

# 客户技术文档

## Technical Customer Documentation (TCD)

**UAES**

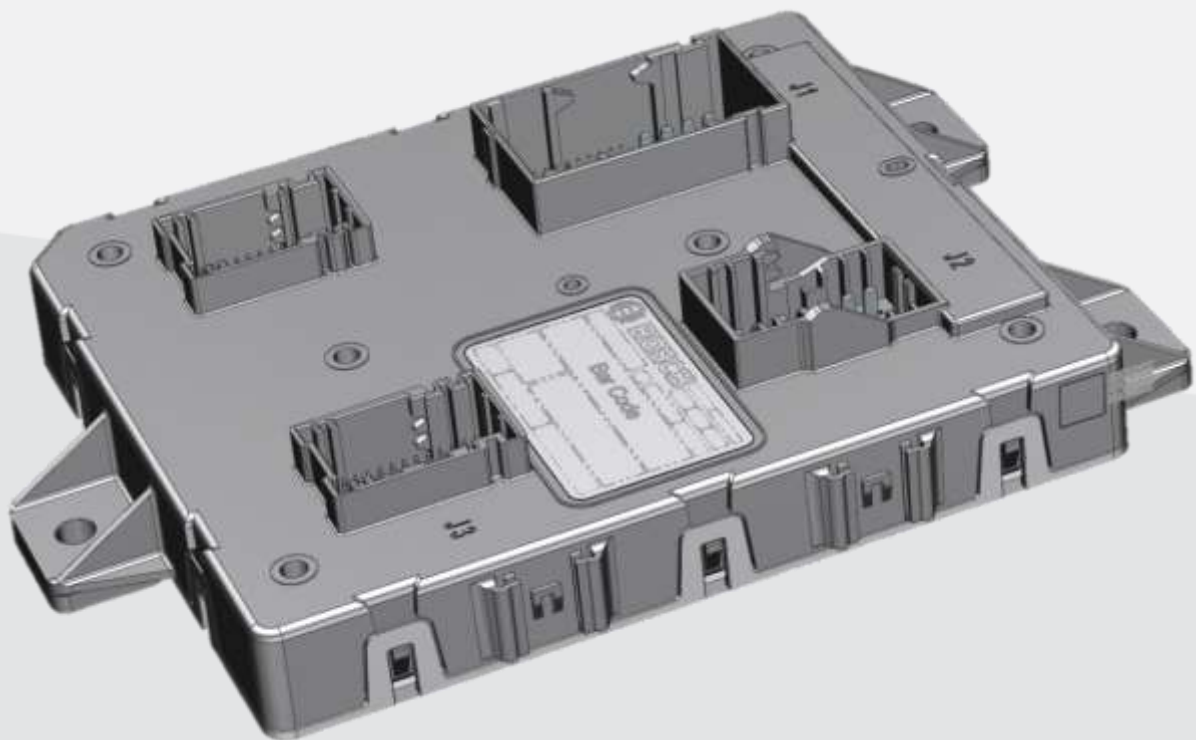
产品名称/Product Designation: BCM3.1

产品号码/Product Part Number(s): F 03H 00A H48

应用/Application: 车身控制器

版本/Version: 01

日期/Date: 2020/11/11



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<b>1 产品信息</b> 产品名称: BCM3.1 产品类型: 车身控制器 (开发) 零件号: F 03H B0A H48 供货图纸号: F 03H A0A H48 客户名称: 上汽大通 客户规范的编号、版本、日期和标题: NA 其它适用文档: NA 此产品仅用于: 车身控制	<b>1 PRODUCT IDENTIFICATION</b> Product designation: BCM3.1 Type designation: BCM (Development) part No.: F 03H B0A H48 Number of offer drawing: F 03H A0A H48 Customer: SAIC MAXUS Customer Specification Number, Edition/Version, Date, and Title :NA Further Applicable Documents:NA This product is solely intended for use in: Vehicle body control
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<b>2 产品总体描述</b>	<b>2 GENERAL PRODUCT DESCRIPTION</b>
<b>2.1 产品主要功能及属性</b>	<b>2.1 MAIN FUNCTION AND PROPERTIES OF THE PRODUCT</b>
<p>BCM3.1采集车身各路开关输入信号(模拟信号、数字信号、脉冲信号等)并根据车身控制功能要求,控制门锁、洗涤、雨刮、内灯、外灯等负载的输出,通过CAN、LIN完成通讯及诊断功能。</p> <p>联合电子在此指明,ISO26262的ASIL等级要求及其执行、以及为此目的所做的假设,记录在本文件2.3节。</p> <p>由客户负责确认前述所记录的要求及其执行、以及为此目的所做的假设。</p> <p>客户必须确保联合电子交付的产品符合整个系统的功能安全要求。</p>	<p>BCM 3.1 collects multiple switch input signals (analog, digital, impulse, etc.) to control the output of the load, such as locking system, washing module, wipers, interior lighting, exterior lighting, according to the control requirement. It's used for communication and diagnostic through CAN and LIN Bus</p> <p>UAES points out that the ASIL-classified requirements as per ISO 26262, their implementation and the assumptions made for this purpose are documented in chapter2.3.</p> <p>It is the customer's responsibility to validate these documented requirements, their implementation and the assumptions made for this purpose.</p> <p>The customer must ensure that the UAES scope of delivery complies with the requirements on the functional safety within the overall system.</p>
<b>2.2 预期用途</b>	<b>2.2 INTENDED USE</b>
联合电子开发本产品时遵守如下特定目标市场的规定: 目标市场: 中国大陆;	<b>UAES complied with the following regulations specific to the target market when developing the product:</b>

