

# 快速启动指导 ACS880 传动基本控制程序



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## 相关手册信息

| 传动硬件手册                                       | 代码             |
|--|----------------|
| ACS880-01 传动硬件手册                             | 3AUA0000078093 |
| ACS880-07 传动 (45 至 250 kW, 60 至 300 hp) 硬件手册 | 3AUA0000105718 |
| ACS880-104 逆变模块硬件手册                          | 3AUA0000104271 |
| ACS880-107 逆变单元硬件手册                          | 3AUA0000102519 |
| <b>传动固件手册和指导</b>                             |                |
| ACS880 基础控制程序固件手册                            | 3AUA0000085967 |
| ACS880 传动基础控制程序, 快速启动指导                      | 3AUA0000098062 |
| <b>可选件手册和指导</b>                              |                |
| ACS-AP-x 助手控制盘用户手册                           | 3AUA0000085685 |
| 传动编辑器启动和维护 PC 工具用户手册                         | 3AUA0000094606 |
| I/O 扩展模块, 现场总线适配器, 编码器接口等手册和快速启动指导           |                |

您可以在网上查找并下载产品手册的 PDF 文件。参见封底背面的 [Internet 上的文件库](#)。Document library 里查找不到的手册, 请联系当地 ABB 代表。



[ACS880-01 手册](#)



[ACS880-07 手册](#)

3AXD5000009107 版本 A

中文 / 英文

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# ACS880 基本控制程序快速 启动指导

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## 关于本指导

本指导介绍了配备基本控制程序的 ACS880 传动的基本启动顺序。可以从 *固件手册* 中找到传动固件的完整介绍。(请参见封皮内页的手册列表)。

在本指导中,使用 ACS-AP-I 控制盘对传动进行设置。该启动顺序也同样可以通过 Drive composer PC tool 来实现。

CN

## 在您启动之前

确保传动已经如 *快速安装指导* 和 / 或 *硬件手册* 上的描述进行正确的机械和电气安装。

## 安全

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**警告!**

只有具备资质的电气工程师才可以对传动进行安装和维护。





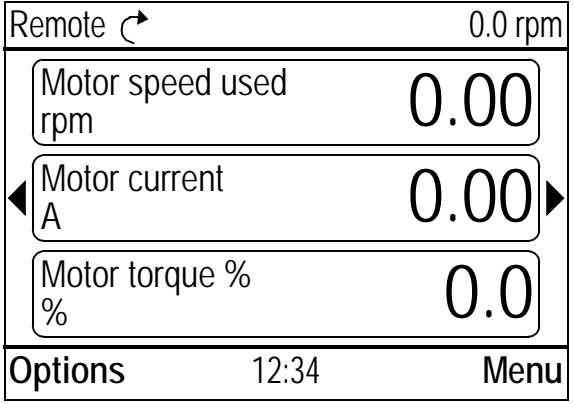


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
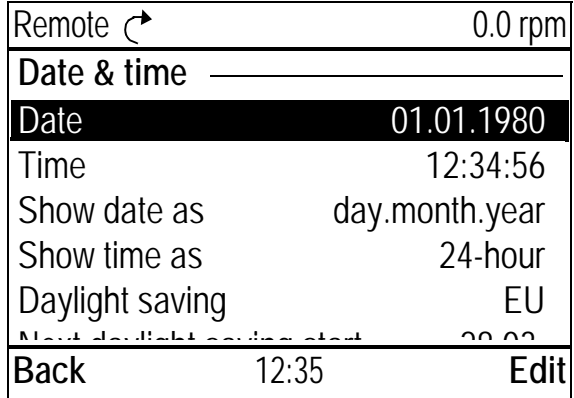








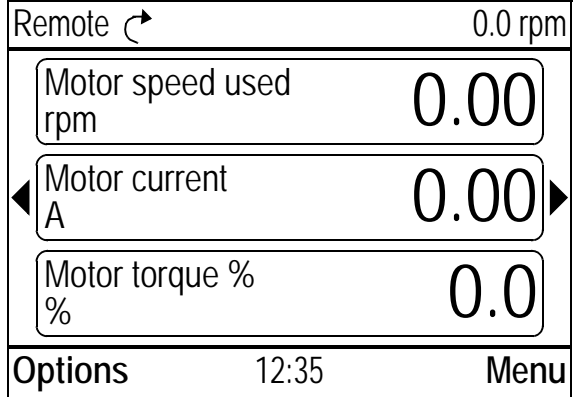

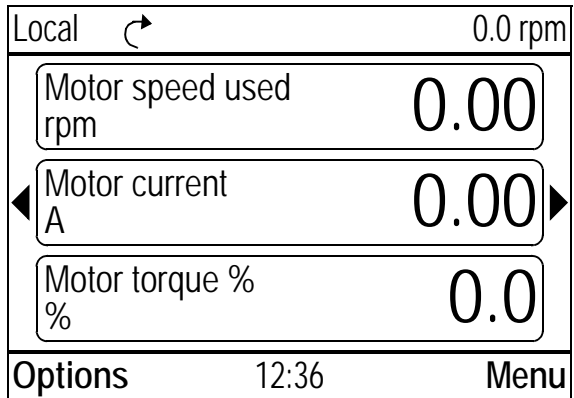
不能对带电的传动、制动斩波器电路、电机电缆或电机进行任何操作。进行操作前,要确认传动没有存在任何电压。


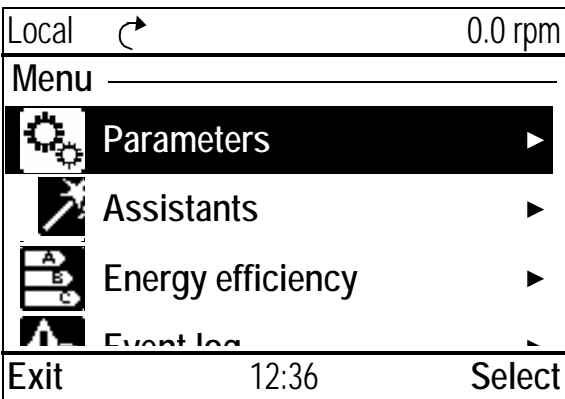









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# 启动








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| 安全  |  |
|---|--|
|  | <p>启动必须由具备资质的电气工程师来完成。<br/>启动进行期间，必须遵照安全指导。参见 <i>硬件手册</i> 第一页的正确安全指导。</p>  |
| <input type="checkbox"/>  | <p>检查安装。参见 <i>硬件手册</i> 中的正确安装清单。</p>   |
| <input type="checkbox"/>  | <p>检查确保电机的启动不会带来任何危险。<br/><b>如果有下面情况，请断开负载连接：</b></p> <ul style="list-style-type: none"> <li>• 由于错误的旋转方向，有损坏的风险，或</li> <li>• 当负载转矩高于 20% 或机械在辨识运行期间不能承受额定转矩瞬变时，而传动启动需要一个完全辨识运行。</li> </ul>   |
| 1 – 通电，日期和时间设置  |  |
| <input type="checkbox"/>  | <p>给传动通电。<br/><b>注意：</b>在启动过程中产生警告信息是正常现象。隐藏警告信息或恢复启动程序，请按 。<br/>隐藏任何警告请进入主菜单视图（如右图所示）。<br/>下方显示两个命令 (<b>Options</b> 和 <b>Menu</b>)，位于字体下方有两个软键  和 。指定给软键的功能各不同，这取决于上下文的内容。</p> |
|   |   |
| <input type="checkbox"/>  | <p>在主菜单视图下，按  (<b>Menu</b>) 键。<br/>主菜单如右图所示。</p>  |
|   |    |
| <input type="checkbox"/>  | <p>在 <b>Settings</b> 菜单中通过  和  上下选择高亮显示的选项，按  键确认 (<b>Select</b>)。</p>  |
|   |    |

