

安装、操作
和编程附加说明



hydrovar X 系列

配置集成变速驱动的电

EXM

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1 简介与安全

1.1 简介

本手册用途

本手册是对产品随附手册的补充，并非其替代手册。本手册提供了有关如何正确执行以下作业的信息：

- 安装
- 操作
- 编程。

文档中所用名称

- hydrovar X: 带 HVX 驱动的 EXM 电机
- hydrovar X+: 带 HVX+ 驱动的 EXM 电机

补充说明

本手册中的说明和警告适用于销售文档中所述的标准装置。特殊型号的泵将随附补充说明手册。如出现手册或商业文档中未考虑到的情形，请联系 Xylem 或授权经销商。

1.2 危险等级和安全符号

在使用装置之前，用户必须阅读、理解并遵守危险警告等指示，以防出现以下危险：

- 受伤和健康危害
- 产品受损
- 装置故障。

危险等级

危险等级	指示
 危险：	用于指示一种危险情况，如未避免则会造成重伤甚至死亡。
 警告：	用于指示一种危险情况，如未避免则可能造成重伤甚至死亡。
 注意事项：	用于指示一种危险情况，如未避免则可能造成轻度或中度受伤。
注意：	用于指示一种情况，如未避免则可能造成财产损失但无人员伤亡。

补充符号

符号	描述
	电气危险
	高温表面危险
	爆炸性空气危险
	电离辐射危险
	磁场危险

1.3 用户安全

严格遵守现行的健康和安全法规。

合格人员

该装置的安装、操作、维护和故障排除仅限合格人员进行。合格用户是指能够在装置安装、使用、维护和故障排除期间识别风险并避免危险的人员。

个人防护装备

在搬运、安装、操作、维护和故障排除过程中，请根据具体情况使用个人防护装备。个人防护装备包括但并不仅限于安全帽、手套、安全鞋。

暴露于电离辐射下的位置



警告：电离辐射危险

如果装置暴露在电离辐射下，应采取必要措施，保护人员安全。如需运输装置，应通知承运人和接收人采取适当的安全措施。

1.4 环境保护

包装和产品的处置

遵守与分类废物处置有关的现行法规。

2 搬运和储存

2.1 预防措施

在开始任何作业前，请务必阅读并理解 简介与安全 中的所有安全指示。



注意事项: 人工搬运的风险

装置搬运应符合“人工搬运”的现行规定，避免不良的人体工程学条件导致脊椎损伤的风险。



警告: 割伤和压伤危险

始终穿戴个人防护装备。

2.2 交付时的装置检查

包装检查

1. 检查数量、描述和产品代码是否与订单相符。
 2. 检查包装有无破损或部件有无缺失。
 3. 如有明显破损或部件缺失:
 - 请进行异常签收，在运输单据上注明发现的任何问题，或者
 - 请拒收货物，并在运输单据上注明原因。
- 在这两种情况下，请立即联系 Xylem 或销售该产品的授权经销商。

装置的拆箱和检查

1. 拆除包装。
2. 确保根据适用法规对所有包装材料进行分类。
3. 卸下螺钉和/或剪断扎带（如有）以松开装置。
4. 检查装置的完整性，并确保没有部件缺失。
5. 如出现损坏或部件缺失，请立即联系 Xylem 或授权经销商。

2.3 使用起重机提升



警告: 压伤危险

- 使用符合现行规定和适合指定用途的绳索、吊钩、卸扣、吊索或吊环螺栓。
- 紧固在电机上的吊环螺栓仅用于提升电机。

1. 将绳索连接至电机上的吊环螺栓。
2. 将绳索固定至起重机。
3. 提升起重机，拉紧绳索但不提升装置。
4. 缓慢提升并移动装置，单手扶住电机轴以平衡负载
5. 缓慢降下装置。
6. 从吊环螺栓中松开绳索。

下图显示如何提升装置。



2.4 储存

已包装装置的存放

装置的存放位置必须：

- 位于具有遮盖且干燥的场所
- 远离热源
- 防尘
- 防震
- 环境温度在 -40°C 至 $+70^{\circ}\text{C}$ (-40°F 至 158°F) 之间且 30°C (86°F) 时最大相对湿度为 90%。

注意：

- 请勿在装置顶部放置重物。
 - 保护装置以防碰撞。
-

装置的长期存放

遵守与已包装装置相同的存放说明。

如需了解有关长期存放的更多信息，请联系 Xylem 销售公司或授权经销商。

3 产品描述

3.1 特点

该产品为永磁辅助磁阻同步电机，配备了 HVX 或 HVX+ 电子变速驱动。

该产品可提供以下配置：

- 与集成泵预组装
- 作为同型号 EXM 电机的兼容备件
- 作为用于与 Xylem 泵连接的部件：在此情况下，整个组件构成一款新产品，完成集成的一方需对其在各方面承担全部法律责任。

预期用途

本产品适用于商业、企业、手工业或专业用途，用于驱动 Xylem 地面电动泵，并可根据需要调整性能。

始终遵守 规格 中的操作限制。



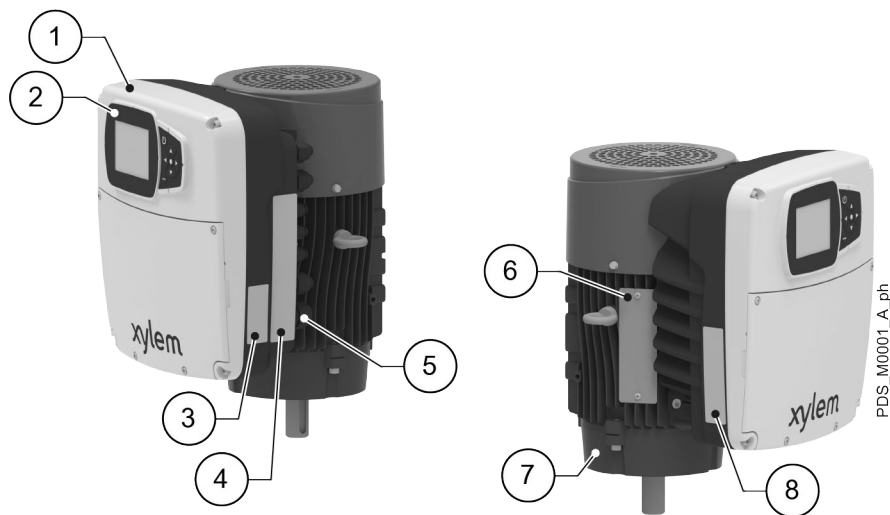
危险：潜在爆炸性空气危险

禁止在有潜在爆炸性空气或可燃粉尘的环境中启动装置。

不当用途

- 驱动不同类型和/或不同制造商的电动泵，以及不在预期用途范围内的装备或设备
- 使用 EXM 电机替代电动泵的传统异步电机。

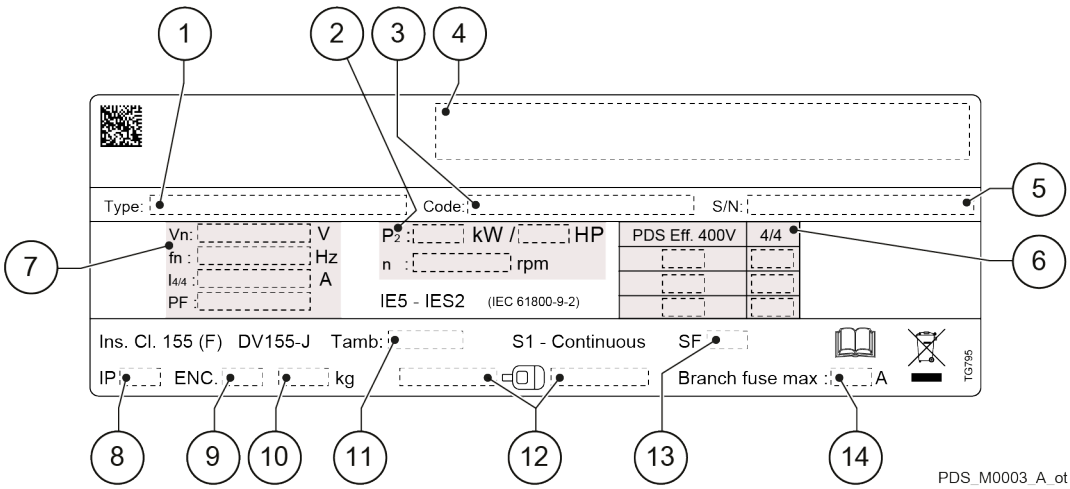
3.2 部件名称



1. HVX 或 HVX+ 驱动
2. 操作面板
3. HVX 或 HVX+ 驱动的无线电设备批准标签
4. HVX 或 HVX+ 驱动的警告标签
5. 电源和信号电缆入口
6. EXM 电机组件的铭牌
7. EXM 电机
8. 驱动铭牌

3.3 铭牌

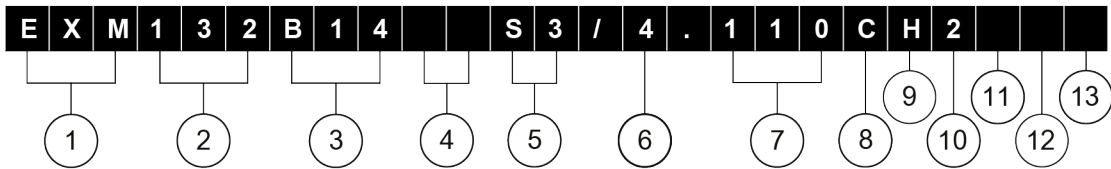
EXM 电机组件的铭牌



PDS_M0003_A_ot

1. 型号
2. 输出额定值
3. 标识码
4. 品牌
5. 序列号
6. 装置满载效率
7. 输入额定值
8. IP 防护等级
9. NEMA 外壳类型
10. 装置重量
11. 室温范围
12. 轴承型号
13. 服务系数
14. 保护保险丝的最大功率

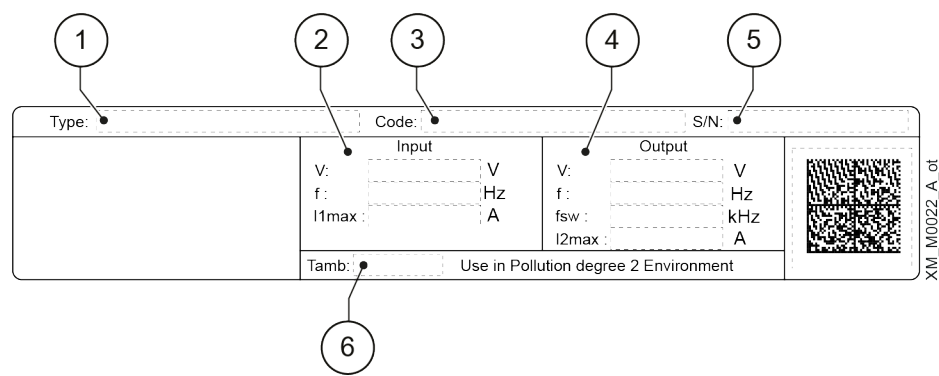
标识码



PDS_M0004_A_sc

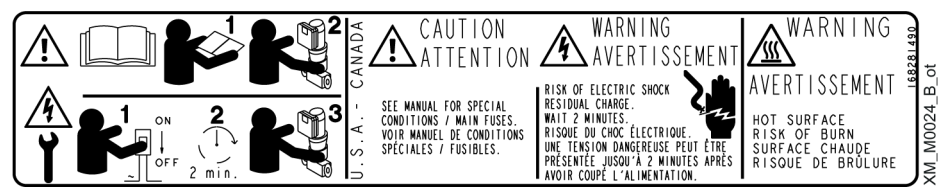
1. 系列名称
2. 轴高: 90、112、132、160 或 180 mm
3. 法兰类型: B3、B5、B14、HM、CEA 或 CA
4. 键类型: SV、HA、HB 或标准化 []
5. 特殊轴延长件类型: S1、S2、S3、S4 或标准化 []
6. 电源电压: 3 × 208 V, ..., 240 V [03] 或 3 × 380 V, ..., 480 V [04]
7. 额定电机功率 (单位为 kW×10)
8. 机型尺寸: B、C 或 D
9. hydrovar X [S] 或 hydrovar X+ [H] 驱动
10. 额定功率下的转速范围: 3000 至 4000 min⁻¹ [2] 或 3600 至 4000 min⁻¹ [2] 或 1500 至 2000 min⁻¹ [4]
11. 标准驱动 [] 或无滤波器 [W]
12. 电机有底脚 [F] 或无底脚 []
13. 标准电机 [] 或加大电机 [R]

HVX 或 HVX+ 驱动的铭牌

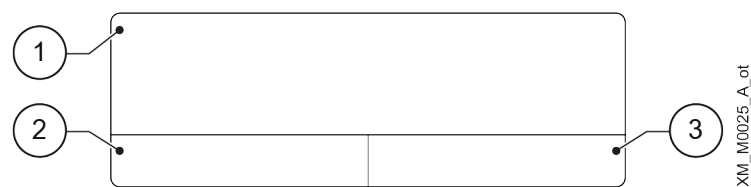


- 1. 型号
- 2. 输入运行限值
- 3. 标识码
- 4. 输出运行限值
- 5. 序列号
- 6. 室温范围

HVX 或 HVX+ 驱动的警告标签



HVX 或 HVX+ 驱动的无线电设备批准标签



- 1. 美国
- 2. 加拿大
- 3. 其他国家

4 安装

4.1 预防措施

在开始任何作业前，请务必阅读并理解 简介与安全 中的所有安全指示。



危险：电气危险

开始作业前，检查电源是否断开和锁住，避免装置、控制面板和辅助控制电路意外重启。



警告：物理危险和热危险

- 始终穿戴个人防护装备。
- 始终使用适当的工作工具。

注意

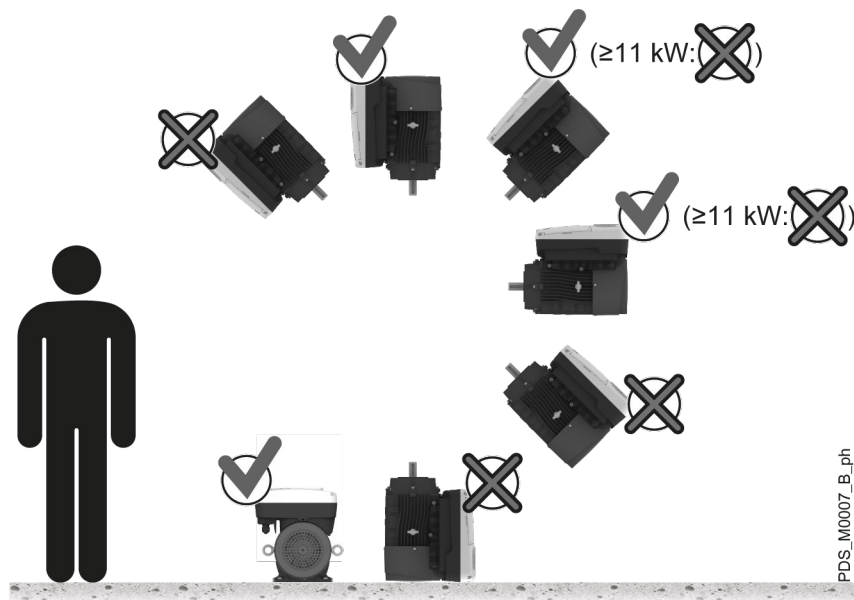
下列泵型号不提供 EXM 电机：

- HMK / HMX
- 1...22 SVI...E....

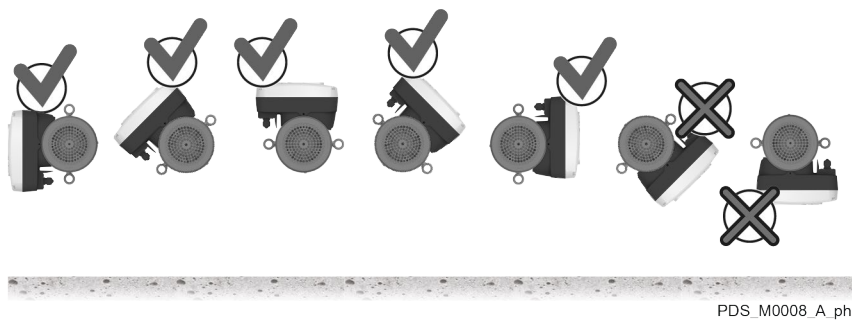
4.2 机械安装

4.2.1 允许位置

下图仅显示驱动的允许位置：也可参阅电动泵手册中的允许位置。
如需了解其他位置，请联系 Xylem 或授权经销商。



PDS_M0007_B_ph



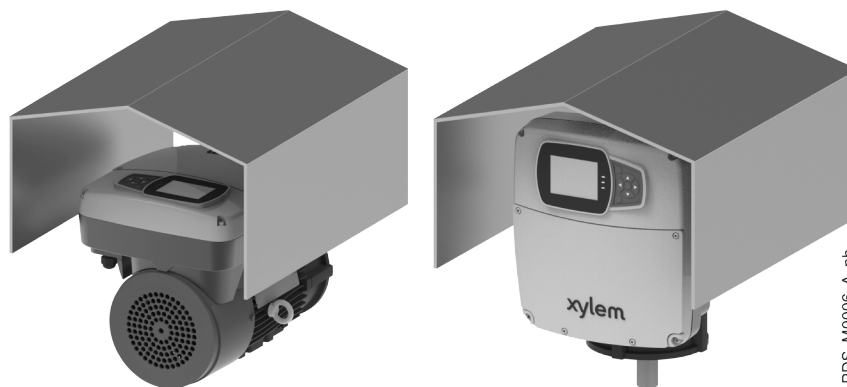
4.2.2 安装区域

1. 遵守第 124 页的“运行环境”中的规定。

注意：

如果相对湿度超出规定限值，请联系 Xylem 或授权经销商。

2. 将装置放置在高于地面的位置上。
3. 确保任何泄漏不会造成安装区域受淹或装置浸泡。
4. 如果安装在室外，请确保使用合适的护罩对装置进行适当防护，以防阳光直射和雨雪侵蚀。



墙壁和装置外表面间的空气间隙

- 为确保适度通风： $\geq 100 \text{ mm}$ (4 in)
- 为了方便电机检查和拆卸： $\geq 300 \text{ mm}$ (12 in)
- 如果可用空间不足，请参阅电动泵的技术文档。

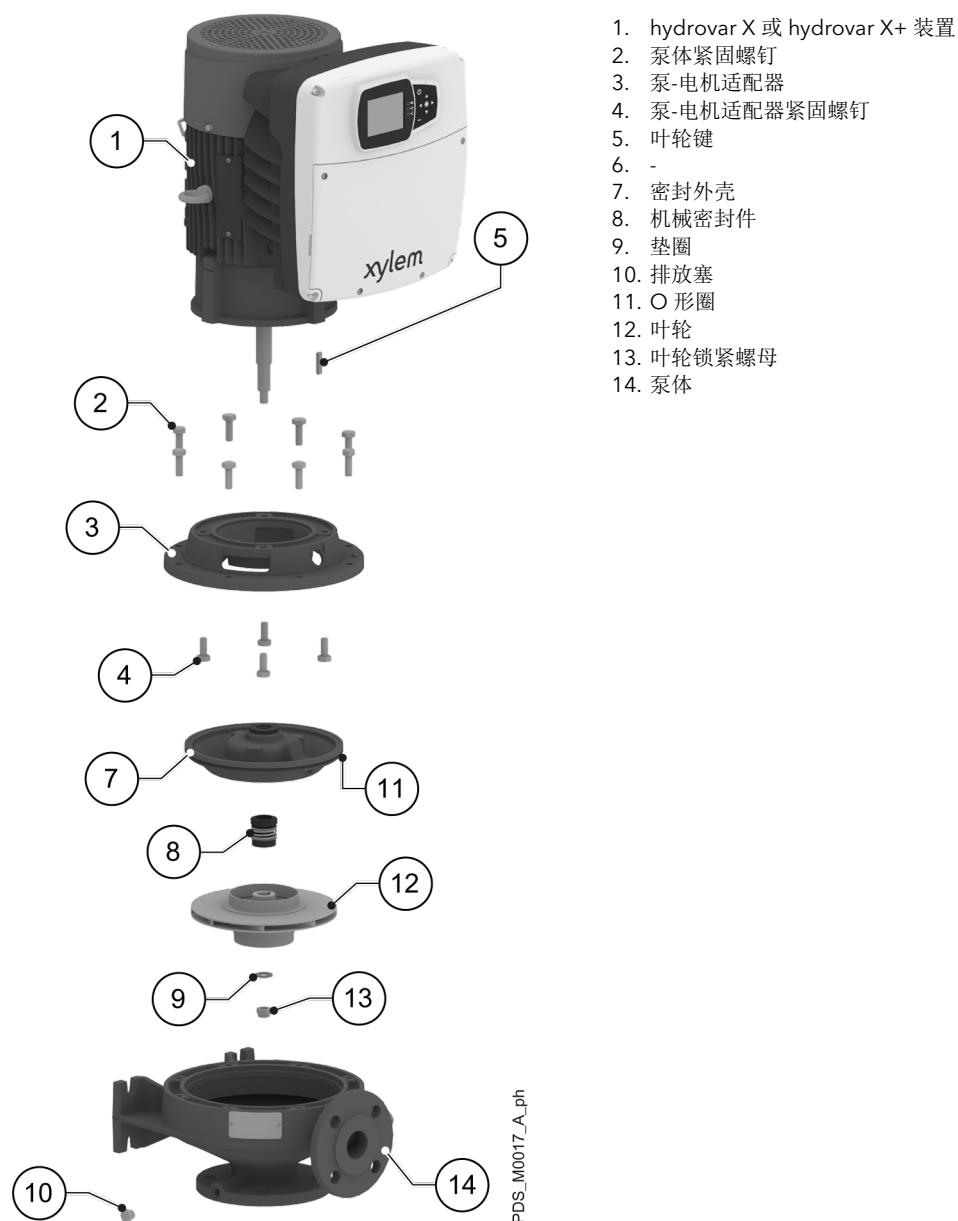
易冷凝环境

在易冷凝的环境条件下，请启用电机自动加热模式。更多详情，请参阅 **S07.2 Motor Heating**。

4.3 与 Xylem 泵的机械连接

hydrovar X 或 hydrovar X+ 装置与 Xylem 产品目录中的泵进行机械连接。

4.3.1 与 NSCEK 和 NSCEX 泵连接



初步操作

1. 关闭吸入和排出阀。
2. 拆下排放塞，排空装置。

装置拆卸

1. 拧下紧固螺钉，拆卸泵体。
2. 滑出电机。
3. 拧下叶轮螺母并拆下垫圈。
4. 拆下叶轮和键。
5. 借助撬棍小心地拆下机械密封件。
6. 拆下密封外壳。
7. 拧松螺钉，拆下泵-电机适配器。

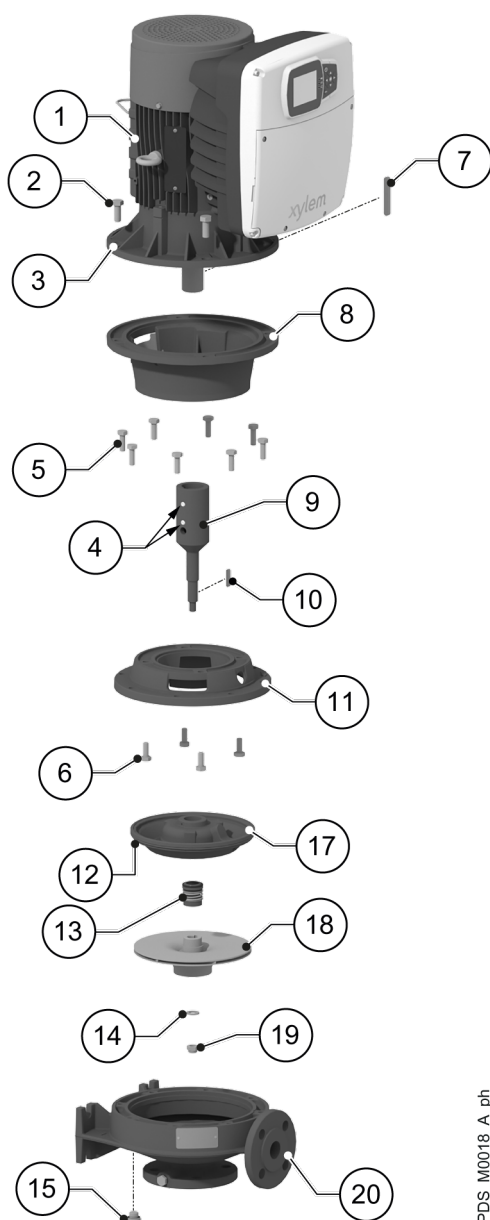
新装置组装

1. 将泵-电机适配器安装到电机上。
螺钉扭矩：
 - M8 → 15 Nm (133 lbf • in) ± 15%
 - M10 → 32 Nm (283 lbf • in) ± 15%
 - M12 → 45 Nm (398 lbf • in) ± 15%。
2. 将密封外壳安装在法兰上，确保 O 形圈位置正确。
3. 使用酒精润滑机械密封件。
4. 小心地将机械密封件放置于轴上。
5. 放置键并将叶轮放置于轴上。
6. 插入垫圈并拧紧螺母。
拧紧扭矩：
 - 7/16" - 20UNF → 25 Nm (221 lbf • in) ± 15%
 - M12 → 45 Nm (398 lbf • in) ± 15%
 - M16 → 110 Nm (974 lbf • in) ± 15%。
7. 将电机组件安装到泵体上。
螺钉扭矩：
 - M10X25 → 32 Nm (283 lbf • in) ± 15%
 - M10X30 和 M10X35 → 40 Nm (354 lbf • in) ± 15%
 - M12 → 70 Nm (620 lbf • in) ± 15%。

最终操作

1. 紧固排放塞。
拧紧扭矩：40 Nm (354 lbf • in) ± 25%。
2. 启动电动泵之前，先对其进行灌泵操作。请参阅电动泵手册。

4.3.2 与 NSCSK 和 NSCSX 泵连接



1. hydrovar X 或 hydrovar X+ 装置
2. 将电机法兰固定至适配器的螺钉
3. 电机法兰
4. 耦合器锁紧止付螺钉
5. 泵体紧固螺钉
6. 泵-电机适配器紧固螺钉
7. 电机轴键
8. 电机侧适配器
9. 刚性耦合器
10. 叶轮键
11. 泵侧适配器
12. O 形圈
13. 机械密封件
14. 垫圈
15. 排放塞
16. -
17. 密封外壳
18. 叶轮
19. 叶轮锁紧螺母
20. 泵体

PDS_M0018_A_ph

初步操作

1. 关闭吸入和排出阀。
2. 拆下排放塞，排空装置。

装置拆卸

1. 拧下紧固螺钉，拆卸泵体。
2. 滑出电机。
3. 拧下叶轮螺母并拆下垫圈。
4. 拆下叶轮和键。
5. 借助撬棍小心地拆下机械密封件。
6. 拆下密封外壳。
7. 拧下螺钉，拆下法兰。
8. 部分拧松固定法兰与适配器的其中一个螺钉，并完全拧下其余所有螺钉。
9. 用木槌轻敲该部分拧松的螺钉的头部，拆下适配器。
10. 完全拧下该螺钉。
11. 拧松耦合器的止付螺钉。
12. 使用抽取器拉出耦合器。

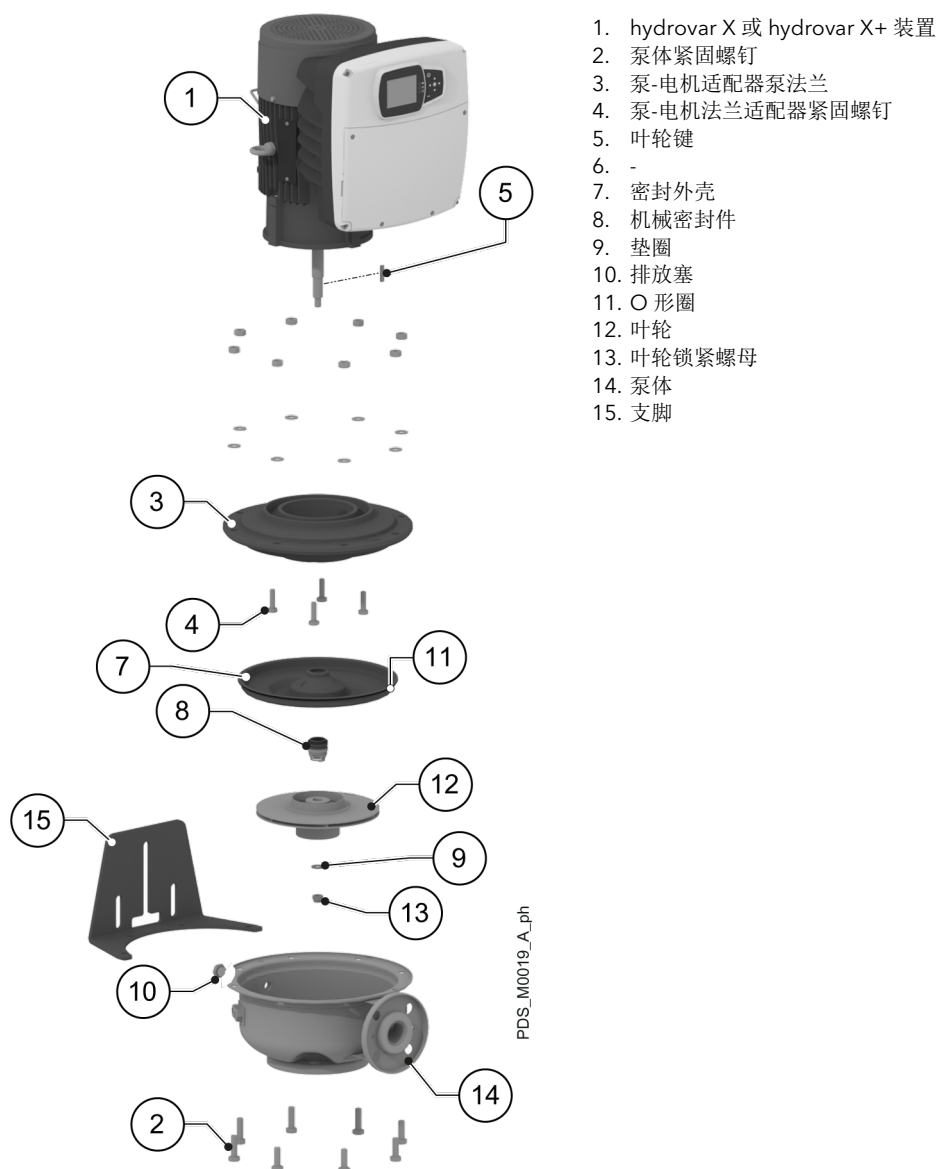
新装置组装

1. 放置键并将耦合器插到轴上。
2. 拧紧止付螺钉，固定耦合器。
拧紧扭矩：13 Nm (115 lbf · in) ± 15%。
3. 将电机侧适配器安装在电机法兰上。
螺钉扭矩：
 - M10→32 Nm (283 lbf · in) ± 15%
 - M12→45 Nm (398 lbf · in) ± 15%
 - M16→110 Nm (974 lbf · in) ± 15%。
4. 将泵侧适配器安装在电机侧适配器上。
螺钉扭矩：
 - M8 → 15 Nm (133 lbf · in) ± 15%
 - M10→32 Nm (283 lbf · in) ± 15%。
5. 将密封外壳安装在适配器上，确保 O 形圈位置正确。
拧紧扭矩：20 Nm (177 lbf · in) ± 25%。
6. 使用酒精润滑机械密封件。
7. 小心地将机械密封件放置于轴上。
8. 放置键并将叶轮放置于轴上。
9. 插入垫圈并拧紧螺母。
拧紧扭矩：
 - 7/16" - 20UNF→25 Nm (221 lbf · in) ± 15%
 - M12→45 Nm (398 lbf · in) ± 15%
 - M16→110 Nm (974 lbf · in) ± 15%。
10. 将电机组件安装到泵体上。
螺钉扭矩：
 - M10→40 Nm (354 lbf · in) ± 15%
 - M12→70 Nm (620 lbf · in) ± 15%。
11. 紧固排放塞。
拧紧扭矩：40 Nm (354 lbf · in) ± 25%。

最终操作

1. 紧固排放塞。
拧紧扭矩：40 Nm (354 lbf · in) ± 25%。
2. 启动电动泵之前，先对其进行灌泵操作。请参阅电动泵手册。

4.3.3 与 ESHEX 泵连接



初步操作

1. 关闭吸入和排出阀。
2. 拆下排放塞，排空装置。

装置拆卸

1. 拧下紧固螺钉，拆卸泵体。
2. 滑出电机。
3. 拧下叶轮螺母并拆下垫圈。
4. 拆下叶轮和键。
5. 借助撬棍小心地拆下机械密封件。
6. 拆下密封外壳。
7. 拧下螺钉，拆下泵-电机适配器。

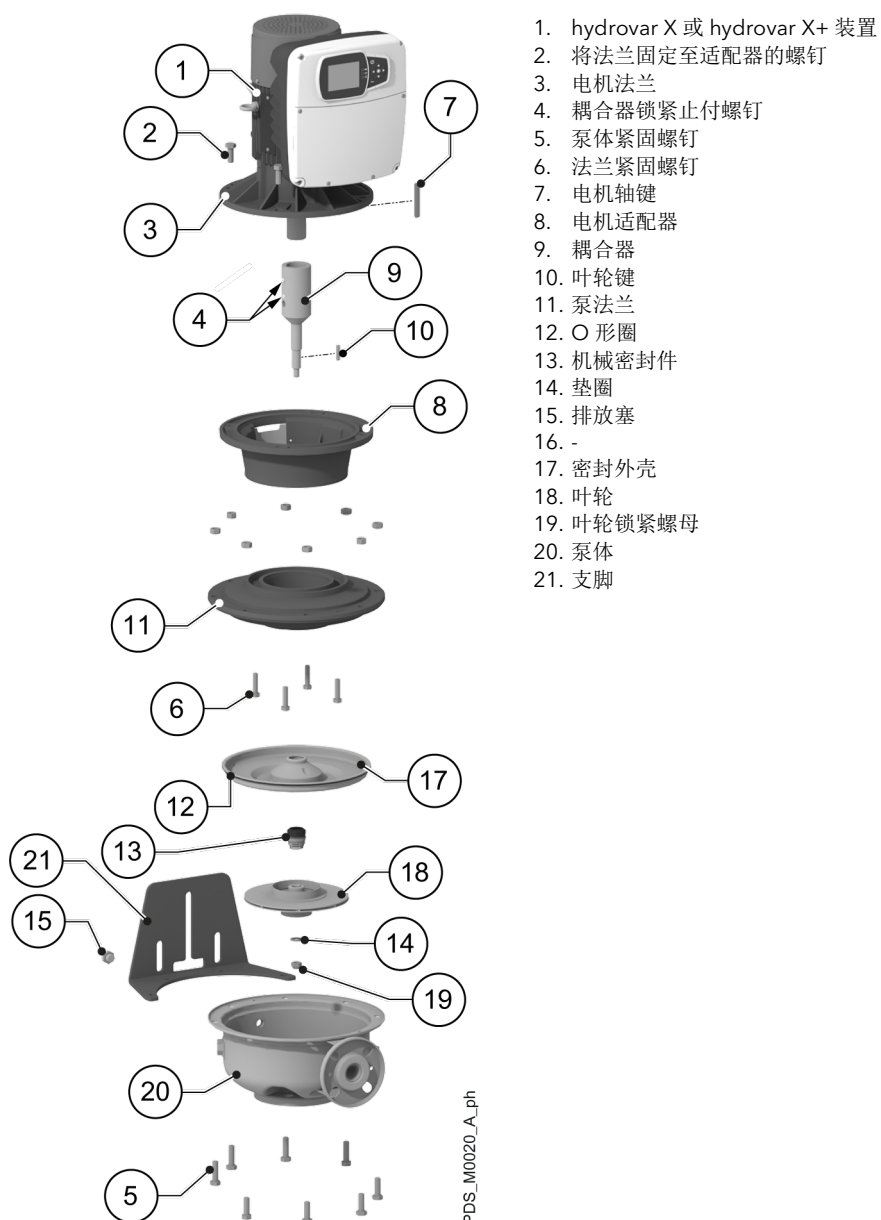
新装置组装

1. 将泵-电机适配器安装到电机上。
螺钉扭矩：
 - M8 → 15 Nm (133 lbf • in) ± 15%
 - M10 → 32 Nm (283 lbf • in) ± 15%
 - M12 → 45 Nm (398 lbf • in) ± 15%。
2. 将密封外壳安装在泵-电机适配器上，确保 O 形圈位置正确。
3. 使用酒精润滑机械密封件。
4. 小心地将机械密封件放置于轴上。
5. 放置键并将叶轮放置于轴上。
6. 插入垫圈并拧紧螺母。
拧紧扭矩：
 - 7/16" - 20UNF → 25 Nm (221 lbf • in) ± 15%
 - M12 → 45 Nm (398 lbf • in) ± 15%
 - M16 → 110 Nm (974 lbf • in) ± 15%。
7. 将电机组件安装到泵体上。
螺钉扭矩：
 - M10X25 → 32 Nm (283 lbf • in) ± 15%
 - M10X30 和 M10X35 → 40 Nm (354 lbf • in) ± 15%
 - M12 → 70 Nm (620 lbf • in) ± 15%。
8. 紧固排放塞。
拧紧扭矩：40 Nm (354 lbf • in) ± 25%。

