

## High performance in an ultra-compact package

Offering the economy of a six-state drive within an extremely space-efficient package, the OEM670 series provides a very cost-effective solution in a wide range of low to medium power servo applications. It is designed to operate with motors incorporating Hall-effect sensors such as Parker's SM, NeoMetric and J series. The single-voltage DC power input of 24-75V may be derived from an OEM300 module.

The OEM670 provides 6A continuous output and 12A peak. The output to the motor is extensively protected against short circuits, over and under voltage and overtemperature. Programmable automatic current foldback is incorporated.

The OEM670 is available in three versions - an analogue input torque amplifier, a step/direction positioning servo and a drive with built in controller. All versions share the same amplifier characteristics. Current compensation in the OEM670 is optimised for use with Parker NeoMetric and J series slotted motors. The OEM675 is optimised for SM series slottless motors.

### OEM670/675T torque amplifier

The OEM670T operates as a conventional torque amplifier. The industry-standard  $\pm 10V$  analogue input may be driven from a Parker servo controller such as the 6250.

### OEM670/675SD step/direction servo drive

The OEM670SD accepts step and direction control signals from a stepper-type controller. This makes the drive eminently suitable for mixed-technology applications in which stepper and servo drives share the same controller.

The drive incorporates a conventional PID position control loop with potentiometers for gain adjustment. A disable input is provided for the integral gain function and the dual-range derivative gain circuit minimises audible noise at standstill.

### OEM670/675X servo drive/controller

Combining the OEM670 servo drive with an economic RS232C controller, the OEM670X uses Parker's X-Code command language for straightforward, user-friendly programming. With a good range of basic control functions, this package offers an attractive solution in many low to medium power applications. The built-in controller may be equipped with 2K bytes of battery-backed RAM which will store up to 7 complete motion sequences, allowing it to be pre-programmed for specific functions selected via the configurable inputs.

The controller incorporates a PID position control loop which accepts feedback from a standard incremental encoder. Up to 256 drives may be daisy chained on one RS232 serial port. Eight configurable inputs are used for remote sequence select, trigger, limit switch and address select functions. There are two programmable outputs for machine interaction.



## Features common to all versions

### Performance

- Provides 6 amps continuous current and 12 amps peak current
- Single 24–75 VDC power supply input
- Three-state current control for more efficient drive and cooler motor operation
- Configurable current fold-back
- Six-state drive design with Hall effect sensors for commutation
- Operates with brushless or brushed servo motors

### Protection

- Short circuit protected—phase-to-phase and phase-to-ground
- Overvoltage circuitry protects the drive from large inertial loads
- Status/fault LED indicators to confirm correct operation
- Overtemperature circuitry protects the drive from excess heat

### Physical

- Application-specific integrated circuit (ASIC) and surface mount technology minimize product footprint, overall package size, and increase product reliability
- Heat is dissipated through the mounting surface
- Installed with only two screws (also provides grounding and secures cover)
- Universally available standard 25-pin D connector

## OEM670/675 Torque & Step-direction drive specifications

<i>Parameter</i>	<i>Value</i>
<b>Power Input</b>	
Voltage	24 to 75 VDC
Current	0 to 12 amps
<b>Power Output—Motor</b>	
Peak Current	12A (approx 2 sec max duration at 45°C ambient temperature)
Continuous Current	6A
Voltage	90 VDC max
Peak Power	840W @ 75V supply voltage
Continuous Power	420W
Switching Frequency	20kHz
Bandwidth	2kHz typical (dependent on motor)
Transconductance	1 volt = 1.2 amp
Commutation	120° Hall effect sensors for six-state commutation method or brushed DC motor
<b>Power Output—Hall Effect Sensors</b>	
Voltage	+5 VDC ±0.5 VDC
Current	50 mA max each output (not short circuit protected)
<b>Auxilliary Power Output OEM670T</b>	
Voltage	+15VDC ±1.5 VDC; -15 VDC ± 1.5 VDC
Current	10 mA max each output (not short circuit protected)
<b>Power Output—To Encoder—OEM670SD</b>	
Voltage	+5VDC ±0.5VDC
Current	200 mA max (not short circuit protected)
<b>Control Inputs—OEM670T</b>	
Command Input	-10V to +10V analogue voltage; 1 volt input = 1.2 amp output
Enable Input	Active LOW: 0 to 0.8V @ 2 mA; when disabled: internal 2.49 kΩ pull-up resistor to +5 VDC
<b>Control Inputs—OEM670SD</b>	
Step +/-StepDirection +/-Direction	-5V max input; Input current: 12mA max, 6.3mA min; Pos input on Dir+ = Clockwise rotation
<b>Hall Inputs</b>	
Low State	0 to 0.8V
High State	Internal 1 kΩ pull-up resistor to +5V
Input Frequency	0 to 2 kHz max
<b>Signal Outputs—OEM670T</b>	
Fault Output	Active High: open collector output, max volts = 24VDC; Inactive Low: 0-0.4 VDC @ 0-20 mA
Current Monitor	-10 V to +10V analogue voltage; scale: 1V corresponds to 1.2A output. Output Impedance: 10KΩ
<b>Signal Outputs—OEM670SD</b>	
Fault Output-Isolated	50 V max voltage; 10mA max current
Fault Output-non-isolated	24 V max voltage; 20 mA max current
Velocity Monitor	1 V per 10kHz pre-quad encoder frequency
Current Monitor	1 V output per 1.2A motor current. Output Impedance: 10 KΩ
<b>Protective Circuits</b>	
Short Circuit	Turns off outputs to motor; latched
Overtemperature	55°C ±5°C trip temperature; latched
Overvoltage	95 V ±5 V trip voltage; latched
Undervoltage	21.5 V max; not latched
Current Foldback	Configurable with 3 resistors
Position Error (OEM670SD)	2,047-16,383 post-quad encoder counts
<b>Motor Characteristics</b>	
Minimum Inductance	50 μH (micro Henrys)
Minimum Resistance	0.25Ω
Recommended Motor Type	NeoMetric and J Series (slotted) with OEM670, SM (slotless) with OEM675
<b>Environmental</b>	
Operating temperature range	0°C to 45°C
Max Heatplate Temperature	45°C
Package Dissipation	Heatplate: 0–30 W, depending on motor current; PP = (I AVG /12 A) 30 W; Cover: 3 watts max
<b>Physical</b>	
Power Connector	10-pin screw terminal; 14 awg max wire size
Input/Output Connector	25-pin D connector
Weight	OEM670T: 0.35kg ; OEM670SD: 0.4kg

