

Micro-Power Motor Amplifier

TA305



- Sinusoidal or trapezoidal operation
- Very low electrical noise
- 25W continuous/50W peak
- 5Khz bandwidth
- Integral forced-air cooling
- Digital on-the-fly gain control (DTS)
- Over temperature protection

Applications

- optics positioners
- laboratory test equipment
- linear motor stages
- small brushless DC motors

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

The TA305 is a linear three-phase servo motor amplifier, designed to drive a brushless motor with up to 50W of power. The TA305 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 TA305 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 flexibility 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 capability. DTS is included on all of Trust Automation's amplifiers.

The TA305 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.

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

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)

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

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

Switch Settings

S1 – System Configuration

SW#	DOWN	UP
1	TA305-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

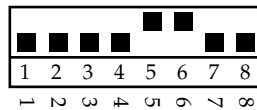
Gain - Transconductance & DTS

Setting	S1-5	S1-6
10V in = 0.5A out	Down (0)	Down (0)
10V in = 1.0A out	Up (1)	Down (0)
10V in = 1.5A out	Down (0)	Up (1)
10V in = 2.0A out	Up (1)	Up (1)

NOTE:

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

S1-5, S1-6 are shown UP.



Electrical

Supply Voltage	15-48V
Equivalent Motor Voltage	up to ±43V*
Output Current	±2A peak**
Fault	TTL Level 0
/Enable	TTL Level 0 or 1
Command Input	±10V
Torque Gain	0.05-0.2A/V
Bandwidth	5KHz***

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

Mechanical

Length	5.5 inches (allow >1 inch clearance on each end for sufficient forced-air cooling)
Width	2.2 inches
Height	2.1 inches
Weight	20 ounces
Mounting	(4) 6-32 screws

Absolute Maximum Ratings

Supply Voltage	52V
Command Input	±12V
Heatsink Temperature	75°C
Heat Dissipation – continuous	30W
– peak	50W