

Connectors

NC
Vac_1
Vac_2
Vac_c

FUSE_1	FUSE_2	Vac_1	Vac_2	24V -	24V +	24V -	24V +
MOTOR-	MOTOR+	NC	Vac_c	PWR-	PWR+	PWR-	PWR+

Voltages at Connectors

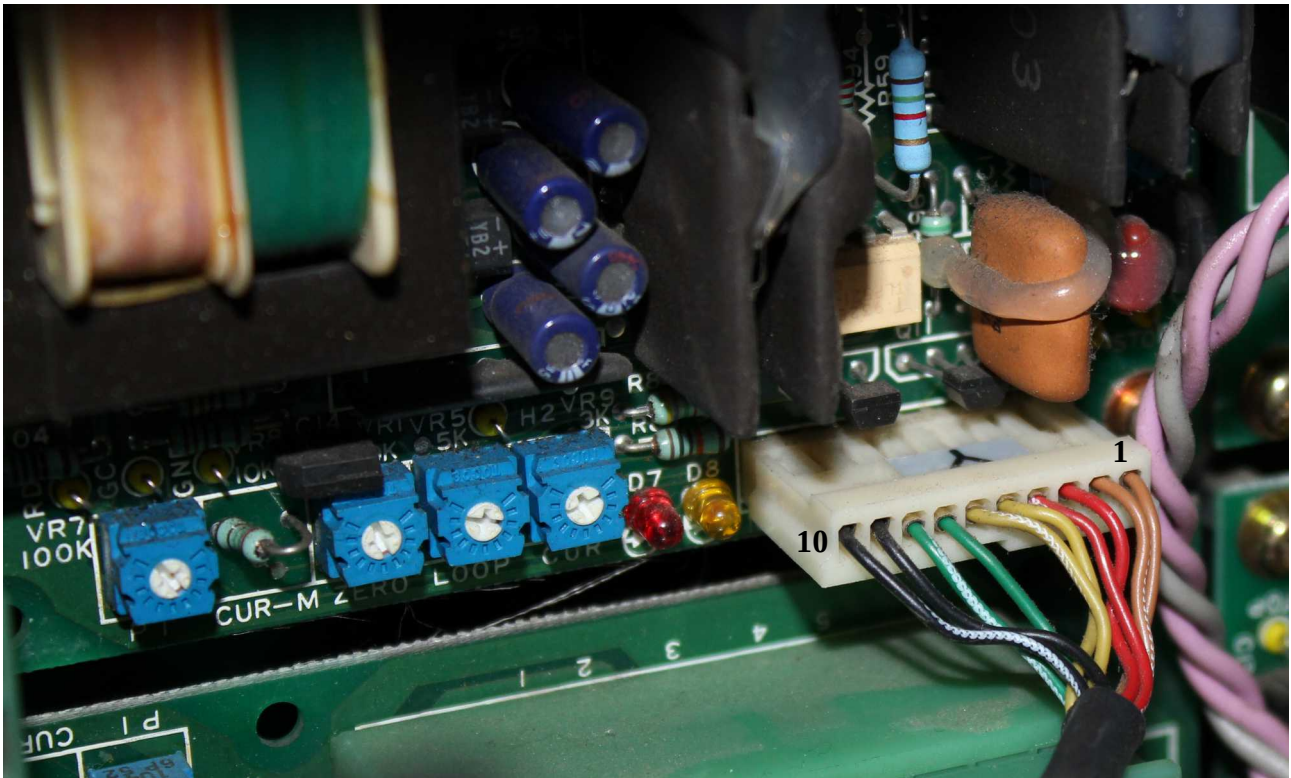
Signal1	Signal2	Measurement	Comment
24V+	24V-	+24V DC, no AC	From Power-Sequencing Board
Vac_1	Vac_2	~ 32V AC	Directly from Transformer (Y-P-Y)
Vac_c	Vac_1	16V AC	Directly from Transformer (Y-P-Y)
Vac_c	Vac_1	16V AC	Directly from Transformer (Y-P-Y)
PWR+	PWR-	141V DC	Transformer → Rectifier → Capacitor

the 16V AC is rectified and used to generate +-12V with 7812 and 7912 LDOs

Pinout Control-Connector Servo-Amp

Pin	Function	Measured vs. Logic-GND
1	??	0V
2	GND	
3	Analog-In	+/-0.12V at slow Speed, 0.07V at even slower speed (both in jogging mode)
4	GND	
5	??	Stopped: 2,7V Moving: -12V, speed has no influence
6	??	-12V
7	??	Stopped: 12V, Moving: 0,6V, speed has no influence
8	GND	
9	??	No DC voltage, slowly discharge via multimeter, 0,3V AC at all times
10	??	No DC voltage, slowly discharge via multimeter, 0,3V AC at all times

