

**PL/PLX**

3 PHASE DIGITAL DC DRIVES



**Ihr persönlicher  
Systempartner:**



Postfach 1967  
D-77909 LAHR  
Schützenstr. 14a  
D-77933 LAHR

Tel.: 07821 / 98 39 13

Fax: 07821 / 98 39 14

Funk: 0171 80 38 472

Mall: [Info@pophof.de](mailto:Info@pophof.de)

[www.pophof.de](http://www.pophof.de)

## The Sprint Electric digital DC drive is probably the most powerful on the market today

With an extensive range of standard software blocks, it can take control of the most demanding motion tasks. All models include 40 character alpha-numeric back-lit display, full set of centre winding blocks and a field weakener for extended speed range. A high quality product from a world beating company. UL, cUL and CE approved.

Available in both 2Q and 4Q versions the range comprises 3 very compact chassis sizes with models rated from 5 to 265Kw.

INCLUDES FREE PL PILOT CONFIGURATION AND MONITORING SOFTWARE

## The brains behind the digital drive

Aris Potamianos (pictured) has been responsible for the design and engineering of Sprint Electric's range of 3 phase DC Digital Drives type PL & PLX.

Dr. Potamianos has a wealth of experience gained from working with companies like Anderson Strathclyde where he pioneered a switched reluctance motor application, Cegelec Industrial Controls, SR Drives and Eurotherm Drives where he was key in the design of their 590 range of digital drives.

Dr. Potamianos is an effervescent, enthusiastic and solution focused man. He is regarded as one of the foremost designers of digital drives today.



# PLX / PLX THE DRIVE

## Key features

- Friendly easy to use menu structure with English language parameter names.
- Extremely flexible block diagram including unique "Configuration Checker", detects shorting of user programmed block diagram output connections.
- Free "PL PILOT" drive configuration and monitoring software.
- Failsafe automatic "Revert to AVF" on speed feedback failure.
- Ultra compact sizes offering significant panel space savings over other manufacturers.
- Programming menu is designed for rapid travel to desired parameter using ergonomically designed keys.

- Five feedback transducer options as standard.
- Non volatile trip alarm memory, even after power-down.
- Real language parameter description eliminates need for look up tables.
- UL, cUL and CE approved.
- Built in "Oscilloscope" output for full parameter monitoring.
- Three fully independent, user programmable drive configurations.
- Extensive, multi-function programmable I/O, with over 36 digital & analogue input/output combinations.
- Full suite of centre winding macros included.

- Built in system application blocks with descriptive connection points.
- Unique electronic regenerative stopping facility on most 2Q models.
- In depth fault monitoring and comprehensive system alarms.
- Serial communications to allow off site programming and remote diagnostics.
- In depth diagnostic facility available from on board display & "in-built meter".
- On board fully controlled field with five operating modes.
- Easy to use product manual with display graphics and block diagrams.
- Full suite of built in encoder functions as standard.



LARGE 40 CHARACTER BACKLIT ALPHANUMERIC LCD DISPLAY  
FRIENDLY EASY TO USE MENU STRUCTURE WITH ENGLISH LANGUAGE PARAMETER NAMES

## Rating & dimensions

PL 2 QUADRANT PLX 4 QUADRANT	Kw @ 460V	HP @460V	Armature Current DC Amps	Field Amps	Frame Size (H x W x Dmm)
PL and PLX 5	5	6.6	12	8	289 x 216 x 174
PL and PLX 10	10	13.3	24	8	
PL and PLX 15	15	20	36	8	
PL and PLX 20	20	26.6	51	8	
PL and PLX 30	30	40	72	8	
PL and PLX 40	40	53.3	99	8	
PL and PLX 50	50	66.6	123	8	
PL and PLX 65	65	90	155	16	
PL and PLX 85	85	115	205	16	
PL and PLX 115	115	155	270	16	
PL and PLX 145	145	190	330	16	410 x 216 x 218
PL and PLX 185	185	250	430	32	
PL and PLX 225	225	300	530	32	
PL only 265	265	350	630	32	

5-50Kw



65-145Kw



185-265Kw



## Key features



The PL PILOT is a PC based graphical configuration and diagnostic tool for use with the range of PL and PLX digital DC drives. It greatly simplifies drive programming, installation and commissioning.