<p>法规要求:</p> <p>GB 4785-2007,</p> <p>GB 7258-2017,</p> <p>如果产品的销售须遵守其他或附加的规定, 或产品在指定的目标市场之外进行销售, 客户应要求联合电子遵守目标市场的规定, 或由客户自行保证遵守前述规定。</p> <p>如果本产品在本TCD及相关约定文件所规定的(环境, 应用, 安装, 载荷)条件下使用, 联合电子确保产品满足约定的性能。超出前述约定的范围须经联合电子书面同意。当产品成功通过TCD及相关约定文件所规定的试验时, 则认为产品满足预期用途。</p> <p>由客户负责保证产品在整个系统/车辆中的正确应用。</p> <p>如果产品应用环境的变化偏离本TCD及双方约定的文件的规定, 则联合电子不承担任何责任。</p>	<p>Target Market:China mainland;</p> <p>Regulations:</p> <p>GB-4785-2007,</p> <p>GB-7258-2017.</p> <p><b>If other or additional regulations are required for marketing the product or marketing is effected outside the named target markets, the customer requests compliance with the specific regulations of the target market from UAES, or ensures these by itself.</b></p> <p><b>Provided that the product is used within the conditions (environment, application, installation, loads) as described in this TCD and the corresponding agreed upon documents, UAES ensures that the product complies with the agreed properties. Agreements beyond this require the written approval by UAES. The product is considered fit for the intended use when the product successfully has passed the tests in accordance with the TCD and agreed upon documents.</b></p> <p><b>It is the responsibility of the customer to ensure the proper application of the product in the overall system/vehicle.</b></p> <p><b>UAES does not assume any responsibility for changes to the environment of the product that deviate from the TCD and the agreed upon documents.</b></p>
<p><b>2.3 产品安全</b></p>	<p><b>2.3 PRODUCT SAFETY</b></p>
<p><b>2.3.1 功能安全</b></p>	<p><b>2.3.1 FUNCTIONAL SAFETY</b></p>
<p>产品满足ISO 26262的功能安全要求。ISO26262功能安全是针对乘用车的一个国际标准, 其目的是防止潜在的电电子系统功能失效带来的风险。一般情况下, 功能安全的要求由客户和UAES双方达成的开发接口协议DIA (Development Interface Agreement) 中定义。如果双方没有签署该协议, 则功能安全定义默认按照UAES的标准执行。</p> <p>刹车灯的功能安全等级为ASIL B;</p> <p>近光灯的功能安全等级是ASIL B;</p> <p>PDU的功能安全等级是ASIL B;</p> <p>雨刮的功能安全等级是ASIL A;</p>	<p><b>This product meets functional safety requirements (ISO 26262). ISO functional safety is an international standard for passenger vehicles, and the purpose is to prevent the potential risk caused by electrical and electronic system function failure. Generally, the requirements of functional safety is defined in DIA (Development Interface Agreement) reached by customers and UAES. If both sides don't sign the agreement, the functional safety definition meets UAES Standard by default.</b></p> <p>Functional safety level of brake light is ASIL B;</p> <p>Functional safety level of dipped light is ASIL B;</p> <p>Functional safety level of PDU is ASIL B;</p> <p>Functional safety level of wiper is ASIL A;</p>
<p><b>2.3.2 数据保护, 网络安全和空中下载方面</b></p>	<p><b>2.3.2 DATA PROTECTION, CYBER SECURITY AND OVER-THE-AIR ASPECTS</b></p>



