Bardac Drives Catalog 2024





AC DRIVES



DC DRIVES



MOTORS



SERVICE



Automation Things

Everything is...

- ... Internet accessible
- ... Ethernet workable, peer-to-peer
- ... Configurable from anywhere
- ... IIoT ready

AutomationThings.com

Everything normally in stock!

Since our founding in 1992 we have worked hard to build our reputation around key goals:

- Innovative technologies.
- Reliable products.
- Unrelenting customer support.
- All catalog items normally in stock.
- Competitive pricing.



Our Company President: Paul Crowhurst

Bardac ...the safe bet!

Seamlessly Integrated Automation











AC DRIVES

Vector Systems
To 400 HP - pages 36 - 38

ECO fan & pump

General Purpose To 50 HP - pages 42 - 43

NEMA 4X (IP66) To 30 HP - page 44

Single Phase To 1.5 HP - page 46 - 47

CONTROLLERS

drive.web

Ethernet Distributed Control

Smarty Universal Automation Controllers with I/O - pages 14 - 19

speedy Embedded & onboard Controllers pages 20 - 22

Motion

pages 30 - 31

TOOLS

SAVVY Drive & controller configuration pages 8 - 9

Savvy-SFD Signal Flow Diagram tools for system design pages 10 - 11

drive.web Apps

device Apps
Pre-Engineered interfaces for third party drives - pages 26 - 33

HMI

SavvyPanel
For industrial PC touch screens pages 12 - 13

savvyPanel touch Hi Res industrial touch screens

savvyPanel

mobile

HMI app for iPhone, & iPad pages 12 - 13

pages 12-13

DC DRIVES

Single Phase

To 10 HP - pages 48 - 50

DC Servo Up to 12 A, 48VDC - page 51

3-Phase Digital To 2000+ HP - pages 52 - 57

Stack Controller 6 & 12 pulse - page 56

Packaged Drives

POWER QUALITY ~ MOTORS ~ ENGINEERING ~ SERVICE ~ SUPPORT ~ TRAINING

pages 58 - 59

Specifications ... At the time of going to press we believe the information in this catalog to be accurate. However, the specifications of products may be amended at any time, so please check with us when ordering to ensure that such changes will not affect your requirements.

DC t∈chnology

PL Series ...digital dc drives



up to 2000+HP

LA503846 dw Ethernet Through-Panel Port for closed door system access





Standard Features

- Total digital control
- · Basic peer-to-peer link
- 40 character backlit display
- Friendly, easy menu structure
- Modern, compact packagingExtensive, flexible, plug-in I/O
- RS232 serial port
- · Easy configuration saving & cloning
- · Built-in automatic field controller
- Built in programmable control functions for PID, winders, orientation, etc.
- · Tach, encoder & arm volts feedback
- Easy reliable autotune

All suffix d PL/X drives include an embedded **speedy** Automation Controller (dw221) for safe, doors closed, start up & operation with:

- Easy USB port interface
- · Peer-to-peer Ethernet communications
- drive.web programmable control
- ModbusTCP over Ethernet
- Easy, safe, savvyPanel "Quick Start"
- see pages 20 & 21 for dw221 details -

Optional:

- ModbusRTU RS485 serial port
- · Devicenet, Profibus DP, fieldbus



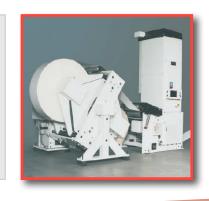




powerDRIVE Packages

PL/X DC drives up to 1200 horsepower are available in compact **powerDRIVE** packages complete with:

- · Main contactor
- · High speed 3-phase line fuses
- · High speed armature fuse
- · High speed control/field fuses
- Line filter (100HP & up)
- USB & Ethernet interface with speedy dw221
- Optional motor blower starter (100HP & up)



Key Features

Analog Inputs & Outputs

8 analog inputs & 4 analog outputs (12 bits) All outputs short circuit protected All inputs over voltage protected up to +50v Inputs configurable 5 to 30v Input volts programmable up to +/-30v

Digital Inputs & Outputs

17 digital inputs & 7 digital outputs Digital I/O short circuit protected Digital inputs over volts protected to +50v (with settable switching levels) Digital outputs over volts protected to +50v

Speed Feedback - Standard

Analog tach Encoder Armature voltage Encoder + armature volts Encoder + analog tach

