

Issue 1



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 34 - 38

ECO fan & pump

To 400 HP - pages 39 - 41

General Purpose

To 50 HP - pages 42 - 43

NEMA 4X (IP66)

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Single Phase

To 1.5 HP - page 46 - 47

CONTROLLERS

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smarty

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with I/O - pages 14 - 22

speedy

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smart motion controllers
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smart temperature controller
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DC DRIVES

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

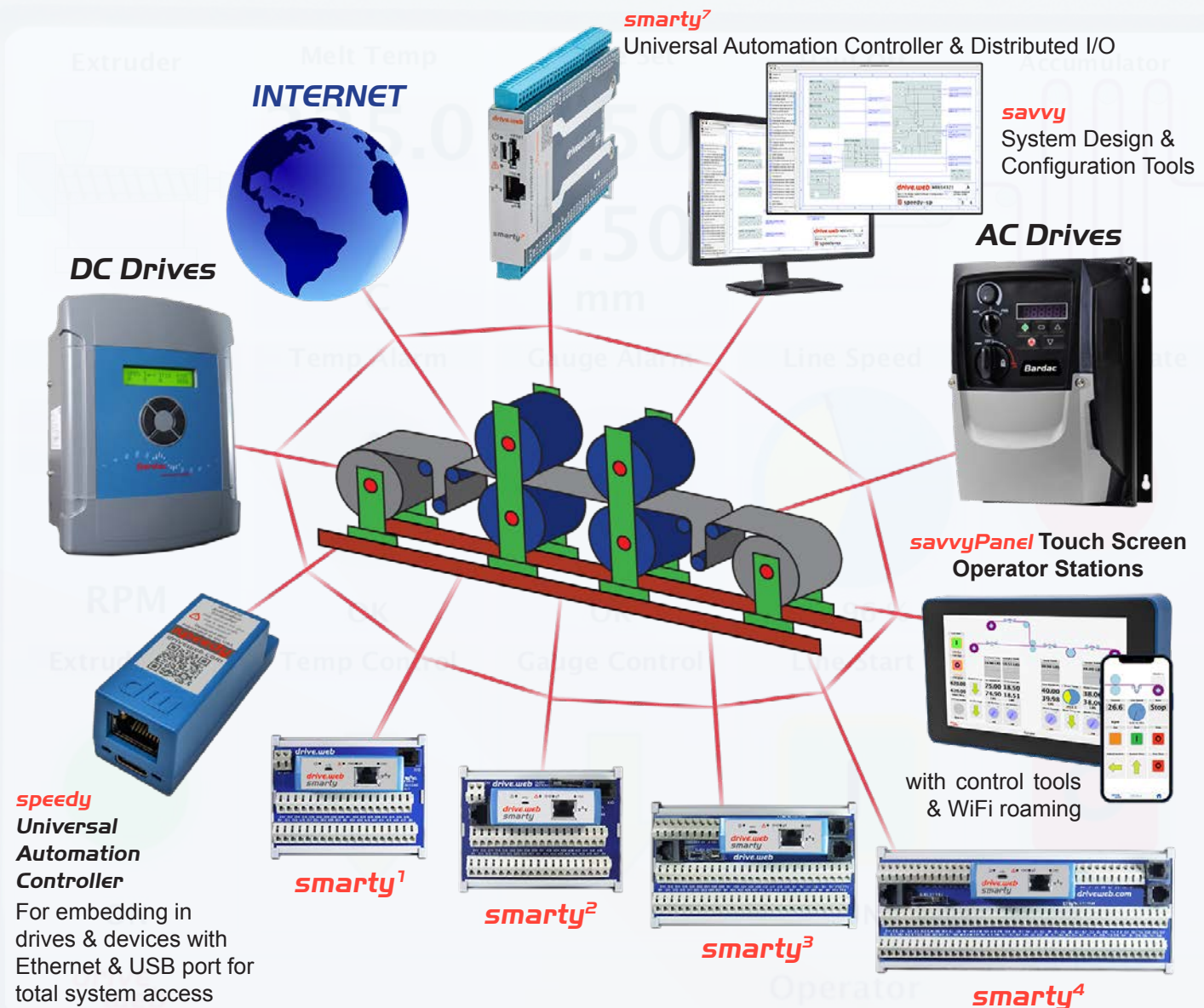
drive.web smart technology ... Designed and engineered in the USA to International Standards: UL, cUL, CE, FCC, UK CA

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.

drive.web

SMART AUTOMATION

Configure, connect & control everything ... in one environment
Internet accessible, peer-to-peer Ethernet with savvy tools
Cost effective for systems of any size or complexity



Automation Things ... smart ... connected ... IIoT ready

drive.web smart technology ... Designed and engineered in the USA to International Standards: UL, cUL, CE, FCC, UK CA

drive.web automation

total connectivity

enterprise management - machine operators - system engineering

drive.web

A Unique Architecture

1 *drive.web* devices connect peer-to-peer over ethernet to form a completely homogenous control environment.

2 *drive.web* devices provide a full featured programmable control environment. Each device processor contributes to the total system processing capacity so that as the system gets bigger it's capacity increases.

3 An unlimited number of *drive.web* devices can be incorporated into a system to provide an unlimited amount of processing capacity and I/O with undiminished performance.

4 The *drive.web* devices store all the device and complete system configuration data including touch screen PC, iOS & Android display data - everything!

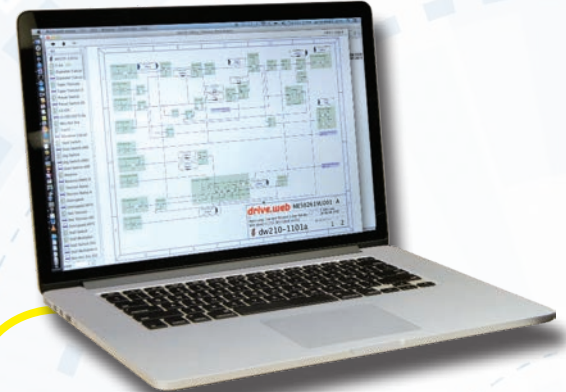
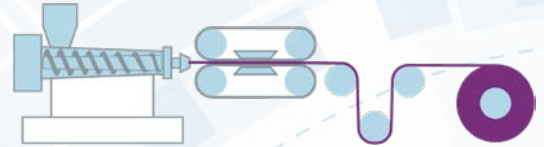
5 A *speedy* embedded in a drive takes over the entire drive; its setup, control, & memory management. It becomes an integral part of the drive and now looks just like the drive. Any actions from the drive keypad or terminals or serial ports are instantly synchronized.

6 *savvyPanel* touch screen PC, iOS & Android display graphics and configuration data all resides in the *drive.web* devices so that you can roam to any WiFi location with your iPad and view a system (subject to access permission).

7 Easily create a graphical interface to almost any control device to bring it into your unique, homogenous, *drive.web* environment.

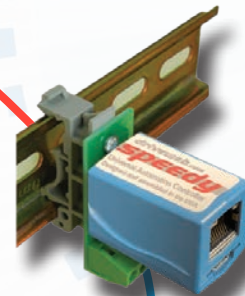
Vector Drives

Easy setup & full featured, programmable control onboard drives



USB Port

- Easy drive configuration
- Plug & play drive interface
- System wide programming access



drive.web smart technology designed and engineered in the USA to International Standards: UL, cUL, CE, FCC, UK CA



Internet
Remote system access

savvy

Graphical, function block tools

1. Easy drive configuration
2. Powerful systems design & integration
3. Trend charts
4. Signal flow diagrams
5. Internet access
6. Intuitive system navigation tools

smart automation

production control - maintenance - tech support

speedy

Universal Automation Controllers

- Embedded available
- Easy gateway to instrumentation
- Fast data collection
- Mount anywhere DIN option



DC Regen Drives

save time



High efficiency
ECO
drives

speedy

Integrated Universal Automation Controller

- provides easy coordination of ECO drives in building energy systems
- easily interfaces to existing third party drives & controls
- add ethernet and USB device access
- boost network performance
- add full featured programmable control

save energy



savvyPanel touch Hi-res industrial stations



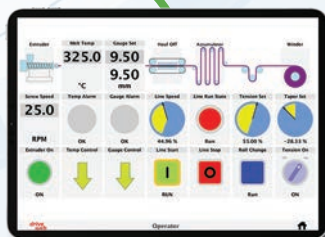
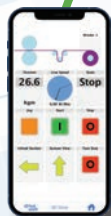
NEW! smarty⁷



smarty

Universal Automation Controllers

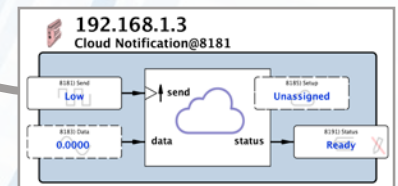
- Easy sensor interface
- Precision analog I/O
- Fast logic I/O with powerful state machine programming
- 16 precision analog & logic I/O
- Encoder I/O for indexing, registration, and shaft lock
- Multiple communications options
- Unlimited expansion with no loss of system bandwidth



savvyPanel

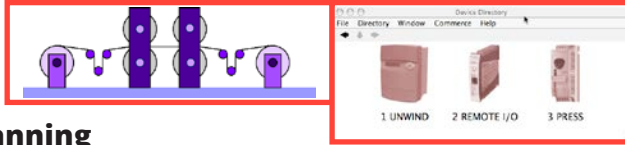
Integrated touch screen HMI technology

For touch screen PC, Android or iOS devices



drive.web

drive.web uses distributed control over Ethernet to provide cost effective, high performance integration of drives & controls in systems of any size or complexity.



Concept & Planning

From your initial sketches and notes create **drive.web savvy** "Phantoms" offline to identify all your drives, remote I/O, MMI interfaces, gateways, etc.

Design & Configuration

Place any control function blocks you need then drag & drop between parameters in your "Phantoms" to make all your device interconnections. The **savvy** Signal Flow Diagrams and powerful navigation aids give you a clear intuitive view of your work. Information and help is always on the spot with hover text, links to the manual, and contextual menus.

Construction & Testing

Simply connect all your drives and devices together over Ethernet and load your complete design into the devices from just one location. The System immediately comes alive for testing and monitoring.

Installation & Operation

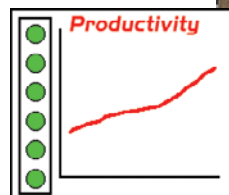
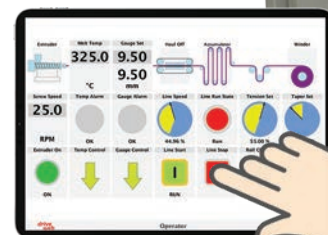
Use **drive.web savvy** to provide real time monitoring and control of your entire system from any location. No running from drive to drive to check the setup or operational state! Use **savvyPanel** operator station technology to provide smart touch and roaming control from anywhere.

Management & Maintenance

Use **savvy** utilities to setup system performance criteria and monitor your productivity, machine state, and process trends locally or remotely over the internet.

drive.web smart technology ... Designed and engineered in the USA to International Standards: UL, cUL, CE, FCC, UK CA

FROM THE INITIAL CONCEPT,
THROUGH PLANNING,
DESIGN, CONSTRUCTION,
TESTING, INSTALLATION, AND
OPERATION, THE
DRIVE.WEB SAVVY TOOLS
PROVIDE ALL THE VISION,
INSIGHT, AND HELP YOU
NEED FOR A SUCCESSFUL
PROJECT!



smart automation

The innovative **drive.web** technology provides total control in one homogeneous environment with the entire system database resident in the **drive.web** devices.

