Bardac drives

Pump Control

V3 ECO DRIVES

AC Variable Speed Drive

PUMP CONTROL

Energy efficient

ASHRAE BACnet® MS/TP built-in as standard

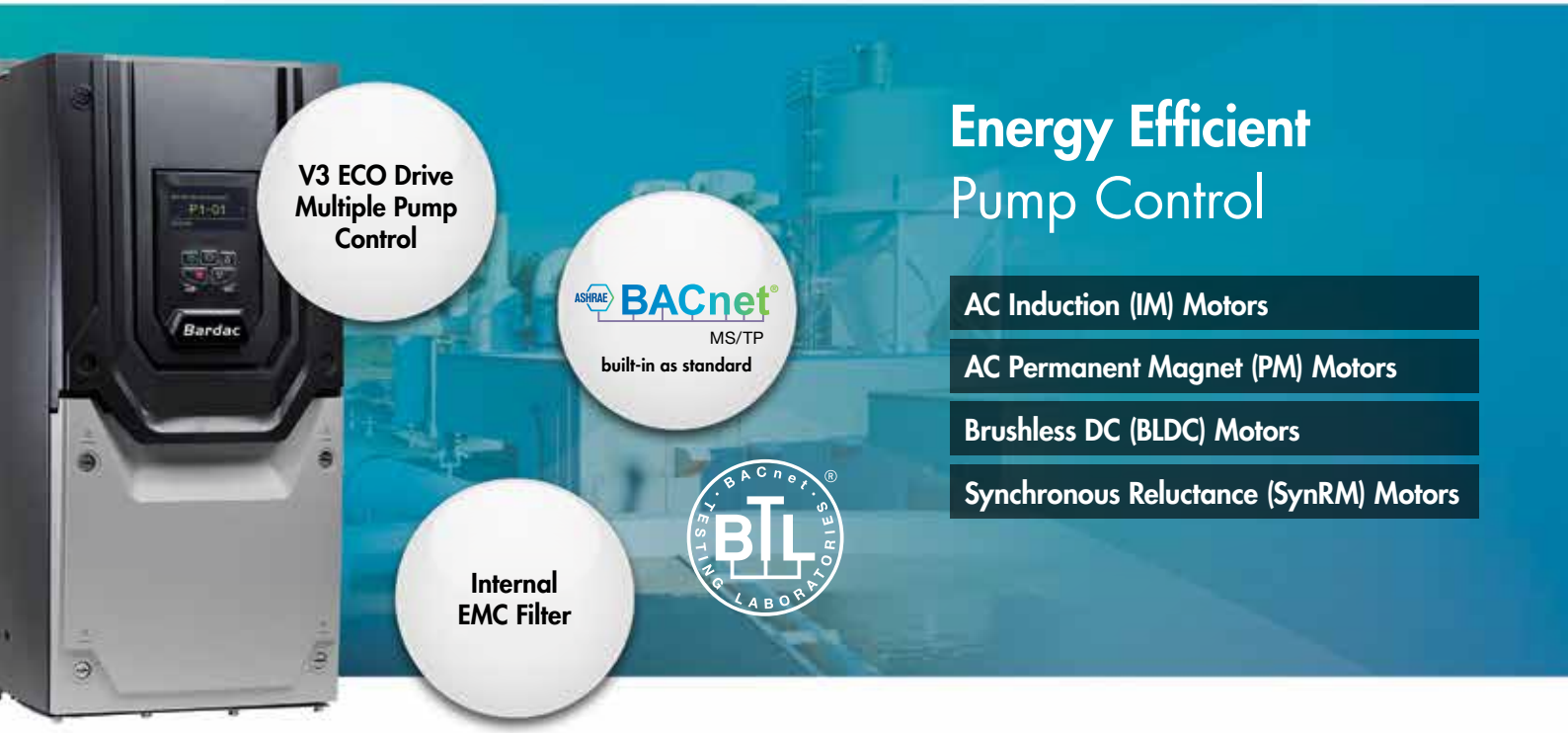
Low Harmonic Design
EN 61000-3-12 Compliant

1HP–350HP / 0.75kW–250kW
200–600V Single & 3 Phase Input

V3 ECO DRIVES

1HP – 350HP / 0.75 – 250kW
200 – 600V Single & 3 Phase Input

AC Variable Speed Drive



Energy Efficient Pumping

When a pump or pump set is selected, it must be suitable for operation during periods of maximum flow demand. In many applications, this maximum flow level may be rarely required, and as such the pump may operate for long periods at less than maximum flow capacity. By varying the speed of the pump to match the actual flow demand, significant energy savings are possible.