NA	NA
<b>2.3.3 安全和警告</b>	<b>2.3.3 SAFETY AND WARNING NOTES</b>
<p>1. BCM可承受<math>26 \pm 0.2</math> V的过电压60秒（环境温度在<math>23 \pm 5</math> °C, 其它连接无误），在60秒后如果系统未恢复到正常工作电压，BCM不能保证正常工作；</p> <p>2. BCM可承受14.0 V的反向电压1分钟（<math>23 \pm 5</math> °C），在1分钟之后如果系统未恢复到正常工作电压，BCM不能保证正常工作；</p> <p>3. BCM中不具备抛负载Load Dump保护功能。在Load Dump的情况下发电机电压因为负载的突然减小而产生较高的突变脉冲，若该脉冲峰值和脉宽足够大，可能造成BCM受损。因此请确认，在发电机内部安装雪崩二极管进行保护，且雪崩电压低于35 V。</p> <p>4. BCM的安装应使连接器方向朝下或水平，避免出现连接器开口方向朝上的现象，防止水从接插件流入，造成接插件间的短路；</p> <p>5. BCM的安装应尽量避免选择在灰尘比较容易聚集的地方，大量的灰尘累积会影响BCM工作的可靠性。</p> <p>6. BCM装配位置应该尽量远离能够使其外壳本身的温度有可能超过70 °C的位置及其附近位置的高温区域，同时要防止周围零件的释放热量向BCM辐射散热；</p> <p>7. BCM系统采用车身接地的方式，其具体的要求就是将线束中的接地线直接连接到车身上，BCM到接地点的距离建议不超过50厘米，其中SGND使用一个接地点，PGND使用另一个接地点，两个接地点之间的距离应超过20厘米；另外，BCM的多路模拟档位开关参考地需与BCM的SGND地单点接地，否则档位开关存在误判的风险</p> <p>8. BCM在驾驶舱内的装配应牢固可靠，不得有松动现象；</p> <p>9. 为了保护BCM及其线束在整车装配时既便于装配又不易受到损坏，BCM与乘员室内的其它零部件应保持足够的空间；</p> <p>10. 应避免将BCM安装在油污、潮湿和水滴易飞溅到的位置；</p> <p>11. BCM线束的固定应牢靠，避免通过BCM来支撑线束，同时BCM线束的布置应能防止和保护线束中的所有导线不致因磨损和过热而造成损坏；</p> <p>12. 应避免由于BCM的安装位置及装配方式方法而有可能导致使其自身遭受额外的机械震动和遭受外力冲击的可能性，应避免将BCM安装于车身的共振点处；</p> <p>13. 应避免将BCM装配在有可能接触到蓄电池或其它酸性碱性溶液易渗出部位附近，以及BCM易被腐蚀的位置附近；</p> <p>14. 应避免将BCM装配在有可能碰到蓄电池的正极接</p>	<p>1. BCM can bear <math>26 \pm 0.2</math> V overvoltage during 60 seconds if ambient temperature is <math>23 \pm 5</math> °C and connection is correct. After 60 seconds, if working voltage doesn't return to normal, BCM cannot work as normal.</p> <p>2. BCM can bear 14.0 V reverse voltage during 1 minutes if ambient temperature is <math>23 \pm 5</math> °C. After 1 minute, if working voltage doesn't return to normal, BCM can't work as normal.</p> <p>3. There is no load-dump protection function in BCM. The generator voltage has a higher mutation pulse due to the sudden decrease of load in the case of load dump. If the pulse peak and pulse width are large enough, BCM may be damaged. Therefore, installing the avalanche diode in the generator for protection should be confirmed and avalanche voltage is less than 35V.</p> <p>4. BCM's connector should be placed downward or horizontally rather than upward to prevent water from flowing into the connector and causing short circuit between connectors.</p> <p>5. The installation position of BCM shouldn't be the place where dust collects easily. A large amount of dust will affect the working reliability of BCM.</p> <p>6. The installation position of BCM should be as far as possible from the high temperature place where ambient temperature makes shell itself exceed 70°C. At the same time, we should prevent heat released by surrounding parts from radiating BCM.</p> <p>7. BCM system adopts the method of body grounding. The specific requirement is to connect the ground wire in the wire harness directly to the body. It is recommended that the distance between the BCM and the ground point should not exceed 50cm. SGND uses one grounding point, PGND uses another, and the distance between the two grounding points should be more than 20cm. In addition, the reference ground of the multi-channel analog gear switch of the BCM should be grounded with the SGND ground of the BCM at a single point, otherwise the gear switch may be misjudged.</p> <p>8. The assembly of BCM in the cockpit should be firm and reliable without any loose phenomenon.</p> <p>9. In order to assemble easily and protect BCM and its wiring harness from damage during vehicle assembly, sufficient space should be maintained for the BCM and other parts in the passenger</p>