最终操作

1. 紧固排放塞。
拧紧扭矩：40 Nm (354 lbf • in) ± 25%。
2. 启动电动泵之前，先对其进行灌泵操作。请参阅电动泵手册。

4.3.4 与 ESHSX 泵连接



初步操作

1. 关闭吸入和排出阀。
2. 拆下排放塞，排空装置。

装置拆卸

1. 拧下紧固螺钉，拆卸泵体。
2. 滑出电机。
3. 拧下叶轮螺母并拆下垫圈。
4. 拆下叶轮和键。
5. 借助撬棍小心地拆下机械密封件。
6. 拆下密封外壳。
7. 拧下螺钉，拆下法兰。
8. 部分拧松固定法兰与适配器的其中一个螺钉，并完全拧下其余所有螺钉。
9. 用木槌轻敲该部分拧松的螺钉的头部，拆下适配器。
10. 完全拧下该螺钉。
11. 拧松耦合器的止付螺钉。
12. 使用抽取器拉出耦合器。

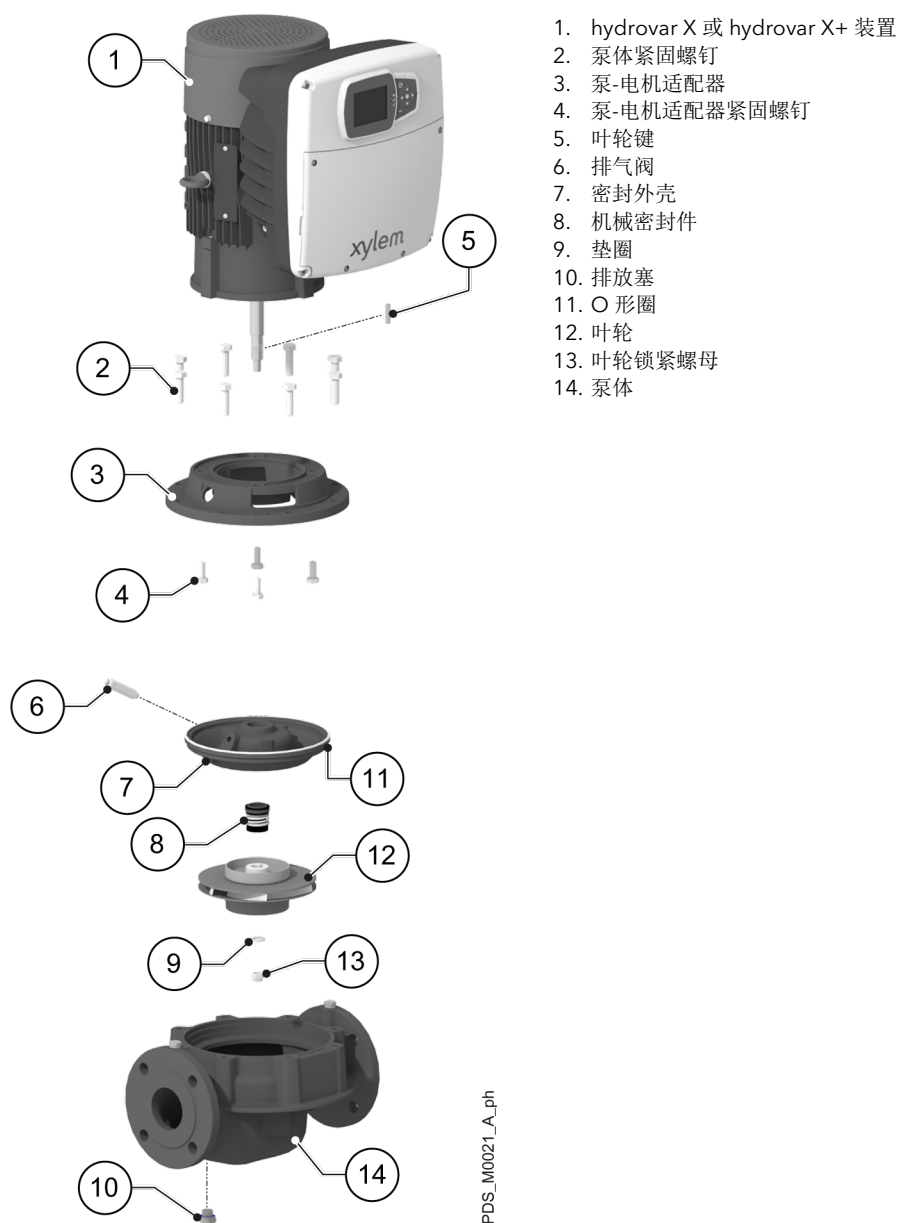
新装置组装

1. 放置键并将耦合器插到轴上。
2. 拧紧止付螺钉，固定耦合器。
拧紧扭矩：13 Nm (115 lbf · in) ± 15%。
3. 将适配器安装在电机上。
螺钉扭矩：
 - M10→32 Nm (283 lbf · in) ± 15%
 - M12→50 Nm (443 lbf · in) ± 15%
 - M16→110 Nm (974 lbf · in) ± 15%。
4. 将法兰安装在适配器上。
螺钉扭矩：
 - M8 → 15 Nm (133 lbf · in) ± 15%
 - M10→32 Nm (283 lbf · in) ± 15%。
5. 将密封外壳安装在法兰上，确保 O 形圈位置正确。
拧紧扭矩：20 Nm (177 lbf · in) ± 25%。
6. 使用酒精润滑机械密封件。
7. 小心地将机械密封件放置于轴上。
8. 放置键并将叶轮放置于轴上。
9. 插入垫圈并拧紧螺母。
拧紧扭矩：
 - 7/16" - 20UNF→25 Nm (221 lbf · in) ± 15%
 - M12→45 Nm (398 lbf · in) ± 15%
 - M16→110 Nm (974 lbf · in) ± 15%。
10. 将电机组件安装到泵体上。
螺钉扭矩：
 - M10→40 Nm (354 lbf · in) ± 15%
 - M12→70 Nm (620 lbf · in) ± 15%。
11. 紧固排放塞。
拧紧扭矩：40 Nm (354 lbf · in) ± 25%。

最终操作

1. 紧固排放塞。
拧紧扭矩：40 Nm (354 lbf · in) ± 25%。
2. 启动电动泵之前，先对其进行灌泵操作。请参阅电动泵手册。

4.3.5 与 LNEEK、LNEEX、LNTEK 和 LNTEX 泵连接



初步操作

1. 关闭吸入和排出阀。
2. 拆下排放塞，排空装置。

装置拆卸

1. 拧下减压阀。
2. 拧下紧固螺钉，拆卸泵体。
3. 滑出电机。
4. 拧下叶轮螺母并拆下垫圈。
5. 拆下叶轮和键。
6. 借助撬棍小心地拆下机械密封件。
7. 拆下密封外壳。
8. 拧松螺钉，拆下泵-电机适配器。

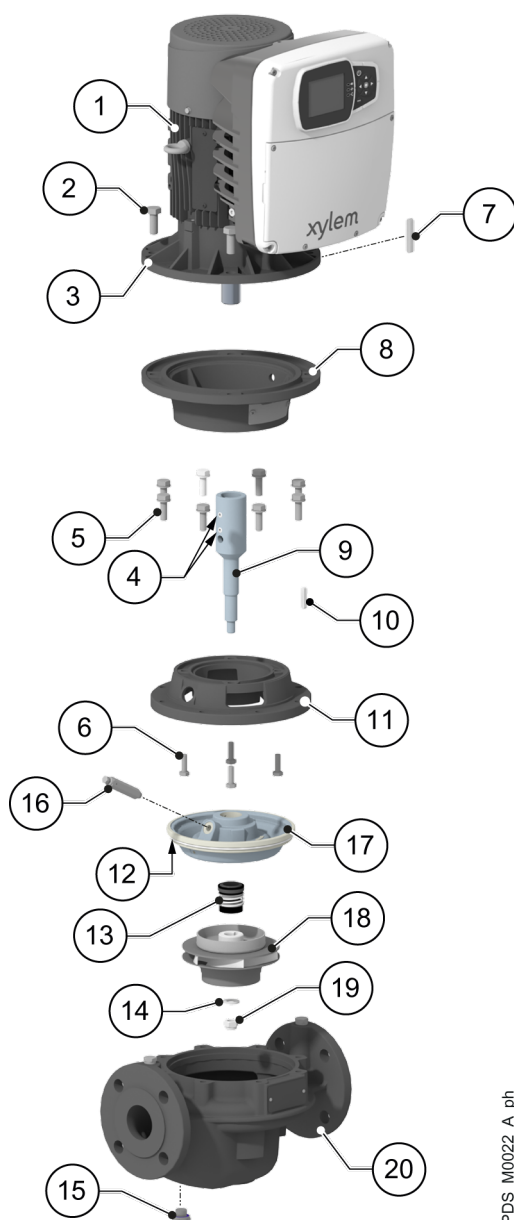
新装置组装

1. 将泵-电机适配器安装到电机上。
螺钉扭矩：
 - M8 → 15 Nm (133 lbf • in) ± 15%
 - M10 → 32 Nm (283 lbf • in) ± 15%
 - M12 → 45 Nm (398 lbf • in) ± 15%。
2. 将密封外壳安装在泵-电机适配器上，确保 O 形圈位置正确。减压阀连接孔必须与法兰上的孔对齐。
3. 在减压阀螺纹上涂抹一些特氟隆，并将阀门拧紧到位。
拧紧扭矩：20 Nm (177 lbf • in) ± 25%。
4. 使用酒精润滑机械密封件。
5. 小心地将机械密封件放置于轴上。
6. 放置键并将叶轮放置于轴上。
7. 插入垫圈并拧紧螺母。
拧紧扭矩：
 - 7/16" - 20UNF → 25 Nm (221 lbf • in) ± 15%
 - M12 → 45 Nm (398 lbf • in) ± 15%
 - M16 → 110 Nm (974 lbf • in) ± 15%。
8. 将电机组件安装到泵体上。
螺钉扭矩：
 - M10X25 → 32 Nm (283 lbf • in) ± 15%
 - M10X30 和 M10X35 → 40 Nm (354 lbf • in) ± 15%
 - M12 → 70 Nm (620 lbf • in) ± 15%。
9. 紧固排放塞。
拧紧扭矩：40 Nm (354 lbf • in) ± 25%。

最终操作

1. 紧固排放塞。
拧紧扭矩：40 Nm (354 lbf • in) ± 25%。
2. 启动电动泵之前，先对其进行灌泵操作。请参阅电动泵手册。

4.3.6 与 LNESK、LNESX、LNTSK 和 LNTSX 泵连接



1. hydrovar X 或 hydrovar X+ 装置
2. 将电机法兰固定至适配器的螺钉
3. 电机法兰
4. 耦合器锁紧止付螺钉
5. 泵体紧固螺钉
6. 泵-电机适配器紧固螺钉
7. 电机轴键
8. 电机侧适配器
9. 刚性耦合器
10. 叶轮键
11. 泵侧适配器
12. O 形圈
13. 机械密封件
14. 垫圈
15. 排放塞
16. 排气阀
17. 密封外壳
18. 叶轮
19. 叶轮锁紧螺母
20. 泵体

PDS_M0022_A_ph

初步操作

1. 关闭吸入和排出阀。
2. 拆下排放塞，排空装置。

装置拆卸

1. 拧下减压阀。
2. 拧下紧固螺钉，拆卸泵体。
3. 滑出电机。
4. 拧下叶轮螺母并拆下垫圈。
5. 拆下叶轮和键。
6. 借助撬棍小心地拆下机械密封件。
7. 拆下密封外壳。
8. 拧下螺钉，拆下法兰。
9. 部分拧松固定法兰与适配器的其中一个螺钉，并完全拧下其余所有螺钉。
10. 用木槌轻敲该部分拧松的螺钉的头部，拆下适配器。
11. 完全拧下该螺钉。
12. 拧松耦合器的止付螺钉。
13. 使用抽取器拉出耦合器。

新装置组装

1. 放置键并将耦合器插到轴上。
2. 拧紧止付螺钉，固定耦合器。
拧紧扭矩：13 Nm (115 lbf · in) ± 15%。
3. 将适配器安装在电机上。
螺钉扭矩：
 - M10→32 Nm (283 lbf · in) ± 15%
 - M12→45 Nm (398 lbf · in) ± 15%
 - M16→110 Nm (974 lbf · in) ± 15%。
4. 将法兰安装在适配器上。
螺钉扭矩：
 - M8 → 15 Nm (133 lbf · in) ± 15%
 - M10→32 Nm (283 lbf · in) ± 15%。
5. 将密封外壳安装在法兰上，确保 O 形圈位置正确。减压阀连接孔必须与法兰上的孔对齐。
拧紧扭矩：20 Nm (177 lbf · in) ± 25%。
6. 在减压阀螺纹上涂抹一些特氟隆，并将阀门拧紧到位。
拧紧扭矩：20 Nm (177 lbf · in) ± 25%。
7. 使用酒精润滑机械密封件。
8. 小心地将机械密封件放置于轴上。
9. 放置键并将叶轮放置于轴上。
10. 插入垫圈并拧紧螺母。
拧紧扭矩：
 - 7/16" - 20UNF→25 Nm (221 lbf · in) ± 15%
 - M12→45 Nm (398 lbf · in) ± 15%
 - M16→110 Nm (974 lbf · in) ± 15%。
11. 将电机组件安装到泵体上。
螺钉扭矩：
 - M10→40 Nm (354 lbf · in) ± 15%
 - M12→70 Nm (620 lbf · in) ± 15%。
12. 紧固排放塞。
拧紧扭矩：40 Nm (354 lbf · in) ± 25%。

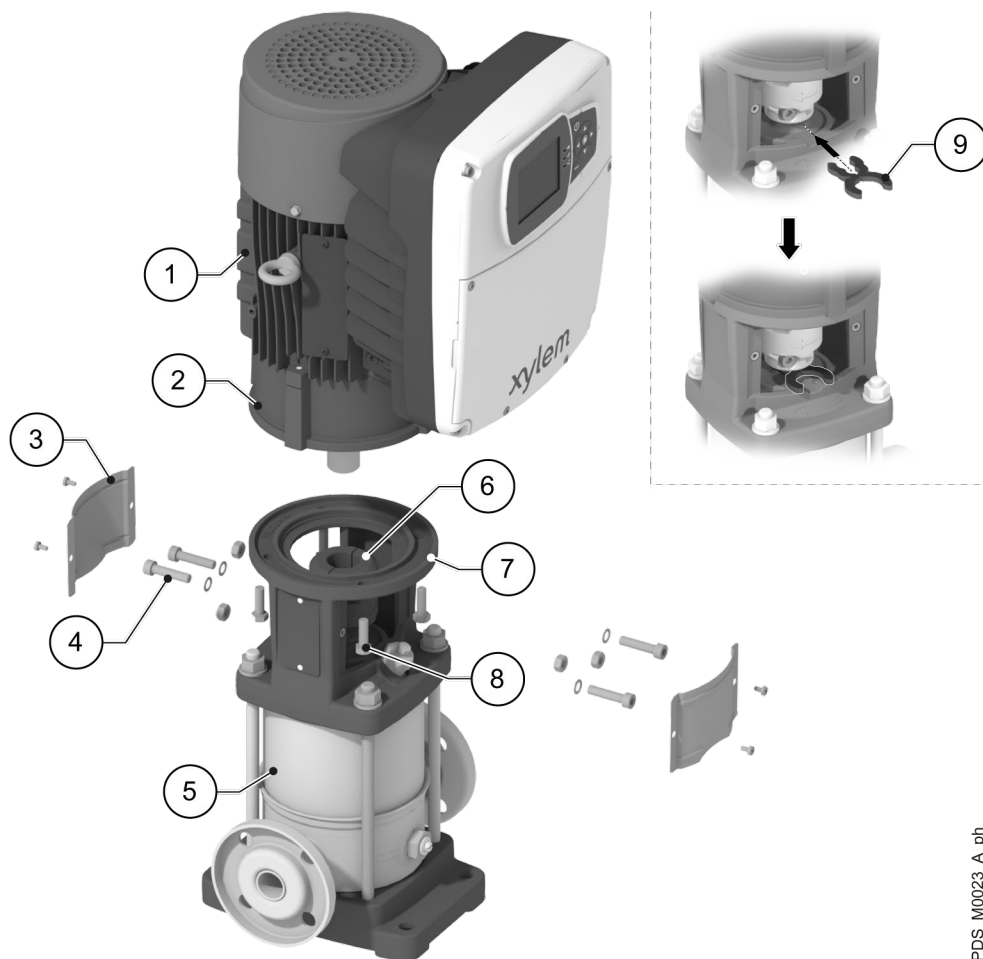
最终操作

1. 紧固排放塞。
拧紧扭矩：40 Nm (354 lbf · in) ± 25%。
2. 启动电动泵之前，先对其进行灌泵操作。请参阅电动泵手册。

4.3.7 与 SVK、SVX、SVIK 和 SVIX 泵连接

不包括型号 1...22 SVI...E...

SVK, SVX

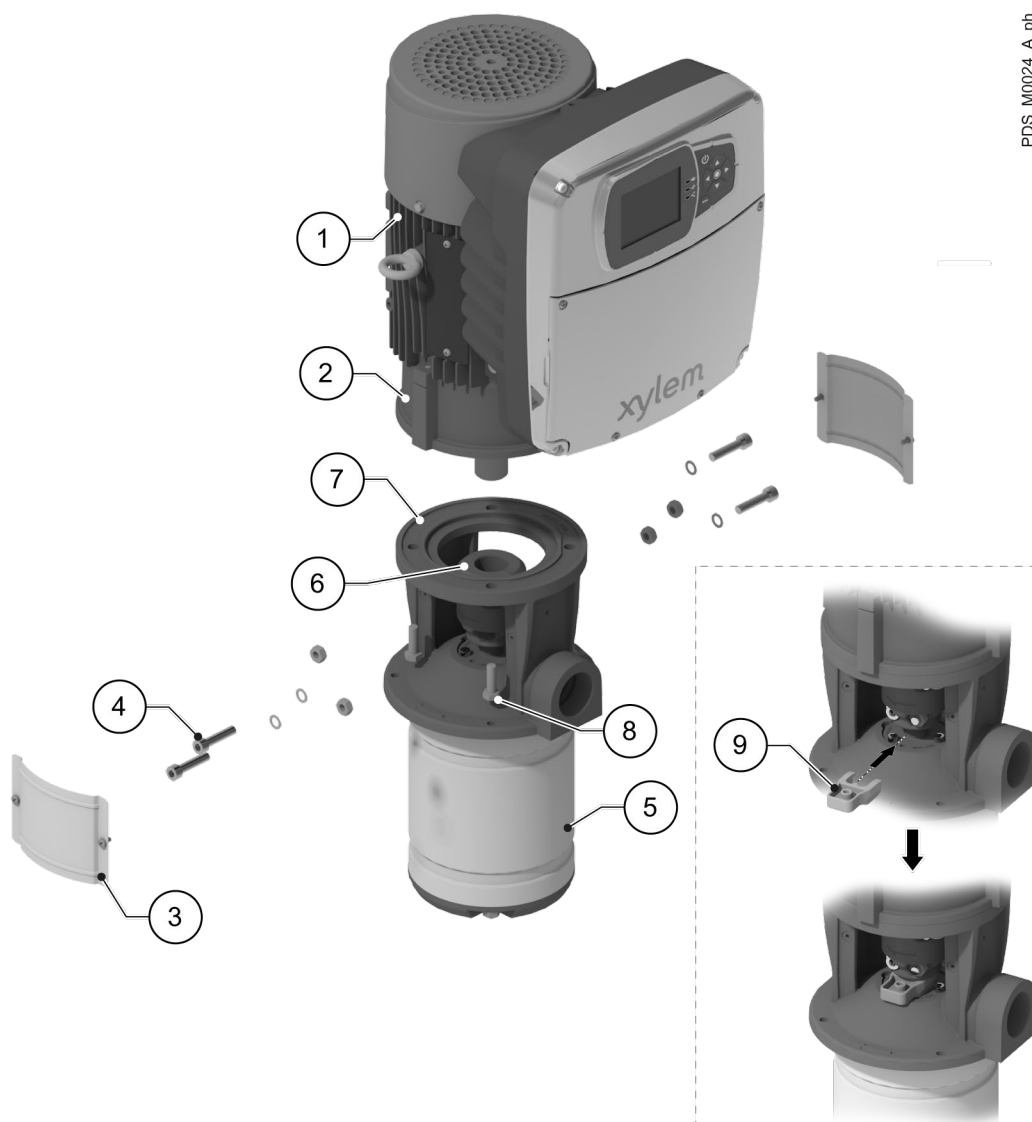


PDS_M0023_A_ph

1. hydrovar X 或 hydrovar X+ 装置
2. 电机法兰
3. 耦合器保护装置
4. 耦合螺钉
5. 泵
6. 耦合器
7. 适配器
8. 电机固定螺钉
9. 叶轮堆栈垫片

SVIK, SVIX

PDS_M0024_A_ph



1. hydrovar X 或 hydrovar X+ 装置
2. 电机法兰
3. 耦合器保护装置
4. 耦合螺钉
5. 泵
6. 耦合器
7. 适配器
8. 电机固定螺钉
9. 叶轮堆栈垫片

装置拆卸

1. 拆下保护装置。
2. 插入随电动泵提供的叉形垫片。
3. 拧下螺钉，拧下耦合器。
4. 拧下将法兰固定至适配器的螺钉。
5. 滑出电机。

新装置组装

1. 将电机安装在适配器上。
螺钉扭矩：
 - M8 → 15 Nm (133 lbf · in) ± 15%
 - M12 → 50 Nm (442 lbf · in) ± 15%
 - M16 → 75 Nm (664 lbf · in) ± 15%。
2. 安装接头。
螺钉扭矩：
 - M8 → 25 Nm (221 lbf · in) ± 15%
 - M10 → 50 Nm (442 lbf · in) ± 15%
 - M12 → 75 Nm (664 lbf · in) ± 15%。
3. 拆下叉形夹片。
4. 安装耦合器防护罩。
螺钉扭矩：
 - M4 → 1.5 Nm (13 lbf · in) ± 25%
 - M5 → 3 Nm (27 lbf · in) ± 25%。

4.4 电气连接

4.4.1 要求

1. 检查电线是否有应对以下情况的保护：
 - 高温
 - 震动
 - 碰撞
 - 液体。
2. 检查电源线是否配有：
 - 尺寸合适的短路保护装置
 - 电源断开装置，其触点打开距离可确保在过电压 III 类条件下完全断开连接。

隔离型网络 (IT)

在零线与地面隔离的配电网络中安装（IT 系统）：

- 必须根据公布的泄露电流和待连接的装置数量进行评估；
- 可能需要使用 C4 类应用程序专用的“W”型 hydrovar X 和 hydrovar X+（无 EMI 滤波器），符合相关产品标准 EN 61800-3:2004+A1:2012 和 EN IEC 61800-3:2018 的定义。

如需获得更多信息，请联系 Xylem 或授权经销商。

4.4.2 接地



危险：电气危险

- 在尝试进行任何其他电气连接之前，始终将外部保护导体（接地）连接到接地端子。
- 将装置的所有电气配件接地。
- 检查外部保护导体（接地）是否比相导体长。如果装置与相导体意外断开连接，保护导体必须是最后一个与端子分离的导体。
- 安装能避免间接接触的适当保护系统，防止致命电击。

4.4.3 控制面板指南

注意：
控制面板必须符合装置铭牌上的等级。

保险丝和/或自动开关

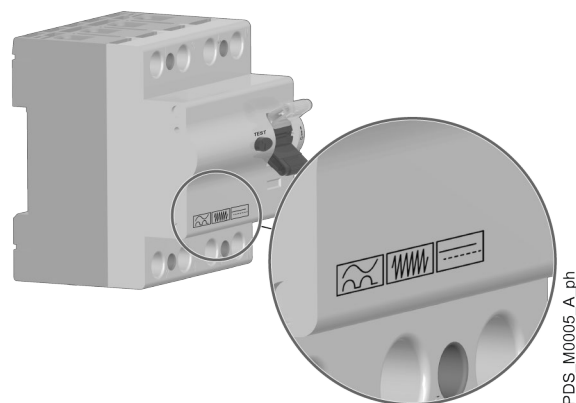
- 电子激活的驱动功能可确保电机的过载保护功能。过载保护功能计算增量水平，从而激活触发器功能（电机停止）的时间安排。
输入电流越高，响应越快。该功能为电机提供 20 级保护。
- 驱动必须配备过电流和短路保护装置，以防电源电缆过热。必须安装线路保险丝或自动开关，以确保实现该保护功能。保险丝和自动开关必须作为安装的一部分由安装人员提供。
- 在电源侧使用推荐的保险丝和/或自动开关，将其作为内部驱动部件失效（首次失效）时的保护装置。使用推荐的保险丝和自动开关可确保将驱动可能受到的损坏限制在其内部。对于其他类型的保护装置，请确保其通过能量等于或小于推荐型号的通过能量。
- 仅当使用 JDDZ.2/8 类 T 型并具有下表所示特性的核准保险丝时，才可确保符合 UL 要求。
- 表中显示的保险丝适用于可以释放 5000 Arms 电流（对称）和最大 480 V 电压的电路。使用所示保险丝时，驱动的短路电流额定值 (SCCR) 为 5000 Arms。
- 选择保护装置时，请参阅铭牌上显示的电流，并遵守当地和国家的尺寸规定。

下表显示推荐的保险丝和开关。

HVX 或 HVX+ 驱动的尺寸	Xylem 电机	三相电源电压, Vac	不符合 UL 的 gG 型保险丝电流, A	符合 UL 的 T 型保险丝的制造商和型号				MCB S203 型号 ABB 开关
				Bussmann	Edison	Littelfuse	Ferraz-Shawmut	
B	EXM.../3...B..	200 - 240	16	JJN-15	TJN (15)	JLLN 15	A3T15	C16
C	EXM.../3...C..		30	JJN-30	TJN (30)	JLLN 30	A3T30	C32
D	EXM.../3...D..		63	JJN-60	TJN (60)	JLLN 60	A3T60	C63
B	EXM.../4...B..	380 - 480	16	JJS-15	TJS (15)	JLLS 15	A6T15	C16
C	EXM.../4...C..		30	JJS-30	TJS (30)	JLLS 30	A6T30	C32
D	EXM.../4...D..		63	JJS-60	TJS (60)	JLLS 60	A6T60	C63

漏电断路器

- 如果安装了用于保护人员免受接地漏电影响的开关，请检查：
 - 其尺寸是否适用于系统配置和使用环境
 - 是否具有防止瞬态接地电流导致故障的启动延迟
 - 是否可以检测交流电或直流电并以下图所示符号标记。
- 使用接地漏电自动开关或接地防故障开关时，请确保考虑到系统中所有电气设备的总对地泄露电流。



4.4.4 驱动指南

注意：

电缆横截面的尺寸必须根据装置的额定电流确定。遵守当地或国家有关电缆尺寸的规定。

电缆输入特性

请参阅 铭牌 以确定驱动的尺寸。

电缆密封套类型	电缆直径, mm (in)	托板上的拧紧扭 矩, Nm (lbf • in)	电缆密封套扭矩, Nm (lbf • in)	根据 HVX 或 HVX+ 驱动尺寸 确定的输入端数量		
				B	C	D
M12	3-6.5 (0.1-0.26)	2.7 (24)	1.5 (13)	3	3	5
M16	5-10 (0.2-0.4)	5 (44)	3 (27)	3	3	3
M25	11-17 (0.4-0.7)	7.5 (66)	7 (62)	1	1	-
M40	19-28 (0.7-1.1)	14 (124)	12 (106)	-	-	1

注意：

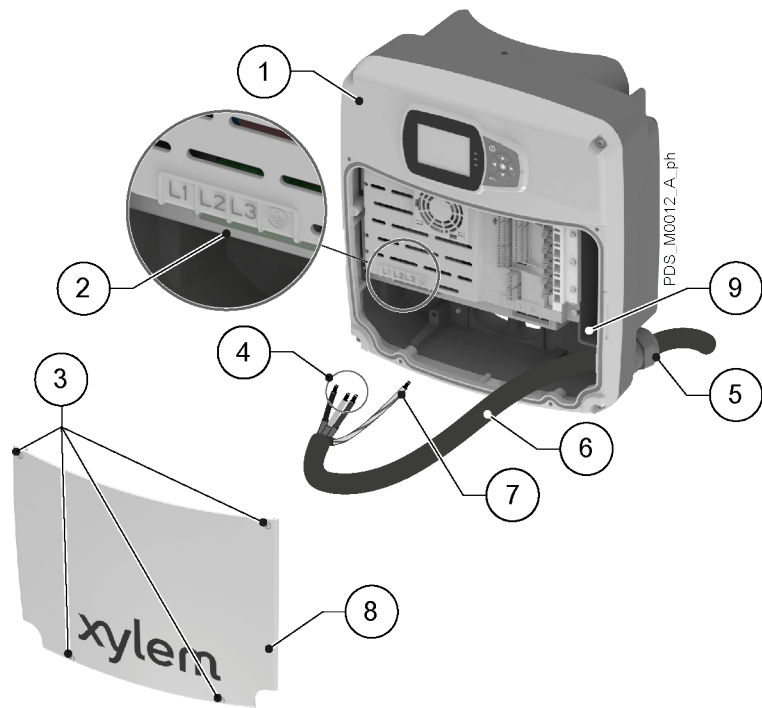
- 安装时，请根据表格中的数值检查托板上的电缆密封套是否正确紧固。
- 更换电缆密封套和/或安装转接器时，请使用合适的核准部件，以保证 IP55 防护等级和 NEMA 4 等级。

电源端子和导体的特性

请参阅 铭牌 以确定驱动的尺寸。

HVX 或 HVX+ 驱动的 尺寸	连接类型	可安装导体的类型和横截面	剥离长度, mm (in)
B 和 C	弹簧	• 刚性: 1.5-10 mm² • 柔性: 1.5-6 mm² • 无塑料护套的电缆端子: 1.5-6 mm² • 有塑料护套的电缆端子: 1.5-4 mm² • 符合 UL/CSA: AWG 16-8	15 (0.6)
D	通过螺钉	• 刚性: 2.5-35 mm² • 柔性: 2.5-25 mm² • 无塑料护套的电缆端子: 2.5-25 mm² • 有塑料护套的电缆端子: 2.5-25 mm² • 符合 UL/CSA: AWG 14-2	

驱动连接



- 1. 驱动
- 2. 端子
- 3. 护罩螺钉
- 4. 相导体
- 5. 电缆密封套
- 6. 电源电缆
- 7. 保护导体（接地）
- 8. 护罩
- 9. 其他接地接口

- 1. 拆除护罩并观察内部接线图。
- 2. 确定驱动的尺寸；请参阅 铭牌。
- 3. 将电缆插入电源电缆密封套中：

HVX 或 HVX+ 驱动的尺寸	电缆密封套类型
B	M20
C	M25
D	M40

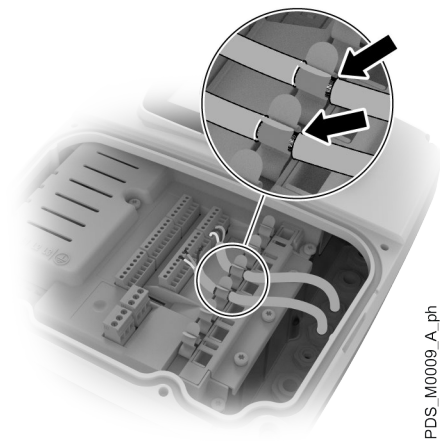
- 4. 牢固地连接各导体，确保保护导体长于相导体。在以下型号尺寸中：
 - B 和 C，使用最大宽度为 2.5 mm (0.98 in) 的一字螺丝刀打开弹簧
 - D，使用米字螺丝刀以 4 Nm (35 lbf • in) 的扭矩拧紧端接螺钉。注意：对于尺寸为 D 的型号，建议使用带塑料护套的电缆端子。
- 5. 拧紧电缆密封套。
拧紧扭矩：
 - M20→6 Nm (53 lbf • in)
 - M25→7 Nm (71 lbf • in)
 - M40→12 Nm (106 lbf • in)。
- 6. 安装护罩并拧紧螺钉。
拧紧扭矩：2.5 Nm (22 lbf • in) ± 15%。

4.5 辅助连接



危险：电气危险
如果继电器 1 接入的电压高于 30 V，请勿使用继电器 2。

建议通过信号端子旁可用的弹簧金属端子将信号电缆屏蔽层接地。

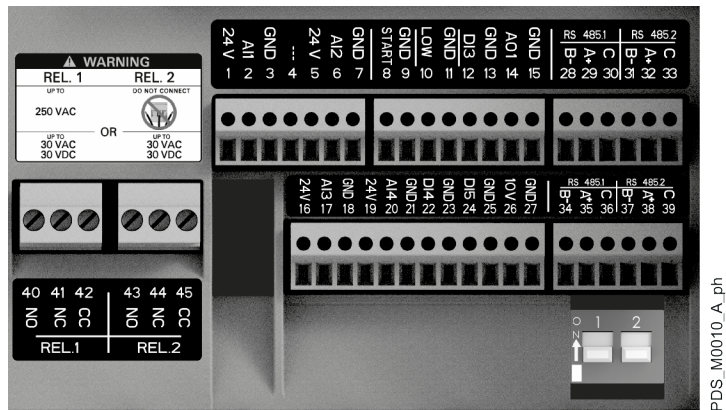


- 注意：
- 信号电缆与电源电缆之间的距离至少保持 200 mm (8 in)
 - 请勿将电源电缆交叉；如无法避免，可以保持 90° 的交叉夹角。

端子特性

位置	名称	可安装电缆的类型和横截面	剥离长度, mm (in)	拧紧扭矩, Nm (lbf • in) ± 15%
1-39	模拟和数字输入端和输出端	• 0.2-1.5 mm² • AWG 28-16	6-7 (0.2-0.3)	0.2 (1.7)
40-45	继电器	• 0.34-2.5 mm² • AWG 24-12		0.5 (4)

4.5.1 hydrovar X+ 的信号端子



位置编号	名称	描述	默认设置
1	模拟输入端 1	电源 +24 VDC，最大 60 mA（端子 1 + 5 总值）	压力传感器 1
2		可配置的模拟输入端 1	
3		电子接地	
4	备用	供内部使用，请勿连接	-
5	模拟输入端 2	电源 +24 VDC，最大 60 mA（端子 1 + 5 总值）	未选择
6		可配置的模拟输入端 2	
7		电子接地	
8	外部启动/停止	数字启动/停止输入端，内部上拉 +24 VDC，接触电流 6 mA	-
9		电子接地	
10	外部缺水	低水位数字输入端，内部上拉 +24 VDC，接触电流 6 mA	-
11		电子接地	
12	数字输入端 3	可配置数字输入端 3，内部上拉 +24 VDC，接触电流 6 mA	以最大速度紧急启动
13		电子接地	
14	模拟输出端	可配置模拟输出端	电机速度
15		电子接地	
16	模拟输入端 3	电源 +24 VDC，最大 60 mA（端子 16 和 19 总值）	未选择
17		可配置的模拟输入端 3	
18		电子接地	
19	模拟输入端 4	电源 +24 VDC，最大 60 mA（端子 16 和 19 总值）	未选择
20		可配置的模拟输入端 4	
21		电子接地	
22	数字输入端 4	可配置数字输入端 4，内部上拉 +24 VDC，接触电流 6 mA	未选择
23		电子接地	
24	数字输入端 5	可配置数字输入端 5，内部上拉 +24 VDC，接触电流 6 mA	未选择
25		电子接地	
26	10 VDC 电源	电源 +10 VDC，最大 3 mA	-
27		电子接地	
28	通信总线 1	RS485 端口 1: RS485-1B N(-)	多联泵
29		RS485 端口 1: RS485-1A P(+)	
30		RS485 端口 1: RS485-COM	
31	通信总线 2	RS485 端口 2: RS485-2B N(-)	Modbus
32		RS485 端口 2: RS485-2A P(+)	
33		RS485 端口 2: RS485-COM	
34	通信总线 1	RS485 端口 1: RS485-1B N(-)	多联泵
35		RS485 端口 1: RS485-1A P(+)	
36		RS485 端口 1: RS485-COM	
37	通信总线 2	RS485 端口 2: RS485-2B N(-)	Modbus
38		RS485 端口 2: RS485-2A P(+)	
39		RS485 端口 2: RS485-COM	

位置编号	名称	描述	默认设置
40	继电器 1	可配置继电器 1: 常开	错误报告
41		可配置继电器 1: 常闭	
42		可配置继电器 1: 公共触点	
43	继电器 2	可配置继电器 2: 常开	电机启动
44		可配置继电器 2: 常闭	
45		可配置继电器 2: 公共触点	

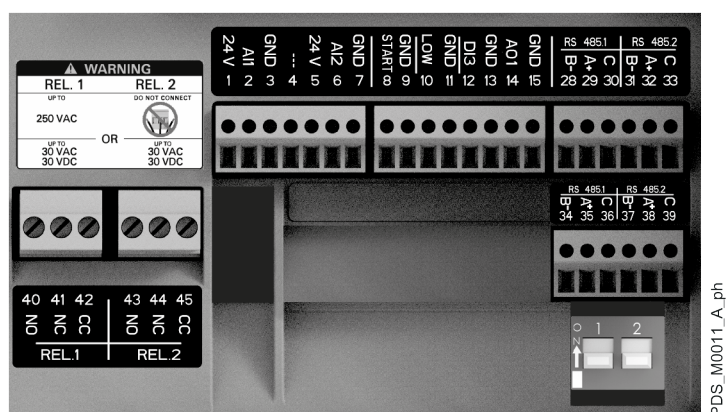
通信总线 1

预配置为多泵配置下最多连接 8 台 hydrovar X+ 装置。开关 (1) 激活 RS485 终端电阻器；如有需要，可设置为开。

通信总线 2

配置为 Modbus RTU 协议，可连接外部设备 (PLC、BMS、PC)，并使用 Xylem 固件工具进行固件更新。开关 (2) 启用 RS485 终端电阻器；如有需要，可设置为开。

