

I. Connector assignment TCT-2

Connector 7-pole (electronics):

PIN	Cable colour	Function / description	Remark
1	red	+6 to +24V DC electronics for position sensor	A
2	black	0V DC electronics for position sensor	
3	yellow	Relay - Base	B
4	brown	Relay - Output A	
5	blue	Relay - Output B	
6	-	-	-
7	-	-	

Connector 8-pole (stepper motor):

PIN	Cable colour	Function / description	Remark																																																																					
1	black	<table border="1"> <thead> <tr> <th colspan="4">TYPE OF CONNECTION (EXTERN)</th> <th colspan="3">MOTOR</th> </tr> <tr> <th rowspan="2">UNIPOLAR</th> <th colspan="3">BIPOLAR</th> <th rowspan="2">CONNECTOR PIN NO. ↗</th> <th rowspan="2">LEADS</th> <th rowspan="2">WINDING</th> </tr> <tr> <th>TWINDING</th> <th>SERIAL</th> <th>PARALLEL</th> </tr> </thead> <tbody> <tr> <td>A —</td> <td>A —</td> <td>A —</td> <td>A —</td> <td>1</td> <td>BLK</td> <td rowspan="2">A</td> </tr> <tr> <td>COM —</td> <td>A —</td> <td>—</td> <td>—</td> <td>3</td> <td>BLK/WHT</td> </tr> <tr> <td>A\ —</td> <td>B —</td> <td>A\ —</td> <td>A\ —</td> <td>2</td> <td>GRN/WHT</td> <td rowspan="2">A\</td> </tr> <tr> <td>B —</td> <td>B —</td> <td>B —</td> <td>B —</td> <td>4</td> <td>GRN</td> </tr> <tr> <td>COM —</td> <td>B —</td> <td>—</td> <td>—</td> <td>5</td> <td>RED</td> <td rowspan="2">B</td> </tr> <tr> <td>B\ —</td> <td>B —</td> <td>B\ —</td> <td>B\ —</td> <td>7</td> <td>RED/WHT</td> </tr> <tr> <td>COM —</td> <td>—</td> <td>—</td> <td>—</td> <td>6</td> <td>BLU/WHT</td> <td rowspan="2">B\</td> </tr> <tr> <td>B\ —</td> <td>—</td> <td>B\ —</td> <td>B\ —</td> <td>8</td> <td>BLU</td> </tr> </tbody> </table>	TYPE OF CONNECTION (EXTERN)				MOTOR			UNIPOLAR	BIPOLAR			CONNECTOR PIN NO. ↗	LEADS	WINDING	TWINDING	SERIAL	PARALLEL	A —	A —	A —	A —	1	BLK	A	COM —	A —	—	—	3	BLK/WHT	A\ —	B —	A\ —	A\ —	2	GRN/WHT	A\	B —	B —	B —	B —	4	GRN	COM —	B —	—	—	5	RED	B	B\ —	B —	B\ —	B\ —	7	RED/WHT	COM —	—	—	—	6	BLU/WHT	B\	B\ —	—	B\ —	B\ —	8	BLU	C
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Warning !

The notes following on the next page must be observed carefully.



II. Remarks to the connector assignment concerning TCT-2

Remark	Description
A	The electronic system for the position sensor has to be supplied with a direct current of 6V to 24V. Electronics have to be fused externally; the maximum current must not exceed 500mA
B	The position sensor controls an integrated relay that can be used by the supervising CNC controller as a limit or reference switch: <ul style="list-style-type: none"> • Once the blade has reached the homing point during a reference run, there is contact between PIN3 and PIN5 of the 7-pole M16 connector. • If the blade is located outside the reference position, there is contact between PIN3 and PIN4 of the 7-pole M16 connector. • Depending on the applied CNC controller, the integrated relay can be used as a normally closed switch (NC) or as a normally open switch (NO). • The switching voltage of the relay must not exceed 24V DC; the maximum switching current must not exceed 500mA.
C	The connection of the stepper motor depends on the driver used. The following documentation has to be observed carefully. Stepper motor and stepper controller have to be fused externally.