## OEM670X/675X Indexer-drive specifications

<i>Parameter</i>	<i>Value</i>
<b>Power Input</b>	
Voltage	24 to 75 VDC
Current	0 to 12 amps
<b>Power Output—Motor</b>	
Peak Current	12A (approx 2 sec max duration at 45°C ambient temperature)
Continuous Current	6A
Voltage	90 VDC max
Peak Power	840 W @ 75 V supply voltage
Continuous Power	420 W
Switching Frequency	20 kHz
Bandwidth	2 kHz typical (dependent on motor)
Transconductance	1 volt = 1.2 amp
Commutation	120° Hall effect sensors for six-state commutation method or brushed DC motor
<b>Power Output—Hall Effect Sensors</b>	
Voltage	+5 VDC ±0.5 VDC
Current	50 mA max. each output (not short circuit protected)
<b>Power Output—To Encoder</b>	
Voltage	+5 VDC
Current	200 mA max. (not short circuit protected)
<b>Hall Inputs</b>	
Low State	0 to 0.8V
High State	Internal 1 kΩ pull-up resistor to +5 V
Input Frequency	0 to 2 kHz max
<b>Inputs</b>	
Programmable Inputs	5 user defined, TTL signal levels: low = 0 to 0.8 V, high = 2 to 5 V
End-of-Travel Limits	CW/CCW, 0-5 TTL signal levels: low = 0 to 0.8 V, high = 2 to 5 V
RS232C	3-wire (RX, TX, GND), 9600 baud, 8 data bits, 1 stop bit, no parity
<b>Outputs</b>	
Programmable Outputs	2 user-defined, TTL signal levels: low = 0 to 0.8 V, high = 2 to 5 V
<b>Performance</b>	
Position Range	±1,073,741,823 counts
Velocity Range	0.01 to 200 rps
Acceleration Range	0.01 to 9999 rps <sup>2</sup>
Velocity Accuracy	±0.02% of maximum rate
Velocity Repeatability	±0.02% of set rate
Resolution	400-65,532 encoder counts/rev
<b>Digital Servo Loop</b>	
Update Time	266 msec
Output	12-bit DAC
Servo Tuning	Digital, via RS232C
Tuning Parameters	PID with digital filter
<b>Protection Circuits</b>	
Short Circuit	Turns off outputs to motor; latched
Overtemperature	55°C ±5°C trip temperature; latched
Overvoltage	95 V ±5V trip voltage; latched
Undervoltage	21.5V max; not latched
Current Foldback	Configurable with 3 resistors
Position Error	2,047–16,383 post-quad encoder counts
<b>Motor Characteristics</b>	
Minimum Inductance	50 μH (micro Henrys)
Minimum Resistance	0.25 W
Recommended Motor Type	NeoMetric and J Series (slotted) with OEM670X, SM with OEM675X
<b>Environmental</b>	
Operating Temperature	0°C to 45°C
Package Dissipation	Heatplate: 0 to 30 W, depending on motor current; PP = (I AVG /12 A) 30 W; Cover: 3 watts max.
<b>Physical</b>	
Power Connector	10-pin screw terminal; 14 awg max wire size
Input/Output	Connector 25-pin D connector
Weight	0.4kg