Improved performance based on a winning formula

Developed from the highly-successful OEM350/650 series, the OEM750 and OEM750X combine even higher performance with the benefits of high-resolution microstepping and a space-saving package. The electronic damping circuitry used in the acclaimed ZETA drive has been adapted for use within this new compact module. The result is a dramatic reduction in midrange instability, reducing the safety margin required and thereby increasing the usable torque.

OEM750 models have been designed to accommodate a very wide range of motors and supply voltages. With this in mind, a current loop gain adjustment feature has been incorporated. This means that only one version of the drive module is required to cover the full range of motor inductances from 0.2mH to 80mH at all supply voltages between 24 and 75V. Output current is programmable between 150mA and 7.5A. The single-voltage DC power input may be derived from an OEM300 module.

Both the OEM750 and OEM750X offer a choice of motor resolutions up to 50,800 steps/rev to provide very smooth rotation over the entire speed range. The output to the motor is extensively protected against short circuits, over and under voltage and overtemperature. Programmable automatic current reduction at standby is incorporated.

OEM750X microstep drive with built-in RS232C indexer

Combining the OEM750 microstep drive with an economic RS232C controller, this version 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.

Up to 256 drives may be daisy chained on one RS232 serial port. Configurable inputs are used for remote sequence select, trigger, limit switch and address select functions. In addition there are two programmable outputs for the control of auxiliary machine functions.

OEM750 and 750X common features

Performance

- Designed for use with any motor inductance between 0.2mH and 80mH
- Selectable output current from 0.15A to 7.5A peak
- Three-state current control for cooler operation
- Selectable resolution up to 50,800 steps/rev
- Auto standby reduces motor current at rest
- Single 24-75 VDC power supply input
- Compatible with a wide range of motors
- Six current profiles to optimise smoothness
- Anti-resonance feature controls midrange instability

Protection circuits

- Short circuit (phase-to-phase and phase-to-ground) and overtemperature protected
- Power dump circuitry to protect drive from excessive regenerated energy during deceleration
- Self-test feature to verify correct system operation

Physical

- Status/fault LED indicators
- Application specific integrated circuit (ASIC) and surface mount technology minimise product footprint and overall package size, improve product reliability
- Optically isolated fault output
- Heat plate design allows thermal dissipation via the mounting surface or a suitable heatsink
- Larger right-angle screw terminal allows side-to-side mounting or Eurorack compatibility
- Configuration by DIP switches
- CE marked with LVD compliance, UL recognised
- Overall dimensions 127 x 91 x 41 mm