V3 ECO drives have been designed to maximize the energy savings potential in pumping applications, while also providing significant additional benefits in reduced installation costs, maintenance costs and downtime. Throughout all this, our "Ease of Use" philosophy ensures that advanced features are simple to commission, without requiring extensive, in depth knowledge of a huge number of parameters. V3 ECO drives have a simple menu structure, and provide just the right amount of parameters to allow flexibility without over complication.

Overall, this provides the perfect balance of Easy to Install, Easy to operate, Advanced Pump Control.

All V3 ECO drives are
***drive.web* ready**

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

Save Energy, Cut CO_2

Save Energy

ECO vector operation, based on Bardac's advanced motor control, provides the most energy efficient operation of the pump, continually optimizing the output to match the required flow with minimum energy consumption.

Advanced sleep & wake functions provide maximum energy savings by switching off the pump when not required

Save Money

V3 ECO drive technology allows simple operation of multiple pump sets without the need for a PLC

Pump blockage detection and cleaning dramatically reduces pump maintenance requirements

***drive.web* functionality** allows bespoke customised applications to be programmed directly in the drive

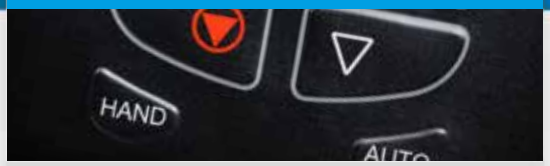
Save Time

Simple parameter set allows fast commissioning of pump control systems

Pump operating curve detection automatically detects and monitors normal pump behaviour and is able to react when pumping conditions change

Customisable OLED display provides excellent visibility of drive status and operation in all conditions

Key Features



ECO Vector Motor Control

Standard Induction Motors

- Permanent Magnet AC Motors
- Brushless DC Motors
- Synchronous Reluctance Motors

Energy Optimized Design

Internal EMC Filter

Low Noise Operation

Maximum Pumping Efficiency

Unique Eco Vector Sensorless Control

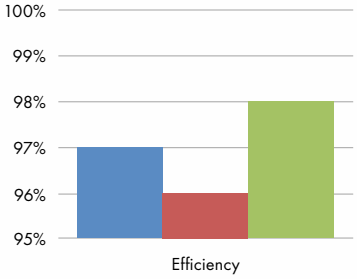
V3 ECO drives use advanced motor control technology, designed to provide the most energy efficient motor control possible. Operation with standard IM Motors, Permanent Magnet or Synchronous Reluctance motors is possible, all without requiring any feedback device or optional modules – simply change parameters to suit the connected motor, autotune and operate!

V3 ECO drives continuously adjust in real time to provide the most efficient operating conditions for the load, typically reducing energy consumption by 2 – 3% compared to standard AC drives – providing similar long term costs savings to selecting a higher efficiency motor.

Energy Optimized Design

V3 ECO drives, up to frame size 5, are designed with film capacitors, replacing the traditional electrolytic capacitors used in the DC link. Film capacitors have lower losses, and also remove the need for AC, DC or swinging chokes, improving overall drive efficiency. Efficiency is improved by up to 4% compared to standard AC drives, while also reducing supply current total harmonic distortion (iTHD), improving the Real Power Factor and reducing total input current, leading to cost savings on installation through reduced cable and fuse ratings and smaller supply transformer rating.

Improved Efficiency, Reduced Lifetime Costs: e.g. for a 37kW load, operating 10 hours per day, 5 days per week, 50 weeks per year, improving the efficiency by just 1% will provide an energy saving > 900kWh per year.



Typical efficiency comparison for V3 ECO drives vs other AC variable speed drives

- Standard AC Variable Speed Drive
- AC Variable Speed Drive + 4% Line Choke
- V3 ECO Drive

V3 ECO DRIVES

V3 ECO Drive Multi-pump Control

Embedded control technology for multi-pump systems

Flexible pump station control
with no PLCs or pump control units

Pump Prime Mode

Pump Prime with Burst Pipe Detection

Pump prime mode allows starting of the pump in a safely controlled manner, to ensure consistent filling and pressurisation of pipe work and systems. Low pressure warnings are ignored during priming to allow the system to prime correctly, while a failsafe timeout prevents the pump from continuing to run in the event of a failure to prime. This helps to prevent the effects of water hammering (such as bursting water pipes) or damage to fountain / sprinkler heads.

The time limit, set for pump prime mode to complete, means that the pressure in the system must reach the minimum level within the set time. Failure of the system to pressurise would indicate a leak or burst pipe within the pump system and result in the V3 ECO drive shutting down the pump. During normal operation the system pressure is still continuously monitored against the minimum level so that a burst pipe during normal operation will likewise result in the drive tripping 'low pressure' and shutting the pump down.

Total Control

A single 'Master' drive acts to control and monitor system operation. Control connections are made to this drive only, saving installation time and reducing costs.

Simple Connection

Additional drives connected on the system require a single RJ45 connection and basic commissioning, leading to time savings and simplified installation.

