



深圳市港源微键技术有限公司

Shenzhen Gangyuan Microkey Technology Co., Ltd

Total Page	9
Edition	A
Reference No.	

承 认 书  
Specifications For Approval

Customer		Part No.:	
Gangyuan Model	G10F	Gangyuan Part No.	G10F-XXXXXXX-XXX-XXX

Approved by Gangyuan

Approved by	Checked by	Prepared by
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Approved by Customer

Research & Development by	Quality Assurance

Remark:

1:This product specification is considered as the technical agreement between the receiving customer and Gangyuan, Any information on the general product catalogue which is in conflict with or different from the corresponding information of this document is considered as invalid.

2:If customer issue purchase orders without confirmation by signature of this specification after receipt,such confirmation will be considered as granted upon receipt of the first purchase order.

客 户 签 署 (盖章)  
Sing for customer approved

港 源 签 署 (盖章)  
Sing for GangYuan approved

确认日期: \_\_\_\_\_

送承认日期:



Shenzhen Gangyuan Microkey Technology Co., Ltd		文件编号	SP-G10F-XXXXXXX-XXX-XXX
		发布日期	2024 年 03 月 25 日
PRODUCT SPECIFICATION 产品规格书		文件版次	第 A 版 第 0 次修订
SERIES 系列	MICRO SWITCH 微动开关	页 码	共 9 页 第 3 页
1. General Characteristics 一般特性:			
1.1 Application: This specification is applied to the micro switch (G15F series) for general applications. 适用范围: 该承认书微动开关（G10F 系列）的一般使用范围。			
1.4 Operating Temperature Range: -40℃to +85℃ 使用温度范围: -40℃to +85℃			
1.5 Operating Relative Humidity: ≤85% at 相对湿度: ≤85% at			
1.6 Test Conditions: Unless otherwise specified, the atmospheric conditions for making measurements and tests are as follows: 实验条件: 若没有特别说明, 则试验大气条件如下: Ambient Temperature: 5~35℃ 环境温度: 5~35℃ Relative Humidity: 45~85% 相对湿度: 45~85% Air Pressure: 86~106Kpa (860~106mbar) 大气压力: 86~106Kpa (860~106mbar)			
2. Appearance, Structure and Dimensions 外观, 结构及尺寸:			
2.1 Appearance: The switch shall have good finishing, and no rust, crack or plating defects. 外观: 产品外观良好, 无锈蚀、裂纹和镀层缺陷。			
2.2 Structure & Dimensions: Refer to individual product drawing. 结构及尺寸: 参见产品图纸			
2.3 Markings: Refer to individual product drawing. 标识: 参见产品图纸。			
3. Ratings 额定负荷		Refer to individual product drawing.	
4. Electrical Characteristics 电气特性			
No.	Item 项目	Criteria 标准	Test Method 实验方法
4.1	Contact Resistance 接触电阻 (初始值)	100mΩ Max.	Measured by a voltage drop method at 1A Max, 5VDC. Any equipment with error not more than 5% can be used. Resistance after test is the average of 5 successive measurements. 以 1A, 5V 直流电, 采用电压降法测量。也可用误差不超过 5% 的仪表进行测量, 实验后的电阻取 5 次测量的平均值。
4.2	Insulation Resistance 绝缘电阻	100MΩ Min.	500VDC voltage is applied between each pair of terminals and between the terminal and the metal frame for 60±5S. 在相互绝缘的所有端子之间及各接线端子与外露的非载流金属零件之间加载 500V 直流电, 持续时间 60±5S。
4.3	Dielectric withstand in voltage 耐压强度	No dielectric breakdown shall occur. 无击穿现象发生。	500VAC (50~60Hz,cut –off current 10mA) is applied between non-connected terminals and between terminals and the metal frame for 60 ±5s. 在相互绝缘的所有接线端子之间 500V（50-60Hz 电流为 10mA）交流电, 各接线端子与外壳或非载流金属零件之间加载 500V（50-60Hz）交流电, 持续时间 60±5S。

