Danfoss VLT® Soft Starter
The single speed drive

3–1600 A
For any soft start situation

VLT® Soft Starters cover the full range – from simple start-stop operation to high end performance.

www.danfoss.com/drives
Soft starts:
Protect gear, goods, equipment and the environment

An AC motor switched directly on to the mains power supply will struggle to reach its nominal speed as quickly as possible.

This draws maximum current from the power supply and accelerates the application with its maximum torque. Depending on the application, this can cause different problems.

Applications like pumps, conveyers, centrifuges and bandsaws must be started slowly, and sometimes stopped slowly, to prevent mechanical shocks such as water hammer, and strains on bands, couplings and shafts.

**Principle of Phase Angle Control**
A soft starter is an electronic device that regulates the voltage to the motor and this provides a smooth transition from standstill to full speed operation of the application.

VLT® Soft Starters all use the principle of phase angle control: Back-to-back coupled thyristors ramp up the motor voltage.

In some VLT® Soft Starters, current transformers measure the motor current, providing feedback for starting current control but also for numerous motor and application protection functions.

**VLT® Soft Starters cover a comprehensive range**
Soft starting and stopping can be controlled in a number of ways depending on the application. Some applications require non-linear voltage ramp-up and the voltage ramp is therefore related to the actual current drawn. Conversely, a band-saw usually requires a quick stop function provided by a DC brake.

Then again, a number of applications require a kick-start torque for an instantaneous period of time followed by a soft ramp-up acceleration.

VLT® Soft Starters cover all of these applications and much more.
<table>
<thead>
<tr>
<th>VLT® Soft Starter MCD 500</th>
<th>VLT® Compact Starter MCD 200</th>
<th>VLT® Soft Starter MCD 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>Fully featured Soft Starter for motors up to 850 kW</td>
<td>Compact Soft Starter for motors up to 110 kW</td>
<td>Micro Soft Start controller for motors up to 11 kW</td>
</tr>
<tr>
<td>Total motor starting solution</td>
<td>Voltage ramps, current limit start and integrated motor protection</td>
<td>Extremely robust SCR design with heavy ratings as standard</td>
</tr>
<tr>
<td>Advanced protection features</td>
<td>Integral bypass design reduces heat dissipation</td>
<td>Unlimited number of starts per hour</td>
</tr>
<tr>
<td>Adaptive Acceleration Control</td>
<td>Wide power range with advanced accessory modules</td>
<td>Contactor style design for easy selection, installation and commissioning</td>
</tr>
<tr>
<td>Inside Delta connection</td>
<td></td>
<td></td>
</tr>
<tr>
<td>4 line graphical display</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Multiple programming setup menus</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
VLT® Soft Starter MCD 500

VLT® Soft Starter MCD 500 is a total motor starting solution. Current transformers measure motor current and provide feedback for controlled motor ramp profiles.

AAC, the Adaptive Acceleration Control, automatically employs the best starting and stopping profile for the application. Adaptive Acceleration Control means that for each start and stop, the soft starter compares and adapts the process to the chosen profile best suited to the application.

The VLT® Soft Starter MCD 500 has a four-line graphical display and a logic keypad making programming easy. Advanced setup is possible displaying operational status.

Three menu systems: Quick Menu, Application Setup and Main Menu provide optimum programming approach.

The perfect solution, also for more severe applications:
- Pumps
- Conveyors
- Fans
- Mixers
- Compressors
- Centrifuges
- Mills
- Saws
- And many more

Power range
21 – 1600 A, 7.5 – 850 kW (1.2 MW inside Delta Connection)
Versions for 200 – 690 VAC

