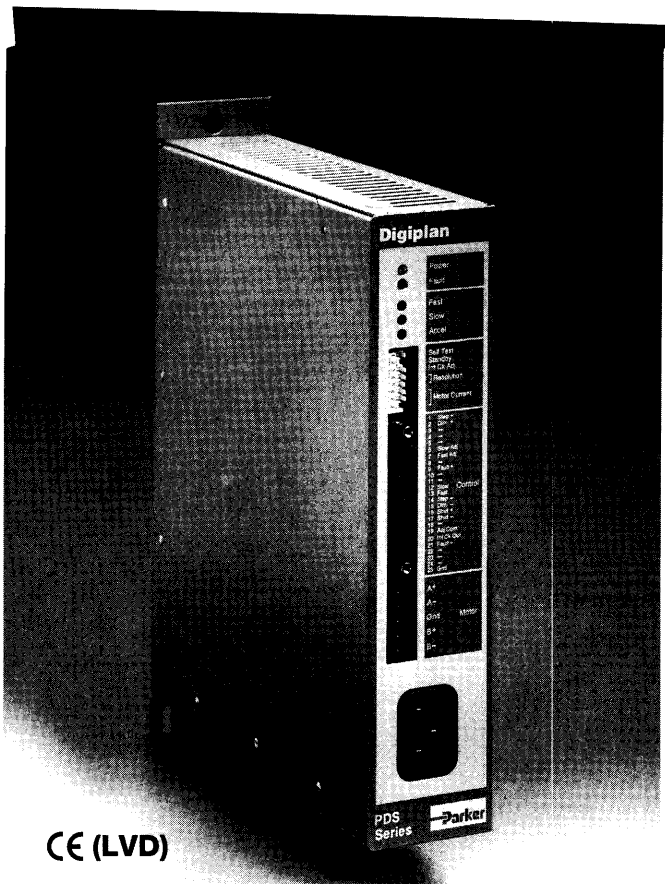


Drive



(€ (LVD))

PDS Series

Step/Direction Drives

PDS drives are appropriate in applications that require coordinated multi-axis motion control, interfacing to a user-supplied pulse source or applications that have very simple control functions. The PDS drives are frequently used on multi-axis applications with Compumotor 6000 Series indexers. The internal oscillator can solve some low-complexity applications without the additional expense of a PDX indexer/drive.

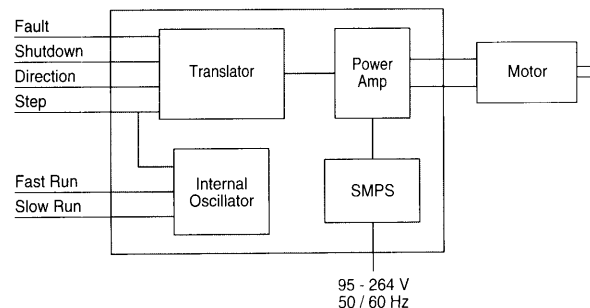
When the PDS drive is used with a Compumotor 6000 Series indexer, the drive is essentially a slave to the Step and Direction signals output by the 6000 Series indexer. The drive plugs directly into the cable supplied with the indexer; the only other configuration required is to select the appropriate motor current, motor resolution and standby mode. Selection of these parameters is by switches accessed through the front panel. All other system parameters are configured by software in the 6000 Series indexer.

Applications having simple control requirements could be solved with the PDS drive internal oscillator feature. The drive's internal oscillator is controlled by two inputs; slow and fast. When the slow input is active, the oscillator generates low-frequency pulses and slowly rotates the motor at a constant speed, when the input goes inactive the motor stops immediately. When the fast input is active, the oscillator generates high-frequency pulses and will rotate the motor at a higher speed. The fast speed range will ramp pulses to accelerate the motor. If the pulses were unramped, the motor would tend to stall. When the fast input is deactivated, the pulses will be ramped down to a stop. The speed of the step pulses is controlled by two potentiometers; one to control the slow range and one for the fast range. Another potentiometer is provided to adjust the fast speed ramp rate. A PLC can control the PDS drive Fast, Slow and Direction inputs solving some low-complexity applications.

