# Making It Easier To Control DC Motors

**DC Digital Drive Feature comparison guide**

This guide will show you the features of the PL/PLX range of DC drives when compared to its immediate competition. It is by no means an exhaustive comparison. Please email your feedback to info@bardac.com. Thanks.

KEY:

✔ = yes  ✖ = no

👎 = reduced specification  $= extra cost option

| | Bardac PL/PLX | Parker SSD 590 + | CT Mentor2 | Lenze 48/4900 | ABB DCS500 |
|---|---|---|---|---|---|
| Unique electronic regenerative stopping facility on most 2Q models. | ✔ | ✖ | ✖ | ✖ | ✖ |
| English language display for programmable connection points. | ✔ | ✖ | ✖ | 👎 | ✖ |
| Digital I/P's and O/P's are short circuit proof. | ✔ | ✖ | ✖ | ✖ | 👎 |
| Digital I/P's and O/P's are over-voltage protected. | ✔ | ✖ | ✔ | ✖ | ✖ |
| Main & Auxiliary power ports for quick current release at start. | ✔ | ✖ | ✖ | ✔ | ✖ |
| 4 ergonomically designed keys for Up, Down, Left and Right for easy menu navigation. | ✔ | ✖ | ✖ | ✖ | ✖ |
| Motor drive alarms latched for display after power on / off, i.e. message not lost when power turned off. | ✔ | ✖ | ✖ | ✖ | ✖ |
| Unique 'configuration checker' detects shorting of user programmed block diagram outputs. | ✔ | ✖ | ✖ | ✖ | ✖ |
| All analogue I/P's have a programmable voltage range up to +/- 30V with up to 5mv resolution with excellent response time. | ✔ | ✖ | 👎 | 👎 | 👎 |
| All analogue I/P's are over-voltage protected. | ✔ | ✖ | ✔ | ✖ | ✖ |
| Ability to select 2 sets of motor parameters. | ✔ | ✖ | $ | ✖ | ✔ |
| Windows based on/off line graphical configuration & diagnostic tool (supplied FOC inc. connection lead) | ✔ | ✖ | ✖ | ✖ | $ |
| Friendly easy to use menu structure with English language parameter names. | ✔ | 👎 | ✖ | ✖ | ✖ |
| Extensive programmable I/O. | ✔ | 👎 | $ | $ | $ |
| Significant panel space savings due to compact design. | ✔ | 👎 | 👎 | ✖ | ✖ |
| In depth diagnostic functionality available from on board display (in-built meter). | ✔ | 👎 | 👎 | 👎 | ✔ |
| Built in oscilloscope output looking at ALL display parameters. | ✔ | 👎 | ✖ | ✖ | $ |

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|---|:---:|:---:|:---:|:---:|:---:|
| Ability to store 3 entire drive recipes. | ✓ | ✗ | $ | ✓ | ✗ |
| Uniform product width across whole range. | ✓ | ✗ | ✗ | ✗ | ✓ |
| Up to 8 preset speeds by 3 inputs (with priority select). | ✓ | ✗ | 👎 | 👎 | 👎 |
| Large Backlit 40 Character Alphanumeric LCD Display. | ✓ | 👎 | ✗ | ✗ | ✓ |
| All feedback options as standard (Tacho, Encoder etc). | ✓ | $ | ✓ | ✓ | ✓ |
| 16 Motor drive alarms - displayed in English. | ✓ | ✓ | 👎 | 👎 | ✓ |
| Real language parameter description & pin number on display. | ✓ | 👎 | ✗ | ✓ | ✓ |
| Self test message displays. | ✓ | ✓ | ✗ | ✗ | ✓ |
| Self ranging input for main stack supply 12V to 480V. | ✓ | ✗ | ✗ | ✗ | ✗ |
| Self ranging input for auxiliary supplies 100V to 480V. | ✓ | 👎 | ✗ | ✗ | ✗ |
| Self ranging input for control supply 100V to 240V. | ✓ | 👎 | ✗ | ✗ | 👎 |
| In depth fault monitoring and comprehensive system alarms. | ✓ | ✓ | ✓ | ✓ | ✓ |
| Fully digital control loops. | ✓ | ✓ | ✓ | ✓ | ✓ |
| Control circuits fully isolated from power circuit. | ✓ | ✓ | ✓ | ✓ | ✓ |
| Choice of 2 adaptive armature current loop modes (Standard or Superfast). | ✓ | ✗ | ✗ | ✗ | ✗ |
| Self tuning current loop utilizing "Autotune" algorithm. | ✓ | ✓ | ✓ | ✓ | ✓ |
| Steady state accuracy of 0.01% using encoder with digital reference. NB. No extra hardware required. | ✓ | $ | $ | ✓ | ✓ |
| Adjustable speed PI with integral defeat. | ✓ | ✓ | ✓ | ✓ | ✓ |
| All analogue O/P's short circuit protected. | ✓ | ✓ | ✓ | ✓ | ✓ |
| Drive to drive Total Recipe Exchange via serial link. | ✓ | ✓ | ✓ | ✓ | $ |
| Drive to host Total Recipe Exchange via serial link. | ✓ | ✓ | ✓ | ✓ | $ |
| Multiple drive 'daisy chain' data exchange facility via serial link (ideal for digital speed ratioing using encoder feedback – NB no extra hardware needed). | ✓ | $ | $ | ✓ | $ |
| Regeneration up to 1.2 x mains supply. | ✓ | ✓ | 👎 | ✗ | ✓ |
| Field current programmable from minimum to 100% continuous with fail alarm. | ✓ | ✓ | ✓ | ✓ | ✓ |