4.5.2 hydrovar X 的信号端子



位置编号	名称	描述	默认设置
1	模拟输入端 1	电源 +24 VDC，最大 60 mA（端子 1 + 5 总值）	压力传感器 1
2		可配置的模拟输入端 1	
3		电子接地	
4	备用	供内部使用，请勿连接	-
5	模拟输入端 2	电源 +24 VDC，最大 60 mA（端子 1 + 5 总值）	未选择
6		可配置的模拟输入端 2	
7		电子接地	
8	外部启动/停止	数字启动/停止输入端，内部上拉 +24 VDC，接触电流 6 mA	-
9		电子接地	
10	外部缺水	低水位数字输入端，内部上拉 +24 VDC，接触电流 6 mA	-
11		电子接地	

位置编号	名称	描述	默认设置
12	数字输入端 3	可配置数字输入端 3，内部上拉 +24 VDC，接触电流 6 mA	以最大速度紧急启动
13		电子接地	
14	模拟输出端	可配置模拟输出端	电机速度
15		电子接地	-
28	通信总线 1	RS485 端口 1: RS485-1B N(-)	多联泵
29		RS485 端口 1: RS485-1A P(+)	
30		RS485 端口 1: RS485-COM	
31	通信总线 2	RS485 端口 2: RS485-2B N(-)	Modbus
32		RS485 端口 2: RS485-2A P(+)	
33		RS485 端口 2: RS485-COM	
34	通信总线 1	RS485 端口 1: RS485-1B N(-)	多联泵
35		RS485 端口 1: RS485-1A P(+)	
36		RS485 端口 1: RS485-COM	
37	通信总线 2	RS485 端口 2: RS485-2B N(-)	Modbus
38		RS485 端口 2: RS485-2A P(+)	
39		RS485 端口 2: RS485-COM	
40	继电器 1	可配置继电器 1: 常开	错误报告
41		可配置继电器 1: 常闭	
42		可配置继电器 1: 公共触点	
43	继电器 2	可配置继电器 2: 常开	电机启动
44		可配置继电器 2: 常闭	
45		可配置继电器 2: 公共触点	

通信总线 1

预配置为在多泵配置下最多连接 8 台 hydrovar X 装置。开关 (1) 激活 RS485 终端电阻器；如有需要，可设置为开。

通信总线 2

配置为 Modbus RTU 协议，可连接外部设备 (PLC、BMS、PC)，并使用 Xylem 固件工具进行固件更新。开关 (2) 启用 RS485 终端电阻器；如有需要，可设置为开。

5 使用和操作

启动装置前，请检查是否

- 已阅读并理解 简介与安全 章节中的安全指示以及
 - 电动泵手册中的使用和操作说明，
- 并确认是否已正确遵循 安装 章节中的说明。

注意：该装置具有自动复位热保护功能。



警告：受伤危险

该装置冷却后可能会意外重启：存在人身伤害风险。

6 控制

简介



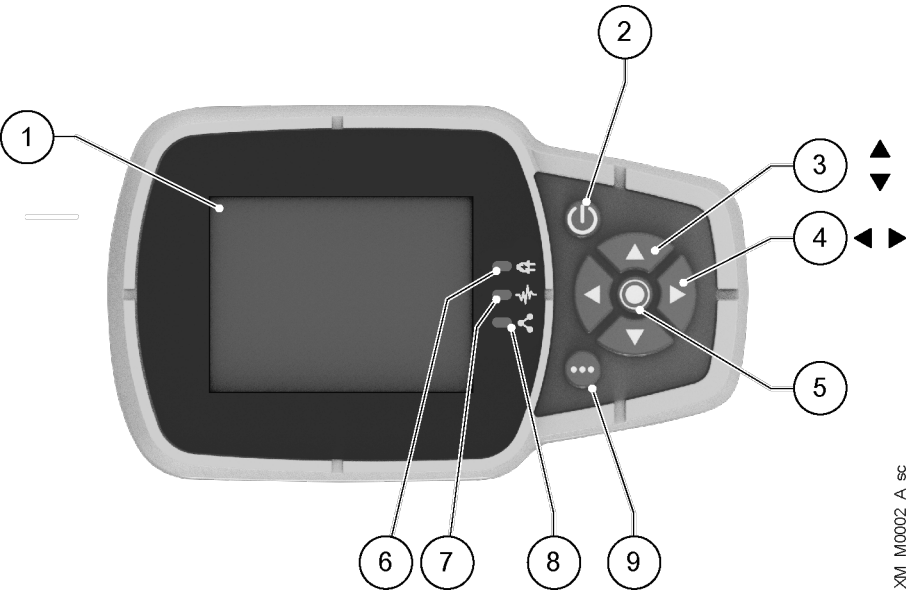
危险：电气危险
如果操作面板损坏，请联系 Xylem 或授权经销商。



警告：高温表面危险
仅触摸操作面板按钮。注意装置释放的高温。

请根据型号遵守第 38 页的“hydrovar X+ 操作面板”或第 41 页的“hydrovar X 操作面板”等段落中的说明。

6.1 hydrovar X+ 操作面板

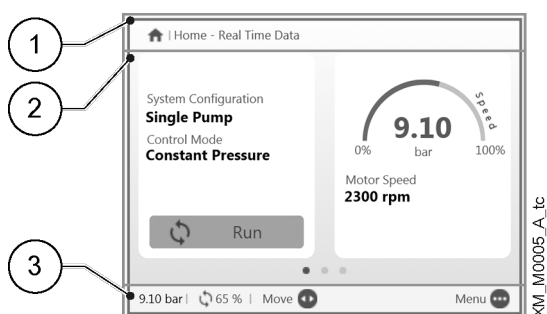


XM_M0002_A_sc

位置编号	名称	功能
1	显示屏	
2	“开/关”按钮	- 启动和停止装置 - 按住 5 秒可重置错误。
3	“向上”和“向下”箭头键	- 在菜单选项间垂直移动 - 按下“向下”箭头（长按），在多联泵系统中手动切换 - 同时按下“确认”和“向上”箭头（长按），180° 旋转显示屏。
4	“向右”和“向左”箭头键	- 水平移动，以浏览主屏幕和菜单 - 同时按下“向右”和“向左”箭头（长按），锁定和解锁显示屏。

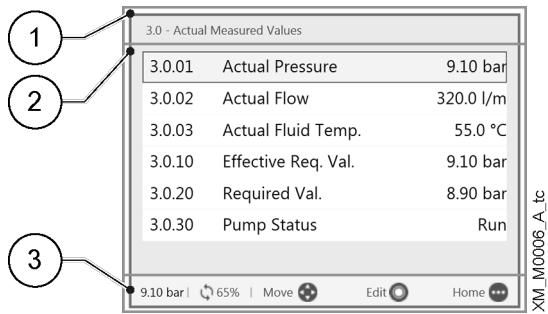
位置编号	名称	功能
5	“发送”按钮	- 在菜单级别间继续 - 确认参数选择 - 确认参数值。
6	装置 LED 指示灯亮起	表示装置上电。
7	装置状态 LED 指示灯	表示： - 电机未上电（未亮起） - 警报已激活且电机已停止（黄色） - 装置错误且电机已停止（红色） - 电机已启动（绿色） - 警报已激活且电机已启动（黄绿交替）。
8	连接状态 LED 指示灯	表示： - BMS 通信已禁用（未亮起） - BMS 通信已激活（绿色） - 已建立与移动设备的无线通信（蓝色常亮） - 正在建立与移动设备的无线通信（蓝色闪烁） - 无线通信和 BMS 通信已激活（蓝绿交替）。
9	“故障”按钮	- 根据显示屏上的屏幕，访问参数菜单或其他功能。 - 将装置连接至移动设备（长按）

6.1.1 图形显示器



位置编号	名称	描述
1	顶栏	显示与运行条件有关的静态信息和消息，例如： - 警报 - 错误 - 多联泵运行。
2	主屏幕	显示主要信息，并允许更改运行参数。 最多有 5 个屏幕，可按下“向右”和“向左”箭头键以浏览。 条目旁的符号  表示参数可编辑。
3	底栏	显示： - 左侧为基本运行信息，如实际调整值和装置运行时的速度百分比 - 右侧为可用于主屏幕交互的按钮。

6.1.2 hydrovar X+ 参数菜单



位置编号	名称	描述
1	顶栏	显示菜单和子菜单级别中的参数路径。
2	参数列表	显示： - 索引， - 名称， - 数值预览 均为当前菜单级别的参数信息。 如需继续至下一级别或更改数值，请按下“发送”或“向右”箭头键。
3	底栏	显示： - 左侧为基本运行信息，如实际调整值和装置运行时的速度百分比 - 右侧为可用于主屏幕交互的按钮。

菜单分为 3 个级别：

- 主菜单
- 子菜单
- 参数。

如需显示或更改参数：

- 按下主屏幕中的功能按钮。
- 使用箭头键输入密码。
- 按下“发送”。
注意：无操作状态 10 分钟后，必须重新输入密码。
- 按下“向右”箭头键或“发送”以在级别间继续，或按下“向左”箭头键以返回。

6.1.3 使用 hydrovar X+ 操作面板启动装置

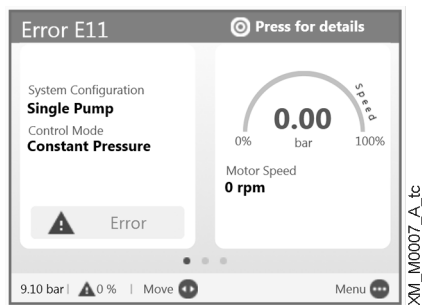
- 检查端子上“启动/停止”输入端和“接地”输入端之间的连接。
- 按下“开/关”以启动装置。
注意：如果参数 1.0.45 Autostart（自动启动）配置为“是”，则下次启动时无需重复按下“开/关”。
- 在装置运行时，可切换至第二个屏幕以更改工作设定点。

6.1.4 hydrovar X+ 运行模式更改

装置参数在出厂前就已设置好，装置可立即使用。
如需更改参数和高级功能，请访问配置菜单。

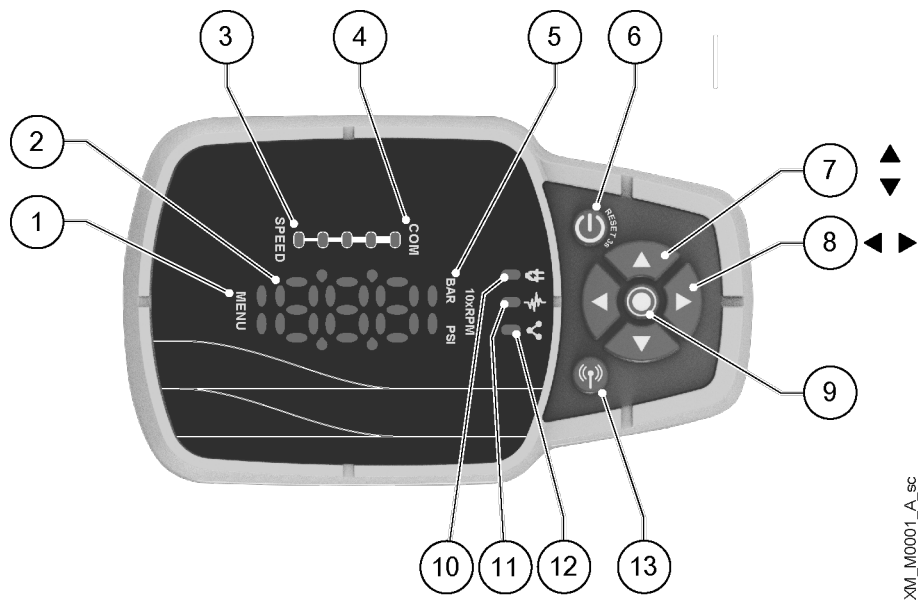
- 按下多功能按钮。
- 使用箭头键输入密码。
- 按下“发送”。
- 浏览菜单，找到待更改的参数或功能。

6.1.5 hydrovar X+ 错误重置



- 出现错误时，如果允许，装置将自动多次尝试自行重置：如果尝试未成功，装置停止且显示屏显示错误代码。
- 如需消除错误：
1. 按下“发送”以打开第一个主屏幕。
 2. 阅读屏幕上的错误说明。
 3. 确定原因并按照故障排除说明操作
 4. 按下并按住“开/关”3秒钟以重置错误：装置恢复至出现错误前的状态。

6.2 hydrovar X 操作面板



位置编号	名称	功能
1	菜单指示灯	表示： • 浏览菜单项（灯光常亮） • 显示参数值（灯光闪烁）。
2	七段式显示	
3	速度栏	
4	多联泵通信指示灯	

位置编号	名称	功能
5	度量单位指示灯	
6	“开/关”按钮	- 启动和停止装置 - 按住 5 秒可重置错误。
7	“向上”和“向下”箭头键	- 快速更改主显示中的设定点 - 浏览子菜单并更改参数菜单上显示的参数 - 按下“向下”箭头（长按），在多联泵系统中手动切换 - 同时按下“确认”和“向上”箭头（长按），180° 旋转显示屏。
8	“向右”和“向左”箭头键	- 在主显示上交替显示速度和压力 - 在参数菜单级别间导航 - 仅“向左”箭头时，确认更改的参数 - 同时按下“向右”和“向左”箭头（长按），锁定和解锁显示屏。 - 仅“向右”箭头时，如果存在多个已激活错误代码，则对其进行浏览
9	“发送”按钮	- 在菜单级别间继续 - 确认参数值 - 进入参数配置菜单（长按）。
10	装置 LED 指示灯亮起	表示装置上电。
11	装置状态 LED 指示灯	表示： - 电机未上电（未亮起） - 警报已激活且电机已停止（黄色） - 装置错误且电机已停止（红色） - 电机已启动（绿色） - 警报已激活且电机已启动（黄绿交替）。
12	连接状态 LED 指示灯	表示： - BMS 通信已禁用（未亮起） - BMS 通信已激活（绿色） - 已建立与移动设备的无线通信（蓝色常亮） - 正在建立与移动设备的无线通信（蓝色闪烁） - 无线通信和 BMS 通信已激活（蓝绿交替）。
13	无线技术通信按钮	将装置连接至移动设备。

6.2.1 主可视化

图像符号	名称	描述
	关闭	已通过“开/关”按钮或BMS停止装置。 注意：与STOP（停止）相比优先级更低。
	停止	“启动/停止”和“接地”数字输入端打开。
	启动请求	通过“开/关”按钮请求启动装置。激活状态保持数秒，然后显示以下信息： - 正在运行的装置，或 - 警报，或 - 错误。
	警报	处于警报状态的装置的警报代码，与主显示交替显示。 装置状态LED指示灯可为： - 黄色 = 电机已停止 - 黄绿交替 = 电机已启动。
	错误	处于错误状态的装置的错误代码。
	正在运行的装置	正在运行的装置和选择的度量单位，显示： - 速度，10xRPM - 压力，巴或psi。
	显示屏已锁定	显示屏已由操作人员锁定且按钮操作已禁用。

6.2.2 hydrovar X 参数菜单

菜单分为3个级别：

- 主菜单
- 子菜单
- 参数。

如需显示或更改参数：

1. 按下“发送”按钮（长按）。
 2. 使用箭头键输入密码。
 3. 按下“发送”。
- 注意：无操作状态10分钟后，必须重新输入密码。
4. 按下“向上”和“向下”箭头键以浏览菜单。
 5. 按下“发送”或“向右”箭头键可前往菜单子级别，直至找到参数值。
 6. 按下“向上”和“向下”箭头键以增大或减小参数值。
 7. 按下“发送”或“向左”箭头键以确认。

注意：无操作状态5秒钟后，参数恢复为之前的设定值。

图像符号	名称	说明
	主菜单	• 编号为1至9的菜单。 • 菜单指示灯：常亮。
	子菜单	• 编号为1至9的子菜单。 • 菜单指示灯：常亮。
	参数	在参数级别间导航。 • 编号为0至99的参数。 • 编号为1至9的子菜单。 • 菜单指示灯：常亮。
	参数值	参数值修改。 • 菜单指示灯：闪烁。 • 编辑时的参数值：闪烁。

6.2.3 使用 hydrovar X 操作面板启动装置

1. 检查端子上“启动/停止”输入端和“接地”输入端之间的连接。
2. 按下“开/关”以启动装置。
注意：如果参数 1.0.45 Autostart（自动启动）配置为“**Yes**”（是），则下次启动时无需重复按下“开/关”。
3. 在装置运行时，可使用“向上”和“向下”箭头键立即更改控制设定点。

6.2.4 hydrovar X 运行模式更改

装置参数在出厂前就已设置好，装置可立即使用。

如需更改参数和高级功能，请访问配置参数。

1. 按下“发送”按钮（长按）。
2. 使用箭头键输入密码。
3. 按下“发送”。
4. 选择 M01 菜单中待更改的参数。

6.2.5 hydrovar X 错误重置

出现错误时，如果允许，装置将自动多次尝试自行重置：如果尝试未成功，装置停止且显示屏显示错误代码。如需消除错误：

1. 确定原因并按照故障排除说明操作
2. 按下并按住“开/关”3 秒钟以重置错误：装置恢复至出现错误前的状态。

6.3 Xylem X 应用程序

简介

可用于装有无线技术操作系统的移动设备。

使用该应用程序来：

- 检查装置状态
- 配置参数
- 在安装和维护时与装置交互并获取数据
- 生成工作报告
- 联系帮助服务。

下载这款应用程序并连接移动设备和装置

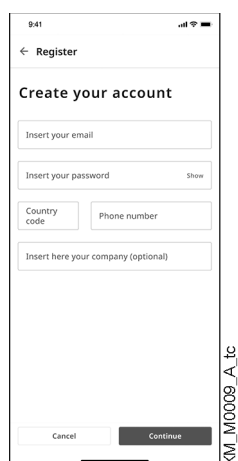
1. 扫描二维码，从应用商店¹或 Google Play²下载 Xylem X 应用程序至移动设备：



¹与版本 15.0 或以上的 iOS® 操作系统兼容

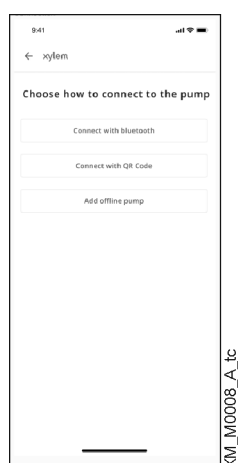
²与版本 10.0 或以上的安卓操作系统兼容

2. 完成注册。

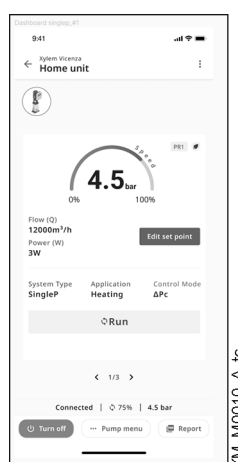


3. 在操作面板上，按下无线通信按钮。

4. 将装置添加至用户配置文件。



5. 建立连接时，连接灯会变为蓝色常亮：此时可以使用移动设备来控制装置。



7 编程

固件版本

固件版本可通过参数 P03.4.19 进行显示。
此处描述的参数化适用于封面所示版本。

所用符号

符号	描述
(G)	全局应用。在多联泵系统的一台装置上对该参数进行更改将传输至所有其他装置。如果没有该符号，则参数仅适用于显示该参数的装置。
(X+)	仅适用于 HVX+
(X)	仅适用于 HVX
(A)	使用 Xylem X 应用程序时，仅限 HVX。
(R)	只读。参数无法更改。 如果没有该符号，则参数可更改。

7.1 M01 Home menu

常用参数或其别名。

7.1.1 S01.0 Application

参数	类型	名称	描述	值
P01.0.01	(X+)	Language	Select the display language.	Default = English
P01.0.05	(G)	System Type	Select the system type. 0-Pressurization (PrS): for open-loop systems, i.e. boosting water to a high building 1-Circulation (HV legacy) (CrL): for Circulation HVAC systems using Hydrovar Ramps Control 2-Circulation (CrP): for Circulation HVAC systems using PI control	Default = Pressurization

参数	类型	名称	描述	值
P01.0.06	(G)	Control Mode	Select the control mode for the pump. 0-Actuator (PE): The unit operates as a constant speed actuator. It can only be used for one unit in single operation. 1-Constant Pressure (CP): The unit maintains constant pressure regardless of flow variation. 2-Prop. Press. (PP): The unit increases the pressure setpoint linearly proportional to the flow. 3-Prop. Quad. Press.: The unit increases the pressure setpoint (actual demand value) quadratically proportional to the flow. 4-Constant Flow: The unit varies the motor speed to keep the flow constant. 5-Constant Temp: The unit varies the motor speed to keep the temperature constant. 6-Constant Level: The unit varies the motor speed to keep the level constant (for example in a tank or well). 7-Generic: The unit varies its speed to maintain a constant generic measured quantity.	Default = Constant Pressure
P01.0.10	(G)	System Configuration	Select system configuration. 0-Single Pump (SG): The unit is set up to operate on its own, with no interactions with other units. 1-Serial Cascade (NSE): In this configuration, several units work together, connected via the RS485 interface. Only the last started unit varies its speed, while the already running units operate at maximum speed. 2-Synchronous Cascade (NSY): In this configuration, several units work together, connected via the RS485 interface. All running units operate at the same variable speed.	Default = Single Pump
P01.0.11		Multipump Address	Select the pump address in a multipump system. In a multipump system each unit has a unique address, with value from 1 to 8.	Min = 1 Max = - Default = 1
P01.0.15	(G)	Start Value	Define the start value after system stop for no demand, in percentage of the setpoint. In a pressurization system type, if the setpoint is met and there is no more consumption, the pump stops. The pump starts again when the pressure drops below the Restart Value (e.g. if the setpoint is set to 10 bar, a Restart Value set to 90% makes the pump start at 9 bar). Attention: If the value is set too low, (e.g. lower than the incoming pressure) the pump will not start. Value 100% makes this parameter not effective.	Min = 0 % Max = 100 % Default = 100 %
P01.0.20	(G)	Lack Of Water Delay	Select the delay time of the lack of water (LOW) protection. This delay is the time that passes between the opening of the LOW contact and the actual activation of the error "E21 Lack of water (LOW)".	Min = 1 s Max = 100 s Default = 2 s

参数	类型	名称	描述	值
P01.0.31	(G) (X+)	Pressure - Minimum Threshold	Select the minimum threshold limit: if the value is not reached within the parameter P01.0.40 "Minimum threshold delay", then the unit stops giving the error "E22 Minimum threshold".	Min = P05.0.11 Max = P05.0.12 Default = 0 bar
P01.0.32	(G) (X+)	Flow - Minimum Threshold	Select the minimum threshold limit: if the value is not reached within the parameter P01.0.40 "Minimum threshold delay", then the unit stops giving the error "E22 Minimum threshold".	Min = P05.0.21 Max = P05.0.22 Default = 0 l/min
P01.0.33	(G) (X+)	Temperature - Minimum Threshold	Select the minimum threshold limit: if the value is not reached within the parameter P01.0.40 "Minimum threshold delay", then the unit stops giving the error "E22 Minimum threshold".	Min = P05.0.31 Max = P05.0.32 Default = -50 ° C
P01.0.34	(G) (X+)	Level - Minimum Threshold	Select the minimum threshold limit: if the value is not reached within the parameter P01.0.40 "Minimum threshold delay", then the unit stops giving the error "E22 Minimum threshold".	Min = P05.0.41 Max = P05.0.42 Default = 0 m
P01.0.35	(G) (X+)	Generic - Min. Threshold	Select the minimum threshold limit: if the value is not reached within the parameter P01.0.40 "Minimum threshold delay", then the unit stops giving the error "E22 Minimum threshold".	Min = P05.0.51 Max = P05.0.52 Default = P05.0.51
P01.0.40	(G)	Minimum Threshold Delay	Select the delay time of the minimum threshold protection. This delay is the time given to the system to reach the minimum threshold value: if not reached the unit stops giving the error "E22 Minimum threshold".	Min = 1 s Max = 100 s Default = 2 s
P01.0.45	(G)	Auto Start	Select the status of the pump following a power disconnection. 0-No (OFF): at the power return the unit is set to OFF. 1-Yes (YES): at the power return, the unit is set to the status that was active prior of the power disconnection.	Default = Yes
P01.0.46		On/Off Set	Select the ON/OFF status of the pump. Corresponds to the action on the ON/OFF button. 0-On 1-Off	Default = Off
P01.0.50	(G) (X+)	Date	Select the unit calendar date.	
P01.0.51	(G) (X+)	Time	Set the unit clock.	

7.1.2 S01.1 Sensors

参数	类型	名称	描述	值
P01.1.00	(G)	Measuring Unit Selection	Select the measuring unit set used by the unit. 0-SI Units 1-Imperial Units	Default = SI Units
P01.1.01	(X+)	Actuator - Zero Value	Select the zero value of the regulation feedback sensor.	Min = 0 rpm Max = 9999 rpm Default = 0 rpm
P01.1.02	(X+)	Actuator - Full Scale	Select the full range of the regulation feedback sensor.	Min = 0 rpm Max = 9999 rpm Default = 3600 rpm
P01.1.11	(G)	Pressure - Zero Value	Select the zero value of the regulation feedback sensor.	Min = -5 bar ^{*)} Max = 10 bar ^{*)} Default = 0 bar ^{*)}
P01.1.12	(G)	Pressure - Full Scale	Select the full range of the regulation feedback sensor.	Min = 0 bar ^{*)} Max = 100 bar ^{*)} Default = 10 bar ^{*)}
P01.1.21	(G) (X+)	Flow - Zero Value	Select the zero value of the regulation feedback sensor.	Min = 0 l/min ^{*)} Max = 9999 l/min ^{*)} Default = 0 l/min ^{*)}
P01.1.22	(G) (X+)	Flow - Full Scale	Select the full range of the regulation feedback sensor.	Min = 0 l/min ^{*)} Max = 9999 l/min ^{*)} Default = 100 l/min ^{*)}
P01.1.31	(G) (X+)	Temperature - Zero Value	Select the zero value of the regulation feedback sensor.	Min = -100 ° C Max = 9999 ° C Default = 0 ° C
P01.1.32	(G) (X+)	Temperature - Full Scale	Select the full range of the regulation feedback sensor.	Min = -100 ° C Max = 9999 ° C Default = 100 ° C
P01.1.41	(G) (X+)	Level - Zero Value	Select the zero value of the regulation feedback sensor.	Min = -999 m ^{*)} Max = 9999 m ^{*)} Default = 0 m ^{*)}
P01.1.42	(G) (X+)	Level - Full Scale	Select the full range of the regulation feedback sensor.	Min = -999 m ^{*)} Max = 9999 m ^{*)} Default = 10 m ^{*)}
P01.1.51	(G) (X+)	Generic - Zero Value	Select the zero value of the regulation feedback sensor.	Min = -1000 Max = 1000 Default = 0
P01.1.52	(G) (X+)	Generic - Full Scale	Select the full range of the regulation feedback sensor.	Min = -1000 Max = 1000 Default = 100
P01.1.61	(G) (X+)	SPS Pressure Zero Value	Select the zero value of the pressure sensor used for the Setpoint Shift function.	Min = -1 bar Max = 99 bar Default = 0 bar
P01.1.62	(G) (X+)	SPS Pressure Full Scale	Select the full scale of the pressure sensor used for the Setpoint Shift function.	Min = 0 bar Max = 999 bar Default = 10 bar

*) 取决于泵型号

7.1.3 S01.2 Setpoints

参数	类型	名称	描述	值
P01.2.01	(G)	Speed Setpoint 1	Select the value for Setpoint.	Min = P04.2.31 Max = P04.2.32 Default = 2000 rpm ^{*)}
P01.2.02	(G)	Speed Setpoint 2	Select the value for Setpoint.	Min = P04.2.31 Max = P04.2.32 Default = 2000 rpm ^{*)}
P01.2.03	(G) (X+)	Speed Setpoint 3	Select the value for Setpoint.	Min = P04.2.31 Max = P04.2.32 Default = 2000 rpm ^{*)}
P01.2.04	(G) (X+)	Speed Setpoint 4	Select the value for Setpoint.	Min = P04.2.31 Max = P04.2.32 Default = 2000 rpm ^{*)}
P01.2.11	(G)	Pressure Setpoint 1	Select the value for Setpoint.	Min = P05.0.11 Max = P05.0.12 Default = 3.5 bar ^{*)}
P01.2.12	(G)	Pressure Setpoint 2	Select the value for Setpoint.	Min = P05.0.11 Max = P05.0.12 Default = 3.5 bar ^{*)}
P01.2.13	(G) (X+)	Pressure Setpoint 3	Select the value for Setpoint.	Min = P05.0.11 Max = P05.0.12 Default = 3.5 bar ^{*)}
P01.2.14	(G) (X+)	Pressure Setpoint 4	Select the value for Setpoint.	Min = P05.0.11 Max = P05.0.12 Default = 3.5 bar ^{*)}
P01.2.21	(G) (X+)	Flow Setpoint 1	Select the value for Setpoint.	Min = P05.0.21 Max = P05.0.22 Default = 0 l/min ^{*)}
P01.2.22	(G) (X+)	Flow Setpoint 2	Select the value for Setpoint.	Min = P05.0.21 Max = P05.0.22 Default = 0 l/min ^{*)}
P01.2.23	(G) (X+)	Flow Setpoint 3	Select the value for Setpoint.	Min = P05.0.21 Max = P05.0.22 Default = 0 l/min ^{*)}
P01.2.24	(G) (X+)	Flow Setpoint 4	Select the value for Setpoint.	Min = P05.0.21 Max = P05.0.22 Default = 0 l/min ^{*)}
P01.2.31	(G) (X+)	Temp. Setpoint 1	Select the value for Setpoint.	Min = P05.0.31 Max = P05.0.32 Default = 25 ° C
P01.2.32	(G) (X+)	Temp. Setpoint 2	Select the value for Setpoint.	Min = P05.0.31 Max = P05.0.32 Default = 25 ° C
P01.2.33	(G) (X+)	Temp. Setpoint 3	Select the value for Setpoint.	Min = P05.0.31 Max = P05.0.32 Default = 25 ° C

^{*)} 取决于泵型号

参数	类型	名称	描述	值
P01.2.34	(G) (X+)	Temp. Setpoint 4	Select the value for Setpoint.	Min = P05.0.31 Max = P05.0.32 Default = 25 ° C
P01.2.41	(G) (X+)	Level Setpoint 1	Select the value for Setpoint.	Min = P05.0.41 Max = P05.0.42 Default = 0 m ^{*)}
P01.2.42	(G) (X+)	Level Setpoint 2	Select the value for Setpoint.	Min = P05.0.41 Max = P05.0.42 Default = 0 m ^{*)}
P01.2.43	(G) (X+)	Level Setpoint 3	Select the value for Setpoint.	Min = P05.0.41 Max = P05.0.42 Default = 0 m ^{*)}
P01.2.44	(G) (X+)	Level Setpoint 4	Select the value for Setpoint.	Min = P05.0.41 Max = P05.0.42 Default = 0 m ^{*)}
P01.2.51	(G) (X+)	Generic Setpoint 1	Select the value for Setpoint.	Min = P05.0.51 Max = P05.0.52 Default = P05.0.51
P01.2.52	(G) (X+)	Generic Setpoint 2	Select the value for Setpoint.	Min = P05.0.51 Max = P05.0.52 Default = P05.0.51
P01.2.53	(G) (X+)	Generic Setpoint 3	Select the value for Setpoint.	Min = P05.0.51 Max = P05.0.52 Default = P05.0.51
P01.2.54	(G) (X+)	Generic Setpoint 4	Select the value for Setpoint.	Min = P05.0.51 Max = P05.0.52 Default = P05.0.51

^{*)}取决于泵型号

7.1.4 S01.3 Actual Measured Values

参数	类型	名称	描述	值
P01.3.01	(R)	Actual Pressure	Current measured PRESSURE value	-
P01.3.02	(R)	Actual Flow	Current measured FLOW value	-
P01.3.03	(R) (X+)	Actual Fluid Temperature	Current measured FLUID TEMPERATURE value	-
P01.3.04	(R) (X+)	Actual Level	Current measured LEVEL value	-
P01.3.05	(R) (X+)	Actual Generic	Current measured GENERIC value	-
P01.3.10	(G) (R)	Effective Required Value	Current calculated setpoint. This value is the result of proportional or quadratic pressure control, head losses compensation and Setpoint Shift function.	-

7.1.5 S01.4 Jog mode

参数	类型	名称	描述	值
P01.4.01		Jog Speed	Select the speed for the Jog mode. Jog mode is used to run the pump at a specific speed for priming or minimum speed verification.	Min = 0 rpm Max = P04.2.32 Default = 0 rpm
P01.4.02	(G)	Min Speed	Select the pump minimum speed.	Min = 0 rpm ^{*)} Max = 2000 rpm ^{*)} Default = 800 rpm ^{*)}

^{*)}取决于泵型号

7.1.6 S01.5 Safety

参数	类型	名称	描述	值
P01.5.10		Password Entry	Enter the password. The default user password is 66.	Min = 0 Max = 999 Default = 0
P01.5.11	(R)	Logout	Logout	-
P01.5.12		Set Password	Set a new password. The password is required to access the menu.	Min = 0 Max = 999 Default = 66

7.2 M02 Error Log

7.2.1 S02.0 Errors

参数	类型	名称	描述	值
P02.0.01	(G) (R)	Error 1 (Most Recent)		-
P02.0.02	(G) (R)	Error 2		-
P02.0.03	(G) (R)	Error 3		-
P02.0.04	(G) (R)	Error 4		-
P02.0.05	(G) (R)	Error 5		-
P02.0.06	(G) (R)	Error 6		-
P02.0.07	(G) (R)	Error 7		-
P02.0.08	(G) (R)	Error 8		-
P02.0.09	(G) (R)	Error 9		-
P02.0.10	(G) (R)	Error 10		-

7.2.2 S02.9 Bitfield

参数	类型	名称	描述	值
P02.9.01	(R) (A)	Error Bitfield 1	Error 1 Bitfield:	-
			0-IGBT Overtemperature	
			1-IGBT Internal Overtemperature	
			2-IGBT Overcurrent	
			3-Motor Overcurrent	
			4-Overvoltage DC-Bus	
			5-Undervoltage DC-Bus	
			6-Motor Startup Error	
			7-Multipump Protocol Incompatibility	
			8-Ext-Flash Error	
			9-Ext-Eeprom Error	
			10-Motor Overtemperature	
			11-I2T Error	
			12-PowerClassRestrict	
			13-Inverter Overtemperature	
			14-*Reserved	
			15-Motor Connection	
			16-*Reserved	
			17-External Error	
			18-Sensor1 Error	
			19-Sensor2 Error	
			20-Sensor3 Error	
			21-Sensor4 Error	
			22-Setpoint 1 Error	
			23-Setpoint 2 Error	
			24-Setpoint 3 Error	
			25-Setpoint 4 Error	
			26-*Reserved	
			27-Multipump Bus Timeout	
			28-Internal Communication MOC	
			29-AOC Hardware Error	
			30-*Reserved	
			31-*Reserved	
P02.9.02	(R) (A)	Error Bitfield 2	Error2 BitField:	-
			0-*Reserved	
			1-Ground Leakage	
			2-*Reserved	
			3-Grid Overvoltage	
			4-Power Failure	
			5-Minimum Threshold	
			6-Lack of Water	
			7-*Reserved	
			8-Missing Configuration files	
			9-Grid Undervoltage	
			10-Wrong Feedback Configuration	
			11-Configuration files mismatch	
			12-Drive is a spare part	
			13-Control Card is a spare part	
			14-Hydrovar X connected to X+	
			15-Missing Hydraulic Curves	
			16 ÷ 31-*Reserved	

参数	类型	名称	描述	值
P02.9.05	(R) (A)	Alarm Bitfield 1	Alarm1 Bitfield: 0-Generic Firmware Alarm 1-Extenal Alarm 2-*Reserved 3-MultiPump Comm. Lost 4-MultiPump Address Conflict 5-MultiPump Incompatibility 6-Internal Communication MOC 7-Wrong Feedback Cfg 8-Wrong Setpoint Cfg 9-FieldBus Comm Lost 10-Pipe Filling Alarm 11-IGBT temperature derating 12-Internal Communication UI-AOC 13-AI1 Alarm 14-AI2 Alarm 15-AI3 Alarm 16-AI4 Alarm 17-Internal Communication UI-BLE 18-Factory Files not in Ext-Flash 19-Language file wrong 20-Control card update is possible 21-Cloning Failure in UI 22-Cloning failure in MP bus 23 ÷ 31-*Reserved	-

7.3 M03 Pump information

7.3.1 S03.0 Actual Measured Values

参数	类型	名称	描述	值
P03.0.00	(R)	Estimated Actual Value	The actual value is estimated using the hydraulic curves stored in the unit and by checking the speed and power consumption without using external sensors	-
P03.0.01	(R)	Actual Pressure	Current measured PRESSURE value	-
P03.0.02	(R)	Actual Flow	Current measured FLOW value	-
P03.0.03	(R) (X+)	Actual Fluid Temperature	Current measured FLUID TEMPERATURE value	-
P03.0.04	(R) (X+)	Actual Level	Current measured LEVEL value	-
P03.0.05	(R) (X+)	Actual Generic	Current measured GENERIC value	-
P03.0.06	(R) (X+)	Actual Shift	Current measured Setpoint Shift input value	-
P03.0.10	(G) (R)	Effective Required Value	Current calculated setpoint. This value is the result of proportional or quadratic pressure control, head losses compensation and Setpoint Shift function.	-
P03.0.20	(G) (R)	Required Value	Current setpoint. This value is the current setpoint, before the calculation of proportional or quadratic pressure control, head losses compensation or Setpoint Shift function.	-

