



Specifications for Turbo Controller

1. Specification

Model	TC010M		
Pump Model	TG390M / TG420M	TG900M / TG1300M	TG2400M
Input Voltage	AC180 – 264 V		
Phase	Single		
Frequency	50/60 Hz		
Power	Max. 0.7 kVA	Max. 1.2 kVA	Max. 1.2 kVA
Rated Output Frequency	680 Hz	560 Hz	520 Hz
Permissible Ambient Temperature	0 – 40 °C		
Humidity	35 – 85 %		
Weight	11 kg		
Warning functions ¹⁾	Touch down counter warning: When the number-of-times limit of durability of protection bearing approached.		
	Unbalance warning: When shaft movement due to unbalance for byproducts disposition etc. reached the warning level.		
	Maintenance time warning: When operation time reached at the time to require maintenance.		
	Low battery warning: When the capacity of the battery for clock backup decreased.		
Protective functions (Continue to next page)	Self check error protection: When an error occurred in self-check of the controller.		
	Matching error protection: When mismatch between pump model and controller setting occurred.		
	Cable connection failure protection: When output cable was unplugged.		
	Sensor tuning error protection: When an error occurred during the sensor calibration.		
	Fan absence protection: (Air-cooling type pump) When fan cable was unplugged. (Water-cooling type pump) When terminator for fan cable was unplugged.		
	Displacement failure protection: When shaft movement for external vibration etc. exceeded the specified level.		
	Active Magnetic Bearing overload protection: When magnetic bearing load exceeded the specified level for air inrush etc.		
	Rotation detector failure protection: When an error occurred in rotation detective circuit.		
	Change safety bearing protection: ²⁾ When rotor has touched down specified times, the pump cannot be restarted.		
	Unbalance failure protection: When shaft movement due to unbalance for byproducts disposition etc. exceeded the specified level.		
	Motor overheat protection: When pump inside motor became overheat.		
	Power amplifier overheat protection: When amplifier of controller became overheat.		
	DSP board overheat protection: When Digital Signal Processor board of controller became overheat.		
	Inverter over-voltage protection: When over-voltage occurred in inverter of the controller.		
	Output over-current protection: When over-current occurred in inverter of the controller.		
Delay in acceleration protection: When pump rotor failed to accelerate at the specified rate for overload etc.			



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(Continue from previous page)	Input voltage loss or drop-off protection: When input voltage was interrupted or drops off during 3 seconds or more.
	Over speed protection: When rotation speed exceeded 105 % of the maximum speed.
	Interlock protection: When protection signal of the remote input was opened.
Communication interface	RS232C
Outside view drawing attached	X3-00040 <4>
I/O signal diagram attached	X3-00292

- 1) Although controller performed warning display (lit ALARM led/output ALARM signal/display warning on the LCD), pump operation can be continue. Order overhaul of pump and controller to OSAKA VACUUM as soon as possible.
- 2) When this protection function operated, it becomes impossible to start a pump after it. Order to OSAKA VACUUM overhaul of the pump.

2. Accessories

Attached part name	Quantity
Remote connector	1 ea.
Input cable 5meters (16.4 ft)	1 ea.
Instruction manual	1 copy

3. Shop inspection

Prior to release for shipment, each controller is tested to ensure it passes the following inspection criteria.

Inspection item	Criteria
Exterior check	No abnormality detected by visual check
Insulation resistance measurement ^{3),4)} Input power – Earth (Ground)	≥100 MΩ
Withstand voltage test ³⁾ Input power and motor output – Earth (Ground) Input power and motor output – Others	No abnormality detected AC1,500V 1min. AC2,230V 1min.
Operation test Check for start/stop Check for input/output signal Check for protective functions	No abnormality detected

3) Surge absorber removes and carries out.

4) By DC 1,000 V mega-tester