Field Configurations

Easily add a savvuPanel touch

screen HMI with

Fixed Current Fixed voltage Automatic field weakening Delayed field quench Standby field setting Field economy

0 26.6 Stop secure WiFi interface

Diagnostic Monitoring

Output power Kw

AC supply volts

Scope terminal monitors selectable values All analog input voltages All digital input states All analog output voltages All digital output states Tach volts Motor arm volts & amps Field current

User Configurable Software Functions

PID blocks, Parameter profiler, Winder reel diameter calculator, Winder taper tension calculator, Winder torque/inertia/friction compensator, Preset speed function, Two summers, Software "motorized pot", Interval timer, Current profiling, Zero speed with shaft position lock, Jog / crawl functions, Two filters, Dual motor swap, Latch, Sample & hold function, Auto self-tune current loop, Linear and S-ramps, Slack take-up, Batch Counter, Draw control.

Engineered Configuration Packages

Pre-configured generic apps are available for Open & Closed Loop Winders, Position Controls, Coordinated Line Drives, Indexing, registration and others.

* Included with all powerDRIVES and size 4 & 5 basicDRIVES

Safe, "Doors Closed" Start Up & Opertation

The optional dw221 Automation Controller is embedded as standard in size 4 & 5 for easy system wide access to configure, connect & control.

Protection

Interline device networks High energy MOV's Instantaneous overcurrent Overcurrent (inverse time) Field fail and overcurrent Motor over temperature SCR (thyristor) over temp Main power phase loss Armature over volts Over speed protection Speed feedback mismatch Stall protection Standstill logic SCR (Thyristor) trigger failure Digital output short circuit

Communications Ports*

drive.web peer-to-peer Ethernet ModbusTCP/IP Ethernet USB port for easy network wide set up Serial port (RS232)

Optional Communications

Ethernet: EIP (PCCC) ModbusRTU Profibus DP

Simple, intuitive configuration techniques with clear display of information

- · No pots or switches to set
- · Accurate display of voltages and currents
- · Positive displacement pushbuttons for tactile feel
- · High power processor and large memory will ensure ease of product enhancement in the future
- · 2-button reset gets users back to OEM set up
- Powerful savvy graphical configuration, diagnostics & system design tools





The powerful **savvy** configuration tools are used for the PL Series DC drives, AC drives, drive.web programmable controllers, savvyPanel operator stations & complete systems.

DC technology



1 75 HP, PLX50/123

powerPLX50/123 → With fuses, contactor & power components

(shown hinged open for easy access)







powerPL265/630 →

With fuses, contactor & power components (shown with optional motor blower starter)



Models & Ratings

4-Quadrant, Regenerative Drives

HP @ 500V arm 460VAC	HP @ 240V arm 230VAC	•	Field Amps DC oower(basic	powerDRIV€ Model c)	Dimensions W x H x D (weight) inches (LBS)	basicDRIVE Model	Dimensions W x H x D (weight) inches (LBS)	Line Reactor Model
20	10	36	5(8)	powerPLX15/36d	8.5 x 11.4 x 11.7 (26)	PLX15/36d	8.5 x 11.4 x 6.9 (16)	LM37
30	10	51	5(8)	рошегPLX20/51d	8.5 x 11.4 x 11.7 (26)	PLX20/51d	8.5 x 11.4 x 6.9 (16)	LM52
60	25	99	5(8)	рош∈rPLX40/99d	8.5 x 11.4 x 11.7 (30)	PLX40/99d	8.5 x 11.4 x 6.9 (17)	LM120
75	35	123	5(8)	powerPLX50/123d	8.5 x 11.4 x 11.7 (30)	PLX50/123d	8.5 x 11.4 x 6.9 (17)	LM120
100	50	164	10(16)	powerPLX65/164d	16 x 33 x 9.7 (80)	PLX65/164d	8.5 x 16.2 x 8.6 (27)	LM150
125	60	205	10(16)	powerPLX85/205d	16 x 33 x 9.7 (80)	PLX85/205d	8.5 x 16.2 x 8.6 (27)	LM195
150	75	270	10(16)	powerPLX115/270d	16 x 33 x 9.7 (82)	PLX115/270d	8.5 x 16.2 x 8.6 (28)	LM240
200	100	330	10(16)	POWET PLX145/330d	16 x 33 x 9.7 (89)	PLX145/330d	8.5 x 16.2 x 8.6 (28)	LM300
250	125	405	20(32)	DOWERPI X185/405d	16 x 43.5 x 14.4(143)	PI X185/430d	8.5 x 19.9 x 14.4 (43)	LM375
300	150	480	20(32)	•	16 x 43.5 x 14.4 (145)		8.5 x 19.9 x 14.4 (45)	LM480