Shenzhen Gangyuan Microkey Technology Co., Ltd		文件编号	SP-G10F-XXXXXX-XXX-XXX
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SERIES 系列	MICRO SWITCH 微动开关	页 码	共 9 页 第 4 页
5. Mechanical Characteristics 机械特性			
No.	Item 项目	Criteria 标准	Test Method 实验方法
5.1	Operating Force 操作力	见图纸 Refer to individual product drawing.	Apply a tension meter on the midpoint of the actuator (or tip of the shaft) to supply a pressure vertically from its free position to operating position. 在操作元件末端沿操作方向均匀施加静载荷，使操作元件转换到动作位置。
5.3	Operation Position 操作位置	见图纸 Refer to individual product drawing.	Position of switch plunge or actuator at which point contacts snap from normal to operated position. Note that the case of flexible of adjustable actuators. 开关操动件受到外力后，由自由状态切换到动作状态的动作位置。（注意防止盖片变形或按钮倾斜现象。）
5.5	Terminal Strength 接线端强度	Shall be free from terminal looseness, damage and insulator breakage. No functional defective occur 端子无松动，损坏及绝缘层的破裂。 无功能性不良	A static load of 25N shall be applied to the tip of terminal in a desired direction for 10 ± 1s. The test shall be done once per terminal. 以 25N 作用力沿轴向逐渐施加于接线端末端，作用力方向为离开开关向外指向，每个接线端子测量一次。
5.6	Vibration Proof 振动	After test, Contact resistance:200m Ω Max. Insulation resistance:100M Ω Min. No functional defective occur No abnormalities shall be recognized in appearance and construction. 实验后： 接触电阻：200m Ω Max. 绝缘电阻：100M Ω Min. 无功能性不良。 表面及结构无明显变形。	Switch shall be secured to a testing machine by a normal mounting device and method. Switch shall be measured after following test. (1) Vibration frequency range = 10~55 Hz (2) Total amplitude =1.5mm (3) Sweep ratio: 10~55~10Hz Approx. 1 min (4) Method of changing the sweep vibration frequency: logarithmic or linear (5) Direction of vibration: Three perpendicular directions including actuating direction. (6) Duration: 2 hours (6 hours in total) 开关采用常规的安装方法牢固地安装在试验设备上，并在下述参数条件下进行试验： (1) 振频=10-55Hz (2) 振幅 1.5mm (3) 振动变化速率：10-55-10Hz 大约 1 分钟 (4) 变频方法：对数或线性型式 (5) 振动方向：三个相互垂直的方向，其中一个方向应是促动元件运动的方向。 (6) 时间：每个方向 2 小时（共 6 小时）。

Shenzhen Gangyuan Microkey Technology Co., Ltd		文件编号	SP-G10F-XXXXXX-XXX-XXX
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PRODUCT SPECIFICATION 产品规格书		文件版次	第 A 版 第 0 次修订
SERIES 系列	MICRO SWITCH 微动开关	页 码	共 9 页 第 5 页
No.	Item 项目	Criteria 标准	Test Method 实验方法
5.7	Mechanica   Shock 冲击	After test, Contact resistance:200m $\Omega$ Max. Insulation resistance:100M $\Omega$ Min. No functional defective occur No abnormalities shall be recognized in appearance and construction. 实验后： 接触电阻：200m $\Omega$ Max. 绝缘电阻： 100M $\Omega$ Min. 无功能性不良。 表面及结构无明显变形。	Switch shall be measured after following test: (1) Mounting Method: Normal (2) Acceleration: 490m/s <sup>2</sup> (50G) (3) Duration: 11ms (4) Test Direction: 6 directions  (5)Number of shocks: 3 times per direction (18 times in total) 试件在下述参数条件下进行试验： (2) 安装方法：常规方法 (2) 加速度：490m/ s <sup>2</sup> (50G) (3) 时间：11ms (4) 实验方向：图示 6 方向 (5) 冲击次数：每个方向 3 次（总共 18 次）
5.8	Solder Heat Resistanc e 耐焊接热	No abnormalities shall be observed in appearance and operation. No functional defective occur 无外观及功能损坏。 无功能性不良。	Switch shall be measured after following test: (1) Solder: H63A (JIS Z3282) (2) Flux: Rosin Flux having a nominal composition of 25% solids by mass of water white rosin in methyl alcohol (JIS K 1501) solution. (3) Soldering Temperature & Immersing Time Dip Soldering 260 $\pm$ 5° C 5 $\pm$ 1s Manual Soldering 300 $\pm$ 5° C 2~3s (4)Immersion Depth: (For Dip Soldering) Immersion depth shall be at copper plating portion of PCB after mounting. (Thickness of PCB=1.6mm) 试件在下述参数条件下进行试验： (1) 焊料：H63A （JIS Z 3282） (2) 焊剂：焊剂，质量百分比为 25%松香，75%甲 醇的无色透明溶液。 (3) 焊接温度及浸渍时间： 自动焊接 260 $\pm$ 5℃ 5 $\pm$ 1s 手工焊接 300 $\pm$ 5℃ 2~3s (3) 浸渍深度：（对于手动焊接） 接线端应浸到离开开关根部 1.6mm 处。

