

**Bardac**  
**drives**



# Corporate Overview

***Bardac . . . the safe bet!***

# Bardac Drives & Automation



## AGENDA

- ▶ Corporate Background
- ▶ AC Drives & Motors
- ▶ DC Drives & Motors
- ▶ **drive.web** automation technology
- ▶ Global view with a local focus



# Bardac Drives & Automation



## PRODUCTS

- ▶ AC Drives 0.1 to 400 horsepower
- ▶ DC Drives 0.1 to 2,000+ horsepower
- ▶ **drive.web** automation technology
- ▶ DC servo linear amplifier drives
- ▶ AC & DC motors
- ▶ Engineered systems
- ▶ Worldwide sales & service



## **AC DRIVES**

- ▶ Closed loop vector drives up to 400 HP (230 & 460V)
- ▶ Sensorless vector drives up to 400 HP (230 & 460V)
- ▶ 600VAC drives up to 150 HP
- ▶ HVAC & pump drives up to 400 HP (230 & 460V)
- ▶ Industrial general purpose VFDs up to 50 HP  
115/230/460 Volts, all purpose features
- ▶ Single Phase Motor VFDs up to 1.5 HP (115 & 230V)
- ▶ NEMA 12 drives up to 400 HP – CLV, HVAC, SV, GP, SP
- ▶ NEMA 4X drives up to 30 HP – CLV, SV, HVAC, GP, SP



## **DC DRIVES – REGEN & NON-REGEN**

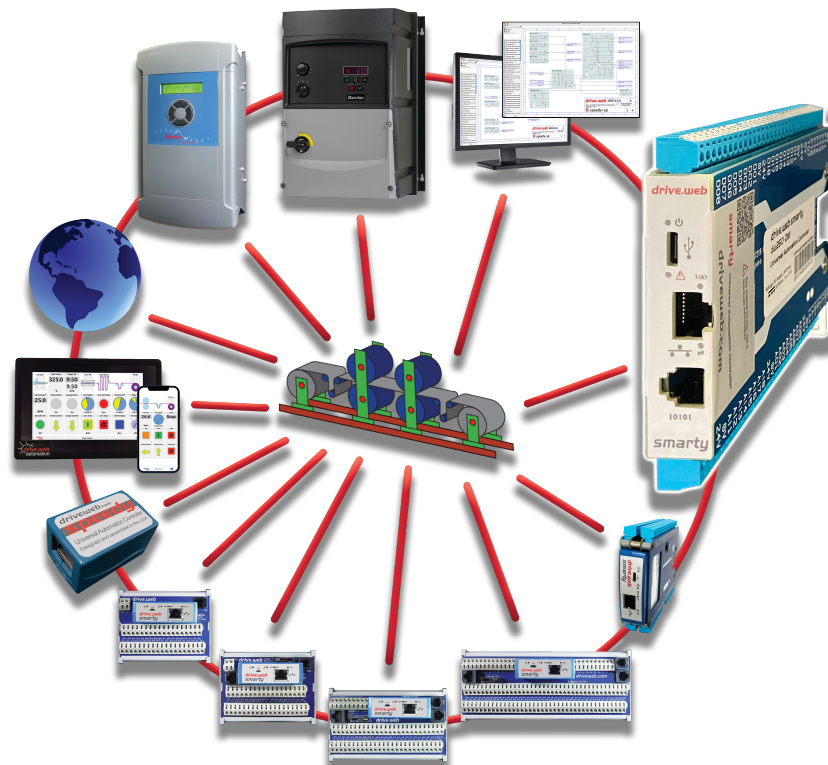
- ▶ 1-phase OEM drives up to 2 HP
- ▶ 1-phase systems drives up to 10 HP
- ▶ 3-phase digital systems drives up to 2000+ HP
- ▶ 3-phase analog drives up to 150 HP
- ▶ 3-phase digital separate SCR stack controllers
- ▶ 3-phase 12 pulse SCR stack controllers
- ▶ 3-phase slip ring motor controllers to 2000 HP

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## **drive.web** Distributed Control Technology