参数	类型	名称	描述	值
P03.0.30	(G) (R)	Pump Status	Display the current status of the unit. 0-Off (OFF): the unit is set to stay still. 1-Run (Run): the unit is currently running. 2-Alarm, unit stopped (AL5): the unit is currently not running because the START/STOP digital input is open and an alarm is active 3-Alarm, unit running (ALr): the unit is currently running and an alarm is active 4-Alarm, unit on (ALn): the unit is not running but is ready to run, and an alarm is active 5-Alarm, unit off (ALO): the unit is set to stay still and an alarm is active 6-Error (Err): the unit is not running because an error is active 7-Stop (SEP): the unit is not running because the START/STOP digital input is open 8-On (On): the unit is not running but is ready to run	-

7.3.2 S03.1 Counters

参数	类型	名称	描述	值
P03.1.01	(G) (R) (A)	Unit Powered Time	Display the total time the unit has spent connected to power.	-
P03.1.02	(G) (R) (A)	Motor Running Time	Display the total time the motor has spent running.	-
P03.1.05	(G) (R) (A)	Energy Counter	Display the total energy used by the unit	-

7.3.3 S03.2 Motor

参数	类型	名称	描述	值
P03.2.01	(G) (R)	Motor Speed	Display the actual motor speed in rpm	-
P03.2.02	(G) (R)	Motor Speed %	Display the actual motor speed in percentage	-
P03.2.05	(G) (R)	Motor Current	Display the actual current drawn by the motor	-
P03.2.06	(G) (R)	Motor Power	Display the actual electric power drawn by the motor	-
P03.2.07	(G) (R)	Motor Voltage	Display the actual voltage provided to the motor	-
P03.2.08	(G) (R)	Grid Voltage	Display the actual voltage provided by the power grid	-
P03.2.09	(G) (R)	DC Bus Voltage	Display the actual DC bus voltage	-

参数	类型	名称	描述	值
P03.2.20	(G) (R)	Power Module Temperature	Display the actual temperature of the power module. This is the temperature of the electronic component responsible of the current supply to the motor.	-
P03.2.21	(G) (R)	Inverter Temperature	Display the drive actual internal temperature. This is the temperature of the air inside the drive, measured on the electronic board.	-

7.3.4 S03.3 Input/Output Status

参数	类型	名称	描述	值
P03.3.01	(R) (A)	Digital I/O Status	Display the status of the digital inputs and outputs	-
P03.3.11	(R)	Analog Input 1 Value	Display the raw value of the analog input.	-
P03.3.12	(R)	Analog Input 2 Value	Display the raw value of the analog input.	-
P03.3.13	(R) (X+)	Analog Input 3 Value	Display the raw value of the analog input.	-
P03.3.14	(R) (X+)	Analog Input 4 Value	Display the raw value of the analog input.	-
P03.3.20	(R)	Analog Output Value	Display the value of the analog output	-

7.3.5 S03.4 Product information

参数	类型	名称	描述	值
P03.4.01	(R) (A)	Unit Part Number	Display the part number (PN) of the complete pump	-
P03.4.02	(R) (A)	Unit Production Date	Display the production date (PD) of the complete pump	-
P03.4.03	(R) (A)	Unit Serial Number	Display the serial number (SN) of the complete pump	-
P03.4.05	(R) (A)	Drive Production Date	Display the production date (PD) of the drive	-
P03.4.06	(R) (A)	Drive Serial Number	Display the serial number (SN) of the drive	-
P03.4.10	(G) (R) (A)	Hmi Firmware Version	Display the firmware version of the user interface board	-
P03.4.11	(G) (R) (A)	Hmi-Bt Firmware Version	Display the firmware version of the wireless communication board	-
P03.4.12	(G) (R) (A)	Power Card Firmware Version	Display the firmware version of the power board	-
P03.4.13	(G) (R) (A)	Control Card Firmware Version	Display the firmware version of the control board	-
P03.4.14	(R) (A)	Map File Version	Display the version of the map file	-

参数	类型	名称	描述	值
P03.4.15	(R) (A)	Default File Version	Display the version of the default file	-
P03.4.16	(R) (A)	Parameter File Version	Display the version of the parameter file	-
P03.4.17	(R) (X+)	Language File Version	Display the version of the language file	-
P03.4.19	(R)	Firmware Version	Display the cumulative firmware version of the device	-
P03.4.25	(R)	Hydraulic Curves Stored	This parameter indicates if the hydraulic curves are stored in memory.	-

7.4 M04 Pump Control

7.4.1 S04.0 Configuration

参数	类型	名称	描述	值
P04.0.01	(G)	System Type	Select the system type. 0-Pressurization (P-S): for open-loop systems, i.e. boosting water to a high building 1-Circulation (HV legacy) (C-L): for Circulation HVAC systems using Hydrovar Ramps Control 2-Circulation (C-PI): for Circulation HVAC systems using PI control	Default = Pressurization
P04.0.02	(G)	Control Mode	Select the control mode for the pump. 0-Actuator (ACT): The unit operates as a constant speed actuator. It can only be used for one unit in single operation. 1-Constant Pressure (CP): The unit maintains constant pressure regardless of flow variation. 2-Prop. Press. (PP): The unit increases the pressure setpoint linearly proportional to the flow. 3-Prop. Quad. Press.: The unit increases the pressure setpoint (actual demand value) quadratically proportional to the flow. 4-Constant Flow: The unit varies the motor speed to keep the flow constant. 5-Constant Temp: The unit varies the motor speed to keep the temperature constant. 6-Constant Level: The unit varies the motor speed to keep the level constant (for example in a tank or well). 7-Generic: The unit varies its speed to maintain a constant generic measured quantity.	Default = Constant Pressure

参数	类型	名称	描述	值
P04.0.03	(G) (X+)	Regulation Mode	Select the regulation mode. 0-Normal: The motor speed increases when the measured value is below the setpoint, and decreases when the measured value is above the setpoint 1-Inverse: The motor speed increases when the measured value is above the setpoint, and decreases when the measured value is below the setpoint	Default = Normal
P04.0.05	(G)	Start Value	Define the start value after system stop for no demand, in percentage of the setpoint. In a pressurization system type, if the setpoint is met and there is no more consumption, the pump stops. The pump starts again when the pressure drops below the Restart Value (e.g. if the setpoint is set to 10 bar, a Restart Value set to 90% makes the pump start at 9 bar). Attention: If the value is set too low, (e.g. lower than the incoming pressure) the pump will not start. Value 100% makes this parameter not effective.	Min = 0 % Max = 100 % Default = 100 %
P04.0.06	(G)	Auto Start	Select the status of the pump following a power disconnection. 0-No (N): at the power return the unit is set to OFF. 1-Yes (YES): at the power return, the unit is set to the status that was active prior of the power disconnection.	Default = Yes
P04.0.07	(G)	Min Speed Configuration	Select the behaviour of the pump when the minimum speed and the setpoint are reached. If ACTUATOR mode is selected, this parameter selects the behaviour of the pump when the speed setpoint is below the minimum speed. 0-Zero Speed (0): The pump will reach speed 0 and stop 1-Min speed (1): The pump will continue to keep the minimum speed.	Default = Zero Speed
P04.0.09	(G)	Measuring Unit Selection	Select the measuring unit set used by the unit. 0-SI Units 1-Imperial Units	Default = SI Units
P04.0.11	(G)	Pressure Measuring Unit	Select the measuring unit. 0-bar 1-psi 2-ft 3-kPa 4-MPa 5-mbar 6-m 7-cm 8-in	Default = bar
P04.0.12	(G) (X+)	Flow Measuring Unit	Select the measuring unit. 0-l/min 1-m3/s 2-m3/h 3-g/min 4-l/s	Default = m3/h
P04.0.13	(G) (X+)	Temperature Measuring Unit	Select the measuring unit. 0-° C 1-° F 2-K	Default = ° C
P04.0.14	(G) (X+)	Level Measuring Unit	Select the measuring unit. 1-m 2-ft 3-cm 4-in	Default = m

参数	类型	名称	描述	值
P04.0.15	(G) (X+)	Power Measuring Unit	Select the measuring unit. 1-W 2-kW 3-MW 4-Hp	Default = kW
P04.0.16	(X+)	Energy Measuring Unit	Select the measuring unit. 0-kWh 1-MWh 2-BTU 3-HPh 4-MJ 5-KJ	Default = kWh
P04.0.21		Setpoint 1 Selection	Select the source for the setpoint 1. 0-Analog (RnR): The setpoint reference is given via one of the analog inputs 1-Parameter (PRr): The setpoint reference is given via one of the dedicated parameter	Default = Parameter
P04.0.22		Setpoint 2 Selection	Select the source for the setpoint. 0-Off (OFF): setpoint not used 1-Analog (RnR): The setpoint reference is given via one of the analog inputs 2-Parameter (PRr): The setpoint reference is given via one of the dedicated parameter	Default = Parameter
P04.0.23	(X+)	Setpoint 3 Selection	Select the source for the setpoint. 0-Off: setpoint not used 1-Analog: The setpoint reference is given via one of the analog inputs 2-Parameter: The setpoint reference is given via one of the dedicated parameter	Default = Parameter
P04.0.24	(X+)	Setpoint 4 Selection	Select the source for the setpoint. 0-Off: setpoint not used 1-Analog: The setpoint reference is given via one of the analog inputs 2-Parameter: The setpoint reference is given via one of the dedicated parameter	Default = Parameter

7.4.2 S04.1 Setpoints

参数	类型	名称	描述	值
P04.1.01	(G)	Speed Setpoint 1	Select the value for Setpoint.	Min = P04.2.31 Max = P04.2.32 Default = 2000 rpm ^{*)}
P04.1.02	(G)	Speed Setpoint 2	Select the value for Setpoint.	Min = P04.2.31 Max = P04.2.32 Default = 2000 rpm ^{*)}
P04.1.03	(G) (X+)	Speed Setpoint 3	Select the value for Setpoint.	Min = P04.2.31 Max = P04.2.32 Default = 2000 rpm ^{*)}
P04.1.04	(G) (X+)	Speed Setpoint 4	Select the value for Setpoint.	Min = P04.2.31 Max = P04.2.32 Default = 2000 rpm ^{*)}
P04.1.11	(G)	Pressure Setpoint 1	Select the value for Setpoint.	Min = P05.0.11 Max = P05.0.12 Default = 3.5 bar ^{*)}
P04.1.12	(G)	Pressure Setpoint 2	Select the value for Setpoint.	Min = P05.0.11 Max = P05.0.12 Default = 3.5 bar ^{*)}
P04.1.13	(G) (X+)	Pressure Setpoint 3	Select the value for Setpoint.	Min = P05.0.11 Max = P05.0.12 Default = 3.5 bar ^{*)}
P04.1.14	(G) (X+)	Pressure Setpoint 4	Select the value for Setpoint.	Min = P05.0.11 Max = P05.0.12 Default = 3.5 bar ^{*)}
P04.1.15	(G)	Pressure Setpoint Type	This parameter specifies whether the setpoint should be at Zero Flow (see parameter 4.2.06) or at the maximum flow (Max Curve). The Max Curve option is available only if the unit has the hydraulic curves stored in memory	Default = Setpoint at Zero Flow
P04.1.16	(G)	H0 Pressure	If "Pressure Setpoint Type" (Parameter 04.1.15) is set at "Setpoint at Max Curve" and either linear or quadratic compensation is activated, this parameter is used to calculate the pressure setpoint at zero flow.	Min = P05.0.11 Max = P05.0.12 Default = 0.5 bar
P04.1.21	(G) (X+)	Flow Setpoint 1	Select the value for Setpoint.	Min = P05.0.21 Max = P05.0.22 Default = 0 l/min ^{*)}
P04.1.22	(G) (X+)	Flow Setpoint 2	Select the value for Setpoint.	Min = P05.0.21 Max = P05.0.22 Default = 0 l/min ^{*)}
P04.1.23	(G) (X+)	Flow Setpoint 3	Select the value for Setpoint.	Min = P05.0.21 Max = P05.0.22 Default = 0 l/min ^{*)}
P04.1.24	(G) (X+)	Flow Setpoint 4	Select the value for Setpoint.	Min = P05.0.21 Max = P05.0.22 Default = 0 l/min ^{*)}
P04.1.31	(G) (X+)	Temp. Setpoint 1	Select the value for Setpoint.	Min = P05.0.31 Max = P05.0.32 Default = 25 ° C
P04.1.32	(G) (X+)	Temp. Setpoint 2	Select the value for Setpoint.	Min = P05.0.31 Max = P05.0.32 Default = 25 ° C

^{*)} 取决于泵型号

参数	类型	名称	描述	值
P04.1.33	(G) (X+)	Temp. Setpoint 3	Select the value for Setpoint.	Min = P05.0.31 Max = P05.0.32 Default = 25 ° C
P04.1.34	(G) (X+)	Temp. Setpoint 4	Select the value for Setpoint.	Min = P05.0.31 Max = P05.0.32 Default = 25 ° C
P04.1.41	(G) (X+)	Level Setpoint 1	Select the value for Setpoint.	Min = P05.0.41 Max = P05.0.42 Default = 0 m ^{*)}
P04.1.42	(G) (X+)	Level Setpoint 2	Select the value for Setpoint.	Min = P05.0.41 Max = P05.0.42 Default = 0 m ^{*)}
P04.1.43	(G) (X+)	Level Setpoint 3	Select the value for Setpoint.	Min = P05.0.41 Max = P05.0.42 Default = 0 m ^{*)}
P04.1.44	(G) (X+)	Level Setpoint 4	Select the value for Setpoint.	Min = P05.0.41 Max = P05.0.42 Default = 0 m ^{*)}
P04.1.51	(G) (X+)	Generic Setpoint 1	Select the value for Setpoint.	Min = P05.0.51 Max = P05.0.52 Default = P05.0.51
P04.1.52	(G) (X+)	Generic Setpoint 2	Select the value for Setpoint.	Min = P05.0.51 Max = P05.0.52 Default = P05.0.51
P04.1.53	(G) (X+)	Generic Setpoint 3	Select the value for Setpoint.	Min = P05.0.51 Max = P05.0.52 Default = P05.0.51
P04.1.54	(G) (X+)	Generic Setpoint 4	Select the value for Setpoint.	Min = P05.0.51 Max = P05.0.52 Default = P05.0.51
P04.1.60	(G)	Limit setpoint saving	The function limits the number of saves in internal memory. To be enabled in case of continuous writing of the setpoint by the fieldbus.	Default = No

^{*)}取决于泵型号

7.4.3 S04.2 Regulation

参数	类型	名称	描述	值
P04.2.00	(G)	Regulation Type	This parameter specifies whether the regulation is based on Hydrovar Ramps control or PI control. See parameter in submenu 04.2.xx	Default = Hydrovar
P04.2.01	(G)	Window	Select the regulation window. This parameter defines a band around the setpoint, as a percentage of the setpoint. When the measured value is out of the window the system will use ramps 1 and 2; when the measured value is inside the window the system will use ramps 3 and 4.	Min = 1 % Max = 100 % Default = 20 %
P04.2.02	(G)	Hysteresis	Select the regulation hysteresis. This parameter defines a band, around the setpoint, that is a percentage of the window. The limits of the hysteresis band define the change between accelerating and decelerating ramps.	Min = 1 % Max = 100 % Default = 90 %

参数	类型	名称	描述	值
P04.2.06	(G)	Lift Speed	Select the speed value at which the setpoint value starts to increase, if a lift amount is set.	Min = P04.2.31 Max = P04.2.32 Default = 2000 rpm ^{*)}
P04.2.07	(G)	Linear Lift Amount	Select the amount of linear increase of the setpoint at maximum speed, as a percentage of the setpoint, in order to compensate the friction losses. The increase will be linear, starting from 0% when the motor speed is equal to LIFT SPEED, up to LINEAR LIFT AMOUNT when the motor speed is maximum.	Min = 0 % Max = 200 % Default = 0 %
P04.2.08	(G) (X+)	Quad. Lift Amount	Select the amount of quadratic increase of the setpoint at maximum speed, as a percentage of the setpoint, in order to compensate the friction losses. The increase will be quadratic, starting from 0% when the motor speed is equal to LIFT SPEED, up to QUADRATIC LIFT AMOUNT when the motor speed is maximum.	Min = 0 % Max = 999 % Default = 0 %
P04.2.11	(G)	Ramp 1	Select the fast acceleration time. This ramp is used when the motor speed is above the MINIMUM SPEED and the measured value is outside the range defined by the WINDOW.	Min = 1 s ^{*)} Max = 250 s ^{*)} Default = 10 s ^{*)}
P04.2.12	(G)	Ramp 2	Select the fast deceleration time. This ramp is used when the motor speed is above the MINIMUM SPEED and the measured value is outside the range defined by the WINDOW.	Min = 1 s ^{*)} Max = 250 s ^{*)} Default = 10 s ^{*)}
P04.2.13	(G)	Ramp 3	Select the slow acceleration time. This ramp is used when the measured value is inside the range defined by the WINDOW.	Min = 1 s ^{*)} Max = 999 s ^{*)} Default = 70 s ^{*)}
P04.2.14	(G)	Ramp 4	Select the slow deceleration time. This ramp is used when the measured value is inside the range defined by the WINDOW.	Min = 1 s ^{*)} Max = 999 s ^{*)} Default = 70 s ^{*)}
P04.2.15	(G)	Ramp Speed Min Acceleration	Select the minimum speed accelerating ramp time. This ramp is used when the motor speed is below the MINIMUM SPEED	Min = 0.1 s ^{*)} Max = 25 s ^{*)} Default = 2 s ^{*)}
P04.2.16	(G)	Ramp Speed Min Deceleration	Select the minimum speed decelerating ramp time. This ramp is used when the motor speed is below the MINIMUM SPEED	Min = 0.1 s ^{*)} Max = 25 s ^{*)} Default = 2 s ^{*)}
P04.2.21	(G)	Pi Control - Kp	Select the proportional constant of the PI control	Min = 0 ^{*)} Max = 10000 ^{*)} Default = 0.5 ^{*)}
P04.2.25	(G)	Pi Control - Ti	Ti is the integral time variable used with the gain (Kp) to set the PI (Proportional-Integral) regulation. - If the control system is "hunting" (oscillating) or unstable, you can stabilize it by either reducing the gain (Kp) or increasing the integral time (Ti). - If the system is too slow to react, you can make it more responsive by increasing the gain (Kp).	Min = 0 s ^{*)} Max = 10000 s ^{*)} Default = 0.5 s ^{*)}

^{*)} 取决于泵型号

参数	类型	名称	描述	值
P04.2.31	(G)	Min Speed	Select the pump minimum speed.	Min = 0 rpm ^{*)} Max = 2000 rpm ^{*)} Default = 800 rpm ^{*)}
P04.2.32	(G)	Max Speed	Select the pump maximum speed.	Min = 2000 rpm ^{*)} Max = 4100 rpm ^{*)} Default = 3600 rpm ^{*)}
P04.2.35	(G)	Min Speed Time	Select the delay time the motor stays at minimum speed, before reaching a complete stop. This parameter is only active if parameter MIN SPEED CONFIGURATION is set to "Zero speed".	Min = 0 s Max = 100 s Default = 1 s

^{*)} 取决于泵型号

7.4.4 S04.3 Thresholds

参数	类型	名称	描述	值
P04.3.00	(G)	Automatic Error Reset	Select the type of error reset. 0-No (00): in case of error the unit will stay stopped, waiting for an error reset commanded by the user. 1-Yes (05): the unit will automatically reset the error, if possible, up to a maximum of 5 times in 1 hour.	Default = Yes
P04.3.01	(G)	Pressure - Minimum Threshold	Select the minimum threshold limit: if the value is not reached within the parameter P01.0.40 "Minimum threshold delay", then the unit stops giving the error "E22 Minimum threshold".	Min = P05.0.11 Max = P05.0.12 Default = 0 bar
P04.3.02	(G) (X+)	Flow - Minimum Threshold	Select the minimum threshold limit: if the value is not reached within the parameter P01.0.40 "Minimum threshold delay", then the unit stops giving the error "E22 Minimum threshold".	Min = P05.0.21 Max = P05.0.22 Default = 0 l/min
P04.3.03	(G) (X+)	Temperature - Minimum Threshold	Select the minimum threshold limit: if the value is not reached within the parameter P01.0.40 "Minimum threshold delay", then the unit stops giving the error "E22 Minimum threshold".	Min = P05.0.31 Max = P05.0.32 Default = -50 ° C
P04.3.04	(G) (X+)	Level - Minimum Threshold	Select the minimum threshold limit: if the value is not reached within the parameter P01.0.40 "Minimum threshold delay", then the unit stops giving the error "E22 Minimum threshold".	Min = P05.0.41 Max = P05.0.42 Default = 0 m
P04.3.05	(G) (X+)	Generic - Min. Threshold	Select the minimum threshold limit: if the value is not reached within the parameter P01.0.40 "Minimum threshold delay", then the unit stops giving the error "E22 Minimum threshold".	Min = P05.0.51 Max = P05.0.52 Default = P05.0.51
P04.3.10	(G)	Minimum Threshold Delay	Select the delay time of the minimum threshold protection. This delay is the time given to the system to reach the minimum threshold value: if not reached the unit stops giving the error "E22 Minimum threshold".	Min = 1 s Max = 100 s Default = 2 s
P04.3.11	(G)	Lack Of Water Delay	Select the delay time of the lack of water (LOW) protection. This delay is the time that passes between the opening of the LOW contact and the actual activation of the error "E21 Lack of water (LOW)".	Min = 1 s Max = 100 s Default = 2 s

7.4.5 S04.4 Test Run

参数	类型	名称	描述	值
P04.4.01	(G)	Test Run Speed	Select the motor speed for the test run.	Min = 0 rpm ^{*)} Max = P04.2.32 Default = 1200 rpm ^{*)}
P04.4.02	(G)	Test Run Timeout	Select the time that have to pass before the test run starts. The pump must be not running for the time set in this parameter in order to start the test run. In order to let the TEST RUN work, the START/STOP digital input must be closed	Min = 0 h Max = 255 h Default = 100 h
P04.4.03	(G)	Test Run Time	Select the duration time of the test run.	Min = 0 s Max = 180 s Default = 5 s
P04.4.05		Test Run Command	Select ON to manually start the test run.	Default = Off

^{*)}取决于泵型号

7.4.6 S04.5 Setpoint Shift

参数	类型	名称	描述	值
P04.5.01	(G) (X+)	SP Shift Function	Select the type of Setpoint Shift function. 0-Off: The Setpoint Shift function is disabled 1-SSV1: The Setpoint Shift function is enabled and only SSV1 (Setpoint Shift Value 1) is used 2-SSV2: The Setpoint Shift function is enabled and only SSV2 (Setpoint Shift Value 2) is used 3-Full: The Setpoint Shift function is enabled and both SSV1 and SSV2 are used	Default = Off
P04.5.02	(G) (X+)	SP Shift Input	Select the magnitude used as reference for the Setpoint Shift function. 0-Setpoint Shift Pressure: The analog input set to Setpoint Shift Pressure 1-Pressure: The analog input set to Pressure 2-Flow: The analog input set to Flow 3-Temperature: Tanalog input set to Temperature 4-Level: The analog input set to Level 5-Generic: The analog input set to Generic	Default = Setpoint Shift Pressure
P04.5.05	(G) (X+)	SP Shift VALUE 1	Select the setpoint value desired for the first section of the Setpoint Shift function	Min = - Max = - Default = 0
P04.5.06	(G) (X+)	SP Shift VALUE 2	Select the setpoint value desired for the second section of the Setpoint Shift function	Min = - Max = - Default = 0
P04.5.10	(G) (X+)	SP Shift X 1	Select the Setpoint Shift input value at which the Setpoint Shift Value 1 starts to shift towards the Setpoint	Min = - Max = P04.5.11 Default = 0

参数	类型	名称	描述	值
P04.5.11	(G) (X+)	SP Shift X 2	Select the Setpoint Shift input value at which the Setpoint is used	Min = P04.5.10 Max = P04.5.12 Default = 0
P04.5.12	(G) (X+)	SP Shift X 3	Select the Setpoint Shift input value at which the Setpoint value starts to shift towards Setpoint Shift Value 2	Min = P04.5.11 Max = P04.5.13 Default = 0
P04.5.13	(G) (X+)	SP Shift X 4	Select the Setpoint Shift input value at which the Setpoint Shift Value 2 is used	Min = P04.5.12 Max = - Default = 0

7.4.7 S04.6 Pipe filling

未加压时，检查液压系统的加注情况，以防水锤现象。

如果启用，则在测得压力低于 *Pipe Filling Threshold*（管道加注阈值）且以下任一情况发生时，该功能启动：

- 装置启动
- 启动/停止触点从打开切换为闭合
- 装置设置为“开”
- 错误已重置。

功能激活时，装置在 *pipe filling stabilisation time*（管道加注稳定时间）内以最低速度运行，且压力得到监测：

- 如果 *stabilisation time*（稳定时间）内的压力恒定，则以 *pipe filling speed increase*（管道加注速度增加）值增加速度，且在下一个 *stabilisation time*（稳定时间）内重新监测压力等。
- 如果压力不是恒定，则速度不会增加
- 如果在 *pipe filling time*（管道加注时间）内达到 *pipe filling threshold*（管道加注阈值），则装置切换至设置的标准控制。

Pipe filling function（管道加注功能）参数可用于未在 *pipe filling time*（管道加注时间）内达到 *pipe filling threshold*（管道加注阈值）时禁用该功能或选择装置状态。

参数	类型	名称	描述	值
P04.6.01	(G)	Pipe Filling Function	With this parameter you can disable the Pipe Filling function or select the status of the unit if the Pipe Filling Threshold is not reached. 0-Disabled (0): the Pipe Filling function is disabled 1-Alarm (AL): the failure of the Pipe Filling function gives the alarm A29 Pipe Filling Alarm and the unit continues to run the function. 2-Error (Err): the failure of the Pipe Filling function gives the error E29 Pipe Filling Error and the unit stops. While the Pipe Filling function is running the Minimum Threshold is disabled.	Default = Disabled
P04.6.03	(G)	Pipe Filling Threshold	Select the pressure the system has to reach to exit the pipe filling function.	Min = P05.0.11 Max = P05.0.12 Default = 2 bar

参数	类型	名称	描述	值
P04.6.05	(G)	Pipe Filling Time	Select the maximum time given to the pipe filling function to reach the PIPE FILLING THRESHOLD.	Min = 0 s Max = 999 s Default = 180 s
P04.6.06	(G)	Max Pipe Filling Pumps	Select the number of pumps that will run simultaneously during the pipe filling function.	Min = 1 Max = P06.0.02 Default = 1
P04.6.10	(G)	Pipe Filling Steady Time	Select the time given to the unit to verify if the measured pressure is stable. The pressure is considered stable if its value is within the WINDOW calculated on the setpoint, centred on the pressure measured at the beginning of the current steady time.	Min = 1 s Max = P04.6.05 Default = 5 s
P04.6.15	(G)	Pipe Filling Speed Step	Select the amount of speed, in percentage of the maximum speed, that the unit will add to the current speed if the measured pressure is stable for the PIPE FILLING STEADY TIME.	Min = 5 % Max = 100 % Default = 10 %

7.5 M05 Input/Output Settings

7.5.1 S05.0 Measuring ranges

参数	类型	名称	描述	值
P05.0.00		Actual Value Source	Select the input for the controlled value. 0-Auto AI (PUE): The Actual Value is automatically linked to the Analog Input set to the controlled quantity of the Control Mode 1-Delta AI (Δ IF): The Actual Value is equal to the absolute difference of two Analog Inputs set to the controlled quantity of the Control Mode 2-Auto AI - Low (LBU): The Actual Value is equal to the lowest value of the Analog Inputs set to the controlled quantity of the Control Mode 3-Auto AI - High (H IF): The Actual Value is equal to the highest value of the Analog Inputs set to the controlled quantity of the Control Mode 4-DI Selection (Δ IF): The Analog Value is selected via the status of the Digital Input set to function "Sensor 1/2 Selection" 5-Sensorless Delta Pressure or Flow (SΔF): The actual value is estimated using the hydraulic curves stored in memory, if available. 6-Sensored or Sensorless Delta Pressure (SΔF): The actual value is automatically linked to the analog input set as "Pressure". If the analog input is not available, the actual value will be estimated using the hydraulic curves stored in memory, if available.	Default = Auto AI
P05.0.01		Actuator - Zero Value	Select the zero value of the regulation feedback sensor.	Min = 0 rpm Max = 9999 rpm Default = 0 rpm
P05.0.02		Actuator - Full Scale	Select the full range of the regulation feedback sensor.	Min = 0 rpm Max = 9999 rpm Default = 3600 rpm
P05.0.11	(G)	Pressure - Zero Value	Select the zero value of the regulation feedback sensor.	Min = -5 bar*) Max = 10 bar*) Default = 0 bar*)
P05.0.12	(G)	Pressure - Full Scale	Select the full range of the regulation feedback sensor.	Min = 0 bar*) Max = 100 bar*) Default = 10 bar*)
P05.0.21	(G) (X+)	Flow - Zero Value	Select the zero value of the regulation feedback sensor.	Min = 0 l/min*) Max = 9999 l/min*) Default = 0 l/min*)
P05.0.22	(G) (X+)	Flow - Full Scale	Select the full range of the regulation feedback sensor.	Min = 0 l/min*) Max = 9999 l/min*) Default = 100 l/min*)
P05.0.31	(G) (X+)	Temperature - Zero Value	Select the zero value of the regulation feedback sensor.	Min = -100 ° C Max = 9999 ° C Default = 0 ° C
P05.0.32	(G) (X+)	Temperature - Full Scale	Select the full range of the regulation feedback sensor.	Min = -100 ° C Max = 9999 ° C Default = 100 ° C

*) 取决于泵型号

参数	类型	名称	描述	值
P05.0.41	(G) (X+)	Level - Zero Value	Select the zero value of the regulation feedback sensor.	Min = -999 m ^{*)} Max = 9999 m ^{*)} Default = 0 m ^{*)}
P05.0.42	(G) (X+)	Level - Full Scale	Select the full range of the regulation feedback sensor.	Min = -999 m ^{*)} Max = 9999 m ^{*)} Default = 10 m ^{*)}
P05.0.51	(G) (X+)	Generic - Zero Value	Select the zero value of the regulation feedback sensor.	Min = -1000 Max = 1000 Default = 0
P05.0.52	(G) (X+)	Generic - Full Scale	Select the full range of the regulation feedback sensor.	Min = -1000 Max = 1000 Default = 100
P05.0.61	(G) (X+)	SPS Pressure Zero Value	Select the zero value of the pressure sensor used for the Setpoint Shift function.	Min = -1 bar Max = 99 bar Default = 0 bar
P05.0.62	(G) (X+)	SPS Pressure Full Scale	Select the full scale of the pressure sensor used for the Setpoint Shift function.	Min = 0 bar Max = 999 bar Default = 10 bar

^{*)}取决于泵型号

7.5.2 S05.1 Analogue inputs

参数	类型	名称	描述	值
P05.1.01		Analog Input 1 Function	Select the function for the analog input. 0-Off (OFF): the analog input is disabled 1-Pressure (P-E): A pressure sensor is connected to the analog input 2-Setpoint (SEt): A setpoint reference is connected to the analog input 3-Flow: A flow sensor is connected to the analog input 4-Temperature: A temperature sensor is connected to the analog input 5-Level: A level sensor is connected to the analog input 6-Generic: a Generic input is connected to the analog input 7-Setpoint Shift: an input used for the Setpoint Shift function is connected to the analog input	Default = Pressure
P05.1.02		Analog Input 1 Type	Select the type of analog signal connected to the analog input. 0-0 ÷ 20 mA 1-4 ÷ 20 mA 2-0 ÷ 10 V 3-2 ÷ 10 V	Default = 4 ÷ 20 mA

参数	类型	名称	描述	值
P05.1.11		Analog Input 2 Function	Select the function for the analog input. 0-Off (OFF): the analog input is disabled 1-Pressure (P-E): A pressure sensor is connected to the analog input 2-Setpoint (SEt): A setpoint reference is connected to the analog input 3-Flow: A flow sensor is connected to the analog input 4-Temperature: A temperature sensor is connected to the analog input 5-Level: A level sensor is connected to the analog input 6-Generic: a Generic input is connected to the analog input 7-Setpoint Shift: an input used for the Setpoint Shift function is connected to the analog input	Default = Off
P05.1.12		Analog Input 2 Type	Select the type of analog signal connected to the analog input. 0-0 ÷ 20 mA 1-4 ÷ 20 mA 2-0 ÷ 10 V 3-2 ÷ 10 V	Default = 4 ÷ 20 mA
P05.1.21	(X+)	Analog Input 3 Function	Select the function for the analog input. 0-Off: the analog input is disabled 1-Pressure: A pressure sensor is connected to the analog input 2-Setpoint: A setpoint reference is connected to the analog input 3-Flow: A flow sensor is connected to the analog input 4-Temperature: A temperature sensor is connected to the analog input 5-Level: A level sensor is connected to the analog input 6-Generic: a Generic input is connected to the analog input 7-Setpoint Shift: an input used for the Setpoint Shift function is connected to the analog input	Default = Off
P05.1.22	(X+)	Analog Input 3 Type	Select the type of analog signal connected to the analog input. 0-0 ÷ 20 mA 1-4 ÷ 20 mA 2-0 ÷ 10 V 3-2 ÷ 10 V	Default = 4 ÷ 20 mA

参数	类型	名称	描述	值
P05.1.31	(X+)	Analog Input 4 Function	Select the function for the analog input. 0-Off: the analog input is disabled 1-Pressure: A pressure sensor is connected to the analog input 2-Setpoint: A setpoint reference is connected to the analog input 3-Flow: A flow sensor is connected to the analog input 4-Temperature: A temperature sensor is connected to the analog input 5-Level: A level sensor is connected to the analog input 6-Generic: a Generic input is connected to the analog input 7-Setpoint Shift: an input used for the Setpoint Shift function is connected to the analog input	Default = Off
P05.1.32	(X+)	Analog Input 4 Type	Select the type of analog signal connected to the analog input. 0-0 ÷ 20 mA 1-4 ÷ 20 mA 2-0 ÷ 10 V 3-2 ÷ 10 V	Default = 4 ÷ 20 mA
P05.1.50		Analog Actuator Type	Select the type of actuator profile to be used when the setpoint for the actuator mode is set to analog input. 0-Hydrovar HVL (HVL): The profile is the same used in the Hydrovar HVL, see dedicated chart 1-Manual: The profile can be tuned using the dedicated parameters.	Default = Hydrovar HVL

7.5.3 S05.2 Digital inputs

参数	类型	名称	描述	值
P05.2.03		Digital Input 3 Function	Select the function for the Digital Input. 0-Disabled (d I5): function not used 1-Setpoint Switch: Use the digital input to switch between Setpoints. 2-Sensor 1/2 Selection (S I2): Use the digital input to switch between Analog Sensor 1 and Analog Sensor 2. 3-Min. Speed (ā īā): Close the digital input to run the motor at minimum speed 4-Max Speed: Close the digital input to run the motor at maximum speed 5-Solo Run (Sāā): Close the digital input to run the motor at maximum speed bypassing most of the errors. 6-Error Reset (rE5): Close the digital input to reset the error condition 7-External Error (EΞE): Open the digital input to activate the error condition "E16 External D.I. error" 8-External Alarm (EΞA): Open the digital input to activate the alarm condition "A16 External D.I. alarm" 9-Parameter Set Selection: Close the digital input to switch parameter set	Default = Solo Run
P05.2.04	(X+)	Digital Input 4 Function	Select the function for the Digital Input. 0-Disabled: function not used 1-Setpoint Switch: Use the digital input to switch between Setpoints. 2-Sensor 1/2 Selection: Use the digital input to switch between Analog Sensor 1 and Analog Sensor 2. 3-Min. Speed: Close the digital input to run the motor at minimum speed 4-Max Speed: Close the digital input to run the motor at maximum speed 5-Solo Run: Close the digital input to run the motor at maximum speed bypassing most of the errors. 6-Error Reset: Close the digital input to reset the error condition 7-External Error: Open the digital input to activate the error condition "E16 External D.I. error" 8-External Alarm: Open the digital input to activate the alarm condition "A16 External D.I. alarm" 9-Parameter Set Selection: Close the digital input to switch parameter set	Default = Disabled

参数	类型	名称	描述	值
P05.2.05	(X+)	Digital Input 5 Function	Select the function for the Digital Input. 0-Disabled: function not used 1-Setpoint Switch: Use the digital input to switch between Setpoints. 2-Sensor 1/2 Selection: Use the digital input to switch between Analog Sensor 1 and Analog Sensor 2. 3-Min. Speed: Close the digital input to run the motor at minimum speed 4-Max Speed: Close the digital input to run the motor at maximum speed 5-Solo Run: Close the digital input to run the motor at maximum speed bypassing most of the errors. 6-Error Reset: Close the digital input to reset the error condition 7-External Error: Open the digital input to activate the error condition "E16 External D.I. error" 8-External Alarm: Open the digital input to activate the alarm condition "A16 External D.I. alarm" 9-Parameter Set Selection: Close the digital input to switch parameter set	Default = Disabled

7.5.4 S05.3 Analogue output

参数	类型	名称	描述	值
P05.3.01		Analog Output Function	Select the Analog Output function. 0-Actual value (URL): The Analog Output replicates the current measured value 1-Effective required value (EFF): The Analog Output replicates the Effective Required Value 2-Motor speed (SPd): The Analog Output replicates the current motor speed 3-Motor load (Pwr): The Analog Output replicates the current motor power 4-Motor current: The Analog Output replicates the actual current drained from the motor 5-AN1 value (Rn1): The Analog Output replicates the value read on analog input 1 6-AN2 value (Rn2): The Analog Output replicates the value read on analog input 2 7-AN3 value: The Analog Output replicates the value read on analog input 3 8-AN4 value: The Analog Output replicates the value read on analog input 4 9-Temperature: The Analog Output replicates the value of measured fluid temperature 10-Flow rate: The Analog Output replicates the current measured flow 11-SPS Input Value: The Analog Output replicates the current value of the analog input used for the Setpoint Shift function	Default = Motor speed