- Configure & control individual drives & devices
- Design and operate complete drive systems
- Provide fast, peer-to-peer networking over ethernet
- Create clear, graphical signal flow system documentation
- Easily interface to most other drives, MMIs, PLCs, etc.
- Build cost effective systems of any size or complexity
- Add internet accessibility to your system
- Support worldwide enterprise integration

products

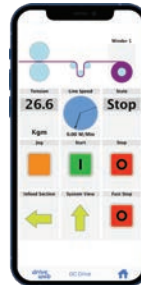
savvy Tools

Intuitive, graphical system design and device configuration tools with powerful navigation features, drag & drop connections, trend charting, online help.



savvyPanel Touch Screens

Innovative, touch screen operator station technology that runs on PC or iOS (iPad, iPhone, etc.) & Android. Build clear machine graphics, buttons, switches, meters, and instrumentation and link to your control scheme. Provides multi-user, multi-level, password protected access via Wi-Fi from anywhere to any system.



smarty Universal Controller

A range of DIN mount **drive.web** programmable controllers with peer-to-peer networking over ethernet or stand alone capability and a wide range of I/O and communications options. Intuitive, easy function block configurations are stored on board for instant field access.



speedy Embedded Controller

Miniature, low cost, **drive.web**, programmable controllers for easy embedding in drives & devices. Includes peer-to-peer networking over Ethernet & USB port.



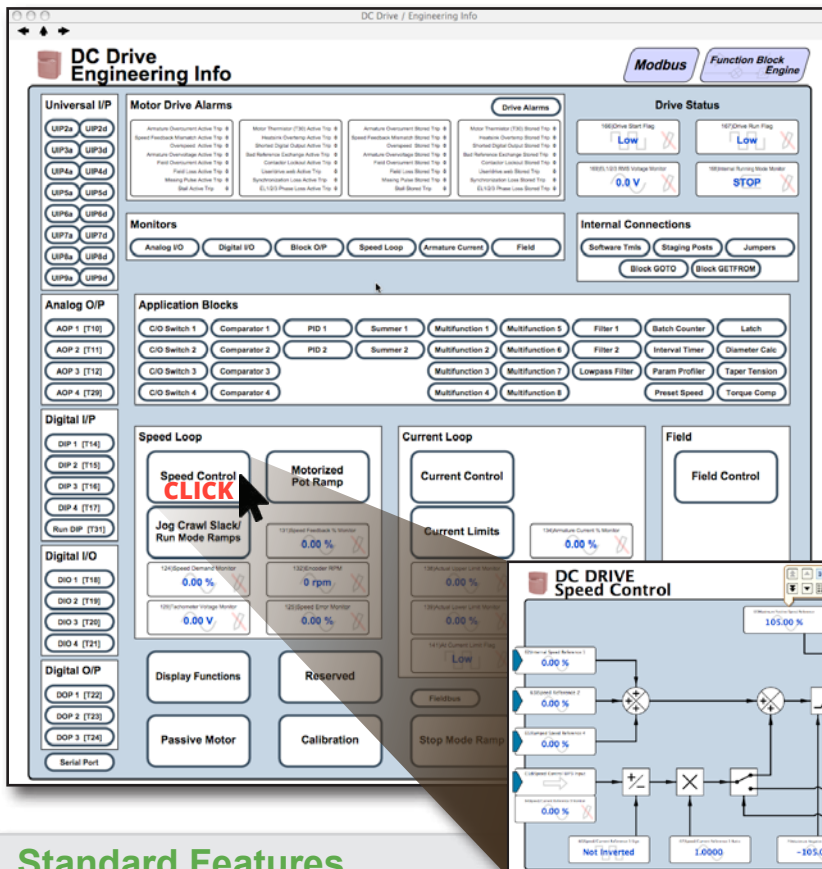
Only 0.91"W x 0.89"H x 2.42"D!



drive.web automation

savvy... the smart automation tool.

- Configure drives, controllers & operator stations
- Design & build complete systems of any size or complexity
- Network & operate drives & systems over ethernet
- Provide multi-user, system wide access from anywhere

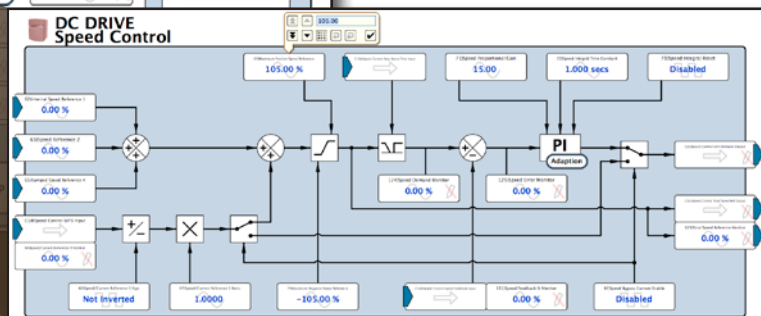


Engineering Info

In Complex products with a fixed set of features, such as drives, an "Engineering Info" window gives an organized overview of the key parameters, I/O, and controls features.

Graphical Function Blocks

Simply click on any function button to drill down to the detailed graphical function block and view or change parameter values.



Standard Features

- Online or offline design of drive systems using intuitive tools with pre-engineered function blocks.
- Internet access to drives and systems for remote configuration, monitoring, and process training.
- Provides easy import, export, and cloning of device configurations.
- Dynamic graphics show real time state of switches, indicators, parameter values, etc.
- Low cost, full featured, distributed control capability with peer-to-peer networking.
- Multiple users, local or remote, can have concurrent real-time access to drives or systems.
- Function Block Libraries for winder controls, PID, drive synchronization, arithmetic, logic, etc.
- Deterministic connections provide high performance links between drives, PLCs, Operator Stations, SCADA computer, and other control products.
- "drag & drop" techniques make easy parameter connections between drives, control devices, etc.
- "Dock" feature enables key system parameters to be monitored and trended from one location.
- Powerful navigation features include drill down (to detail layers in drives and controllers), search, connection tags, jump, browse, pan, and zoom for easy visual system comprehension.
- VPN (Virtual Private Networking) for secure Internet connectivity is supported.
- Password protection is provided at many levels for secure use.

Get **savvy** free online: www.driveweb.com

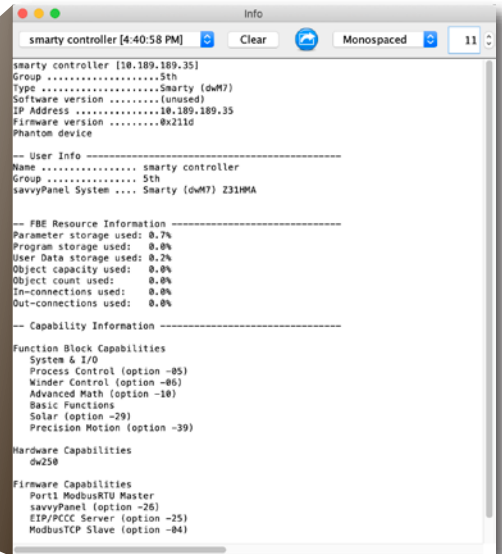
The **savvy** tools and utilities are platform independent and run on Windows, macOS, Unix, Linux, and Solaris and they are all automatically updated as new features before release.

Drives, programmable controllers, operator stations, and complete systems are configured by making simple drag & drop connections between graphical function blocks.

Engineering Info

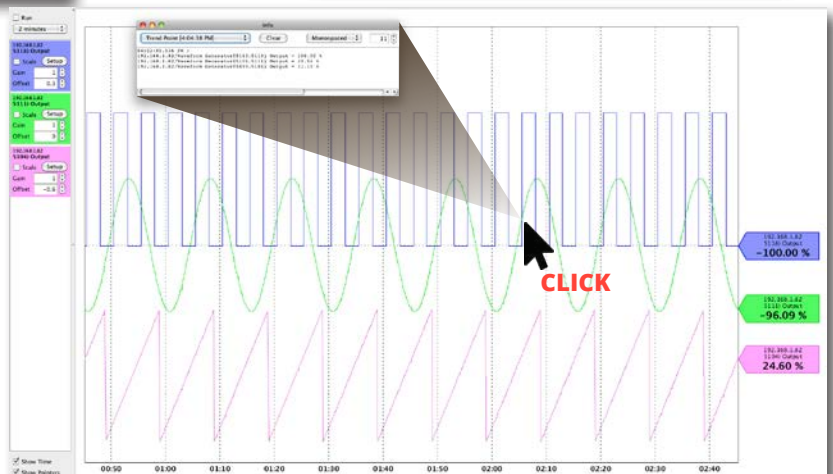
Anywhere in the system you will have easy instant access to the information you need with several different types of resource...

- Right click on any active object such as a device, connection, parameter, or function block to open the contextual menu.
- "Hover" over any active object and see its key data appear at the top of the window.
- "Hover" over a button to see its function described.
-  Look for the information button. This will jump you to the relevant location in the user manual.
- The "Help" menu links you to the full user manual, and other getting started guides.



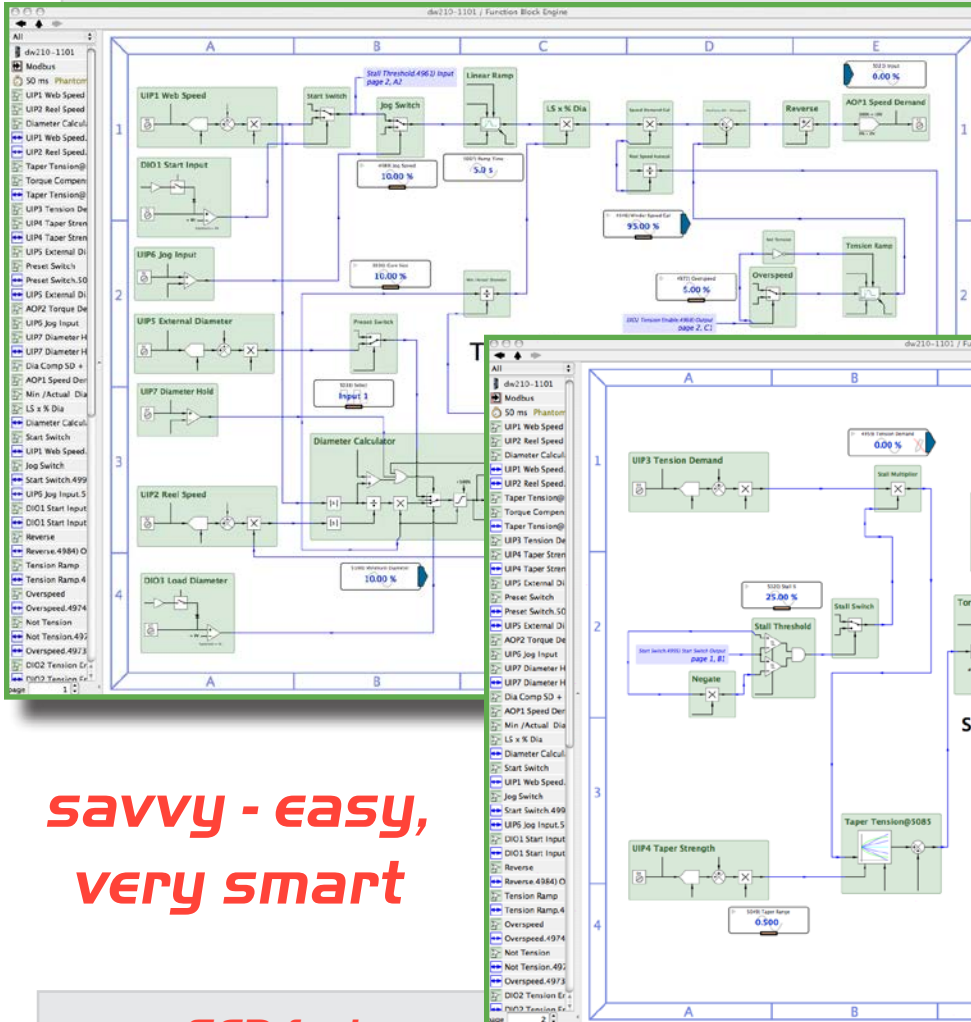
Trend Charting

You can collect any parameters of interest in a "dock" window and display as a trend chart. The trend time scale can be adjusted from 10 seconds to 2 days and the data can be exported in a .csv format for separate spreadsheet analysis. Click on a point of interest to get the instantaneous, time stamped data values.



savvy-SFD ... Signal Flow Diagram

The **savvy-SFD** option provides a powerful, graphical, Signal Flow Diagram interface with enhanced system wide navigation and the ability to produce clear, annotated, device and system documentation.



Use **savvy** “phantoms” to create systems which can be downloaded later into the real devices.