- ▶ System integration without PLC
- ▶ Cost effective in systems of any size
- ▶ Peer-to-peer Ethernet networking
- ▶ Internet accessible
- ▶ Graphical function block tools
- ▶ Onboard data storage
- ▶ Powerful system navigation
- ▶ **savvyPanel** touch screens
- ▶ WiFi roaming with iPad, iPhone, etc.
- ▶ Easy links to most drives, PLCs, etc.
- ▶ Supports enterprise integration
- ▶ **savvy** intuitive signal flow tools
- ▶ Online training and field support



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## AC DRIVES

- ▶ Closed & open loop vector drives
- ▶ Systems drives
- ▶ General purpose VFDs
- ▶ NEMA 12 & NEMA 4X drives



## **AC DRIVE FAMILY FEATURES**

- ▶ High frequency switching for quiet operation
- ▶ Built in a DB switch in size 2 and up
- ▶ ModbusRTU serial port up to 115 kbps
- ▶ Spin start, PI control, boost, trip memory
- ▶ Optional remote keypad & display
- ▶ Optional ModbusTCP/IP over Ethernet
- ▶ Optional peer-to-peer Ethernet networking
- ▶ Optional **drive.web** programmable control
- ▶ Optional distributed i/o over Ethernet

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## P2 OPEN & CLOSED LOOP VECTOR DRIVES

- ▶ IP20, NEMA 4X, & NEMA 12 enclosures
- ▶ Ratings to 400HP
- ▶ 230/460/600 volts
- ▶ Expandable systems features
- ▶ DC bus sharing
- ▶ **savvy** graphical programming
- ▶ Optional encoder feedback
- ▶ Optional **drive.web** control
- ▶ Many fieldbus options available





## V3 HVAC, FAN, & PUMP DRIVES

- ▶ IP20, NEMA 4X, & NEMA 12 enclosures
- ▶ Ratings to 400HP
- ▶ 230/460/600 volts
- ▶ Energy efficient >98%
- ▶ Low input harmonics
- ▶ BACnet, ModbusRTU standard
- ▶ **savvy** graphical programming
- ▶ HVAC & pump functions
- ▶ Optional **drive.web** control



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## E3 SERIES GENERAL PURPOSE VFDs

- ▶ IP20 & NEMA 4X enclosures
- ▶ Ratings to 50HP
- ▶ 230/460 volts
- ▶ High frequency switching for quiet operation
- ▶ Brake transistor, size 2 and up
- ▶ ModbusRTU, RS485 115 kbps
- ▶ Spin start, PI control, boost
- ▶ Optional **drive.web** control
- ▶ Optional Ethernet



## E3 SERIES SINGLE PHASE MOTOR VFDs

- ▶ IP20 & NEMA 4X enclosures
- ▶ For use with Shaded Pole or Permanent Split Capacitor motors
- ▶ For use in variable torque fan & centrifugal pump type applications
- ▶ 115 volts, 1Ø up to 0.75 HP
- ▶ 230 volts, 1Ø up to 1.5 HP
- ▶ Expandable i/o & systems features



## **NEMA 4X (IP66) DRIVES**

**For harsh, wet, dirty environments**

- ▶ Vector up to 30HP
- ▶ General purpose VFDs up to 30HP
- ▶ HVAC & Pump drives up to 30HP
- ▶ Basic versions with keypad & display
- ▶ Switched versions with:
  - ▶ Lockable isolator switch
  - ▶ FWD/OFF/REV switch
  - ▶ Speed pot
- ▶ Outdoor Rated



## DC DRIVES

- ▶ Single Phase, regen & non-regen to 10 HP
- ▶ 3-Phase, regen & non-regen to 2000+HP
- ▶ 3-Phase 12 pulse drives
- ▶ Linear amplifier servos up to 12 amps
- ▶ Separate Stack Controllers
- ▶ Slip ring motor controllers to 2000 HP
- ▶ Annealer Controllers
- ▶ Field Regulators





## K-SERIES, OEM DC DRIVES – REGEN & NON-REGEN

- ▶ Up to 2 HP
- ▶ DIN mounting
- ▶ Plug in terminals
- ▶ Arm volts or tach f/b
- ▶ Isolated versions
- ▶ 115/230 VAC selectable for 90/180VDC arm
- ▶ Adjustable ramps, max/min speed, IR comp
- ▶ Fields up to 1 amp
- ▶ Volume discounts