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SERIES 系列		MICRO SWITCH 微动开关	页 码	共 9 页 第 6 页
No.	Item 项目	Criteria 标准	Test Method 实验方法	
6. Durability characteristics 耐久性能				
6.1	Mechanical Life 机械寿命	After test, Contact resistance: 1000m Ω Max. Insulation resistance:10M Ω Min. No functional defective occur The switch shall be free from abnormalities in appearance construction. 实验后: 接触电阻: 2000m Ω Max. 绝缘电阻: 10M Ω Min. 无功能性不良。 开关外观及结构应无损坏	300,000 cycles of operation shall be performed continuously at a rate of 6-12cycles per minute without load. 在不带负荷的条件下, 速度为 6-12 次/分, 在寿命试验设备上连续转换 300,000 次。	
6.2	Electronics Life 电气寿命		operation shall be performed ( 100,000 cycles of operation shall be performed ) continuously at a rate of 6-12 cycles per minute with load(0.1A 12VDC) as follow 在带以下负荷0.1A 12VDC的条件下, 速度为 6-12 次/分, 在寿命试验设备上连续转换 100,000 次。	
7. Weather Proof Characteristics 耐候性能:				
7.1	Cold Proof 低温	After test, Contact resistance: 2000m Ω Max. Insulation resistance: 10M Ω Min. No functional defective occur。 The switch shall be free from abnormalities in appearance &construction. 实验后: 接触电阻: 2000m Ω Max. 绝缘电阻: 10M Ω Min. 无功能性不良。 开关外观及结构应无损坏。	After testing at -40 ± 2° C for 96 hours, the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour, and measurement shall be made within 1 hour after that. Water drops shall be eliminated. 试件在-40±2℃的温控箱内保持 96 小时, 然后在正常温度和湿度下恢复 1 小时, 并在此后 1 小时内对试品进行测量, 水滴应消失。	
7.2	Hot Proof 高温		After testing at 85 ± 2° C for 96 hours, the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour, and measurement shall be made within 1 hour after that. 试件在 85±2℃的温控箱内保持 96 小时, 然后在正常温度和湿度下恢复 1 小时, 并在此后 1 小时内对试品进行测量。	
7.3	Moisture Resistanc e 恒定湿热		After testing at 40 ± 2° C ,90~95% RH for 96 hours, the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour, and measurement shall be made within 1 hour after that. Water drops shall be eliminated. 试件在 40±2℃, 90-95%RH 的温控箱内保持 96 小时, 然后在正常温度和湿度下恢复 1 小时, 并在此后 1 小时内对试品进行测量, 水滴应消失。	

