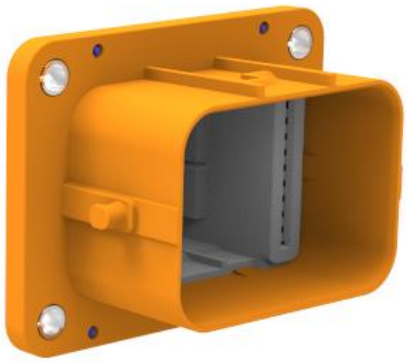
瑞可达
创新技术引领未来

Recodeal

瑞可达
连接系统股份有限公司
2024.07 .02 S3.0

Manual Maintenance Switch (MSD14)



Version Rev.	Change Description/Change Content Change Description	Date of modification Revise. Date	Compilation Prepared By	Approve Approved By
1. 0	First release	2023. 09. 13	Gaoli	Li Xiaoyin
2. 0	Renewal of flame retardant grade of silicone rubber	2024. 04. 03	Wen Chaosheng	Li Xiaoyin
3. 0	Update View	2024. 07. 02	Wen Chaosheng	Li Xiaoyin

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1. Commonly used material models (Table 1):

Serial number	Product name	Product model	Remarks
1	MSD14 connector plug	RC-MSD14-T-H-A	With high voltage interlock, 500A/500V Zhongbei fuse plug
2	MSD14 connector plug	RC-MSD14-T-H-B	With High Voltage Interlock, 500A/500V Basman Fuse Plug
3	MSD14 connector plug	RC-MSD14-T-H-C	With High Voltage Interlock, 500A/500V Medium Fuse Fuse Plug
4	MSD14 connector plug	RC-MSD14-H-A	With high voltage interlock, copper bar plug
5	MSD14 connector socket	RC-MSD14-Z-H-A	With high voltage interlock, front mount socket
6	Socket dust cover (optional)	6.702.191001R	Suitable for sockets, matching number: 1

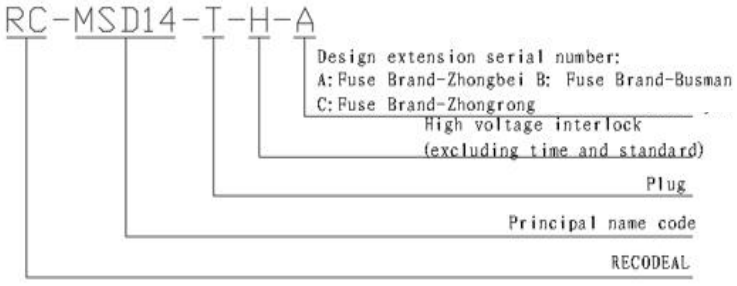
Remarks:
1. There are many models of this series of connectors. This table will not list them one by one. Customers can choose the appropriate model according to the "naming rules" below. At present, the design expansion serial number at the end of the plug and socket is "A".
2. Fuses with plugs below 500A/500V for this series of products can be selected from manufacturers of Zhongbei, Basman, Zhongrong, and Boyue.

II. Material profile:

- This series of products are mainly used for large current transmission in the automotive field. A fuse is integrated in the plug, which has the function of circuit overcurrent and short circuit protection.
- This series of products highly integrates the breaker and fuse in the circuit, which saves space to the greatest extent and facilitates equipment maintenance, overhaul and fuse replacement operation.
- This series of products is composed of plug and socket. The plug does not need to be equipped with cables, and the socket has a variety of installation methods to choose from.
- The rated working current of this series of products equipped with fuses is 200A; The rated working current of the copper bar is 350A.
- This series of products are equipped with fuses at an altitude of 2000m and rated at 200A without impact. If it exceeds, the fuse derating rate needs to be considered; Safety at 5000m above sea level has no problem. The rated current needs depend on the fuse of the fuse;
- The selection of fuses should be calculated by contacting our technology after comprehensively considering the ambient temperature coefficient, current density coefficient, altitude coefficient, heat dissipation coefficient, and cyclic load coefficient. The calculation results need to consult the corresponding fuse manufacturers.
- The plug of this series of products is equipped with a rotatable handle and a secondary lock structure. The lock adopts a handle lock, which is convenient to operate and labor-saving. It has the functions of secondary lock and secondary unlock.