2-Quad	2-Quadrant, Non-Reversing Drives							
HP @ 500V arm 460VAC	HP @ 240V arm 230VAC	•	Field Amps DC power(basic)	рошєrDRIVE Model	Dimensions W x H x D (weight) inches (LBS)	basicDRIVE Model	Dimensions W x H x D (weight) inches (LBS)	Line Reactor Model
20	10	36	5(8)	рош∈г РL15/36d	8.5 x 11.4 x 11.7 (26)	PL15/36d	8.5 x 11.4 x 6.9 (16)	LM37
30	10	51	5(8)	рош∈г РL20/51d	8.5 x 11.4 x 11.7 (26)	PL20/51d	8.5 x 11.4 x 6.9 (16)	LM52
60	25	99	5(8)	рошег PL40/99d	8.5 x 11.4 x 11.7 (30)	PL40/99d	8.5 x 11.4 x 6.9 (17)	LM120
75	35	123	5(8)	рошег PL50/123d	8.5 x 11.4 x 11.7 (30)	PL50/123d	8.5 x 11.4 x 6.9 (17)	LM120
100	50	164	10(16)	powerPL65/164d	16 x 33 x 9.7 (80)	PL65/164d	8.5 x 16.2 x 8.6 (27)	LM150
125	60	205	10(16)	powerPL85/205d	16 x 33 x 9.7 (80)	PL85/205d	8.5 x 16.2 x 8.6 (27)	LM195
150	75	270	10(16)	рошег PL115/270d	16 x 33 x 9.7 (82)	PL115/270d	8.5 x 16.2 x 8.6 (28)	LM240
200	100	330	10(16)	рош∈г РL145/330d	16 x 33 x 9.7 (89)	PL145/330d	8.5 x 16.2 x 8.6 (28)	LM300
250	125	405	20(32)	рошег PL185/405d	16 x 43.5 x 14.4 (143)	PL185/430d	8.5 x 19.9 x 14.4 (43)	LM375
300	150	480	20(32)	рошег PL225/480d	16 x 43.5 x 14.4 (143)	PL225/530d	8.5 x 19.9 x 14.4 (45)	LM480
400	200	630	20(32)	рошег PL265/630d	16 x 43.5 x 14.4 (154)	PL265/630d	8.5 x 19.9 x 14.4 (45)	LM600

basicDRIVES must be installed with new contactor and the correct high speed SCR fuses to maintain the warranty drive.web options see pages 24 - 25

USB cable for programming (USB A to USB-C), 2M long - part number LA504302, please call +410-604-3400 Computer RS232 Communications Cable - Drive to DB9 - part number LA102595, included with every drive For details of Drive Isolation Transformers, Line Reactors and Line Filters, please call +410-604-3400

PL-Series Drives to 2000HP

Models & Ratings

DC drives 400 HP to 2000 HP are normally available as **basicDRIVES** but can be supplied with **powerKITS** including:

- High speed fuses for line, armature & field
- Main DC contactor
- Line filter
- Flexible bus bar kits

(**basicDRIVES** must be installed with new power components to maintain the warranty)

Drives are available for either 6-pulse or 12-pulse, 460, 600 or 690 VAC configurations - please call for further information.

