

# The Next Generation D-frame VLT® Drive

Improved performance in applications between 90-315 kW



**Note:** The new D1h Frame VLT® drive takes up significantly less space than the older version.

Customers today increasingly demand high efficiency in drive technology. Investments in improved efficiency quickly pay off, especially at higher power levels. Now, one of the most efficient drives in the industry has been made even more efficient.

The size of the new D-frame has been reduced by up to 68% to take up less space in control rooms and panels. The new IP 20 version is optimized for panel building, while providing a higher degree of safety for operators. All of the new D-frame drives will continue to use the proven back-channel cooling concept. Back-channel cooling now directs 90% (increased from 85%) of cooling air away from the drive interior and removes 90% of the heat generated by the drive.

The compact, efficient design is the result of innovative thermal manage-

ment. The new D-frame VLT® requires less panel or wall space than previous models which are already some of the smallest in their class, adding flexibility while reducing installation costs. The new D-frame is available in the same platforms as Danfoss' renowned VLT® drives.

- FC 302 AutomationDrive for demanding industrial applications
- FC 202 AQUA Drive for use in water and wastewater applications (and other pump applications)
- FC 102 HVAC Drive for application in the HVAC and refrigeration industries

Available in IP 20, IP 21 and IP 54 enclosures, the new drives maintain the same award winning control platform and LCP as existing Danfoss VLT®s.

Up to 68%

smaller footprint provides ease of installation and lower material costs. New features increase efficiency and reduce operation costs.

Feature	Benefit
Reduced size	Reduced in size by up to 68%. The smaller new D-Frame drive uses less panel space or wall space, saving valuable space and money.
Higher Efficiency	Higher efficiency results in lower operating cost, over the life of the frequency converter.
Basic input options <ul style="list-style-type: none"> <li>- Fuses</li> <li>- Mains disconnect</li> <li>- Contactor (new)</li> <li>- Circuit breaker (new)</li> <li>- Mains disconnect + contactor (new)</li> </ul>	Eliminates the need for a panel when only the basic input options are required, for further cost savings and reduced space requirements.
Standard VLT® control platform and LCP	There are no new controls to learn. The transition from the old drive to the new drive can be made easily.
IP 20 enclosure rating for drives being installed into panels	IP 20 design enhances safety
Optional heat sink access panel	Enables the heat-sink to be cleaned when installed in harsh environments
Back-channel cooling permits up to 90% of cooling air to be removed from room	Reduces the needed air conditioning for the room, reducing up-front cost and operating expenses
230 V Anti-condensation Heater (new option in a D-frame)	Preventing condensation in the drive reduces the need to heat the control room.

**Power Ratings (at 400 V)**

**FC 302**

90 kW – 250 kW, 380 – 500 (T5)

**FC 202**

110 kW – 315 kW, 380 – 480 (T4)

**FC 102**

110 kW – 315 kW, 380 – 480 (T4)

**Power Ratings (at 690 V):**

**FC 302**

90 kW – 315 kW (T7)

**FC 202**

110 kW – 400 kW (T7)

**FC 102**

110 kW – 400 kW (T7)

**Back-channel cooling**

A unique ducted back-channel passes cooling air over heat sinks with minimal air passing through the electronics area. There is an IP 54 seal between the back-channel cooling duct and the electronics area of the VLT® drive. This allows 90% of the heat losses to be exhausted directly outside of the enclosure, improving reliability and prolonging life by dramatically reducing temperature rise and contamination of the electronic components.



**Power Ratings (400 V)**

Model	FC 302 High overload		Model	FC 102/202 Normal overload		Frame	With brake or disconnect	With contactor or circuit breaker
	Typical shaft output (kW)	Output current (Amps)		Typical shaft output (kW)	Output current (Amps)			
FC302N90KT5	90	177	FC102N110T4 FC202N110T4	110	212	D1h/ D3h	D5h	D6h
FC302N110T5	110	212	FC102N132T4 FC202N132T4	132	260			
FC302N132T5	132	260	FC102N160T4 FC202N160T4	160	315			
FC302N160T5	160	315	FC102N200T4 FC202N200T4	200	395	D2h/ D4h	D7h	D8h
FC302N200T5	200	395	FC102N250T4 FC202N250T4	250	480			
FC302N250T5	250	480	FC102N315T4 FC202N315T4	315	588			

**Power Ratings (690 V)**

Model	FC 302 High overload		Model	FC 102/202 Normal overload		Frame	With brake or disconnect	With contactor or circuit breaker
	Typical shaft output (kW)	Output current (Amps)		Typical shaft output (kW)	Output current (Amps)			
FC302N55KT7	55	73	FC102N75KT7 FC202N75KT7	75	86	D1h/ D3h	D5h	D6h
FC302N75KT7	75	86	FC102N90KT7 FC202N90KT7	90	108			
FC302N90KT7	90	108	FC102N110T7 FC202N110T7	110	131			
FC302N110T7	110	131	FC102N132T7 FC202N132T7	132	155			
FC302N132T7	132	155	FC102N160T7 FC202N160T7	160	192			
FC302N160T7	160	192	FC102N200T7 FC202N200T7	200	242	D2h/ D4h	D7h	D8h
FC302N200T7	200	242	FC102N250T7 FC202N250T7	250	290			
FC302N250T7	250	290	FC102N315T7 FC202N315T7	315	344			
FC302N315T7	315	344	FC102N400T7 FC202N400T7	400	400			

**Cabinet sizes**

Enclosure	IP 21/IP 54 (NEMA 1/NEMA 12)		IP 20 (Chassis)		IP 21/IP 54 (NEMA 1/NEMA 12)			
	D1h	D2h	D3h	D4h	D5h	D6h	D7h	D8h
Frame								
Width mm (inch)	325 (13)	420 (17)	250 (10)	350 (14)	325 (13)	325 (13)	420 (17)	420 (17)
Height mm (inch)	901 (35)	1107 (44)	909 (36)	1122 (44)	1324 (52)	1665 (66)	1978 (90)	2284 (88)
Depth mm (inch)	378 (15)	378 (15)	375 (15)	375 (15)	381 (15)	381 (15)	384 (15)	402 (16)