Features

- Standardized Step/Direction/Shutdown inputs and Fault output
- Directly compatible with Compumotor 6000 Series controls
- Directly compatible with open-collector user supplied pulse sources
- Internal dual range speed-control oscillator
- Self-test rotates motor without supplying external pulse source

Diagram



PDS Specifications

| Parameter | Value |
|----------------------------|---|
| AC Power Input | |
| Connector | IEC 3-way, mating cable supplied |
| Supply voltage | 95VAC - 264VAC (absolute limits) |
| Supply frequency | 47 to 63Hz |
| Power factor | Better than 0.9 over full input voltage and output power range |
| Performance | |
| Resolution | Switch selectable: 400, 1,000, 2,000 and 4,000 steps/rev |
| Speed/Torque | Curves located on page C49; CE motors located on page C52. |
| Motors | |
| Type | 2-phase hybrid or permanent magnet |
| Step angle | Typically 1.8°, but 0.9°, or 3.6° and others acceptable |
| Motion | Linear or rotary movement |
| Number of leads | 4, 6 or 8 (5 lead not suitable) |
| Inductance | Min. 1MH, max. 30MH: recommend 1-10MH |
| Amplifier | |
| Type | 20KHz fixed frequency, bi-polar recirculating current control using ultra-low $R_{ds(on)}$ MOSFETs |
| DC Bus voltage | 70VDC |
| Nominal current | One-phase-on or peak current level 0.9-3.0A (PDS/X13), 2.5-5.0A (PDS/X15) |
| Standby | Current is normally reduced to 80% of nominal when the motor is stopped. Reduction of 50% can be selected with the standby switch |
| Protection | Drive shuts down and signals a fault in any of the conditions listed |
| Short-circuit | Across and between phase and phase to GND |
| Brownout | If DC Bus <50VDC |
| Overvoltage | If DC Bus >90VDC |
| Internal supplies | Any internal supply out of specification |
| Overtemperature | If internal temperature >90° (194°F) |
| Self-Test | Rotates motor at SLOW speed setting |
| Diagnostics | Power LED (green); Fault LED (red) and Fault Output |
| Reset | Faults reset by Shutdown input; power-up reset time 2 sec |
| Step/Direction Mode | |
| | Differential TTL opto-isolated inputs. On current = 10mA min., 21mA max.; voltage low = 0.4V max.; voltage high = 3-5.0V |
| Step Input | Drive steps on high-low transition; Min. step pulse width 1μS; Max. frequency 200KHz |
| Direction Input | Motor direction changes on transition; Direction input must change at least 2.5μS before step pulse |
| Shutdown Input | Motor shutdown when input high; Fault latch reset on high-low transition |
| Fault Output | Opto-isolated NPN transistor Fault + = Collector, Fault - = Emitter; Transistor ON during Fault conditions Vce(sat) = +1.0V max. at 5mA; Vce(max) = +24V max.; Imax = 5mA |
| Aux Clock Input | Single-ended step input, 4k7 pull-up to +12V; Voltage low: 0 to +2.0V or short to gnd; Voltage high: +10V to +12V or open circuit; Negative going pulses, steps on high-low transition |
| Aux DIR Input | Single-ended direction input, 4k7 pull-up to +12V Voltage low: 0 to +2.0V or short to gnd; Voltage high: +10V to +12V or open circuit |
| Oscillator Mode | |
| Slow Input | Active low; Low voltage <2.0V High voltage open-circuit, internally pulled-up to 12V |
| Fast Input | Active low; Low voltage <2.0V High voltage open-circuit, internally pulled-up to 12V |
| Aux DIR Input | Controls motor direction; Low-voltage <2.0V High-voltage open-circuit, internally pulled-up to 12V |
| Slow speed range | 0.05 rps-2.0 rps, unramped; Internal slow potentiometer or external 100K potentiometer |
| Fast speed range | 1 rps-50 rps ramped; Internal fast potentiometer or external 10K potentiometer |
| Ramping | Acceleration/Deceleration of Fast speed only 20-500 rps ² |
| Internal clock-out | NPN transistor: Open-collector, emitter = GND; Low going pulse for every pulse generated by the oscillator; Output pulse width = 1μS (fixed); Vce(sat) = 0.25V at I = 10mA; Vce(max) = 24V; Imax = 15mA |
| Physical | |
| Drive dimensions | Height 9.8" (250mm), width 2" (50mm), depth 7.5" (190mm); Drawings located on page C55 |
| Weight (Drive only) | Net 4 lbs (1.8Kg); Ship 5.7 lbs (2.6Kg) |
| Environmental | |
| Operating temperature | 0°C to 40°C (32°F to 104°F) |
| Storage temperature | -40°C to 85°C (40°F to 185°F) |
| Relative Humidity | 0% to 95% (non-condensing) |
| Ingress protection | IP20 |
| Mounting | Panel mount. Vertical mounting only; Mounting slots for #8 (M4) Allen Cap or Fillister/Pan Head screws |