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PRODUCT SPECIFICATION 产品规格书		文件版次	第 A 版 第 0 次修订
SERIES 系列	MICRO SWITCH 微动开关	页 码	共 9 页 第 7 页
No.	Item 项目	Criteria 标准	Test Method 实验方法
7.4	Temperature Cycling 温度转换	After test, Contact resistance: 2000m Ω Max. Insulation resistance:10M Ω Min. No functional defective occur. The switch shall be free from abnormalities in appearance & construction. 实验后： 接触电阻：2000m Ω Max. 绝缘电阻： 10M Ω Min. 无功能性不良。 开关外观及结构应无损坏。	After 5 cycles of following conditions, the switch shall be allowed to stand under normal temperature and humidity conditions for 1 hour, and measurement shall be made within 1 hour after that. Water drops shall be eliminated. 试件按下述实验条件试验 5 次，然后在正常温度和湿度下恢复 1 小时，并在此后 1 小时内对试品进行测量，水滴应消失。
7.5	Salt Mist 盐雾实验	After the test, the relevant terminal components of the micro switch; The corrosion degree should not exceed 10% of the surface area, and the electrical connection rate in the wiring harness should be 100%, without short circuit, open circuit, wrong circuit and other phenomena. The appearance of the electrical appliance should be judged according to GB/T 6461 in detail Appearance rating RA≥6 试验后，微动开关的相关端子元器件；腐蚀程度不能超过表面积 10%，并且要求线束中通电率为 100%，无短路，断路，错路等现象，电器功能正常详细按照 GB/T 6461 进行外观评判 外观评级 RA≥6 级	The switch shall be checked after following test: (1) Temperature: 35± 2° C (2) Salt Solution: 5±1% (Solids by mass) (3) Duration: 48±1 hour After test, salt deposit shall be removed by running water. 试件在下述实验后测量： (1) 温度：35±2℃ (2) 盐溶液浓度：5±1%（质量百分比） (3) 时间：48±1 小时 实验后的盐沉积物用水冲掉。

注意事项 Precautions for use:

1. 一般事项 General:

本产品主要用于自动化装置，视像装置，家用电器，信息装置及通讯装置等常用电子设备中；如果该产品要用于其它具有更高安全性及可靠性的耐久性设备中（如生命维持装置，宇宙航空装置，防灾及安全性装置）时，请确



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SERIES 系列	MICRO SWITCH 微动开关	页 码	共 9 页 第 8 页

认是否合用，或者同我方了解详细情况。

The product is used mainly in electronic devices such as automotive devices, visual devices, home electrical appliances, information devices and communication settings. If the products is intended to be used for other endurance equipments requiring higher safety and reliability such as life support system, space and aviation devices, disaster and safety system, it' s necessary to make verification of conformity or contact us for the details before using.

2. 焊接安装 Soldering and assembly:

- (1) 如果焊锡时，有施力在端子部位的话，则端子可能会变形且易出现电气性能不良。

If there is force applied on the terminal during soldering, the terminal may deform and the electrical characteristics may not be satisfied.

- (2) 焊锡条件应按照实际的对应条件予以确认。

The soldering conditions should be confirmed according to the actual production environment.

- (3) 焊锡工序完成后，不要尝试用溶剂或类似物品清洗开关。

Don' t try to clean the switch with a solvent or similar substance after the soldering process.

- (4) 开关焊锡后，还有热量时，请不要操作开关。

Don' t operate the switch if it still has heat after soldering.

- (5) 如使用水溶性助焊剂，可能会导致开关破损，因此应确保不要用这种助焊剂。

The switch might be damaged if using the water-soluble flux, so make sure not to use such kind of flux.

3. 安装构造，机械设计 Assembly structure and Mechanical design:

- (1) 线路板上安装孔及安装图示的尺寸都须参照工程图中所建议的尺寸。

The dimensions for the holes and the pattern on PCB should refer to the recommended dimensions on the engineering drawing.

- (2) 如果施超出规定值的较大重力于开关上，会导致开关破损，所以应特别小心防止开关承受超出规定值的较大重力。

The switch might be broken if there is stress stronger than the specified is given on it. Take special care not to stress the switch beyond its specification.

- (3) 把本公司的产品和其它产品配合使用时，请客户确认必须适合的规格、法规或规定。另请客户自身确认本公司产品装到客户使用的系统、机械、装置上的适用性. 如果想变更开关使用条件，请预先与本公司进行协商。  
If the switch is being used together other products, please confirm the compatibility of the specification, laws and regulations. Please also confirm the compatibility of switch to be installed in the systems, machines and devices used by customer. If you want to change the operating conditions of the switch, please consult with us in advance.

