

3.4. Interfaces, pin-out



CAUTION!

The interfacing of external equipment to the provided interface connectors is only allowed to be carried out through qualified personnel.

3.4.1. Connector for lubricating system (receptacle, 4-pins female)

(Figure please see chapter “technical data, description”)

PIN	Connection
2	open collector
3	+ 24 V / max. 0,2 A

Any 24 VDC solenoid valve of appropriate capacity can be connected between pins 2 and 3, for instance for an external lubricating system or control for compressed air, etc.

3.4.2. Serial interface RS 232, SUB-D, 9-pin female

(Figure please see chapter “technical data, description”)

(9600 baud, 8Bit, no parity, 1 stop-bit)

For further details see chapter “communication PC – thread tapping unit”.

PIN	Connection
2	232 TX
3	232 RX
5	232 GND

3.4.3. I/O user interface connector (SUB-D, 15-pins)

(Figure please see chapter “technical data, description”)



NOTE

The galvanically isolated inputs and outputs are active with respect to external ground. External inputs and relays (N/O) are rated max. 100 mA, max 48 VDC.

PIN	Connection
1	Relay 1, contact A contact closed (machine ready)
9	External input 1
2	Relay 2, contact A contact closed, (quality OK)
10	External input 2
3	Relay 3, contact A contact open
11	External input 3
4	Relay 4, contact A contact open
12	External input 4
5	Common reference for relays 1; 2; 3; 4 (all contact B)
13	input start 1 (Function like manual start)
6	Ground external
14	Input start 2 (Function like foot start)
7	+ 24 VDC, auxiliary supply max. 50 mA (7,2W)
15	Open collector Valve 3 (only microtap II Software V4.9 and higher)

