONTROL INPUT/OUTPUT SIGNALS (IO):

PNC / NP | Machine tool

CONTROL INPUTS
TR1
TR2
ER
SE
-24 V
+24 V
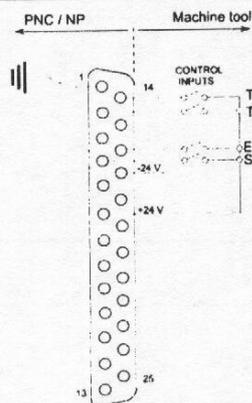
	NP 20 TV		
Pin:	**Signals**		
1	Shield	13	NC
2	Input TR2 – Transmission rate 2	14	Input TR1 – Transmission rate 1
3	NC	15	NC
4	Input SE – Start of main spindle	16	Input ER – External error
5	NC	17	-24 V – Supply voltage for inputs
6	+24 V – Supply voltage for inputs	18	NC
7	NC	19	NC
8	NC	20	NC
9	NC	21	NC
10	NC	22	NC
11	NC	23	NC
12	NC	24	NC
		25	NC

DIMENSIONS:
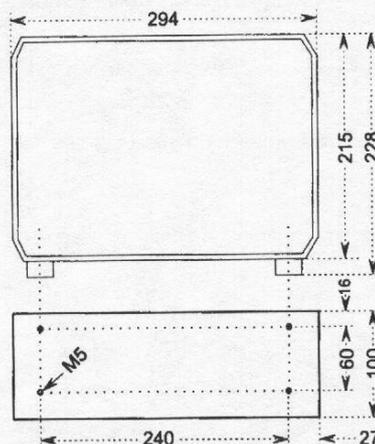
294

215
228

16

M5

60
100

240

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DIGITAL POSITION READOUT SYSTEM

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► STANDARD DELIVERY: ◄

Digital readout system NP 20T-V

Power supply cable with plug-in connector for 220 VAC, 50 Hz, 3m length

Spare fuse 0.2 AT for 220 VAC, or 0.4 AT for 110 VAC

► OPTIONS: ◄

All devices can be delivered with the following options:

S	sine current measuring input signals with interpolation electronics
Q	Auxiliary parallel axis to X or Z (selectable with parameters)
R	RIE connector
K	RS232C serial interface

► OPTION - ACCESSORIES: ◄

Stand C
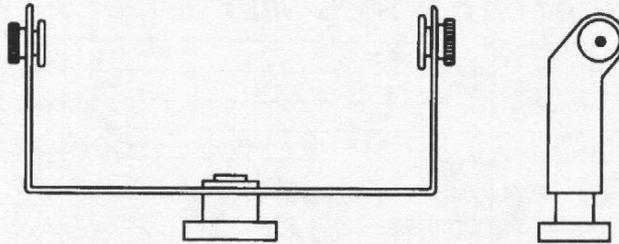
► ORDERING DATA: ◄

Standard delivery:	Options:			
NP 20T-V	S	Q	R	K

RS232C serial interface

RIE connector

Auxiliary parallel axis

sine current measuring input signals with interpolation electronics

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