**savvy - easy,
very smart**

savvy Signal Flow Diagram option with:

- Multiple page drawings with easy navigation
- Clear page-to-page & device-to-device connections
- Complete drawings & annotations stored in devices
- Choice of ANSI, ISO or custom drawing sizes and borders
- Easy pan, zoom, jump, drill down and home commands
- Browse forward, back and up features for easy working
- Easy drag and drop connections
- Context menus, “hover text” and tags keep you informed



savvy-SFD features

- Basic **savvyPanel** operator station functions included
- Create your own customized drawing sheets with choice of ISO or ANSI formats
- Signal flow diagrams provide a clear vision of your control scheme and its functionality
- Tags clearly specify the source, destination and location of connections between multiple pages.
- Entire drawing is stored in the **drive.web** devices for instant access in the field.
- Key parameters can be shown at the Signal Flow Diagram level for enhanced monitoring and control
- Connections are “rubber banded” so that function blocks can be moved on pages or between pages
- Drag and drop connections can be made between any parameter anywhere in a system.
- Drawings can be user annotated.
- Powerful navigation features ensure fast searches and that you will never get lost.
- Password protection is provided at many levels for secure use.



1 Create "phantom" devices or find real devices in your system in the "Device Directory" window

2 Right click on any device or object to open its contextual menu and get information, change names, import/export data, etc.

3 Click on a "Phantom" or device to drill down to the "Function Block Engine"

savvy programming

It could not be easier, whether simply configuring a drive or designing a complete integrated system.

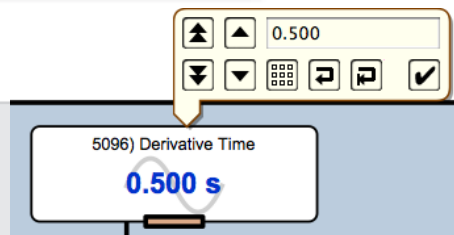
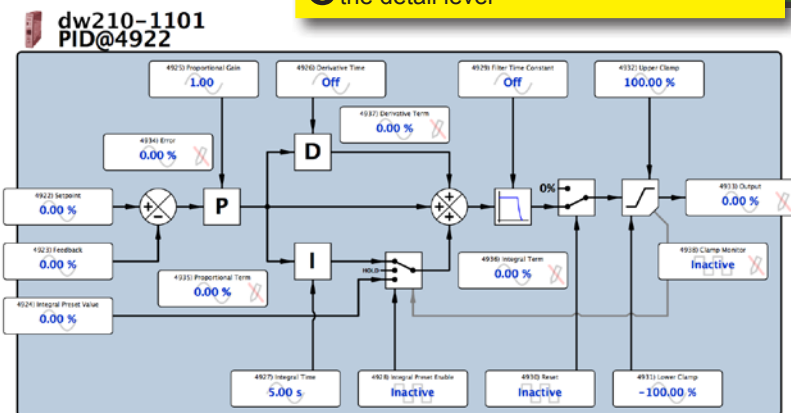
A few simple steps are all that is needed to build a complete control scheme with signal flow documentation that is clear and easy to understand. Powerful navigation tools ensure that you will never get lost!

4 Right click to open the Function Block selector

5 Drag and drop to make connections

6 Click on a Function Block to drill down to the detail level

7 Click on a parameter to change its value or state



Function Blocks are complete engineered system components. Their graphics are dynamic so that objects such as switches, indicators, etc., show their instantaneous state. A function block such as the PID above includes all the presets, resets, scaling, filters, clamps, etc., that you need for reliable implementation in the real world.

savvy is your smart friend! With a few simple clicks you can build a system, set up a drive and document your work in a thoroughly professional manner - there is no equal!

savvyPanel

Smart, touch screen operator station technology

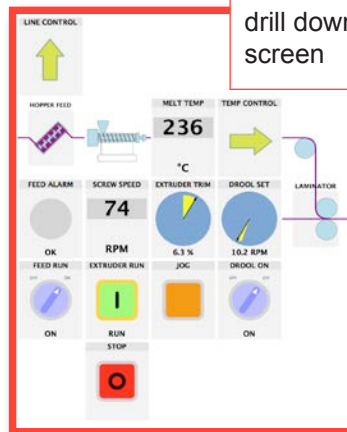
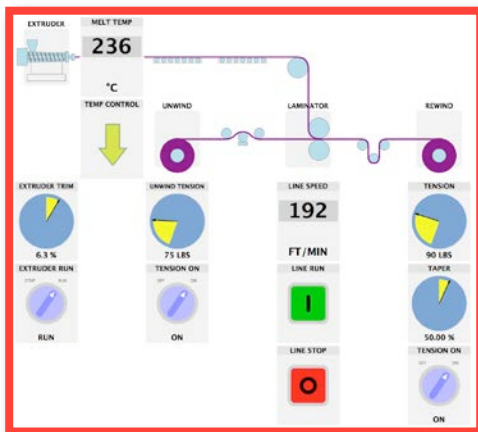
Provides unprecedented flexibility in instrumentation, control and monitoring.

- Runs native on a **savvyPanel station** high resolution, touch screen display.
- Also runs on any full featured, touch screen PC, Android, and iOS devices (iPad, iPhone, etc.)
- Extensive library of objects such as pushbuttons, switches, meters, indicators, lamps, buzzers, etc.
- Extensive library of graphical image “tiles” to build smart machine and process graphics.
- Machine graphic “tiles” can be linked to detail control screens.
- Full **savvyPanel** configuration is stored in the **drive.web** devices for instant WiFi roaming access.
- Supports multiple screens with multiple pages.
- Provides hierarchal access to system groups, individual systems and multiple operator levels.
- Powerful multi-level password protection.

Example - Extrusion Coating Line

Master System Control Station

Easily build graphics and controls and link them to any location in your drives & control system.



Operator Screen

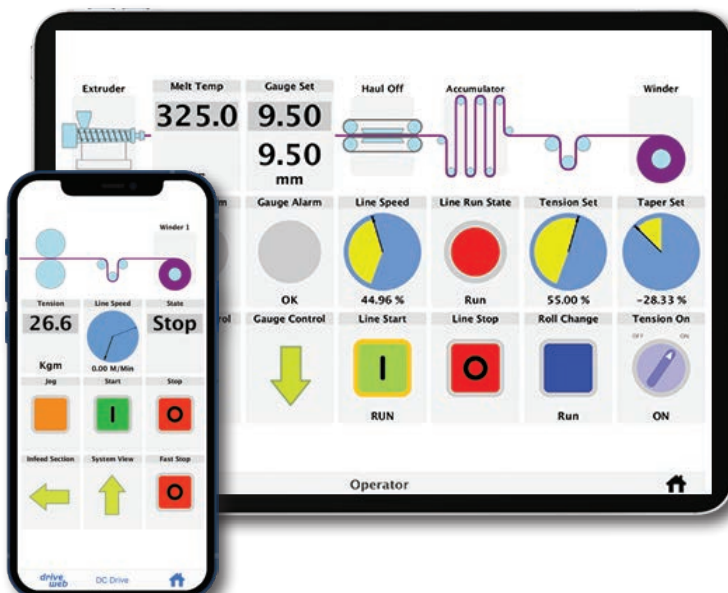
Touch a graphic tile such as the “EXTRUDER” to drill down to the detail screen



Total Control

Touch the “TEMP CONTROL” arrow link tile to drill down to the temperature control system

Touch the “MELT TEMP” tile in any screen to set the master temperature setpoint.



savvyPanel

app for iOS & Android



Go mobile

Get secure machine access anywhere

Try it out now!

Download **savvyPanel** free from the Apple App Store or Google Play Store and get immediate access to a real, live drive system in Stevensville, Maryland, USA.

- ☞ Touch the “Roll Change” button to reset the length to zero
- ☞ Turn on all the section “On/Off” switches
- ☞ Touch the “Line Start” button - see the line run its auto cycle
- ☞ Touch the “Set Speed” indicator to change the line speed
 - ☞ Touch the parameter name to get info
 - ☞ Touch the square display symbol to close the setter

savvyPanel touch *Color Touch Screens*

- Plug & Play, **drive.web** natively
- Competitively priced
- Crisp, high visibility graphics
- IP65 front
- IP20 rear
- Easy setup
- 1 Ethernet port 1000BASE-T
- Power supply 24VDC
- Working Temp: -20°C to 70°C
- Connect directly to any single **drive.web** device or to multiple devices with an Ethernet switch

dw260

7" - bright, 800 x 480p

savvyPanel touch screen operator station

- Easy surface mount - no big cut outs required
- Easy **savvy** programming tools
- Front sealed for indoor use
- **drive.web** Ethernet port for system wide access
- 24V power supply, 6W
- Slim size: 7.9" x 6.6" x 0.8" (200 x 117 x 20 mm)

Optional Mounting Enclosure

dwOPTION-66-070

Gray ABS, 8.75"x5.75"x2.2"
(222x146x56 mm)



dw230-101 10.1" - 1280x800p 10.8"x7.6"x1.8"

dw230-070 7" - 1024x600p 8.1"x5.5"x1.2"

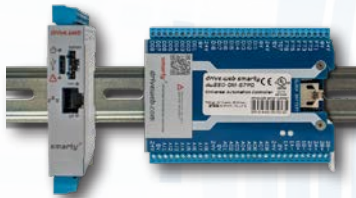
dw230-050 5" - 800x480p 5.9"x4.4"x1.1"

dw250 smarty⁷

Our most advanced Universal Automation Controller yet

100% compatible with all existing **speedys**, **smartys**, and **savvyPanels**!

- ✓ Advanced Motion Control
- ✓ Smart Process Control
- ✓ **savvy** system design tools
- ✓ Right for the IIoT future
- ✓ Distributed, deterministic processing over Ethernet
- ✓ Homogeneous integration for drives, HMIs, remote I/O
- ✓ Easy, intuitive, affordable, expandable
- ✓ For systems of any size or complexity



\$\$ BIG cost savings with the **smarty dw250** \$\$

Example savings, using a **smarty⁷**

smarty eliminates all the wiring, terminals, and hardware normally required to connect your control devices (such as drives, PLCs, etc.) to your enclosure terminals!



The installation cost for these **smartys** can be as low as \$20, and the possible savings are huge!

Assuming an average 6ft wire runs from your devices to your terminals, you save:

- Wire, lugs, wire numbers, DIN terminals, terminal numbers, duct, hardware **\$83 savings**
- Assembly time (4.5 minutes per wire @ \$85/hour) **\$235 savings**
- Wiring continuity testing (45 seconds per wire @ \$85/hour) **\$39 savings**

Possible net savings of over \$300!

The **smarty dw250 series** comes fully loaded:

- Compact DIN-rail or panel-mount controller with 60 plug-in screw terminals.
- Peer-to-peer 100BASE-TX Ethernet plus USB-C system-wide access.
- Floating-point or integer math for process, machine, and motion calculations.
- Encoder pulses up to 1 MHz with 64-bit count.
- Two encoder inputs for quadrature A/B or ABZ, 5 V or 24 V.
- Six fast I/O channels: 100 kHz input or 500 kHz output.
- Standard I/O: 8 analog inputs, 8 analog outputs, 8 digital inputs, and 8 configurable digital outputs.
- Built-in ModbusRTU, ModbusTCP/IP, and EIP/PCCC support.
- XIO builds add AC digital I/O, extended digital I/O, relay outputs, isolated millivolt analog inputs and more.

dw250 smarty⁷

Our most advanced Universal Automation Controller yet



Standard DIN Mounting

Alternate Panel Mounting



Flex DIN Clip
Option



No Limits!
Outperforms any PLC!