参数	类型	名称	描述	值
P05.3.02		Analog Output Type	Select the Analog Output type. 0-0 ÷ 20 mA 1-4 ÷ 20 mA 2-0 ÷ 10 V 3-2 ÷ 10 V	Default = 4 ÷ 20 mA

7.5.5 S05.4 Digital outputs

参数	类型	名称	描述	值
P05.4.01		Relay 1 Function	Select the function of the Relay. 0-Off (OFF): the Relay is disabled 1-Power (Pwr): the relay is active when the unit is connected to the power supply 2-Running (Run): the relay is active when the motor is running 3-Motor Heating (MHE): the relay is active when the motor heating function is active 4-Error (Err): the relay is active when no errors are active 5-Alarm or Error (ALR): the relay is active when no alarms or errors are active 6-On (On): the relay is active when the unit is in status ON (not running but ready to run) 7-Error Reset (rES): the relay is active when the parameter "Automatic Error Reset" is set to YES and the maximum number of automatic reset has been reached	Default = Error
P05.4.02		Relay 2 Function	Select the function of the Relay. 0-Off (OFF): the Relay is disabled 1-Power (Pwr): the relay is active when the unit is connected to the power supply 2-Running (Run): the relay is active when the motor is running 3-Motor Heating (MHE): the relay is active when the motor heating function is active 4-Error (Err): the relay is active when no errors are active 5-Alarm or Error (ALR): the relay is active when no alarms or errors are active 6-On (On): the relay is active when the unit is in status ON (not running but ready to run) 7-Error Reset (rES): the relay is active when the parameter "Automatic Error Reset" is set to YES and the maximum number of automatic reset has been reached	Default = Running

7.5.6 S05.8 Calibrations

该菜单中的参数用于校准连接到模拟输入端的传感器的测量值以及模拟输出端的驱动值。

模拟输入端 - hydrovar X、hydrovar X+

模拟输入端的校准过程包括将装置（hydrovar X 或 hydrovar X+）测得的值与外部参考传感器测得的值进行比较。

测量应在两个点进行，理想情况下分别对应于模拟信号满量程的 10% 和 90%。

配置示例：

- P05.1.01 = 1 - 压力
- P05.0.11 = 0 bar
- P05.0.12 = 10 bar

定义:

- “实际值 1 和 2”: 外部传感器在满量程的 10% 和 90% 处测得的压力值
- “读取值 1 和 2”: hydrovar X 或 hydrovar X+ 通过参数 “P03.0.1 - 当前压力” 在相同点读取的值。

待完成的设置:

- $P05.8.02 \text{ (AI 1 增益)} = (\text{实际值 2} - \text{实际值 1}) \div (\text{读取值 2} - \text{读取值 1})$
- $P05.8.01 \text{ (AI 1 偏移)} = \text{实际值 1} - (\text{读取值 1} \times P05.8.02)$ 。

模拟输出端 - hydrovar X+

模拟输出端的校准过程包括将在 AO1 (14) 和 GND (15) 端子处测得的实际电压或电流值与通过参数 P03.3.20 读取的值进行比较。

校准示例:

- $P05.8.45 \text{ (模拟输出端增益)} = (\text{实际值 2} - \text{实际值 1}) \div (\text{读取值 2} - \text{读取值 1})$
- $P05.8.44 \text{ (模拟输出端偏移)} = \text{实际值 1} - (\text{读取值 1} \times P05.8.45)$ 。

参数表

参数	类型	名称	描述	值
P05.8.01		Analog Input 1 Offset	Select the offset at zero value for the Analog Input	Min = -100 Max = 100 Default = 0
P05.8.02		Analog Input 1 Gain	Select the gain for Analog Input	Min = 0 Max = 1.5 Default = 1
P05.8.11		Analog Input 2 Offset	Select the offset at zero value for the Analog Input	Min = -100 Max = 100 Default = 0
P05.8.12		Analog Input 2 Gain	Select the gain for Analog Input	Min = 0 Max = 1.5 Default = 1
P05.8.21	(X+)	Analog Input 3 Offset	Select the offset at zero value for the Analog Input	Min = -100 Max = 100 Default = 0
P05.8.22	(X+)	Analog Input 3 Gain	Select the gain for Analog Input	Min = 0 Max = 1.5 Default = 1
P05.8.31	(X+)	Analog Input 4 Offset	Select the offset at zero value for the Analog Input	Min = -100 Max = 100 Default = 0
P05.8.32	(X+)	Analog Input 4 Gain	Select the gain for Analog Input	Min = 0 Max = 1.5 Default = 1
P05.8.44		Analog Output 1 Offset	The OFFSET parameter is an additive constant applied to the analog output signal, shifting the entire output range. Adjusting offset corrects for zero-point errors in the output signal	Min = -100 mA Max = 100 mA Default = 0 mA
P05.8.45		Analog Output 1 Gain	The GAIN parameter is a multiplier applied to the analog output signal, controlling the slope of the output. Adjusting gain corrects for scaling errors in the output signal.	Min = 0 Max = 1.5 Default = 1

7.6 M06 Multipump

7.6.1 S06.0 Configuration

参数	类型	名称	描述	值
P06.0.01	(G)	System Configuration	Select system configuration. 0-Single Pump (S06): The unit is set up to operate on its own, with no interactions with other units. 1-Serial Cascade (PSE): In this configuration, several units work together, connected via the RS485 interface. Only the last started unit varies its speed, while the already running units operate at maximum speed. 2-Synchronous Cascade (P59): In this configuration, several units work together, connected via the RS485 interface. All running units operate at the same variable speed.	Default = Single Pump
P06.0.02	(G)	Max Units	Select the maximum number of units that operate simultaneously in the multipump system.	Min = 1 Max = - Default = 6
P06.0.03		Multipump Address	Select the pump address in a multipump system. In a multipump system each unit has a unique address, with value from 1 to 8.	Min = 1 Max = - Default = 1
P06.0.04	(R) (A)	Multipump Map	Display the map of the units that could be part of the multipump	-
P06.0.05	(R)	Multipump Priority	Display the multipump priority	-

7.6.2 S06.1 Regulation

参数	类型	名称	描述	值
P06.1.11	(G)	Pressure - Inc. value	Select the multipump actual value increase. This value, in conjunction with the actual value decrease, will be used to calculate the effective required value in a multipump system.	Min = 0 bar ^{*)} Max = P05.0.12 Default = 0.35 bar ^{*)}
P06.1.12	(G)	Pressure - Dec. value	Select the multipump actual value decrease. This value, in conjunction with the actual value increase, will be used to calculate the effective required value in a multipump system.	Min = 0 bar ^{*)} Max = P05.0.12 Default = 0.15 bar ^{*)}
P06.1.21	(G) (X+)	Flow - Inc. value	Select the multipump actual value increase. This value, in conjunction with the actual value decrease, will be used to calculate the effective required value in a multipump system.	Min = 0 l/min ^{*)} Max = P05.0.22 Default = 0.35 l/min ^{*)}
P06.1.22	(G) (X+)	Flow - Dec. value	Select the multipump actual value decrease. This value, in conjunction with the actual value increase, will be used to calculate the effective required value in a multipump system.	Min = 0 l/min ^{*)} Max = P05.0.22 Default = 0.15 l/min ^{*)}

^{*)} 取决于泵型号

参数	类型	名称	描述	值
P06.1.31	(G) (X+)	Temperature - Inc. value	Select the multipump actual value increase. This value, in conjunction with the actual value decrease, will be used to calculate the effective required value in a multipump system.	Min = 0 ° C Max = P05.0.32 Default = 1.5 ° C
P06.1.32	(G) (X+)	Temperature - Dec. value	Select the multipump actual value decrease. This value, in conjunction with the actual value increase, will be used to calculate the effective required value in a multipump system.	Min = 0 ° C Max = P05.0.32 Default = 1.5 ° C
P06.1.41	(G) (X+)	Level - Inc. value	Select the multipump actual value increase. This value, in conjunction with the actual value decrease, will be used to calculate the effective required value in a multipump system.	Min = 0 m ^{*)} Max = P05.0.42 Default = 0.35 m ^{*)}
P06.1.42	(G) (X+)	Level - Dec. value	Select the multipump actual value decrease. This value, in conjunction with the actual value increase, will be used to calculate the effective required value in a multipump system.	Min = 0 m ^{*)} Max = P05.0.42 Default = 0.15 m ^{*)}
P06.1.51	(G) (X+)	Generic - Inc. value	Select the multipump actual value increase. This value, in conjunction with the actual value decrease, will be used to calculate the effective required value in a multipump system.	Min = 0 Max = P05.0.52 Default = 1.5
P06.1.52	(G) (X+)	Generic - Dec. value	Select the multipump actual value decrease. This value, in conjunction with the actual value increase, will be used to calculate the effective required value in a multipump system.	Min = 0 Max = P05.0.52 Default = 1.5
P06.1.61	(G)	Multipump Enable Speed	Select the desired release speed for the following pumps. The next pump starts when the below conditions are matched: - the motor speed reaches the MULTIPUMP ENABLE SPEED - the actual value drops below SETPOINT-ACTUAL VALUE DECREASE.	Min = P04.2.31 Max = P04.2.32 Default = 3000 rpm ^{*)}
P06.1.71	(G)	Synchronous Limit	Select the speed limit for the multipump cascade synchronous. The pump with priority P2 will shut off if its speed goes below this value.	Min = 0 rpm ^{*)} Max = 3600 rpm ^{*)} Default = 840 rpm ^{*)}
P06.1.72	(G)	Synchronous Window	Select the speed window for the multipump cascade synchronous. The pump with priority P3 will shut off when its speed goes below SYNCHRONOUS LIMIT + SYNCHRONOUS WINDOW, P4 will shut off when its speed goes below SYNCHRONOUS LIMIT + 2 x SYNCHRONOUS WINDOW, and so on.	Min = 0 rpm Max = P04.2.32 Default = 150 rpm

^{*)} 取决于泵型号

参数	类型	名称	描述	值
P06.1.81	(G)	Automatic Switchover Interval	Select the timeout for the automatic switchover: it allows an automatic change-over of the MASTER pump and the assist pumps. As soon as the timeout is elapsed, the next pump becomes MASTER and the counter restarts; this gives even wear and similar operating hours to all pumps. The switchover interval is active as long as the MASTER does not stop.	Min = 0 h Max = 250 h Default = 24 h

^{*)} 取决于泵型号

7.7 M07 Inverter

7.7.1 S07.0 Switching Frequency Settings

参数	类型	名称	描述	值
P07.0.01		Max Switching Frequency	Select the maximum switching frequency of the inverter modulation. Range: 2 ÷ 16 KHz	Default = 16 KHz
P07.0.02		Min Switching Frequency	Select the minimum switching frequency the unit will use. In case of overheating, the unit will automatically decrease the switching frequency down to this value.	Default = 4 KHz

7.7.2 S07.1 Skip Speed Function

参数	类型	名称	描述	值
P07.1.01	(G)	Skip Speed Center	Select the center of the speed band that will be avoided by the motor.	Min = P04.2.31 Max = P04.2.32 Default = 2000 rpm ^{*)}
P07.1.02	(G)	Skip Speed Range	Select the range of the speed band that will be avoided by the motor.	Min = 0 rpm Max = 300 rpm Default = 0 rpm

^{*)} 取决于泵型号

7.7.3 S07.2 Motor Heating

参数	类型	名称	描述	值
P07.2.01	(G)	Motor heating function	Select to enable the motor heating function. When this function is enabled, if the motor is not running and the inverter temperature decreases below the motor heating temperature (7.2.03), a current flows to the motor to avoid icing. This current flow does not make the motor rotate. 0-Off (0FF): the motor heating function is disabled 1-On (0n): the motor heating function is enabled and starts running when the motor is not running and the inverter temperature is below the Motor Heating Temperature (7.2.03) 2-Always On (0On): the motor heating function is always running when the motor is not running, independently from the inverter temperature	Default = Off

^{*)} 取决于泵型号

参数	类型	名称	描述	值
P07.2.02		Motor heating current	Select the amount of current, in percentage of the maximum current, that will flow through the motor when the motor heating function is running.	Min = 0 % ^{*)} Max = 100 % ^{*)} Default = 50 % ^{*)}
P07.2.03	(G)	Motor heating temperature	Select the temperature below which the motor heating function will run. This parameter is active only if Motor heating function (7.2.01) is set to ON	Min = -5 ° C Max = 30 ° C Default = 0 ° C

^{*)}取决于泵型号

7.7.4 S07.3 Special Functions

参数	类型	名称	描述	值
P07.3.01		Feed Forward Function	Feed Forward Function	Default = Off

7.8 M08 Communication

7.8.1 S08.0 Ports

参数	类型	名称	描述	值
P08.0.01		Com 1 Function	Select the function for the communication port 1 (RS 485.1). 0-Disabled (禁用): The communication port is not active 1-Modbus RTU (Mod): The protocol selected is MODBUS RTU and the unit acts as Modbus slave 2-BACnet MS/TP (bAC): The protocol selected is BACnet MS/TP 3-Multipump (MP): The protocol selected is the Hydrovar X Multipump protocol	Default = Multipump
P08.0.02		Com 2 Function	Select the function for the communication port 2 (RS 485.2). 0-Disabled (禁用): The communication port is not active 1-Modbus RTU (Mod): The protocol selected is MODBUS RTU and the unit acts as Modbus slave 2-BACnet MS/TP (bAC): The protocol selected is BACnet MS/TP	Default = Modbus RTU

7.8.2 S08.1 Modbus RTU

参数	类型	名称	描述	值
P08.1.01		Modbus RTU Address	Select the unit address in the Modbus RTU network.	Min = 0 Max = 127 Default = 1
P08.1.02		Modbus RTU Baudrate	Select the unit network baudrate in order to match the baudrate of the Modbus RTU master.	Default = 115200
P08.1.08		Modbus RTU Format	Select the unit network format in order to match the format of the Modbus RTU master.	Default = 8N1

7.8.3 S08.2 Bacnet MS/TP

参数	类型	名称	描述	值
P08.2.01		BACnet MS/TP Mac Address	Select the unit address in the RS-485 network.	Min = 0 Max = P08.2.05 Default = 1
P08.2.02		BACnet MS/TP Baudrate	Select the unit network baudrate in order to match the baudrate of the other BACnet MS/TP devices in the network.	Default = 38400
P08.2.03		BACnet MS/TP Format	Select the unit network format in order to match the format of the other BACnet MS/TP devices in the network.	Default = 8N1
P08.2.04		BACnet MS/TP Device Id	Select the BACnet MS/TP device ID	Min = - Max = 4194304 Default = 84003
P08.2.05		BACnet MS/TP Max Master	Select the BACnet MS/TP maximum number of masters	Min = P08.2.01 Max = 127 Default = 127

7.8.4 S08.3 Wireless Communication

参数	类型	名称	描述	值
P08.3.01		Enable Wireless Communication	Select the activation of the wireless communication service. 0-Off (OFF): The wireless communication is disabled and the unit cannot be connected to a smartphone 1-On (ON): The wireless communication is active and the unit can be connected to a smartphone running the dedicated app	Default = On

7.9 M09 General Settings

7.9.1 S09.0 Localization

参数	类型	名称	描述	值
P09.0.01	(X+)	Language	Select the display language.	Default = English
P09.0.11	(G) (X+)	Date	Select the unit calendar date.	
P09.0.12	(G) (X+)	Time	Set the unit clock.	

7.9.2 S09.1 Display

参数	类型	名称	描述	值
P09.1.01		Display Energy Saving	Select the status of the display energy saving function. 0-Off (OFF): The unit will keep the display always active 1-On (ON): The unit will dim the display after the ENERGY SAVING TIME is elapsed	Default = On
P09.1.02		Energy Saving Time	Select the time in minutes that must pass from the last keyboard action before the display dims.	Min = 60 s Max = 3600 s Default = 600 s
P09.1.10		Display Orientation	Select the display orientation. 0-6 O'Clock (6): The display has the correct orientation for an horizontal pump 1-12 O'Clock (12): The display has the correct orientation for a vertical pump	Default = 6 O'Clock ^{*)}
P09.1.11		Max Decimals	Set the maximum number of decimal points for values to be shown in the homepage	Min = 0 Max = 3 Default = 3

^{*)} 取决于泵型号

7.9.3 S09.2 Parameters profiles

参数	类型	名称	描述	值
P09.2.01	(G) (X+)	Select Active Parameter Set	Select the parameter set to activate.	Default = Param Set 1
P09.2.02	(X+)	Save Active Parameter Set	Save current parameter set.	Default = Wait Save Action
P09.2.03	(X+)	Load Parameter Set	Load default parameter set.	Default = Wait Load Action

7.9.4 S09.3 Factory Settings

参数	类型	名称	描述	值
P09.3.01		Error Log Reset	Select YES to reset the error log.	Default = No
P09.3.02		Operating Time Counter Reset	Select YES to reset the operating time counter	Default = No
P09.3.03		Motor Running Counter Reset	Select YES to reset the motor running time counter	Default = No
P09.3.04		Energy Counter Reset	Select YES to reset the energy counter	Default = No
P09.3.05		Factory Restore	Select YES to restore the unit to factory default parameters	Default = No
P09.3.06	(G) (X+)	Commissioning Completed	Select if the Genie procedure is completed.	Default = No
P09.3.07		Bonded Device List Reset	Select Yes to reset the bluetooth bonded device list	Default = No
P09.3.10		Upgrade Control Card	Download the configuration file from the HMI to the Control Card	Default = No

7.9.5 S09.4 Security

参数	类型	名称	描述	值
P09.4.01		Password Entry	Enter the password. The default user password is 66.	Min = 0 Max = 999 Default = 0
P09.4.02	(R)	Logout	Logout	-
P09.4.03		Set Password	Set a new password. The password is required to access the menu.	Min = 0 Max = 999 Default = 66
P09.4.10		Key Lock	Select the activation of the key lock. Possible selections are: 0-No (00): The key buttons are always active. 1-Yes (15): After the Energy Saving Time is elapsed, the arrow and wireless communication buttons are locked. ON/OFF button is still active. 2-Yes - Password (2-P): After the Energy Saving Time is elapsed, all buttons are locked. Inserting the password is required to unlock the buttons. Attention: also On/Off button is locked, therefore an external Start/Stop contact is recommended.	Default = No

7.9.6 S09.5 Cloning

参数	类型	名称	描述	值
P09.5.01	(X+)	Start	Starting the CLONING will download the firmware of this specific unit on all the other units connected. The process will be performed independently of the firmware version of this unit being more or less recent of the other units.	Default = No
P09.5.02	(R) (X+)	Firmware Version	Display the cumulative firmware version of the device	-
P09.5.03	(R) (X+)	Progress	This value shows the percentage of progression of the CLONING once the process has been launched	-

8 Modbus RTU

8.1 通信

装置使用 RS485 串行接口，定义了：

- 连接引脚
- 接线
- 信号等级
- 传输波特率
- 奇偶校验。

控制器采用主机-客户端解决方案进行通信，其中仅主机可启动传输或轮询。其他设备（客户端）的响应方式为向主机提供所请求的数据或终止查询中请求的操作。

8.2 传输

功能不受支持。

8.3 数据保护

标准 Modbus 串行网络使用两类错误校验：

- 奇偶校验（偶数或奇数），可选择性地应用于每个字符
- 帧校验（LRC 或 CRC），应用于完整消息。

奇偶校验和帧校验均在主设备中生成，并在传输前应用于消息内容。

客户端设备在接收时校验每个字符和完整消息帧。

8.4 协议传输模式

可通过由所有值的保持寄存器组成的 Modbus 虚拟存储器来访问装置管理的数据。

设置 S08.0 Ports（端口）菜单的参数时，Modbus RTU 协议传输模式可用。

串行端口通信参数：

- P08.0.01 Address
- P08.0.02 Baud rate
- P08.0.08 Format

必须根据网络配置进行选择。

注意：

Modbus 网络中所有设备的模式和串行参数必须一致。

设置 P08.0.08 Format（格式）参数时，以下模式可用：

- 8N1 1 起始位、8 数据位、1 停止位，无奇偶校验位
- 8N2 1 起始位、8 数据位、2 停止位，无奇偶校验位
- 8E1 1 起始位、8 数据位、1 停止位，偶数校验位
- 8O1 1 起始位、8 数据位、1 停止位，奇数校验位。

串行端口的默认配置为：

- P08.0.01 Address=1
- P08.0.02 Baud rate=115200
- P08.0.08 Format=8N1.

8.5 受支持的功能代码

装置中实现的 Modbus 协议功能代码为：

- 读取保持寄存器（十六进制代码 0x03），以读取表示参数和信息的保持寄存器
- 写入多个寄存器（十六进制代码 0x10），以写入代表参数的保持寄存器。

8.5.1 示例 1

0x03 读取保持寄存器 — “读取命令” 读取客户端中保持寄存器的二进制内容。

注意：Modbus 寄存器从零开始寻址，例如，索引为 0xBBA 的保持寄存器必须寻址为 0xBB9。

示例：当前压力读取

查询

客户端地址	0x01
功能	0x03 读取保持寄存器
起始位置高字节	0x0B
起始位置低字节	0xB9 => 3001 十进制 => 当前压力的 Modbus 地址 (FLOAT32)
高字节节点数	0x00
低字节节点数	0x02 读取两个寄存器为 FLOAT32
CRC 错误校验 — 高字节	0x17
CRC 错误校验 — 低字节	0xCA 生成的 CRC 校验和

响应

客户端地址	0x01
功能	0x03
字节计数	0x04
高字节数据	0x40
低字节数据	0xA0
高字节数据	0x00
低字节数据	0x00
CRC 错误校验 — 高字节	0xEF => 0x40A00000 十六进制 = 5.0f FLOAT32 => 实际值 = 5.0 巴
CRC 错误校验 — 低字节	0xD1 生成的 CRC 校验和

8.5.2 示例 2

0x10 写入多个寄存器 — “写入命令”在连续寄存器块中写入值。

注意：Modbus 寄存器从零开始寻址，例如，索引为 0x1074 的保持寄存器必须寻址为 0x1073。

示例：将斜坡指令 1 和斜坡指令 2 设置为 25 秒，斜坡指令 3 和斜坡指令 4 设置为 100 秒。

查询

客户端地址	0x01
功能	0x10 写入多个寄存器
起始位置高字节	0x10
起始位置低字节	0x74 => 4211 十进制 => 首个寄存器为斜坡指令 1
高字节寄存器数量	0x00
低字节寄存器数量	0x04 总共 4 个寄存器（斜坡指令 1 至斜坡指令 4）待写入
字节计数	0x08 2 * 寄存器数量
高字节 Reg 值	0x00
低字节 Reg 值	0x19 => 19 十六进制 = 25 十进制 => 设置斜坡指令 1 为 25 秒
高字节 Reg 值	0x00
低字节 Reg 值	0x19 => 19 十六进制 = 25 十进制 => 设置斜坡指令 2 为 25 秒
高字节 Reg 值	0x00
低字节 Reg 值	0x64 => 64 十六进制 = 100 十进制 => 设置斜坡指令 3 为 100 秒
高字节 Reg 值	0x00
低字节 Reg 值	0x64 => 64 十六进制 = 100 十进制 => 设置斜坡指令 4 为 100 秒
CRC 错误校验 — 高字节	0x18
CRC 错误校验 — 低字节	0x6A 生成的 CRC 校验和

响应

客户端地址	0x01
功能	0x10
起始位置高字节	0x10
起始位置低字节	0x73
高字节寄存器数量	0x00
低字节寄存器数量	0x04 总共 4 个寄存器（斜坡指令 1 至斜坡指令 4）已写入
CRC 错误校验 — 高字节	0x34
CRC 错误校验 — 低字节	0xD1 生成的 CRC 校验和

8.6 Modbus RTU 的连接和数据管理

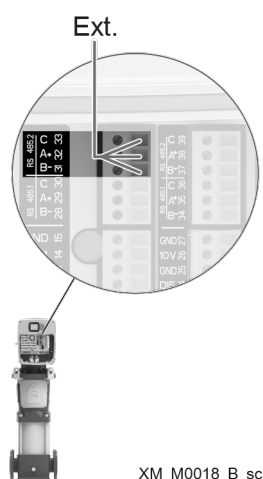
- 当驱动和外部设备间的 Modbus RTU 通信处于激活状态时，操作面板连接状态指示灯亮起。
- 将参数 *P04.1.60 Limit setpoint saving*（保存限值设定值）设置为 *Yes*（是），以向易失性存储区域写入并延长非易失性 EEPROM 存储器的寿命。

注意：

请勿将控制板的端子 (C) 连接至不同的电压电位或地线。

将单个电动泵连接至外部设备

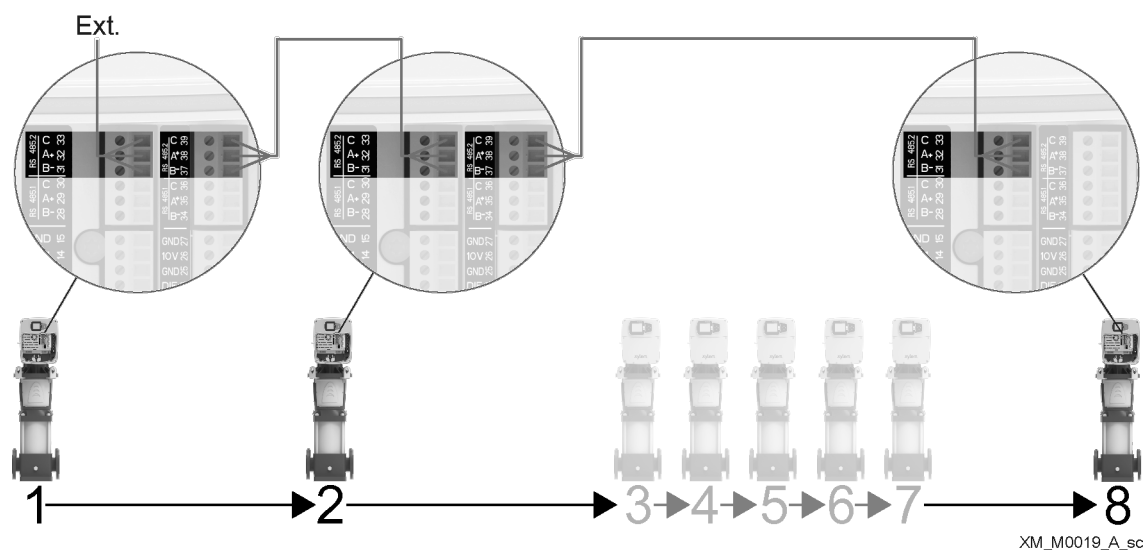
1. 拆除驱动的护罩并观察内部接线图。
2. 将端子 31 (B)、32 (A) 和 33 (C) 连接至 PLC、BMS 等外部设备。



将多联泵系统连接至外部设备

多联泵模式允许采用多主机多联泵配置来连接两个或三个电机驱动。

- 增压机组的每台装置均有其唯一的 Modbus 地址，并为外部设备提供寄存器的完整列表
- 参数 P08.1.01 Address（地址）必须在增压机组的每台装置上设置为唯一值。参数 P08.1.01 Address（地址）由 Modbus 网络中的装置标识号组成。
- 与外部控制设备（如 PLC、BMS 等）通信时，默认使用端子 31 (B)、32 (A) 和 33 (C)。
- 为方便 RS485 端口信号的级联连接，两排接口上都复制了每个端口的端子。
- RS485.2 端口信号复制在端子组合 31-31-33 和端子组合 37-38-39 上。



由于驱动也连接在多联泵系统中，因此必须特别注意，以防外部设备(通过 Modbus 协议)请求读取和写入驱动器参数。

特别是：

- 在多联泵系统中，为响应 Modbus 上的“读取寄存器”请求，每台装置仅将其各自的参数返回至外部设备，而非增压机组中其他所连接驱动的参数。
- 在多联泵系统中，即使待写入的参数为“全局应用”（对于增压机组），Modbus 上的“写入寄存器”请求也必须从外部设备发送至所有连接的装置。

8.7 寄存器列表

Modbus 寄存器	菜单 ID	名称	读/写 (R/W)	类型	尺寸	最小	最大
0	-	Select the ON/OFF status of the pump. Corresponds to the action on the ON/OFF button. 0-On 1-Off	R/W	ENUM	-	0	1
1	-	Error Reset Command	R/W	ENUM	-	0	1
2001	P02.0.01	Error 1 (Most Recent)	R	UINT16	-	-	-
2002	-	Error 1 - Date	R	UINT32	-	-	-
2004	-	Error 1 - Time	R	UINT32	-	-	-
2006	-	Error 1 - End Date	R	UINT32	-	-	-
2008	-	Error 1 - End Time	R	UINT32	-	-	-
2010	-	Log: Error Counter	R	UINT16	-	-	-
2011	-	Log: Error 1 Bitfield	R	UINT32	-	-	-
2013	-	Log: Error 2 Bitfield	R	UINT32	-	-	-
2015	-	Log: Alarm 1 Bitfield	R	UINT32	-	-	-
2017	-	LogSpeed	R	UINT32	-	-	-
2019	-	Log: Error Code	R	UINT32	-	-	-
2021	-	Log: Flow	R	FLOAT32	P04.0.12 - Flow Measuring Unit	-	-
2023	-	Log: Head	R	FLOAT32	P04.0.11 - Pressure Measuring Unit	-	-
2025	-	Log: Power Module Temperature	R	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
2027	-	Log: Motor Current	R	FLOAT32	A	-	-
2029	-	Log: Motor Voltage	R	FLOAT32	V	-	-
2031	-	Log: Inverter Temperature	R	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-

2033	-	LogPower	R	FLOAT32	-	-	-
2035	-	Log: DC Bus Voltage	R	FLOAT32	V	-	-
2037	-	Log: Grid Voltage	R	FLOAT32	V	-	-
2039	P02.0.02	Error 2	R	UINT16	-	-	-
2040	-	Error 2 - Date	R	UINT32	-	-	-
2042	-	Error 2 - Time	R	UINT32	-	-	-
2044	-	Error 2 - End Date	R	UINT32	-	-	-
2046	-	Error 2 - End Time	R	UINT32	-	-	-
2048	-	Log: Error Counter	R	UINT16	-	-	-
2049	-	Log: Error 1 Bitfield	R	UINT32	-	-	-
2051	-	Log: Error 2 Bitfield	R	UINT32	-	-	-
2053	-	Log: Alarm 1 Bitfield	R	UINT32	-	-	-
2055	-	LogSpeed	R	UINT32	-	-	-
2057	-	Log: Error Code	R	UINT32	-	-	-
2059	-	Log: Flow	R	FLOAT32	P04.0.12 - Flow Measuring Unit	-	-
2061	-	Log: Head	R	FLOAT32	P04.0.11 - Pressure Measuring Unit	-	-
2063	-	Log: Power Module Temperature	R	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
2065	-	Log: Motor Current	R	FLOAT32	A	-	-
2067	-	Log: Motor Voltage	R	FLOAT32	V	-	-
2069	-	Log: Inverter Temperature	R	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
2071	-	LogPower	R	FLOAT32	-	-	-
2073	-	Log: DC Bus Voltage	R	FLOAT32	V	-	-
2075	-	Log: Grid Voltage	R	FLOAT32	V	-	-
2077	P02.0.03	Error 3	R	UINT16	-	-	-
2078	-	Error 3 - Date	R	UINT32	-	-	-
2080	-	Error 3 - Time	R	UINT32	-	-	-
2082	-	Error 3 - End Date	R	UINT32	-	-	-
2084	-	Error 3 - End Time	R	UINT32	-	-	-
2086	-	Log: Error Counter	R	UINT16	-	-	-
2087	-	Log: Error 1 Bitfield	R	UINT32	-	-	-
2089	-	Log: Error 2 Bitfield	R	UINT32	-	-	-
2091	-	Log: Alarm 1 Bitfield	R	UINT32	-	-	-
2093	-	LogSpeed	R	UINT32	-	-	-
2095	-	Log: Error Code	R	UINT32	-	-	-
2097	-	Log: Flow	R	FLOAT32	P04.0.12 - Flow Measuring Unit	-	-
2099	-	Log: Head	R	FLOAT32	P04.0.11 - Pressure Measuring Unit	-	-
2101	-	Log: Power Module Temperature	R	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
2103	-	Log: Motor Current	R	FLOAT32	A	-	-
2105	-	Log: Motor Voltage	R	FLOAT32	V	-	-
2107	-	Log: Inverter Temperature	R	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
2109	-	LogPower	R	FLOAT32	-	-	-
2111	-	Log: DC Bus Voltage	R	FLOAT32	V	-	-
2113	-	Log: Grid Voltage	R	FLOAT32	V	-	-
2115	P02.0.04	Error 4	R	UINT16	-	-	-
2116	-	Error 4 - Date	R	UINT32	-	-	-
2118	-	Error 4 - Time	R	UINT32	-	-	-
2120	-	Error 4 - End Date	R	UINT32	-	-	-
2122	-	Error 4 - End Time	R	UINT32	-	-	-
2124	-	Log: Error Counter	R	UINT16	-	-	-

2125	-	Log: Error 1 Bitfield	R	UINT32	-	-
2127	-	Log: Error 2 Bitfield	R	UINT32	-	-
2129	-	Log: Alarm 1 Bitfield	R	UINT32	-	-
2131	-	LogSpeed	R	UINT32	-	-
2133	-	Log: Error Code	R	UINT32	-	-
2135	-	Log: Flow	R	FLOAT32	P04.0.12 - Flow Measuring Unit	-
2137	-	Log: Head	R	FLOAT32	P04.0.11 - Pressure Measuring Unit	-
2139	-	Log: Power Module Temperature	R	FLOAT32	P04.0.13 - Temperature Measuring Unit	-
2141	-	Log: Motor Current	R	FLOAT32	A	-
2143	-	Log: Motor Voltage	R	FLOAT32	V	-
2145	-	Log: Inverter Temperature	R	FLOAT32	P04.0.13 - Temperature Measuring Unit	-
2147	-	LogPower	R	FLOAT32	-	-
2149	-	Log: DC Bus Voltage	R	FLOAT32	V	-
2151	-	Log: Grid Voltage	R	FLOAT32	V	-
2153	P02.0.05	Error 5	R	UINT16	-	-
2154	-	Error 5 - Date	R	UINT32	-	-
2156	-	Error 5 - Time	R	UINT32	-	-
2158	-	Error 5 - End Date	R	UINT32	-	-
2160	-	Error 5 - End Time	R	UINT32	-	-
2162	-	Log: Error Counter	R	UINT16	-	-
2163	-	Log: Error 1 Bitfield	R	UINT32	-	-
2165	-	Log: Error 2 Bitfield	R	UINT32	-	-
2167	-	Log: Alarm 1 Bitfield	R	UINT32	-	-
2169	-	LogSpeed	R	UINT32	-	-
2171	-	Log: Error Code	R	UINT32	-	-
2173	-	Log: Flow	R	FLOAT32	P04.0.12 - Flow Measuring Unit	-
2175	-	Log: Head	R	FLOAT32	P04.0.11 - Pressure Measuring Unit	-
2177	-	Log: Power Module Temperature	R	FLOAT32	P04.0.13 - Temperature Measuring Unit	-
2179	-	Log: Motor Current	R	FLOAT32	A	-
2181	-	Log: Motor Voltage	R	FLOAT32	V	-
2183	-	Log: Inverter Temperature	R	FLOAT32	P04.0.13 - Temperature Measuring Unit	-
2185	-	LogPower	R	FLOAT32	-	-
2187	-	Log: DC Bus Voltage	R	FLOAT32	V	-
2189	-	Log: Grid Voltage	R	FLOAT32	V	-
2191	P02.0.06	Error 6	R	UINT16	-	-
2192	-	Error 6 - Date	R	UINT32	-	-
2194	-	Error 6 - Time	R	UINT32	-	-
2196	-	Error 6 - End Date	R	UINT32	-	-
2198	-	Error 6 - End Time	R	UINT32	-	-
2200	-	Log: Error Counter	R	UINT16	-	-
2201	-	Log: Error 1 Bitfield	R	UINT32	-	-
2203	-	Log: Error 2 Bitfield	R	UINT32	-	-
2205	-	Log: Alarm 1 Bitfield	R	UINT32	-	-
2207	-	LogSpeed	R	UINT32	-	-
2209	-	Log: Error Code	R	UINT32	-	-
2211	-	Log: Flow	R	FLOAT32	P04.0.12 - Flow Measuring Unit	-
2213	-	Log: Head	R	FLOAT32	P04.0.11 - Pressure Measuring Unit	-

2215	-	Log: Power Module Temperature	R	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
2217	-	Log: Motor Current	R	FLOAT32	A	-	-
2219	-	Log: Motor Voltage	R	FLOAT32	V	-	-
2221	-	Log: Inverter Temperature	R	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
2223	-	LogPower	R	FLOAT32	-	-	-
2225	-	Log: DC Bus Voltage	R	FLOAT32	V	-	-
2227	-	Log: Grid Voltage	R	FLOAT32	V	-	-
2229	P02.0.07	Error 7	R	UINT16	-	-	-
2230	-	Error 7 - Date	R	UINT32	-	-	-
2232	-	Error 7 - Time	R	UINT32	-	-	-
2234	-	Error 7 - End Date	R	UINT32	-	-	-
2236	-	Error 7 - End Time	R	UINT32	-	-	-
2238	-	Log: Error Counter	R	UINT16	-	-	-
2239	-	Log: Error 1 Bitfield	R	UINT32	-	-	-
2241	-	Log: Error 2 Bitfield	R	UINT32	-	-	-
2243	-	Log: Alarm 1 Bitfield	R	UINT32	-	-	-
2245	-	LogSpeed	R	UINT32	-	-	-
2247	-	Log: Error Code	R	UINT32	-	-	-
2249	-	Log: Flow	R	FLOAT32	P04.0.12 - Flow Measuring Unit	-	-
2251	-	Log: Head	R	FLOAT32	P04.0.11 - Pressure Measuring Unit	-	-
2253	-	Log: Power Module Temperature	R	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
2255	-	Log: Motor Current	R	FLOAT32	A	-	-
2257	-	Log: Motor Voltage	R	FLOAT32	V	-	-
2259	-	Log: Inverter Temperature	R	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
2261	-	LogPower	R	FLOAT32	-	-	-
2263	-	Log: DC Bus Voltage	R	FLOAT32	V	-	-
2265	-	Log: Grid Voltage	R	FLOAT32	V	-	-
2267	P02.0.08	Error 8	R	UINT16	-	-	-
2268	-	Error 8 - Date	R	UINT32	-	-	-
2270	-	Error 8 - Time	R	UINT32	-	-	-
2272	-	Error 8 - End Date	R	UINT32	-	-	-
2274	-	Error 8 - End Time	R	UINT32	-	-	-
2276	-	Log: Error Counter	R	UINT16	-	-	-
2277	-	Log: Error 1 Bitfield	R	UINT32	-	-	-
2279	-	Log: Error 2 Bitfield	R	UINT32	-	-	-
2281	-	Log: Alarm 1 Bitfield	R	UINT32	-	-	-
2283	-	LogSpeed	R	UINT32	-	-	-
2285	-	Log: Error Code	R	UINT32	-	-	-
2287	-	Log: Flow	R	FLOAT32	P04.0.12 - Flow Measuring Unit	-	-
2289	-	Log: Head	R	FLOAT32	P04.0.11 - Pressure Measuring Unit	-	-
2291	-	Log: Power Module Temperature	R	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
2293	-	Log: Motor Current	R	FLOAT32	A	-	-
2295	-	Log: Motor Voltage	R	FLOAT32	V	-	-
2297	-	Log: Inverter Temperature	R	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
2299	-	LogPower	R	FLOAT32	-	-	-
2301	-	Log: DC Bus Voltage	R	FLOAT32	V	-	-
2303	-	Log: Grid Voltage	R	FLOAT32	V	-	-

2305	P02.0.09	Error 9	R	UINT16	-	-	-
2306	-	Error 9 - Date	R	UINT32	-	-	-
2308	-	Error 9 - Time	R	UINT32	-	-	-
2310	-	Error 9 - End Date	R	UINT32	-	-	-
2312	-	Error 9 - End Time	R	UINT32	-	-	-
2314	-	Log: Error Counter	R	UINT16	-	-	-
2315	-	Log: Error 1 Bitfield	R	UINT32	-	-	-
2317	-	Log: Error 2 Bitfield	R	UINT32	-	-	-
2319	-	Log: Alarm 1 Bitfield	R	UINT32	-	-	-
2321	-	LogSpeed	R	UINT32	-	-	-
2323	-	Log: Error Code	R	UINT32	-	-	-
2325	-	Log: Flow	R	FLOAT32	P04.0.12 - Flow Measuring Unit	-	-
2327	-	Log: Head	R	FLOAT32	P04.0.11 - Pressure Measuring Unit	-	-
2329	-	Log: Power Module Temperature	R	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
2331	-	Log: Motor Current	R	FLOAT32	A	-	-
2333	-	Log: Motor Voltage	R	FLOAT32	V	-	-
2335	-	Log: Inverter Temperature	R	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
2337	-	LogPower	R	FLOAT32	-	-	-
2339	-	Log: DC Bus Voltage	R	FLOAT32	V	-	-
2341	-	Log: Grid Voltage	R	FLOAT32	V	-	-
2343	P02.0.10	Error 10	R	UINT16	-	-	-
2344	-	Error 10 - Date	R	UINT32	-	-	-
2346	-	Error 10 - Time	R	UINT32	-	-	-
2348	-	Error 10 - End Date	R	UINT32	-	-	-
2350	-	Error 10 - End Time	R	UINT32	-	-	-
2352	-	Log: Error Counter	R	UINT16	-	-	-
2353	-	Log: Error 1 Bitfield	R	UINT32	-	-	-
2355	-	Log: Error 2 Bitfield	R	UINT32	-	-	-
2357	-	Log: Alarm 1 Bitfield	R	UINT32	-	-	-
2359	-	LogSpeed	R	UINT32	-	-	-
2361	-	Log: Error Code	R	UINT32	-	-	-
2363	-	Log: Flow	R	FLOAT32	P04.0.12 - Flow Measuring Unit	-	-
2365	-	Log: Head	R	FLOAT32	P04.0.11 - Pressure Measuring Unit	-	-
2367	-	Log: Power Module Temperature	R	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
2369	-	Log: Motor Current	R	FLOAT32	A	-	-
2371	-	Log: Motor Voltage	R	FLOAT32	V	-	-
2373	-	Log: Inverter Temperature	R	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
2375	-	LogPower	R	FLOAT32	-	-	-
2377	-	Log: DC Bus Voltage	R	FLOAT32	V	-	-
2379	-	Log: Grid Voltage	R	FLOAT32	V	-	-
2381	-	Total Error Counter	R	UINT16	-	-	-
2382	-	Total Alarm Counter	R	UINT16	-	-	-
2383	P02.9.01	Error Bitfield 1	R	UINT32	-	-	-
2385	P02.9.02	Error Bitfield 2	R	UINT32	-	-	-
2387	P02.9.05	Alarm Bitfield 1	R	UINT32	-	-	-
3000	P03.0.00	Estimated Actual Value	R	ENUM	-	-	-
3001	P03.0.01	Actual Pressure	R	FLOAT32	P04.0.11 - Pressure Measuring Unit	-	-

3003	P03.0.02	Actual Flow	R	FLOAT32	P04.0.12 - Flow Measuring Unit	-	-
3005	P03.0.03 [X+]	Actual Fluid Temperature	R	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
3007	P03.0.04 [X+]	Actual Level	R	FLOAT32	P04.0.14 - Level Measuring Unit	-	-
3009	P03.0.10	Effective Required Value	R	FLOAT32	-	-	-
3011	P03.0.20	Required Value	R	FLOAT32	-	-	-
3013	P03.0.30	Pump Status	R	ENUM	-	-	-
3014	P03.0.05 [X+]	Actual Generic	R	FLOAT32	-	-	-
3016	P03.0.06 [X+]	Actual Shift	R	FLOAT32	-	-	-
3101	P03.1.01	Unit Powered Time	R	UINT32	s	-	-
3103	P03.1.02	Motor Running Time	R	UINT32	s	-	-
3105	P03.1.05	Energy Counter	R	FLOAT32	P04.0.16 - Energy Measuring Unit	-	-
3201	P03.2.01	Motor Speed	R	UINT16	rpm	-	-
3202	P03.2.02	Motor Speed %	R	FLOAT32	%	-	-
3204	P03.2.05	Motor Current	R	FLOAT32	A	-	-
3206	P03.2.06	Motor Power	R	FLOAT32	P04.0.15 - Power Measuring Unit	-	-
3208	P03.2.07	Motor Voltage	R	FLOAT32	V	-	-
3210	P03.2.08	Grid Voltage	R	UINT16	V	-	-
3211	P03.2.09	DC Bus Voltage	R	UINT16	V	-	-
3220	P03.2.20	Power Module Temperature	R	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
3222	P03.2.21	Inverter Temperature	R	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
3224	P03.2.22	Motor Ptc	R	FLOAT32	-	-	-
3301	P03.3.01	Digital I/O Status	R	UINT16	-	-	-
3302	P03.3.11	Analog Input 1 Value	R	FLOAT32	P05.1.02 - Analog Input 1 Type	-	-
3304	P03.3.12	Analog Input 2 Value	R	FLOAT32	P05.1.12 - Analog Input 2 Type	-	-
3306	P03.3.13 [X+]	Analog Input 3 Value	R	FLOAT32	P05.1.22 - Analog Input 3 Type	-	-
3308	P03.3.14 [X+]	Analog Input 4 Value	R	FLOAT32	P05.1.32 - Analog Input 4 Type	-	-
3310	P03.3.20	Analog Output Value	R	FLOAT32	P05.3.02 - Analog Output Type	-	-
3401	P03.4.01	Unit Part Number	R	UINT16	-	-	-
3402	P03.4.01	Unit Part Number	R	UINT16	-	-	-
3403	P03.4.01	Unit Part Number	R	UINT16	-	-	-
3404	P03.4.01	Unit Part Number	R	UINT16	-	-	-
3405	P03.4.01	Unit Part Number	R	UINT16	-	-	-
3406	P03.4.01	Unit Part Number	R	UINT16	-	-	-
3407	P03.4.01	Unit Part Number	R	UINT16	-	-	-
3408	P03.4.01	Unit Part Number	R	UINT16	-	-	-
3409	P03.4.02	Unit Production Date	R	UINT32	-	-	-
3411	P03.4.03	Unit Serial Number	R	UINT16	-	-	-
3412	P03.4.03	Unit Serial Number	R	UINT16	-	-	-
3413	P03.4.03	Unit Serial Number	R	UINT16	-	-	-
3414	P03.4.03	Unit Serial Number	R	UINT16	-	-	-
3415	P03.4.03	Unit Serial Number	R	UINT16	-	-	-
3416	P03.4.03	Unit Serial Number	R	UINT16	-	-	-
3417	P03.4.03	Unit Serial Number	R	UINT16	-	-	-

3418	P03.4.03	Unit Serial Number	R	UINT16	-	-	-
3419	P03.4.05	Drive Production Date	R	UINT32	-	-	-
3421	P03.4.06	Drive Serial Number	R	UINT16	-	-	-
3422	P03.4.06	Drive Serial Number	R	UINT16	-	-	-
3423	P03.4.06	Drive Serial Number	R	UINT16	-	-	-
3424	P03.4.06	Drive Serial Number	R	UINT16	-	-	-
3425	P03.4.06	Drive Serial Number	R	UINT16	-	-	-
3426	P03.4.06	Drive Serial Number	R	UINT16	-	-	-
3427	P03.4.06	Drive Serial Number	R	UINT16	-	-	-
3428	P03.4.06	Drive Serial Number	R	UINT16	-	-	-
3429	P03.4.10	Hmi Firmware Version	R	UINT32	-	-	-
3431	P03.4.11	Hmi-Bt Firmware Version	R	UINT32	-	-	-
3433	P03.4.12	Power Card Firmware Version	R	UINT32	-	-	-
3435	P03.4.13	Control Card Firmware Version	R	UINT32	-	-	-
3437	P03.4.14	Map File Version	R	UINT32	-	-	-
3439	P03.4.15	Default File Version	R	UINT32	-	-	-
3441	P03.4.16	Parameter File Version	R	UINT32	-	-	-
3443	P03.4.17 [X+]	Language File Version	R	UINT32	-	-	-
3445	P03.4.19	Firmware Version	R	UINT32	-	-	-
3447	-	Drive Type	R	ENUM	-	-	-
3448	P03.4.25	Hydraulic Curves Stored	R	ENUM	-	-	-
4001	P04.0.01	System Type	R/W	ENUM	-	0	2
4002	P04.0.02	Control Mode	R/W	ENUM	-	0	7
4003	P04.0.03 [X+]	Regulation Mode	R/W	ENUM	-	0	1
4004	P04.0.05	Start Value	R/W	UINT16	%	0	100
4005	P04.0.06	Auto Start	R/W	ENUM	-	0	1
4006	P04.0.07	Min Speed Configuration	R/W	ENUM	-	0	1
4007	P04.0.09	Measuring Unit Selection	R/W	ENUM	-	0	1
4008	P04.0.11	Pressure Measuring Unit	R/W	ENUM	-	0	8
4009	P04.0.12 [X+]	Flow Measuring Unit	R/W	ENUM	-	0	4
4010	P04.0.13 [X+]	Temperature Measuring Unit	R/W	ENUM	-	0	2
4011	P04.0.14 [X+]	Level Measuring Unit	R/W	ENUM	-	0	3
4012	P04.0.15 [X+]	Power Measuring Unit	R/W	ENUM	-	0	3
4013	P04.0.16 [X+]	Energy Measuring Unit	R/W	ENUM	-	0	5
4014	P04.0.17 [X+]	Specific Energy Meas. Unit	R/W	ENUM	-	0	4
4018	P04.1.15	Pressure Setpoint Type	R/W	ENUM	-	0	1
4019	P01.6.01	H0 Pressure	R/W	FLOAT32	P04.0.11 - Pressure Measuring Unit	P05.0.11 - Pressure - Zero Value	P05.0.12 - Pressure - Full Scale
4021	P04.0.21	Setpoint 1 Selection	R/W	ENUM	-	0	1
4022	P04.0.22	Setpoint 2 Selection	R/W	ENUM	-	0	2
4023	P04.0.23 [X+]	Setpoint 3 Selection	R/W	ENUM	-	0	2
4024	P04.0.24 [X+]	Setpoint 4 Selection	R/W	ENUM	-	0	2
4101	P04.1.01	Speed Setpoint 1	R/W	UINT16	rpm	P04.2.31 - Min Speed	P04.2.32 - Max Speed
4102	P04.1.02	Speed Setpoint 2	R/W	UINT16	rpm	P04.2.31 - Min Speed	P04.2.32 - Max Speed

4103	P04.1.03 [X+]	Speed Setpoint 3	R/W	UINT16	rpm	P04.2.31 - Min Speed	P04.2.32 - Max Speed
4104	P04.1.04 [X+]	Speed Setpoint 4	R/W	UINT16	rpm	P04.2.31 - Min Speed	P04.2.32 - Max Speed
4111	P04.1.11	Pressure Setpoint 1	R/W	FLOAT32	P04.0.11 - Pressure Measuring Unit	P05.0.11 - Pressure - Zero Value	P05.0.12 - Pressure - Full Scale
4113	P04.1.12	Pressure Setpoint 2	R/W	FLOAT32	P04.0.11 - Pressure Measuring Unit	P05.0.11 - Pressure - Zero Value	P05.0.12 - Pressure - Full Scale
4115	P04.1.13 [X+]	Pressure Setpoint 3	R/W	FLOAT32	P04.0.11 - Pressure Measuring Unit	P05.0.11 - Pressure - Zero Value	P05.0.12 - Pressure - Full Scale
4117	P04.1.14 [X+]	Pressure Setpoint 4	R/W	FLOAT32	P04.0.11 - Pressure Measuring Unit	P05.0.11 - Pressure - Zero Value	P05.0.12 - Pressure - Full Scale
4121	P04.1.21 [X+]	Flow Setpoint 1	R/W	FLOAT32	P04.0.12 - Flow Measuring Unit	P05.0.21 - Flow - Zero Value	P05.0.22 - Flow - Full Scale
4123	P04.1.22 [X+]	Flow Setpoint 2	R/W	FLOAT32	P04.0.12 - Flow Measuring Unit	P05.0.21 - Flow - Zero Value	P05.0.22 - Flow - Full Scale
4125	P04.1.23 [X+]	Flow Setpoint 3	R/W	FLOAT32	P04.0.12 - Flow Measuring Unit	P05.0.21 - Flow - Zero Value	P05.0.22 - Flow - Full Scale
4127	P04.1.24 [X+]	Flow Setpoint 4	R/W	FLOAT32	P04.0.12 - Flow Measuring Unit	P05.0.21 - Flow - Zero Value	P05.0.22 - Flow - Full Scale
4131	P04.1.31 [X+]	Temp. Setpoint 1	R/W	FLOAT32	P04.0.13 - Temperature Measuring Unit	P05.0.31 - Temperature - Zero Value	P05.0.32 - Temperature - Full Scale
4133	P04.1.32 [X+]	Temp. Setpoint 2	R/W	FLOAT32	P04.0.13 - Temperature Measuring Unit	P05.0.31 - Temperature - Zero Value	P05.0.32 - Temperature - Full Scale
4135	P04.1.33 [X+]	Temp. Setpoint 3	R/W	FLOAT32	P04.0.13 - Temperature Measuring Unit	P05.0.31 - Temperature - Zero Value	P05.0.32 - Temperature - Full Scale
4137	P04.1.34 [X+]	Temp. Setpoint 4	R/W	FLOAT32	P04.0.13 - Temperature Measuring Unit	P05.0.31 - Temperature - Zero Value	P05.0.32 - Temperature - Full Scale
4141	P04.1.41 [X+]	Level Setpoint 1	R/W	FLOAT32	P04.0.14 - Level Measuring Unit	P05.0.41 - Level - Zero Value	P05.0.42 - Level - Full Scale
4143	P04.1.42 [X+]	Level Setpoint 2	R/W	FLOAT32	P04.0.14 - Level Measuring Unit	P05.0.41 - Level - Zero Value	P05.0.42 - Level - Full Scale
4145	P04.1.43 [X+]	Level Setpoint 3	R/W	FLOAT32	P04.0.14 - Level Measuring Unit	P05.0.41 - Level - Zero Value	P05.0.42 - Level - Full Scale
4147	P04.1.44 [X+]	Level Setpoint 4	R/W	FLOAT32	P04.0.14 - Level Measuring Unit	P05.0.41 - Level - Zero Value	P05.0.42 - Level - Full Scale
4155	P04.1.60	Limit setpoint saving	R/W	ENUM	-	0	1
4156	P04.1.51 [X+]	Generic Setpoint 1	R/W	FLOAT32	-	P05.0.51 - Generic - Zero Value	P05.0.52 - Generic - Full Scale

4158	P04.1.52 [X+]	Generic Setpoint 2	R/W	FLOAT32	-	P05.0.51 - Generic - Zero Value	P05.0.52 - Generic - Full Scale
4160	P04.1.53 [X+]	Generic Setpoint 3	R/W	FLOAT32	-	P05.0.51 - Generic - Zero Value	P05.0.52 - Generic - Full Scale
4162	P04.1.54 [X+]	Generic Setpoint 4	R/W	FLOAT32	-	P05.0.51 - Generic - Zero Value	P05.0.52 - Generic - Full Scale
4200	P04.2.00	Regulation Type	R/W	ENUM	-	0	1
4201	P04.2.01	Window	R/W	UINT16	%	1	100
4202	P04.2.02	Hysteresis	R/W	UINT16	%	1	100
4203	P04.2.06	Lift Speed	R/W	UINT16	rpm	P04.2.31 - Min Speed	P04.2.32 - Max Speed
4204	P04.2.07	Linear Lift Amount	R/W	UINT16	%	0	200
4205	P04.2.08 [X+]	Quad. Lift Amount	R/W	UINT16	%	0	999
4211	P04.2.11	Ramp 1	R/W	UINT16	s	1	250
4212	P04.2.12	Ramp 2	R/W	UINT16	s	1	250
4213	P04.2.13	Ramp 3	R/W	UINT16	s	1	999
4214	P04.2.14	Ramp 4	R/W	UINT16	s	1	999
4215	P04.2.15	Ramp Speed Min Acceleration	R/W	FLOAT32	s	0.1	25
4217	P04.2.16	Ramp Speed Min Deceleration	R/W	FLOAT32	s	0.1	25
4221	P04.2.21	Pi Control - Kp	R/W	FLOAT32	-	0	10000
4225	P04.2.25	Pi Control - Ti	R/W	FLOAT32	s	0	10000
4231	P04.2.31	Min Speed	R/W	UINT16	rpm	0	2000
4232	P04.2.32	Max Speed	R/W	UINT16	rpm	2000	4100
4233	P04.2.35	Min Speed Time	R/W	UINT16	s	0	100
4300	P04.3.00	Automatic Error Reset	R/W	ENUM	-	0	1
4301	P04.3.01	Pressure - Minimum Threshold	R/W	FLOAT32	P04.0.11 - Pressure Measuring Unit	P05.0.11 - Pressure - Zero Value	P05.0.12 - Pressure - Full Scale
4303	P04.3.02 [X+]	Flow - Minimum Threshold	R/W	FLOAT32	P04.0.12 - Flow Measuring Unit	P05.0.21 - Flow - Zero Value	P05.0.22 - Flow - Full Scale
4305	P04.3.03 [X+]	Temperature - Minimum Threshold	R/W	FLOAT32	P04.0.13 - Temperature Measuring Unit	P05.0.31 - Temperature - Zero Value	P05.0.32 - Temperature - Full Scale
4307	P04.3.04 [X+]	Level - Minimum Threshold	R/W	FLOAT32	P04.0.14 - Level Measuring Unit	P05.0.41 - Level - Zero Value	P05.0.42 - Level - Full Scale
4310	P04.3.10	Minimum Threshold Delay	R/W	UINT16	s	1	100
4311	P04.3.11	Lack Of Water Delay	R/W	UINT16	s	1	100
4312	P04.3.05 [X+]	Generic - Min. Threshold	R/W	FLOAT32	-	P05.0.51 - Generic - Zero Value	P05.0.52 - Generic - Full Scale
4401	P04.4.01	Test Run Speed	R/W	UINT16	rpm	0	P04.2.32 - Max Speed
4402	P04.4.02	Test Run Timeout	R/W	UINT16	h	0	255
4403	P04.4.03	Test Run Time	R/W	UINT16	s	0	180
4404	P04.4.05	Test Run Command	R/W	ENUM	-	0	1
4501	P04.5.01 [X+]	SP Shift Function	R/W	ENUM	-	0	3
4502	P04.5.02 [X+]	SP Shift Input	R/W	ENUM	-	0	5
4503	P04.5.05 [X+]	SP Shift VALUE 1	R/W	FLOAT32	-	-	-

4505	P04.5.06 [X+]	SP Shift VALUE 2	R/W	FLOAT32	-	-	-
4507	P04.5.10 [X+]	SP Shift X 1	R/W	FLOAT32	-	-	P04.5.11 - SP Shift X 2
4509	P04.5.11 [X+]	SP Shift X 2	R/W	FLOAT32	-	P04.5.10 - SP Shift X 1	P04.5.12 - SP Shift X 3
4511	P04.5.12 [X+]	SP Shift X 3	R/W	FLOAT32	-	P04.5.11 - SP Shift X 2	P04.5.13 - SP Shift X 4
4513	P04.5.13 [X+]	SP Shift X 4	R/W	FLOAT32	-	P04.5.12 - SP Shift X 3	-
4601	P04.6.01	Pipe Filling Function	R/W	ENUM	-	0	2
4602	P04.6.03	Pipe Filling Threshold	R/W	FLOAT32	P04.0.11 - Pressure Measuring Unit	P05.0.11 - Pressure - Zero Value	P05.0.12 - Pressure - Full Scale
4604	P04.6.05	Pipe Filling Time	R/W	UINT16	s	0	999
4605	P04.6.06	Max Pipe Filling Pumps	R/W	UINT16	-	1	P06.0.02 - Max Units
4606	P04.6.10	Pipe Filling Steady Time	R/W	UINT16	s	1	P04.6.05 - Pipe Filling Time
4607	P04.6.15	Pipe Filling Speed Step	R/W	UINT16	%	5	100
5000	P05.0.00	Actual Value Source	R/W	ENUM	-	0	7
5001	P05.0.01	Actuator - Zero Value	R/W	UINT16	rpm	0	9999
5002	P05.0.02	Actuator - Full Scale	R/W	UINT16	rpm	0	9999
5003	P05.0.11	Pressure - Zero Value	R/W	FLOAT32	P04.0.11 - Pressure Measuring Unit	-5	10
5005	P05.0.12	Pressure - Full Scale	R/W	FLOAT32	P04.0.11 - Pressure Measuring Unit	0	100
5007	P05.0.21 [X+]	Flow - Zero Value	R/W	FLOAT32	P04.0.12 - Flow Measuring Unit	0	9999
5009	P05.0.22 [X+]	Flow - Full Scale	R/W	FLOAT32	P04.0.12 - Flow Measuring Unit	0	9999
5011	P05.0.31 [X+]	Temperature - Zero Value	R/W	FLOAT32	P04.0.13 - Temperature Measuring Unit	-100	9999
5013	P05.0.32 [X+]	Temperature - Full Scale	R/W	FLOAT32	P04.0.13 - Temperature Measuring Unit	-100	9999
5015	P05.0.41 [X+]	Level - Zero Value	R/W	FLOAT32	P04.0.14 - Level Measuring Unit	-999	9999
5017	P05.0.42 [X+]	Level - Full Scale	R/W	FLOAT32	P04.0.14 - Level Measuring Unit	-999	9999
5021	P05.0.61 [X+]	SPS Pressure Zero Value	R/W	FLOAT32	P04.0.11 - Pressure Measuring Unit	-1	99
5023	P05.0.62 [X+]	SPS Pressure Full Scale	R/W	FLOAT32	P04.0.11 - Pressure Measuring Unit	0	999
5025	P05.0.51 [X+]	Generic - Zero Value	R/W	FLOAT32	-	-1000	1000
5027	P05.0.52 [X+]	Generic - Full Scale	R/W	FLOAT32	-	-1000	1000
5101	P05.1.01	Analog Input 1 Function	R/W	ENUM	-	0	7
5102	P05.1.02	Analog Input 1 Type	R/W	ENUM	-	0	3
5103	P05.1.11	Analog Input 2 Function	R/W	ENUM	-	0	7
5104	P05.1.12	Analog Input 2 Type	R/W	ENUM	-	0	3
5105	P05.1.21 [X+]	Analog Input 3 Function	R/W	ENUM	-	0	7
5106	P05.1.22 [X+]	Analog Input 3 Type	R/W	ENUM	-	0	3

5107	P05.1.31 [X+]	Analog Input 4 Function	R/W	ENUM	-	0	7
5108	P05.1.32 [X+]	Analog Input 4 Type	R/W	ENUM	-	0	3
5109	P05.1.40 [X+]	Sensor Curve	R/W	ENUM	-	0	1
5110	P05.1.50	Analog Actuator Type	R/W	ENUM	-	0	1
5203	P05.2.03	Digital Input 3 Function	R/W	ENUM	-	0	9
5204	P05.2.04 [X+]	Digital Input 4 Function	R/W	ENUM	-	0	9
5205	P05.2.05 [X+]	Digital Input 5 Function	R/W	ENUM	-	0	9
5301	P05.3.01	Analog Output Function	R/W	ENUM	-	0	12
5302	P05.3.02	Analog Output Type	R/W	ENUM	-	0	3
5401	P05.4.01	Relay 1 Function	R/W	ENUM	-	0	7
5402	P05.4.02	Relay 2 Function	R/W	ENUM	-	0	7
5801	P05.8.01	Analog Input 1 Offset	R/W	FLOAT32	-	-100	100
5803	P05.8.02	Analog Input 1 Gain	R/W	FLOAT32	-	0	1.5
5805	P05.8.11	Analog Input 2 Offset	R/W	FLOAT32	-	-100	100
5807	P05.8.12	Analog Input 2 Gain	R/W	FLOAT32	-	0	1.5
5809	P05.8.21 [X+]	Analog Input 3 Offset	R/W	FLOAT32	-	-100	100
5811	P05.8.22 [X+]	Analog Input 3 Gain	R/W	FLOAT32	-	0	1.5
5813	P05.8.31 [X+]	Analog Input 4 Offset	R/W	FLOAT32	-	-100	100
5815	P05.8.32 [X+]	Analog Input 4 Gain	R/W	FLOAT32	-	0	1.5
5844	P05.8.44	Analog Output 1 Offset	R/W	FLOAT32	P05.3.02 - Analog Output Type	-100	100
5846	P05.8.45	Analog Output 1 Gain	R/W	FLOAT32	-	0	1.5
6001	P06.0.01	System Configuration	R/W	ENUM	-	0	2
6002	P06.0.02	Max Units	R/W	UINT16	-	1	-
6003	P06.0.03	Multipump Address	R/W	UINT16	-	1	-
6004	P06.0.04	Multipump Map	R	UINT16	-	-	-
6005	P06.0.05	Multipump Priority	R	UINT16	-	-	-
6111	P06.1.11	Pressure - Inc. value	R/W	FLOAT32	P04.0.11 - Pressure Measuring Unit	0	P05.0.12 - Pressure - Full Scale
6113	P06.1.12	Pressure - Dec. value	R/W	FLOAT32	P04.0.11 - Pressure Measuring Unit	0	P05.0.12 - Pressure - Full Scale
6115	P06.1.21 [X+]	Flow - Inc. value	R/W	FLOAT32	P04.0.12 - Flow Measuring Unit	0	P05.0.22 - Flow - Full Scale
6117	P06.1.22 [X+]	Flow - Dec. value	R/W	FLOAT32	P04.0.12 - Flow Measuring Unit	0	P05.0.22 - Flow - Full Scale
6119	P06.1.31 [X+]	Temperature - Inc. value	R/W	FLOAT32	P04.0.13 - Temperature Measuring Unit	0	P05.0.32 - Temperature - Full Scale
6121	P06.1.32 [X+]	Temperature - Dec. value	R/W	FLOAT32	P04.0.13 - Temperature Measuring Unit	0	P05.0.32 - Temperature - Full Scale
6123	P06.1.41 [X+]	Level - Inc. value	R/W	FLOAT32	P04.0.14 - Level Measuring Unit	0	P05.0.42 - Level - Full Scale

6125	P06.1.42 [X+]	Level - Dec. value	R/W	FLOAT32	P04.0.14 - Level Measuring Unit	0	P05.0.42 - Level - Full Scale
6129	P06.1.61	Multipump Enable Speed	R/W	UINT16	rpm	P04.2.31 - Min Speed	P04.2.32 - Max Speed
6130	P06.1.71	Synchronous Limit	R/W	UINT16	rpm	0	3600
6131	P06.1.72	Synchronous Window	R/W	UINT16	rpm	0	P04.2.32 - Max Speed
6132	P06.1.81	Automatic Switchover Interval	R/W	UINT16	h	0	250
6133	-	MultipumpDeviceEnable	R/W	UINT16	-	0	1
6134	P06.1.51 [X+]	Generic - Inc. value	R/W	FLOAT32	-	0	P05.0.52 - Generic - Full Scale
6136	P06.1.52 [X+]	Generic - Dec. value	R/W	FLOAT32	-	0	P05.0.52 - Generic - Full Scale
7001	P07.0.01	Max Switching Frequency	R/W	ENUM	-	0	5
7002	P07.0.02	Min Switching Frequency	R/W	ENUM	-	0	5
7101	P07.1.01	Skip Speed Center	R/W	UINT16	rpm	P04.2.31 - Min Speed	P04.2.32 - Max Speed
7102	P07.1.02	Skip Speed Range	R/W	UINT16	rpm	0	300
7201	P07.2.01	Motor heating function	R/W	ENUM	-	0	2
7301	P07.3.01	Feed Forward Function	R/W	ENUM	-	0	1
8001	P08.0.01	Com 1 Function	R/W	ENUM	-	0	3
8002	P08.0.02	Com 2 Function	R/W	ENUM	-	0	2
8101	P08.1.01	Modbus RTU Address	R/W	UINT16	-	0	127
8102	P08.1.02	Modbus RTU Baudrate	R/W	ENUM	-	0	8
8108	P08.1.08	Modbus RTU Format	R/W	ENUM	-	0	3
8201	P08.2.01	BACnet MS/TP Mac Address	R/W	UINT16	-	0	P08.2.05 - BACnet MS/TP Max Master
8202	P08.2.02	BACnet MS/TP Baudrate	R/W	ENUM	-	0	8
8203	P08.2.03	BACnet MS/TP Format	R/W	ENUM	-	0	3
8204	P08.2.04	BACnet MS/TP Device Id	R/W	UINT32	-	-	4194304
8206	P08.2.05	BACnet MS/TP Max Master	R/W	UINT16	-	P08.2.01 - BACnet MS/TP Mac Address	127
8210	-	BACnet Info Frames	R/W	UINT16	-	1	255
8211	-	BACnet Reinit	R/W	ENUM	-	0	1
8301	P08.3.01	Enable Wireless Communication	R/W	ENUM	-	0	1
9001	P09.0.01 [X+]	Language	R/W	ENUM	-	0	28
9011	P09.0.12 [X+]	Time	R/W	UINT32	-	-	-
9013	P09.0.11 [X+]	Date	R/W	UINT32	-	-	-
9101	P09.2.01 [X+]	Select Active Parameter Set	R/W	ENUM	-	0	1
9201	P09.1.01	Display Energy Saving	R/W	ENUM	-	0	1
9202	P09.1.02	Energy Saving Time	R/W	UINT16	s	60	3600
9210	P09.1.10	Display Orientation	R/W	ENUM	-	0	1
9211	P09.1.11	Max Decimals	R/W	UINT16	-	0	3
9301	P09.3.01	Error Log Reset	R/W	ENUM	-	0	1
9302	P09.3.02	Operating Time Counter Reset	R/W	ENUM	-	0	1
9303	P09.3.03	Motor Running Counter Reset	R/W	ENUM	-	0	1

9304	P09.3.04	Energy Counter Reset	R/W	ENUM	-	0	1
9305	P09.3.05	Factory Restore	R/W	ENUM	-	0	1
9306	P09.3.06 [X+]	Commissioning Completed	R/W	ENUM	-	0	1
9307	P09.3.07	Bonded Device List Reset	R/W	ENUM	-	0	1

9 BACnet MS/TP

9.1 协议实现一致性声明 (PICS)

符合性声明

数据	29/03/2023
供应商名称	XYLEM INC
产品名称	HYDROVAR X
设备型号	HVX, HVX+, HYDROVAR X, HYDROVAR X+
应用程序软件版本	01.00.00 (FW_PackVersion)
固件修订版本	01
BACnet 协议版本	19

BACnet 标准设备配置文件（附件 L）

☐	BACnet Advanced Workstation	(B-AWS)
☐	BACnet Operator Workstation	(B-OWS)
☐	BACnet Operator Display	(B-OD)
☐	BACnet Building Controller	(B-BC)
☐	BACnet Advanced Application Controller	(B-AAC)
☐	BACnet Application Specific Controller	(B-ASC)
☐	BACnet Smart Sensor	(B-SS)
☒	BACnet Smart Actuator	(B-SA)

BACnet 互操作性块（附件 K）

☐	Data Sharing - Read Property-A	DS-RP-A
☒	Data Sharing - Read Property-B	DS-RP-B
☐	Data Sharing - Read Property Multiple-A	DS-RPM-A
☐	Data Sharing - Read Property Multiple-B	DS-RPM-B
☐	Data Sharing - Write Property-A	DS-WP-A
☒	Data Sharing - Write Property-B	DS-WP-B
☐	Data Sharing - Write Property Multiple-A	DS-WPM-A
☐	Data Sharing - Write Property Multiple-B	DS-WPM-B
☐	Data Sharing - Change of Value-A	DS-COV-A
☐	Data Sharing - Change of Value-B	DS-COV-B
☐	Data Sharing - Change of Value Property-A	DS-COVP-A
☐	Data Sharing - Change of Value Property-B	DS-COVP-B
☐	Data Sharing - Change of Value Unsolicited-A	DS-COVU-A
☐	Data Sharing - Change of Value Unsolicited-B	DS-COVU-B
☐	Data Sharing - View-A	DS-V-A
☐	Data Sharing - Advanced View-A	DS-AV-A
☐	Data Sharing - Modify-A	DS-M-A
☐	Data Sharing - Advanced Modify-A	DS-AM-A

网络设备管理

☐	Device Management - Dynamic Device Binding-A	DM-DDB-A
☒	Device Management - Dynamic Device Binding-B	DM-DDB-B
☐	Device Management - Dynamic Object Binding-A	DM-DOB-A
☒	Device Management - Dynamic Object Binding-B	DM-DOB-B
☐	Device Management - Device Communication Control-A	DM-DCC-A
☐	Device Management - Device Communication Control -B	DM-DCC-B
☐	Device Management - Private Transfer-A	DM-PT-A
☐	Device Management - Private Transfer-B	DM-PT-B
☐	Device Management - Text Message-A	DM-TM-A
☐	Device Management - Text Message-B	DM-TM-B
☐	Device Management - Time Synchronization-A	DM-TS-A
☐	Device Management - Time Synchronization-B	DM-TS-B
☐	Device Management - UTC Time Synchronization-A	DM-UTC-A
☐	Device Management - UTC Time Synchronization-B	DM-UTC-B
☐	Device Management - Reinitialize Device-A	DM-RD-A
☐	Device Management - Reinitialize Device-B	DM-RD-B
☐	Device Management - Backup and Restore-A	DM-BR-A
☐	Device Management - Backup and Restore-B	DM-BR-B
☐	Device Management - Restart-A	DM-R-A
☐	Device Management - Restart-B	DM-R-B
☐	Device Management - List Manipulation-A	DM-LM-A
☐	Device Management - List Manipulation-B	DM-LM-B
☐	Device Management - Object Creation and Deletion-A	DM-OCD-A
☐	Device Management - Object Creation and Deletion-B	DM-OCD-B
☐	Device Management - Virtual Terminal-A	DM-VT-A
☐	Device Management - Virtual Terminal-B	DM-VT-B
☐	Device Management - Automatic Network Mapping-A	DM-ANM-A
☐	Device Management - Automatic Device Mapping-A	DM-ADM-A
☐	Device Management - Automatic Time Synchronization-A	DM-ATS-A
☐	Device Management - Manual Time Synchronization-A	DM-MTS-A

受支持的标准对象

对象	是否受支持	是否动态创建/删除	可选的受支持属性	写入属性
Analog Input	☒	☐	-	-
Analog Value	☒	☐	-	Present_Value
Device	☒	☐	Max_Master, Max_Info_Frames	Object_Identifier
Network Port	☒	☐	MAC_Address, Max_Master, Max_Info_Frames	-
CharacterStringValue	☒	☐	-	-

数据链路层

☐	BACnet IP, (Annex J)	
☐	BACnet IP, (Annex J), Foreign Device	
☐	ISO 8802-3, Ethernet (Clause 7)	
☐	ANSI/ATA 878.1, 2,5 Mb ARCNET (Clause 8)	
..	ANSI/ATA 878.1, 2,5 Mb ARCNET (Clause 8), baud rate(s)	
☒	MS/TP master (Clause 9), baud rate(s)	• 1200 (功能有限, 可能因低速而造成超时) • 2400 (功能有限, 可能因低速而造成超时) • 4800 (功能有限, 可能因低速而造成超时) • 9600 • 19200 • 38400 (推荐) • 57600 • 76800 • 115200
☐	MS/TP slave (Clause 9), baud rate(s)	
☐	Point-To-Point, EIA 232 (Clause 10), baud rate(s)	
☐	Point-To-Point, modem (Clause 10), baud rate(s)	
☐	LonTalk (Clause 11), medium	
☐	其他	

设备地址约束

带有静态约束的设备是否受支持? 与 MS/TP 从设备和其他设备进行双向通信时, 必须具备。	☐ 是	☒ 否
---	----------------------------	---------------------------------------

其他功能

- | | |
|-------------------|------|
| • 网络选项: | 不提供。 |
| • 网络安全选项: | 不提供。 |
| • 受支持字符的集: | 不提供。 |
| • 分段功能: | 不提供。 |
| • 网络管理: | 不提供。 |
| • 警报和事件管理: | 不提供。 |
| • 调度和编程: | 不提供。 |
| • 日志处理 (趋势分析) 功能: | 不提供。 |

9.2 BACnet 设备和 BACnet 设备对象标识符

HVX 和 HVX+ 支持使用 BACnet 协议的数字通信，因此是 BACnet 设备。
每个 BACnet 设备均含有一个设备对象。这是一个标准对象，其属性代表可从外部查看的特性。
连接至本地 MS/TP 网络的装置通过以下信息完成本地化：

- 设备对象标识符，或
- MAC 地址。

BACnet 设备对象标识符

出厂设定值为 84003。
如需更改值，请使用设备对象 Object_Identifier 属性中的“写入属性”服务，或者显示屏上提供的特殊参数 P08.2.04 Device ID BACnet MS/TP（设备 ID BACnet MS/TP）。

MAC 地址

出厂设定值为 1。
检查连接至 MS/TP 网络的每台装置是否已由参数 P08.2.01 MAC address BACnet MS/TP（MAC 地址 BACnet MS/TP）中的不同地址标识。

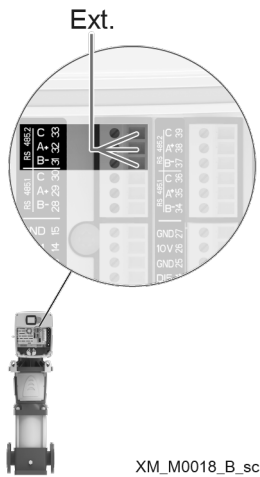
9.3 BACnet MS/TP 的连接和数据管理

- 当驱动和外部设备之间的 BACnet MS/TP 通信处于激活状态时，操作面板上的连接状态指示灯亮起。
- 将参数 *P04.1.60 Limit setpoint saving*（保存限值设定点）设置为 *Yes*（是），以向易失性存储区域写入并延长非易失性 EEPROM 存储器的寿命。

注意：
请勿将控制板的端子 (C) 连接至不同的电压电位或地线。

将单个电动泵连接至外部设备

1. 拆除驱动的护罩并观察内部接线图。
2. 将端子 31 (B)、32 (A) 和 33 (C) 连接至 PLC、BMS 等外部设备。



9.4 BACnet 字符串表

对象标识符	菜单 ID	参数名称	BACnet 对象名称	类型			
0	P03.4.01	Unit Part Number	Unit Part Number	UINT16	-	-	-
1	P03.4.03	Unit Serial Number	Unit Serial Number	UINT16	-	-	-
2	P03.4.06	Drive Serial Number	Drive Serial Number	UINT16	-	-	-

9.5 BACnet 模拟输入端表

对象标识符	菜单 ID	参数名称	BACnet 对象名称	类型	尺寸	最小	最大
0	P02.0.01	Error 1 (Most Recent)	Error 1 (Most Recent)	UINT16	-	-	-
1	-	Error 1 - Date	Error 1 - Date	UINT32	-	-	-
2	-	Error 1 - Time	Error 1 - Time	UINT32	-	-	-
3	-	Error 1 - End Date	Error 1 - End Date	UINT32	-	-	-
4	-	Error 1 - End Time	Error 1 - End Time	UINT32	-	-	-
5	-	Log: Error Counter	Log: Error Counter 1	UINT16	-	-	-
6	-	Log: Error 1 Bitfield	Log: Error 1 Bitfield 1	UINT32	-	-	-
7	-	Log: Error 2 Bitfield	Log: Error 2 Bitfield 1	UINT32	-	-	-
8	-	Log: Alarm 1 Bitfield	Log: Alarm 1 Bitfield 1	UINT32	-	-	-
9	-	LogSpeed	Log: Speed 1	UINT32	-	-	-
10	-	Log: Error Code	Log: Error Code 1	UINT32	-	-	-
11	-	Log: Flow	Log: Flow 1	FLOAT32	P04.0.12 - Flow Measuring Unit	-	-
12	-	Log: Head	Log: Head 1	FLOAT32	P04.0.11 - Pressure Measuring Unit	-	-
13	-	Log: Power Module Temperature	Log: Power Module Temp 1	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
14	-	Log: Motor Current	Log: Motor Current 1	FLOAT32	A	-	-
15	-	Log: Motor Voltage	Log: Motor Voltage 1	FLOAT32	V	-	-
16	-	Log: Inverter Temperature	Log: Inverter Temperature 1	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
17	-	LogPower	Log: Motor Power 1	FLOAT32	-	-	-
18	-	Log: DC Bus Voltage	Log: DC Bus Voltage 1	FLOAT32	V	-	-
19	-	Log: Grid Voltage	Log: Grid Voltage 1	FLOAT32	V	-	-
20	P02.0.02	Error 2	Error 2	UINT16	-	-	-
21	-	Error 2 - Date	Error 2 - Date	UINT32	-	-	-
22	-	Error 2 - Time	Error 2 - Time	UINT32	-	-	-
23	-	Error 2 - End Date	Error 2 - End Date	UINT32	-	-	-
24	-	Error 2 - End Time	Error 2 - End Time 1	UINT32	-	-	-
25	-	Log: Error Counter	Log: Error Counter 2	UINT16	-	-	-
26	-	Log: Error 1 Bitfield	Log: Error 1 Bitfield 2	UINT32	-	-	-
27	-	Log: Error 2 Bitfield	Log: Error 2 Bitfield 2	UINT32	-	-	-
28	-	Log: Alarm 1 Bitfield	Log: Alarm 1 Bitfield 2	UINT32	-	-	-
29	-	LogSpeed	Log: Speed 2	UINT32	-	-	-
30	-	Log: Error Code	Log: Error Code 2	UINT32	-	-	-
31	-	Log: Flow	Log: Flow 2	FLOAT32	P04.0.12 - Flow Measuring Unit	-	-
32	-	Log: Head	Log: Head 2	FLOAT32	P04.0.11 - Pressure Measuring Unit	-	-
33	-	Log: Power Module Temperature	Log: Power Module Temp 2	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
34	-	Log: Motor Current	Log: Motor Current 2	FLOAT32	A	-	-
35	-	Log: Motor Voltage	Log: Motor Voltage 2	FLOAT32	V	-	-

36	-	Log: Inverter Temperature	Log: Inverter Temperature 2	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
37	-	LogPower	Log: Motor Power 2	FLOAT32	-	-	-
38	-	Log: DC Bus Voltage	Log: DC Bus Voltage 2	FLOAT32	V	-	-
39	-	Log: Grid Voltage	Log: Grid Voltage 2	FLOAT32	V	-	-
40	P02.0.03	Error 3	Error 3	UINT16	-	-	-
41	-	Error 3 - Date	Error 3 - Date	UINT32	-	-	-
42	-	Error 3 - Time	Error 3 - Time	UINT32	-	-	-
43	-	Error 3 - End Date	Error 3 - End Date	UINT32	-	-	-
44	-	Error 3 - End Time	Error 3 - End Time 1	UINT32	-	-	-
45	-	Log: Error Counter	Log: Error Counter 3	UINT16	-	-	-
46	-	Log: Error 1 Bitfield	Log: Error 1 Bitfield 3	UINT32	-	-	-
47	-	Log: Error 2 Bitfield	Log: Error 2 Bitfield 3	UINT32	-	-	-
48	-	Log: Alarm 1 Bitfield	Log: Alarm 1 Bitfield 3	UINT32	-	-	-
49	-	LogSpeed	Log: Speed 3	UINT32	-	-	-
50	-	Log: Error Code	Log: Error Code 3	UINT32	-	-	-
51	-	Log: Flow	Log: Flow 3	FLOAT32	P04.0.12 - Flow Measuring Unit	-	-
52	-	Log: Head	Log: Head 3	FLOAT32	P04.0.11 - Pressure Measuring Unit	-	-
53	-	Log: Power Module Temperature	Log: Power Module Temp 3	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
54	-	Log: Motor Current	Log: Motor Current 3	FLOAT32	A	-	-
55	-	Log: Motor Voltage	Log: Motor Voltage 3	FLOAT32	V	-	-
56	-	Log: Inverter Temperature	Log: Inverter Temperature 3	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
57	-	LogPower	Log: Motor Power 3	FLOAT32	-	-	-
58	-	Log: DC Bus Voltage	Log: DC Bus Voltage 3	FLOAT32	V	-	-
59	-	Log: Grid Voltage	Log: Grid Voltage 3	FLOAT32	V	-	-
60	P02.0.04	Error 4	Error 4	UINT16	-	-	-
61	-	Error 4 - Date	Error 4 - Date	UINT32	-	-	-
62	-	Error 4 - Time	Error 4 - Time	UINT32	-	-	-
63	-	Error 4 - End Date	Error 4 - End Date	UINT32	-	-	-
64	-	Error 4 - End Time	Error 4 - End Time 1	UINT32	-	-	-
65	-	Log: Error Counter	Log: Error Counter 4	UINT16	-	-	-
66	-	Log: Error 1 Bitfield	Log: Error 1 Bitfield 4	UINT32	-	-	-
67	-	Log: Error 2 Bitfield	Log: Error 2 Bitfield 4	UINT32	-	-	-
68	-	Log: Alarm 1 Bitfield	Log: Alarm 1 Bitfield 4	UINT32	-	-	-
69	-	LogSpeed	Log: Speed 4	UINT32	-	-	-
70	-	Log: Error Code	Log: Error Code 4	UINT32	-	-	-
71	-	Log: Flow	Log: Flow 4	FLOAT32	P04.0.12 - Flow Measuring Unit	-	-
72	-	Log: Head	Log: Head 4	FLOAT32	P04.0.11 - Pressure Measuring Unit	-	-
73	-	Log: Power Module Temperature	Log: Power Module Temp 4	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
74	-	Log: Motor Current	Log: Motor Current 4	FLOAT32	A	-	-
75	-	Log: Motor Voltage	Log: Motor Voltage 4	FLOAT32	V	-	-
76	-	Log: Inverter Temperature	Log: Inverter Temperature 4	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
77	-	LogPower	Log: Motor Power 4	FLOAT32	-	-	-
78	-	Log: DC Bus Voltage	Log: DC Bus Voltage 4	FLOAT32	V	-	-
79	-	Log: Grid Voltage	Log: Grid Voltage 4	FLOAT32	V	-	-
80	P02.0.05	Error 5	Error 5	UINT16	-	-	-
81	-	Error 5 - Date	Error 5 - Date	UINT32	-	-	-
82	-	Error 5 - Time	Error 5 - Time	UINT32	-	-	-
83	-	Error 5 - End Date	Error 5 - End Date	UINT32	-	-	-

84	-	Error 5 - End Time	Error 5 - End Time 1	UINT32	-	-	-
85	-	Log: Error Counter	Log: Error Counter 5	UINT16	-	-	-
86	-	Log: Error 1 Bitfield	Log: Error 1 Bitfield 5	UINT32	-	-	-
87	-	Log: Error 2 Bitfield	Log: Error 2 Bitfield 5	UINT32	-	-	-
88	-	Log: Alarm 1 Bitfield	Log: Alarm 1 Bitfield 5	UINT32	-	-	-
89	-	LogSpeed	Log: Speed 5	UINT32	-	-	-
90	-	Log: Error Code	Log: Error Code 5	UINT32	-	-	-
91	-	Log: Flow	Log: Flow 5	FLOAT32	P04.0.12 - Flow Measuring Unit	-	-
92	-	Log: Head	Log: Head 5	FLOAT32	P04.0.11 - Pressure Measuring Unit	-	-
93	-	Log: Power Module Temperature	Log: Power Module Temp 5	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
94	-	Log: Motor Current	Log: Motor Current 5	FLOAT32	A	-	-
95	-	Log: Motor Voltage	Log: Motor Voltage 5	FLOAT32	V	-	-
96	-	Log: Inverter Temperature	Log: Inverter Temperature 5	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
97	-	LogPower	Log: Motor Power 5	FLOAT32	-	-	-
98	-	Log: DC Bus Voltage	Log: DC Bus Voltage 5	FLOAT32	V	-	-
99	-	Log: Grid Voltage	Log: Grid Voltage 5	FLOAT32	V	-	-
100	P02.0.06	Error 6	Error 6	UINT16	-	-	-
101	-	Error 6 - Date	Error 6 - Date	UINT32	-	-	-
102	-	Error 6 - Time	Error 6 - Time	UINT32	-	-	-
103	-	Error 6 - End Date	Error 6 - End Date	UINT32	-	-	-
104	-	Error 6 - End Time	Error 6 - End Time 1	UINT32	-	-	-
105	-	Log: Error Counter	Log: Error Counter 6	UINT16	-	-	-
106	-	Log: Error 1 Bitfield	Log: Error 1 Bitfield 6	UINT32	-	-	-
107	-	Log: Error 2 Bitfield	Log: Error 2 Bitfield 6	UINT32	-	-	-
108	-	Log: Alarm 1 Bitfield	Log: Alarm 1 Bitfield 6	UINT32	-	-	-
109	-	LogSpeed	Log: Speed 6	UINT32	-	-	-
110	-	Log: Error Code	Log: Error Code 6	UINT32	-	-	-
111	-	Log: Flow	Log: Flow 6	FLOAT32	P04.0.12 - Flow Measuring Unit	-	-
112	-	Log: Head	Log: Head 6	FLOAT32	P04.0.11 - Pressure Measuring Unit	-	-
113	-	Log: Power Module Temperature	Log: Power Module Temp 6	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
114	-	Log: Motor Current	Log: Motor Current 6	FLOAT32	A	-	-
115	-	Log: Motor Voltage	Log: Motor Voltage 6	FLOAT32	V	-	-
116	-	Log: Inverter Temperature	Log: Inverter Temperature 6	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
117	-	LogPower	Log: Motor Power 6	FLOAT32	-	-	-
118	-	Log: DC Bus Voltage	Log: DC Bus Voltage 6	FLOAT32	V	-	-
119	-	Log: Grid Voltage	Log: Grid Voltage 6	FLOAT32	V	-	-
120	P02.0.07	Error 7	Error 7	UINT16	-	-	-
121	-	Error 7 - Date	Error 7 - Date	UINT32	-	-	-
122	-	Error 7 - Time	Error 7 - Time	UINT32	-	-	-
123	-	Error 7 - End Date	Error 7 - End Date	UINT32	-	-	-
124	-	Error 7 - End Time	Error 7 - End Time 1	UINT32	-	-	-
125	-	Log: Error Counter	Log: Error Counter 7	UINT16	-	-	-
126	-	Log: Error 1 Bitfield	Log: Error 1 Bitfield 7	UINT32	-	-	-
127	-	Log: Error 2 Bitfield	Log: Error 2 Bitfield 7	UINT32	-	-	-
128	-	Log: Alarm 1 Bitfield	Log: Alarm 1 Bitfield 7	UINT32	-	-	-
129	-	LogSpeed	Log: Speed 7	UINT32	-	-	-
130	-	Log: Error Code	Log: Error Code 7	UINT32	-	-	-
131	-	Log: Flow	Log: Flow 7	FLOAT32	P04.0.12 - Flow Measuring Unit	-	-

132	-	Log: Head	Log: Head 7	FLOAT32	P04.0.11 - Pressure Measuring Unit	-	-
133	-	Log: Power Module Temperature	Log: Power Module Temp 7	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
134	-	Log: Motor Current	Log: Motor Current 7	FLOAT32	A	-	-
135	-	Log: Motor Voltage	Log: Motor Voltage 7	FLOAT32	V	-	-
136	-	Log: Inverter Temperature	Log: Inverter Temperature 7	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
137	-	LogPower	Log: Motor Power 7	FLOAT32	-	-	-
138	-	Log: DC Bus Voltage	Log: DC Bus Voltage 7	FLOAT32	V	-	-
139	-	Log: Grid Voltage	Log: Grid Voltage 7	FLOAT32	V	-	-
140	P02.0.08	Error 8	Error 8	UINT16	-	-	-
141	-	Error 8 - Date	Error 8 - Date	UINT32	-	-	-
142	-	Error 8 - Time	Error 8 - Time	UINT32	-	-	-
143	-	Error 8 - End Date	Error 8 - End Date	UINT32	-	-	-
144	-	Error 8 - End Time	Error 8 - End Time 1	UINT32	-	-	-
145	-	Log: Error Counter	Log: Error Counter 8	UINT16	-	-	-
146	-	Log: Error 1 Bitfield	Log: Error 1 Bitfield 8	UINT32	-	-	-
147	-	Log: Error 2 Bitfield	Log: Error 2 Bitfield 8	UINT32	-	-	-
148	-	Log: Alarm 1 Bitfield	Log: Alarm 1 Bitfield 8	UINT32	-	-	-
149	-	LogSpeed	Log: Speed 8	UINT32	-	-	-
150	-	Log: Error Code	Log: Error Code 8	UINT32	-	-	-
151	-	Log: Flow	Log: Flow 8	FLOAT32	P04.0.12 - Flow Measuring Unit	-	-
152	-	Log: Head	Log: Head 8	FLOAT32	P04.0.11 - Pressure Measuring Unit	-	-
153	-	Log: Power Module Temperature	Log: Power Module Temp 8	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
154	-	Log: Motor Current	Log: Motor Current 8	FLOAT32	A	-	-
155	-	Log: Motor Voltage	Log: Motor Voltage 8	FLOAT32	V	-	-
156	-	Log: Inverter Temperature	Log: Inverter Temperature 8	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
157	-	LogPower	Log: Motor Power 8	FLOAT32	-	-	-
158	-	Log: DC Bus Voltage	Log: DC Bus Voltage 8	FLOAT32	V	-	-
159	-	Log: Grid Voltage	Log: Grid Voltage 8	FLOAT32	V	-	-
160	P02.0.09	Error 9	Error 9	UINT16	-	-	-
161	-	Error 9 - Date	Error 9 - Date	UINT32	-	-	-
162	-	Error 9 - Time	Error 9 - Time	UINT32	-	-	-
163	-	Error 9 - End Date	Error 9 - End Date	UINT32	-	-	-
164	-	Error 9 - End Time	Error 9 - End Time 1	UINT32	-	-	-
165	-	Log: Error Counter	Log: Error Counter 9	UINT16	-	-	-
166	-	Log: Error 1 Bitfield	Log: Error 1 Bitfield 9	UINT32	-	-	-
167	-	Log: Error 2 Bitfield	Log: Error 2 Bitfield 9	UINT32	-	-	-
168	-	Log: Alarm 1 Bitfield	Log: Alarm 1 Bitfield 9	UINT32	-	-	-
169	-	LogSpeed	Log: Speed 9	UINT32	-	-	-
170	-	Log: Error Code	Log: Error Code 9	UINT32	-	-	-
171	-	Log: Flow	Log: Flow 9	FLOAT32	P04.0.12 - Flow Measuring Unit	-	-
172	-	Log: Head	Log: Head 9	FLOAT32	P04.0.11 - Pressure Measuring Unit	-	-
173	-	Log: Power Module Temperature	Log: Power Module Temp 9	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
174	-	Log: Motor Current	Log: Motor Current 9	FLOAT32	A	-	-
175	-	Log: Motor Voltage	Log: Motor Voltage 9	FLOAT32	V	-	-
176	-	Log: Inverter Temperature	Log: Inverter Temperature 9	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
177	-	LogPower	Log: Motor Power 9	FLOAT32	-	-	-

178	-	Log: DC Bus Voltage	Log: DC Bus Voltage 9	FLOAT32	V	-	-
179	-	Log: Grid Voltage	Log: Grid Voltage 9	FLOAT32	V	-	-
180	P02.0.10	Error 10	Error 10	UINT16	-	-	-
181	-	Error 10 - Date	Error 10 - Date	UINT32	-	-	-
182	-	Error 10 - Time	Error 10 - Time	UINT32	-	-	-
183	-	Error 10 - End Date	Error 10 - End Date	UINT32	-	-	-
184	-	Error 10 - End Time	Error 10 - End Time 1	UINT32	-	-	-
185	-	Log: Error Counter	Log: Error Counter 10	UINT16	-	-	-
186	-	Log: Error 1 Bitfield	Log: Error 1 Bitfield 10	UINT32	-	-	-
187	-	Log: Error 2 Bitfield	Log: Error 2 Bitfield 10	UINT32	-	-	-
188	-	Log: Alarm 1 Bitfield	Log: Alarm 1 Bitfield 10	UINT32	-	-	-
189	-	LogSpeed	Log: Speed 10	UINT32	-	-	-
190	-	Log: Error Code	Log: Error Code 10	UINT32	-	-	-
191	-	Log: Flow	Log: Flow 10	FLOAT32	P04.0.12 - Flow Measuring Unit	-	-
192	-	Log: Head	Log: Head 10	FLOAT32	P04.0.11 - Pressure Measuring Unit	-	-
193	-	Log: Power Module Temperature	Log: Power Module Temp 10	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
194	-	Log: Motor Current	Log: Motor Current 10	FLOAT32	A	-	-
195	-	Log: Motor Voltage	Log: Motor Voltage 10	FLOAT32	V	-	-
196	-	Log: Inverter Temperature	Log: Inverter Temperature 10	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
197	-	LogPower	Log: Motor Power 10	FLOAT32	-	-	-
198	-	Log: DC Bus Voltage	Log: DC Bus Voltage 10	FLOAT32	V	-	-
199	-	Log: Grid Voltage	Log: Grid Voltage 10	FLOAT32	V	-	-
200	-	Totoal Error Counter	Total Error Counter	UINT16	-	-	-
201	-	Total Alarm Counter	Total Alarm Counter	UINT16	-	-	-
202	P02.9.01	Error Bitfield 1	Error Bitfield 1	UINT32	-	-	-
203	P02.9.02	Error Bitfield 2	Error Bitfield 2	UINT32	-	-	-
204	P02.9.05	Alarm Bitfield 1	Alarm Bitfield 1	UINT32	-	-	-
205	P03.0.01	Actual Pressure	Actual Pressure	FLOAT32	P04.0.11 - Pressure Measuring Unit	-	-
206	P03.0.02 [X+]	Actual Flow	Actual Flow	FLOAT32	P04.0.12 - Flow Measuring Unit	-	-
207	P03.0.03 [X+]	Actual Fluid Temperature	Actual Fluid Temperature	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
208	P03.0.04 [X+]	Actual Level	Actual Level	FLOAT32	P04.0.14 - Level Measuring Unit	-	-
209	P03.0.10	Effective Required Value	Effective Required Value	FLOAT32	-	-	-
210	P03.0.20	Required Value	Required Value	FLOAT32	-	-	-
211	P03.0.30	Pump Status	Pump Status	ENUM	-	-	-
212	P03.1.01	Unit Powered Time	Unit Powered Time	UINT32	s	-	-
213	P03.1.02	Motor Running Time	Motor Running Time	UINT32	s	-	-
214	P03.1.05	Energy Counter	Energy Counter	FLOAT32	P04.0.16 - Energy Measuring Unit	-	-
215	P03.2.01	Motor Speed	Motor Speed	UINT16	rpm	-	-
216	P03.2.02	Motor Speed %	Motor Speed %	FLOAT32	%	-	-
217	P03.2.05	Motor Current	Motor Current	FLOAT32	A	-	-
218	P03.2.06	Motor Power	Motor Power	FLOAT32	P04.0.15 - Power Measuring Unit	-	-
219	P03.2.07	Motor Voltage	Motor Voltage	FLOAT32	V	-	-
220	P03.2.08	Grid Voltage	Grid Voltage	UINT16	V	-	-
221	P03.2.09	DC Bus Voltage	DC Bus Voltage	UINT16	V	-	-
222	P03.2.20	Power Module Temperature	Power Module Temperature	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-

223	P03.2.21	Inverter Temperature	Inverter Temperature	FLOAT32	P04.0.13 - Temperature Measuring Unit	-	-
224	P03.2.22	Motor Ptc	Motor Ptc	FLOAT32	-	-	-
225	P03.3.01	Digital I/O Status	Digital I/O Status	UINT16	-	-	-
226	P03.3.11	Analog Input 1 Value	Analog Input 1 Value	FLOAT32	P05.1.02 - Analog Input 1 Type	-	-
227	P03.3.12	Analog Input 2 Value	Analog Input 2 Value	FLOAT32	P05.1.12 - Analog Input 2 Type	-	-
228	P03.3.13 [X+]	Analog Input 3 Value	Analog Input 3 Value	FLOAT32	P05.1.22 - Analog Input 3 Type	-	-
229	P03.3.14 [X+]	Analog Input 4 Value	Analog Input 4 Value	FLOAT32	P05.1.32 - Analog Input 4 Type	-	-
230	P03.3.20	Analog Output Value	Analog Output Value	FLOAT32	P05.3.02 - Analog Output Type	-	-
231	P03.4.02	Unit Production Date	Unit Production Date	UINT32	-	-	-
232	P03.4.05	Drive Production Date	Drive Production Date	UINT32	-	-	-
233	-	Drive Type	Drive type	ENUM	-	-	-
234	P06.0.04	Multipump Map	Multipump Map	UINT16	-	-	-
235	P06.0.05	Multipump Priority	Multipump Priority	UINT16	-	-	-
236	P03.4.13	Control Card Firmware Version	Control Card Firmware Version	UINT32	-	-	-
237	P03.4.12	Power Card Firmware Version	Power Card Firmware Version	UINT32	-	-	-
238	P03.4.10	Hmi Firmware Version	Hmi Firmware Version	UINT32	-	-	-
239	P03.4.11	Hmi-Bt Firmware Version	Hmi-Bt Firmware Version	UINT32	-	-	-
240	P03.4.14	Map File Version	Map File Version	UINT32	-	-	-
241	P03.4.15	Default File Version	Default File Version	UINT32	-	-	-
242	P03.4.16	Parameter File Version	Parameter File Version	UINT32	-	-	-
243	P03.4.17 [X+]	Language File Version	Language File Version	UINT32	-	-	-
244	P03.0.00 [X+]	Estimated Actual Value	Senorless or Sensored	ENUM	-	-	-
245	P03.4.25	Hydraulic Curves Stored	EstimationCapability	ENUM	-	-	-

9.6 BACnet 模拟值表

对象标识符	菜单 ID	参数名称	BACnet 对象名称	类型	尺寸	最小	最大
0	-	Select the ON/OFF status of the pump. Corresponds to the action on the ON/OFF button. 0-On 1-Off	On/Off Set	ENUM	-	0	1
1	-	Error Reset Command	ERRORRETCMD	ENUM	-	0	1
2	P04.0.01	System Type	System Type	ENUM	-	0	2
3	P04.0.02	Control Mode	Control Mode	ENUM	-	0	7
4	P04.0.03	Regulation Mode	Regulation Mode	ENUM	-	0	1
5	P04.0.05	Start Value	Start Value	UINT16	%	0	100
6	P04.0.06	Auto Start	Auto Start	ENUM	-	0	1
7	P04.0.07	Min Speed Configuration	Min Speed Configuration	ENUM	-	0	1
8	P04.0.09	Measuring Unit Selection	Measuring Unit Selection	ENUM	-	0	1
9	P04.0.11	Pressure Measuring Unit	Pressure Measuring Unit	ENUM	-	0	8

10	P04.0.12 [X+]	Flow Measuring Unit	Flow Measuring Unit	ENUM	-	0	4
11	P04.0.13 [X+]	Temperature Measuring Unit	Temperature Measuring Unit	ENUM	-	0	2
12	P04.0.14 [X+]	Level Measuring Unit	Level Measuring Unit	ENUM	-	0	3
13	P04.0.15 [X+]	Power Measuring Unit	Power Measuring Unit	ENUM	-	0	3
14	P04.0.16 [X+]	Energy Measuring Unit	Energy Measuring Unit	ENUM	-	0	5
15	P04.0.17 [X+]	Specific Energy Meas. Unit	Specific Energy Meas. Unit	ENUM	-	0	4
16	P09.1.11	Max Decimals	Max Decimals	UINT16	-	0	3
17	P04.0.21	Setpoint 1 Selection	Setpoint 1 Selection	ENUM	-	0	1
18	P04.0.22	Setpoint 2 Selection	Setpoint 2 Selection	ENUM	-	0	2
19	P04.0.23 [X+]	Setpoint 3 Selection	Setpoint 3 Selection	ENUM	-	0	2
20	P04.0.24 [X+]	Setpoint 4 Selection	Setpoint 4 Selection	ENUM	-	0	2
21	P04.1.01	Speed Setpoint 1	Speed Setpoint 1	UINT16	rpm	P04.2.31 - Min Speed	P04.2.32 - Max Speed
22	P04.1.02	Speed Setpoint 2	Speed Setpoint 2	UINT16	rpm	P04.2.31 - Min Speed	P04.2.32 - Max Speed
23	P04.1.03 [X+]	Speed Setpoint 3	Speed Setpoint 3	UINT16	rpm	P04.2.31 - Min Speed	P04.2.32 - Max Speed
24	P04.1.04 [X+]	Speed Setpoint 4	Speed Setpoint 4	UINT16	rpm	P04.2.31 - Min Speed	P04.2.32 - Max Speed
25	P04.1.11	Pressure Setpoint 1	Pressure Setpoint 1	FLOAT32	P04.0.11 - Pressure Measuring Unit	P05.0.11 - Pressure - Zero Value	P05.0.12 - Pressure - Full Scale
26	P04.1.12	Pressure Setpoint 2	Pressure Setpoint 2	FLOAT32	P04.0.11 - Pressure Measuring Unit	P05.0.11 - Pressure - Zero Value	P05.0.12 - Pressure - Full Scale
27	P04.1.13 [X+]	Pressure Setpoint 3	Pressure Setpoint 3	FLOAT32	P04.0.11 - Pressure Measuring Unit	P05.0.11 - Pressure - Zero Value	P05.0.12 - Pressure - Full Scale
28	P04.1.14 [X+]	Pressure Setpoint 4	Pressure Setpoint 4	FLOAT32	P04.0.11 - Pressure Measuring Unit	P05.0.11 - Pressure - Zero Value	P05.0.12 - Pressure - Full Scale
29	P04.1.21 [X+]	Flow Setpoint 1	Flow Setpoint 1	FLOAT32	P04.0.12 - Flow Measuring Unit	P05.0.21 - Flow - Zero Value	P05.0.22 - Flow - Full Scale
30	P04.1.22 [X+]	Flow Setpoint 2	Flow Setpoint 2	FLOAT32	P04.0.12 - Flow Measuring Unit	P05.0.21 - Flow - Zero Value	P05.0.22 - Flow - Full Scale
31	P04.1.23 [X+]	Flow Setpoint 3	Flow Setpoint 3	FLOAT32	P04.0.12 - Flow Measuring Unit	P05.0.21 - Flow - Zero Value	P05.0.22 - Flow - Full Scale

32	P04.1.24 [X+]	Flow Setpoint 4	Flow Setpoint 4	FLOAT32	P04.0.12 - Flow Measuring Unit	P05.0.21 - Flow - Zero Value	P05.0.22 - Flow - Full Scale
33	P04.1.31 [X+]	Temp. Setpoint 1	Temp. Setpoint 1	FLOAT32	P04.0.13 - Temperature Measuring Unit	P05.0.31 - Temperature - Zero Value	P05.0.32 - Temperature - Full Scale
34	P04.1.32 [X+]	Temp. Setpoint 2	Temp. Setpoint 2	FLOAT32	P04.0.13 - Temperature Measuring Unit	P05.0.31 - Temperature - Zero Value	P05.0.32 - Temperature - Full Scale
35	P04.1.33 [X+]	Temp. Setpoint 3	Temp. Setpoint 3	FLOAT32	P04.0.13 - Temperature Measuring Unit	P05.0.31 - Temperature - Zero Value	P05.0.32 - Temperature - Full Scale
36	P04.1.34 [X+]	Temp. Setpoint 4	Temp. Setpoint 4	FLOAT32	P04.0.13 - Temperature Measuring Unit	P05.0.31 - Temperature - Zero Value	P05.0.32 - Temperature - Full Scale
37	P04.1.41 [X+]	Level Setpoint 1	Level Setpoint 1	FLOAT32	P04.0.14 - Level Measuring Unit	P05.0.41 - Level - Zero Value	P05.0.42 - Level - Full Scale
38	P04.1.42 [X+]	Level Setpoint 2	Level Setpoint 2	FLOAT32	P04.0.14 - Level Measuring Unit	P05.0.41 - Level - Zero Value	P05.0.42 - Level - Full Scale
39	P04.1.43 [X+]	Level Setpoint 3	Level Setpoint 3	FLOAT32	P04.0.14 - Level Measuring Unit	P05.0.41 - Level - Zero Value	P05.0.42 - Level - Full Scale
40	P04.1.44 [X+]	Level Setpoint 4	Level Setpoint 4	FLOAT32	P04.0.14 - Level Measuring Unit	P05.0.41 - Level - Zero Value	P05.0.42 - Level - Full Scale
41	P04.1.51 [X+]	Generic Setpoint 1	Generic Setpoint 1	FLOAT32	-	P05.0.51 - Generic - Zero Value	P05.0.52 - Generic - Full Scale
42	P04.1.52 [X+]	Generic Setpoint 2	Generic Setpoint 2	FLOAT32	-	P05.0.51 - Generic - Zero Value	P05.0.52 - Generic - Full Scale
43	P04.1.53 [X+]	Generic Setpoint 3	Generic Setpoint 3	FLOAT32	-	P05.0.51 - Generic - Zero Value	P05.0.52 - Generic - Full Scale
44	P04.1.54 [X+]	Generic Setpoint 4	Generic Setpoint 4	FLOAT32	-	P05.0.51 - Generic - Zero Value	P05.0.52 - Generic - Full Scale
45	P04.2.01	Window	Window	UINT16	%	1	100
46	P04.2.02	Hysteresis	Hysteresis	UINT16	%	1	100
47	P04.2.06	Lift Speed	Lift Speed	UINT16	rpm	P04.2.31 - Min Speed	P04.2.32 - Max Speed
48	P04.2.07	Linear Lift Amount	Linear Lift Amount	UINT16	%	0	200
49	P04.2.08 [X+]	Quad. Lift Amount	Quad. Lift Amount	UINT16	%	0	999
50	P04.2.11	Ramp 1	Ramp 1	UINT16	s	1	250
51	P04.2.12	Ramp 2	Ramp 2	UINT16	s	1	250
52	P04.2.13	Ramp 3	Ramp 3	UINT16	s	1	999

53	P04.2.14	Ramp 4	Ramp 4	UINT16	s	1	999
54	P04.2.15	Ramp Speed Min Acceleration	Ramp Speed Min Acceleration	FLOAT32	s	0.1	25
55	P04.2.16	Ramp Speed Min Deceleration	Ramp Speed Min Deceleration	FLOAT32	s	0.1	25
56	P04.2.31	Min Speed	Min Speed	UINT16	rpm	0	2000
57	P04.2.32	Max Speed	Max Speed	UINT16	rpm	2000	4100
58	P04.2.35	Min Speed Time	Min Speed Time	UINT16	s	0	100
59	P04.3.00	Automatic Error Reset	Automatic Error Reset	ENUM	-	0	1
60	P04.3.01	Pressure - Minimum Threshold	Pressure - Minimum Threshold	FLOAT32	P04.0.11 - Pressure Measuring Unit	P05.0.11 - Pressure - Zero Value	P05.0.12 - Pressure - Full Scale
61	P04.3.02 [X+]	Flow - Minimum Threshold	Flow - Minimum Threshold	FLOAT32	P04.0.12 - Flow Measuring Unit	P05.0.21 - Flow - Zero Value	P05.0.22 - Flow - Full Scale
62	P04.3.03 [X+]	Temperature - Minimum Threshold	Temperature - Minimum Thresho	FLOAT32	P04.0.13 - Temperature Measuring Unit	P05.0.31 - Temperature - Zero Value	P05.0.32 - Temperature - Full Scale
63	P04.3.04 [X+]	Level - Minimum Threshold	Level - Minimum Threshold	FLOAT32	P04.0.14 - Level Measuring Unit	P05.0.41 - Level - Zero Value	P05.0.42 - Level - Full Scale
64	P04.3.05 [X+]	Generic - Min. Threshold	Generic - Min. Threshold	FLOAT32	-	P05.0.51 - Generic - Zero Value	P05.0.52 - Generic - Full Scale
65	P04.3.10	Minimum Threshold Delay	Minimum Threshold Delay	UINT16	s	1	100
66	P04.3.11	Lack Of Water Delay	Lack Of Water Delay	UINT16	s	1	100
67	P04.4.01	Test Run Speed	Test Run Speed	UINT16	rpm	0	P04.2.32 - Max Speed
68	P04.4.02	Test Run Timeout	Test Run Timeout	UINT16	h	0	255
69	P04.4.03	Test Run Time	Test Run Time	UINT16	s	0	180
70	P04.4.05	Test Run Command	Test Run Command	ENUM	-	0	1
71	P04.6.01	Pipe Filling Function	Pipe Filling Function	ENUM	-	0	2
72	P04.6.03	Pipe Filling Threshold	Pipe Filling Threshold	FLOAT32	P04.0.11 - Pressure Measuring Unit	P05.0.11 - Pressure - Zero Value	P05.0.12 - Pressure - Full Scale
73	P04.6.05	Pipe Filling Time	Pipe Filling Time	UINT16	s	0	999
74	P04.6.06	Max Pipe Filling Pumps	Max Pipe Filling Pumps	UINT16	-	1	P06.0.02 - Max Units
75	P04.6.10	Pipe Filling Steady Time	Pipe Filling Steady Time	UINT16	s	1	P04.6.05 - Pipe Filling Time
76	P04.6.15	Pipe Filling Speed Step	Pipe Filling Speed Step	UINT16	%	5	100
77	P05.0.00	Actual Value Source	Actual Value Source	ENUM	-	0	7
78	P05.0.01	Actuator - Zero Value	Actuator - Zero Value	UINT16	rpm	0	9999