<table>
<thead>
<tr>
<th>Features</th>
<th>Benefits</th>
</tr>
</thead>
<tbody>
<tr>
<td>User friendly</td>
<td></td>
</tr>
<tr>
<td>AAC Adaptive Acceleration Control</td>
<td>– Automatically adapts to the chosen starting and stopping profile</td>
</tr>
<tr>
<td>Adjustable bus bars allow for both top and</td>
<td>– Space saving, less cable cost and easy retrofitting</td>
</tr>
<tr>
<td>bottom entry (360 – 1600 A, 160 – 850 kW)</td>
<td></td>
</tr>
<tr>
<td>DC injection braking distributed evenly</td>
<td>– Less installation cost and less stress on the motor</td>
</tr>
<tr>
<td>over three phases</td>
<td></td>
</tr>
<tr>
<td>Inside Delta (6-wire connection)</td>
<td>– Smaller soft starter can be selected for the application</td>
</tr>
<tr>
<td>Log menus, 99 events and trip log provide</td>
<td>– Eases analysis of the application</td>
</tr>
<tr>
<td>information on events, trips and performance</td>
<td></td>
</tr>
<tr>
<td>Auto Reset</td>
<td>– Less down-time</td>
</tr>
<tr>
<td>Jog (slow-speed operation)</td>
<td>– Application flexibility</td>
</tr>
<tr>
<td>Second-order thermal model</td>
<td>– Allows motors to be used to their full potential without damage from</td>
</tr>
<tr>
<td></td>
<td>– overloading</td>
</tr>
<tr>
<td>Internal bypass contactors</td>
<td>– Save space and wiring compared to external bypass</td>
</tr>
<tr>
<td>(21 – 215 A, 7.5 – 110 kW)</td>
<td>– Very little heat dissipates when running. Eliminates costly external</td>
</tr>
<tr>
<td></td>
<td>– fans, wiring or bypass contactors</td>
</tr>
<tr>
<td>Auto-start/stop clock</td>
<td>– Application flexibility</td>
</tr>
<tr>
<td>Compact size – amongst the smallest in their class</td>
<td>– Saves space in cabinets and other application setups</td>
</tr>
<tr>
<td>4-line graphical display</td>
<td>– Optimum programming approach and setup for viewing operational status</td>
</tr>
<tr>
<td>Multiple programming setup</td>
<td>– Simplifies the programming, but still holding to maximum flexibility</td>
</tr>
<tr>
<td>(Standard Menu, Extended Menu, Quick Set)</td>
<td></td>
</tr>
<tr>
<td>Multiple languages</td>
<td>– Serving the whole world</td>
</tr>
</tbody>
</table>
### Dimensions

<table>
<thead>
<tr>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>21, 37, 43 and 53</td>
<td>4.2</td>
<td>295</td>
<td>150</td>
<td>183</td>
<td>G1</td>
</tr>
<tr>
<td>68</td>
<td>4.5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>84, 89 and 105</td>
<td>4.9</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>131, 141, 195 and 215</td>
<td>14.9</td>
<td>438</td>
<td>275</td>
<td>250</td>
<td>G2</td>
</tr>
<tr>
<td>245</td>
<td>23.9</td>
<td>460</td>
<td>390</td>
<td>279</td>
<td>G3</td>
</tr>
<tr>
<td>360, 380 and 428</td>
<td>35</td>
<td>689</td>
<td>430</td>
<td>302</td>
<td>G4</td>
</tr>
<tr>
<td>595, 619, 790 and 927</td>
<td>45</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1200, 1410 and 1600</td>
<td>120</td>
<td>856</td>
<td>585</td>
<td>364</td>
<td>G5</td>
</tr>
</tbody>
</table>

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**MCD 500 operation options**

**Starting:**
- AAC Adaptive Acceleration
- Control
- Current Ramp
- Constant Current
- Kickstart

**Stopping:**
- Coast to stop
- TVR soft Stop
- AAC Adaptive deceleration Control
- Brake

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### Control Panel VLT® LCP 501

With the Control Panel VLT® LCP 501 being a full function interface, everything you can do on the VLT® Soft Starter MCD 500 is possible via the LCP 501.

The screen view set-up is selected from 7 standard views and one user programmable.

**Language selection:**
- English, Chinese, German, Spanish, Portuguese, French, Italian, Russian.

The VLT® LCP 501 is connected to the MCD 500 by using a 3 m cable using 9 pin (D-sub) plug and 3 m cable provided with the IP 65 (NEMA 12) door-mount kit.

Once connected, the soft starter asks whether you want to copy parameters from LCP to starter or starter to LCP (if different).

**100% easy connection**
- The Modbus, Profibus and Device net modules use another port on the MCD 500 (at the side of the soft starter)
- Separate LCP 501 output at the bottom for 9 pin plug and 3 m cable
- One ordering number (LCP with door-mount kit and cable)
- Plug & play connection (also if soft starter is powered up)
- One cable for power and communication
- Powered up by soft starter
- Copy of parameter set-up

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Three Adaptive Acceleration Control (AAC) start profiles; early, constant and late acceleration

Constant current/ current ramp – here shown with kickstart

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The VLT® LCP 501 is connected to the MCD 500 by using a 3 m cable using 9 pin (D-sub) plug and 3 m cable provided with the IP 65 (NEMA 12) door-mount kit.

Once connected, the soft starter asks whether you want to copy parameters from LCP to starter or starter to LCP (if different).
**VLT® Compact Starter MCD 200**

**VLT® Compact Starter MCD 200 from Danfoss includes two families of soft starters in the power range from 7.5 – 110 kW.**

The series offers easy DIN rail mounting for sizes up to 30 kW, 2-wire or 3-wire start/stop control and excellent starting duty (4 x Ie for 6 seconds).

Heavy starting ratings at 4x Ie for 20 seconds.

Compatible with grounded delta power systems.

**The perfect match for:**
- Pumps
- Fans
- Compressors
- Mixers
- Conveyors
- And many more

**Power range:**
- 7.5 – 110 kW

---

Remote operation

Remote operation of MCD 201 and MCD 202 is facilitated by the dedicated remote operator kit.

The operator (IP 54/NEMA 12) is mounted on the cabinet front and allows remote control, status indication and motor monitoring of an individual VLT® Soft Starter using RS485 serial communication.

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**Features Benefits**

- Small footprint and compact size
  - Saves panel space
- Built-in bypass
  - Minimises installation cost and eliminates power loss
  - Reduces heat build up. Savings in components, cooling, wiring and labor
- Advanced accessories
  - Allows enhanced functionality
- Advanced SCR control algorithms balance output waveform
  - Allowing more starts per hour, accepting higher load
- Essential motor protection (MCD 202)
  - Reduces overall project investment
- Max. ambient temperature 50°C without derating
  - No external cooling or oversizing necessary

**Reliable**

**Maximum up-time**

**User friendly**

**Save commissioning**

- Easy to install and use
- Easy DIN rail mounting for sizes up to 30 kW

---

**Dimensions**

<table>
<thead>
<tr>
<th>Power range (400 V)</th>
<th>7 – 30 kW</th>
<th>37 – 55 kW</th>
<th>75 – 110 kW</th>
</tr>
</thead>
<tbody>
<tr>
<td>Height [mm]</td>
<td>203</td>
<td>215</td>
<td>240</td>
</tr>
<tr>
<td>Width [mm]</td>
<td>98</td>
<td>145</td>
<td>202</td>
</tr>
<tr>
<td>Depth [mm]</td>
<td>165</td>
<td>193</td>
<td>214</td>
</tr>
</tbody>
</table>
VLT® Soft Starter MCD 100

VLT® Soft Start Controller MCD 100 is a cost effective and extremely compact soft starter for AC motors up to 11 kW, due to a unique semiconductor design.

MCD 100 is a true “fit and forget” product. Selection can be made on the basis of the motor power – exactly as with traditional contactors.

MCD 100 products provide timed voltage ramp up and down. Ramp time can be individually adjusted with rotary switches from 0.4 to 10 seconds.

The start torque can be adjusted from 0 to 85% of the direct on-line torque.

All sizes are rated for line voltage up to 600 V AC.

The perfect match for:
- Pumps
- Fans
- Compressors
- Mixers
- Conveyors
- and many more

### Features

- Small footprint and compact size
- Selection can be based on motor power
- Universal control voltage
- “Fit and forget” contactor design
- Robust semiconductor design
- Almost unlimited number of starts per hour without derating
- Maximum ambient temperature 50°C
- User-friendly
- Digitally controlled rotary switches
- Easy DIN rail mounting for sizes up to 30 kW

### Benefits

- Saves panel space
- Easy selection
- Simplifies selection
- Keeps stock at a minimum
- Simplifies installation
- Reduces required panel space
- Reliable operation
- Prevents unauthorized changes
- No external cooling or oversizing necessary
- Saves commissioning and operating cost
- Saves times
- Secures precise settings and simplifies installation
- Saves time and space

### Dimensions

<table>
<thead>
<tr>
<th>Model</th>
<th>Power size (kW)</th>
<th>Rated current (Amps)</th>
<th>Dimensions (mm) H x W x D</th>
<th>Approvals</th>
</tr>
</thead>
<tbody>
<tr>
<td>1.5</td>
<td>3 A</td>
<td>AC-53b: 4-10: 110</td>
<td>102 x 22.5 x 123.5</td>
<td>UL, CSA, CE</td>
</tr>
<tr>
<td>7.5</td>
<td>15 A</td>
<td>AC-53a: 8-3: 100-3000 AC-58a: 6-6: 100-3000</td>
<td>110 x 45 x 128.1</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>25 A</td>
<td>AC-53a: 8-3: 100-3000 AC-58a: 6-6: 100-3000</td>
<td>110 x 90 x 128</td>
<td></td>
</tr>
</tbody>
</table>
Serial communication

MCD 201, MCD 202 and MCD 500 come with optional plug-in modules for serial communication.

- DeviceNet
- Profibus
- Modbus RTU
- USB

<table>
<thead>
<tr>
<th>MCD 201</th>
<th>MCD 202</th>
<th>MCD 500</th>
</tr>
</thead>
<tbody>
<tr>
<td>Start/stop, reset</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>LED for start, run, trip</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Trip codes</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Current display</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Motor temp. display</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>4 – 20 mA output</td>
<td>□</td>
<td>□</td>
</tr>
<tr>
<td>Programming keypad, graphical display</td>
<td>□</td>
<td>□</td>
</tr>
</tbody>
</table>

Ordering type codes

### VLT® Compact Starter MCD 200

- **MCD**
  - 2
  - 0
  - –
  - T
  - –
  - C
  - V
- **Series**
  - Soft start/stop: 1
  - Soft start/stop + protection: 2
- **Nominal Motor kW, 400 V**
  - E.g. 55 kW: 055
  - 110 kW: 110
- **Line Supply Voltage**
  - 200 – 440 V: 4
  - 200 – 575 V: 6
- **Control Supply Voltage**
  - 24 V AC/DC: 1
  - 110 – 240 V AC and 380 – 440 V AC: 3

### VLT® Soft Starter MCD 500

- **MCD**
  - S
  - –
  - –
  - T
  - –
  - G
  - X
  - –
  - C
  - V
- **FLC (A)**
  - 0021
  - 0037
  - 0043
  - 0053
  - 0068
  - 0084
  - 0089
  - 0105
  - 0131
  - 0141
  - 0195
  - 0215
  - 0245
  - 0360
  - 0380
  - 0428
  - 0595
  - 0619
  - 0790
  - 0927
  - 1200
  - 1410
  - 1600
- **Bypass indication**
  - B: With Internal Bypass Contactor
  - C: Without Internal Bypass Contactor (Continuous)
- **IP Rating**
  - 00, IP 00
  - 20, IP 20
- **Supply Voltage**
  - T5, 200 – 525 VAC
  - T7, 380 – 690 VAC
- **Enclosure**
  - G1, Frame size 1
  - G2, Frame size 2
  - G3, Frame size 3
  - G4, Frame size 4
  - G5, Frame size 5
  - (X, not Used)
- **Control Voltage**
  - CV1, 24 VAC or 24 VDC
  - CV2, 110 or 220 VAC

MCD 201, MCD 202 and MCD 500 come with optional plug-in modules for serial communication.
Size indications

Size indication for VLT® Compact Starter MCD 200

<table>
<thead>
<tr>
<th>Model</th>
<th>Power size (kW)</th>
<th>Rated current AC-53b* (Amps)</th>
<th>Dimensions (mm) H x W x D</th>
<th>Approvals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>7.5</td>
<td>18 A: 4-6: 354</td>
<td>203 x 98 x 165</td>
<td></td>
</tr>
<tr>
<td></td>
<td>15</td>
<td>34 A: 4-6: 354</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>18</td>
<td>42 A: 4-6: 354</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>22</td>
<td>48 A: 4-6: 354</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>30</td>
<td>60 A: 4-6: 354</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>37</td>
<td>75 A: 4-6: 594</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>45</td>
<td>85 A: 4-6: 594</td>
<td>215 x 145 x 193</td>
<td></td>
</tr>
<tr>
<td></td>
<td>55</td>
<td>100 A: 4-6: 594</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>75</td>
<td>140 A: 4-6: 594</td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>90</td>
<td>170 A: 4-6: 594</td>
<td>240 x 202 x 214</td>
<td></td>
</tr>
<tr>
<td></td>
<td>110</td>
<td>200 A: 4-6: 594</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

* Example: AC 53b: 42 A: 4-6: 354 starting current max. 4 times FLC (42 A) in 6 seconds. 354 seconds minimum between starts.

Size indication for VLT® Soft Starter MCD 100

<table>
<thead>
<tr>
<th>Model</th>
<th>Power size (kW)</th>
<th>Rated current (Amps)</th>
<th>Dimensions (mm) H x W x D</th>
<th>Approvals</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>1.5</td>
<td>3 A: 5-5:10 (AC 53b)</td>
<td>102 x 22,5 x 124</td>
<td>UL, CSA, CE</td>
</tr>
<tr>
<td></td>
<td>11</td>
<td>25 A: 6:5:100-480 (AC 53a)</td>
<td>110 x 90 x 128</td>
<td></td>
</tr>
</tbody>
</table>

Size indication for VLT® Soft Starter MCD 500

<table>
<thead>
<tr>
<th>Motor size (kW) @ 400 V</th>
<th>Frame size code</th>
<th>Starts per hour</th>
<th>Max. FLC</th>
<th>Not bypassed</th>
<th>External bypass</th>
<th>Rated FLC (40°C, 1000 m), outside delta motor connection</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td></td>
<td>Light 300%, 30s, Internal bypass</td>
<td>Medium 400%, 20s, Internal bypass</td>
<td>Heavy 450%, 30s, Internal bypass</td>
<td></td>
</tr>
<tr>
<td>11</td>
<td>G1 (no fan)</td>
<td>10</td>
<td>23</td>
<td>21</td>
<td>17</td>
<td>15</td>
</tr>
<tr>
<td>18.5</td>
<td></td>
<td>10</td>
<td>43</td>
<td>37</td>
<td>31</td>
<td>26</td>
</tr>
<tr>
<td>22</td>
<td></td>
<td>10</td>
<td>50</td>
<td>43</td>
<td>37</td>
<td>30</td>
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<tr>
<td>25</td>
<td></td>
<td>10</td>
<td>53</td>
<td>53</td>
<td>46</td>
<td>37</td>
</tr>
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<td>30</td>
<td></td>
<td>6</td>
<td>76</td>
<td>68</td>
<td>55</td>
<td>47</td>
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<td>37</td>
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<td>6</td>
<td>97</td>
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<tr>
<td>45</td>
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<td>6</td>
<td>100</td>
<td>89</td>
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<td>55</td>
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<td>6</td>
<td>105</td>
<td>105</td>
<td>95</td>
<td>78</td>
</tr>
<tr>
<td>60</td>
<td>G2</td>
<td>6</td>
<td>145</td>
<td>131</td>
<td>106</td>
<td>90</td>
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<tr>
<td>75</td>
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<td>6</td>
<td>170</td>
<td>141</td>
<td>121</td>
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<tr>
<td>90</td>
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<td>6</td>
<td>200</td>
<td>195</td>
<td>160</td>
<td>134</td>
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<tr>
<td>110</td>
<td></td>
<td>6</td>
<td>220</td>
<td>215</td>
<td>178</td>
<td>149</td>
</tr>
</tbody>
</table>

Note: Optimise your selection with WinStart Soft Starter PC tool.
# Specifications

<table>
<thead>
<tr>
<th>Type</th>
<th>VLT® Soft Starter MCD 500</th>
<th>VLT® Soft Starter MCD 100</th>
</tr>
</thead>
<tbody>
<tr>
<td>The total motor starter solution. Provides advanced control methods for starting and stopping and protection of motor and application.</td>
<td>A true “fit and forget” soft starter for DIN rail mount. MCD 100 provides basic soft start and stop function.</td>
<td></td>
</tr>
</tbody>
</table>

## Concept

- Enhanced soft start and soft stop
- Motor and system protection
- 7.5 – 850 kW @ 400 V (21-1600A)
- 200 – 690 V mains voltage
- 110 – 220 V AC or 24V AC/DC control supply
- 3-phase SCR control

- Soft start
- Soft stop
- 0.1 – 11 kW @ 400 V
- 208 – 600 V mains voltage
- 24 – 480 V AC/DC control voltage
- 2-phase SCR control

## Start/stop

- Adaptive Acceleration Control (AAC)
- Current limit start
- Current ramp start
- Dual parameter function
- Kick-start
- Jog

- Timed voltage ramp-up
- Adjustable start torque
- Selectable kick-start function

- Adaptive Deceleration Control (AAC)
- TVR soft stop (Timed Voltage Ramp)
- Coast to stop
- DC brake function – three phase
- Soft brake function

- Timed voltage ramp-down

## Protection

- Same as MCD 202 and:
- Under current
- Current imbalance
- Starter overtemperature
- Restart delay
- Warning before trips
- Adjustable phase imbalance sensitivity
  - Programmable input trip
  - Individual phase loss trips
  - Individual shorted SCR trips
  - Int. bypass relay overload
  - Int. bypass relay fail
- Fully adjustable protections
- Network communication timeout
- Heatsink overtemperature
- Battery/clock failure
- Supply frequency
- External trip

## Outputs

- Three programmable output relays:
  - Programmable analogue output
  - Motor thermistor

## Control

- 8 language graphical display and keypad
- Quick menu and application menu
- Buttons for start, stop, reset and remote control
- Inputs for two- or three-wire control

- Universal two-wire control
- Programmable via 3 rotary switches

- Optional:
  - Modules for serial communication
  - Control Panel VLT® LCP 501
  - PC software

## Other features

- Bypass up to 110 kW
- Configurable bus bars from 360 A and up
- Operation timers
- Jog – slow speed operation
- Auto reset of fault situations
- Emergency run
- 99 event log
- Trip log
- User programmable metering and monitoring
- Simulation before connecting line voltage

- Extremely robust SCR design for unlimited number of starts per hour, LED indication, IP 20
<table>
<thead>
<tr>
<th>Type</th>
<th>VLT® Compact Starter MCD 201</th>
<th>VLT® Compact Starter MCD 202</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>A physically compact starter providing basic soft start and stop functionality</td>
<td>Physically similar to MCD 201 but providing enhanced soft start functionality and various motor protection functions</td>
</tr>
<tr>
<td>Concept</td>
<td>Soft start  Soft stop  7.5 – 110 kW @ 400 V  200 – 575 V mains voltage  110 – 440 V AC or  24 V AC/DC control supply  2-phase SCR control</td>
<td>Current limit start  Soft stop  Motor protection  7.5 – 110 kW @ 400 V  200 – 575 V mains voltage  110 – 440 V AC or  24 V AC/DC control supply  2-phase SCR control</td>
</tr>
<tr>
<td>Start/stop</td>
<td>Timed voltage ramp-up  Adjustable initial torque</td>
<td>Current limit start  Initial current ramp-up</td>
</tr>
<tr>
<td></td>
<td>Timed voltage ramp-down</td>
<td>Timed voltage ramp-down</td>
</tr>
<tr>
<td>Protection</td>
<td>Motor overload  (adjustable trip class)  Excess start time  Reverse phase rotation  Motor thermistor input  Shorted SCR – no start  Supply fault – no start  Instantaneous overload</td>
<td></td>
</tr>
<tr>
<td>Outputs</td>
<td>One output relay:  Line contactor control</td>
<td>Two output relays:  Line contactor control  Run contactor or trip function</td>
</tr>
<tr>
<td>Control</td>
<td>Two- or three-wire control  Programmable via 3 rotary switches  Reset push button  <strong>Optional:</strong>  Modules for serial communication  Remote operator kit  PC software</td>
<td>Two- or three-wire control  Programmable via 8 rotary switches  Reset push button  <strong>Optional:</strong>  Modules for serial communication  Remote operator kit  PC software</td>
</tr>
<tr>
<td>Other features</td>
<td>Integral SCR bypass for minimum physical size and heat dissipation during nominal operation  LED status indication  IP 20 (7.5 – 55 kW @ 400 V)  IP 00 (75 – 110 kW @ 400 V)  Protection kit available</td>
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Environmental responsibility

VLT® products are manufactured with respect for the safety and well-being of people and the environment.

All activities are planned and performed taking into account the individual employee, the work environment and the external environment. Production takes place with a minimum of noise, smoke or other pollution and environmentally safe disposal of the products is pre-prepared.

UN Global Compact

Danfoss has signed the UN Global Compact on social and environmental responsibility and our companies act responsibly towards local societies.

EU Directives

All factories are certified according to ISO 14001 standard. All products fulfil the EU Directives for General Product Safety and the Machinery directive. Danfoss VLT Drives is, in all product series, implementing the EU Directive concerning Hazardous Substances in Electrical and Electrical Equipment (RoHS) and is designing all new product series according to the EU Directive on Waste Electrical and Electronic Equipment (WEEE).

Impact on energy savings

One year’s energy savings from our annual production of VLT® drives will save the energy equivalent to the energy production from a major power plant. Better process control at the same time improves product quality and reduces waste and wear on equipment.

Dedicated to drives

Dedication has been a key word since 1968, when Danfoss introduced the world’s first mass produced variable speed drive for AC motors – and named it VLT®.

Twenty five hundred employees develop, manufacture, sell and service drives and soft starters in more than one hundred countries, focused only on drives and soft starters.

Intelligent and innovative

Developers at Danfoss VLT Drives have fully adopted modular principles in development as well as design, production and configuration.

Tomorrow’s features are developed in parallel using dedicated technology platforms. This allows the development of all elements to take place in parallel, at the same time reducing time to market and ensuring that customers always enjoy the benefits of the latest features.

Rely on the experts

We take responsibility for every element of our products. The fact that we develop and produce our own features, hardware, software, power modules, printed circuit boards, and accessories is your guarantee of reliable products.

Local backup – globally

VLT® motor controllers are operating in applications all over the world and Danfoss VLT Drives’ experts located in more than 100 countries are ready to support our customers with application advice and service wherever they may be.

Danfoss VLT Drives experts don’t stop until the customer’s drive challenges are solved.

http://driveconfig.danfoss.com/