



TECHNICAL DATA SHEET

/// TORNADO BASIC MODULE

Release 2.0 /// February 2013

TORNADO GEN I MODULE

Base Product Size	Length in transport direction: 104 mm Depth: 106 mm Height: 38 mm
Weight	200g
Mechanical Interface	Module to external mounting (Application): Screws M4 Belt drive / shaft: Hex Clutch
Housing	Material: Aluminium
Control / Electrical	Suction Force: Analog 0-10V Input Signal Belt Speed & Direction: External Motor (Not included) Signals: Impeller speed output Connection: AMP CT - 6 pole connector Supply Voltage: 24V Current Rating: 1A
Rated Belt Speed	Transport speed: Current applications up to 8m/sec
Suction Force Characteristics	Suction force: Proportional to Impeller Speed Suction Force on Belts (10V): 1,2N Suction Force @ 10mm distance (10V): 0,9N Suction force @ 20mm distance (10V): 0,5N
Reliability	(Gen I only) Module life: Target 1 year production Acoustic sound: ~50dBA to 75dBA (without covers, doors)

I/O SPECIFICATION

CN1 AMP CT, 6 pin, 292173-6



Pin	Name	Description				
1	Supply voltage	Supply voltage +24 V 1.3A max				
2	SPEED_IN_ANALOG	Fan speed control (input) → (0...10V) 0V min. speed 10V max. speed				
3	ERROR_OUT	Error output Error = low level				
4	DIR_IN	Fan direction control (input)				
		<table border="1"> <tr> <td>CCW ¹⁾</td> <td>Low</td> <td>< 3.8V</td> </tr> <tr> <td>CW ¹⁾</td> <td>High</td> <td>> 9.9V</td> </tr> </table>	CCW ¹⁾	Low	< 3.8V	CW ¹⁾
CCW ¹⁾	Low	< 3.8V				
CW ¹⁾	High	> 9.9V				
5	GND					
6	SPEED_OUT_CLK	Fan Speed Monitor (output) 0/24V _{DC} - 12 pulses/rotation				

Note 1: Fan direction refers to top view:



In normal operation the fan direction CW/CCW is not critical. The Tornado effect works reliably in both modes. The only reason for this control is for special cases where Tornado modules are placed very close together, combined with high transport speed, when side-effects from the neighbouring modules and from the moving substrates (paper) can start to affect the airflow. In such special cases it can be useful to configure neighbouring modules in opposite directions.