SAFE, "DOORS CLOSED" START UP AND OPERATION Drive models with suffix "d" include a speedy dw221 onboard controller with drive.web

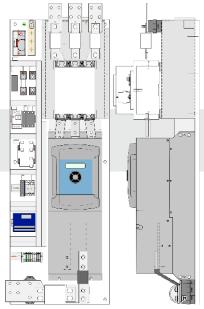


DC Dri	ves - 500 V	DC Armatu	re, 480VAC Su	vlaa		
HP@	ARMATURE	FIELD	basicDRIVE	basicDRIVE	DIMENSIONS	OVERLOAD
	AMPS DC	AMPS DC	4-QUAD REGEN		W x H x D (weight)	RATING
	@ 40°C	Basic(Optional)	REVERSING	NON-REVERSING	INCHES (LBS)	
400	650	32 (50)	PLX275/650d	PL275/650d	TOP CABLE ENTRY 10 x 30 x 13.8 (120)	150%, 25 SECS
450	750	32 (50)	PLX275/050d PLX315/750d	PL315/750d	10 x 30 x 13.8 (120)	150%, 25 SECS
500	850	32 (50)	PLX360/850d	PL360/850d	10 x 30 x 13.8 (120)	150%, 25 SECS
575	950	32 (50)	PLX400/950d	PL400/950d	10 x 30 x 13.8 (120)	150%, 25 SECS
650	1050	32 (50)	PLX440/1050d	PL440/1050d	10 x 30 x 13.8 (120)	100%, CONT
750	1250	64	PLX520/1250d	PL520/1250d	20 x 30 x 13.8 (285)	150%, 25 SECS
895	1450	64	PLX600/1450d	PL600/1450d	20 x 30 x 13.8 (285)	150%, 25 SECS
1000	1650	64	PLX700/1650d	PL700/1650d	20 x 30 x 13.8 (285)	150%, 25 SECS
1140	1850	64	PLX800/1850d	PL800/1850d	20 x 30 x 13.8 (285)	150%, 25 SECS
1260	2050 @35°C	64	PLX900/2050d	PL900/2050d	20 x 30 x 13.8 (285)	150%, 25 SECS
1380	2250 @35°C	64	PLX980/2250d	PL980/2250d	20 x 30 x 13.8 (285)	100%, CONT
			0001/100			
			re, 600VAC Su			
480	650	32 (50)	PLX275MV/650d	PL275MV/650d	10 x 30 x 13.8 (120)	150%, 25 SECS
550	750	32 (50)	PLX315MV/750d	PL315MV/750d	10 x 30 x 13.8 (120)	150%, 25 SECS
630 700	850 950	32 (50) 32 (50)	PLX360MV/850d PLX400MV/950d	PL360MV/850d PL400MV/950d	10 x 30 x 13.8 (120) 10 x 30 x 13.8 (120)	150%, 25 SECS 150%, 25 SECS
775	1050	32 (50)	PLX440/MV1050d	PL440MV/1050d	10 x 30 x 13.8 (120)	100%, CONT
925	1250	64	PLX520MV/1250d	PL520MV/1250d	20 x 30 x 13.8 (285)	150%, 25 SECS
1075	1450	64	PLX620MV/1250d PLX600MV/1450d	PL600MV/1450d	20 x 30 x 13.8 (285)	150%, 25 SECS 150%, 25 SECS
1220	1650	64	PLX700MV/1650d	PL700MV/1650d	20 x 30 x 13.8 (285)	150%, 25 SECS
1370	1850	64	PLX800MV/1850d	PL800MV/1850d	20 x 30 x 13.8 (285)	150%, 25 SECS
1510	2050 @35°C	64	PLX900MV/2050d	PL900MV/2050d	20 x 30 x 13.8 (285)	150%, 25 SECS
1660	2250 @35°C	64	PLX980MV/2250d	PL980MV/2250d	20 x 30 x 13.8 (285)	100%, CONT
DC Dri	ves - 700 V	DC Armatu	re, 690VAC Su	vlaa		
550	650	32 (50)	PLX275HV/650d	PL275HV/650d	10 x 30 x 13.8 (120)	150%, 25 SECS
650	750	32 (50)	PLX315HV/750d	PL315HV/750d	10 x 30 x 13.8 (120)	150%, 25 SECS
735	850	32 (50)	PLX360HV/850d	PL360HV/850d	10 x 30 x 13.8 (120)	150%, 25 SECS
820	950	32 (50)	PLX400HV/950d	PL400HV/950d	10 x 30 x 13.8 (120)	150%, 25 SECS
900	1050	32 (50)	PLX440HV/1050d	PL440HV/1050d	10 x 30 x 13.8 (120)	100%, CONT
1080	1250	64	PLX520HV/1250d	PL520HV/1250d	20 x 30 x 13.8 (285)	150%, 25 SECS
1250	1450	64	PLX600HV/1450d	PL600HV/1450d	20 x 30 x 13.8 (285)	150%, 25 SECS
1420	1650	64	PLX700HV/1650d	PL700HV/1650d	20 x 30 x 13.8 (285)	150%, 25 SECS
1600	1850	64	PLX800HV/1850d	PL800HV/1850d	20 x 30 x 13.8 (285)	150%, 25 SECS
1770	2050 @35°C	64	PLX900HV/2050d	PL900HV/2050d	20 x 30 x 13.8 (285)	150%, 25 SECS
1940	2250 @35°C	64	PLX980HV/2250d	PL980HV/2250d	20 x 30 x 13.8 (285)	100%, CONT