线端子和点火电源接线端子附近的位置；

15. BCM内根据其配置一般含RF, PEPS等敏感功能, 安装位置应尽可能远离车身内的大电流线束与强辐射干扰源, 安装位置需远离金属材质部分, 且RF配置的产品需要保证RF天线一侧在安装位置中处于上方；

16. BCM及其线束的固定位置应远离已知的严重的电子噪声源。比如电动马达、点火线圈、高压点火线、火花塞、燃油喷射器和发电机及其导线；

17. 在整车装配的过程中, 静电引发的火花可能导致BCM损坏。所以, 在编制生产装配工艺过程中, 应尽量把BCM的装配安排在生产过程的最后阶段, 这样便可减少BCM遭受静电受损的机会和概率；

18. BCM与线束接插件进行装配时, 务必要确保系统电源是在断开的状态, 不得在点火开关打开的状态下, 插拔BCM。避免在带电状态下, 用身体的任何部分接触BCM管脚或BCM线束的裸露部分；

19. 不得使用外观有明显物理损伤的BCM。BCM的外壳表面不得涂敷任何未经认可的材料, 不允许将油漆或其他绝缘类液体喷涂在BCM的管脚上。维修外壳烧电焊时必须将BCM断电拔下否则会烧坏BCM；

20. 在完成 BCM 产品的安装后, 必须保证 BCM 彻底断开电源或者与电源稳定连接, 避免使 BCM 通过任何形式与电源虚接触, 导致频繁上下电而引起非期望的工作状态。

compartment.

10. It should be avoided to install BCM in the position with the oil, moisture and spattering water.

11. The wiring harness of BCM should be firm and reliable to avoid supported by BCM. At same time, it should be placed to protect all wires in the wiring harness from damage caused by wear and overheating.

12. The possibility of exposing itself to additional mechanical vibration and external shock due to the installation position and assembly way of BCM should be avoided. And BCM shouldn't be installed at the resonance point of body.

13. The installation position of BCM shouldn't be near the place where it is likely to contact with accumulator or where acid and alkaline solution oozes easily. It also should be avoided to install BCM in the place vulnerable to corrosion.

14. It should be avoided to install BCM in the nearby place where it is likely to contact with accumulator positive terminal and ignition power terminal.

15. The installation of BCM equipped with sensitive RF/PEPS configuration should be placed away from massive current wire harness and strong electronic radiation source; metal material parts are also not permitted being mounted near BCM. RF antenna shall take the highest position in installation of RF configuration product.

16. BCM and its wiring harness should be away from a known serious electronic noise source, such as electric motors, ignition coils, high-voltage ignition wires, spark plugs, fuel injectors and electric generators and their conductors.

17. During vehicle assembly, the spark caused by static electricity may cause BCM damage. Therefore, when arranging production process, BCM assembly should be as far as possible arranged in the final stage of production process, so as to reduce the chance and probability of damage caused by static electricity.

18. When assembling BCM and wire harness connector, it must be ensure that the system power supply is disconnected. BCM should not be inserted and unplugged when the ignition switch is turned on. Touching the parts of BCM pins or wire harness with any part of body when charged should be avoided.

19. BCM with obvious physical damage in appearance shouldn't be used. The shell surface of BCM shouldn't be coated with any unapproved material and the pins should not be sprayed with paint or any other insulating liquid. BCM power must be cut off and removed when the shell is welded for

	<p>maintenance, or else BCM will be burnt.</p> <p>20. After installation of BCM, it should be ensured that BCM is not connected with battery or stabilized connected with battery. Virtual connect shall be avoided in case of unexpected working condition due to frequent power on/off.</p>
<b>2.4 产品标签</b>	<b>2.4 LABELING OF THE PRODUCT</b>
<p>产品标签图纸如下，如客户对标签有特殊需求，需与联合电子另行约定并得到联合电子同意。</p>	<p>The label of product contains the items as follow, if customer requires special label contents or format, extra label design request shall be agreed by UAES</p>
<p>图 2.4: 产品标签图纸</p> <p>Figure2.4: Product Label Drawing</p>	
<b>2.5 尺寸和重量</b>	<b>2.5 DIMENSIONS AND WEIGHTS</b>
<p>外观尺寸: 232 x 162.4 x 14.3 mm<sup>3</sup> (PCB 175 mm x145 mm)</p> <p>Size: 232 x 162.4 x 14.3 mm<sup>3</sup> (PCB 175 mm x145 mm)</p> <p>重量: 约441g+/-22g (此重量为平台设计典型值, 供参考, 具体重量跟随配置有变化。)</p> <p>Weight: 441g+/-22g ( This weight value is platform typical value, actual value may vary with configuration )</p>	