4. 保存方法 Storage Method:

- (1) 为防止本产品的性能劣化和耐焊性等性能受到影响，请保管在以下的条件和环境下：

In order to protect the switch performance and the soldering conditions, it should keep the switch under the following conditions:

- ① 温度 -10℃ 以上，+40℃ 以下，湿度 85% 以下的环境。

Temperature of -10℃ to +40℃, with humidity lower than 85%RH;



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SERIES 系列	MICRO SWITCH 微动开关	页 码	共 9 页 第 9 页

② 避免保存在含有腐蚀性气体等的空气中。

Avoid storing in the environment containing corrosive gas;  
产品购入后，不可超过 6 个月以上长期保管。

After purchasing, the storage period should not exceed 6 months.

③ 避免保存在日光能直射的场所。

Avoid keeping it in the location with direct sunlight.

(2) 保存标准为 3 个月，限度为 6 个月以内，请尽早使用。打开包装后，有剩余品时，应将剩余部分以胶袋包装好以同外界隔离，请进行合适的防湿，防腐蚀气体等处理后进行保管。

The standard storage period is 3 months, with maximum up to 6 months, preferably to be used as soon as possible. After opening the package, you should put the remaining switches in a plastic bag to prevent from damp and corrosive gas.

5. 其它 Others

请特别注意严格遵守以下的禁止事项及注意事项：

Please take good care to comply with the following guidelines:

(1) 关于火灾，冒烟的禁止事项 The prohibited practices where there is fire and fume:

① 超过额定负荷使用时，有发生火灾的可能性，故请切勿超负荷使用。

It might catch fire if the rating exceeds the specifications. Never use the switch beyond the rating.  
如果有误使用、异常使用等有可能超过额定电流的话，请采取对策. 如:通过设置保护电路等切断电流。  
If the rating may exceed due to some abuse or abnormal usage, please take protective measures such as protective circuit to shut down the circuit.

② 本产品使用的非金属材料，其抗燃等级是根据 UL94 的判定基准，若有使用 94HB 等级的材料，则禁止使用在有可能产生漫延燃烧的地方，或采取延烧防止对策。

The fire-resistance grade of the resin used in the switch meets UL94HB rating, according to the UL94 Standard for burning test of plastics. Do not use the switch where there may be danger of getting fire, or take protective measures to prevent from catching fire.

(2) 对于追求安全性产品的注意事项 Precautions to the products requiring special safety:

① 对于产品品质我司以期万全，但有可能发生寿命等故障形式，如性能劣化、短路、常开等。因此，在设计追求安全性产品的时候：“对于零件单一故障，产品会出现什么故障”。请进行事前检讨。

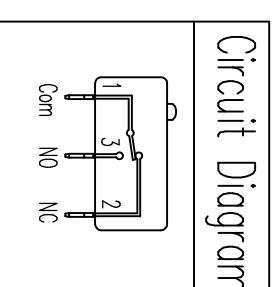
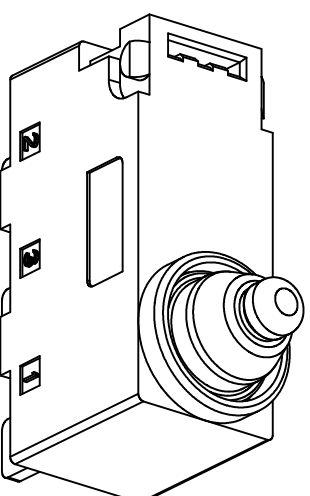
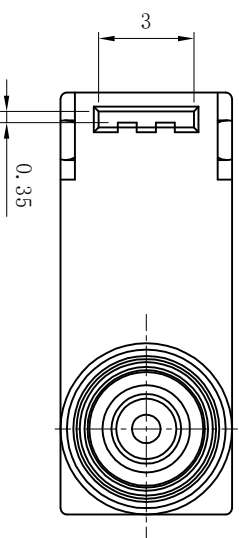
Though we are confident in switch quality, we can't deny the possibility that there could be failure due to inferior performance, short or open circuit. Therefore, when designing the product requiring special safety, please verify in advance what effects would show on your product in case the switch alone may fail.