DC technology

DC powerDRIVES - 500 VDC Armature, 480 VAC Supply & powerKITS

HP @ 500 VDC 460 VAC	ARMATURE AMPS DC @40°C	FIELD AMPS DC	FRAME SIZE	powerDRIVE w/contactor & fuses & dw221 speedy	Contactor Kit Contactor + mount bus bars & h/w	Fuse Kit Line, Regen Arm & Aux Fuses + mountings + h/w	Fan Supply Kit 460/230V Transfmr Fuses + h/w
REGEN	ERATIVE, F	REVERSI	NG, 4-Q	UADRANT DRIVES	3		
400	650	32 (50)	4	powerPLX275/650v2d	CON-800V700A	FPX650	FANSUPPLY4
450	750	32 (50)	4	powerPLX315/750v2d	CON-800V850A	FPX750	FANSUPPLY4
500	850	32 (50)	4	powerPLX360/850v2d	CON-800V850A	FPX850	FANSUPPLY4
575	950	32 (50)	4	powerPLX400/950v2d	CON-800V1000A	FPX950	FANSUPPLY4
600	1000	64	5	рошег PLX520/1000d	CON-800V1200A	FPX1000	FANSUPPLY5
700	1150	64	5	рошег PLX520/1150d	CON-800V1200A	FPX1150	FANSUPPLY5
800	1350	64	5	рошег PLX600/1350d	CON-800V1750A	FPX1350	FANSUPPLY5
1000	1650	64	5	рош∈г РLX700/1650d	CON-800V1750A	FPX1650	FANSUPPLY5
1100	1750	64	5	рош∈г РLX800/1750d	CON-800V2000A	FPX1750	FANSUPPLY5
1200	1950	64	5	рош∈г РLX900/1950d	CON-800V2000A	FPX1950	FANSUPPLY5
NON DE	CENEDAT	IVE 2-OI	IADDAI	NT DRIVES			
400	650	32 (50)	4	powerPL275/650v2d	CON-800V700A	FP650	FANSUPPLY4
		` '		powerPL315/750v2d	CON-800V700A CON-800V850A	FP750	FANSUPPLY4
450	750	32 (50)	4				
500	850	32 (50)	4	pow∈r PL360/850v2d	CON-800V850A	FP850	FANSUPPLY4
575	950	32 (50)	4	рошег PL400/950v2d	CON-800V1000A	FP950	FANSUPPLY4
700	1150	64	5	рошег PL520/1150d	CON-800V1200A	FP1150	FANSUPPLY5
800	1350	64	5	рошегPL600/1350d	CON-800V1750A	FP1350	FANSUPPLY5
1000	1650	64	5	powerPL700/1650d	CON-800V1750A	FP1650	FANSUPPLY5
1100	1750	64	5	рошегPL800/1750d	CON-800V2000A	FP1750	FANSUPPLY5
1200	1950	64	5	рошетPL900/1950d	CON-800V2000A	FP1950	FANSUPPLY5
. 200	.000	٠,	,	F522 2300/1000d	22.1.2237200071		



Size 4 *power*PL/X315 - 400

NOTE 1:

To encourage "doors closed", safe start up & maintenance practices, all suffix d PL/X drives are fitted with a duz21 speedy with isolated USB and Ethernet ports as standard for full remote configuration & control access.