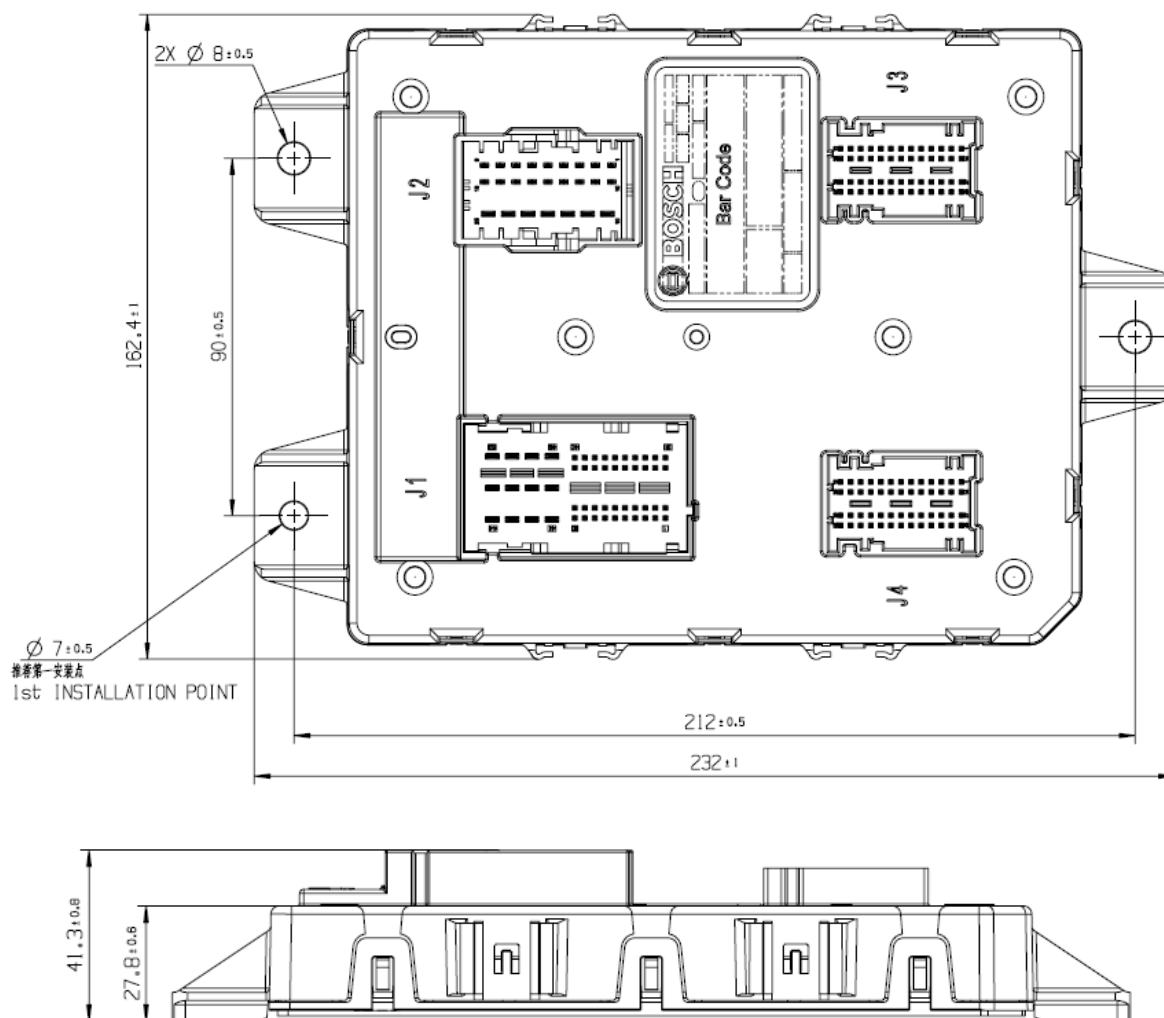


图2.5: 产品尺寸图

Figure2.5: Product 2D Drawing

2.6 功率消耗和功率输出	2.6 POWER CONSUMPTION / POWER OUTPUT
<p>本产品有多种工作模式，具体的功耗和输出能力取决于使用工况和车身端负载应用情况。</p>	<p>This product has multiple working modes, actual power and driving capacity depend on applied condition and loads in car body.</p>
2.7 服务，维修和维护说明	2.7 GENERAL REMARKS ON SERVICE, REPAIR, AND MAINTENANCE
<p>本产品不具有被维修的可能性。</p> <p>仅允许授权人员对产品进行服务、维修或更换。</p> <p>仅通过联合电子测量设备校验过的测量设备，才能可靠地用于确保符合规范。</p> <p>仅允许具有资质的技术人员对产品进行服务、维修或更换。</p>	<p>Repair of this product is not possible.</p> <p>Service and repair or replacement of the product may only be performed by authorized personnel.</p> <p>Only such measuring equipment that is subject to the inspection of measuring equipment at UAES, are reliably suited to ensure compliance with the specification.</p> <p>Service and repair or replacement of the product may only be performed by technically qualified</p>



	personnel.
<b>2.8 废弃和回收说明</b>	<b>2.8 INFORMATION ON DISPOSAL AND RECYCLING</b>
<p>本产品产品遵循 ELV (End-of life vehicles) 要求, ELV 的主要要求如下表所示:</p> <p>其中: 1. 铅、汞、镉、六价铬是欧盟报废汽车技术指令 (ELV) 的决议要求; 多溴联苯和多溴二苯醚是国内要求禁限用的物质。</p> <p>2. 如客户的禁限用物质标准要求将石棉纤维纳入整车禁、限用物质指标进行管控, BCM 所有零部件均不许使用石棉制品。</p> <p>3. 本产品已通过 CVTC 22001-2018 与 GB/T 30512-2014 测试标准;</p>	<p>This product meets the ELV requirements. The main content is as follow:</p> <p>1. Pb, Hg, Cd and <math>Cr^{6+}</math> are included in ELV requirements formulated by the EU; PBB and PBDE are banned substances in the domestic.