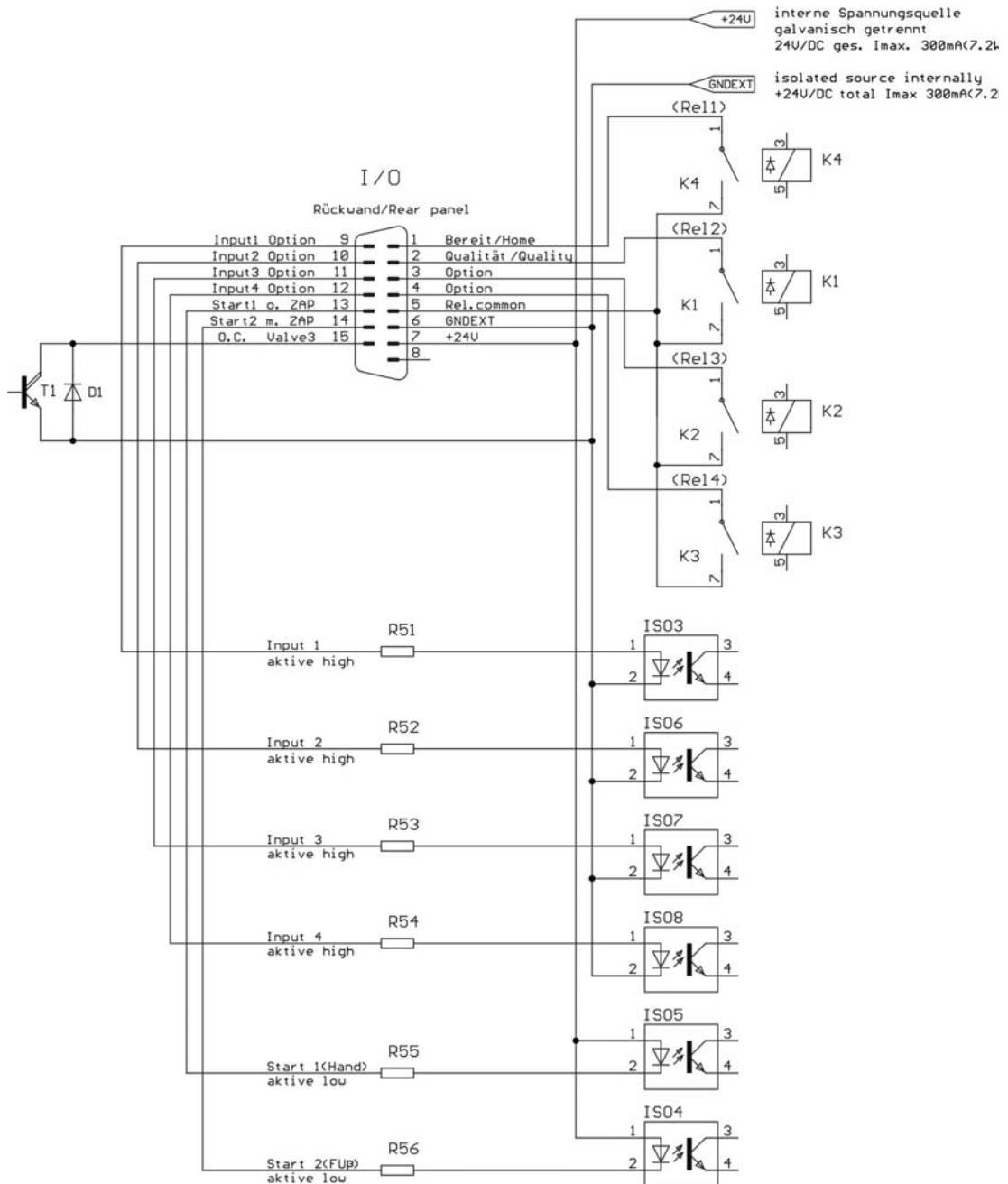


Warning

For usage of the machine via remote control
Ensure that no person can enter the operating area of the machine when it is under remote control by erecting a fence, photo-electric gate or other means of barrier.

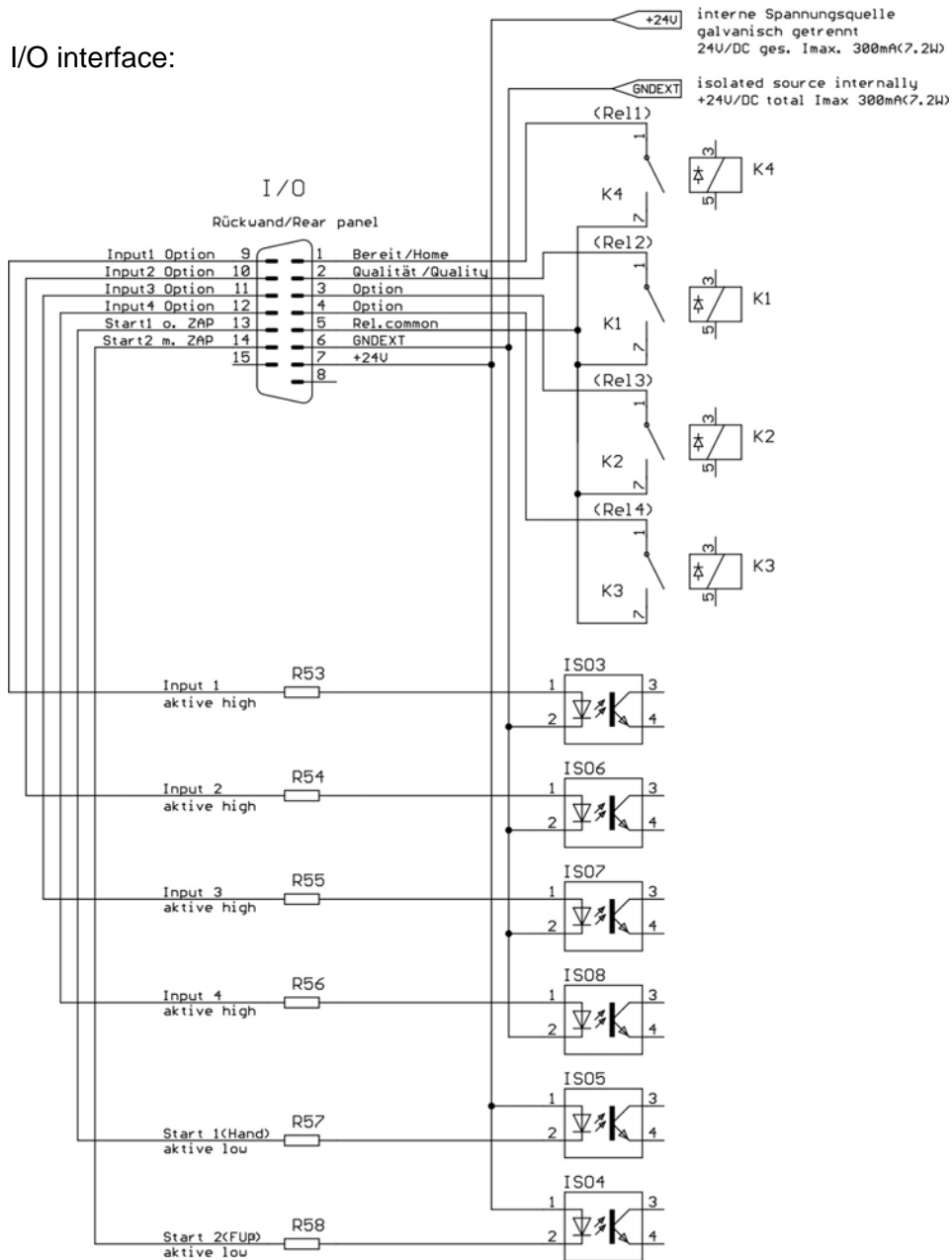
3.4.4. I/O wiring diagram (internal wiring of the machine)