Features		
USB	USB-C	savvy
Ethernet	8P8C	100baseTX Ethernet
		drive.web & savvy
		ModbusTCP Client & Server
		EIP/PCCC Server
Communications	6P6C	CANbus: Bardac P2 & E3, CANopen Client
		EIA-485: ModbusRTU Client or Server
		Both CANbus & EIA-485 may be active simultaneously
0V	Common Reference	All 0V terminals connected together
24V	Power In	+24V±5%, consumes ≈ 100mA plus loads
		Supply from a SELV Class 2 LPS (Limited power source) only
		All 24V terminals connected together
5V	Power Out	+5V±5%, up to 250mA
		Do not apply external power to 5V
LED Indicators	Blue	Power & heartbeat
	Red	Fault
	Yellow	Ethernet link + activity
	Green	Ethernet 100 full duplex
Clock Battery		CR2032 coin cell
		Used only for real-time clock backup
		Typically only one required per system, if NTP is not available

Inputs and Outputs	
Analog Input	[8] Analog (±10V) inputs
	16-bit resolution, ≈100kΩ impedance
	Also configurable as Digital Input (5V or 24V logic)
Analog Output	[8] Analog (±10V) outputs
	16-bit resolution
	Each AO can source or sink up to 10mA
AB (Encoder Inputs)	[2] Encoder inputs
	RS-422, RS-485, 5V, 12V, and 24V encoders supported
	Differential or single-ended
Digital Inputs	2A & 2B also configurable as marker/event inputs
	[8] Digital (24V logic) inputs
	Also configurable as event inputs
Digital Outputs	[8] Digital (24V sourcing) outputs
	Up to 300mA (shared by all DOs); with overcurrent fault detection
	Also configurable as Digital Inputs (24V logic)
Frequency Inputs	[6] Frequency Inputs
	Configurable for 5V logic or 24V logic
	Configurable for pull-down or pull-up (5V logic only)
Timing Outputs	Configurable as Frequency input, Counter Input, Digital Input, Event Input
	[7] Timing (sinking) outputs
	Up to 30V
Frequency & Timing Output	Each TO can sink up to 20mA
	Configurable as Frequency Output, Stepper Output, or Digital Output
	TO7 also configurable as a Digital Input, Analog Input (unipolar)
FI 1-6 & TO 1-6 share a wiring terminal, labeled FT 1-6	

Data
Dimensions: 0.7" x 3.5" x 4.5" (17.2 x 90 x 119 mm)
Weight: 0.38 LBS (17.3 g)

dw250 smarty⁷-XIO

Universal Automation Controller with Extended I/O

dw250 smarty⁷-XIO automation controllers all include all of the standard **smarty⁷** features with the addition of an extended I/O module.

- Flex mount allows either end mount DIN rail for high density or optional side mount for low profile
- Plug in screw terminals
- Easy monitoring and diagnostics

smarty⁷-XD Extended Digital I/O

model dw250-DM-XDPD

- 16, 5-24VDC Digital Inputs
- 16, 24VDC Digital Outputs also configurable as Digital Inputs
- All I/O have common 0V
- Compact package only 1.0" x 3.5" x 4.8" (26 x 90 x 121 mm)

smarty⁷-HV Extended High Voltage Digital I/O

model dw250-DM-HVPD

- 10, 120/240VAC Digital Inputs
- 6, 120/240VAC Digital Outputs
- For use with common power supply lines
- 1.3" x 3.5" x 4.8" (33 x 90 x 121 mm)

smarty⁷-RL Extended Relay I/O

model dw250-DM-RLPD

Four relay outputs rated 120/240VAC or 30VDC, 5 Amps

- 2, Form C (changeover) contacts
- 2, Form A, (single contact, normally open)
- For use with common power supply lines
- 1.4" x 3.5" x 4.8" (36 x 90 x 121 mm)

smarty⁷-XA Extended Precision Analog Inputs

model dw250-DM-XAPD

Four precision analog inputs, each isolated from each other and the controller.

Each channel is individually configurable for:

- Thermocouple (most common types supported) with cold junction compensation
- RTD temperature sensor (2, 3 & 4 wire)
- Strain gauge loadcell (Wheatstone bridge type)
- Semiconductor tension transducer, full bridge & half bridge
- mV sensing with ranges from 10mV to 2048mV
- Compact package only 1.0" x 3.5" x 4.8" (26 x 90 x 121 mm)

drive.web smart technology ... Designed and engineered in the USA to International Standards: UL, cUL, CE, FCC, UK CA



dw250 smarty⁷-T

smart, 4-zone temperature controller

Model: dw250-1200 Series - Quad Temperature Controller



dw250-1201

- 4 zone, isolated temperature controller channels
- All common thermocouples and RTDs supported
- Cold junction compensation
- Easy configurable power controller and chiller output options



dw250-1201 with dw260 display



dw250-1201 & system with dw260 display

Core Features

- Masses of extra analog and logic I/O in every module
- No backplane restrictions - every module linked peer-to-peer over Ethernet
- No CPU limitations - every module provides parallel processing for infinite expansion
- Seamless integration into systems with drives, PLC, motion control & HMIs
- Add your process details and graphics to the basic Quad Controller display
- Easy configurable controller output options
- Easy data logging, trend charts and smart diagnostics
- Easy, password protected set up
- Internet accessible with cloud functions
- Communications options include ModbusTCP/IP, ModbusRTU, CANopen, EthernetIP/PCC
- DIN mount with full featured programmable control in every module

Mode Settings

Manual Mode

Power output is forced to manual setting, 0 to 100%

On-Off Mode

PID is not used for digital output. This is a typical thermostat with hysteresis; heater turns off at setpoint and back on at SP-hysteresis.

Fixed-Time Mode

Digital output is controlled by the PID output via an oscillator with variable duty cycle. Typical oscillator fixed time is 1s.

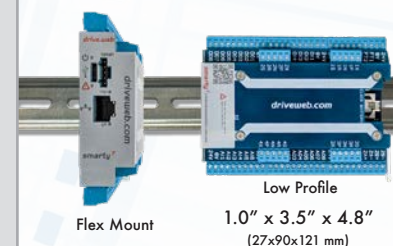
Power Demand

0 - 10 VDC = 0-100% Power Demand

ThermoPanel Bundle



dw250-1201 with dw260 display



Flex Mount

Low Profile
1.0" x 3.5" x 4.8"
(27x90x121 mm)

Easy **savvy** configuration and set up tools

Use USB-C or Ethernet to connect to **savvy** tools for complete system configuration and documentation - including controllers, drives, HMIs:

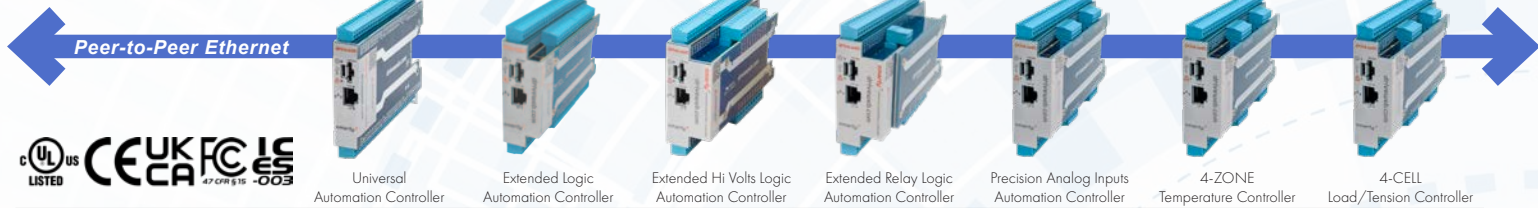
- Pair with a **dw260** HMI for both control and set up
- Password protected access to operator and set up levels
- Add internet access
- Get **savvy** tools from <https://driveweb.com/get-savvy/>
- Run **savvyPanel** display on any PC, tablet or phone

- Add your complete process system configuration
- Add other temperature controllers and I/O
- Add other load controllers and I/O
- Add power controllers and drives
- Add touch screens
- Easy drag & drop connections between all devices
- Powerful logic and signal processing functions
- Internet access and cloud functions
- Everything in one homogeneous environment
- Smart system wide navigation features.

drive.web Universal Automation Controllers

faster » compact » versatile » expansive » intelligent » easily wirable » ... Available!

smarty⁷ smarty⁷-XD smarty⁷-HV smarty⁷-RL smarty⁷-XA smarty⁷-T smarty⁷-L



	smarty ⁷	smarty ⁷ -XD	smarty ⁷ -HV	smarty ⁷ -RL	smarty ⁷ -XA	smarty ⁷ -T	smarty ⁷ -L
Full Featured PLC Functions	✓	✓	✓	✓	✓	✓	✓
Advanced Process Control	✓	✓	✓	✓	✓	✓	✓
Basic Motion Control	✓	✓	✓	✓	✓	✓	✓
Advanced Motion Control	✓	✓	✓	✓	✓	✓	✓
Extended I/O	—	✓	✓	✓	✓	✓	✓
Smart Configuration	—	—	—	—	—	✓	✓
drive.web distributed control	✓	✓	✓	✓	✓	✓	✓
100baseTX Ethernet	✓	✓	✓	✓	✓	✓	✓
Modbus TCP/IP & EIP/PCCC	✓	✓	✓	✓	✓	✓	✓
USB-C port	✓	✓	✓	✓	✓	✓	✓
8 analog inputs: +/- 10VDC	✓	✓	✓	✓	✓	✓	✓
8 analog outputs: +/- 10VDC	✓	✓	✓	✓	✓	✓	✓
8 digital inputs: 24VDC	✓	✓	✓	✓	✓	✓	✓
8 digital outputs: 24VDC	✓	✓	✓	✓	✓	✓	✓
4 status LEDs	✓	✓	✓	✓	✓	✓	✓
24VDC Logic: 16 Inputs & 16 configurable input/outputs	—	✓	—	—	—	—	—
120/240VAC Logic: 6 x outputs & 10 x inputs (with line/neutral)	—	—	✓	—	—	—	—
Relay Outputs: 30VDC, 240VAC, 5A: 2 x Form A, 2 x Form C	—	—	—	✓	—	—	—
4 Precision Analog Inputs: isolated, 2000mV	—	—	—	—	✓	✓	✓
Floating-point numbers and math	✓	✓	✓	✓	✓	✓	✓
Battery backup for clock (battery not included)	✓	✓	✓	✓	✓	✓	✓
ModbusRTU master (slave optional)	✓	✓	✓	✓	✓	✓	✓
Optional drive interface	✓	✓	✓	✓	✓	✓	✓
Frequency/events inputs, timing/stepper outputs	6 inputs, 7 outputs	6 inputs, 7 outputs	6 inputs, 7 outputs	6 inputs, 7 outputs	6 inputs, 7 outputs	6 inputs, 7 outputs	6 inputs, 7 outputs
Encoder	2 encoders, diff. AB	2 encoders, diff. AB	2 encoders, diff. AB	2 encoders, diff. AB	2 encoders, diff. AB	2 encoders, diff. AB	2 encoders, diff. AB
drive.web options included	-04, -05, -06, -10, -25, -26, -29, -39	-04, -05, -06, -10, -25, -26, -29, -39	-04, -05, -06, -10, -25, -26, -29, -39	-04, -05, -06, -10, -25, -26, -29, -39	-04, -05, -06, -10, -25, -26, -29, -39	-04, -05, -06, -10, -25, -26, -29, -39	-04, -05, -06, -10, -25, -26, -29, -39
Core UAC	dw250-DM-S7PD	dw250-DM-XDPD	dw250-DM-HVPD	dw250-DM-RLPD	dw250-DM-XAPD	dw250-1201	dw250-1301
P2 Vector Drive UAC	dw254-DM-S7PD	dw254-DM-XDPD	dw254-DM-HVPD	dw254-DM-RLPD	dw254-DM-XAPD	dw254-1201	dw254-1301
E3 Industrial Drive UAC	dw258-DM-S7PD	dw258-DM-XDPD	dw258-DM-HVPD	dw258-DM-RLPD	dw258-DM-XAPD	dw258-1201	dw258-1301
CANopen UAC	dw259-DM-S7PD	dw259-DM-XDPD	dw259-DM-HVPD	dw259-DM-RLPD	dw259-DM-XAPD	dw259-1201	dw259-1301
Dimensions (WxHxD)	0.70" x 3.50" x 4.70" (17.2 x 90 x 119mm)	1.0" x 3.5" x 4.8" (27 x 90 x 121mm)	1.3" x 3.5" x 4.8" (33 x 90 x 121mm)	1.4" x 3.5" x 4.8" (36 x 90 x 121mm)	1.0" x 3.5" x 4.8" (27 x 90 x 121mm)	1.0" x 3.5" x 4.8" (27 x 90 x 121mm)	1.0" x 3.5" x 4.8" (27 x 90 x 121mm)

drive.web smart technology ... Designed and engineered in the USA to International Standards: UL, cUL, CE, FCC, UK CA