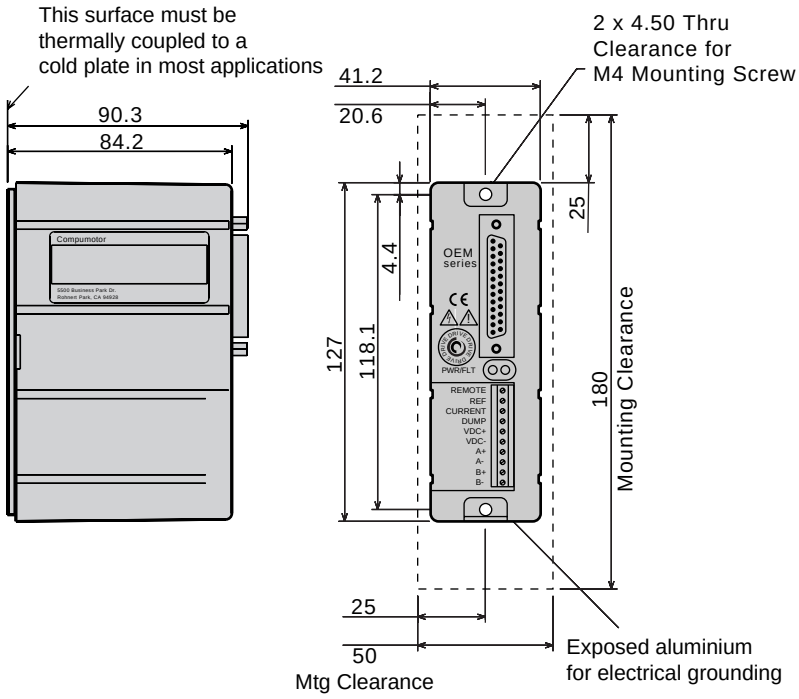
OEM750X indexer/drive

- Standard RS-232C serial communications interface
- Straightforward Parker X Language
- Optional 2K bytes of battery-backed RAM to store up to 7 motion programs (-M2 option)
- Address selectable for daisy chaining up to 8 units by hardware, or up to 256 units by software
- Incremental encoder support for position tracking, stall detection and position maintenance
- Three sequence select inputs for program initiation by an external device
- CW, CCW limit and Home inputs

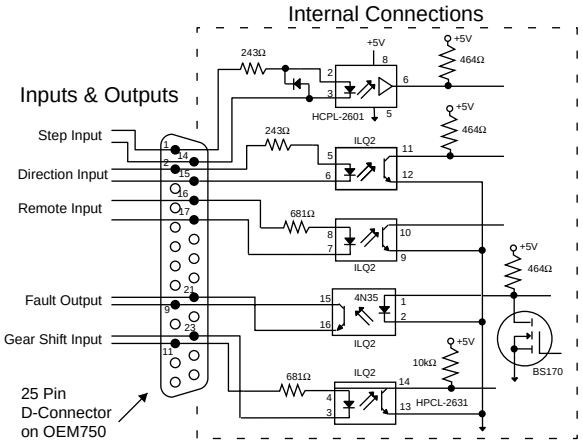
Parameter	Value
Power Input - DC	24–75 VDC @ 2A max
Performance	
Accuracy	±5 arc min (0.0833°) typical, unloaded, bidirectional with Parker-supplied motors. Other motors may exhibit different absolute accuracy Loaded condition - in addition to unloaded accuracy, add 1 arc min (0.0167°) for each increment of load equal to 1% of the rated motor torque
Repeatability	±5 arc sec (0.0014°) typical, unloaded - one revolution returning to start point from same direction
Hysteresis	Less than 2 arc min (0.0334°) unloaded, bidirectional
Resolution	16 selectable options: 200, 400, 1000, 2000, 5000, 10000, 12800, 18000, 20000, 21600, 25000, 25400, 25600, 36000, 50000, 50800
Waveform	Selectable - allows waveform shaping for optimum smoothness or relative accuracy. Pure sine; -4%, -6%, -8%, -10% 3rd harmonic
Amplifier	
Type	20 kHz fixed frequency, variable duty cycle pulse width modulated (PWM) current controlled, bipolar chopper
Number of Phases	2
Output Current	Programmable, 0.15 - 7.5A/phase peak
Drive Supply Voltage	24–75 VDC (dependent on external power supply)
Standby Current Reduction	25%, 50% or 75% of selected motor current
Nominal Chopping Frequency	20 kHz
Max Stepping Rate	2 MHz max pulse rate; 50 rps max speed
Protection Circuits*	
Short Circuit	Phase-to-phase, phase-to-ground
Undervoltage	If DC supply drops below 24 VDC
Overtemperature	If internal air temperature exceeds 70°C