NOTE 2:

Due to the weight and dimensions, size 5 **power**DRIVES are shipped in two parts (basic drive & power package panel) that will need to be assembled on site

Frame 4 Dimensions						
Drive	OH	OW	OD			
powerPL275	53.0"	18.5"	14.9"			
powerPLX275	53.0"	18.5"	14.9"			
powerPL315	56.0"	18.5"	16.0"			
powerPLX315	56.0"	19.3"	16.0"			
powerPL360	60.0"	18.5"	16.9"			
powerPLX360	60.0"	19.3"	16.9"			
powerPL400	60.0"	18.5"	16.9"			
powerPLX400	63.9"	19.3"	16.9"			
Frame 5 Dimensions						
All frame 5 drives	67.0"	30.0"	16.0"			



Size 5 powerPL/X520 - 900

PLXDd Separate Stack Controller

The PLXDd is a great retrofit option for controlling large separate SCR stacks in either 6 or 12-pulse DC drive configurations and also for wound rotor motor SCR stack control. The unit has all the standard PL/X series drive features together with:

- Available for stacks up to 690 volts AC, 700 volts DC
- · Built-in 32 amps fully automatic field controller (optional 50 amps rating)
- · Separate gate pulse driver unit for greater noise immunity and reliability
- Ethernet and drive.web distributed control
- Optional current transformers Please call for details

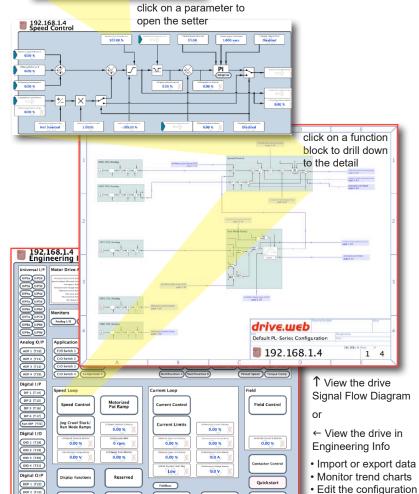


savvy tools for the PL/X DC drives



drive.web automation

- Easy
- Reliable



- Intuitive

- Verv smart!



drive.web smart drives

Add a drive.web module to any drive for unlimited automation capability:

- Powerful programmable control functions
- Peer-to-peer networking over Ethernet
- Smart iPad/Android or touch screen PC operation
- Internet access

smarty - adds programmable control & extra I/O **speedy** - adds programmable control & gateway

- · Get clear graphical signal flow system diagrams.
- · Send event driven emails from your drive.
- All in one unique, intuitive, environment.

ு Dow∈rSL Series

Analog DC drives - up to 200HP

powerSLX Regen, reversing drive + field controller powerSL Non-reversing drive + field controller powerSLE Non-reversing OEM drive.

Please call for details



Power Quality For DC Drives

Drive Isolation Transformers NEMA 1 enclosed for indoor use

K-factor 4 Windings: Delta Primary, Wye Secondary Aluminum or Copper windings as indicated Taps at ± 5% Approvals: UL, cUL

Ontions

DOP 2 [T23]

Outdoor enclosures Frequencies other than 60Hz Voltages other than 230/460/575 pri, 230/460 sec Special Taps Fungus Proofing 80°C & 115°C Rise Copper Windings Electrostatic Shield K-13, K-20, K-30

Discount Schedule SX-1

Specification

DIT3** 3KVA - Cu (2HP) DIT6** 6KVA - Cu (5HP) 11KVA - AI (7.5HP) DIT11** DIT14** 14KVA - AI (10HP) DIT20** DIT27** 20KVA - AI (15HP) 27KVA - AI (20HP) 34KVA - AI (25HP) DIT34** DIT40** 40KVA - AI (30HP) DIT51** 51KVA - AI (40HP) DIT63** 63KVA - AI (50HP) DIT75** 75KVA - AI (60HP) DIT93** 93KVA - AI (75HP) DIT118** 118KVA - AÌ (100HP) 145KVA - AI (125HP) DIT145** 175KVA - AI (150HP) DIT175** DIT220** 220KVA - AI (200HP) DIT275** 275KVA - AI (250HP) DIT330** 330KVA - AI (300HP) DIT440** 440KVA - AI (400HP) DIT550** 550KVA - AI (500HP) 660KVA - AI (600HP) DIT660**