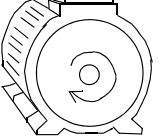
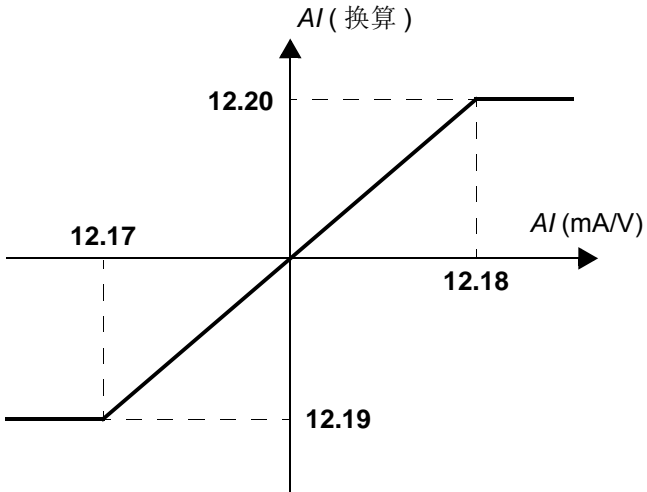
|                          |  |  |
|--------------------------|--|--|
| <input type="checkbox"/> | <p>在 <b>Settings</b> 菜单中，选择高亮显示 <b>Date &amp; time</b> (如果尚未高亮选择) 并按  (<b>Select</b>) 键。</p>  |    |
| <input type="checkbox"/> | <p>在 <b>Date &amp; time</b> 菜单中，选择高亮显示 <b>Date</b> (如果尚未高亮选择) 并按  (<b>Select</b>) 键。</p>  |   |
| <input type="checkbox"/> | <p>设置正确日期：</p> <ul style="list-style-type: none"> <li>• 使用  和  左右移动光标。</li> <li>• 使用  和  改变数值。</li> <li>• 按  (<b>Save</b>) 键保存设置。</li> </ul> <p>在 <b>Date &amp; time</b> 中检查或调整所有其它的设置。</p> <p><b>Show clock</b> 设置决定时间是否一直显示在控制盘的下方。</p> <p>设置完成后，按  键退出或离开，重复按该键直到右方出现主菜单。</p> |  |
| <h2>2 – 供电电压和电机数据设置</h2> |  |  |
| <input type="checkbox"/> | <p>切换到本地控制以确保外部控制已经通过  按钮被禁用。本地控制在控制盘上方的窗格中显示“Local”。</p>   |  |

|                          |   |  |
|--------------------------|---|--|
| <input type="checkbox"/> | <p>按  (<b>Menu</b>) 键打开主菜单。</p>  |  <p>Local  0.0 rpm<br/> <b>Menu</b> _____<br/>  <b>Parameters</b> ▶<br/>  Assistants ▶<br/>  Energy efficiency ▶<br/>  Event log ▶<br/> Exit 12:36 Select</p> |
| <input type="checkbox"/> | <p>高亮显示 <b>Parameters</b> 并按  (<b>Select</b>) 键确认。</p>   |  <p>Local  0.0 rpm<br/> <b>Parameters</b> _____<br/> <b>Favorites</b> ▶<br/> By function ▶<br/> Complete list ▶<br/> Modified ▶<br/> Back 12:36 Select</p>   |
| <input type="checkbox"/> | <p>高亮显示 <b>Complete list</b>，使用  和  上下选择，并按  (<b>Select</b>) 键确认。<br/>参数组列表显示出来。</p> |  <p>Local  0.0 rpm<br/> <b>Complete list</b> _____<br/> <b>01 Actual values</b> ▶<br/> 03 Input references ▶<br/> 04 Warnings and faults ▶<br/> 05 Diagnostics ▶<br/> 06 Control and status words ▶<br/> 07 System info ▶<br/> Back 12:36 Select</p>  |
| <input type="checkbox"/> | <p>高亮选择参数组 <b>95 HW configuration</b> 按  (<b>Select</b>) 键确认。<br/>注意该列表是围绕 99 组和 01 组参数循环显示。因此，通过  按键向上选择 95 组参数更为便捷。<br/>选择了一组参数后，该参数组内的参数显示出来。</p>                    |  <p>Local  0.0 rpm<br/> <b>95 HW configuration</b> _____<br/> <b>95.01 Supply voltage</b> Not given<br/> 95.02 Adaptive voltage limits Disable<br/> 95.04 Control board supply Internal 24V<br/> Back 12:36 Edit</p>  |