Environmental	
Operating temp.	0°C to 50°C. Max allowable ambient temperature is 50°C. External heat sinking is required via the mounting surface or a suitable heatsink. Max. heatplate temperature 55ºC
Storage temp.	-40°C to 85°C
Humidity	0 to 95% Non-condensing
Physical	
Drive Dimensions	127 x 91 x 41 mm
Weight	0.32 kg
Motor	
Type	2 phase hybrid; 4, 6 or 8 leads
Inductance Range	0.2mH - 80mH
OEM750	
Step Input	High-going pulse, 200 nsec min width; max pulse rate is 2 MHz; User-supplied driver for the step inputs should be capable of providing up to 15mA
Direction Input	Logic High = positive (CW) rotation—3.5–5.0V; Logic Low = negative (CCW) rotation—0–0.4V User-supplied driver for the direction inputs should be capable of providing up to 15mA. The direction input must be stable for at least 200 µsec before the drive receives the first pulse
Fault Output	Open-Collector/Emitter, Vce = 35 VDC, Vce sat = 0.3 VDC, Ic = 10 mA (max) dissipation = 100 mW; Conducting = normal operation; Non conduction = drive fault
OEM750X	
RS-232C Interface	
Connection	3-wire implementation (Tx, Rx, Gnd)
Parameters	9,600 baud rate, 8 data bits, 1 stop bit, no parity
Configurations	Up to 8 OEM750X units can be controlled from a single host RS-232C port in daisy chain configuration
Inputs	
Sequence Select Inputs	Three inputs to be used to select and run motion programe and for interactive machine control; TTL-compatible**
Trigger Inputs	Three trigger inputs internally pulled up to 5V; sinking current is 1.2mA, TTL-compatible**
Limits and Home	Logic High = 2.0-5.0V; Logic Low = 0-0.8V
Encoder	
A, B and Z Channel	Single-ended, active high; Logic Low = 0-0.8V; Logic High = 2.0-5.0V (4.5mA sink)
Max Frequency	160 kHz (pre-quadrature)
Min Pulse Width (Z)	500 nsecs
Outputs	
2 Programmable Outputs	Logic High = min. 4.26V (source -24 mA); Logic Low = max. 0.44V (sinks to 24 mA)
Fault Output	Logic Low = drive fault; Logic High = normal operation