* The smarty⁷-RL does not currently have UL Certification

smarty dw240

Compact distributed control for motion, process, and IIoT applications

100% compatible with all existing *speedys*, *smartys*, and *savvyPanels*!

smarty¹

smarty²

smarty³

smarty⁴



Key Features

- Advanced Motion & Smart Process Control
- Distributed, deterministic processing over Ethernet
- Homogeneous integration for drives, HMI's, remote I/O
- Powerful *savvy* system design tools
- Easy, intuitive, affordable, expandable
- Scalable IIoT-ready architecture
- For systems of any size or complexity

Specifications

- Install a dw240 on the customer interface terminal rail to save on wiring and installation costs.
- Floating point math for accurate and complex calculations.
- Count and Frequency with 64-bit count for precision positioning; to 1MHz input,
- 500kHz output.
- High speed event inputs for position markers and registration.
- Processing and networking speeds are up to 10 times faster than the dw210, especially with larger configurations.
- Increased storage; four times more capacity.
- Up to six frequency inputs with multiple modes.
- Up to two current inputs; 0 to 20mA, 4-20mA.
- Up to two encoder inputs.
- Up to seven timing outputs with multiple modes to 500kHz; frequency, stepper, and digital.
- Real-time clock with optional battery back up. Low-power mode allows real time clock to run without power from coin cell battery, USB power, or 24-hour internal storage.

drive.web Options Included

(smarty² and above)

- 04 Modbus TCP/IP
- 05 Process Control
- 06 Winders
- 10 Modbus RTU
- 25 Advanced Math
- 26 savvyPanel
- 29 Solar Position
- 39 Advanced Motion

Model	smarty ¹	smarty ²	smarty ³	smarty ⁴
Height (in)	3.4"	3.4"	3.4"	3.4"
Height (mm)	87	87	87	87
Width (in)	4.2"	4.2"	5.5"	8.3"
Width (mm)	105	105	140	210
Depth (in)	3.1"	3.1"	3.1"	3.1"
Depth (mm)	77	77	77	77



drive.web automation smarty dw240



smarty¹



smarty²



smarty³



smarty⁴



smarty¹

smarty²

smarty³

smarty⁴

Full Featured PLC Functions	✓	✓	✓	✓
Advanced Process Control	✓ - Winders	✓	✓	✓
Basic Motion Control	-	✓	-	-
Advanced Motion Control	-	-	✓	✓
Extended I/O	-	-	-	-
Smart Configuration	-	-	-	-
drive.web distributed control	✓	✓	✓	✓
100baseTX Ethernet	✓	✓	✓	✓
Modbus TCP/IP & EIP/PCCC	✓	✓	✓	✓
USB-C port	✓	✓	✓	✓
8 analog inputs: +/- 10VDC	✓	✓	✓	✓
8 analog outputs: +/- 10VDC	✓ (unipolar outputs)	✓	✓	✓
8 digital inputs: 24VDC	✓	✓	✓	✓
8 digital outputs: 24VDC	✓	✓	✓	✓
4 status LEDs	✓	✓	✓	✓
Floating-point numbers and math	✓	✓	✓	✓
Battery backup for clock (battery not included)	-	✓	✓	✓
ModbusRTU master (slave optional)	-	✓	✓	✓
Optional drive interface	-	✓	✓	✓
Frequency/events inputs, timing/stepper outputs	-	-	4 selectable inputs or outputs	6 inputs, 7 outputs
Encoder	-	-	1 encoder, diff. AB	2 encoders, diff. ABZ + reconnect terminals
drive.web options included	-04, -05, -25, -26	-04, -05, -06, -10, -25, -26, -29, -39	-04, -05, -06, -10, -25, -26, -29, -39	-04, -05, -06, -10, -25, -26, -29, -39
Core UAC	dw241-BX-C1CD	dw240-DM-C2CD	dw240-DM-C3CD	dw240-DM-C4CD
P2 Vector Drive UAC	-	dw244-DM-C2CD	dw244-DM-C3CD	dw244-DM-C4CD
E3 Industrial Drive UAC	-	dw248-DM-C2CD	dw248-DM-C3CD	dw248-DM-C4CD
CANopen UAC	-	dw249-DM-C2CD	dw249-DM-C3CD	dw249-DM-C4CD
Dimensions (WxHxD)	4.11" x 3.50" x 3.00" (105 x 89 x 76mm)	4.11" x 3.50" x 3.00" (105 x 89 x 76mm)	5.51" x 3.43" x 3.00" (140 x 87 x 76mm)	8.27" x 3.50" x 3.00" (210 x 89 x 76mm)

Call for customized OEM builds!

Core Stock Build Includes:

100baseTX Ethernet, auto-negotiating,
USB-C
Power: 24VDC
dw build options -04 -05 -25 -26
Clamp Terminals, DIN Rail Mounting

Every **dw240** comes fully equipped
with dw build options
-04 -05 -06 -10 -25 -26 -29 -39
as standard! (**smarty²** and above)



speedy Automation Controller

Embedded & Onboard Control

Affordable distributed control for all devices

Serial interface on-board to drives and third party devices via ModbusRTU or CANopen to provide:

- Low cost, peer-to-peer Ethernet networking
- Full featured programmable control functions.
- Improve system performance by reducing your RS485 load
- Parallel processing provides extra system performance & memory
- Ethernet gateway to ModbusRTU or CANopen



Film line winder

small package with big performance!

Includes USB port for system wide programming, Ethernet ModbusTCP/IP and *savvyPanel* interface. Available forms:

- Tether interface with either plug-in or 4-wire serial connection
- Optional DIN rail mount.
- Customized forms for embedding into drives and devices



Cyclic indexing system

configure, connect & control ... everything!

- Provides full featured *savvyPanel* operator station interface
- Add unlimited processing muscle to your system
- Add peer to peer Ethernet networking
- Add easy USB system access
- Use as a gateway

speedy

model dw270 series
take a closer look ...

for embedded or onboard
control

only 0.91" x 0.89" x 2.42"
(23x23x62mm)



speedy

model dw271 / dw221
embedded controller for
PL/X Series DC drives

speedy dw270 series



0.91" x 0.89" x 2.42"
(23 x 23 x 62 mm)

Mini smart controllers for use on-board or embedded in drives & devices with **drive.web** distributed control over 100baseTX Ethernet, ModbusTCP/IP, USB port, fast serial port (up to 1MB/s), full-featured savvyPanel HMI, & communications options

- dw270 **speedy** generic interface controller with 500kbps ModbusRTU master & 7" wire interface
 - dw271 **speedy** plug-in automation controller for PL/X Series DC drive
 - dw274 **speedy** plug-in automation controller for P2 Vector Drives
 - dw278 **speedy** plug-in automation controller for E3 Series General Purpose drive
 - dw279 **speedy** automation controller with generic CANopen device with 7" wired interface
- see page 24 for other drive and device integration apps

Easy, on-board & embedded automation for drives & devices
Very small, very smart, very affordable
Goes anywhere – does everything!

speedy dw220 series



0.91" x 0.83" x 1.42"
(23 x 21 x 36 mm)



DIN mount dwOPTION -50

Mini smart controllers for use on-board or embedded in drives & devices with **drive.web** distributed control over 100baseTX Ethernet, ModbusTCP/IP, USB port, fast serial port (up to 500kbps), full-featured savvyPanel HMI, & communications options

- dw220 **speedy** generic interface controller with 500kbps ModbusRTU master & 15" wire interface
 - dw221 **speedy** plug-in automation controller for PL/X Series DC drive
 - dw222 **speedy** plug-in automation controller for ODE2 General Purpose VFD
 - dw223 **speedy** plug-in automation controller for ODP Sensorless Vector drive
 - dw224 **speedy** plug-in automation controller for P2 Closed Loop Vector drive
 - dw224S **speedy** plug-in automation controller for SEW Eurodrive MLTP Closed Loop Vector drive
 - dw225 **speedy** automation controller for Yaskawa F7 drive with 7" wired interface
 - dw228 **speedy** plug-in automation controller for E3 Series General Purpose drive
 - dw229 **speedy** automation controller with generic CANopen device with 7" wired interface
- see page 24 for other drive and device integration apps



High performance film winder



21 section embossing line



Airport transit car load sharing system

Model Numbers



smarty & speedy Product build options

		smarty		speedy								
		dw240	dw250	dw220	dw221	dw222	dw223	dw224	dw225	dw228	dw229	dw27X
Function Block Libraries												
-05	Advanced Process Control Function Block Library (FBL) (comparators, profilers, presets, latches, filters, counters, timers, PIDs)	S	S	X	X	X	X	X	X	X	X	S
-06	Winder Control FBL (dia. calc., taper tension, torque comp.)	S	S	X	X	X	X	X	X	X	X	S
-10	Advanced Math FBL (trigonometric, log, exponential)	S	S	X	X	X	X	X	X	X	X	S
-11	Encoder Control FBL (shaft lock, indexing, registration for Options 40-44)											
-29	Solar FBL with sun position calculator	S	S	X	X	X	X	X	X	X	X	S
-35	Cloud Functions / Notification	X	X	X	X	X	X	X	X	X	X	X
-39	Precise Motion Control FBL with Linear Positional, Shaft Lock, etc.	S	S	X	X	X	X	X	X	X	X	S
Communications Options												
-04	Ethernet Modbus TCP/IP slave	S	S	S	S	S	S	S	S	S	S	S
-25	Ethernet EIP/PCCC interface for AB PLCs	S	S	X	X	X	X	X	X	X	X	S
I/O Options												
-26	savvyPanel iPad/iPhone/Android & touch screen PC operator station interface	S	S	S	S	S	S	S	S	S	S	S
Mounting Options												
-50	DIN rail mount with screw terminal connections			X								

X = Optional Add-on S = Standard feature

smarty & speedy - stock controller options (un-configured)

pack 1 - speedy & smarty dwOPTION -1121 for

- Process line drive coordination
- General purpose machine control

Includes all standard controller features together with:

advanced arithmetic, logic, process control, counters, timers, touch screen PC, iOS & Android control, systems utilities

Incorporates standard **drive.web** options

- 04, ModbusTCP/IP slave Ethernet
- 05, Advanced Process control Function Block Library
- 25, EIP/PCCC Ethernet slave for Allen Bradley interface
- 26, **savvyPanel** full featured, touch screen PC, iOS & Android operator station controller



pack 2 - speedy & smarty dwOPTION -1122 for

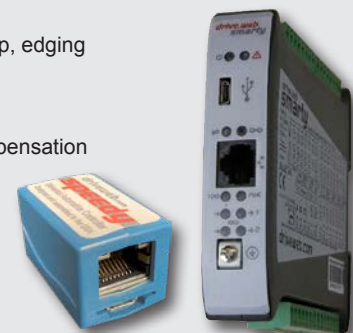
- Full featured winder control with single or multi cores, turret indexing, auto splicing, open and closed loop, edging
- Web handling, tension control, accumulators, infeeds, center winding, slip core, surface winding

Includes all pack 1, dwOPTION -1121 features together with:

diameter calculation, linear and hyperbolic taper control, static/dynamic friction compensation, inertia compensation

Incorporates standard **drive.web** options

- 04, ModbusTCP/IP slave Ethernet
- 05, Advanced Process control Function Block Library
- 06, Winder Control Function Block Library
- 25, EIP/PCCC Ethernet slave for Allen Bradley interface
- 26, **savvyPanel** full featured, touch screen PC, iOS & Android operator station controller
- 36, Motion Control Function Block Library with trapezoidal & cam motion



drive.web smart technology ... Designed and engineered in the USA to International Standards: UL, cUL, CE, FCC, UK CA

Free Online Training Videos

The **drive.web savvy-SFD** Introductory Seminar provides an overview of the **drive.web** distributed control technology and its products.