</p> <p>2. If asbestos fiber is included in the vehicle's forbidden or restricted items, all BCM parts shall not contain asbestos material.</p> <p>3. This product has passed CVTC 22001-2018 and GB / T 30512-2014 test standards;</p>

表2.8 ELV主要要求

Table 2.8 ELV main requirements

物质种类/Material types		限值/Limit
铅 (Pb)		$\leq 1000\text{mg/kg}$
汞 (Hg)		$\leq 1000\text{mg/kg}$
镉 (Cd)		$\leq 100\text{mg/kg}$
六价铬 ( $Cr^{6+}$ )		$\leq 1000\text{mg/kg}$
多溴联苯 (PBB)		$\leq 1000\text{mg/kg}$
多溴二苯醚 (PBDE)		$\leq 1000\text{mg/kg}$
石棉纤维 (Asbestos fiber)	阳起石 (77536-66-4) / Actinolite	禁用/Prohibited
	铁石棉 (12172-73-5) / Iron asbestos	禁用/Prohibited
	直闪石 (77536-67-5) / Anthophyllite	禁用/Prohibited
	温石棉 (12001-29-4) / Chrysotile	禁用/Prohibited
	青石棉 (12001-28-4) / Crocidolite	禁用/Prohibited
	透闪石 (77536-68-6) / Tremolite	禁用/Prohibited

<b>3 系统描述</b>	<b>3 SYSTEM DESCRIPTION</b>
<b>3.1 相关系统</b>	<b>3.1 SYSTEM OF INTEREST (SOI)</b>
<p>本产品采集车身各路开关输入信号 (模拟信号、数字信号、脉冲信号等) 并根据车身控制功能要求, 控制门锁、洗涤、雨刮、内灯、外灯等负载的输出, 通过CAN、LIN完成通讯及诊断功能, 并支持无线遥控钥匙终端控制、PEPS等功能。</p>	<p>The product collects multiple switch input signals (analog, digital, impulse, etc.) to control the output of the load, such as locking system, washing module, wipers, interior lighting, exterior lighting, according to the control requirement. It's used for communication and diagnostic through CAN and LIN Bus, and supports RKE, PEPS functions.</p>

