

B&D INDUSTRIAL

Pre-Engineered
Motor Controls



SERVING INDUSTRY SINCE 1947



INDUSTRY DESIGNS

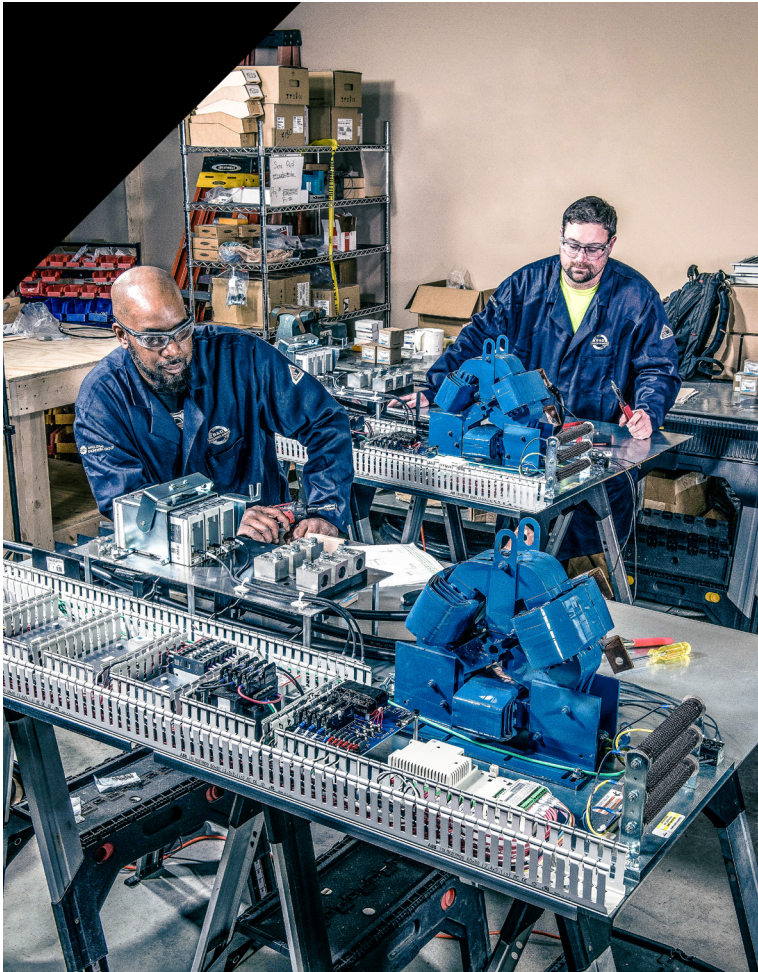
CUSTOM CREATIONS

THE BEST ACCESSORIES

The needs of specific industries have guided B&D to produce some of the boldest and most useful designs in the US.

ABOUT US

THE DESIGN BUILD LABORATORY



"Laboratory:
A place providing
opportunity for
experimentation,
observation, or prac-
tice in a field of study."
Webster Dictionary

B&D spends an average of \$2M per year on research and development (R&D) specific to variable-frequency drives (VFDs), industrial controls, mechanical transmission, and cutting-edge topics in Industry 4.0 and machine learning (ML).

We started sixteen years ago with a folding table and a few engineers testing the programming of a VFD located on the floor. The escalation started as customers began asking us to test various ideas for system optimization and reliability improvements. By 2013, this led to the creation of a fully functional laboratory in Norcross. Before that time, building our designs had been outsourced to several firms around Georgia and Florida. After overcoming many challenges associated with schedules and quality, in 2016, we opted to bring the building and quality processes into the confines of the lab where our most seasoned design engineers were located. Today, in addition to R&D testing, we build over \$3M in custom AC and DC drive systems for several industries—paper, plastics, mining, textiles, and irrigation, to name just a few within the breadth of our knowledge.

PROGRAM 90 - JUST ASK FOR IT

READY TO RUN SOFTSTARTERS, STARTERS, AND VFDs

After two decades and 1,000s and 1,000s of live applications as well as intense R&D, B&D has the specific expertise to program and set-up softstarters, starters, and VFDs to an almost complete state of operation before the device arrives at a customer location.

Isolating two functions of this program illustrates the possibilities:

- 90% of the applications are pumps, fans, and conveyors
- 90% of these same applications are programmed the same way

What we provide is the maximum safest motor model for the horsepower range ready to run from the “Hand” mode with nothing more than hooking power to the panel and running the motor leads. Realistically you can be running faster than any other design starting from scratch.

If you need remote “Auto” control, everything is ready for you as well. The remaining 10% of the set-up or programming could be fine motor tuning or some customization of special functions surrounding the controls.