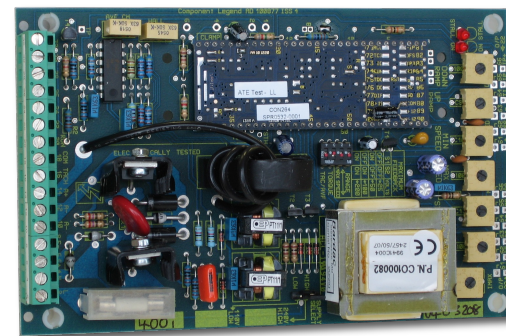
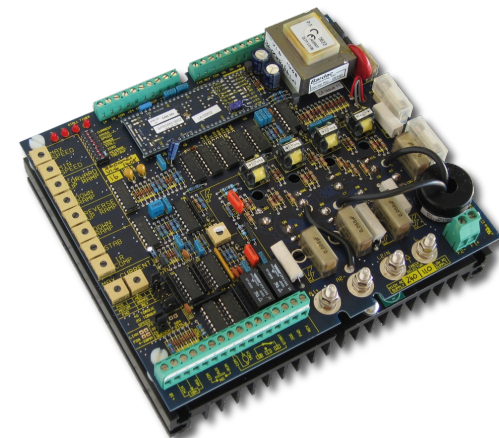
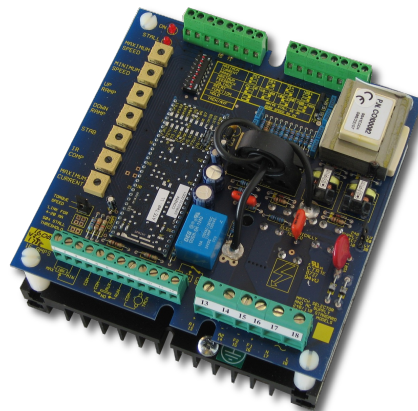
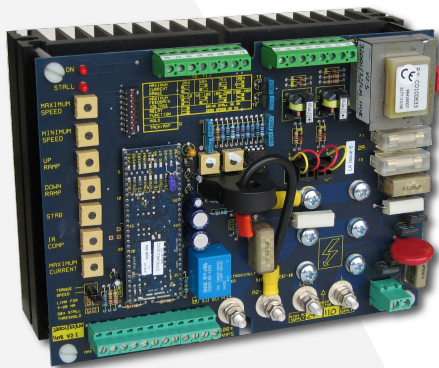
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## DC DRIVES – 1-PHASE SYSTEMS DRIVES

### Regen up to 36A, non-regen up to 48A

- ▶ 115/230 VAC selectable for 90/180VDC arm
- ▶ 230/460 VAC selectable for 180/360VDC arm
- ▶ Adjustable ramps, max/min speed, IR comp
- ▶ European voltage versions



## PLX SERIES DC DRIVES – 3-PHASE DIGITAL DRIVES TO 2000+ HP

- ▶ Compact packages
- ▶ 8.5" x 11" thru 75HP!
- ▶ High performance
- ▶ AVF/tach/encoder f/b
- ▶ Auto field controller
- ▶ **drive.web** Ethernet
- ▶ **savvy** graphical tools
- ▶ Extensive, flexible i/o
- ▶ “power” version with fuses, contactor, etc.
- ▶ International ratings
- ▶ Many fieldbus options available