Information about the internal wiring of the I/O interface
microtap II-G5 (valid for software version 4.9 and higher)

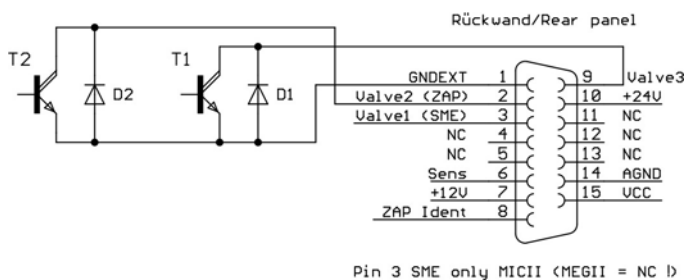


Information about the internal wiring of the I/O and ZAP interface
 - microtapII G5 (valid only for software up to version 4.0)
 - megataplI

I/O interface:



ZAP Interface:



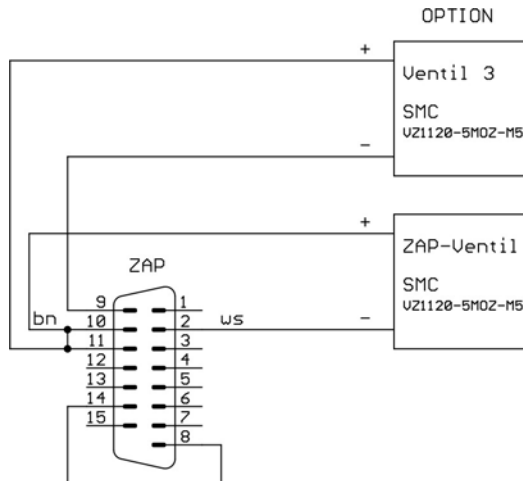
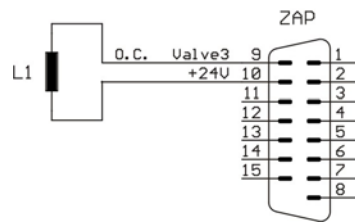
3.4.5. I/O Samples (external wiring of the machine)

3.4.5.1 Sample 1A: Magnetic valve V3 to connector ZAP (megataplI)

External wiring of the ZAP interface

- microtapII G5 (valid only for software up to version 4.0)
- megataplI

(Spule Magnetventil max. 2.1W)



- OPTION
- 1= GNDEXT
 - 2= Open Collector Valve2 (ZAP)
 - 3= Open Collector Valve1 (SME)
 - 4;5;6;7;15= NC
 - 8= ZAP Ident
 - 9= Open Collector Valve3 (Option)
 - 10;11;12= +24U/500mA max (bei MEGII ist nur Pin 10 belegt, ext. verbinden)
 - 14= AGND

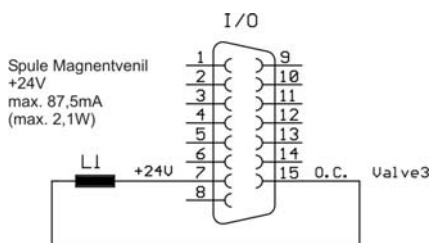
Attention for microtapII G5:

Connector for valve 3 is located at the I/O interface for software up to version 4.0 (see sample 1B)

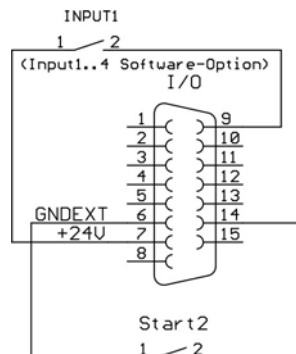
3.4.5.2 Sample 1B: magnetic valve V3 to connector I/O (microtapII)

External wiring of the I/O interface

microtapII G5 ((valid for software version 4.9 and higher)

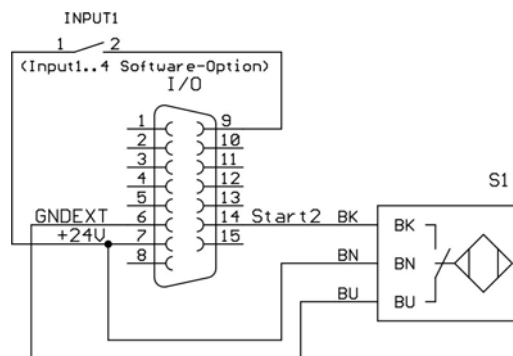


3.4.5.3 Sample 2A: Input signal Start2 by closing



3.4.5.4 Sample 2B: Input signal Start2 by switch Input1 (Option !)

It is only possible to read input 1 ... 4 with Software-Option

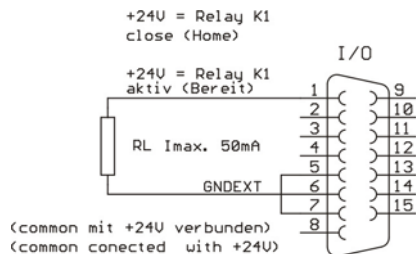


Input 1-4 = active high (The inputs 1-4 are wired against PIN 6 GND Ext.)