| <input type="checkbox"/>   | <p>高亮选择参数 <b>95.01 Supply voltage</b> (如果尚未高亮选择) 并按  (<b>Edit</b>) 键确认。<br/>有效参数设置列表显示出来。</p>  | <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: right;">Local  0.0 rpm</p> <p><b>95.01 Supply voltage</b></p> <p style="background-color: black; color: white; padding: 2px;">[0] Not given</p> <p>[1] 208...240 V</p> <p>[2] 380...415 V</p> <p>[3] 440...480 V</p> <p>[4] 500 V</p> <p style="display: flex; justify-content: space-between;"><b>Cancel</b> 12:36 <b>Save</b></p> </div>                              |       |      |       |       |                   |       |                   |       |    |    |      |      |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |   |   |    |    |       |   |       |       |                   |       |    |    |     |     |      |  |  |
|--|---|--|-------|------|-------|-------|-------------------|-------|-------------------|-------|----|----|------|------|------|--|--|-------|----|----|------|----|------|--|--|-------|----|----|------|----|------|--|--|-------|----|----|------|----|------|--|--|-------|----|----|------|----|------|--|--|-------|----|----|------|----|------|--|--|---|---|----|----|-------|---|-------|-------|-------------------|-------|----|----|-----|-----|------|--|--|
| <input type="checkbox"/>   | <p>在列表中高亮选择正确的设置并按  (<b>Save</b>) 键保存。</p>   | <div style="border: 1px solid black; padding: 5px;"> <p style="text-align: right;">Local  0.0 rpm</p> <p><b>95 HW configuration</b></p> <p style="background-color: black; color: white; padding: 2px;"><b>95.01 Supply voltage</b> 380...415 V</p> <p>95.02 Adaptive voltage limits Disable</p> <p>95.04 Control board supply Internal 24V</p> <p style="display: flex; justify-content: space-between;"><b>Back</b> 12:36 <b>Edit</b></p> </div> |       |      |       |       |                   |       |                   |       |    |    |      |      |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |   |   |    |    |       |   |       |       |                   |       |    |    |     |     |      |  |  |
| <input type="checkbox"/>   | <p>按  (<b>Back</b>) 键再次退出到参数组列表中。选择参数组 <b>99 Motor data</b>, 设置参数 <b>99.03 Motor type</b>。</p>   |  |       |      |       |       |                   |       |                   |       |    |    |      |      |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |   |   |    |    |       |   |       |       |                   |       |    |    |     |     |      |  |  |
| <input type="checkbox"/>   | <p>设置参数 <b>99.04 Motor ctrl mode</b>。<br/><b>DTC = 直接转矩控制, 标量</b><br/>DTC 符合大多数情况, 下列情况中推荐使用标量控制模式:</p> <ul style="list-style-type: none"> <li>• 电机额定电流少于传动额定电流的 1/6。</li> <li>• 传动用于测试目的, 没有连接任何电机, 或</li> <li>• 传动控制多个电机连接或者连接电机的数量是可变的。</li> </ul> |  |       |      |       |       |                   |       |                   |       |    |    |      |      |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |   |   |    |    |       |   |       |       |                   |       |    |    |     |     |      |  |  |
| <p>下列参数的设置请参见电机铭牌。如果可能的话, 请<b>严格</b>按照电机铭牌上显示的数值输入。</p>  |   |  |       |      |       |       |                   |       |                   |       |    |    |      |      |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |   |   |    |    |       |   |       |       |                   |       |    |    |     |     |      |  |  |
| <p>感应 (异步) 电机铭牌的示例:</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <div style="text-align: center; border-bottom: 1px solid black;">  <b>ABB Motors</b>   </div> <p>3 ~ motor M2AA 200 MLA 4</p> <p style="text-align: center;">IEC 200 M/L 55</p> <hr/> <p style="text-align: center;">No</p> <p style="text-align: center;">Ins.cl. F IP 55</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>V</th> <th>Hz</th> <th>kW</th> <th>r/min</th> <th>A</th> <th>cos φ</th> <th>IA/IN</th> <th>t<sub>E</sub>/s</th> </tr> </thead> <tbody> <tr> <td>690 Y</td> <td>50</td> <td>30</td> <td>1475</td> <td>32.5</td> <td>0.83</td> <td></td> <td></td> </tr> <tr> <td>400 D</td> <td>50</td> <td>30</td> <td>1475</td> <td>56</td> <td>0.83</td> <td></td> <td></td> </tr> <tr> <td>660 Y</td> <td>50</td> <td>30</td> <td>1470</td> <td>34</td> <td>0.83</td> <td></td> <td></td> </tr> <tr style="background-color: #e0e0e0;"> <td>380 D</td> <td>50</td> <td>30</td> <td>1470</td> <td>59</td> <td>0.83</td> <td></td> <td></td> </tr> <tr> <td>415 D</td> <td>50</td> <td>30</td> <td>1475</td> <td>54</td> <td>0.83</td> <td></td> <td></td> </tr> <tr> <td>440 D</td> <td>60</td> <td>35</td> <td>1770</td> <td>59</td> <td>0.83</td> <td></td> <td></td> </tr> </tbody> </table> <p>Cat. no 3GAA 202 001 - ADA</p> <hr/> <p>6312/C3  6210/C3 180 kg</p> <div style="text-align: center; border-top: 1px solid black;">  IEC 34-1  </div> </div> |   | V  | Hz    | kW   | r/min | A     | cos φ             | IA/IN | t <sub>E</sub> /s | 690 Y | 50 | 30 | 1475 | 32.5 | 0.83 |  |  | 400 D | 50 | 30 | 1475 | 56 | 0.83 |  |  | 660 Y | 50 | 30 | 1470 | 34 | 0.83 |  |  | 380 D | 50 | 30 | 1470 | 59 | 0.83 |  |  | 415 D | 50 | 30 | 1475 | 54 | 0.83 |  |  | 440 D | 60 | 35 | 1770 | 59 | 0.83 |  |  | <p>永磁电机铭牌的示例:</p> <div style="border: 1px solid black; padding: 5px; margin-top: 10px;"> <div style="text-align: center; border-bottom: 1px solid black;">  <b>ABB Motors</b>   </div> <p>3 ~ motor M2BJ 280SMB 10 B3</p> <hr/> <p>S1 SPEC INSUL. No 3424522</p> <p>JK-21640-1 Ins.cl. F IP 55</p> <table border="1" style="width: 100%; border-collapse: collapse; text-align: center;"> <thead> <tr> <th>V</th> <th>Hz</th> <th>kW</th> <th>r/min</th> <th>A</th> <th>cos φ</th> <th>IA/IN</th> <th>t<sub>E</sub>/s</th> </tr> </thead> <tbody> <tr> <td>400 D</td> <td>50</td> <td>55</td> <td>600</td> <td>103</td> <td>0.97</td> <td></td> <td></td> </tr> </tbody> </table> <p>Prod. code 2GBJ285220-ADA405445477</p> <p>6316/C3  6316/C3 630kg</p> <div style="text-align: center; border-top: 1px solid black;">  IEC 34-1  </div> </div> | V | Hz | kW | r/min | A | cos φ | IA/IN | t <sub>E</sub> /s | 400 D | 50 | 55 | 600 | 103 | 0.97 |  |  |
| V  | Hz  | kW   | r/min | A    | cos φ | IA/IN | t <sub>E</sub> /s |       |                   |       |    |    |      |      |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |   |   |    |    |       |   |       |       |                   |       |    |    |     |     |      |  |  |
| 690 Y  | 50  | 30   | 1475  | 32.5 | 0.83  |       |                   |       |                   |       |    |    |      |      |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |   |   |    |    |       |   |       |       |                   |       |    |    |     |     |      |  |  |
| 400 D  | 50  | 30   | 1475  | 56   | 0.83  |       |                   |       |                   |       |    |    |      |      |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |   |   |    |    |       |   |       |       |                   |       |    |    |     |     |      |  |  |
| 660 Y  | 50  | 30   | 1470  | 34   | 0.83  |       |                   |       |                   |       |    |    |      |      |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |   |   |    |    |       |   |       |       |                   |       |    |    |     |     |      |  |  |
| 380 D  | 50  | 30   | 1470  | 59   | 0.83  |       |                   |       |                   |       |    |    |      |      |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |   |   |    |    |       |   |       |       |                   |       |    |    |     |     |      |  |  |
| 415 D  | 50  | 30   | 1475  | 54   | 0.83  |       |                   |       |                   |       |    |    |      |      |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |   |   |    |    |       |   |       |       |                   |       |    |    |     |     |      |  |  |
| 440 D  | 60  | 35   | 1770  | 59   | 0.83  |       |                   |       |                   |       |    |    |      |      |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |   |   |    |    |       |   |       |       |                   |       |    |    |     |     |      |  |  |
| V  | Hz  | kW   | r/min | A    | cos φ | IA/IN | t <sub>E</sub> /s |       |                   |       |    |    |      |      |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |   |   |    |    |       |   |       |       |                   |       |    |    |     |     |      |  |  |
| 400 D  | 50  | 55   | 600   | 103  | 0.97  |       |                   |       |                   |       |    |    |      |      |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |       |    |    |      |    |      |  |  |   |   |    |    |       |   |       |       |                   |       |    |    |     |     |      |  |  |