* Drive shuts down under conditions listed. Power must be cycled or drive reset to resume operation.
** TTL-compatible voltage levels; Low ≤0.4V; High ≥2.4V

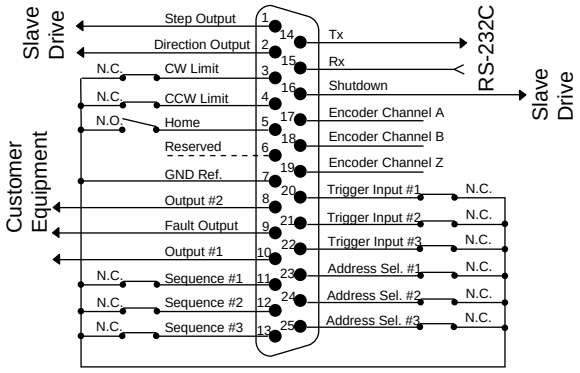
OEM750/OEM750X dimensions (mm)



OEM750 drive connections



OEM750X drive connections

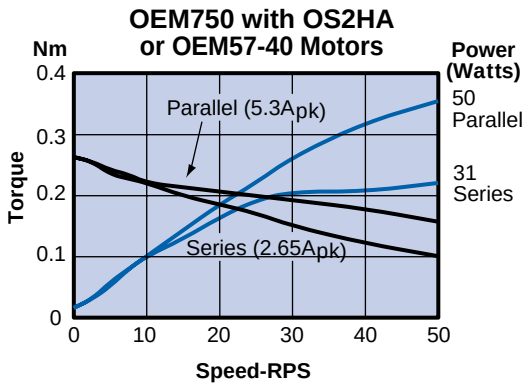


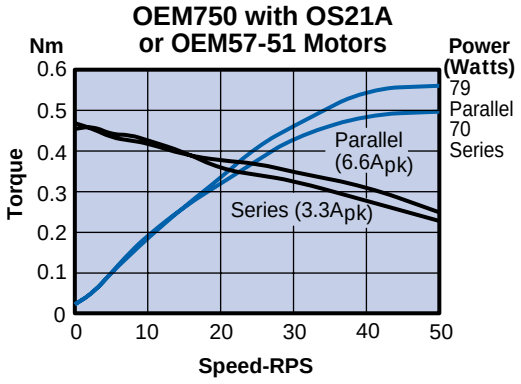
Parker Automation

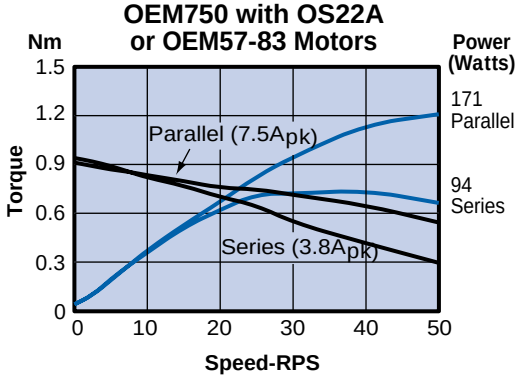
OEM750/OEM750X speed torque curves @ 75VDC

(Power curves are shown in blue)

*Size 23 Frame**

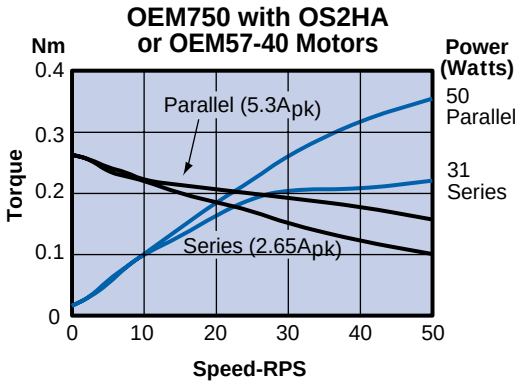


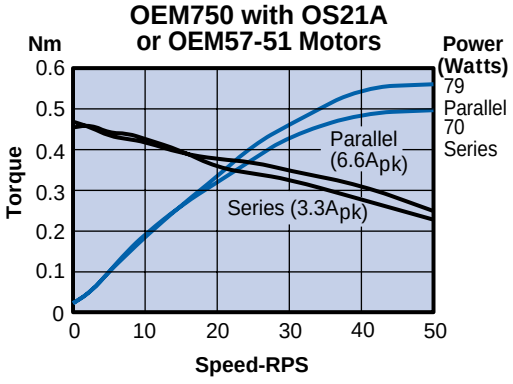


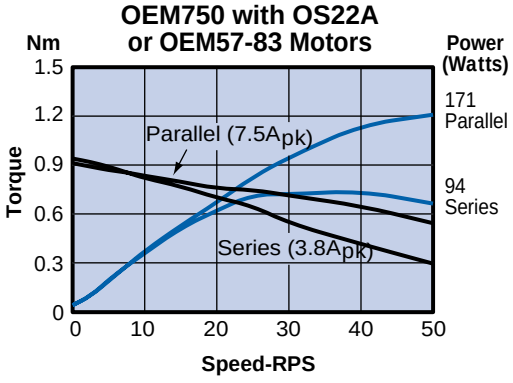


*Parallel connection consideration: for greater than 50% duty cycle above 5 rps, fan cooling the motor may be required.

Size 34 Frame





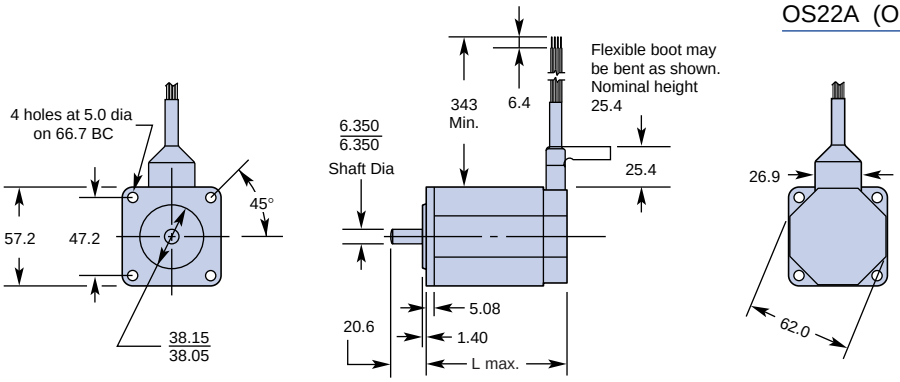


Note: ±10% torque variance due to motor tolerance.