79	P05.0.02	Actuator - Full Scale	Actuator - Full Scale	UINT16	rpm	0	9999
80	P05.0.11	Pressure - Zero Value	Pressure - Zero Value	FLOAT32	P04.0.11 - Pressure Measuring Unit	-5	10
81	P05.0.12	Pressure - Full Scale	Pressure - Full Scale	FLOAT32	P04.0.11 - Pressure Measuring Unit	0	100
82	P05.0.21 [X+]	Flow - Zero Value	Flow - Zero Value	FLOAT32	P04.0.12 - Flow Measuring Unit	0	9999
83	P05.0.22 [X+]	Flow - Full Scale	Flow - Full Scale	FLOAT32	P04.0.12 - Flow Measuring Unit	0	9999
84	P05.0.31 [X+]	Temperature - Zero Value	Temperature - Zero Value	FLOAT32	P04.0.13 - Temperature Measuring Unit	-100	9999
85	P05.0.32 [X+]	Temperature - Full Scale	Temperature - Full Scale	FLOAT32	P04.0.13 - Temperature Measuring Unit	-100	9999
86	P05.0.41 [X+]	Level - Zero Value	Level - Zero Value	FLOAT32	P04.0.14 - Level Measuring Unit	-999	9999
87	P05.0.42 [X+]	Level - Full Scale	Level - Full Scale	FLOAT32	P04.0.14 - Level Measuring Unit	-999	9999
88	P05.0.51 [X+]	Generic - Zero Value	Generic - Zero Value	FLOAT32	-	-1000	1000
89	P05.0.52 [X+]	Generic - Full Scale	Generic - Full Scale	FLOAT32	-	-1000	1000
90	P05.1.01	Analog Input 1 Function	Analog Input 1 Function	ENUM	-	0	7
91	P05.1.02	Analog Input 1 Type	Analog Input 1 Type	ENUM	-	0	3
92	P05.1.11	Analog Input 2 Function	Analog Input 2 Function	ENUM	-	0	7
93	P05.1.12	Analog Input 2 Type	Analog Input 2 Type	ENUM	-	0	3
94	P05.1.21 [X+]	Analog Input 3 Function	Analog Input 3 Function	ENUM	-	0	7
95	P05.1.22 [X+]	Analog Input 3 Type	Analog Input 3 Type	ENUM	-	0	3
96	P05.1.31 [X+]	Analog Input 4 Function	Analog Input 4 Function	ENUM	-	0	7
97	P05.1.32 [X+]	Analog Input 4 Type	Analog Input 4 Type	ENUM	-	0	3
98	P05.1.40 [X+]	Sensor Curve	Sensor Curve	ENUM	-	0	1
99	P05.1.50 [X+]	Analog Actuator Type	Analog Actuator Type	ENUM	-	0	1

100	P05.2.03	Digital Input 3 Function	Digital Input 3 Function	ENUM	-	0	9
101	P05.2.04 [X+]	Digital Input 4 Function	Digital Input 4 Function	ENUM	-	0	9
102	P05.2.05 [X+]	Digital Input 5 Function	Digital Input 5 Function	ENUM	-	0	9
103	P05.3.01	Analog Output Function	Analog Output Function	ENUM	-	0	12
104	P05.3.02	Analog Output Type	Analog Output Type	ENUM	-	0	3
105	P05.4.01	Relay 1 Function	Relay 1 Function	ENUM	-	0	7
106	P05.4.02	Relay 2 Function	Relay 2 Function	ENUM	-	0	7
107	P05.8.01	Analog Input 1 Offset	Analog Input 1 Offset	FLOAT32	-	-100	100
108	P05.8.02	Analog Input 1 Gain	Analog Input 1 Gain	FLOAT32	-	0	1.5
109	P05.8.11	Analog Input 2 Offset	Analog Input 2 Offset	FLOAT32	-	-100	100
110	P05.8.12	Analog Input 2 Gain	Analog Input 2 Gain	FLOAT32	-	0	1.5
111	P05.8.21 [X+]	Analog Input 3 Offset	Analog Input 3 Offset	FLOAT32	-	-100	100
112	P05.8.22 [X+]	Analog Input 3 Gain	Analog Input 3 Gain	FLOAT32	-	0	1.5
113	P05.8.31 [X+]	Analog Input 4 Offset	Analog Input 4 Offset	FLOAT32	-	-100	100
114	P05.8.32 [X+]	Analog Input 4 Gain	Analog Input 4 Gain	FLOAT32	-	0	1.5
115	P06.0.01	System Configuration	System Configuration	ENUM	-	0	2
116	P06.0.02	Max Units	Max Units	UINT16	-	1	-
117	P06.0.03	Multipump Address	Multipump Address	UINT16	-	1	-
118	P06.1.11	Pressure - Inc. value	Pressure - Inc. value	FLOAT32	P04.0.11 - Pressure Measuring Unit	0	P05.0.12 - Pressure - Full Scale
119	P06.1.12	Pressure - Dec. value	Pressure - Dec. value	FLOAT32	P04.0.11 - Pressure Measuring Unit	0	P05.0.12 - Pressure - Full Scale
120	P06.1.21 [X+]	Flow - Inc. value	Flow - Inc. value	FLOAT32	P04.0.12 - Flow Measuring Unit	0	P05.0.22 - Flow - Full Scale
121	P06.1.22 [X+]	Flow - Dec. value	Flow - Dec. value	FLOAT32	P04.0.12 - Flow Measuring Unit	0	P05.0.22 - Flow - Full Scale
122	P06.1.31 [X+]	Temperature - Inc. value	Temperature - Inc. value	FLOAT32	P04.0.13 - Temperature Measuring Unit	0	P05.0.32 - Temperature - Full Scale
123	P06.1.32 [X+]	Temperature - Dec. value	Temperature - Dec. value	FLOAT32	P04.0.13 - Temperature Measuring Unit	0	P05.0.32 - Temperature - Full Scale

124	P06.1.41 [X+]	Level - Inc. value	Level - Inc. value	FLOAT32	P04.0.14 - Level Measuring Unit	0	P05.0.42 - Level - Full Scale
125	P06.1.42 [X+]	Level - Dec. value	Level - Dec. value	FLOAT32	P04.0.14 - Level Measuring Unit	0	P05.0.42 - Level - Full Scale
126	P06.1.51 [X+]	Generic - Inc. value	Generic - Inc. value	FLOAT32	-	0	P05.0.52 - Generic - Full Scale
127	P06.1.52 [X+]	Generic - Dec. value	Generic - Dec. value	FLOAT32	-	0	P05.0.52 - Generic - Full Scale
128	P06.1.61	Multipump Enable Speed	Multipump Enable Speed	UINT16	rpm	P04.2.31 - Min Speed	P04.2.32 - Max Speed
129	P06.1.71	Synchronous Limit	Synchronous Limit	UINT16	rpm	0	3600
130	P06.1.72	Synchronous Window	Synchronous Window	UINT16	rpm	0	P04.2.32 - Max Speed
131	P06.1.81	Automatic Switchover Interval	Automatic Switchover Interval	UINT16	h	0	250
132	P07.0.01	Max Switching Frequency	Max Switching Frequency	ENUM	-	0	5
133	P07.0.02	Min Switching Frequency	Min Switching Frequency	ENUM	-	0	5
134	P07.1.01	Skip Speed Center	Skip Speed Center	UINT16	rpm	P04.2.31 - Min Speed	P04.2.32 - Max Speed
135	P07.1.02	Skip Speed Range	Skip Speed Range	UINT16	rpm	0	300
136	P07.2.01	Motor heating function	Motor heating function	ENUM	-	0	2
137	P08.0.01	Com 1 Function	Com 1 Function	ENUM	-	0	3
138	P08.0.02	Com 2 Function	Com 2 Function	ENUM	-	0	2
139	P08.1.01	Modbus RTU Address	Modbus RTU Address	UINT16	-	0	127
140	P08.1.02	Modbus RTU Baudrate	Modbus RTU Baudrate	ENUM	-	0	8
141	P08.1.08	Modbus RTU Format	Modbus RTU Format	ENUM	-	0	3
142	P08.2.01	BACnet MS/TP Mac Address	BACnet MS/TP Mac Address	UINT16	-	0	P08.2.05 - BACnet MS/TP Max Master
143	P08.2.02	BACnet MS/TP Baudrate	BACnet MS/TP Baudrate	ENUM	-	0	8
144	P08.2.03	BACnet MS/TP Format	BACnet MS/TP Format	ENUM	-	0	3
145	P08.2.04	BACnet MS/TP Device Id	BACnet MS/TP Device Id	UINT32	-	-	4194304
146	P08.2.05	BACnet MS/TP Max Master	BACnet MS/TP Max Master	UINT16	-	P08.2.01 - BACnet MS/TP Mac Address	127
147	-	BACnet Info Frames	BACnet Info Frames	UINT16	-	1	255
148	-	BACnet Reinit	BACnet Reinit	ENUM	-	0	1
149	P08.3.01	Enable Wireless Communication	Enable Wireless Communication	ENUM	-	0	1

150	P09.0.01 [X+]	Language	Language	ENUM	-	0	28
151	P09.0.12 [X+]	Time	Time	UINT32	-	-	-
152	P09.0.11 [X+]	Date	Date	UINT32	-	-	-
153	P09.1.01	Display Energy Saving	Display Energy Saving	ENUM	-	0	1
154	P09.1.02	Energy Saving Time	Energy Saving Time	UINT16	s	60	3600
155	P09.1.10	Display Orientation	Display Orientation	ENUM	-	0	1
156	P09.3.01	Error Log Reset	Error Log Reset	ENUM	-	0	1
157	P09.3.02	Operating Time Counter Reset	Operating Time Counter Reset	ENUM	-	0	1
158	P09.3.03	Motor Running Counter Reset	Motor Running Counter Reset	ENUM	-	0	1
159	P09.3.04	Energy Counter Reset	Energy Counter Reset	ENUM	-	0	1
160	P09.3.05	Factory Restore	Factory Restore	ENUM	-	0	1
161	P09.3.06	Commissioning Completed	Commissioning Completed	ENUM	-	0	1
162	P09.3.07	Bonded Device List Reset	Bonded Device List Reset	ENUM	-	0	1
163	P04.1.60	Limit setpoint saving	Limit setpoint saving	ENUM	-	0	1
164	P01.6.01 [X+]	H0 Pressure	Setpoint Zero Flow	FLOAT32	P04.0.11 - Pressure Measuring Unit	P05.0.11 - Pressure - Zero Value	P05.0.12 - Pressure - Full Scale
165	P04.2.00 [X+]	Regulation Type	Regulation Type	ENUM	-	0	1
166	P05.8.44	Analog Output 1 Offset	Analog Output 1 Offset	FLOAT32	P05.3.02 - Analog Output Type	-100	100
167	P05.8.45	Analog Output 1 Gain	Analog Output 1 Gain	FLOAT32	-	0	1.5

10 维护

10.1 预防措施



危险：电气危险

- 开始作业前，检查电源是否断开和锁住，避免装置、控制面板和辅助控制电路意外重启。
- 断开系统电源后，等待 2 分钟，让剩余电流放电。



警告：物理危险和热危险

- 始终穿戴个人防护装备。
- 始终使用适当的工作工具。
- 如果电机安装在电动泵中，在液体温度过高或过低的情况下，请注意有造成人员受伤的风险。

开始作业前：

- 请务必阅读并理解 简介与安全 中的所有安全指示。
- 接触电动泵和所有系统部件前，请先使其冷却。
- 拆卸电动泵、移除填注塞和排放塞或断开管道系统前，请确保装置已与系统隔离且压力为零。

电机磁场



电机外壳内转子的拆卸或安装可产生强磁场：

危险：磁场危险

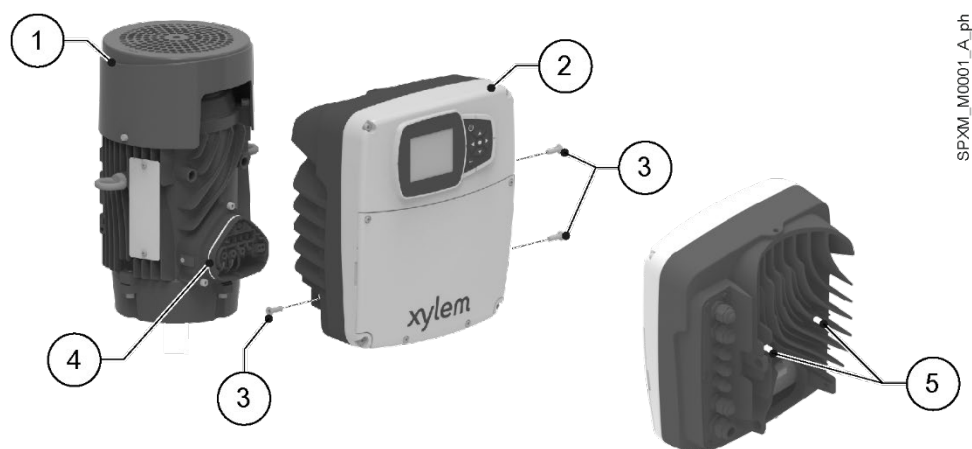
对于佩戴起搏器或任何其他对磁场敏感的医疗器械的人来说，磁场可能具有危险性。

注意：

磁场可能吸引金属碎屑粘附在转子表面并对其造成损坏。

10.2 更换 HVX 或 HVX+ 驱动

10.2.1 更换 B 尺寸和 C 尺寸

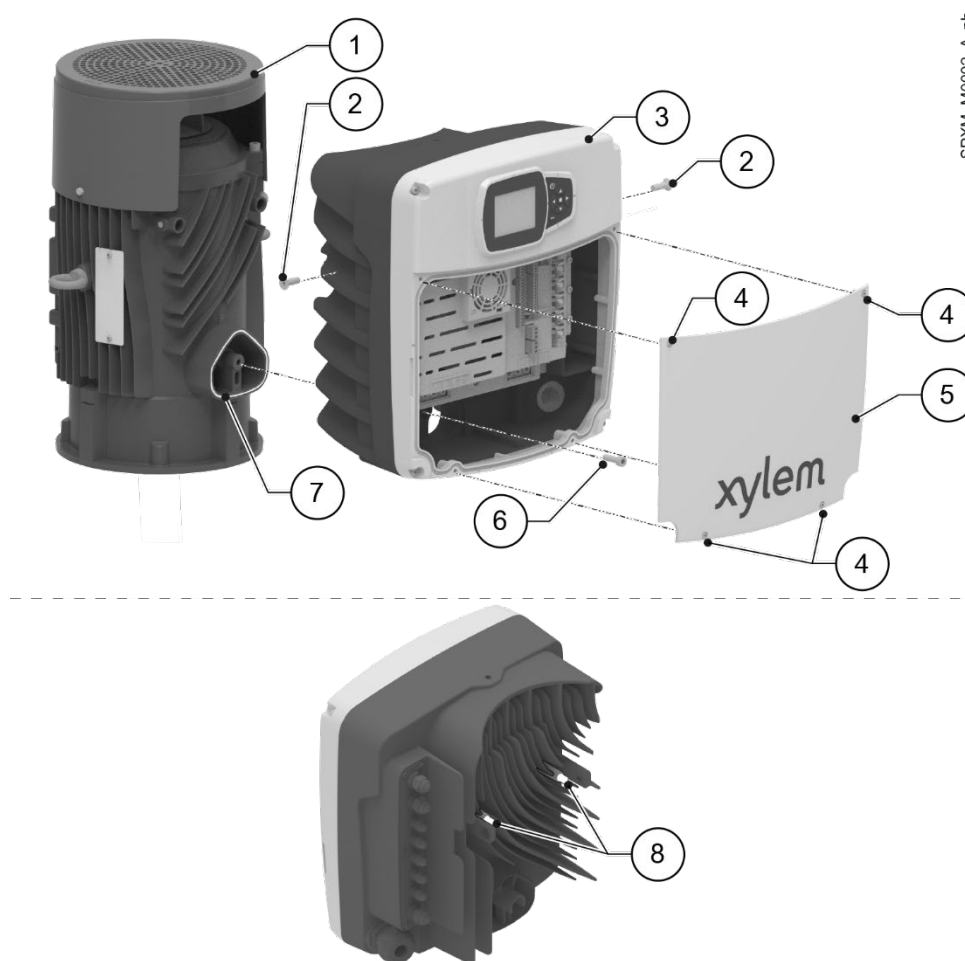


SPXM_M0001_A.ph

1. 电机
2. 驱动
3. 紧固螺钉
4. 密封件
5. 垫片

1. 断开与驱动连接的任何传感器。
2. 使用梅花扳手拧下螺钉，然后拆下驱动。
3. 使用酒精润滑密封件。
4. 检查新驱动的垫片是否正确定位且完好。
5. 安装新驱动并拧紧螺钉。
6. 拧紧扭矩：6 Nm (55 lbf • in) ± 15%。
7. 将所有传感器重新连接到驱动。

10.2.2 更换 D 尺寸



1. 电机
2. 侧面紧固螺钉
3. 驱动
4. 护罩螺钉
5. 护罩
6. 中心紧固螺钉
7. 密封件
8. 垫片

拆卸旧驱动

1. 断开与驱动连接的任何传感器。
2. 拆除护罩。
3. 断开电机相导体的连接。
4. 将 M6 公头吊环螺栓拧至驱动。
5. 将起重机绳索连接至吊环螺栓。
6. 拉紧绳索。
7. 使用梅花扳手拧下侧面和中心的螺钉，注意不要让中心螺钉掉入电机内，然后拆下驱动。
8. 缓慢抬起驱动，注意可能出现的突然负载偏移，并将其与电机分离。

新驱动组装

1. 检查新驱动的垫片是否正确定位且完好。
2. 将 M6 公头吊环螺栓拧至驱动。
3. 将起重机绳索连接至吊环螺栓。
4. 缓慢抬起驱动，注意可能出现的突然负载偏移。
5. 安装新驱动并拧紧螺钉。
拧紧扭矩：15 Nm (132 lbf • in) ± 15%。
6. 拆下起重机绳索并拆下吊环螺栓。
7. 按照原始相序将相导体重新连接至电机：
U = 棕色
V = 蓝色
W = 黑色。
8. 安装护罩并拧紧螺钉。
拧紧扭矩：3 Nm (27 lbf • in) ± 15%。
9. 将所有传感器重新连接到驱动。

10.3 长时间无操作

1. 按下操作面板上的“开/关”按钮或者打开提供的启用触点（如有使用）。
2. 断开电源。
3. 关闭吸入和排出开关阀。
4. 遵守第 9 页的“储存”中的说明。
5. 启动装置前，请检查装置和控制面板上导电体的连接状态，并确保已正确拧紧螺钉。
6. 按照电动泵手册中的说明启动装置。

10.4 备件识别

使用产品代码在网站 spark.xylem.com 上直接识别备件。
如需获得更多技术信息，请联系 Xylem 或授权经销商。

11 故障排除

11.1 预防措施



警告：物理危险和热危险

- 始终穿戴个人防护装备。
- 始终使用适当的工作工具。
- 如果液体过热或过冷，注意受伤风险。

开始作业前：

- 请务必阅读并理解 简介与安全 中的所有安全指示。
- 接触泵和所有系统部件前，请先使其冷却。
- 拆卸泵、移除填注塞和排放塞或断开管道系统前，请确保装置已与系统隔离且压力为零。

无电压操作



危险：电气危险

- 开始作业前，检查电源是否断开和锁住，避免装置、控制面板和辅助控制电路意外重启。
- 断开系统电源后，等待 2 分钟，让剩余电流放电。

电机磁场



电机外壳内转子的拆卸或安装可产生强磁场：

危险：磁场危险

对于佩戴起搏器或任何其他对磁场敏感的医疗器械的人来说，磁场可能具有危险性。

注意：

磁场可能吸引金属碎屑粘附在转子表面并对其造成损坏。

暴露于电离辐射下的位置



警告：电离辐射危险

如果装置暴露在电离辐射下，应采取必要措施，保护人员安全。如需运输装置，应通知承运人和接收人采取适当的安全措施。

11.2 警报列表

代码	名称	描述
A05	Bad files configuration	There is a mismatch in the configuration files or the files didn't load properly. Power off, wait 1 minute, power on.
A08	Derating active	The switching frequency has been reduced due to the high ambient temperature. Clean the unit, verify unit fan and ambient condition.
A11	Analog Input 1 Alarm	The analog input value is too low or too high. Verify the device connected to the analog input or the correct analog input configuration.
A12	Analog Input 2 Alarm	The analog input value is too low or too high. Verify the device connected to the analog input or the correct analog input configuration.
A13	Analog Input 3 Alarm	The analog input value is too low or too high. Verify the device connected to the analog input or the correct analog input configuration.
A14	Analog Input 4 Alarm	The analog input value is too low or too high. Verify the device connected to the analog input or the correct analog input configuration.
A15	Flow/Temperature Sensor Alarm	The embedded flow/temperature sensor is malfunctioning.
A16	External DI Alarm	The external alarm has been activated. Verify the external device contact.
A17	Internal Communication lost	There is a communication problem between the drive boards. Power off, wait 1 minute, power on.
A18	Multipump Communication Lost	The unit is set to multipump but there are no other units communicating. Verify multipump connection and communication port configuration.
A19	Multipump Address conflict	There are other units in the multipump system with the same multipump address. Verify that each unit has a unique multipump address.
A20	Multipump Incompatibility	A unit connected in the multipump system has incompatible features or a different multipump protocol. Do not use the incompatible feature or update all units to the same firmware version.
A21	Cloning failure	Cloning failure
A23	Wrong analog input configuration	None of the analog input is set to the measured quantity of the control mode. Verify the correct configuration of parameters in menu M05.
A24	Wrong Setpoint configuration	None of the setpoint selected correspond to the measured quantity of the control mode. Verify the correct configuration of parameters in menu M04, M05.
A28	Fieldbus Communication lost	The communication with the remote fieldbus device is lost. Verify the status of the remote device and the correct configuration of fieldbus communication parameters.
A29	Pipe Filling Alarm	The pipe filling function filling pressure has not been reached within the pipe filling time. Verify the system integrity and the pipe filling parameters.
A35	HMI Communication lost	There is an internal communication issue between user interface board and control board. Power off, wait 1 minute, power on.
A36	BTLE Communication Lost	There is an internal communication issue between user interface board and wireless interface. Power off, wait 1 minute, power on.
A50	Files revision mismatch	The HMI board and the Control Card contain different revisions of the same configuration files.

11.3 错误列表

代码	名称	描述
E01	Speed limit exceeded	The motor speed is out of expected range. Power off, wait 1 minute, power on.
E02	Overcurrent	The current drawn by the motor is above the limit.
E03	Undervoltage	The voltage is below the minimum limit.
E04	Locked rotor	The rotor is blocked and cannot rotate. Verify the presence of dirt or other material in the wet parts of the pump that can cause the rotor to be blocked.
E05	Data Memory corrupted	There is a part of the memory that is incorrectly initialized or not working. Power off, wait 1 minute, power on.
E06	Input phase loss	One or more phases are missing.
E07	Motor Overheating	The motor temperature is outside the safe limits. Clean the unit, verify unit fan and ambient condition.
E08	Inverter Overheating	The drive internal temperature is outside the safe limits. Clean the unit, verify unit fan and ambient condition.
E09	Motor Disconnected	The connection of one or more motor phases (between drive and motor) is interrupted.
E10	Dry Run	The drive detected no water inside the pump. Verify that the pump is running with water, apply the air purge procedure.
E11	Sensor 1 Error	The analog input value is too low or too high. Verify the device connected to the analog input or the correct analog input configuration.
E12	Sensor 2 Error	The analog input value is too low or too high. Verify the device connected to the analog input or the correct analog input configuration.
E13	Sensor 3 Error	The analog input value is too low or too high. Verify the device connected to the analog input or the correct analog input configuration.
E14	Sensor 4 Error	The analog input value is too low or too high. Verify the device connected to the analog input or the correct analog input configuration.
E15	Flow/Temperature Sensor Error	The embedded flow/temperature sensor is malfunctioning.
E16	External DI Error	The external error has been activated. Verify the external device contact.
E17	Internal Communication lost	There is a communication problem between the drive boards. Power off, wait 1 minute, power on.
E21	Lack of water (LOW)	The LOW digital input is open. Check the status of the lack of water device, if not used keep a loop between LOW terminals.
E22	Minimum Threshold	The minimum threshold set has not been reached within the minimum threshold delay. Verify that the pump has water. Verify the correct settings of the minimum threshold parameters.
E23	Wrong analog input configuration	None of the analog input is set to the measured quantity of the control mode. Verify the correct configuration of parameters in menu M05.
E25	Control Card supply error	There is a power supply issue between the power board and the control board.
E26	Hardware configuration error	The motor-drive configuration parameters are not correct. Power off, wait 1 minute, power on. Contact Xylem service network.

代码	名称	描述
E27	Current leakage to ground	The motor insulation to ground is compromised.
E29	Pipe Filling Error	The pipe filling function filling pressure has not been reached within the pipe filling time. Verify the system integrity and the pipe filling parameters.
E30	Overload	The motor is overloaded. Verify the pumped liquid characteristics.
E31	External Reference 1 Error	The analog input value is too low or too high. Verify the device connected to the analog input or the correct analog input configuration.
E32	External Reference 2 Error	The analog input value is too low or too high. Verify the device connected to the analog input or the correct analog input configuration.
E33	External Reference 3 Error	The analog input value is too low or too high. Verify the device connected to the analog input or the correct analog input configuration.
E34	External Reference 4 Error	The analog input value is too low or too high. Verify the device connected to the analog input or the correct analog input configuration.
E36	Mains undervoltage	The power supply voltage is below the minimum accepted limit.
E43	Overvoltage	The DC-Bus voltage is above the maximum limit. Verify that there are no other pumps creating flow through the pump that can cause energy re-generation.
E46	Grid Overvoltage	The power supply voltage is above the maximum accepted limit.
E50	Configuration files mismatch	There is a mismatch between HMI board and Control Card configuration files.
E51	Drive is a spare part	The HMI board and the Control Card don't contain the configuration files.
E52	Control Card is a spare part	The Control Card is a spare part without configuration files. Use parameter P09.3.10 to upgrade the control card with the files included in the HMI board.
E60	Multipump Protocol Incompatibility	There is an incompatibility between the multipump protocol between the units, align the units to the same firmware version.
E61	hydrovar X connected to X+	hydrovar X and hydrovar X+ cannot be linked together. the two models use different multipump protocols.
E65	Missing Hydraulic Curves	Hydraulic curves are missing or corrupted. Deactivate all functions requiring hydraulic curves, such as "Sensorless delta pressure".

12 规格

12.1 运行环境

数据	描述
空气	无腐蚀性和无爆炸性
温度	-20℃ 至 50℃（-4°F 至 122°F）。
相对空气湿度	≤ 95% 无冷凝
绝对空气湿度	≤ 30 g/kg（干燥空气）
海拔高度（海平面以上）	1000 m (3280 ft) 及以下：最佳条件 1000 m 至 2000 m（3280 ft 至 6562 ft）：可能触发内置的自动热保护功能 - 超过 2000 m (6562 ft)，请联系 Xylem 或授权经销商

12.2 技术特性

另请参阅 铭牌 部分中的 EXM 电机组件数据铭牌。

数据	描述
电源电压和频率	取决于型号： 200 V, ……，240 V 50/60 Hz，或 380 V, ……，480 V 50/60 Hz
电源电压的允许公差	± 10%
泄漏电流 (EN 61800-5-1)	≤ 3.5 mA（交流电，AC）
防护等级、外壳类型	IP 55，NEMA 4 类外壳
效率等级 (IEC 61800-9-2)	- 完整动力驱动系统 (PDS) 装置为 IES2 - 电机为 IE5

电气数据

额定电机功率， kW (hp)	电机类型		转速范围，min ⁻¹	最大输入电流，A	
	IEC	NEMA		200 V, ..., 240 V (EXM....../3.....)	380 V, ..., 480 V (EXM....../4.....)
1.5 (2.0)	EXM...../..015B..4..	EXM...../..020B..4..	1500 ... 2000	5.7 - 4.9	4.0 - 3.8
2.2 (3.0)	EXM...../..022B..4..	EXM...../..020B..4..		7.9 - 6.7	5.0 - 4.6
3.0 (4.0)	EXM...../..030C..4..	EXM...../..040C..4..		11.0 - 9.8	7.9 - 7.0
4.0 (5.5)	EXM...../..040C..4..	EXM...../..055C..4..		14.0 - 12.3	9.2 - 8.5
5.5 (7.5)	EXM...../..055C..4..	EXM...../..075C..4..		21.6 - 20.4	11.2 - 10.2
	EXM...../..055D..4..	EXM...../..075D..4..		20.5 - 18.8	15.3 - 13.6
7.5 (10)	EXM...../..075D..4..	EXM...../..100D..4..		27.5 - 24.8	18.7 - 17.4
11 (15)	EXM...../..110D..4..	EXM...../..150D..4..		39.0 - 34.5	24.5 - 22.8

额定电机功率, kW (hp)	电机类型		转速范围, min ⁻¹	最大输入电流, A	
	IEC	NEMA		200 V, ..., 240 V (EXM.../3.....)	380 V, ..., 480 V (EXM.../4.....)
3.0 (4.0)	EXM.../..030B..2..	EXM.../..040B..2..	3000 ... 4000	10.7 - 8.9*	6.7 - 5.3
4.0 (5.5)	EXM.../..040B..2..	EXM.../..055B..2..		-	7.7 - 6.6
5.5 (7.5)	EXM.../..055B..2..	EXM.../..075B..2..		-	10.2 - 8.7
	EXM.../..055C..2..	EXM.../..075C..2..		18.9 - 16.2	11.4 - 11.0
7.5 (10)	EXM.../..075C..2..	EXM.../..100C..2..		-	14.4 - 12.5
11 (15)	EXM.../..110C..2..	EXM.../..150C..2..		-	20.3 - 16.5
	EXM.../..110D..2..	EXM.../..150D..2..		38.4 - 34.1	24.5 - 22.8
15 (20)	EXM.../..150D..2..	EXM.../..200D..2..		50.0 - 44.1*	30.2 - 27.1
18.5 (25)	EXM.../..185D..2..	EXM.../..250D..2..		-	33.5 - 28.6
22 (30)	EXM.../..220D..2..	EXM.../..300D..2..		-	38.9 - 32.4

*3600 ... 4000 min⁻¹

12.3 电磁兼容性 (EMC)

- HVX 和 HVX+ 驱动符合 IEC 61000-3-12 标准的 THDi 要求。只有当系统与公共电网间连接点的短路功率 (Ssc) 等于或大于表中所示值时, 才符合标准:

电机	Ssc, kVA
EXM.../3....B., EXM.../4....B..	2300
EXM.../3....C., EXM.../4....C..	4600
EXM.../3....D., EXM.../4....D..	9200

请确保设备已连接到符合最低 Ssc 值的网络: 如有疑问, 请咨询您的网络运营商。

- 外部谐波滤波器可以安装在低 Ssc 网络中, 并确保合规性, 即使是单一谐波和 PWHC 也是如此。
- 在 IT 系统中 (零线与地面隔离), 可能需要使用适用于 C4 类的 W 版 hydrovar X 和 X+ (无 EMI 滤波器)。另请参阅 电气连接。

对于 EXM 电机, 请参阅声明。

12.4 射频特性的符合性

EU/EEA/GB

特点	描述
技术	Bluetooth® 低功耗 5.2 无线技术
频段	2.4 GHz ISM
射频 (RF)	≤ 4.5 mW (6.5 dBm)

U.S.A.

HVX FCC ID: 2AYCGXSI02
HVX+ FCC ID: 2AYCGXSI03

该变速驱动符合美国联邦通信委员会 (FCC) 规则的第 15 部分 (FCC 15.247)。

运行受以下两个条件的约束：

1. 该设备不得造成有害干扰。
2. 此设备必须能承受所接收到的任何干扰，包括可能造成意外操作的干扰。

如射频暴露的分析中所示，该变速驱动被视为移动设备，并且符合 FCC 第 2.1093 部分和 KDB 447498 D01 中对射频暴露的安全要求。

安装人员必须确保 (i) 除非符合 FCC 对多发射器产品的程序，该设备不与其他天线或发射器一起放置或使用，(ii) 在正常使用时，应始终保持至少 20 cm 的最小距离。

该设备已根据 FCC 规则的第 15 部分经过测试，并确认符合 A 级电子设备的限制。这些限制旨在提供合理防护，应对设备在商业环境中运行时可能遇到的有害干扰。

该设备会产生、使用并且可以辐射射频能量，而且如果未按照说明手册安装和使用，则可能对无线电通信造成有害干扰。该设备在居民区运行时可能造成有害干扰，在此情况下，用户必须自费纠正干扰

未经授权的维修、变更或修改可能永久损坏设备，并且根据 FCC 规则第 15 部分的规定，可能导致保修或设备操作授权失效。

加拿大

HVX ISED IC: 26881-XSI02
HVX+ ISED IC: 26881-XSI03

该变速驱动符合 RSS-247 标准

运行受以下两个条件的约束：

1. 该设备不得造成有害干扰。
2. 此设备必须能承受所接收到的任何干扰，包括可能造成意外操作的干扰。

该变速驱动被视为移动设备，并且符合 RSS-102 第 5 版中对射频暴露的安全要求。

安装人员必须确保在正常使用时，始终保持至少 20 cm 的最小距离。

该设备符合 ISED 对免许可无线电产品的 RSS 要求。

未经符合性责任方明确批准的变更或修改可能使用户的设备操作授权失效。

澳大利亚和新西兰

HVX : 符合 ACMA 标准
HVX+ : 符合 ACMA 标准

此列表会随时更新。

有关产品授权销售和使用的国家及其版本的信息，请联系 Xylem 或授权经销商。

12.5 其他符合性和批准

EU/EEA/GB

EXM 电机
CE 和 UKCA 标志。

U.S.A.

EXM 电机: cURus (文件编号 E488280)

澳大利亚和新西兰

HVX : RCM
HVX+ : RCM

Bacnet

HVX : BTL 认证
HVX+ : BTL 认证

12.6 输入端和输出端的特性

特点	描述
通信端口	2, RS-485
数字输入端	hydrovar X 3 个, hydrovar X+ 5 个: • 浮动/NPN 触点, 打开歧管/打开排水管, 接地 • 内部极化 +24 VDC, 6 mA 最大电流限值 • 保护范围为 -0.5 VDC 至 +30 VDC, 最大 ± 15 mA
模拟输入端	hydrovar X 2 个, hydrovar X+ 4 个: • 可配置为 0-20 mA 电流, 或 0-10 V 电压 • 24V 传感器电源信号, 60 mA 电流限值
模拟输出端	可配置为 0-20 mA 电流信号或 0-10 V 电压信号
继电器 1	• 带常开或常闭转换触点 • 最高可达 250 V 0.25 A (交流电, 通用), 或 30 V 2 A (直流电, 阻性负载)
继电器 2	• 带常开或常闭转换触点 • 最高可达 30 V 0.25 A (交流电, 通用), 或 30 V 2 A (直流电, 阻性负载)

12.7 锂电池

配备 HVX+ 驱动的 EXM 电机所含锂电池符合国际陆运、海运和空运规定。

12.8 磁场

EXM 电机含有永磁体。产品完好无损时, 磁场值在 IATA 限值范围内, 可进行空运。

12.9 声压（EN 60034-9、CLC/TS 60034-25）

在空地上距离空载运行的设备一米处测得的声功率符合 ISO 9614-2，且声压计算值符合 ISO 11203。

HVX 或 HVX+ 驱动的尺寸	额定功率, kW (hp)	转速, min-1	声压, dB(A) ± 2
B	1.5 (2), 2.2 (3.0)	1500	48
		1800	48
		2000	50
	3.0 (4.0), 4 (5.5), 5.5 (7.5)	3000	61
		3600	64
		4000	70
C	3.0 (4.0), 4 (5.5), 5.5 (7.5)	1500	48
		1800	53
		2000	55
	5.5 (7.5), 7.5 (10), 11 (15)	3000	65
		3600	71
		4000	78
D	5.5 (7.5), 7.5 (10), 11 (15)	1500	49
		1800	52
		2000	54
	11 (15), 15 (20), 18.5 (25), 22 (30)	3000	64
		3600	68
		4000	75

13 处置

13.1 预防措施



警告：环境风险

- 装置必须由专门鉴定不同类型材料（钢、铜、塑料、锂、铁氧体等）的经认可的公司进行处置。
- 禁止将润滑液和其他有害物质丢弃到环境中。

有关产品处置，请参阅本地现行法规。

14 保修

如需了解保修信息，请参阅商业文档。

Xylem |'zīləm|

- 1) The tissue in plants that brings water upward from the roots;
- 2) A leading global water technology company.

We're a global team unified in a common purpose: creating innovative solutions to meet our world's water needs. Developing new technologies that will improve the way water is used, conserved, and re-used in the future is central to our work. We move, treat, analyse, and return water to the environment, and we help people use water efficiently, in their homes, buildings, factories and farms. In more than 150 countries, we have strong, long-standing relationships with customers who know us for our powerful combination of leading product brands and applications expertise, backed by a legacy of innovation.

For more information on how Xylem can help you, go to www.xylem.com



Xylem Service Italia S.r.l.
Via Vittorio Lombardi 14
36075 – Montecchio Maggiore (VI) - Italy
xylem.com