Start 1-2 = active low (The inputs Start 1-2 are wired against PIN 7 +24V)

In ZAP-Mode (Start Fz, Start Auto Sz, autostart Fz/Sz +/-) the pneumatic valve for the pneumatic Z-Axis spindle feed is actual when the closer (Start 2) is activated.

3.4.5.5 Sample 3A: Exit relay contact (K1S ready) by internal +24V power source.



3.5. Link between PC and thread tapping machine

The communications link between a PC and the thread tapping machine is realised via serial interface RS 232 and is based on ASCII code.

9600 baud, 8 data bits, 1 stop bit, no parity bit



NOTE

Further details of the PC control and data acquisition software is provided in the WinPCA software operating handbook.

3.5.1. Set of parameters forwarding to the machine

The set of parameter values is transferred as a block ASCII code.

Each parameter has a single character code followed by the symbol "=" selected parameter value.

The end of each parameter datum is coded by the characters "<CR>" (carriage return). No parity sum created. EXAMPLE: T=105<CR> (depth = 1,5 mm)

The set of parameters includes the following parameters:

Parameter	Code	Range of values	
Depth	'T'	0 - 800	(0,0 – 80,0 mm)
Spindle speed	'N'	300 - 3000	(300 - 3000 min ⁻¹)
Fracture torque	'B'	30 - 7000	(30 - 7000 Ncm)
chip clearance	'E'	0 - 5	(0 – 5 chip clearances)
Lubricant pulse	'L'	0 - 10	(0-10)
Thread	'G'	0 1	(0 = right hand) (1 = left hand)
Reverse mode	'R'	0 1 2	(0 = 100%) (1 = 200 %) (2 = 50 %)
Start- mode	'A'	0 = Start manuel 0 = Start Fz 1 = Auto 2 = auto + Sz	(Start MAN) (Start Fz) (only with ZAP) (Autostart) (St Fz/Sz) (only with ZAP)
Sz	'S'	0 - 700	(0,0 – 70,0 mm)
DSz	'D'	0 - 100	(0,0 – 10,0 mm)
Remote control	'H'	0 1	(0 = Off) (1 = On)
Fz	'F'	0 - 100	(0 – 10,0 N)

3.5.2. Feedback messages of the thread tapping machine

Upon completion of an operation cycle, the machine responds in the following manner:

- 'Y' cycle ready, no error
- 'X' error

In the event of an error, code "Q?" can be used to request an indication as to the nature of the error.

3.5.3. How to request for specific values

The request is done by sending the code for a specific value followed by "?" and "CR LF".

EXAMPLE: Q?<CR>

The thread tapping machine responds then with the same code and its current value.

EXAMPLE: Q=2<CR>

The following values are monitored exactly:

Value	Code	Value range	
depth	'T'	0 - 800	(0,0 – 80,0 mm)
Mz	'M'	30 - 7000	(30 - 7000 Ncm)
Reverse mode	'R'	0	(0 = 100%)
		1	(1 = 200 %)
		2	(2 = 50 %)
Sz	'S'	0 - 700	(0,0 – 70,0 mm)
Mz (tapping torque)	'C'	30 - 7000	(30 - 7000 Ncm)
Quality	'Q'	0-7	see under "Quality"

The status of "Mz" can be requested with "M?".

After response "Y" the tapping torque "Mz" is monitored (machine ready, no error).

3.5.4. Quality monitoring

The quality status can be requested with "Q?"

Usually, a quality status is requested following an "X" (error) response.

The numeric code provides the following information:

- 0 = OK
- 1 = command tapping depth not reached
- 2 = tapping start fault
- 3 = (not used)
- 4 = process interruption by operator
- 5 = error in reverse mode
- 6 = error Sz
- 7 = EMERGENCY STOP active

In special applications, further information can be retrieved:

Quality status	Additional requests	Code used
1	tapping depth reached	t?
5	no. of reversing attempts	r?
6	Sz	s?

3.5.5. Remote control mode

The thread tapping machine can be remote controlled.

For this mode, the option ZAP has to be installed, see chapter "integrating options".

Also, the operation via the machine control panel is then disabled.

Remote control ON: H=1<CR>

Remote control OFF: H=0<CR>

- Install option ZAP, please see chapter 7.2



WARNING

For usage of the machine via remote control

Ensure that no person can enter the operating area of the machine when it is under remote control by installing a fence, photo-electric guard or other means of barriers.