Measured at W-Axis Amp



Connections at the driver board

- 5&6 connect to the output of a „TLP372“ opto, led-side of the optos has a low-side switch (74LSxxx)
- 7&8 same as above
- 9&10 same as above
- 1 connected to „NEC μ pc610d“ 11Bit DAC; +/-10V full range output
- 3 same as 1
- 2&4 GND

Voltages at runtime

- 9&10 0.788V when idle or moving, 0V during ESTOP
- 7&8 11V when idle, 0.62V when moving
- 5&6 15V when idle, 0.72V when moving
- 1 no voltage change during move. Even when measured between 1-3

Connections at the servo amp

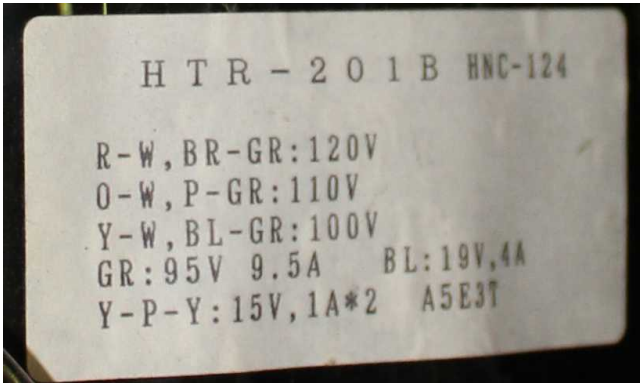
- 1 connects to test-pad 'REF'
- 2 GND
- 3 connects to test-pad 'F/V'
- 4 GND
- 5 connects to test-pad 'STOP'
- 6 -12V from 7812 LDO
- 7 connects to test-pad 'GC'
- 8 GND
- 9 connects to test-pad 'RDY'
- 10 -24V from power-connector (GND from power-sequencer board)

Conclusions

- 1 perhaps zero-point calibration?
- 3 analog input, speed mode
- 5-6 ??
- 7-8 ??
- 9-10 Drive-Enable, most likely switches the two relays (they are 24V types)

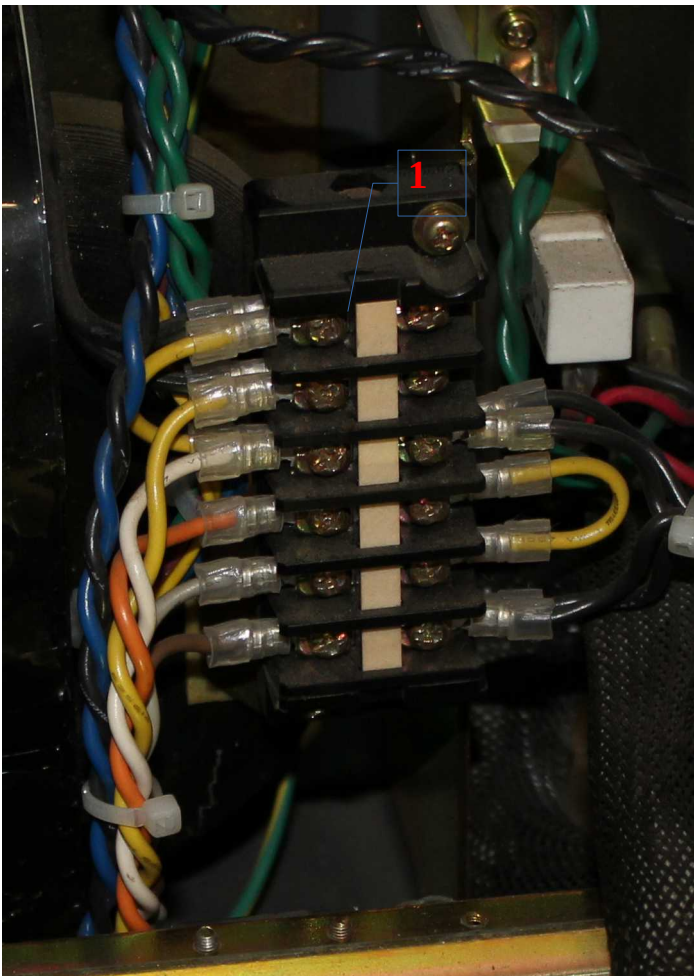
I can't find an overcurrent output!?

Trafo



- GR-GR direct to rectifier, Fuse after the Capacitor
- Y-P-Y direkt to Servo Amps
- BL-BL via Fuse to Power-Sequence-Board

The Power-Sequence-Board has a rectifier to generate +24V



1. FAN1, connected to (3)
2. FAN2, Trafo-Yellos
3. connected to (1), Trafo-White, 230V-N from Power-Switch
4. connected to (5), Trafo-Orange
5. connected to (4), Trafo-Grey
6. Trafo-Brown, 230V-P from Power-Switch

3/6 also connect to the PSU for the digital part.

About 100V AC between 1/2