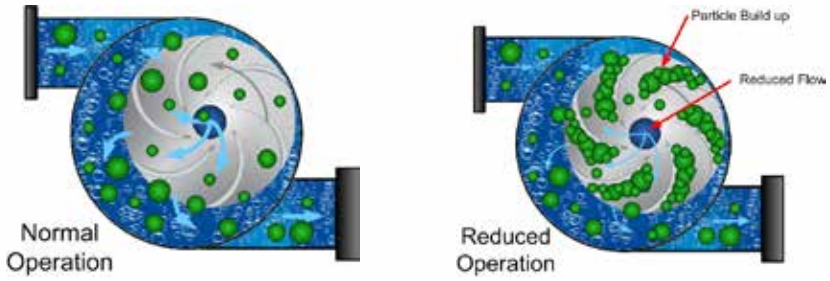
Flexible Solution

The system can operate with up to five pumps in any configuration, e.g. Jockey Pump / Duty / Assist / Standby. Duty pumps are automatically rotated, ensuring maximum service life and system efficiency.

Avoid Pump Downtime

Blockage Detect/Clear

V3 ECO drives can detect pump blockages and trigger a programmed cleaning cycle to automatically clear them, preventing downtime.



Dry Run Protection

V3 ECO drives can evaluate a pump's speed/power and shut it off or warn when the pump starts to run dry, protecting it from heat/friction damage.

Motor Preheat Function

V3 ECO drives feature a motor preheat function to help ensure moisture is not permitted to collect on the motor in periods of inactivity and prior to motor start up. In addition, the motor preheat function can be used to keep condensation from developing on the motor as the motor cools down immediately following a stop. The feature is fully configurable, meaning the pump can be always available the instant it is required.

Pump Stir Cycle

Triggered by a settable period of inactivity, a configurable cleaning cycle can be run to clear sediment, ensuring the pump is ready to run when needed.

Summary

- All drives operate at variable speed for maximum energy efficiency.
- Operating time (Hours Run) is automatically balanced and duty pumps rotated
- Automatic system reconfiguration in the event of a pump fault (including the master pump).
- Continued system operation when drives are individually powered off (including the master drive).
- Communication and +24V control voltage shared between drives via a standard RJ45 patch lead.
- Independent maintenance indicators for each pump.
- Any pump can be switched to Hand operation a the touch of a button, and will automatically rejoin the network when switched back to Auto.
- For waste water applications each pump can be set for blockage/ragging detection and activate an automatic de-ragging/pump cleaning cycle.
- Optional mains isolator with lock-off for safe pump maintenance.

Consistent Flow

The required pressure and flow levels are maintained regardless of how many pumps are required. When demand increases, additional pumps are automatically brought on stream to assist and are switched off again when not required.

Reduced Downtime

In the event of a fault, or if a pump needs to be isolated for maintenance, the system will automatically continue to operate with the remaining available pumps. The mains power can even be completely isolated from the Master drive without affecting operation of the Slave drives.

V3 ECO DRIVES

Drive Features

A compact and robust range of drives dedicated to pump control

Maintenance interval timer and service indication

Internal EMC Filter

Compliant with global EMC Standards

Multi Language OLED Display

Hand / Auto Keypad

Enclosure Options

NEMA 4X with optional mains disconnect

Pluggable terminals

OLED Display

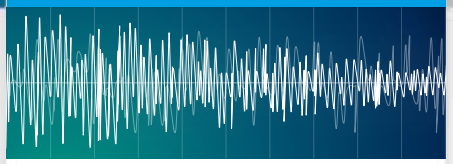
Installed as standard on all NEMA 12 & NEMA 4X models

- Clear multi-line text display
- Operates –10 to 50°C
- Wide viewing angle, effective in dark and light conditions
- Customisable display
- Multi-language selection

Integrated cable management

Long Life, Dual Ball Bearing Fans

Noise Reduction



Quiet Motor Operation

High switching frequency selection (up to 32kHz) ensures motor noise is minimized.

Quiet System Mechanics

Simple skip frequency selection avoids stresses and noise caused by mechanical resonance in pipework.

Quiet Drive Operation

Long Life Dual Ball Bearing Fans provide quiet operation in addition to extended fan life.

Noise Reduction through Speed Control

Optimizing motor speed gives significant energy savings and reduces motor noise.

Reduced Harmonic Current Distortion

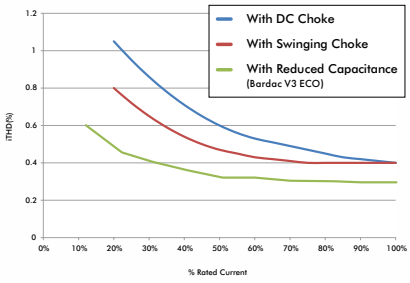
V3 ECO drives use innovative design to improve overall efficiency while minimizing the harmonic distortion levels. All drives designed for 3 phase power supply operation[1] up to frame size 5 utilise film capacitor in the DC link, providing exceptionally low harmonic current distortion without compromising efficiency. Frame size 6 and above include DC chokes and traditional electrolytic capacitors.