OEM750/OEM750X motor dimensions (mm)

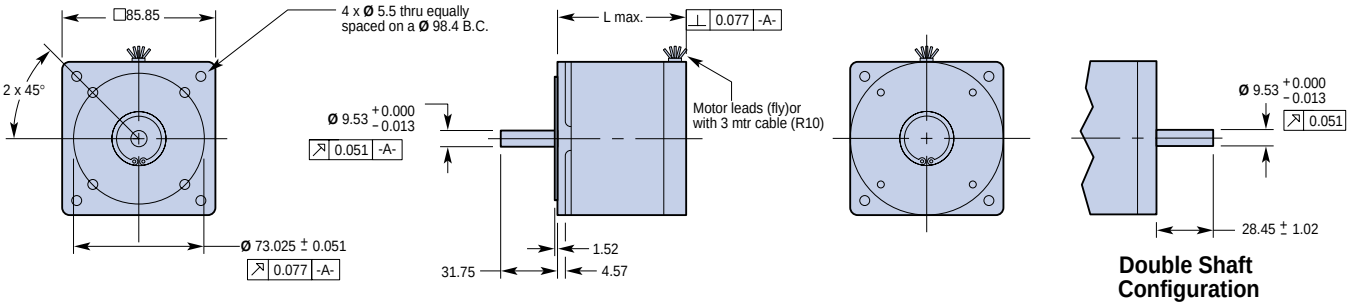
Size 23 Frame, O Series and OEM57 motors

Model	L max.
OS2HA (OEM57-40)	40.7
OS21A (OEM57-51)	52.4
OS22A (OEM57-83)	78.8



Size 34 Frame, R Series and OEM83 motors, regular construction

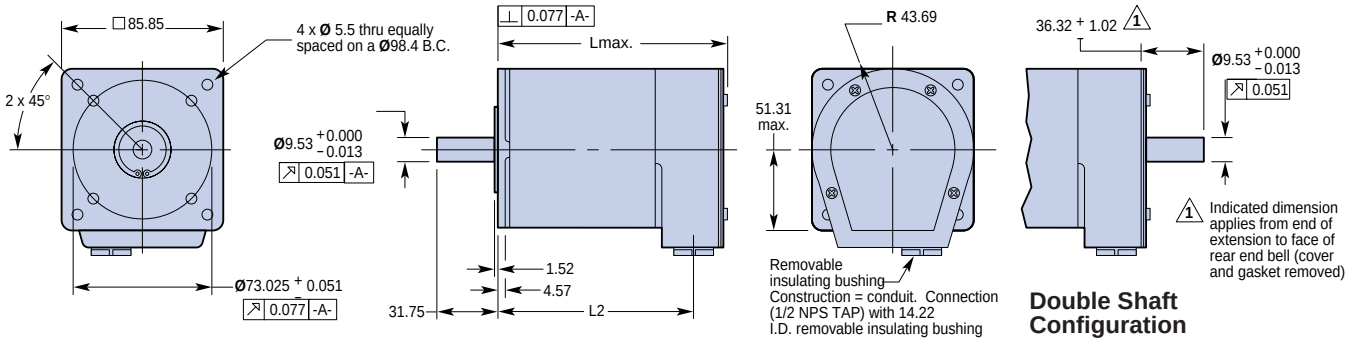
Model	L max.
RS31B□□R10 (OEM83-62)	65.54
RS32B□□R10 (OEM83-93)	95.51
RS33B□□R10 (OEM83-135)	128.53



Double Shaft Configuration

Size 34 Frame, R Series, end bell construction (NPS)

Model	L max.	L2
RS31B□□NPS	65.54	72.9
RS32B□□NPS	95.51	102.11
RS33B□□NPS	128.53	134.62