<b>3.2 硬件和软件接口</b>	<b>3.2 HARDWARE AND SOFTWARE INTERFACES</b>
<p>产品接口信息请见产品系统框图。</p> <p>联合电子仅负责保证产品端的插头（接口）符合约定的客户规范。鉴于接口系统是根据客户的要求使用，联合电子对此不承担责任，也不对其连接装配，特别是其电气功能、耐久性能和密封性能作任何保证。</p>	<p>For product interface information, please see the product system block diagram</p> <p>UAES is only responsible for the compliance of the product side plug (interface) with the agreed upon customer specification. Since the plug system is used per customer request, UAES is not responsible and does not warrant for the connection assembly, especially not for its electrical function, durability and sealing.</p>
<b>4 包含测量变量和测量条件的技术参数</b>	<b>4 TECHNICAL DATA WITH MEASURED VARIABLES AND MEASURING CONDITIONS</b>
<b>4.1 功能，功能状态（运行模式），功能性特性和边界条件</b>	<b>4.1 FUNCTIONS, FUNCTION STATES (MODES OF OPERATION), FUNCTIONAL CHARACTERISTICS AND BOUNDARY CONDITIONS</b>
<p>本产品在温度-40~85 度，最大湿度 80%，气压 86kpa-106kpa 下，符合其额定状态下的性能。</p>	<p>The ambient temperature should be from -40 °C to 85 °C; the max humidity is from 80 percent; and the atmospheric pressure is from 86kpa to 106kpa. Under these conditions, the product rated performance is guaranteed.</p>
<b>4.2 机械特性</b>	<b>4.2 MECHANICAL CHARACTERISTICS</b>
<p>本产品的机械特性及相关试验要求，请参考与客户约定的相关试验项。</p>	<p>The product's mechanical characteristics and test requirement, can be referred to test cases that agreed with customer.</p>
<b>4.3 电子特性</b>	<b>4.3 ELECTRICAL CHARACTERISTICS</b>
<p>本产品的电子特性，包括电气特性与电磁兼容特性，满足相关标准内要求试验，具体试验项目需要由客户项目相关试验标准来定义。</p>	<p>This product's electrical and electromagnetic characteristics meet relevant test case, which should be defined in test cases of specific customer project.</p>
<b>4.4 气候特性</b>	<b>4.4 CLIMATIC CHARACTERISTICS</b>
<p>温度特性：</p> <p>根据不同的安装部位，有相应的不同工作和贮存温度。对于 BCM3.1：工作温度范围： -40 °C ~ 85 °C，储存温度范围：-40 °C ~ 90 °C。</p>	<p>Temperature characteristics:</p> <p>The working and storage temperature is different according to the different installation locations. For BCM 3.1, the working temperature is from -40 °C to 85 °C, and the storage temperature is from -40°C to 90°C.</p>
<b>4.5 化学特性</b>	<b>4.5 CHEMICAL CHARACTERISTICS</b>

本产品的防水防异物等级为IP5K0.	Dust & Water protection grade of this product is IP5K0.
<b>4.6 声学特性</b>	<b>4.6 ACOUSTIC CHARACTERISTICS</b>
NA	NA
<b>4.7 寿命</b>	<b>4.7 LIFETIME</b>
<p>关于本 TCD 中描述的用途和使用条件, 产品设计的最大寿命为 10 万公里, 或最大 5 年 (以先到者为准)</p> <p>商业的担保和责任不受此影响, 而是由另外的交付条件决定。</p>	<p>With respect to the use and usage conditions described in this TCD, the maximum design lifetime of the product is 100,000 KM traveled, or 5 years usage time (whichever occurs first).</p> <p>The commercial warranty and liability is not affected by this and is governed separately by the delivery conditions.</p>
<b>4.8 运输、装配、开始和结束操作、存储</b>	<b>4.8 TRANSPORT, ASSEMBLY, START AND END OF OPERATION, STORAGE</b>
<p><b>4.8.1 运输</b></p> <p>产品包装应考虑: 防潮、防振、防尘要求; 适应运输及装卸的有关要求; 包装前产品的黑色金属零件无防护层的配合部位, 应有临时性的防锈保护措施。</p> <p><b>4.8.2 安装</b></p> <p>安装在乘客舱内, 推荐仪表板或手套箱下方, 距离金属铁皮至少5cm, 切勿安装在座椅下方。</p> <p>如要求BCM有RKE接收功能, 则BCM要竖直安装, 尽可能选择较高的位置。</p> <p><b>4.8.3 存储</b></p> <p>产品的贮存和保管应符合 QC/T 238 的有关规定。产品的贮存期通常为 2 年 (从制造厂入库日期算起)。</p> <p>储存温度范围: -40 °C ~ 90 °C。</p> <p>请特别注意 2.3 节的安全和警告注意事项。</p>	<p><b>4.8.1 Transport</b></p> <p>The package of product should meet moisture resistance, vibration resistance, dust protection requirements. It also meet transport, loading and unloading requirements. The unprotected place of black metal parts before packaging should have temporary protection to prevent rust.</p> <p><b>4.8.2 Installation</b></p> <p>This product should be installed in the passenger compartment. The recommended place is under the instrument board or glove box, at least 5cm from metal sheet. Do not install it under the seat.</p> <p>BCM should be installed in the high place as possible and vertically if RKE receiver is required.</p> <p><b>4.8.3 Storage</b></p> <p>The storage of product should meet QC/T 238 requirements. Generally, the storage period is 2 years (date of warehousing from manufacturer).</p> <p>The storage temperature is from -40°C to 90°C.</p> <p>Please pay special attention to the safety and warning notes in chapter 2.3!</p>