The V3 ECO product range complies with the requirements of EN61000-3-12.

Bardac V3 ECO drives deliver:

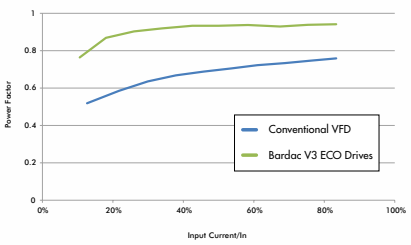
- Improved Efficiency, Reduced Lifetime Costs: e.g. for a 37kW load, operating 10 hours per day, 5 days per week, 50 weeks per year, improving the efficiency by just 1% will provide an energy saving > 900kWh per year
- Improved True Power Factor – No additional charges etc.
- Lower Mains Supply Current

Typical iTHD values at full and part load



It can be clearly seen that the reduced DC link capacitance significantly reduces the total harmonic distortion at full load, and has a much greater benefit at part load compared to a conventional DC choke or swinging choke. This results in reduced overall input current and reduced transformer heating effect.

Power factor comparison



Bardac V3 ECO drives offers improved power factor over conventional VFDs under all loads.

[1] 200V and 400V

V3 ECO DRIVES

drive.web automation

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

smarty

controllers with a wide range of I/O

Used for all programmable control, peer-to-peer Ethernet networking and system integration tasks.

- DIN mount controllers with flexible analog, logic, and encoder I/O
- 16 points of high resolution I/O
- Includes gateway to ModbusTCP/IP, ModbusRTU, EIP/PCCC, etc.
- USB port for easy system-wide programming

speedy

miniature, full-featured controllers

Tiny, full-featured, programmable controllers for embedding into drives, sensors, HMIs, etc.

- The easiest, affordable way to get all your drives & devices up onto peer-to-peer Ethernet
- Includes gateway to ModbusTCP/IP, ModbusRTU, EIP/PCCC, etc.
- USB port for easy system-wide programming

savvy

the smart automation tool

Smart, intuitive graphical tools for device programming, system design, and monitoring.

Also available on PC and iOS devices

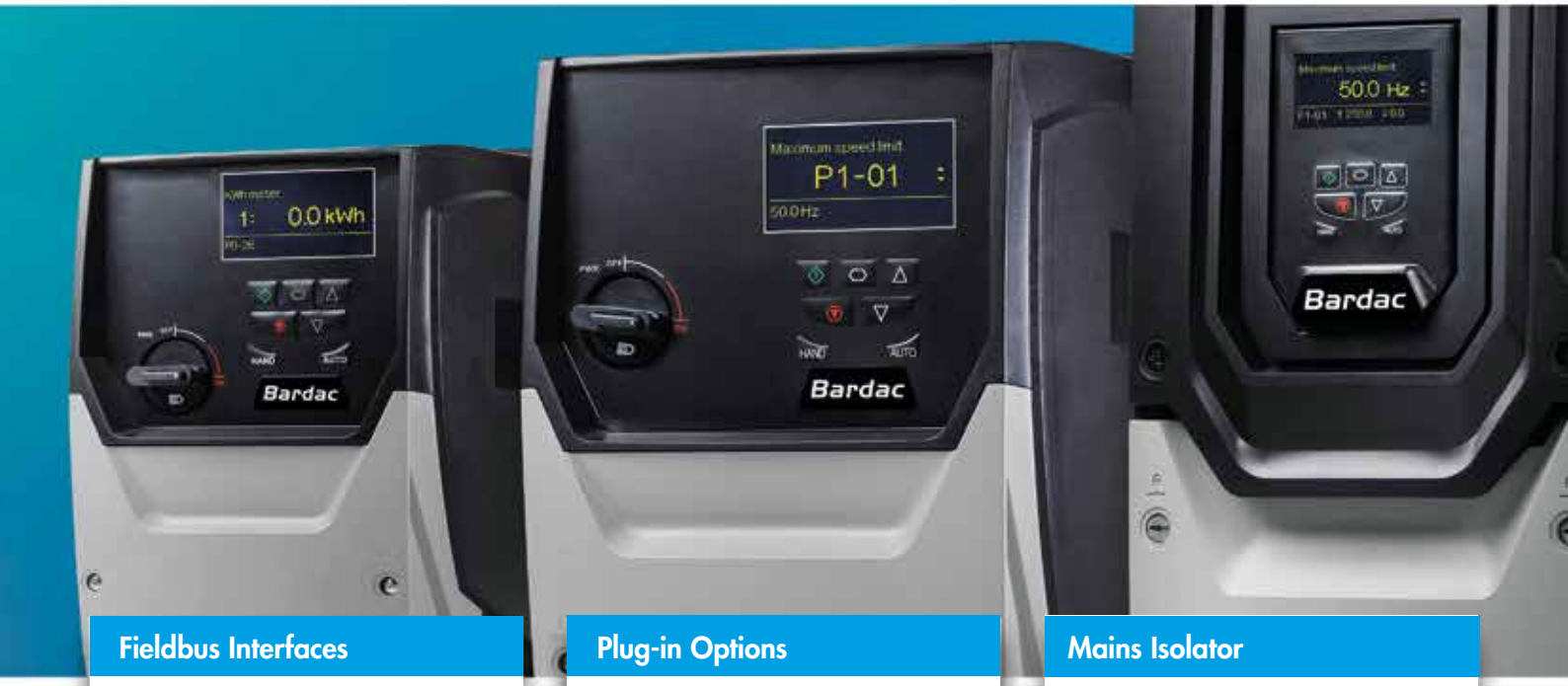
savvyPanel

smart, touch screen operator station technology

Provides unprecedented flexibility in instrumentation, control, and monitoring.

Installation & Peripheral Options

A range of external EMC Filters, Brake Resistors, Input Chokes and Output Filters are available, to suit all installation requirements



Fieldbus Interfaces

BACnet/IP
T2-BNTIP-IN

PROFIBUS DP
T2-PROFB-IN

DeviceNet
T2-DEVNT-IN

EtherNet/IP
T2-ETHNT-IN

Modbus TCP
T2-MODIP-IN

PROFINET
T2-PFNET-IN

EtherCAT
T2-ETCAT-IN

Plug-in Options

Extended I/O

T2-EXTIO-IN

- Additional 3 Digital Inputs
- Additional Relay Output

Cascade Control

T2-CASCD-IN

Additional 3 Relay Outputs

BACnet MS/TP & Modbus RTU on board as standard

Mains Isolator

Mains Isolator Option

Frame Sizes 2 & 3 can be factory ordered with a built in lockable isolator. An optional bolt on isolator is available for Frame Sizes 4 & 5.

Product Codes:

Frame Size 4 = T2-ISOL4-IN
Frame Size 5 = T2-ISOL5-IN

Rapid Commissioning

- Allows rapid copying of parameters between multiple drives
- Backup and restore of drive parameters

T2-STICK-IN

V3 ECO Drives Models & Ratings

200-240V ± 10%, 1-ph in, 230V, 3-ph motor

Model	HP	Amps	Size	NEMA
size 2 - IP20, LED display & EMC Filter:				
V3-220043-1F12-SN	1	4.3	2	IP20
V3-220070-1F12-SN	2	7	2	IP20
V3-220105-1F12-SN	3	10.5	2	IP20
size 2 - NEMA 4X, OLED display & EMC Filter:				
V3-220043-1F1X or D	1	4.3	2	4X
V3-220070-1F1X or D	2	7	2	4X
V3-220105-1F1X or D	3	10.5	2	4X

200-240V ± 10%, 3-ph in, 230V, 3-ph motor

Model	HP	Amps	Size	NEMA
sizes 2 & 3 - IP20, LED display & EMC Filter:				
V3-220043-3F12-SN	1	4.3	2	IP20
V3-220070-3F12-SN	2	7	2	IP20
V3-220105-3F12-SN	3	10.5	2	IP20
V3-320180-3F12-SN	5	18	3	IP20
V3-320240-3F12-SN	7.5	24	3	IP20
sizes 2 & 3 - NEMA 4X, OLED display & EMC Filter:				
V3-220043-3F1X or D	1	4.3	2	4X
V3-220070-3F1X or D	2	7	2	4X
V3-220105-3F1X or D	3	10.5	2	4X
V3-320180-3F1X or D	5	18	3	4X
V3-320240-3F1X or D	7.5	24	3	4X
sizes 4-7 - NEMA 12, OLED display, EMC filter:				
V3-420300-3F1N	10	30	4	12
V3-420460-3F1N	15	46	4	12
V3-520610-3F1N	20	61	5	12
V3-520720-3F1N	25	72	5	12
V3-520900-3F1N	30	90	5	12
V3-621100-3F1N	40	110	6	12
V3-621500-3F1N	50	150	6	12
V3-621800-3F1N	60	180	6	12
V3-722020-3F1N	75	202	7	12
V3-722480-3F1N	100	248	7	12