Line Reactors For 3-Phase DC Drives Dimensions W x D x H Number 460V LM18 20 6.0"x4.8"x3.1" 2.1"x2.0" LM37 10 20 7.2"x5.6"x3.4" 2.3"x3.0" 11 LM52 LM67 15 20 30 40 14 23 58 7.2"x5.6"x3.8" 2.6"x3.0" 75 9.0"x7.0"x4.8" 3.2"x3.0" LM82 25 50 9.0"x7.0"x4.8" 3.2"x3.0" 24 LM120 10.8"x8.2"x5.6" 43 47 LM150 LM195 40 10.8"x8.3"x5.6" 9.0"x7.1"x4.9" 100 166 3.5"x3.6" 60 29 125 216 3.2"x3.0' LM240 150 10.8"x8.4"x5.8" 3.2"x3.6" LM300 200 333 10.8"x8.4"x6.0" 4.2"x3.6" 48 100 10.8"x8.2"x7.3" 14.8"x14.0"x10.2" LM375 250 416 4.2"x3.6' 68 LM480 300 533 125 5.9"x4.6' LM600 15.5"x14.0"x11.5" 6.8"x4.6" LM750 200 500 833 15.5"x14.0"x13.0' 6.8"x4.6" 180 LM900 600 1000 15.5"x14.0"x15.5" 9.3"x4.6" 290 LM1125 22.0"x20.0"x14.8' 9.5"x7.2"



· Drag & drop links Access multiple drives

Engineering & Support









AC and DC motors from fractional to over 2000 HP

All speed ranges, duties, enclosures and voltages complete with a full range of accessories such as encoders, tachs, thermal protection, brakes, blowers, filters, brushes and slide bases. Please call for details and competitive pricing.

Modulus Packaged Drives

Modulus solutions are a range of standard, preengineered drive packages with a selection of options for wide range common applications.

Using the flexible **drive.web** programmable automation technology it is possible to adapt a small range of hardware configurations to a wide range of applications thereby keeping design and manufacturing costs to a minimum.

Modulus drives are available either as packages mounted on an open panel, **Modulus P**, or as assemblies installed in an enclosure, **Modulus E**, to suit the type of operating environment and the control scheme required.

Every **Modulus** project is accompanied by a detailed, 50-point, Quality Control Report covering every facet of the product, its design, construction, testing and shipping.

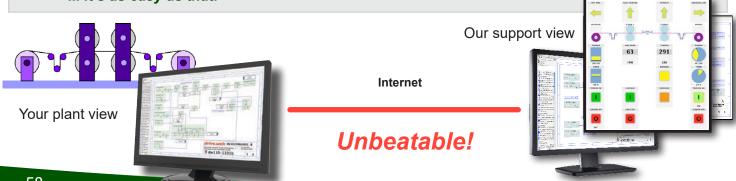


User manuals for all products are available from www.bardac.com

Online Product Support

Using innovative, interactive, Internet online technologies we can provide either product training or product support through your browser from the comfort of your desk! Simply connect via your browser and get live interactive support where ever you are - with savvy running on your computer call +410-604-3400 and in less than a minute an engineer will be able to see your system live and give you the support you need.

... it's as easy as that!



Online Training

Online product training courses are scheduled every week with options for users of all levels of interest and ability.

Level 1 - drive.web introductory seminar - 11/2 hours - Free!

This provides an overview of the **drive.web** automation technology. Learn how to connect to drives, create drive "phantoms", navigate systems, create signal flow diagrams and system drawings, find information, identify object attributes, make connections, show trend charts, build **savvyPanel** operator stations, etc.

Level 2 - drive.web design technology course - 3 hours (Level 1 is a prerequisite)

Covers configuration of drives, basic system design concepts, Ethernet networking, password protection, system safety

Level 3 - drive.web system design and application courses (Level 2 is a prerequisite)

3a) Drive and device interfaces - 2 hours

Covers the use of "Templates" and "Helpers" for documented drives, generic ModbusRTU master interfaces to third party drives, operator stations, etc.

3b) Winder Control Systems - 3 hours

Covers standard solutions for open loop CTCW winders, closed loop dancer controlled winders and closed loop load cell controlled winders.

3c) Encoder Control Systems - 3 hours

Covers applications such as "electronic line shaft", spindle orientation, registration and position control.

3d) Advanced Ethernet, Internet Access and Security - 3 hours

Covers local and wide area network configuration, IP addressing, user access and device and system password protection.