<b>5 批量过程中的测试</b>	<b>5 SERIES-ACCOMPANYING TESTS</b>										
表5 量产测试表 Table 5 Product Test type											
<table border="1"> <thead> <tr> <th>测试项目/Item</th><th>备注/note</th></tr> </thead> <tbody> <tr> <td>自动光学检测 / Automatic Optic&amp; X-ray Inspection (AXI)</td><td>对焊接生产中遇到的常见缺陷进行检测,在每次回流焊和选择焊完成后进行 / Detect defects encountered in welding production, after each reflow welding and selection welding is completed</td></tr> <tr> <td>人工目检/ Artificial inspection</td><td>AOI检查出来的疑似缺陷进行100%的人工确认,在每一个AOI的工位后续进行/ 100% of suspected defects checked out by AOI are manually confirmed and followed up at each AOI station</td></tr> <tr> <td>在线测试/in-circuit-test (ICT)</td><td>检查在线的单个元器件以及各电路网络的开、短路情况 / Check the opening and short circuit of individual components and circuit networks on-line</td></tr> <tr> <td>功能测试/Function test (FT)</td><td>生产功能测试/MTS Function test</td></tr> </tbody> </table>		测试项目/Item	备注/note	自动光学检测 / Automatic Optic& X-ray Inspection (AXI)	对焊接生产中遇到的常见缺陷进行检测,在每次回流焊和选择焊完成后进行 / Detect defects encountered in welding production, after each reflow welding and selection welding is completed	人工目检/ Artificial inspection	AOI检查出来的疑似缺陷进行100%的人工确认,在每一个AOI的工位后续进行/ 100% of suspected defects checked out by AOI are manually confirmed and followed up at each AOI station	在线测试/in-circuit-test (ICT)	检查在线的单个元器件以及各电路网络的开、短路情况 / Check the opening and short circuit of individual components and circuit networks on-line	功能测试/Function test (FT)	生产功能测试/MTS Function test
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<b>6 测试</b>	<b>6 TESTING</b>										
<b>6.1 联合电子端的测试</b>	<b>6.1 TESTING BY UAES</b>										
此产品在联合电子端的测试需要参考所应用客户项目已约定的测试试验计划。	Testing information in UAES is recorded in test cases of specific customer project agreed with customer.										
<b>6.2 客户端的测试</b>	<b>6.2 TESTING BY CUSTOMER</b>										
NA	NA										
<b>7 售后返回产品的评估</b>	<b>7 ASSESSMENT OF PRODUCTS RETURNED FROM THE FIELD</b>										
如果产品符合 TCD 中列出的 0-公里和售后的规范/试验数据,则认为产品正常。	Products are considered good if they fulfill the specifications/test data for 0-mileage and field listed in the TCD.										
<b>8 附录和参考</b>	<b>8 APPENDICES AND REFERENCES</b>										



NA	NA
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9 历史记录			9 HISTORY
版本 Version	生效日期 Valid from	发布人 Issued by	版本描述 Release description

**当前版本信息/Current version information:**

更改编号 Change number	变更点 Changed on	生效日期 Valid from	发布人 Issued by	联系人 Contact person
首次编写	—			

10 签字

10 SIGNATURE

## 签字/ Signatures

UAES 联合电子	
<b>Development/开发部门</b> Reviewer & Date 评审人&日期	<b>Sales/销售部门</b> Reviewer & Date 评审人&日期
Approver & Date 批准人&日期	Approver & Date 批准人&日期

**FCC Compliance Statements**

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Caution: Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

**RF Exposure Compliance**

This equipment complies with FCC radiation exposure limits set forth for an uncontrolled environment. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter.