



**Built to withstand harsh environments, an outdoor-rated enclosure and standard 1000-foot motor cable runs mean the drive provides maximum mounting flexibility**

**The Perfect solution for demanding applications, such as:**

- Lift stations
- Pump stations
- Irrigation
- Other outdoor applications

Neptune-Benson's Variable Frequency Drive (VFD) is suitable for outdoor or indoor installations that require protection against windblown dust and rain or splashing water, IP66-rated variable frequency drives can be installed directly at the equipment location without a protective enclosure. All cast aluminum parts are powder coated with a durable epoxy that can stand up to most corrosive chemicals.

Features	Benefits
<ul style="list-style-type: none"> <li>• All cast aluminum parts are powder coated with a durable epoxy coating</li> </ul>	<ul style="list-style-type: none"> <li>• No need for separate cover or enclosure*</li> </ul>
<ul style="list-style-type: none"> <li>• Conformal coated circuit boards</li> </ul>	<ul style="list-style-type: none"> <li>• Additional protection in corrosive environments</li> </ul>
<ul style="list-style-type: none"> <li>• All stainless steel screws</li> <li>• Fan designed to withstand corrosion</li> </ul>	<ul style="list-style-type: none"> <li>• Improved corrosion resistance</li> <li>• Reliable operation</li> </ul>
<ul style="list-style-type: none"> <li>• Installed near the motor or blower</li> <li>• 1000' motor cable runs (unshielded)</li> </ul>	<ul style="list-style-type: none"> <li>• Facilitates modular plant design</li> <li>• Short motor cables reduce EMI/RFI</li> </ul>

Reliable	Maximum uptime
<ul style="list-style-type: none"> <li>• Robust, single enclosure</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced cost and maintenance</li> </ul>
<ul style="list-style-type: none"> <li>• Unique cooling concept with no ambient air flow through electronics housing</li> </ul>	<ul style="list-style-type: none"> <li>• Additional protection in corrosive environments</li> </ul>
<ul style="list-style-type: none"> <li>• Maximum ambient temp. 50° C without derating</li> </ul>	<ul style="list-style-type: none"> <li>• Reliable operation in harsh environments</li> </ul>
<ul style="list-style-type: none"> <li>• Installed near the motor or blower</li> <li>• 1000' motor cable runs (unshielded)</li> </ul>	<ul style="list-style-type: none"> <li>• No external cooling or over sizing necessary</li> </ul>

User friendly	Simplified operation and lower costs
<ul style="list-style-type: none"> <li>• Award-winning LCP keypad design</li> <li>• Easy installation</li> </ul>	<ul style="list-style-type: none"> <li>• Reduced space requirements and commissioning time</li> <li>• Lower start up costs</li> </ul>
<ul style="list-style-type: none"> <li>• Watertight USB plug can be mounted in the bottom of the drive</li> </ul>	<ul style="list-style-type: none"> <li>• The drive enclosure can remain closed while making setup or programming changes</li> </ul>

\* For outdoor installations: The drive must be installed under a suitable cover to protect from direct exposure to sun, snow and ice.

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### Stainless steel back plate

For panel or wall mounting, a stainless steel back plate is available to direct the air from the fan through the rear heatsink.



### Watertight USB plug

A USB plug can be mounted in the bottom of the enclosure, allowing the drive to stay closed while making setup or programming changes using MCT 10 Setup software.

### PC software tools

- **MCT 10** – ideal for starting up and servicing the drive
- **MCT 31** – harmonics calculations tool

Mains supply (L1, L2, L3)	
Supply voltage	200-240V +- 10%, 380-480V +-10%, 525-690V +-10%
Supply frequency	50/60 Hz
Displacement Power Factor	(>0.98)
Switching on input supply L1, L2, L3	1-2 times/min.
Output data (U, V, W)	
Output voltage	0-100% of supply
Switching on output	Unlimited
Ramp times	1-3600 sec.
Closed Loop	0-132 Hz
Digital Inputs/outputs	
Programmable digital inputs (std)	6 (two can be used as digital outputs)
General purpose I/O card (option)	Additional 3 digital inputs, 2 digital outputs
Logic	PNP or NPN
Voltage level	0-24 VDC
Digital Inputs/outputs	
Analog inputs (standard)	2
General purpose I/O card (option)	2 additional analog inputs
Advanced analog I/O card (option)	3 additional analog inputs
Modes	Voltage or current
Voltage level	-10 to +10V (scaleable)
Current level	0/4 to 20mA (scaleable)
Pulse Inputs	
Programmable pulse inputs (std)	2 (two digital inputs can be used as pulse inputs)
Voltage level	0-24VDC (PNP positive logic)
Pulse input accuracy	(0.1 - 110kHz)
Analog Inputs	
Programmable analog outputs (std)	1
General purpose I/O card (option)	1 additional analog current output
Advanced analog I/O (option)*	3 additional analog outputs
Current range at analog output	0/4 - 20 mA
Analog outputs	
Programmable relay outputs (std)	2 (240VAC, 2A and 400VAC, 2A)
Relay card (option)	3 additional dry contact relays (240VAC, Form C)
Voltage level	0-24VDC (PNP positive logic)
Pulse input accuracy	(0.1 – 110kHz)
External DC supply	
External 24V DC supply card (option)	Provides backup power for control and option cards
Fieldbus communication	
FC Protocol and Modbus RTU build in (LonWorks, DeviceNet, Profibus modules optional)	
Ambient Temperature	
50°C	

\*Advanced analog I/O option card also provides 24V DC backup power for the drive's real-time clock

### Electro-Mechanical Bypass (EMB)

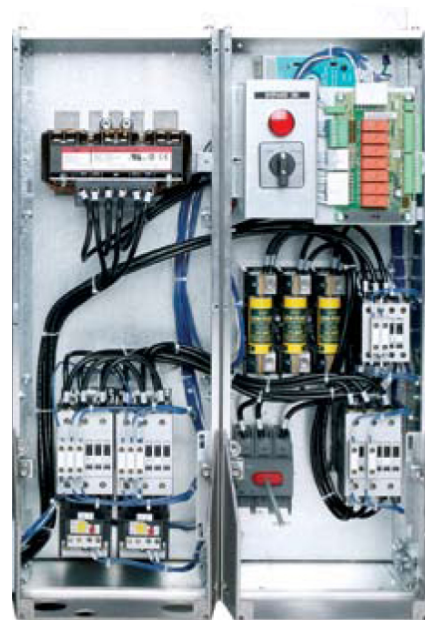
For users who prefer the traditional bypass control methods of relay logic and selector switches, we offer a standard drive and bypass package.

#### Door Mounted Operators

- Drive-Off Bypass selector
- Bypass pilot light indication
- Test selection added with three contactor bypass units

#### 24 VDC Switch Mode Power Supply

- Operates off any two of the three input phases
- Continued drive operation at a reduced load when any input phase is lost
- Eliminates contactor dropout on voltage conditions as low as 70% of nominal voltage
- Eliminates the need for an under voltage relay



### Traditional Doesn't Have to be Featureless

- The same flexible power configurations as the ECB
- Common start/stop available
- Run permissive available
- Automatic bypass with adjustable time delay is available
- Class 20 overload

Frame Sizing Chart

NEMA 12/IP55 Frame Size	Height		Width		Depth		200-240V = HP	380-480V = HP	575V = HP
	In	mm	In	mm	In	mm			
A5	18.86	479.0	19.18	487.3	10.3	261.6	5	5, 7.5 & 10	5, 7.5 & 10
B1	21.48	545.5	19.09	485.0	12.86	326.7	7.5, 10 & 15	15, 20 & 25	15, 20 & 25
B2	28.17	715.5	19.09	485.0	12.81	325.4	20	30 & 40	30, 40 & 50
C1	29.94	760.6	24.37	618.9	14.87	377.7	25, 35 & 40	50, 60 & 75	60 & 75
C2	33.49	850.6	29.24	742.6	16.22	412.0	50 & 60	-	-