This is a highly intuitive 'windows' based software package which requires no previous knowledge of any programming language.

The package can be used in 2 operating modes:

**Offline** without a drive connected, the user can create recipes of drive parameters and block connections.

**On-line** with a drive connected the PL PILOT can also be used to monitor and adjust the drive parameters.

The PC running the PL PILOT software is connected to the drive via the PC's standard serial port. The package is designed for ease of use and provides a clear, defined and understandable method for accessing all levels of the drives extensive built in functionality.

This makes complete system configurations very straightforward and quick.

There are 3 levels of recipe creation and functionality available in PL PILOT to suit all requirements. They are:

**Total recipe (top level)** - used to manipulate the entire range of parameters.

**Bar sub-menus (2nd level)** - used to manipulate each main sub-set of parameters.

**Block pages (lowest level)** - used to manipulate parameters of individual blocks within the drive. The recipes and sections of recipes may be cut and pasted or printed out.

MINIMISES DRIVE SET UP AND COMMISSIONING TIME  
 ALLOWS ON-LINE AND OFF-LINE DRIVE CONFIGURATION  
 EASY TO USE 'WINDOWS' BASED SOFTWARE PACKAGE  
 CONFIGURES DRIVE APPLICATION BLOCK DIAGRAM AND SET UP PARAMETERS  
 ALLOWS REAL TIME PARAMETER DIAGNOSTICS AND MONITORING

UNIQUE 'CONFIGURATION CHECKER' AUTOMATICALLY SCANS FOR USER PROGRAMMED CONNECTION FAULTS AND HIGHLIGHTS THE CONFLICTS  
 THE LAYOUT OF THE DIAGRAM PAGES AND SOFT BUTTONS MIMIC THE DRIVES MENU STRUCTURE

ALLOWS 'COPY AND PASTE' OF ENTIRE RECIPES OR SECTIONS OF RECIPES TO IMPROVE SPEED AND EASE OF DRIVE SET UP  
 CUSTOM PAGE ALLOWS USERS TO SELECT UP TO 16 PARAMETERS, DISPLAYED IN BAR GRAPH OR PANEL METER FORMAT  
 TILE AND ZOOM FACILITY ALLOWS USER TO VIEW AND ARRANGE ANY NUMBER OF SCREENS SIMULTANEOUSLY

DIAGNOSTIC MONITORING IN ENGINEERING UNITS (VOLTS, AMPS, K<sub>w</sub>, RPM, HZ) AND PERCENTAGES FOR ALL TERMINALS AND BLOCK OUTPUTS  
 EXTENSIVE COLOUR DYNAMICS TO ASSIST IN THE DETECTION OF IMPORTANT CONDITIONS  
 BUILT IN INTERACTIVE HELP PAGES INTUITIVE TO USE

# PL PILOT

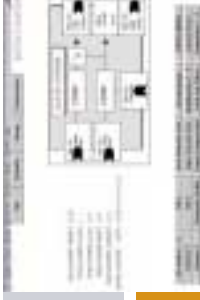
## CONFIGURATION & DIAGNOSTIC SOFTWARE



**THE BAR SUB-MENUS 2ND LEVEL** shows the 4 main menu bars on the PL PILOT entry page. These are:

- Change parameters
- Diagnostics and ancillary functions
- Application blocks
- Control terminals

Each bar has buttons that allow access to a drive block page.



**THE BLOCK PAGES LOWEST LEVEL**

Each block has its own page which details its default values (shown in blue text) and any altered values (shown in black text) with its own block diagram - in most cases this alleviates the need for a hard copy of the technical manual - an excellent plus point when commissioning on site!



Diagnostic and monitoring in engineering units (volts, amps, Kilowatts, rpm, Hz) and percentages for all terminals and block diagram outputs can be shown in bar graph or panel meter format.

The PL PILOT is included free of charge on a CDROM with every digital drive. It makes interconnecting the drive's application blocks a simple task and allows the user to tailor the drive's control strategy to exactly meet the demands of the process or application. It is these abilities which further strengthens Sprint Electric's commitment to providing the user with cost effective and easy to use DC drive products.