|                          |  |
|--------------------------|--|
| <input type="checkbox"/> | <p><b>99.06 电机额定电流</b></p> <p>传动允许范围是：</p> <ul style="list-style-type: none"> <li>在 DTC 模式下： <math>1/6 \times I_{Hd} \dots 2 \times I_{Hd}</math></li> <li>在标量模式下： <math>0 \dots 2 \times I_{Hd}</math></li> </ul> <p><b>注意：</b>在数字参数值下：</p> <ul style="list-style-type: none"> <li>使用  和  改变数字值。</li> <li>使用  和  左右移动光标。</li> <li>按  (<b>Save</b>) 键输入数值。</li> </ul> |
| 用相同方式进行以下设置：             |  |
| <input type="checkbox"/> | <p><b>99.07 电机额定电压</b></p> <p>传动允许范围是： <math>1/6 \times U_N \dots 2 \times U_N</math></p> <p>永磁电机的额定电压是额定速度下的 BackEMF 电压。如果电压单位为 volt/rpm (例如, 60 V 每 1000 rpm), 那么额定速度 3000 rpm 下的电压为 <math>3 \times 60 \text{ V} = 180 \text{ V}</math>。注意额定电压并不等同于一些制造商给出的直流电机电压 (EDCM)。额定电压可以通过 EDCM 电压除以 1.7(或 3 的平方根) 计算出来。</p>  |
| <input type="checkbox"/> | <p><b>99.08 电机额定频率</b></p> <p>使用永磁电机时, 如果额定频率没有在铭牌上显示, 可以通过下面的公式计算出来：</p> $f = n \times p / 60$ <p><math>n</math> = 额定电机速度, <math>p</math> = 极对数。</p>  |
| <input type="checkbox"/> | <p><b>99.09 电机额定速度</b></p>   |
| <input type="checkbox"/> | <p><b>99.10 电机额定功率</b></p>   |
| <input type="checkbox"/> | <p><b>99.11 电机额定配置</b><br/><b>99.12 电机额定转矩</b></p> <p>这些数值不是必须的, 但是输入后可以改变控制的精确度。如果不清楚, 数值保留 0。</p>  |
| <input type="checkbox"/> | <p><b>99.13 辨识运行请求</b></p> <p>该参数选择辨识运行的模式 (只能是 DTC 电机控制模式)。</p> <p> <b>警告!</b>选择标注*的辨识运行模式, 电机会正向运行(详细信息见下文)。在选择下列任一模式之前, 请确认电机是否安全运行。</p> <p>* <b>完全模式</b>。尽可能地选择该模式。在以下两种情况下进行完全辨识运行时, 必须断开电机和传动设备之间的连接：</p> <ul style="list-style-type: none"> <li>如果负载转矩高于 20%, 或</li> <li>如果机械装置在完全辨识运行期间不能承受额定转矩瞬变。</li> </ul> <p>* <b>简化模式</b>。如果机械损耗高于 20%(例如, 电机不能和传动设备分离), 或电机运行过程中不允许磁通量减少(例如, 带锥形电机)时, 必须选择此模式。</p> <p><b>静止模式</b>。只有在 * <b>常规</b> 和 * <b>简化</b> 模式不能被使用时, 才选择该模式。<b>注意:</b></p> <ul style="list-style-type: none"> <li>如果负载转矩高于额定转矩的 20% 时, 该模式不能用于永磁电机。</li> <li>由于辨识运行的逻辑, 机械制动没有开启。</li> </ul>   |
| <input type="checkbox"/> | <p>确保安全力矩中断和急停电路 (如果有的话) 已经关闭。</p>   |
| <input type="checkbox"/> | <p>通过  (<b>Start</b>) 按键启动辨识运行功能。</p>   |
|                          | <p>辨识运行过程中会显示一个警告。</p>   |



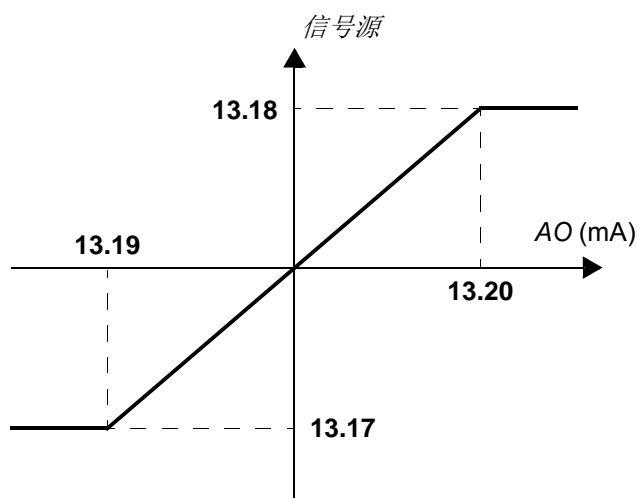
|                          |  |
|--------------------------|--|
| <input type="checkbox"/> | <p>检查电机运行方向是否正确。(下面显示为正向旋转)。</p>  <p>当传动停止, 辨识运行完成, 参数 <b>99.13</b> 的值转换为 “No”。</p> <p>如果电机运行方向错误, 调整电机电缆或调整参数 <b>99.16 Phase order</b> 的设置。</p>  |
| <h3>3 – 控制信号设置</h3>      |  |
| <input type="checkbox"/> | <p>检查传动控制单元跳线 J1 和 J2 的位置。这些跳线决定模拟输入 AI1 和 AI2 是电流还是电压。</p>  |
| <p>检查或调整下面的参数。</p>       |  |
| <input type="checkbox"/> | <p><b>20.01 Ext1 命令</b></p> <p>默认条件下, 传动启动或停止是根据数字输入 DI1 (0 = 停止, 1 = 启动) 来控制, DI2 决定运行方向 (0 = 正向, 1 = 反向)。</p> <p>如果需要其他信号源, 改变相应参数值。信号源 In1...In3 通过参数 <b>20.03...20.05</b> 设置。</p>  |
| <input type="checkbox"/> | <p><b>12.15 AI1 单位选择</b></p> <p>根据跳线 J1 的设置设置该参数为 mA 或 V。</p>  |
| <input type="checkbox"/> | <p><b>12.17 AI1 最小值</b><br/> <b>12.18 AI1 最大值</b><br/> <b>12.19 AI1 最小换算值</b><br/> <b>12.20 AI1 最大换算值</b></p> <p>速度给定的默认输入为模拟输入 AI1。(通过参数组 22 控制)</p> <p>参数 <b>12.17</b> 和 <b>12.18</b> 设置模拟输入信号的高低限值。按照下面的限值, 换算参数 <b>12.19</b> 和 <b>12.20</b> 来定义内部信号等级:</p>  <p>模拟输入 AI2 的相应参数为 <b>12.27...12.30</b>。</p> |



- 13.12 AO1 信号源**  
**13.17 AO1 最小信号源**  
**13.18 AO1 最大信号源**  
**13.19 AO1 最小换算值输出**  
**13.20 AO1 最大换算值输出**

参数 **13.12** 选择模拟输出 AO1 的信号源 (默认下, 电机速度单位 rpm)。

参数 **13.17** 和 **13.18** 设置信号源的高低数值, 符合参数 **13.19** 和 **13.20** 定义的实际模拟输出值。



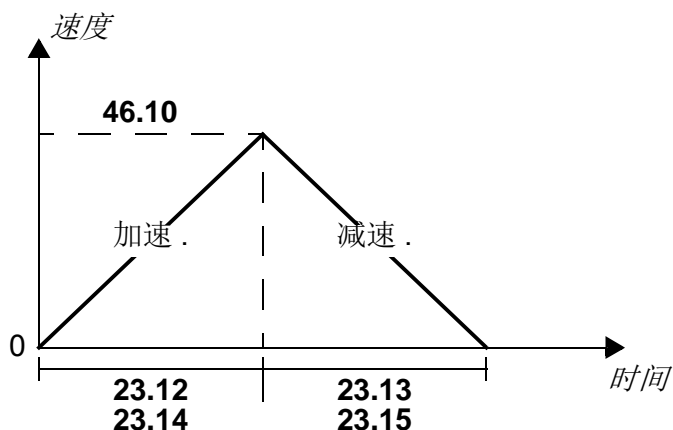
CN








- 46.10 速度换算**  
**23.11 斜坡设置选择**  
**23.12 加速时间 1**  
**23.13 减速时间 1**  
**23.14 加速时间 2**  
**23.15 减速时间 2**