Warning !



The electrical and mechanical connection of the processing unit has to be done with utmost accuracy by an expert only. It is not allowed to put the unit in operation before all necessary and required country-specific safety regulations have been observed and checked carefully. Only the operator of the facility (i.e. machining system) is responsible for observing all relevant safety regulations.

III. Stepper motor specifications

Front view and mounting

Side view

Rear view

SPECIFICATION	CONNECTION	UNIPOLAR OR BIPOLAR-1 WINDING		BIPOLAR	
		BIPOLAR-1 WINDING	4-8	SERIAL	PARALLEL
VOLTAGE (VDC)					
AMPS/PHASE		2.0	4.8	1.41	2.82
RESISTANCE/PHASE (Ohms)@25°C		2.4±10%	4.8±10%	4.8±10%	1.2±10%
INDUCTANCE/PHASE (mH) @1KHz		6.7±20%	6.7±20%	26.8±20%	6.7±20%
HOLDING TORQUE (Nm) [lb-in]		1.27 [11.28]	1.27 [11.28]	1.77 [15.62]	1.77 [15.62]
DETTENT TORQUE (Nm) [lb-in]				0.068 [0.602]	
STEP ANGLE (°)				0.9	
STEP ACCURACY (NON-ACCUM)				±5%	
ROTOR INERTIA (kg-m²) [lb-in²]				4.8x10 ⁻⁵ [0.164]	
WEIGHT (kg) [lb]				1.0 [2.2]	
TEMPERATURE RISE: MAX.80°C (MOTOR STANDSTILL; FOR 2 PHASE ENERGIZED)					
AMBIENT TEMPERATURE -10~+50°C [14°F ~ 122°F]					
INSULATION RESISTANCE 100 MΩhm (UNDER NORMAL TEMPERATURE AND HUMIDITY)					
INSULATION CLASS B 130° [266°F]					
DIELECTRIC STRENGTH 500VAC FOR 1 MIN. (BETWEEN THE MOTOR COILS AND THE MOTOR CASE)					
AMBIENT HUMIDITY MAX. 85% (NO CONDENSATION)					

PERMISSIBLE RADIAL+AXIAL FORCE
ROTOR SPRING-MOUNTED IN AXIAL DIRECTION

WIRING DIAGRAM
(A) BLK
BLK/WHT
GRN/WHT
(A) GRN
(B) RED
RED/WHT
BLU/WHT
(B) BLU

TYPE OF CONNECTION (EXTERN)	BIPOLAR		UNIPOLAR		CONNECTOR PIN NO.	LEADS	WINDING
	TWINDING	SERIAL	PARALLEL	PARALLEL			
UNIPOLAR	A	A	A	A	1	BLK	A
	B	B	B	B	2	GRN	A
	COM	COM	COM	COM	3	BLK/WHT	
	A	A	A	A	4	GRN	A
	B	B	B	B	5	RED	B
	COM	COM	COM	COM	6	RED/WHT	
	A	A	A	A	7	BLU	B
	B	B	B	B	8	BLU/WHT	B

FULL STEP 2 PHASE-Ex., WHEN FACING MOUNTING END (X)

STEP	A	B	A'	B'
1	+	+	-	-
2	-	+	+	-
3	-	-	+	+
4	+	-	-	+

CCW
CW

AXIAL-FORCE F _a (N)	F _a =15
DISTANCE α (mm)	5 10 15 20
RADIAL-FORCE F _r (N)	130 90 70 52
AXIAL	RADIAL
SHAFT PLAY (mm)	0.08 0.02
AT LOAD MAX: (N)	4.5 4.5

SCALE	FREE	APVD	S.H.alpha.
X	+0.5	CHKD	19.10.10
1PL	+0.2	DRN	J.W.
2PL	+0.1	ANGLE	±30°

1 NEW VALUE OF HOLD. TOR. 04.11.13 J.D.

DATE APVD

DATE

SIGNATURE

STEPPING MOTOR

19.10.10 DWG.NO