# Specification

## RATINGS

### POWER CONFIGURATION

PLX Four Quadrant Regenerative  
PL Two Quadrant Non-Regenerative  
(some PL models have electronic regenerative stopping facility)

Fully controlled variable field supply

### ARMATURE VOLTAGE

$V_{\text{armature}} = V_{\text{ac}} \times 1.2$

### ARMATURE CURRENT RATINGS (A<sub>dc</sub>)

12, 24, 36, 51, 72, 99, 123, 155, 205, 270, 330, 430, 530, 630  
Overload 150% for 25 seconds

### FIELD CURRENT

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

### FIELD VOLTAGE

$V_{\text{field}} = 0 \text{ to } 0.9 \times \text{Auxiliary AC Supply}$

### AC SUPPLY VOLTAGE (VAC)

Main 3 phase 50-60Hz :-  
12 to 480Vac +/- 10%  
for armature power  
Auxiliary 3 phase 50-60Hz:-  
100 to 480Vac +/- 10%  
for field power  
Control 1 phase 50-60Hz:-  
110 to 240Vac +/- 10%  
for control power

## PROTECTION

Interline device networks  
High energy MOV's  
Instantaneous over-current  
Field failure & over-current  
Motor over-temperature  
Thyristor stack over-temperature  
Mains supply phase loss  
Mains synchronisation loss  
Armature over-volts  
Speed feedback failure  
Stall protection  
Standstill logic  
Thyristor 'trigger' failure  
Digital output short circuit



## STANDARD SOFTWARE FUNCTIONS

Full suite of centre winding macros  
Motorised pot simulator with memory  
2x PID's (undedicated)  
2x Summers (undedicated)  
2x Filters (undedicated)  
Delay timer  
Current Profiling  
Spindle Orientation  
Jog/Crawl functions  
Dual motor swap  
Latch  
Linear or S ramp  
Slack take up  
Batch counter  
Draw control  
Auto self-tune current loop  
3 user programmable drive configurations

## ALARM STATUS

First fault latched and automatically displayed.  
Fault automatically saved at power off.

## FIELD CONFIGURATIONS

Fixed current  
Fixed voltage  
Field weakening  
Delayed quenching  
Standby field value  
Field economy

## ENVIRONMENT

Ambient Operating Temperature  
0-50°C (all ratings)  
-25 to +55°C storage

## STEADY STATE ACCURACY

0.01% Encoder feedback with digital reference.  
0.1% Analogue tachogenerator feedback.  
2% Armature voltage feedback.  
0.01% Encoder + tacho, encoder + AVF or encoder only feedback.  
Maximum encoder frequency 100KHz

## INPUTS/OUTPUTS

### ANALOGUE INPUTS

(8 Total - resolution 5mV+sign)  
All configurable  
All have programmable thresholds and 4 voltage ranges +/- 5/10/20/30V  
All inputs are over voltage protected (can also be utilised as digital i/p's)

### ANALOGUE OUTPUTS

(4 Total - resolution 2.5mV+sign)  
1 armature current output  
3 configurable  
All outputs are short circuit protected

### DIGITAL INPUTS

(17 Total)  
All configurable

### DIGITAL OUTPUTS

(7 Total - max 32V - 350mA total)  
Short circuit protected  
Over temp and over voltage protected  
All configurable

## MONITORING

All analogue input voltages  
All digital input states  
All analogue output voltages  
All digital output states  
Tachogenerator voltage  
Motor armature current (amps)  
Motor field current (amps)  
Motor armature volts  
Output power  
AC supply volts

## STANDARDS

CE marked to EN50178 (low voltage directive)  
  
EN50082-2:1995  
immunity industrial environment  
  
EN50082-1:1997  
immunity residential commercial and light industry  
  
EN50081-2: 1993  
emissions industrial environment (EN55011 Class A)  
  
EN50081-1: 1992  
emissions industrial environment (EN55022 Class B)  
  
UL and cUL listed



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Reliability fitted as standard

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