## drive.web Automation Technology



## smarty dw240 series

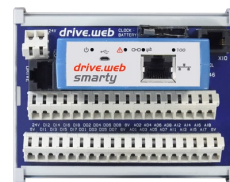
- ▶ *PLC, Motion Controller, and Process Controller . . . all in one!*
- ▶ drive.web distributed control over Ethernet
- ▶ Direct field wiring for easier, quicker, cost-saving installation
- ▶ Homogeneous integration for drives, HMIs, remote I/O
- ▶ **savvy** system design tools
- ▶ Right for the IIoT future
- ▶ Easy, intuitive, affordable, expandable
- ▶ For systems of any size or complexity
- ▶ Designed and built with innovation in the USA



smarty<sup>1</sup>



smarty<sup>2</sup>



smarty<sup>7</sup>

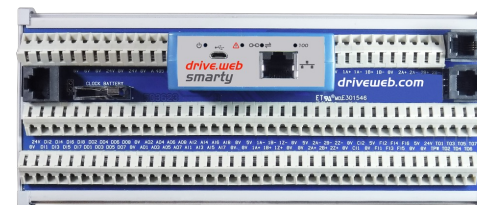


smarty<sup>3</sup>



smarty<sup>6</sup>

smarty<sup>4</sup>





## More *drive.web* Products



### *smarty*

- DIN mount controllers with flexible analog, logic & encoder i/o
- 16 points of high resolution I/O



### *speedy*

Miniature drive interface controllers with gateway to ModbusTCP/IP, ModbusRTU, EIP/PCCC, etc.



### *savvy*

Smart, intuitive graphical tools for device programming, system design & monitoring



### *savvyPanel*

Smart, touch screen operator station technology

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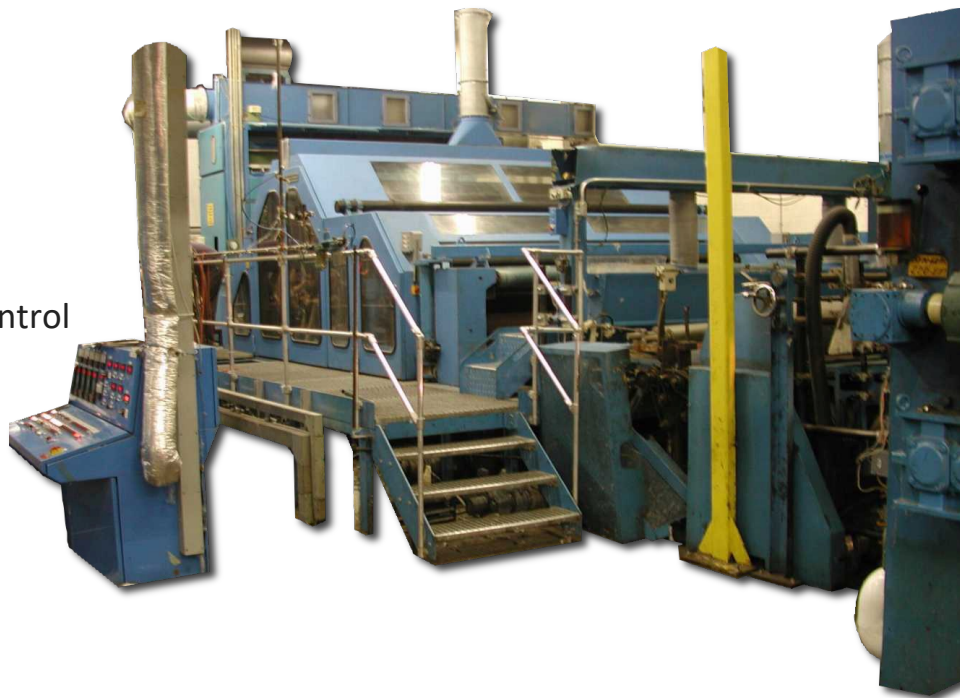
## drive.web KEY FEATURES

- ▶ Provides distributed control over Ethernet
- ▶ Easy interface to most drives, MMIs, etc.
- ▶ Easier, cheaper, faster than a PLC
- ▶ Intuitive **savvy** signal flow programming tools
- ▶ Entire system configuration stored in devices
- ▶ Field upgradable firmware options
- ▶ Multi-user tools with Internet access
- ▶ All system devices accessible from one point
- ▶ savvy runs on Windows, Mac OSX, Linux
- ▶ Powerful password protection
- ▶ Event driven text/email from devices