In this video, new users can expect to learn how to:

- Create a “phantom” drive system with AC & DC drives
- Navigate around drive block diagrams and drive systems
- Create signal flow diagrams & system documentation
- Find information and identify object attributes
- Make connections between devices
- Monitor and set parameter values
- Create and use parameter “docks”
- Show parameter value trend charts, etc.

PL/X Series Training

Configuration | Monitoring | Interfacing



Scan QR for free resources



P2 Series Training

V/Hz Mode | Open Loop | Closed Loop

More scheduled training videos are upcoming! Please watch for announcements.

drive.web device apps

These apps can be installed in **drive.web speedy** and **smarty** Universal Automation Controllers to provide a plug & play interface to the key features of “other” drives or devices. The **smarty** or **speedy** then brings those “other” drives alive with:

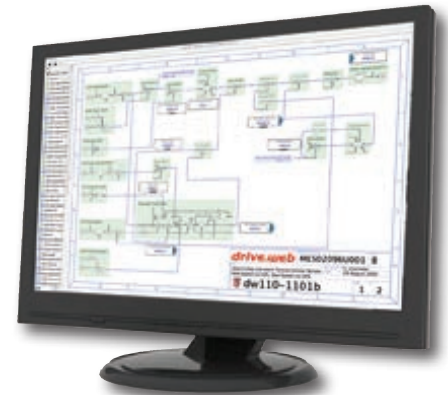
- Full featured programmable control functions
- Ethernet networking
- USB port access

“Other” devices include almost any device that has a ModbusRTU port, including:

- AC drives • DC Drives • PLCs • Process Controllers •
- Temperature Controllers • Smart I/O • Power Controllers •

Current “Other” device app list includes:

dwOPTION -4001 for Yaskawa A1000 Drives (with dwOPTION-1121)
dwOPTION -4002 for Yaskawa V1000 Drives (with dwOPTION-1121)
dwOPTION -4003 for V2 Series Fan & Pump Drives
dwOPTION -4004 for Schneider Altivar 312 Series Drives
dwOPTION -4005 for ABB ACS310 Series Drives
dwOPTION -4006 for Sanyo Denki Stepper Drives
dwOPTION -4007 for Thermal Edge Temperature Controllers
dwOPTION -4008 for V3 Series Eco Drives
dwOPTION -4009 for Fuji Frenic Mega Vector Drives
dwOPTION -4011 for Yaskawa A1000 (with dwOPTION-1124)
dwOPTION -4012 for ABB ACS310
dwOPTION -4013 for Fairford Electronics Synergy Soft Start



drive apps come complete with a user guide and application notes.

The configurations can easily be edited and additional drive parameters can be added using only the **savvy** tools.

These **drive.web device apps** are easy for us to create, so don't hesitate to contact if you have a new request.

Please call +410-604-3400 for the latest list or a new “other” app.

drive.web apps

CONFIGURED OPTIONS FOR *smarty* & *speedy*

These options are pre-programmed units with generic solutions for key applications. The packages are a great design aid.

These generic configurations are easily edited to suit your specific installation using **savvy** with the **SFD** Signal Flow Diagram option and include the following features:

- detail signal flow diagram documentation
- **savvyPanel** touch screen PC, iOS & Android operator station configuration
- basic wiring drawing



ADD CONFIGURED OPTIONS

- 1101 Open loop constant tension center winder (with option 1122)
- 1102 Closed loop dancer controlled winder (with option 1122)
- 1103 Closed loop load cell controlled winder (with option 1122)
- 1104 Slip core winder controller (with option 1122)
- 1105 Speed lock w/encoder feedback
- 1106 Coordinated drive, line master controller (with option 1121)
- 1107 Controller with networking for analog drives (with option 1121)
- 1109 Phase lock, line shaft with registration
- 1110 Three PID Controllers with integral reset and hold (with option 1121)
- 1113 2 channel pulse train follower (with options 05, 26, 27)
- 1117 Encoder cyclic position/indexing
- 1118 Sun tracking for solar energy (with opts 05, 11, 16, 26, 29, 42 & 45 or 46)
- 1131 Encoder analog out, T13, Calibrated 1024PPR @1800RPM = 10V
- 1132 Time control programer (with option 1121 + 47)

smarty				speedy						
dwl240	dwl250	dwl220	dwl221	dwl222	dwl223	dwl224	dwl225	dwl228	dwl229	dwl27X
X	X	X	X		X	X	X	X		X
X	X	X	X		X	X	X	X		X
X	X	X	X		X	X	X	X		X
X	X	X	X		X	X	X	X		X
X	X									
X	X	X	X		X	X	X	X		X
X	X									
X	X									
X	X									
X	X									
X	X									
X	X									
X	X	X				X	X	X	X	X



drive.web accessories

- Industrial Ethernet switches
- Interconnection cables, connectors
- Touch screen PCs
- Wireless access points
- Communications gateways
- **drive.web** software & firmware upgrade vouchers

Please call +410-604-3400 for details

drive.web automation

drive.web apps

WINDERS & UNWINDERS

smarty automation controllers use the **drive.web** distributed control technology to bring easy, cost effective intelligence to high performance drive systems.

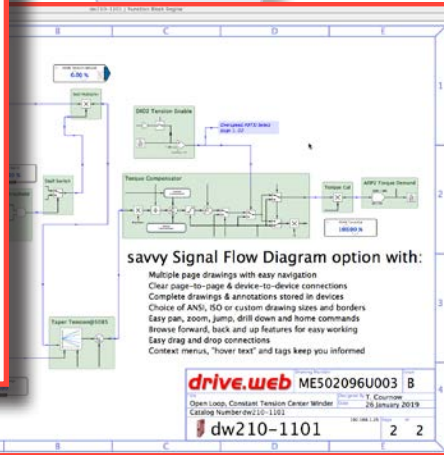
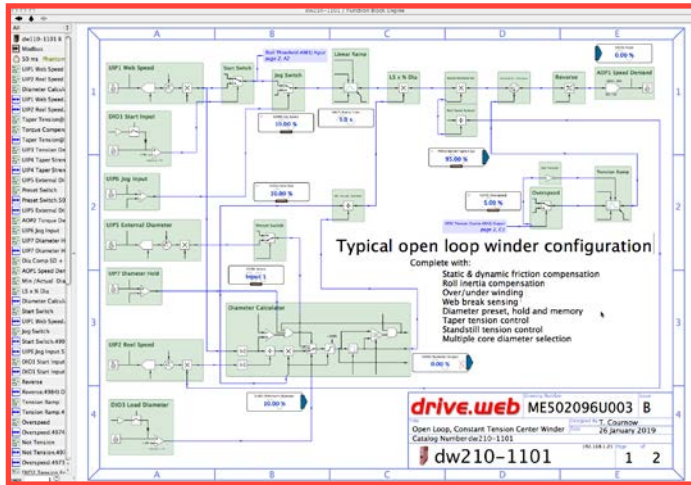
smarty apps are pre-configured generic packages for common applications:

smarty OPTION-1101 Open Loop Constant Tension Center Winder

smarty OPTION-1102 Closed Loop Dancer Controlled Center Winder

smarty OPTION-1103 Closed Loop Load Cell Controlled Center Winder

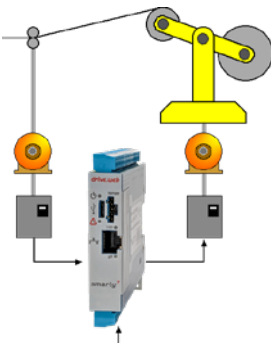
smarty OPTION-1104 Closed Loop Slip Core Winder



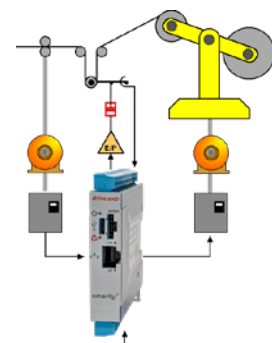
web handling excellence

These generic configurations can easily be edited by the intuitive **drive.web savvy** graphical tools to suit the particular application. The clear signal flow diagrams are stored in the controllers for reliable access in the field.

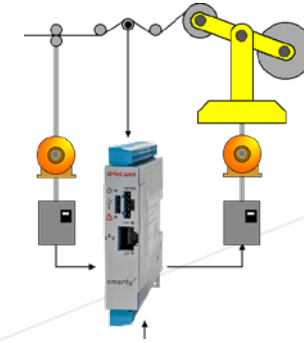
smarty OPTION-1101 OPEN LOOP CENTER WINDER



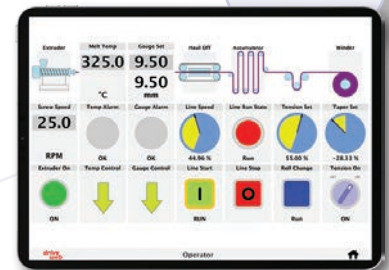
smarty OPTION-1102 DANCER CONTROLLED CENTER WINDER



smarty OPTION-1103 LOAD CELL CONTROLLED CENTER WINDER



savvyPanel touch screen control



Standard features include:

- Fully editable configurations and drawings
- Drive Interface either serial port or analog
- Process control & winder function block libraries
- Web break sensing
- Diameter calculation, memory, preset and hold
- Linear or hyperbolic taper tension
- Friction, inertia & torque compensation
- Multiple core presets
- Integral reset
- Adaptive control for high speed systems
- Standstill tension mode
- Jog/run/slack take up modes
- Turret indexing mode
- Anti-reverse clamps
- Core speed matching

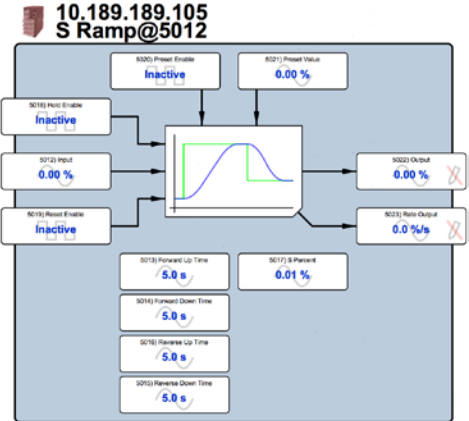
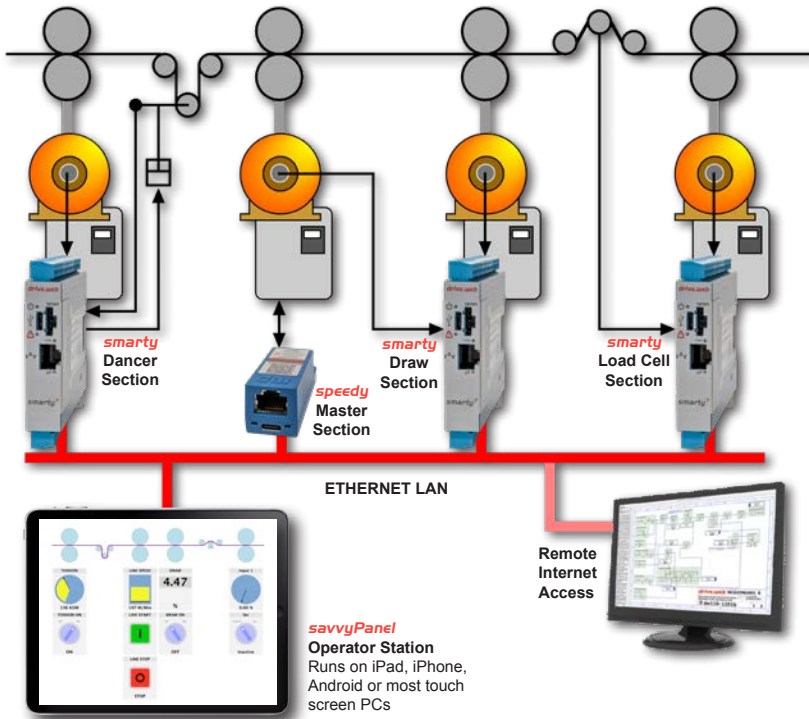
Optional features include:

- Over/under winding
- Line drive coordination
- Manual or auto-splicing modes
- Turret indexing
- Air pressure control
- Length & mass calculation
- Edge guide control
- Encoder inputs
- ModbusTCP/IP over Ethernet
- Serial communications
- ... and more!