380-480V ± 10%, 3-ph in, 460V, 3-ph motor

Model	HP	Amps	Size	NEMA
sizes 2 & 3 - IP20, LED display & EMC Filter:				
V3-240022-3F12-SN	1	2.2	2	IP20
V3-240041-3F12-SN	2	4.1	2	IP20
V3-240058-3F12-SN	3	5.8	2	IP20
V3-240095-3F12-SN	5	9.5	2	IP20
V3-340140-3F12-SN	7.5	14	3	IP20
V3-340180-3F12-SN	10	18	3	IP20
V3-340240-3F12-SN	15	24	3	IP20
sizes 2 & 3 - NEMA 4X, OLED display & EMC Filter:				
V3-240022-3F1X or D	1	2.2	2	4X
V3-240041-3F1X or D	2	4.1	2	4X
V3-240058-3F1X or D	3	5.8	2	4X
V3-240095-3F1X or D	5	9.5	2	4X
V3-340140-3F1X or D	7.5	14	3	4X
V3-340180-3F1X or D	10	18	3	4X
V3-340240-3F1X or D	15	24	3	4X
sizes 4-7 - NEMA 12, OLED display & EMC filter:				
V3-440300-3F1N	20	30	4	12
V3-440390-3F1N	25	39	4	12
V3-440460-3F1N	30	46	4	12
V3-540610-3F1N	40	61	5	12
V3-540720-3F1N	50	72	5	12
V3-540900-3F1N	60	90	5	12
V3-641100-3F1N	75	110	6	12
V3-641500-3F1N	120	150	6	12
V3-641800-3F1N	150	180	6	12
V3-642020-3F1N	175	202	6	12
V3-742400-3F1N	200	240	7	12
V3-743020-3F1N	250	302	7	12
size 8 IP20, OLED display & EMC Filter (not UL)				
V3-843700-3F12-TN	300	370	8	IP20
V3-844500-3F12-TN	350	450	8	IP20

600 Volts Drives

500-600V ± 10%, 3-ph in
500-600V, 3-ph motor

Model	HP	Amps	Size	NEMA
IP20 with LED display				
V3-260021-3012-SN	1	2.1	2	IP20
V3-260031-3012-SN	2	3.1	2	IP20
V3-260041-3012-SN	3	4.1	2	IP20
V3-260065-3012-SN	5	6.5	2	IP20
V3-260090-3012-SN	7.5	9	2	IP20
V3-360120-3012-SN	10	12	3	IP20
V3-360170-3012-SN	15	17	3	IP20
V3-360220-3012-SN	20	22	3	IP20
NEMA 4X (IP66), with OLED text display				
Unswitched				
V3-260021-301X-TN	1	2.1	2	4X
V3-260031-301X-TN	2	3.1	2	4X
V3-260041-301X-TN	3	4.1	2	4X
V3-260065-301X-TN	5	6.5	2	4X
V3-260090-301X-TN	7.5	9	2	4X
V3-360120-301X-TN	10	12	3	4X
V3-360170-301X-TN	15	17	3	4X
w/Disconnect				
V3-260021-301D-TN	1	2.1	2	4X
V3-260031-301D-TN	2	3.1	2	4X
V3-260041-301D-TN	3	4.1	2	4X
V3-260065-301D-TN	5	6.5	2	4X
V3-260090-301D-TN	7.5	9	2	4X
V3-360120-301D-TN	10	12	3	4X
V3-360170-301D-TN	15	17	3	4X
NEMA 12 (IP55) with OLED text display				
V3-460220-301N-TN	20	22	4	12
V3-460280-301N-TN	25	28	4	12
V3-460340-301N-TN	30	34	4	12
V3-460430-301N-TN	40	43	4	12
V3-560540-301N-TN	50	54	5	12
V3-560650-301N-TN	60	65	5	12
V3-660780-301N-TN	75	78	6	12
V3-661050-301N-TN	100	105	6	12
V3-661300-301N-TN	125	130	6	12
V3-661500-301N-TN	150	150	6	12

Size 2 & 3 drives model number suffix X or D
X = No disconnect switch D = With power disconnect switch

speedy on board
Ethernet networking
USB programming
smart automation

Drive Specification

Input Ratings	Supply Voltage	200 – 240V ± 10% 380 – 480V ± 10% 500 – 600V ± 10%
	Supply Frequency	48 – 62Hz
	Displacement Power Factor	> 0.98
	Phase Imbalance	3% Maximum allowed
	Inrush Current	< rated current
	Power Cycles	120 per hour maximum, evenly spaced
Output Ratings	Output Power	230V 1Ph. Input: 1–3HP (0.75–2.2kW) 230V 3Ph. Input: 1–100HP (0.75–75kW) 400V 3Ph. Input: 0.75–250kW 460V 3Ph. Input: 1–350HP 575V 3Ph. Input: 1–150HP (0.75–110kW)
	Overload Capacity	110% for 60 seconds 165% for 4 seconds
	Output Frequency	0 – 250Hz, 0.1Hz resolution
	Typical Efficiency	> 98%
Ambient Conditions	Temperature	Storage: –40 to 60°C Operating: –10 to 50°C
	Altitude	Up to 1000m ASL without derating Up to 2000m maximum UL approved Up to 4000m maximum (non UL)
	Humidity	95% Max, non condensing
	Vibration	Conforms to EN61800-5-1 2007, IEC 60068-2-6
Enclosure	Ingress Protection	IP20, NEMA 12 (IP55), NEMA 4X (IP66)
Programming	Keypad	Built-in keypad as standard Optional remote mountable keypad
	Display	Built-in multi language OLED (NEMA 12 & 4X) 7 Segment LED (IP20)
Control Specification	Control Method	ECO Sensorless Vector Open Loop Permanent Magnet Vector Open Loop BLDC Vector Open Loop Synchronous Reluctance Vector
	PWM Frequency	4 – 32kHz Effective
	Stopping Mode	Ramp to stop: User Adjustable 0.1–600 secs Coast to stop
	Braking	AC Flux Braking
	Skip Frequency	Single point, user adjustable
	Setpoint Control	Analog Signal: 0 to 10 Volts / 10 to 0 Volts –10 Volts to +10 Volts 0 to 20mA / 20 to 0mA 4 to 20mA / 20 to 4mA
		Digital: Motorised Potentiometer (Keypad) Modbus RTU BACnet MS/TP
Fieldbus Connectivity	Built-in	BACnet MS/TP: BACnet Application Specific Controller 9.6 - 76.8 kbps selectable Data Format: 8N1, 8N2, 8O1, 8E1
		Modbus RTU: 9.6 - 115.2 kbps selectable Data Format: 8N1, 8N2, 8O1, 8E1
	Optional	BACnet/IP: Plug-in BACnet/IP interface Dual LAN ports Device Level Ring
		Other: PROFIBUS DP (DPV1) PROFINET IO DeviceNet EtherNet/IP EtherCAT Modbus TCP

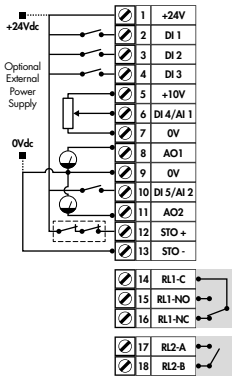
I/O Specification	Power Supply	24 Volt DC, 100mA, Short Circuit Protected 10 Volt DC, 10mA for Potentiometer
	Programmable Inputs	5 Total as standard (optional additional 3) 3 Digital (optional additional 3) 2 Analog / Digital selectable
	Digital Inputs	Opto - Isolated 8 – 30 Volt DC, internal or external supply Response time < 4ms
	Analog Inputs	Resolution: 12 bits Response time: < 4ms Accuracy: < 1% full scale Parameter adjustable scaling and offset
	PTC Input	Motor PTC / Thermistor Input Trip Level : 3kΩ
	Programmable Outputs	2 Total 1 Analog / Digital 1 Relay
	Relay Outputs	Maximum Voltage: 250 VAC, 30 VDC Switching Current Capacity: 5A
	Analog Outputs	0 to 10 Volts / 10 to 0 Volts 0 to 20mA / 20 to 0mA 4 to 20mA / 20 to 4mA
Application Features	PID Control	Internal PID Controller Multi-setpoint Select Standby / Sleep Mode Boost Function
	Fire Mode	Bidirectional Selectable Speed Setpoint (Fixed / PID / Analog / Fieldbus)
	Load Monitoring	High Current Protection (Fan / Bump Blocked) Low Current Protection (Broken Belt / Shaft) Pump Blockage Detection with Cleaning
	Duty / Assist / Standby	Built-in Multi-Pump Support Autotmatic Changeover on Fault Automatic Changeover on Time Fully Redundant
Pump Control Features	Pump Blockage Detection	Pump load monitoring with autotune function, user configurable
	Pump Cleaning	Adjustable Bi-directional Pump Cleaning Cycle operation
	Multi-Pump Control	Control of fixed speed assist pumps (with cascade control module) Control of Duty, Assist and Standby variable speed pumps via internal Master – Slave network
	Pump Stir	Automatic pump stir to prevent sediment build-up
Maintenance & Diagnostics	Fault Memory	Last 4 Trips stored with time stamp
	Data Logging	Logging of data prior to trip for diagnostic purposes : Output Current Drive Temperature DC Bus Voltage
	Maintenance Indicator	Maintenance Indicator with user adjustable maintenance interval Onboard service life monitoring
	Monitoring	Hours Run Meter Resettable & Non-Resettable kWh meters Cooling Fan Run Time
Standards Compliance	Low Voltage Directive	2014/35/EU
	EMC Directive	2014/30/EU
	Additional Conformance	UL, cUL, EAC, RCM
	Harmonic Currents	IEC61000-3-12
	Environmental Conditions	Designed to meet IEC 60721-3-3, in operation: IP20 Drives: 3S2/3C2 NEMA 12 & NEMA 4X Drives: 3S3/3C3

Model Code Guide

V3-340140-3F1#-#N

- Product Family
- Generation
- Frame Size
- Voltage Code: 200–240V = 2 | 380–480V = 4 | 480–525V = 5 | 500–600V = 6
- Output Rating
- Supply Phases
- EMC Filter: No Internal EMC Filter = 0 | Internal EMC Filter = F
- Brake Transistor: No Brake Transistor = 1
- Enclosure: IP20 = 2 | NEMA 12 (IP55) = N | NEMA 4X (IP66) Non-switched = X | NEMA 4X (IP66) with Isolator = D
- Display: 7 Segment LED = S | OLED = T
- PCB Coating: Standard Coating = N

Connection Diagram



Function	Default Setting
24 Volt DC Output, 100mA max / 24 Volt DC Input	
Digital Input 1	Drive Enable
Digital Input 2	Analog/Preset Speed 1 Select
Digital Input 3	Local/Remote Reference Select
+10 Volt Power Supply 5mA	
Analog Input 1	Local Speed Reference
0 Volt	
Analog Output 1	Motor Speed
0 Volt	
Analog Input 2	Remote Speed Reference
Analog Output 2	Motor Current
Safe Torque Off Input	
Safe Torque Off Input	
Output Relay 1	Drive Healthy / Fault
Output Relay 2	Drive Running

NOT TO SCALE

	Size	IP20					NEMA 4X / IP66		NEMA 12 / IP55			
		2	3	4	5	8	2	3	4	5	6	7
in / mm	Height	8.7" / 221	10.3" / 261	16.5" / 418	19.2" / 486	39.2" / 995	10.2" / 257	12.2" / 310	17.3" / 450	21.3" / 540	34.1" / 865	50.4" / 1280
in / mm	Width	4.4" / 110	5.2" / 131	6.3" / 160	8.8" / 222	19.0" / 482	7.4" / 188	8.3" / 211	6.8" / 171	9.3" / 235	13.0" / 330	13.0" / 330
in / mm	Depth	7.3" / 185	8.1" / 205	9.5" / 240	10.3" / 260	18.9" / 480	9.5" / 239	10.5" / 266	10.0" / 252	10.7" / 270	13.0" / 330	14.2" / 360
lb / kg	Weight	4.0 / 1.8	7.7 / 3.5	17.6 / 8.1	37.5 / 17	282.2 / 128	10.6 / 4.8	16.8 / 7.7	25.4 / 11.5	50.7 / 23	121.2 / 55	196.2 / 89

Bardac drives

(410) 604-3400

V3 ECO Drives

✓ Saving Energy / Reducing CO_2

With large scale increases in global energy costs and the introduction of taxes and legislation relating to the industrial production of CO_2 gases the need to reduce energy consumption and save money has never been greater. V3 ECO drives can be used with environmental sensors to reduce pump speed in pumping applications without compromising the required output of the system.

✓ Easy Installation

Compact and modern design utilizing the latest available technology have accumulated in robust V3 ECO drives with small dimensions and innovative mounting and cabling features.

✓ Simple Set-up & Rapid Commissioning

V3 ECO drives were developed from concept for ease of use. A handful of parameters configure the drive for basic pump applications. A short, concise product data means the drive is running in seconds. Advanced powerful functionality is equally easily accessible.

✓ Imaginative Enclosure Design

With a selection of NEMA 12 and NEMA 4X enclosures, V3 ECO drives are well suited to harsh environments, or where cabinet and cabling costs need to be reduced.

✓ Advanced Pump Control Functions

The key pump control functionality required for your application is built into V3 ECO drives and packaged to be both quick and simple to activate.

✓ Options for Flexibility

V3 ECO drives combine both peripheral and factory built options to ensure you get the right drive, scaled to suit your application. With inbuilt BACnet and Modbus, and a host of communication options, V3 ECO drives can integrate easily into your industrial network of choice.

Since our founding in 1992, Bardac has worked hard to build our reputation around key goals:

- Innovative technologies
- Reliable products
- Focus on automation; Distributed Control, AC Drives, DC Drives, and Motors
- All catalog items normally in stock
- Competitive pricing
- Unrelenting customer support

Global Pump Solutions

Bardac drives operate at the heart of pumping systems around the world

IRELAND
Maintaining pressure at pumping stations

HOLLAND
Hot water pumping across district network

ITALY
Cooling loop flow & temperature control

AUSTRALIA
Improved reliability & running costs

bardac.com

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Bardac drives
40 Log Canoe Circle
Stevensville, MD 21666
bardac.com

Tel: (410) 604-3400
Fax: (410) 604-3500
Email: info@bardac.com