您可以定义两种不同的加速 / 减速斜坡。两组设置之间切换的信号源通过参数 **23.11** 来选择。

参数 **23.12...23.15** 中的每个加速或减速时间的设置, 表示传动在零速和给定速度限值之间加减速所需要的时间 (参数 **46.10**)。



|                          |  |
|--------------------------|--|
| <input type="checkbox"/> | <p><b>30.11 最小速度</b><br/><b>30.12 最大速度</b><br/><b>30.17 最大电流</b><br/><b>30.19 最小转矩</b><br/><b>30.20 最大转矩</b></p> <p>检查，如果有必要的话，设置电机速度、电流和转矩的限值。</p>  |
| <input type="checkbox"/> | <p>正向速度给定并启动传动：</p> <ul style="list-style-type: none"><li>• 通过控制盘 (本地控制)：菜单视图下按  (<b>Options</b>) 键，选择 <b>Reference</b>，使用 , , , 和  键调整给定，按 <b>Save</b> 保存，并按启动按钮。</li><li>• 通过 I/O: 远程控制模式下，调整模拟输入 AI1 (给定)，切换数字输入 DI2 至 0 (正向)，切换数字输入 DI1 至 1 (启动)。</li></ul> |



# Quick start-up guide for ACS880 drives with primary control program

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## About this guide

This guide describes the basic start-up sequence of an ACS880 drive equipped with the primary control program. Complete documentation of the drive firmware can be found in *Firmware manual* (see list of manuals on the inside of the front cover).

In this guide, the drive is set up using the ACS-AP-I control panel. The start-up sequence can also be carried out using the Drive composer PC tool.

## Before you start

Ensure that the drive has been mechanically and electrically installed as described in the appropriate *Quick installation guide* and/or *Hardware manual*.

## Safety



**WARNING!** All electrical installation and maintenance work on the drive should be carried out by qualified electricians only.





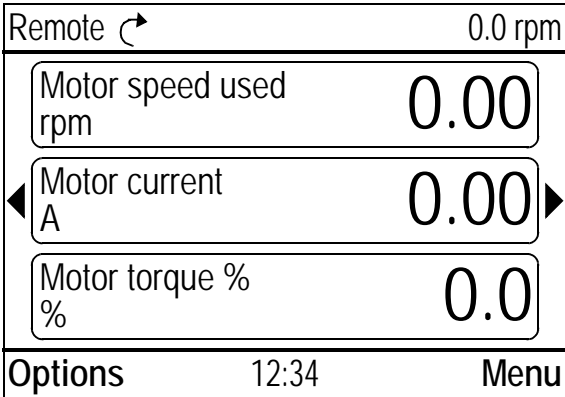

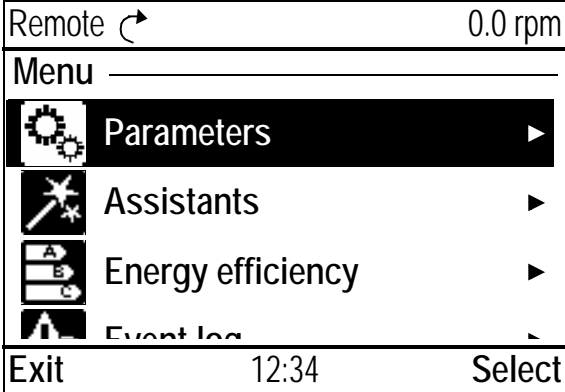
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
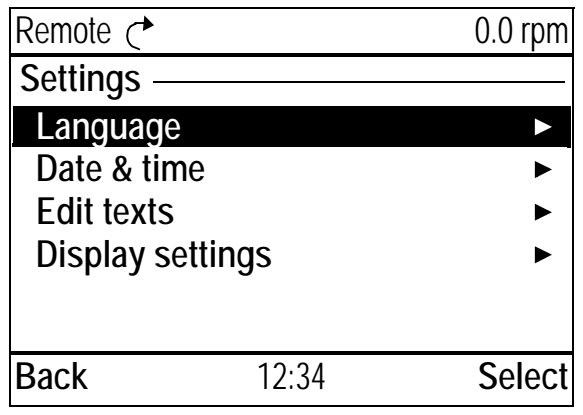

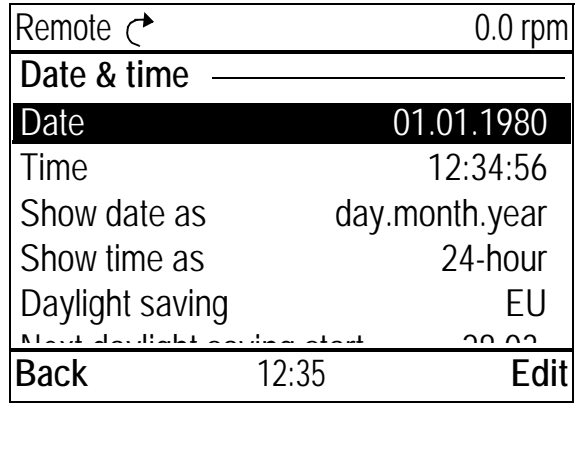

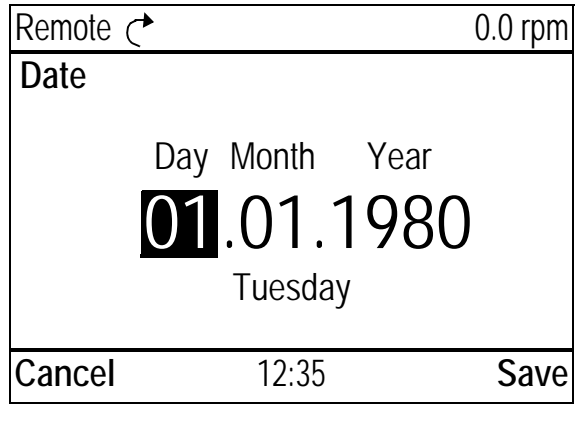
Never work on the drive, the braking chopper circuit, the motor cable or the motor when power is applied to the drive. Always ensure by measuring that no voltage is actually present.

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## Start-up

EN

| Safety  |   |
|---|---|
|    | The start-up may only be carried out by a qualified electrician.<br>The safety instructions must be followed during the start-up procedure. See the safety instructions on the first pages of the appropriate <i>Hardware manual</i> .  |
| <input type="checkbox"/>  | Check the installation. See the installation checklist in the appropriate <i>Hardware manual</i> .  |
| <input type="checkbox"/>  | <p>Check that the starting of the motor does not cause any danger.</p> <p><b>De-couple the driven machine</b> if</p> <ul style="list-style-type: none"> <li>there is a risk of damage in case of an incorrect direction of rotation, or</li> <li>a <b>Normal</b> ID run is required during the drive start-up, when the load torque is higher than 20% or the machinery is not able to withstand the nominal torque transient during the ID run.</li> </ul> |
| 1 – Power-up, date and time settings  |   |
| <input type="checkbox"/> Power up the drive.<br><p><b>Note:</b> It is normal that warning messages appear at various points along the start-up process. To hide a message and to resume the start-up process, press .</p> <p>Hide any warnings now to enter the <b>Home</b> view (shown on the right).</p> <p>The two commands at the bottom of the display (in this case, <b>Options</b> and <b>Menu</b>), show the functions of the two softkeys  and  located below the display. The commands assigned to the softkeys vary depending on the context.</p> |    |
| <input type="checkbox"/> In the <b>Home</b> view, press  ( <b>Menu</b> ). The main <b>Menu</b> (right) appears.  |   |