smarty app OPTION-1106 Process Line Coordination

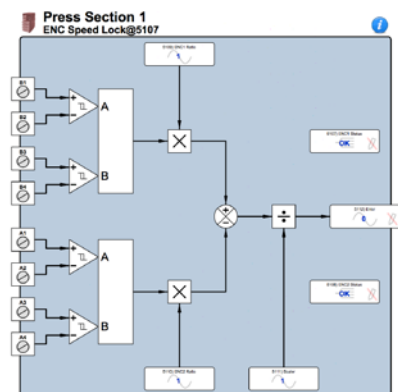
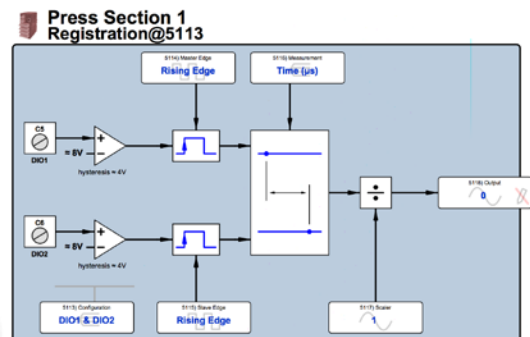
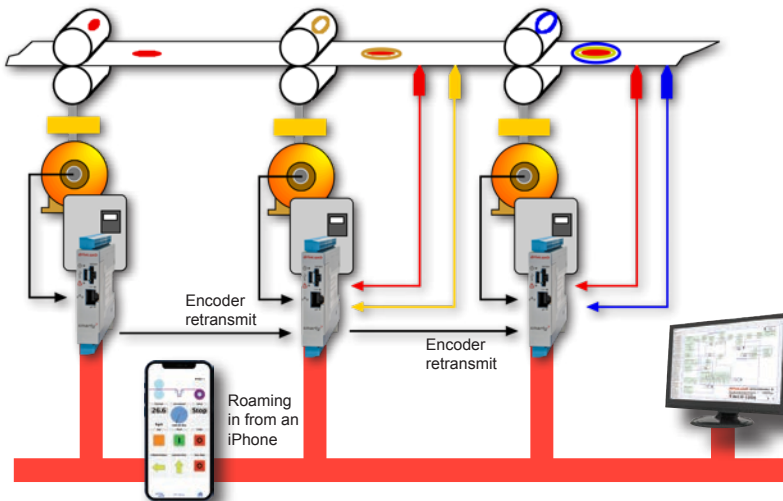
Standard function blocks used in combinations of *smartys* and *speedys* can be easily configured to provide line drive coordination in systems of any size or complexity.



- Functions such as linear, S and hyperbolic ramps are used to provide master references.
- Programmable logic and switch functions are used to provide line run, line jog, local jog, interlocks, etc.
- PIDs, profilers, registration, indexing, phase lock and arithmetic blocks provide precise section control.

smarty app OPTION-1109 Registration & Electronic Line Shaft

The Registration & Electronic Line Shaft package is designed for applications such as print registration, synchronized component handling, position control, cut-to-length, etc., where precision drive coordination and spindle orientation are required.



Standard graphical function blocks for registration and speed locking make these complex processes quick and easy to configure and use. The encoder retransmit option provides buffered encoder signals for secure use in multiple locations.

For multi-axis motion control of all types of drives - AC drives, DC drives, servos, steppers, hydraulic, linear actuator, etc., in a wide variety of general industrial position control applications including:

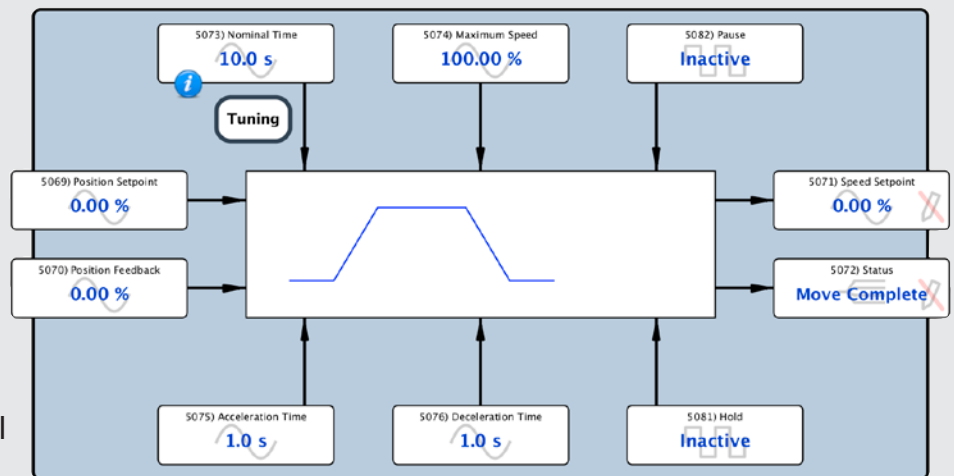
- Pick & place machines
- Packaging machines
- Painting robots
- Cut to length
- Automated assembly processes

Trapezoidal Motion

A key requirement for numerous machine controls

Key Features:

- Continuous target recalculation
- Easy system set up
- Easy performance optimization
- Pause with controlled accel/decel
- Hold with fast stop

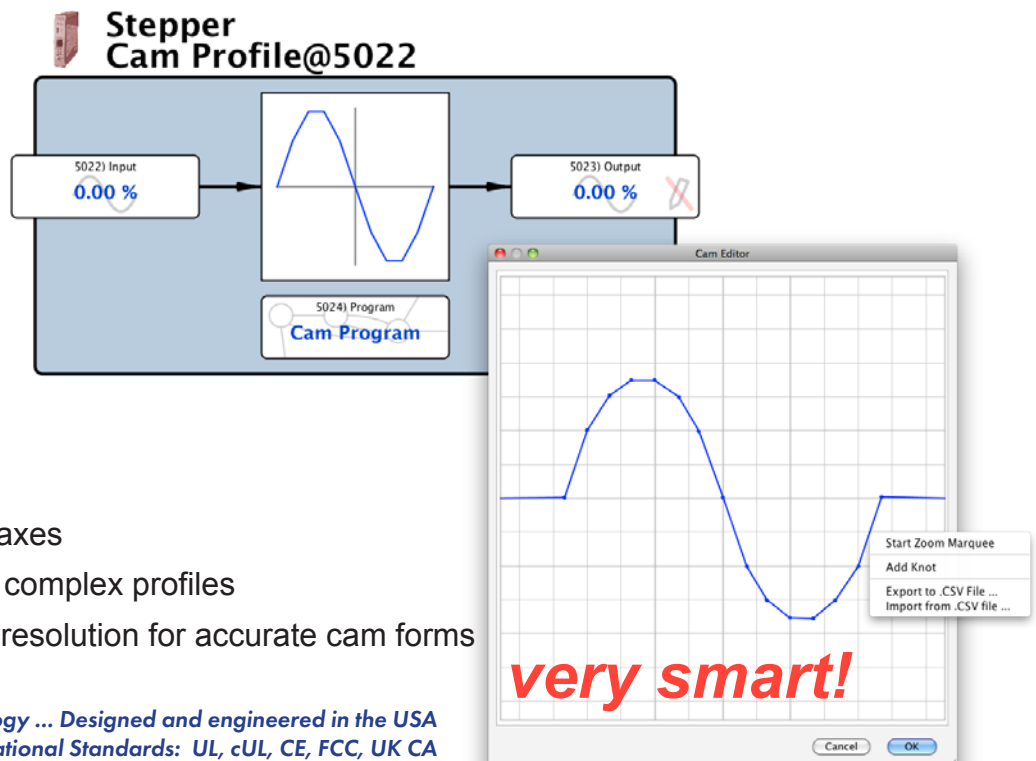


Cam Profile

A key requirement for numerous machine controls

Key Features:

- Easy graphical profile editor
- Optional .csv file import
- Easy .csv file export
- Easy system set up
- Easy integration with multiple axes
- Up to 100 "knots" or points for complex profiles
- 16 bit signed input and output resolution for accurate cam forms



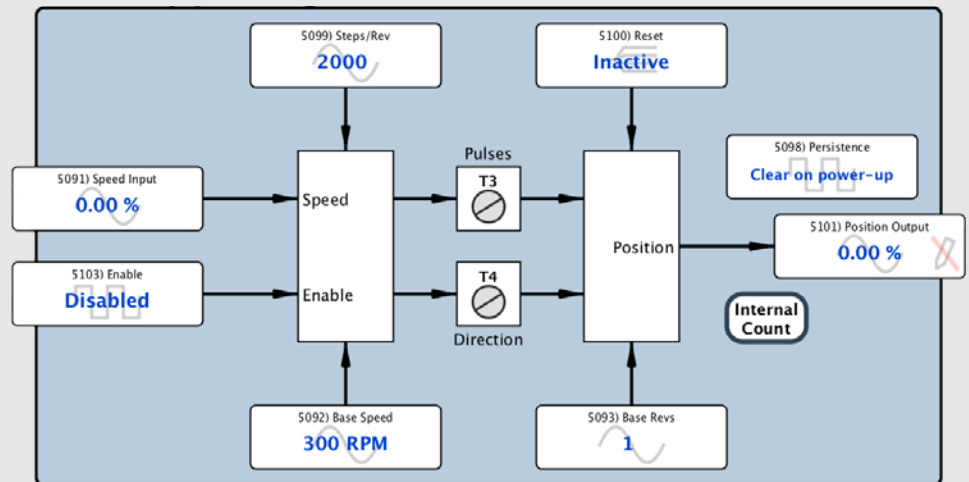
motion control

Stepper Drive Controllers

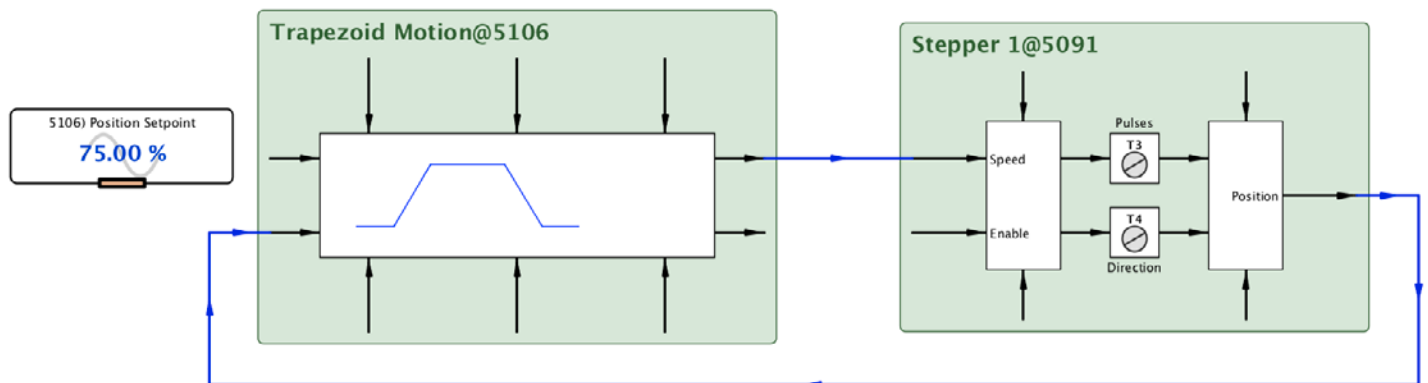
These stepper drive controller options are available for most versions of the **smarty** (see option selection table, page 25).

Both options include:

- 2 channels of pulse & direction
- 2 fast event inputs for count reset
- 64 bit pulse counts
- Automatic datum reset
- Easy set up
- Selectable count persistence with “clear on power up”

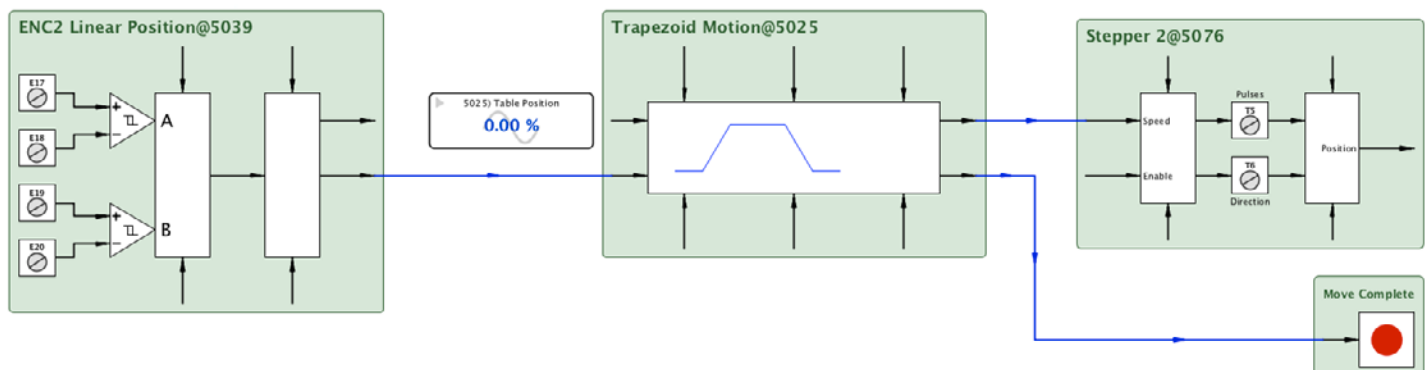


Open Loop Stepper Drive Controller



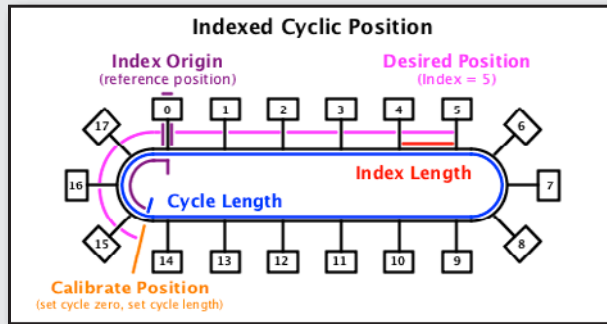
In a typical open loop stepper drive application the “Position” parameter (derived from the pulse count) can be used to close the position control loop.

Closed Loop Stepper Drive Controller



In a typical closed loop stepper drive application the position feedback can be provided by an encoder. The dwOPTION-42-45 encoder module also has two fast event inputs for auto count reset.

smarty app OPTION-1117 Indexing & Cyclic Positioning

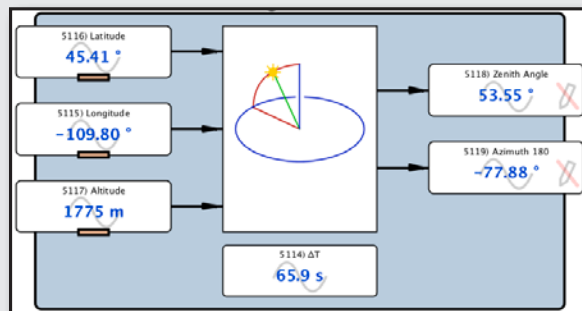


The optional Encoder Function Block Library available in the **smarty** includes a set of engineered function blocks for use in precision positioning applications such as packaging machines, machine center tool loaders, inventory carousels, stackers, etc.

Key Features

- Auto origin checking
- Auto index calculation
- Auto calculation of shortest move from point to point
- 64-bit encoder counts

smarty app OPTION-1118 Sun Position Calculator

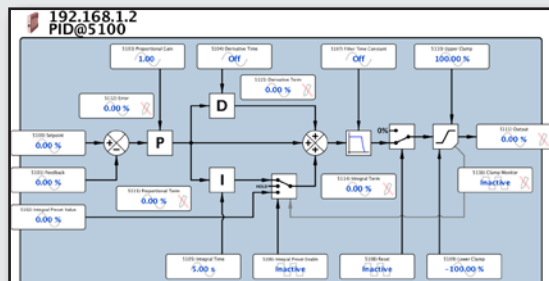


The Solar Function Block Library provides precise calculation of the sun zenith and azimuth angles in solar energy systems. It can be synchronized with the SNTP server time and date and include a ΔT input parameter to compensate for the difference between UTC and Terrestrial Time for precise positioning of solar concentrators.

Key Features

- Set up for any latitude, longitude and altitude.
- Fast calculation for use in mobile systems.
- SNTP synchronization support.
- Terrestrial Time correction input.

smart function blocks

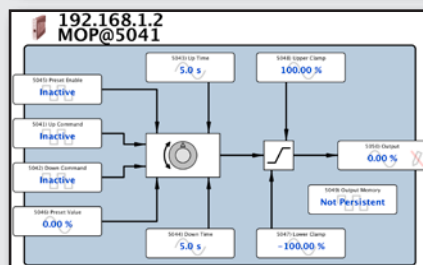


smart PID

One of the most commonly required functions in industrial control.

In most PLCs you get the basics but you are left to sweat the details required to make it work reliably in the real world. We cover the bases by including, integral preset, reset and hold, output filter, upper and lower clamps.

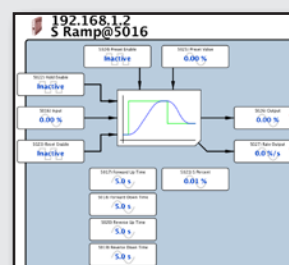
Saves a lot of time and heartache!



Motorized Pot

This MOP block makes short work of figuring out all the functions you need for raise/lower push button control

No sweat!



S-Ramps

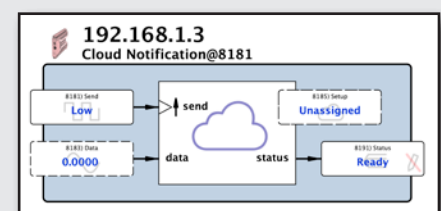
Ever tried to create an S-Ramp that works predictably in a typical PLC? We make it easy, intuitive and reliable!

No problem!

smart utilities cloud functions dwOPTION -35

The Cloud Notification function block available in every **drive.web** device enables you to send alerts, event notices, status reports, etc., to management, quality controllers, plant engineers in any location.

It is easy to set up and it ensures that key process issues are delivered to the right place at the right time.



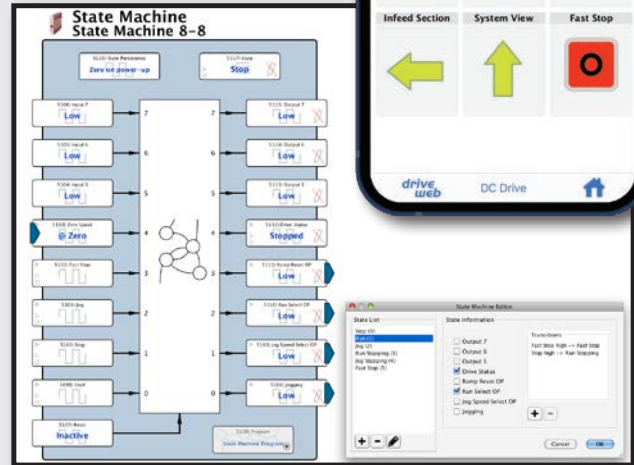
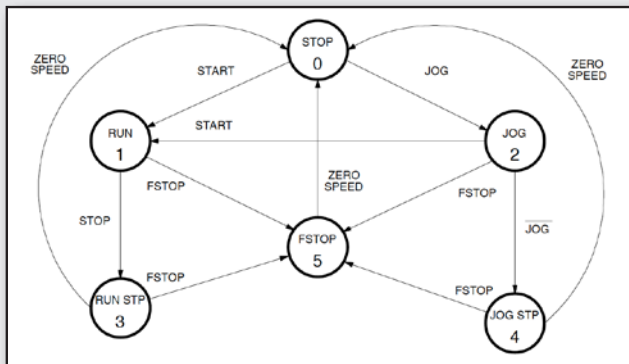
smart function blocks State Machine Logic

Logic made easy and reliable!

This powerful, Intuitive, 21st. century technology takes the stress out of logic programming. It's very simple ..

1. Define your machine states such as STOP, RUN, JOG, FAST STOP, etc.
2. Define the transitions that get you from one state to another, for example:
 START button gets you from STOP state to RUN state
 JOG button takes you from STOP state to JOG state
 FAST STOP button takes you from any state to FSTOP state
 (this can then look for a transition to ZERO SPEED before returning you to the STOP state)

It's that simple! No more sweating over relay interlocks, contact races, etc!



So obvious! So smart! So easy!

drive.web smart ideas

WiFi Roaming Interface

There are many inexpensive third party WiFi routers that when plugged into a **drive.web** Ethernet network provide secure, robust, roaming system access in an industrial environment using iOS or Android smart devices.



Enterprise Integration

The powerful system wide access inherent in the **drive.web** technology provides a great backbone on which to build integrated solutions in your entire global enterprise without additional complex data processing requirements. Multilevel password protection enables safe access for offsite accountants, production controllers and corporate management.



Online Training & System Support

The IP addressing capability in every **drive.web** device ensures easy support for field service and live online training for machine operators, system designers and plant maintenance engineers. If an internet connection is available near your machine or process it takes less than 1 minute to set up a live connection to our engineers or any other off site location. **drive.web** provides system wide access from any single location on your LAN - very smart, very easy!



drive.web smart technology ... Designed and engineered in the USA to International Standards: UL, cUL, CE, FCC, UK CA

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, pre-engineered 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.

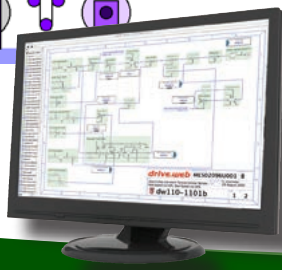
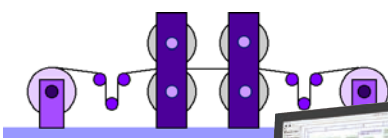
... it's as easy as that!

Our support view

Internet

Unbeatable!

Your plant view



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 - 1½ 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

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.

Field Service, Service Center Repair, Training and Start-up - Call +410-604-3400 Rates for the Continental United States

Charge Basis

	Rates (US\$)
a. Basic Rate - Field Service, Training & Start-up Assistance - up to 8 hours daily Monday to Friday, 7am to 6pm	\$220 per hour
b. Standard Overtime - Weekdays 6pm to 7am & all day Saturday - Total work time not to exceed 12 hrs in any 24 hrs	\$330 per hour
c. Special Overtime - Sundays, Holidays and excess of 8 hours on Saturday	\$440 per hour
d. Overnight - Includes meals, and hotel accommodation	\$400 per night
e. Auto Travel - Covering cost of use of company or personal cars, distance to and from the local office	\$0.75 per mile
f. Public Transport - Rental cars, Air fares, etc.	Cost + 10%
g. Holdover & Standby Time	Same as service
h. Travel Time - Time taken from Bardac to job site and return	Same as service
i. Basic Rate - Service Center Repair charges - Diagnosis & repair time	\$150 per hour + parts
j. Design or application engineering services	\$240 per hour

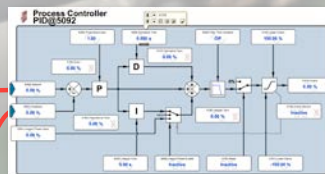
Notes: 1. Minimum service billing is 4 hours for field services, 1 hour for service center services.
2. Parts, materials, special visas, duties, and extraordinary expenses will be charged extra.
3. Warranty credits will be identified on the Daily Field Service Report.

For rates and availability of sales and service outside the US, please call +410-604-3400

24/7 Tech Support

During normal business hours basic tech support will be provided free of charge

Outside normal business hours call +410-604-3535. Tech support will be provided at \$440/hour (minimum of 1/2 hour per call) and this must be paid for with a credit card at the time of service.



drive.web automation

- ~ distributed control over Ethernet
- ~ full featured programmable control
- ~ intuitive graphical programming tools
- ~ Internet accessible
- ~ cost effective systems any size or complexity
- ~ configure, connect & control
- ... everthing from anywhere

Everything normally in stock!

drive.web automation

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