III. Naming rules:

1. Plug:

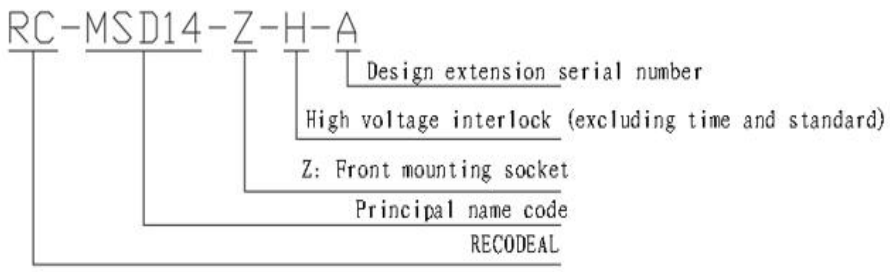


Remarks:

1. Model "RC-MSD14-T-H-A" means equipped with 500A/500V Zhongbei fuse, MSD14 plug with high-voltage interlock;
2. Plug model without fuse and high-voltage interlock: RC-MSD14-T-A;
3. Plug model with high-voltage interlock without fuse: RC-MSD14 -T-H-A;
4. Fuse specification table:

Fuse brand	Selection code	Fuse rating current	Fuse brand	Selection code	Fuse rating current
Zhongbei	A	500A	Medium melting	C	500A
	A1	450A		C1	450A
	A2	400A		C2	400A
	A3	350A		C3	350A
	A4	315A		C4	315A
	A5	250A		C5	250A
	A6	200A		C6	200A
Basman	B	500A		C7	160A
				C8	550A
				C9	630A
Remarks: The selection of fuses should be calculated by contacting our technology after comprehensively considering the ambient temperature coefficient, current density coefficient, altitude coefficient, heat dissipation coefficient, and cyclic load coefficient. The calculation results need to consult the corresponding fuse manufacturers.					

2. **Socket:**



Remarks:

1. Model "RC-MSD14-Z-H-A" means front-mounted MSD14 socket with high-voltage interlock;
2. Plugs and sockets need to have high-voltage interlocking at the same time to meet the functional requirements, and the high-voltage interlocking is 1 group;
3. When the socket high-voltage interlock wiring harness needs to be customized, it is necessary to choose a model without high-voltage interlock socket and purchase the high-voltage interlock wiring harness separately.

4. Technical parameters:

1. Electrical characteristics:

- Contact resistance: the total internal resistance of the power contact pair is ≤ 1.5 mΩ (of which the internal resistance of the fuse is ≤ 0.5 mΩ);

The total internal resistance of the signal contact pair is ≤ 5 mΩ (excluding the internal resistance of high-voltage interlock cables);

- Equipped with fuses: Fuse specifications are recommended based on specific derating factor parameters and test data, for reference only. In principle, the application selection of new projects must be reconfirmed by our technology;
- Equipped with short copper bar: rated working current 350A (when copper bar > 85 mm ²), rated working voltage 1500V. DC;
- Withstand voltage: 3000V. DC 1min, leakage current < 0.1 mA (under normal conditions except fuses);
- Insulation resistance: 5000MΩ (normal: test ambient temperature below 40 °C, humidity 50% RH), 300MΩ (humidity 95% RH and above); Test voltage 500V. DC (500A fuse); Test voltage 1500V. DC (copper row model)
- Electrical parameters of fuse and copper bar:

Fuse model: rated voltage: 500V. DC, fuse rated current 500A (can be used on 1500V. DC platform, but requires series ≥ 3 pcs MSD);

Copper bar: rated voltage: 1500 V. DC, 350A (when copper bar > 85 mm ²);

2. Mechanical characteristics:

- Mechanical life: ≥ 100 times
- Vibration shock: V1 rating in USCar2-6 2013 (installed in a position not connected to the engine)
- Plug and socket separation force: ≤ 75 N;

3. Working environment:

- Working temperature: -40 ℃ ~ + 85 ℃;
- Humidity: below 95% (40 °C);
- Protection level: IP68 (plug and socket plug-in state, 1 meter water depth, immersion for 48h, no water leakage), socket separately meets IPXXB;

4. Materials:

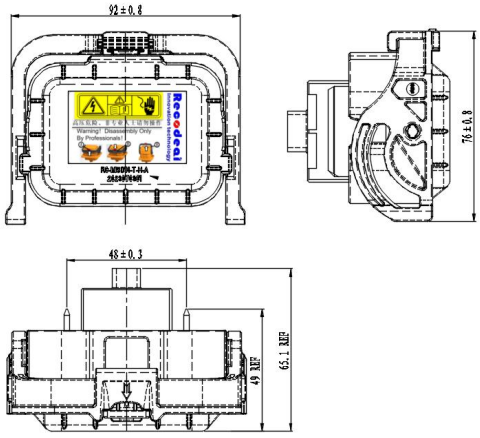
- Shell: thermoplastic engineering plastics (in line with ROHS standard, flame retardant grade UL94-V0, main body color orange);
- Contacts: power contact pair T2-Y2 silver plated; Signal contact pair H62 silver plating;
- Seals: silicone rubber (in line with ROHS2.0 standard, flame retardant grade UL94 HB);

