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Low-Power Motor Amplifier

TA310



- Sinusoidal or trapezoidal operation
- Very low electrical noise
- 150W continuous/325W peak
- 5Khz bandwidth
- Integral forced-air cooling
- Digital on-the-fly gain control (DTS)
- Over temperature protection

Applications

- x-y stages
- brushless DC motors
- wafer handling
- metrology tools

A robust linear amplifier, built to provide quiet and smooth power to brushless motors.

The TA310 is a linear three-phase servo motor amplifier, designed to drive a brushless motor with up to 325W of power. The TA310 is an excellent solution for small rotary or linear brushless motors in high-precision positioning applications, and systems requiring ultra-quiet driving power, when low-noise operation is essential.

The TA310 is optimized for both sinusoidal drive output, and trapezoidal output. However, unlike standard PWM (switcher-type) amplifiers , the trapezoidal output is smoothed to minimize cogging. This flexiblity enables the engineer to provide a clean linear solution for the most demanding motion control applications.

Trust Automation's Dynamic Transconductance Selection (DTS) feature allows changing the amplifier's torque gain on-the-fly thus permitting high-resolution control, without sacrificing power capabilty. DTS is included on all of Trust Automation's amplifiers.

The TA310 can be operated in voltage (velocity) mode or current (torque) mode; selected via a user-accessible DIP switch. Fault logic is also selectable via a DIP switch.

Trust Automation is committed to products that are easy to install and use. Amplifier connections are made via pluggable-terminal connectors. Therefore, all connections are easily installed and removed, which reduces hardware cost, and assembly time.

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TRUST™ AUTOMATION, INC.

TA310

Connector Pinouts

Connector – J1

Wago P/N 733-110

Pin	Description
1	Command Signal Input Phase A+
2	Command Signal Input Phase A-
3	Command Signal Input Phase B+
4	Command Signal Input Phase B-
5	Dynamic Transconductance Select Bit D0
6	Dynamic Transconductance Select Bit D1
7	/ENABLE*
8	FAULT*
9	Aux Gnd
10	V_{AUX} (user-supplied +5V)**

Connector – J2

Wago P/N 734-105

Pin	Description
1	Motor Phase A
2	Motor Phase B
3	Motor Phase C
4	GND
5	V_{SUPPLY} (15-48VDC)

Connector – J3

Wago P/N 733-105

Pin	Description
1	Hall +5V (20mA max)
2	Hall Gnd*
3	Hall A
4	Hall B
5	Hall C

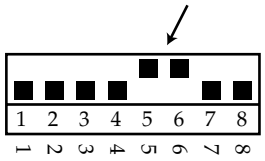
*Referenced to Aux Gnd
**User-supplied/connected for optical isolation (optional)
***Referenced to GND

Switch Settings

S1 – System Configuration

SW#	DOWN	UP
1	TA310-supplied +5V (20mA max)	User-supplied +5V (for optical isolation)
2	Aux Gnd tied to GND	Aux Gnd isolated from GND
3	/FAULT	FAULT
4	Current mode	Voltage mode (A_V=20)
5	DTS bit 0	
6	DTS bit 1	
7	Trapezoidal commutation	Sinusoidal commutation
8	60° Hall commutation	120° Hall commutation

S1-5, S1-6 are shown UP.



Gain - Transconductance & DTS

Setting	S1-5	S1-6
10V in = 2A out	Down (0)	Down (0)
10V in = 4A out	Up (1)	Down (0)
10V in = 6A out	Down (0)	Up (1)
10V in = 8A out	Up (1)	Up (1)

NOTE:
S1-5 and S1-6 must be "UP" for DTS use.

Electrical

Supply Voltage – unipolar	15-48V
Equivalent Motor Voltage	up to ±43V*
Output Current	±8A peak**
Fault	TTL Level 0 or 1
/Enable	TTL Level 0
Command Input	±10V
Torque Gain	0.2–0.8/V
Bandwidth	5KHz***

*dependent upon motor load
**for 0.5 second
***into a 2.5 mH load

Mechanical

Length	9.0 inches (allow >1 inch clearance on each end for sufficient forced-air cooling)
Width	2.7 inches
Height	3.0 inches
Weight	2lbs. 10 oz.
Mounting	(4) 6-32 screws

Absolute Maximum Ratings

Supply Voltage	52V
Command Input	±12V
Heatsink Temperature	75°C
Heat Dissipation – continuous	100W
– peak	200W

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