Double Shaft Configuration

Parker Automation

OEM750/OEM750X motor data

		Size 23 Frame			Size 34 Frame		
		OS2HA	OS21A	OS22A	RS31B	RS32B	RS33B
Static torque, Nm		0.26	0.47	0.94	1.03	2.02	2.55
Rotor inertia, kg-cm ^{2}		0.070	0.119	0.253	0.583	1.195	1.757
Current, Apk/Arms:	Series	2.65/1.9	3.3/2.3	3.8/2.7			
	Parallel	5.3/3.7	6.6/4.7	7.5/5.3	4.4/3.1	5.6/4.0	6.9/4.9
Inductance, mH:	Series	1.7	1.8	2.8			
	Parallel	0.4	0.4	0.7	2.9	2.9	2.4
Detent Torque, Nm		0.02	0.03	0.05	0.06	0.13	0.19
Bearing Information Thrust Load, N		6.0	6.0	6.0	800	800	800
Radial Load, N		90	90	90	160	160	160
End Play, mm (Reversing load equal to 5N)		0.025	0.025	0.025	0.025	0.025	0.025
Radial Play, mm (Per 2.5N load)		0.02	0.02	0.02	0.02	0.02	0.02
Motor Weight, kg		0.45	0.68	1.14	1.45	2.41	3.45
Certifications: UL recognized		Pending	Pending	Pending	Yes	Yes	Yes
CE (LVD)		Yes	Yes	Yes	Yes	Yes	Yes
CE (EMC & LVD)		w/C10 kit*	w/C10 kit*	w/C10 kit*	w/C10kit	w/C10 kit	w/C10 kit

*Provided EMD Installation Guidelines for 'motors with non removable cabling' are followed.

Motor ordering information

CE Size 23 Frame Motors

Part No.	*Desctiption*
OS2HA -□□□□□	Standard, Size 23, half stack (57-40) A winding motor
OS21A -□□□□□	Standard, Size 23, single stack (57-51) A winding motor
OS22A -□□□□□	Standard, Size 23, double stack (57-83) A winding motor

CE Size 34 Frame Motors

Part No.	*Desctiption*
RS21B -□□□□□	Standard, Size 34, half stack (83-62) B winding motor
RS32B -□□□□□	Standard, Size 34, single stack (83-93) B winding motor
RS33B-□□□□□	Standard, Size 34, double stack (83-135) B winding motor

Accessories

C10 - LVD/EMC motor cable kit (includes 3mtr cable, gland (360° shield connector), R-clamp and assembly instructions).

How to order CE motors

Size 23 Frame

Series 0 (Octagonal) | **Type** S = Standard | **Frame Size** 2=Size 23 (2.5") | **No. of Rotor Stacks** H = Half, 1 = 1 Stack, 2 = 2 Stack | **Winding Type** A = 75DC winding (grey painted motors) | **Shaft** S = Single, D = Double | **Shaft Modification** N = Standard (smooth) | **Motor Construction/ Hookup** FLY = Regular construction with flying (8) leads | **Motor Construction/ Hookup** Blank = No feedback; HJ = 512 ppr single-ended kit w/0.3m flying leads; RE = 1000 ppr differential kit encoder w/line driver & 0.3m flying leads (call for availability); RC = 1000 ppr differential kit encoder w/line driver & 3m cable (call for availability)

Size 34 Frame

Series R (Round) | **Type** S = Standard | **Frame Size** 2=Size 34 (3.38") | **No. of Rotor Stacks** 1 = 1 Stack, 2 = 2 Stack, 3 = 3 Stac | **Winding Type** B = 170VDC winding (black painted motors) | **Shaft** S = Single, D = Double | **Shaft Modification** N = Standard (smooth) | **Motor Construction/ Hookup** NPS = End bell/terminal board via 1/2" NPS pipe thread; C10 = NPS option with (C10) LVD/EMC cable kit; R10 = Regular construction with non-CE marked 3m cables (S/ZETA/QM motor construction - not CE marked) | **Encoder Option** Blank = No feedback, EC = 1000 ppr differential encoder with line driver and 3m cable (E Series)