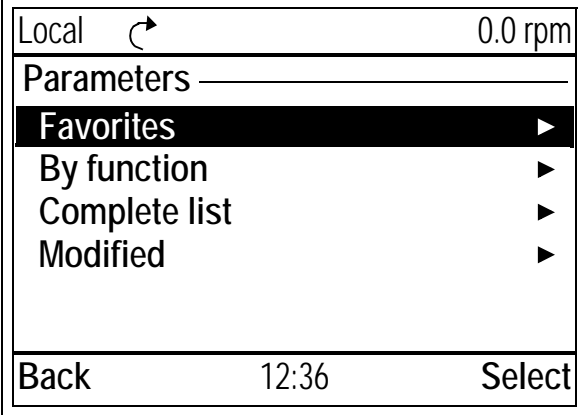




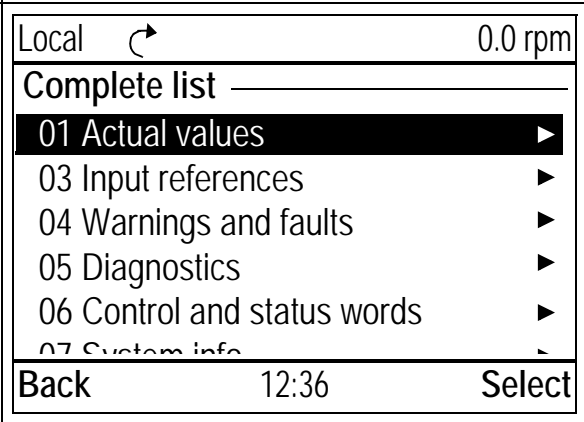



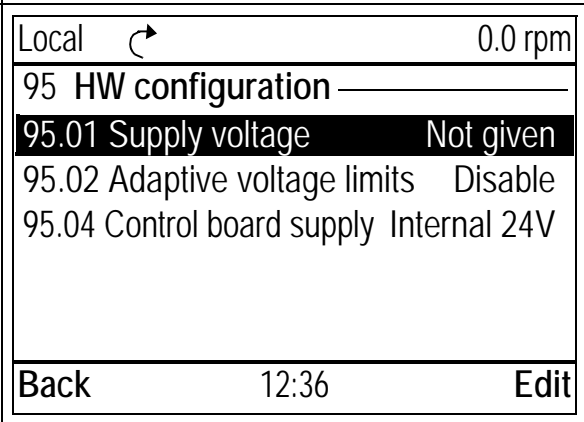


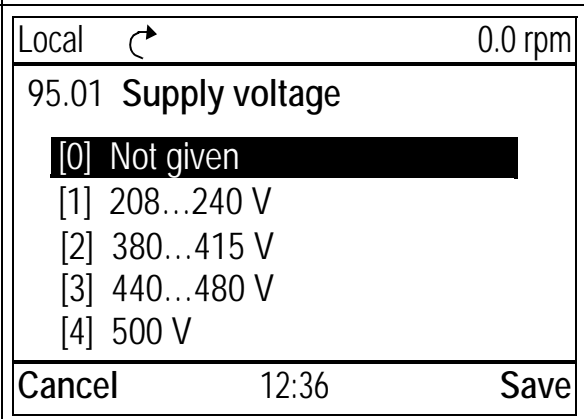

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| <input type="checkbox"/> | <p>Highlight <b>Settings</b> on the menu using  and  and press  (<b>Select</b>).</p> |    |
| <input type="checkbox"/> | <p>In the <b>Settings</b> menu, highlight <b>Date &amp; time</b> (if not already highlighted) and press  (<b>Select</b>).</p>  |   |
| <input type="checkbox"/> | <p>In the <b>Date &amp; time</b> menu, highlight <b>Date</b> (if not already highlighted) and press  (<b>Select</b>).</p>  |  |

|  |   |
|--|---|
| <p><input type="checkbox"/> Set the correct date:</p> <ul style="list-style-type: none"> <li>• Use  and  to move the cursor left and right.</li> <li>• Use  and  to change the value.</li> <li>• Press  (<b>Save</b>) to accept the new setting.</li> </ul> <p>Check/adjust all the remaining settings in the <b>Date &amp; time</b> menu.</p> <p>The <b>Show clock</b> setting determines whether the time is shown at all times in the bottom pane of the display.</p> <p>After you have made the settings, press  (<b>Back</b> or <b>Exit</b>) repeatedly until the <b>Home</b> view (right) reappears.</p> | <p>Remote  0.0 rpm</p> <p>Motor speed used 0.00 rpm</p> <p>Motor current 0.00 A</p> <p>Motor torque % 0.0</p> <p>Options 12:35 Menu</p> |
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## 2 – Supply voltage and motor data settings

|   |  |
|---|--|
| <p><input type="checkbox"/> Switch to local control to ensure that external control is disabled by pressing the  key. Local control is indicated by the text “Local” in the top pane.</p> | <p>Local  0.0 rpm</p> <p>Motor speed used 0.00 rpm</p> <p>Motor current 0.00 A</p> <p>Motor torque % 0.0</p> <p>Options 12:36 Menu</p>           |
| <p><input type="checkbox"/> Open the main <b>Menu</b> by pressing  (<b>Menu</b>).</p>   | <p>Local  0.0 rpm</p> <p>Menu</p> <p> Parameters </p> <p> Assistants </p> <p> Energy efficiency </p> <p> Event log </p> <p>Exit 12:36 Select</p> |



|                          |   |  |
|--------------------------|---|--|
| <input type="checkbox"/> | <p>Highlight <b>Parameters</b> and press  (<b>Select</b>).</p>   |  <p>Local  0.0 rpm</p> <p>Parameters _____</p> <p><b>Favorites</b> ▶</p> <p>By function ▶</p> <p>Complete list ▶</p> <p>Modified ▶</p> <hr/> <p>Back 12:36 Select</p>  |
| <input type="checkbox"/> | <p>Highlight <b>Complete list</b> using  and  and press  (<b>Select</b>).</p> <p>A listing of parameter groups is displayed.</p>   |  <p>Local  0.0 rpm</p> <p>Complete list _____</p> <p><b>01 Actual values</b> ▶</p> <p>03 Input references ▶</p> <p>04 Warnings and faults ▶</p> <p>05 Diagnostics ▶</p> <p>06 Control and status words ▶</p> <p>07 System info ▶</p> <hr/> <p>Back 12:36 Select</p> |
| <input type="checkbox"/> | <p>Highlight parameter group <b>95 HW configuration</b> and press  (<b>Select</b>).</p> <p>Note that the list wraps around in either direction between groups 99 and 01. In this case, it is quicker to use  to locate group 95 on the list.</p> <p>After selecting a group, a listing of parameters within the group is displayed.</p> |  <p>Local  0.0 rpm</p> <p>95 HW configuration _____</p> <p><b>95.01 Supply voltage</b> Not given</p> <p>95.02 Adaptive voltage limits Disable</p> <p>95.04 Control board supply Internal 24V</p> <hr/> <p>Back 12:36 Edit</p>                                    |
| <input type="checkbox"/> | <p>Highlight parameter <b>95.01 Supply voltage</b> (if not already highlighted) and press  (<b>Edit</b>).</p> <p>The available parameter settings are listed.</p>  |  <p>Local  0.0 rpm</p> <p>95.01 Supply voltage</p> <p><b>[0] Not given</b></p> <p>[1] 208...240 V</p> <p>[2] 380...415 V</p> <p>[3] 440...480 V</p> <p>[4] 500 V</p> <hr/> <p>Cancel 12:36 Save</p>  |