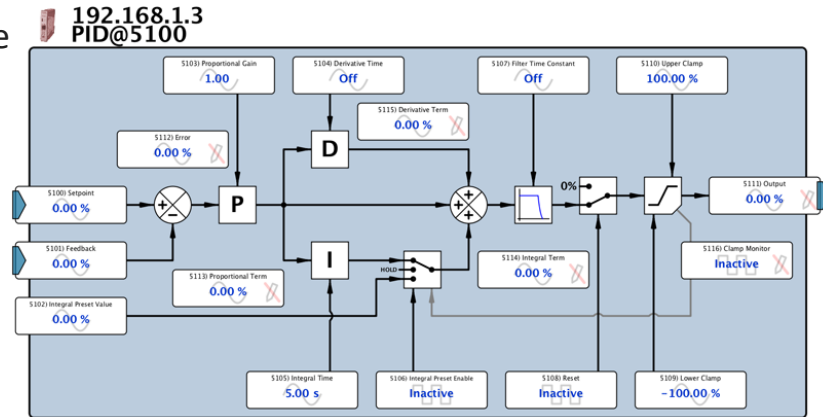
## **drive.web KEY APPLICATIONS**

- ▶ Process lines
- ▶ Steel & paper mills
- ▶ Plastic & metal extrusion lines
- ▶ Printing, coating, laminating, winding
- ▶ Material handling, conveyors, hoists
- ▶ Petro-chemical, pharmaceutical, flow control
- ▶ HVAC drive coordination



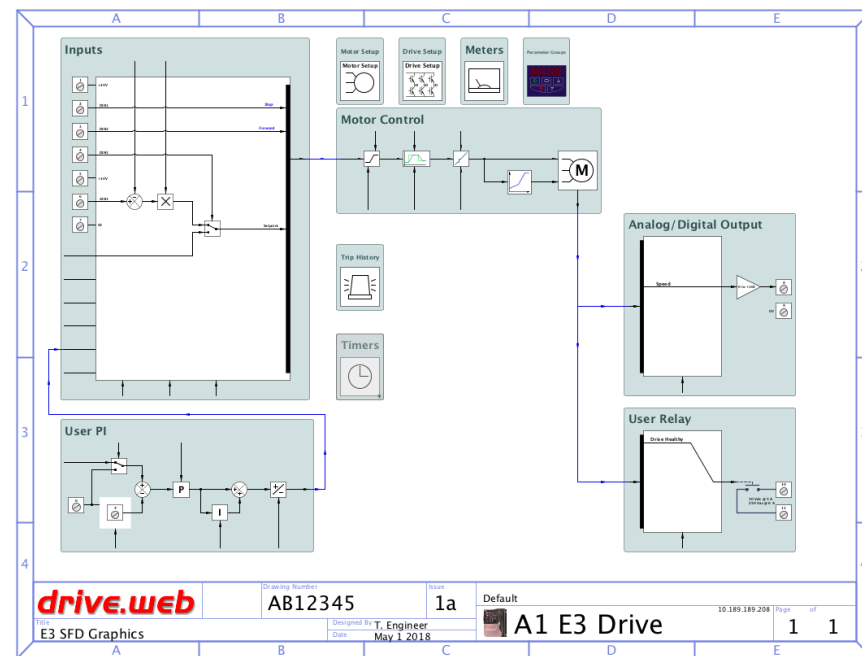
## drive.web KEY GRAPHICAL FUNCTION BLOCKS

- ▶ Arithmetic, logic, timers, comparators, switches
- ▶ Presets, latches, filters, counters, state machine
- ▶ Linear & S-ramps, PIDs, profilers
- ▶ Winder diameter, torque, taper calculation
- ▶ “Electronic line shaft”, phase lock, speed lock
- ▶ Encoder registration, indexing & orientation
- ▶ Sun position calc. for solar energy systems
- ▶ Event driven email from devices



## drive.web PROGRAMMING FEATURES

- ▶ Drag & drop connections
- ▶ Page and level browse navigation controls
- ▶ Drill down, jump, filter, search, pan, zoom
- ▶ Hover text help
- ▶ Contextual menus for get info, editing, naming, etc.
- ▶ Instant links to the built in manual
- ▶ Trend charts with data export
- ▶ Docks for easy parameter organization





***Bardac Drives & Automation***



**THANK YOU!**

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