# Standard Software functions

With an extensive range of standard software blocks, the PL/X can easily take control of the most demanding motion tasks.

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| | Bardac PL/PLX | Parker SSD 590 + | CT Mentor2 | Lenze 48/4900 | ABB DCS500 |
|---|---|---|---|---|---|
| Full suite of center winding macro's | ✓ | ✓ | $ | $ | ✖ |
| Motorized Pot simulator with memory | ✓ | 👎 | 👎 | 👎 | ✖ |
| 2 x PID's (undedicated) | ✓ | 👎 | $ | 👎 | ✖ |
| 2 x Summers (undedicated) | ✓ | 👎 | ✓ | 👎 | ✖ |
| 2 x Filters (undedicated) | ✓ | 👎 | $ | ✖ | ✖ |
| Dual Motor Swap | ✓ | ✖ | $ | $ | ✓ |
| Batch Counter | ✓ | ✖ | ✖ | ✖ | ✓ |
| Spindle Orientation | ✓ | ✖ | $ | ✓ | ✖ |
| Latch | ✓ | ✖ | ✖ | ✖ | ✖ |
| Delay Timer | ✓ | ✖ | ✖ | ✖ | ✖ |
| Linear or S ramp | ✓ | ✓ | $ | ✓ | ✓ |
| Current Profiling v Speed | ✓ | ✓ | ✓ | ✓ | ✓ |
| Jog / Crawl functions | ✓ | ✓ | ✓ | ✓ | ✓ |
| Slack take up | ✓ | ✓ | $ | ✓ | ✓ |
| Draw control | ✓ | ✓ | ✓ | ✓ | ✓ |
| Auto Self-tune current loop | ✓ | ✓ | ✓ | ✓ | ✓ |
| 8 independent Multi-function blocks | ✓ | 👎 | 👎 | 👎 | 👎 |
| 4 independent Comparators | ✓ | ✖ | ✖ | 👎 | ✖ |
| 4 independent Change-Over switches | ✓ | ✖ | ✖ | ✖ | ✖ |
| 16 Jumpers for interconnection of parameters | ✓ | 👎 | 👎 | ✖ | ✓ |
| Versatile Preset Value Selector | ✓ | ✖ | ✖ | ✖ | ✓ |
| Parameter Profiler | ✓ | ✖ | ✖ | ✖ | ✖ |
| 3 User programmable complete drive recipe pages | ✓ | ✖ | ✖ | ✓ | ✖ |
| Copy & paste facility between all recipe pages | ✓ | ✖ | ✖ | ✓ | ✖ |
| 'Overwrite lock out' facility on one recipe page | ✓ | ✖ | ✖ | ✖ | ✖ |