For course details, registration, international training options and charges please call us at 1-888-667-7333 (toll free USA 888-ON SPEED) or international at +410-604-3400. Alternatively please contact training@driveweb.com

Terms of Sale & Payment

Charge Basis

Complete Terms & Conditions of Sale are shown at www.bardac.com. Net 30 day credit terms are available subject to prior approval. Credit card payments are only accepted for payments made at the time of service or shipment of products and will be subject to a 4% surcharge.

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b. Standard Overtime - Weekdays 6pm to 7am & all day Saturday - Total work time not to exceed 12 hrs in any 24 hrs	\$ \$285 per hour
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Notes:

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- 2. Parts, materials, special visas, duties, and extraordinary expenses will be charged extra.
- 3. Warranty credits will be identified on the Daily Field Service Report.

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Rates (US\$)

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Catalog 2024.1

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AC Drives 34 Closed Loop Vector 36 General Purpose AC Drives 35, 42 HVAC & Pump Drives 34, 40, 41 NEMA 4X AC Drives 35, 44 P2 Series Drives 34, 36-38 E3 Series Drives 35, 42, 43 Options 45 Sensorless Vector Drives 35, 42, 43 Single Phase Motor Drives 34, 46 Vector Drives 34, 36 Application Notes Electronic Line Shaft 29 Line Drive Coordination 29, 32

600 Volts AC Drives 38, 41

Process Line Coordination 29, 30, 31 Registration 29 Winder Controls 28

Apps Packages 27, 29, 30, 32 Automation Technology 3-33

Cam Profile 30 Configuration Tools 8-11

DC Drives 3-phase Regen 52 3-phase System Drives 52 Digital 52 Single Phase 48, 49, 50 Single Phase Enclosed 50 Single-Phase Regen 49 SI Series 57 Distributed Control 6

Application Solutions 27, 28, 29, 30, 32 Concept 3, 4, 5 Connectivity 4, 5 Model Numbers 22, 23 Products 7 savvy software 9, 10, 11, 12, 13, 28-33 smarty dw250 14, 18 smarty dw240 15, 16, 17, 18 smarty dw210 18, 24 speedy 20, 24 Systems 4, 5, 6

drive.web Automation 3-33 drive web controllers 14-25 drive.web Line Control 29, 32

E3 Series Drives 42 E3 Series Single Phase Drives 46 FCO Drives 39 Electronic Line Shaft 29 Email Function Block 33 Energy Efficient Drives 39 Engineered Apps 26, 27

Fan & pump drives 40

600 Volts Drives 41 Field Service 59 Flux Vector Drives 34, 36 Frequency I/O 14, 23

General Purpose VFDs 35, 42 Get savvy download 9

HVAC drives 40 600 Volts Drives 41

iOS, iPad, iPhone savvyPanel 13

INDEX

K Series DC Drives 48

Line Reactors 57

Modulus Enclosed Drive Systems 58 Modulus Packaged Drive Systems 58 Motion Control 30, 31 Cam Profile 30 Stepper Drive Control 31 Trapezoidal Motion 30 Motors AC 58 Motors, DC 58

NEMA 4X drives 44 NEMA 12 drives 36, 39

Online Support 58 Open Loop Vector Drives 36 Operator Station savvyPanel 12

P2 Series Drives 36 Packaged Modulus Drive Systems 58 PL/X Series Digital DC Drives 52 Power Quality 57 Process Line Coordination 29, 30, 31 Programming Tools 12 Pump drives 40

Regenerative Drives Digital DC 52 Registration Control 29

savvvPanel Touch Screens 12 savvý programming 11 savvy-SFD Signal Flow Diagram 10 savvy software 9, 10, 11, 12, 13, 28-33 savvy software download 9 Sensorless Vector Drives 36, 42, 43 Service 54, 59 Service Charges 59 Servo Drives 41 smarty Controller 14, 15, 16, 17, 18, 19 speedy Controller 20, 21 Stepper Drive Control 31, 33 System Design Tools 7-11

Temperature Control 27 Terms Sale & Payment 59 Training Seminars 59 Transformers, Drive Isolating 57 Trapezoidal Motion 30

V3 Energy Efficient 39 Variable Torque Drives 40 Vector Drives 36 600 Volts Drives 38, 40

WiFi Roaming 33 Winder Controls 28 drive.web smarty Dancer controlled 28 Load cell controlled 28 Open loop CTCW 28