② 准备保护电路、保护装置的系统以谋求安全。

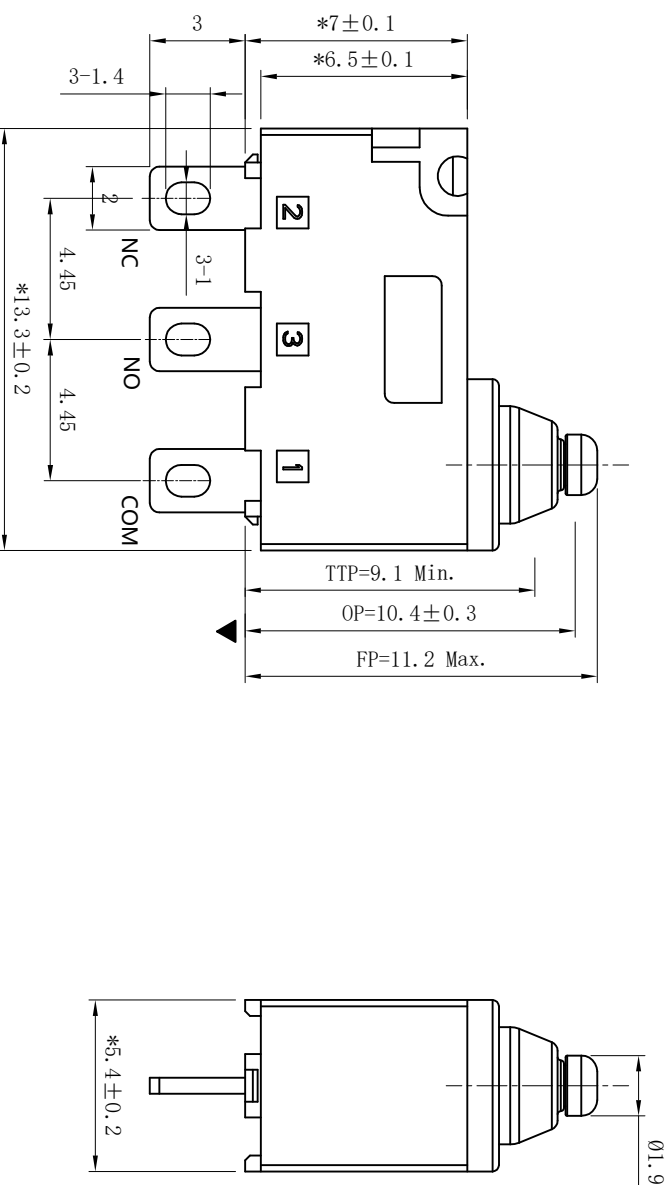
Prepare the system with protective circuit and protective devices for safety purposes.

③ 准备安全备用电路,使单一的故障不会导致整体系统的失效,以确保安全性。

Prepare safety standby circuit to preclude the whole system failure that may result from specific failure.



曲器圖



### 规格 Specifications

規定名稱	Ratings
初期接觸電阻	Initial Contact Resistance
絕緣電阻	Insulation Resistance
抗過壓電	Dielectric Voltage
負載壽命	Operating Life With Load
機械壽命	Operating Life Without Load
防銹、防腐	Ingress Protection

	AC 120V
	6A 120/250mA @ E5
	100 mOhm.
	DC 30V ~ 60±5 Sec. 100 mW/min.
	AC 50V 50±5mA 60±5Sec
	100,000 X Cycles 7200C 0.1A.
	300,000 X Cycles
	P 67

操作力Operating Force	130gf Max
回復力Release Force	30gf Min
柄位置Operation Position	10.4±0.3mm
導引行程Pe Travel	1.3mm Max
差程Difference Travel	0.5mm Max
自由位置PP	11.2mm Max
全行程TP	9.1mm Min

注: 带\*号尺寸为重点尺寸, 带▼号尺寸为特殊特性尺寸



深圳市港源微键技术有限公司

## 防水小微动开关

防水小微动开关									
名称		型号		G10F-00SM00-130-100					
材料		图号							
净重		毛重		页码 1 of 1		比例 1:1		单位 mm	版本 P0
									工程图
批准		审核		设计					
公差		一般		角度		尺寸			
±0.15		±1°		±0.10		.XX			
±0.05		±0.05		.XXX		.XX			
日期		审核		修改		EON 编号/变更内容			
临时发行						版次			