The remaining set-up or programming can be handled before we ship the system or by a simple phone call/remote support session. Stand on us, and we will make this easy.



LOOK FOR THE READY-TO-RUN PROGRAM 90 ICON



PROGRAM 90

#INDUSTRY STANDARD COMBINATION MOTOR STARTERS

Nema 4/12 full voltage non-reversing combination motor starters

UP TO 50HP RATINGS AT 460VAC



**LABORATORY
TESTED**



PROGRAM 90



**2-YEAR
WARRANTY**



**FREE SHIPPING:
WHEN YOU BUY TWO
OR MORE AT A TIME**

Standard Features:

- Powder-coated N4/12 enclosure
- Lockable rotary disconnect handle
- 25kA Molded Case Circuit Breaker (MCCB)
- The "Best Anywhere" 100VA power control transformer with MCB protection
- Hand-off-auto (HOA) with run and fault pilot lights
- 120VAC control
- Fuseless design
- Two-year warranty
- 1 to 2 week delivery



#INDUSTRY STANDARD COMBINATION MOTOR STARTERS

Catalog Number	Enclosure	HWD (in)	MCCB	Voltage	HP	OL	Cost
DW-FVNR-N4M-4-000P50-S	N4/12	16x16x10	15A	460V - 3P	0.5	1.6A	\$1,051
DW-FVNR-N4M-4-000P75-S	N4/12	16x16x10	15A	460V - 3P	0.75	2.5A	\$1,051
DW-FVNR-N4M-4-001P00-S	N4/12	16x16x10	15A	460V - 3P	1	2.5A	\$1,051
DW-FVNR-N4M-4-001P50-S	N4/12	16x16x10	15A	460V - 3P	1.5	4.0A	\$1,051
DW-FVNR-N4M-4-002P00-S	N4/12	16x16x10	15A	460V - 3P	2	4.0A	\$1,051
DW-FVNR-N4M-4-003P00-S	N4/12	16x16x10	15A	460V - 3P	3	6.0A	\$1,051
DW-FVNR-N4M-4-005P00-S	N4/12	16x16x10	15A	460V - 3P	5	8.0A	\$1,051
DW-FVNR-N4M-4-007P50-S	N4/12	16x16x10	15A	460V - 3P	7.5	13.0A	\$1,052
DW-FVNR-N4M-4-010P00-S	N4/12	16x16x10	20A	460V - 3P	10	18.0A	\$1,059
DW-FVNR-N4M-4-015P00-S	N4/12	16x16x10	30A	460V - 3P	15	25.0A	\$1,089
DW-FVNR-N4M-4-020P00-S	N4/12	16x16x10	40A	460V - 3P	20	32.0A	\$1,089
DW-FVNR-N4M-4-025P00-S	N4/12	16x16x10	50A	460V - 3P	25	42.0A	\$1,107
DW-FVNR-N4M-4-030P00-S	N4/12	20x16x10	60A	460V - 3P	30	50.0A	\$1,158
DW-FVNR-N4M-4-040P00-S	N4/12	20x16x10	80A	460V - 3P	40	65.0A	\$1,306
DW-FVNR-N4M-4-050P00-S	N4/12	20x16x10	100A	460V - 3P	50	75.0A	\$1,396

DRIVES WIZARD



Optional Features:

- N4X Non-metallic or Stainless Steel Designs
- Flange-Handle operators
- 65kA Molded Case Circuit Breaker (MCCB)
- Full voltage reversing (FVR)
- Beefed up power control transformers to 1.000VA
- Custom controls and pilot lights
- 230, 460, 575, 600VAC single and three phase power designs
- 24 - 460V AC and DC control voltage levels
- Electronic overloads
- Timers and other specialized controls



Meet the Lab Engineers

#NEMA COMBINATION MOTOR STARTERS

Nema 12/3R full voltage non-reversing combination motor starters

UP TO 400HP RATINGS AT 460VAC



Heavy Duty NEMA Design
Class 20 Electronic OL
Up to 400HP



LABORATORY
TESTED



PROGRAM 90



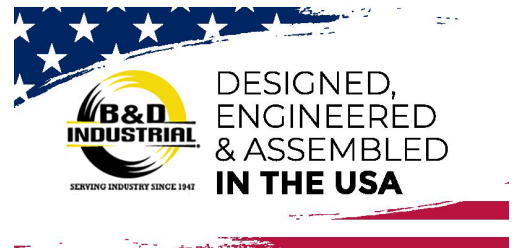
2-YEAR
WARRANTY



FREE SHIPPING:
WHEN YOU BUY TWO
OR MORE AT A TIME

Standard Features:

- NEMA 12/3R enclosure
- NEMA rated contactor
- Lockable rotary disconnect handle
- 25kA Molded Case Circuit Breaker (MCCB)
- Electronic class 20 protection relay
- Dual 480VAC or 240VAC three-phase ready
- 100VA fused power control transformer
- Labels for 480VAC and 240 VAC installed
- Hand-off-auto (HOA) with run and fault pilot lights
- 120 VAC control
- Two-year warranty
- Stock on most sizes

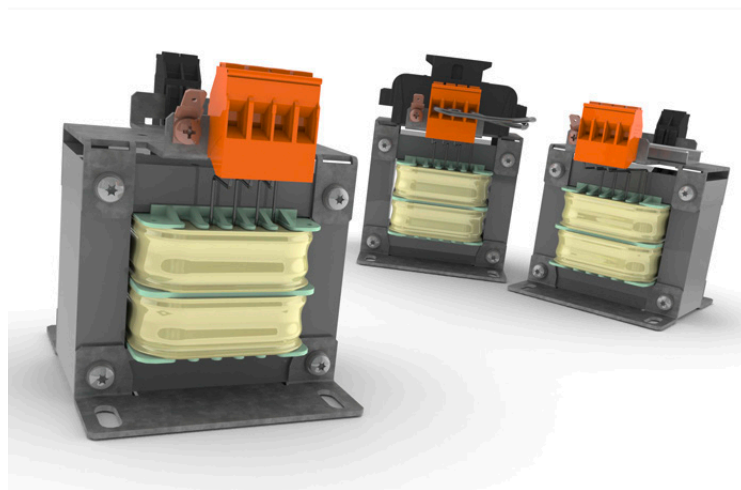


#NEMA COMBINATION MOTOR STARTERS

Catalog Number	Enclosure	HWD (in)	NEMA	230V-HP	460V-HP	FLA	Lead	Cost
CBRCI2-N00-3R	N12/3R	20x16x8	00	1	2	4.2/3.4	Stock	\$1,215
CBRCI2-N0-3R	N12/3R	20x16x8	0	3	5	9.6/7.6	Stock	\$1,276
CBRCI2-N1-3R	N12/3R	20x16x8	1	5	10	15.2/14	Stock	\$1,339
CBRCI2-N2-3R	N12/3R	20x16x8	2	10	25	28/34	Stock	\$1,406
CBRCI2-N3-3R	N12/3R	24x20x10	3	25	50	68/65	Stock	\$1,549
CBRCI2-N4-3R	N12/3R	36x24x12	4	50	100	130/124	Stock	\$2,501
CBRCI2-N5-3R	N12/3R	48x24x12	5	100	200	248/240	2 weeks	\$3,486
CBRCI2-N6-3R	N12/3R	48x36x16	6	200	400	480/477	2 Weeks	\$5,376

#POWER CONTROL TRANSFORMERS

Designed for maximum ease of use and reliability.



100% Finger-Safe
100% Protection
100% UL*

BLOCK 



We assemble to order and same day shipping available.
 Larger sizes and other voltage levels are also available.

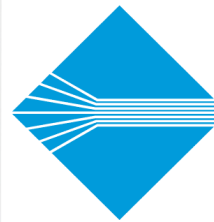
Catalog Number	Description	Cost
BLKCT-010-048-12-0+Pro	IP21 100VA 240/460V primary - 120V Secondary w. MCBs	\$120
BLKCT-025-048-12-0+Pro	IP21 250VA 240/460V primary - 120V Secondary w. MCBs	\$142
BLKCT-050-048-12-0+Pro	IP21 500VA 240/460V primary - 120V Secondary w. MCBs	\$176
BLKCT-100-048-12-0+Pro	IP21 1000VA 240/460V primary - 120V Secondary w. MCBs	\$244

* UL Ratings are designed for 480Y/277 VAC Primary

#CHAMPIONSHIP COMBINATION SOFTSTARTER

Nema 3R reduced voltage non-reversing combination softstarter

BENSHAW CSXi SOFTSTARTERS UP TO 150HP AT 460VAC



BENSHAW®
ADVANCED CONTROLS & DRIVES



LABORATORY
TESTED

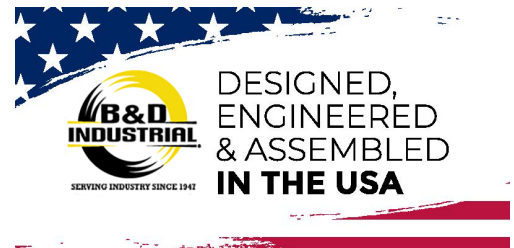


PROGRAM 90



Standard Features:

- NEMA 3R enclosure
- CSXi solid state starter with built-in bypass
- Lockable rotary disconnect handle
- 35kA Molded Case Circuit Breaker (MCCB)
- 100VA fused power control transformer
- Space heater with thermostat
- Start/Stop PBs, HOA, Power On/Run/Fault lights
- UL508A
- Three-year warranty
- Stock to 2 weeks



#PREMIER COMBINATION SOFTSTARTER

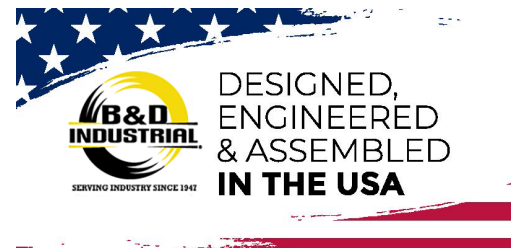
Nema 12 reduced voltage non-reversing combination softstarter

BENSHAW EMX4i SOFTSTARTERS UP TO 600HP AT 460VAC



Standard Features:

- NEMA N12 enclosure (N3R on request)
- EMX4i solid state starter
- Class 30 bypass starter
- Lockable flange handle disconnect handle
- 65kA Molded Case Circuit Breaker (MCCB)
- 100VA fused power control transformer
- Space heater with thermostat
- Start/Stop PBs, HOA, Power On/Run/Fault lights
- Advanced Keypad with diagnostics
- UL508A
- Three-year warranty
- Stock to 2 weeks



#SOFTSTARTER PACKAGES

CHAMPIONSHIP DESIGN

Catalog Number	Enclosure	HWD (in)	MCCB	Voltage	HP	Max A	Cost
CSXi-0014-4-PP-N3R-CB-PD	N3R	20x16x8	40	460V - 3P	10	18	\$2,327
CSXi-0034-4-PP-N3R-CB-PD	N3R	20x16x8	60	460V - 3P	25	34	\$2,517
CSXi-0040-4-PP-N3R-CB-PD	N3R	20x16x8	70	460V - 3P	30	42	\$2,568
CSXi-0052-4-PP-N3R-CB-PD	N3R	20x16x8	100	460V - 3P	40	60	\$2,694
CSXi-0065-4-PP-N3R-CB-PD	N3R	24x20x10	125	460V - 3P	50	75	\$3,225
CSXi-0077-4-PP-N3R-CB-PD	N3R	24x20x10	150	460V - 3P	60	85	\$3,246
CSXi-0096-4-PP-N3R-CB-PD	N3R	24x20x10	150	460V - 3P	75	100	\$3,425
CSXi-0125-4-PP-N3R-CB-PD	N3R	24x20x10	200	460V - 3P	100	140	\$3,954
CSXi-0156-4-PP-N3R-CB-PD	N3R	24x20x10	250	460V - 3P	125	170	\$4,179
CSXi-0180-4-PP-N3R-CB-PD	N3R	24x20x10	300	460V - 3P	150	200	\$4,426

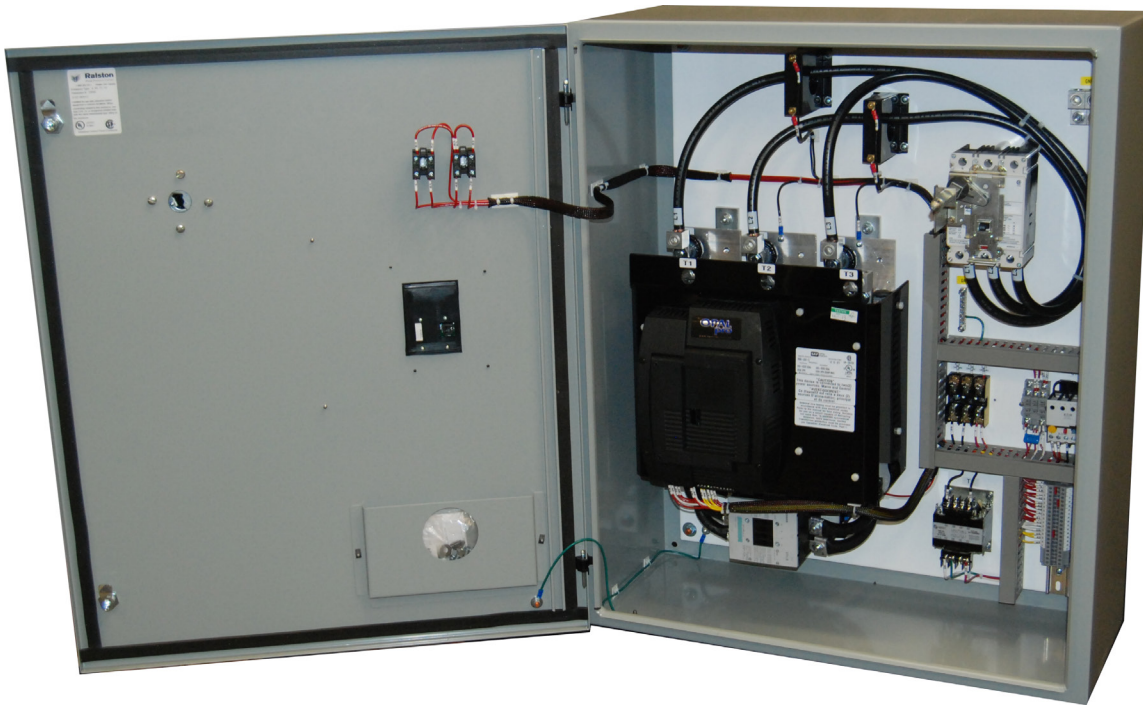
PREMIER DESIGN

Catalog Number	Enclosure	HWD (in)	MCCB	Voltage	HP	Max A	Cost
RX4E-050-480-12KP-HB	N12	26x24x12	100	460V - 3P	50	65	\$4,744
RX4E-075-480-12KP-HB	N12	48x24x12	225	460V - 3P	75	96	\$5,777
RX4E-100-480-12KP-HB	N12	48x24x12	225	460V - 3P	100	124	\$6,425
RX4E-125-480-12KP-HB	N12	48x24x12	225	460V - 3P	125	156	\$6,466
RX4E-150-480-12KP-HB	N12	48x24x12	300	460V - 3P	150	180	\$6,703
RX4E-200-480-12KP-HB	N12	48x24x12	400	460V - 3P	200	240	\$8,688
RX4E-250-480-12KP-HB	N12	48x36x16	400	460V - 3P	250	302	\$9,713
RX4E-300-480-12KP-HB	N12	48x36x16	600	460V - 3P	300	361	\$10,025
RX4E-400-480-12KP-HB	N12	72x40x18	800	460V - 3P	400	477	\$16,045
RX4E-500-480-12KP-HB	N12	72x40x18	1000	460V - 3P	500	590	\$20,096
RX4E-600-480-12KP-HB	N12	72x40x18	1200	460V - 3P	600	720	\$20,454

#SPECIAL HD MINING, PAPER, AND LUMBER SOFTSTARTER

Nema 3R/4/12 Combination Reversing softstarter

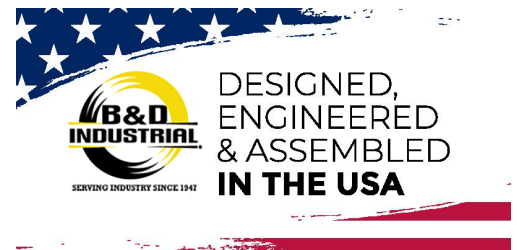
UP TO 1,000HP RATINGS AT 600VAC



**Built to order
500% OL
5 Year Warranty**

Standard Features:

- 500% OL - Out performs everyone
- Powder-coated N3R/4/12 enclosure
- Lockable rotary disconnect handle
- Molded Case Circuit Breaker (MCCB)
- The “Best Anywhere” 100VA power control transformer with MCB protection
- Hand-off-auto (HOA) with run and fault pilot lights
- 120VAC control
- UL508A
- Five-year warranty
- B&D Stocks up to 600HP SS module



#N4/12 CHAMPIONSHIP AC DRIVE PANELS

Nema 4/12 combination AC Variable Frequency Drive (VFD) panels
UP TO 30HP RATINGS AT 460VAC

#Championship Design

Invertek - Optidrive E3



Features:

- Powder-coated N4/12 enclosure
- External Basic keypad
- Already programmed (Program 90)
- Lockable rotary disconnect and handle
- MSP/breaker protection
- 250VA over-sized power control transformer with MCB protection
- Filter fan(s) on larger models
- Hand-off-auto (HOA)
- Run and fault pilot lights
- Submarine Duty Speed Pot
- 120VAC interposing relay control
- UL508A & Drawings
- Fuseless design
- Two-year Warranty

Delivery in 1-2 Weeks

Note - The above image shows the Championship design with the optional SPD and reactor installed.



LABORATORY
TESTED



PROGRAM 90



2-YEAR
WARRANTY



FREE SHIPPING:
WHEN YOU BUY TWO
OR MORE AT A TIME



DRIVES WIZARD

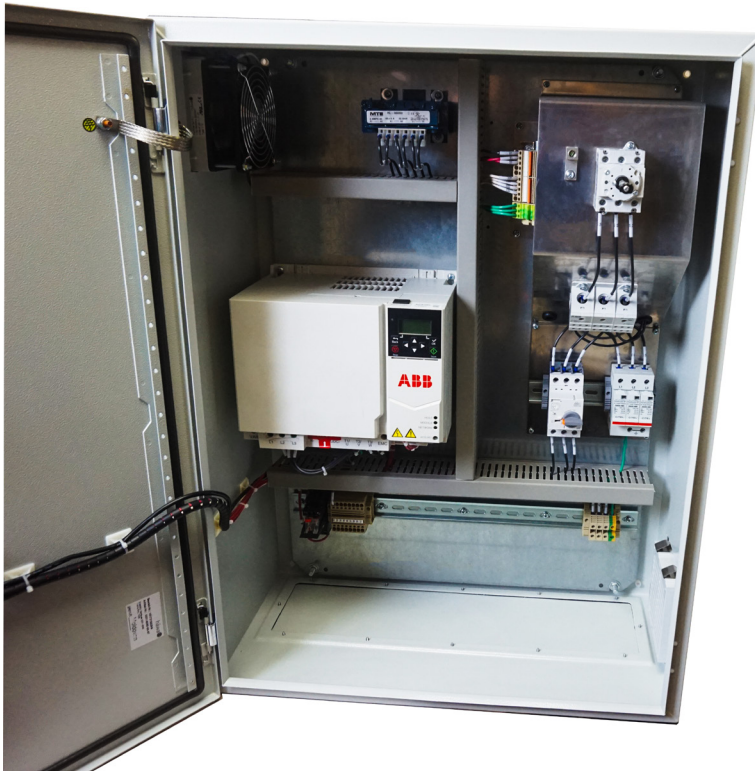


#N4/12 PREMIER AC DRIVE PANELS

Nema 4/12 combination AC Variable Frequency Drive (VFD) panels
UP TO 30HP RATINGS AT 460VAC

#Premier Design

ABB -ACS380



Features:

- Powder-coated N4/12 enclosure
- External Advanced Bluetooth keypad
- Already programmed (Program 90)
- Lockable rotary disconnect and handle
- MSP/breaker protection
- SPD & 5% Line Reactor
- 250VA over-sized power control transformer with MCB protection
- Filter fan(s) on larger models
- Hand-off-auto (HOA)
- Run and fault pilot lights
- Submarine Duty Speed Pot
- 120VAC interposing relay control
- UL508A & Drawings
- Fuseless design
- Two-year Warranty

Delivery in 4 weeks (Firm at order)



LABORATORY
TESTED



PROGRAM 90



2-YEAR
WARRANTY



FREE SHIPPING:
WHEN YOU BUY TWO
OR MORE AT A TIME



DRIVES WIZARD

#N4/12 AC DRIVE PANELS

CHAMPIONSHIP DESIGN

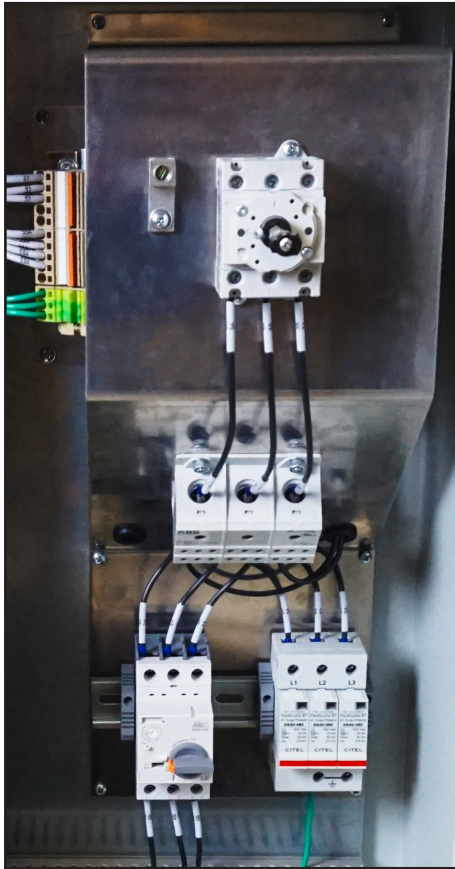
Catalog Number	Enclosure	HWD (in)	MSP	Voltage	HP	FLA	Cost
DW-04-4-000P50-D-PC-ODE*	N4/12	24x24x12	4A	460V - 3P	0.5	1.2A	\$1,909
DW-04-4-001P00-D-PC-ODE*	N4/12	24x24x12	6A	460V - 3P	1	2.2A	\$1,951
DW-04-4-002P00-D-PC-ODE*	N4/12	24x24x12	8A	460V - 3P	2	4.1A	\$1,979
DW-04-4-003P00-D-PC-ODE*	N4/12	24x24x12	10A	460V - 3P	3	5.8A	\$2,063
DW-04-4-005P00-D-PC-ODE*	N4/12	24x24x12	17A	460V - 3P	5	9.5A	\$2,238
DW-12-4-007P50-D-PC-ODE	N12	24x24x12	20A	460V - 3P	7.5	14.0A	\$2,634
DW-12-4-010P00-D-PC-ODE	N12	32x24x12	32A	460V - 3P	10	18.0A	\$2,833
DW-12-4-015P00-D-PC-ODE	N12	32x24x12	40A	460V - 3P	15	24.0A	\$3,119
DW-12-4-020P00-D-PC-ODE	N12	32x24x12	50A	460V - 3P	20	32.0A	\$3,804
DW-12-4-025P00-D-PC-ODE	N12	32x24x12	63A	460V - 3P	25	39.0A	\$4,110
DW-12-4-030P00-D-PC-ODE	N12	32x24x12	75A	460V - 3P	30	46.0A	\$4,468

PREMIER DESIGN

Catalog Number	Enclosure	HWD (in)	MSP	Voltage	HP	FLA	Cost
DW-04-4-000P75-D-PC-ABB*	N4/12	24x24x12	4A	460V - 3P	0.75	1.8A	\$2,573
DW-04-4-001P00-D-PC-ABB*	N4/12	24x24x12	6A	460V - 3P	1	2.6A	\$2,607
DW-04-4-001P50-D-PC-ABB*	N4/12	24x24x12	6A	460V - 3P	1.5	3.3A	\$2,644
DW-04-4-002P00-D-PC-ABB*	N4/12	24x24x12	8A	460V - 3P	2	4.0A	\$2,687
DW-04-4-002P25-D-PC-ABB*	N4/12	24x24x12	10A	460V - 3P	2	5.6A	\$2,718
DW-12-4-003P00-D-PC-ABB	N12	24x24x12	13A	460V - 3P	3	7.2A	\$3,009
DW-12-4-005P00-D-PC-ABB	N12	24x24x12	17A	460V - 3P	5	9.4A	\$3,062
DW-12-4-007P50-D-PC-ABB	N12	24x24x12	20A	460V - 3P	7.5	12.6A	\$3,126
DW-12-4-010P00-D-PC-ABB	N12	32x24x12	32A	460V - 3P	10	17.0A	\$3,449
DW-12-4-015P00-D-PC-ABB	N12	32x24x12	40A	460V - 3P	15	25.0A	\$3,660
DW-12-4-020P00-D-PC-ABB	N12	32x24x12	50A	460V - 3P	20	32.0A	\$4,036
DW-12-4-025P00-D-PC-ABB	N12	32x24x12	63A	460V - 3P	25	38.0A	\$4,332
DW-12-4-030P00-D-PC-ABB	N12	32x24x12	75A	460V - 3P	30	45.0A	\$4,762
DW-12-4-030P25-D-PC-ABB	N12	32x24x12	75A	460V - 3P	30	50.0A	\$5,183

* Denotes Non-ventilated N4 design

#N4/12 AC DRIVE DESIGN DETAILS



B&D Exclusive Design Features

Features:

The "Slant" slanted riser

- Eliminates disconnect handle sag
- Allows an added layer of protection for the transformer
- Increases usable space inside the enclosure

Fuseless design

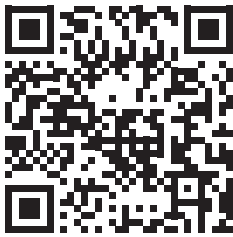
- The design use resettable breakers for transformer and drive protection

Reactor and Surge Protection (Standard in Premier and optional in the Championship designs)

- The 5% reactor adds inductance to the design, improves harmonics mitigation, and protects the diode bridge
- The SPD dramatically improves the reliability of the design for surges see QR code for B&D's video on testing the Citel SPD with ABB drives

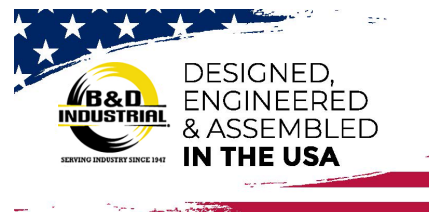
Military Duty Speed Potentiometer (pot)

- We use a Mil-Spec IP68 10K potentiometer in the design because we were tired of the so-called industrial pots provided by industrial vendors failing.



Surge Protection Testing Link

**DRIVES
WIZARD**

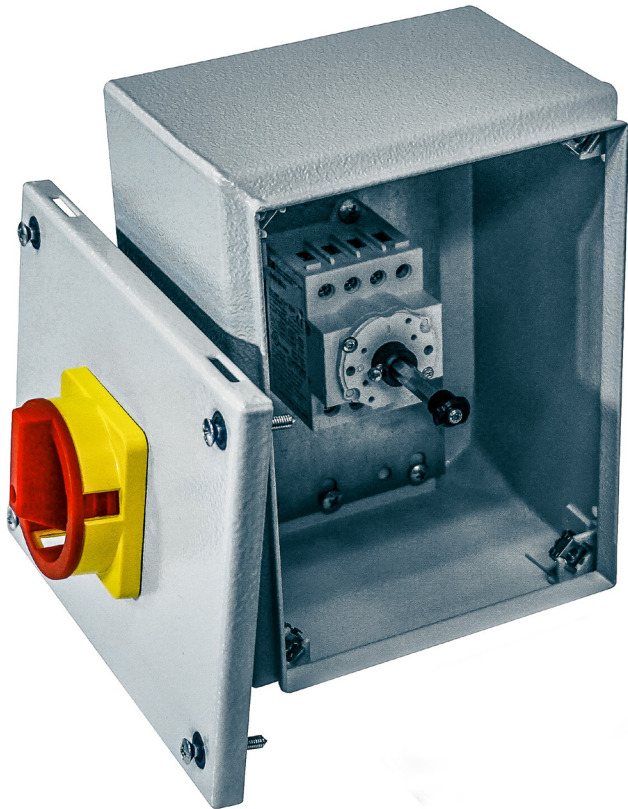


Optional Features:

- N4X Non-metallic or Stainless Steel Designs
- Flange-Handle operators
- 65kA Molded Case Circuit Breaker (MCCB)
- Full voltage bypass designs
- Beefed up power control transformers to 1.000VA
- Custom controls and pilot lights
- 120, 208, 230, 460, 575, 600VAC single and three phase power designs
- Timers and other specialized controls
- Safety Relays and interfaces
- Communications - EIP, Modbus TCP/IP, Profinet, AB RIO, Devicenet, Profibus, etc.

#AC N4/12 METAL DISCONNECT **DRIVES WIZARD**

Simple and Built in Georgia



- UL508
- Suitable for use as a motor disconnect
- Make and break loads up to 600VAC
- Meets OSHA lockout/tagout requirements
- Easy screw mounting
- Clear ON/OFF indication
- Padlockable
- Nema 4/12 (UL Type 12)

Common Applications:

- Load break switching
- Line of sight disconnect
- Circuit isolation
- Motor control



We assemble to order and same day shipping available.
Larger sizes and other voltage levels are also available.



Catalog Number	Phase	Voltage	Current	Description	HWD (mm)	Cost
DW032N12NF	1/3	600V	32A	N12 Power Coated Steel UL508A	200x150x80	\$140
DW040N12NF	1/3	600V	40A	N12 Power Coated Steel UL508A	200x150x80	\$142
DW063N12NF	1/3	600V	63A	N12 Power Coated Steel UL508A	300x150x80	\$151
DW080N12NF	1/3	600V	80A	N12 Power Coated Steel UL508A	300x150x80	\$166
DW100N12NF	1/3	600V	100A	N12 Power Coated Steel UL508A	300x150x120	\$209
DW125N12NF	1/3	600V	125A	N12 Power Coated Steel UL508A	300x150x120	\$378

#AC N4X DISCONNECT



Over 5 Million trouble free installations

- UL508
- Suitable for use as a motor disconnect
- Make and break loads up to 600VAC
- Meets OSHA lockout/tagout requirements
- Easy screw mounting
- Clear ON/OFF indication
- Padlockable
- Nema 4X (IP65)



High Visibility:
In a sea of gray boxes,
where is your safety
disconnect?



We stock these designs.

Catalog Number	Phase	Voltage	Current	Description	HWD (mm)	Cost
PE69-3020	1/3	600V	20A	NEMA 4X (IP65) Yellow Body With Red Rotary	130x98x77	\$30
PE69-3025	1/3	600V	25A	NEMA 4X (IP65) Yellow Body With Red Rotary	130x98x77	\$32
PE69-3032	1/3	600V	32A	NEMA 4X (IP65) Yellow Body With Red Rotary	130x98x77	\$33
PE69-3040	1/3	600V	40A	NEMA 4X (IP65) Yellow Body With Red Rotary	130x98x77	\$43
PE69-3063	1/3	600V	63A	NEMA 4X (IP65) Yellow Body With Red Rotary	200x120x86	\$59
PE69-3080	1/3	600V	80A	NEMA 4X (IP65) Yellow Body With Red Rotary	200x120x86	\$60
PE69-30100	1/3	600V	100A	NEMA 4X (IP65) Yellow Body With Red Rotary	200X140X86	\$165