# Inputs / Outputs

Numerous inputs and outputs allow you to control a wider range of industrial applications without the need for external equipment.
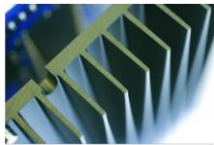
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|---|---|---|---|---|---|
| Analog inputs | | | | | |
| 8 (all programmable) (can also be utilized as digital i/p's) | 8 | 5 | 5 | 4 | 5 |
| Analog outputs | | | | | |
| 4 (3 programmable) | 4 | 3 | 4 | 3 | 2 |
| Digital inputs | | | | | |
| 17 (all programmable) | 17 | 9 | 9 | 5 | 8 |
| Digital outputs | | | | | |
| 7 (all programmable) | 7 | 3 | 7 | 4 | 7 |
| Speed feedback | | | | | |
| Analog tacho | ✔ | $ | ✔ | ✔ | ✔ |
| Encoder | ✔ | $ | ✔ | ✔ | ✔ |
| Armature voltage | ✔ | ✔ | ✔ | ✔ | ✔ |
| Encoder + Armature volts or Analog Tacho | ✔ | $ | ✔ | ✔ | ✘ |

# Protection

Reducing your downtime and maintenance costs by giving your DC motors added levels of protection.

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| | Bardac PL/PLX | Parker SSD 590 + | CT Mentor2 | Lenze 48/4900 | ABB DCS500 |
|---|---|---|---|---|---|
| Interline device networks (snubber) | ✔ | ✔ | ✔ | ✘ | ✔ |
| High energy MOV's | ✔ | ✔ | ✔ | ✔ | ✔ |
| Overcurrent (instantaneous) | ✔ | ✔ | ✔ | ✔ | ✔ |
| Overcurrent (150% for 25s inverse time) | ✔ | ✔ | ✔ | ☜ | ✔ |
| Field Failure | ✔ | ✔ | ✔ | ✔ | ✔ |
| Field Overcurrent | ✔ | ✔ | ✔ | ✔ | ✔ |
| Tacho and/or Encoder failure with auto AVF backup | ✔ | ✘ | ✘ | ✔ | ✘ |
| Motor over-temperature | ✔ | ✔ | ✔ | ✔ | ✔ |
| Thyristor Stack over-temperature | ✔ | ✔ | ✔ | ✔ | ✔ |
| Thyristor "Trigger" failure | ✔ | ✔ | ✔ | ✔ | ✔ |
| Zero speed detection | ✔ | ✔ | ✔ | ✔ | ✔ |
| Standstill logic | ✔ | ✔ | ✔ | ✔ | ✔ |
| Stall protection | ✔ | ✔ | ✔ | ✔ | ✔ |
| Digital Output short circuit Trip Alarm | ✔ | ✘ | ✘ | ✘ | ✘ |
| Overspeed | ✔ | ✔ | ✔ | ✔ | ✔ |

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|---|---|---|---|---|---|
| Armature Overvolts | ✔ | ✔ | ✔ | ✔ | ✔ |
| Mains synchronisation loss | ✔ | ✔ | ✔ | ✔ | ✔ |
| Mains supply phase loss | ✔ | ✔ | ✔ | ✔ | ✔ |
| Digital Output limit 350mA | ✔ | ☞ | ☞ | ☞ | ☞ |
| Low leakage current | ✔ | ☞ | ☞ | ☞ | ☞ |

## Field Control

On board fully controlled field supply.

8A (12-123A ratings)
16A (155-330A ratings)
32A (430-630A ratings)
Optional 50A (430-1650A ratings)

The field and armature supplies are input through separate terminals and may be at different levels if desired.

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|---|---|---|---|---|---|
| Fixed Voltage | ✔ | ✔ | ✔ | ✔ | $ |
| Fixed Current | ✔ | ✔ | ✔ | ✔ | $ |
| Field Economy | ✔ | ✔ | ✔ | ✔ | $ |
| Field Weakening | ✔ | ✔ | ✔ | ✔ | $ |
| Delayed Quenching (for Dynamic Braking) | ✔ | ✔ | ✔ | ✔ | $ |
| Standby field value (for keeping motor warm/no condensation) | ✔ | ✔ | ✔ | ✔ | $ |

## savvy-SFD Configuration and monitoring software

The most powerful digital DC drive on the market needs the most flexible and robust software available.

### savvy-SFD simplifies drive programming

- Easy to use software for Windows, Mac, Unix Platfroms (Java based)
- Allows online and offline configuration
- Allows real time diagnostics and monitoring

This graphical diagnostic tool is included with every Bardac PL/X DC Drive free of charge.
savvy-SFD makes interconnecting the drive's application blocks a simple task, and allows the user to tailor the drive's control strategy to meet the demands of the process or application exactly.