5. Design reference standards:

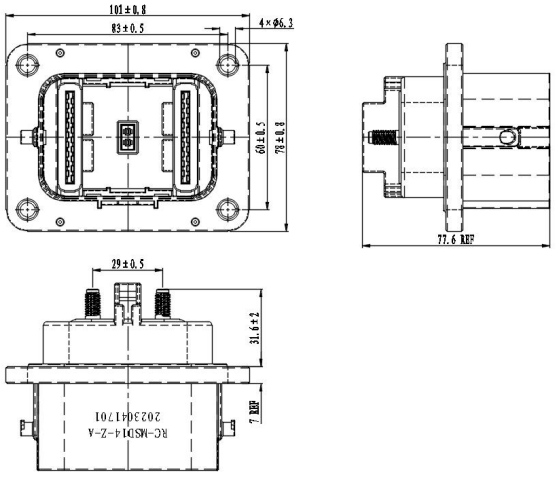
- USCAR-37-2008；USCAR-2-2013；GB 4208-2008；GB/T 5169.11-2006；
- VS-00 00-T-14016-A2-2015；JIS K 6259-2004；

5. Dimension diagram:

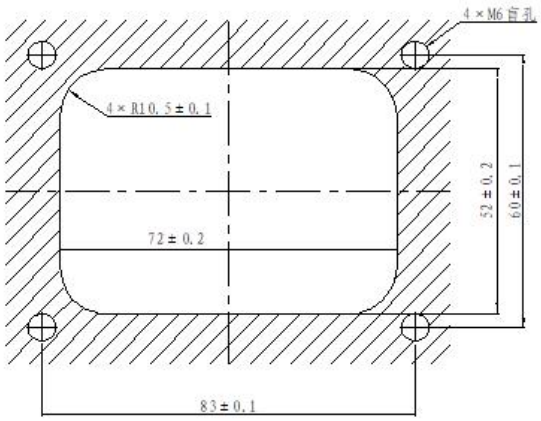
Plug:



Front mounting socket:



Recommended opening size for front installation of socket:



Remarks:

1. Acceptable thickness range of mounting panels for models with high-voltage interlocking: 0.8 ~ 1.5 mm. C ontact of high-voltage interlock contact pairs with high-voltage interlock
The length is affected by the thickness of the panel. In order to ensure good high-voltage interlock contact, the thickness of the installation panel must be controlled.)

2. Acceptable thickness range of mounting panels for models without high-voltage interlocking: 0.8 ~ 3.5 mm.

3. The recommended locking torque for the M6 bolts connected to the installation panel is 7-8N. m, and it is recommended to us e the bolts with flat elastic pads M6 * 16 GB/T9074.15-1988.

4. The recommended locking torque for the M6 nut connected to the copper bar at the tail of the socket is 9-10N. m, and the flan ge nut M6 GB/T 6177.1-2000 is recommended.

6. Special statement:

1. In principle, the selection of fuses equipped with products must provide the selection parameters according to our r equirements and be confirmed by our technology, otherwise our company will not bear the relevant responsibility for the mismatch between the selection of fuses and the actual working conditions; (There are many factors affecting the selectio n of fuses. Please provide accurate and detailed selection parameters as much as possible and consider the problems of ma tching protection with relays.)

2. The basis for judging the qualified temperature rise test of the product is the temperature rise of the copper bar at the tail and the temperature rise of the internal fuse surface. If it is contrary to the application requirements, it is necessary to propose and negotiate to adjust the fuse specification during the selection stage.

7. Appendix:

Relevant instructions and performance parameters of product fuses (taking Zhongbei fuses as an example):

1. Conservation category: aR;

2. Electrical specifications and parameters:

Electrical Characteristics 电气特性

Items 序号	Catalogue Numbers 型号	Electrical Characteristics 电气特性				Use bolts 推荐螺栓	Installation torque 安装扭矩
		Rated Current RMS-Amps 额定电流 (A)	I²t (A²Sec)		Watts Loss 1.0In Max 功耗		
			Pre-arc 弧前 I² t	Clearing at 熔断 I² t			
1	*ESH1190	200	64917	88092	42	/	/
2	*ESH1191	250	111829	151752	53	/	/
3	*ESH1192	315	184860	250855	66	/	/
4	*ESH1193	350	276149	374734	70	/	/
5	*ESH1194	400	447316	607008	80	/	/
6	*ESH1195	450	659563	895027	86	/	/
7	*ESH1196	500	912890	1239000	96	/	/

注：1.*Please consult the original请咨询原厂

2.以上I²t数据DC500V 20kA下测得

Time-Current Curve 时间电流曲线