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|--|--|
| <input type="checkbox"/> Highlight the correct setting on the list and press  ( <b>Save</b> ). | <div style="border: 1px solid black; padding: 5px;"> <div style="display: flex; justify-content: space-between; border-bottom: 1px solid black;"> <span>Local </span> <span>0.0 rpm</span> </div> <div style="border-bottom: 1px solid black; padding: 2px;"> <p>95 HW configuration</p> <p style="background-color: #e0e0e0; margin: 2px;">95.01 Supply voltage 380...415 V</p> <p>95.02 Adaptive voltage limits Disable</p> <p>95.04 Control board supply Internal 24V</p> </div> <div style="display: flex; justify-content: space-between; border-top: 1px solid black;"> <span>Back</span> <span>12:36</span> <span>Edit</span> </div> </div> |
|--|--|

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|---|--|
| <input type="checkbox"/> Press  ( <b>Back</b> ) to display the list of parameter groups again. Select parameter group <b>99 Motor data</b> , and set parameter <b>99.03 Motor type</b> .  |  |
| <input type="checkbox"/> Set parameter <b>99.04 Motor ctrl mode</b> .<br><b>DTC</b> = Direct torque control; <b>Scalar</b><br>DTC is suitable for most cases. Scalar mode is recommended if <ul style="list-style-type: none"> <li>the nominal current of the motor is less than 1/6 of the nominal current of the drive,</li> <li>the drive is used for test purposes with no motor connected, or</li> <li>the drive controls multiple motors and the number of motors connected is variable.</li> </ul> |  |

Refer to the motor nameplate for the following parameter settings. Whenever possible, enter the values exactly as shown on the motor nameplate.



Example of a nameplate of an induction (asynchronous) motor:

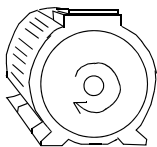
|                            |    |                |       |      |        |       |                  |  |  |
|----------------------------|----|----------------|-------|------|--------|-------|------------------|--|--|
| ABB Motors                 |    |                |       |      |        |       |                  |  |  |
| 3 ~ motor                  |    | M2AA 200 MLA 4 |       |      |        |       |                  |  |  |
| IEC 200 M/L 55             |    |                |       |      |        |       |                  |  |  |
| No                         |    |                |       |      |        |       |                  |  |  |
| Ins.cl. F                  |    |                |       |      | IP 55  |       |                  |  |  |
| V                          | Hz | kW             | r/min | A    | cos φ  | IA/IN | t <sub>E/s</sub> |  |  |
| 690 Y                      | 50 | 30             | 1475  | 32.5 | 0.83   |       |                  |  |  |
| 400 D                      | 50 | 30             | 1475  | 56   | 0.83   |       |                  |  |  |
| 660 Y                      | 50 | 30             | 1470  | 34   | 0.83   |       |                  |  |  |
| 380 D                      | 50 | 30             | 1470  | 59   | 0.83   |       |                  |  |  |
| 415 D                      | 50 | 30             | 1475  | 54   | 0.83   |       |                  |  |  |
| 440 D                      | 60 | 35             | 1770  | 59   | 0.83   |       |                  |  |  |
| Cat. no 3GAA 202 001 - ADA |    |                |       |      |        |       |                  |  |  |
| 6312/C3                    |    | 6210/C3        |       |      | 180 kg |       |                  |  |  |
| IEC 34-1                   |    |                |       |      |        |       |                  |  |  |

Example of a nameplate of a permanent magnet motor:

|                                    |    |                   |       |     |                 |       |                  |  |  |
|------------------------------------|----|-------------------|-------|-----|-----------------|-------|------------------|--|--|
| ABB Motors                         |    |                   |       |     |                 |       |                  |  |  |
| 3 ~ motor                          |    | M2BJ 280SMB 10 B3 |       |     |                 |       |                  |  |  |
| S1 SPEC INSUL. No 3424522          |    |                   |       |     |                 |       |                  |  |  |
| JK-21640-1                         |    |                   |       |     | Ins.cl. F IP 55 |       |                  |  |  |
| V                                  | Hz | kW                | r/min | A   | cos φ           | IA/IN | t <sub>E/s</sub> |  |  |
| 400 D                              | 50 | 55                | 600   | 103 | 0.97            |       |                  |  |  |
| Prod. code 2GBJ285220-ADA405445477 |    |                   |       |     |                 |       |                  |  |  |
| 6316/C3                            |    | 6316/C3           |       |     | 630kg           |       |                  |  |  |
| IEC 34-1                           |    |                   |       |     |                 |       |                  |  |  |

|  |  |
|--|--|
| <input type="checkbox"/> <b>99.06 Motor nominal current</b><br>The allowable range is <ul style="list-style-type: none"> <li>in DTC mode: <math>1/6 \times I_{Hd} \dots 2 \times I_{Hd}</math> of the drive</li> <li>in Scalar mode: <math>0 \dots 2 \times I_{Hd}</math></li> </ul> <b>Note:</b> With numerical parameter values: <ul style="list-style-type: none"> <li>Use  and  to change the value of a digit.</li> <li>Use  and  to move the cursor left and right.</li> <li>Press  (<b>Save</b>) to enter the value.</li> </ul> |  |
|--|--|

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|---|--|
| Make the following parameter settings in the same manner. |  |
| <input type="checkbox"/>                                  | <p><b>99.07 Motor nominal voltage</b></p> <p>The allowable range is <math>1/6 \times U_N \dots 2 \times U_N</math> of the drive.</p> <p>With permanent magnet motors, the nominal voltage is the BackEMF voltage at nominal speed. If the voltage is given in volt/rpm (eg. 60 V per 1000 rpm), the voltage at a nominal speed of 3000 rpm is <math>3 \times 60 \text{ V} = 180 \text{ V}</math>. Note that nominal voltage is not the same as equivalent DC motor voltage (EDCM) given by some manufacturers. The nominal voltage can be calculated by dividing the EDCM voltage by 1.7 (or square root of 3).</p>  |
| <input type="checkbox"/>                                  | <p><b>99.08 Motor nominal frequency</b></p> <p>With permanent magnet motors, if the nominal frequency is not shown on the nameplate, it can be calculated using the following formula:</p> $f = n \times p / 60$ <p>where <math>n</math> = nominal motor speed, <math>p</math> = number of pole pairs.</p>   |
| <input type="checkbox"/>                                  | <b>99.09 Motor nominal speed</b>   |
| <input type="checkbox"/>                                  | <b>99.10 Motor nominal power</b>   |
| <input type="checkbox"/>                                  | <p><b>99.11 Motor nominal cosφ</b></p> <p><b>99.12 Motor nominal torque</b></p> <p>These values are not required, but can be entered to improve control accuracy. If not known, leave at 0.</p>  |
| <input type="checkbox"/>                                  | <p><b>99.13 Identification run request</b></p> <p>This parameter selects the mode of the identification run (DTC motor control mode only).</p> <p> <b>WARNING!</b> The identification run modes marked thus * will run the motor in the forward direction (see below for details). Make sure it is safe to run the motor before choosing any of these modes.</p> <p>*<b>Normal</b> mode should be selected whenever possible. The driven machinery must be de-coupled from the motor if</p> <ul style="list-style-type: none"> <li>• the load torque is higher than 20%, or</li> <li>• the machinery is not able to withstand the nominal torque transient during the identification run.</li> </ul> <p>*<b>Reduced</b> mode should be selected if the mechanical losses are higher than 20%, ie. the load cannot be de-coupled, or full flux is required to keep the motor brake open (eg. with conical motors).</p> <p>The <b>Standstill</b> mode should be selected if neither the *<b>Normal</b> or *<b>Reduced</b> mode can be used. <b>Notes:</b></p> <ul style="list-style-type: none"> <li>• This mode cannot be used with a permanent magnet motor if the load torque is higher than 20% of nominal.</li> <li>• Mechanical brake is not opened by the logic for the identification run.</li> </ul> |
| <input type="checkbox"/>                                  | Ensure that the Safe torque off and emergency stop circuits (if present) are closed.   |
| <input type="checkbox"/>                                  | <p>Start the identification run by pressing the  (Start) button.</p> <p>A warning will indicate that the identification run is in progress.</p>   |

|                          |  |
|--------------------------|--|
| <input type="checkbox"/> | <p>Check that the motor runs in the correct direction (forward direction shown below).</p>  <p>The identification run has completed when the drive stops and the value of parameter <b>99.13</b> reverts to "No".</p> <p>If the motor ran in the wrong direction, correct the motor cabling or adjust parameter <b>99.16 Phase order</b>.</p> |
|--------------------------|--|

### 3 – Control signal settings

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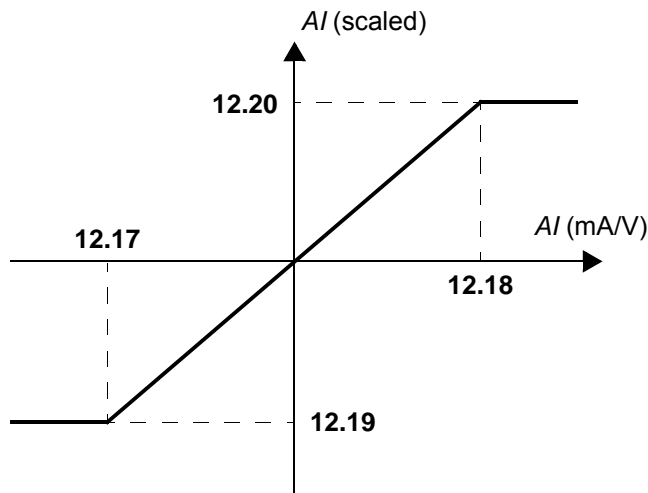
|                          |   |
|--------------------------|---|
| <input type="checkbox"/> | <p>Check the positions of jumpers J1 and J2 on the control unit of the drive. These jumpers determine whether analog inputs AI1 and AI2 are current or voltage.</p> |
|--------------------------|---|

Check/adjust the following parameters.

|                          |   |
|--------------------------|---|
| <input type="checkbox"/> | <p><b>20.01 Ext1 commands</b></p> <p>By default, the drive starts/stops according to the status of digital input DI1 (0 = Stop, 1 = Start). DI2 determines the direction of rotation (0 = Forward, 1 = Reverse).</p> <p>If other sources are required, change the value accordingly. The sources <b>In1...In3</b> are defined by parameters <b>20.03...20.05</b>.</p> |
|--------------------------|---|

|                          |   |
|--------------------------|---|
| <input type="checkbox"/> | <p><b>12.15 AI1 unit selection</b></p> <p>Set this to either <b>mA</b> or <b>V</b> corresponding to the setting of jumper J1.</p> |
|--------------------------|---|

|                          |  |
|--------------------------|--|
| <input type="checkbox"/> | <p><b>12.17 AI1 min</b><br/> <b>12.18 AI1 max</b><br/> <b>12.19 AI1 scaled at AI1 min</b><br/> <b>12.20 AI1 scaled at AI1 max</b></p> <p>The default input for speed reference is analog input AI1. (This is controlled by the parameters in group 22.)</p> <p>Parameters <b>12.17</b> and <b>12.18</b> set the low and high limits of the analog input signal. Scaling parameters <b>12.19</b> and <b>12.20</b> define the internal signal levels that correspond to these limits as follows:</p> |
|--------------------------|--|



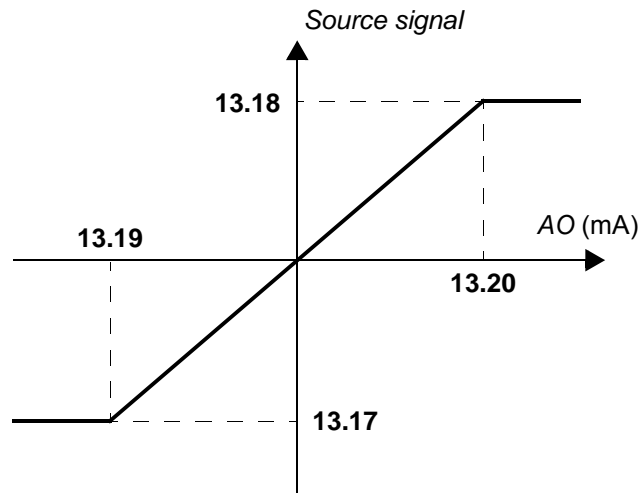
The corresponding parameters for analog input AI2 are **12.27...12.30**.



- 13.12 AO1 source**
- 13.17 AO1 source min**
- 13.18 AO1 source max**
- 13.19 AO1 out at AI1 src min**
- 13.20 AO1 out at AI1 src max**

Parameter **13.12** selects the source for analog output AO1 (by default, motor speed in rpm).

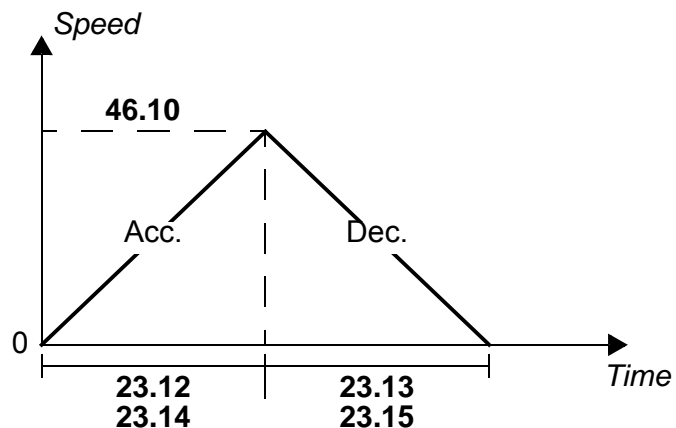
Parameters **13.17** and **13.18** set low and high source signal values that correspond to the actual analog output values defined by parameters **13.19** and **13.20**.








- 46.10 Speed scaling**
- 23.11 Ramp set selection**
- 23.12 Acceleration time 1**
- 23.13 Deceleration time 1**
- 23.14 Acceleration time 2**
- 23.15 Deceleration time 2**

You can define two different sets of acceleration/deceleration ramps. The source that switches between the two sets is selected by parameter **23.11**.

Each acceleration/deceleration time set in parameters **23.12**...**23.15** refers to the time it takes for the drive to accelerate or decelerate between 0 and scaling speed (parameter **46.10**).



|                          |  |
|--------------------------|--|
| <input type="checkbox"/> | <p><b>30.11 Minimum speed</b><br/> <b>30.12 Maximum speed</b><br/> <b>30.17 Maximum current</b><br/> <b>30.19 Minimum torque</b><br/> <b>30.20 Maximum torque</b></p> <p>Check, and set if necessary, the limits for motor speed, current and torque.</p>  |
| <input type="checkbox"/> | <p>Start the drive with a positive (forward) speed reference:</p> <ul style="list-style-type: none"> <li>• From control panel (Local control): In the Home view, press  (<b>Options</b>), select <b>Reference</b>, adjust the reference using the , , , and  keys, press <b>Save</b>, and press the Start button.</li> <li>• From I/O: In Remote control, adjust analog input AI1 (reference), switch digital input DI2 to 0 (forward), and switch digital input DI1 to 1 (start).</li> </ul> |

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