

ARCS02C

EV/B type residual current and charging current two-in-one detection module
(IEC 62955 / IEC 62752)



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- Dual transformer three-dimensional stacking design helps miniaturize charging equipment
 - Built-in high-precision current transformer can easily achieve 1% level accuracy
 - Can be adapted to 2.5mm diameter copper jumper to support 32A rated current application
 - High cost-effective product for new national standard and European standard AC charging equipment

Specifications (1) - Residual current detection related parts

#	Technical Parameters	ARCS02C	
101	Monitoring circuit	Rated working voltage	230VAC
102		Rated working current	≤ 32A
103		Pole number	1P+N
104		Rated frequency	50Hz
105		Rated impulse withstand voltage	4kV
106		Overtoltage category	III
201	Control loop pin for residual current detection	Vcc, TRIP, GND, CAL, TEST	
202	Control loop pin for charge current measurement	S1, S2	
301	Rated residual DC operating current $I_{\Delta dc}$	6mA	
302	Rated residual DC non-operating current $I_{\Delta ndc}$	3mA	
303	Rated residual AC operating current $I_{\Delta n}$	30mA	
304	Rated residual AC non-operating current $I_{\Delta nc}$	15mA	
305	Electrical life	20,000	
306	Operating temperature	-40~85 °C	
307	Pollution degree	2	
308	Power consumption	<500mW	

Specifications (2) - Current detection related parts

#	Technical Parameters	ARCS02C
401	Reference current I_b / Maximum current I_{max}	16A / 32A
402	Rated output at reference current	16mA
403	Transformation ratio	1000/1
404	Maximum current on one side ($R_L=2ohm$)	40A
405	Saturation voltage @ $R_L=15ohm$	0.6V
406	Isolation withstand voltage	3kV
407	Deviation	1%
408	Recommended load resistance R_L / Maximum load resistance R_L	2ohm / 15ohm

Residual current detection related characteristics

Action current

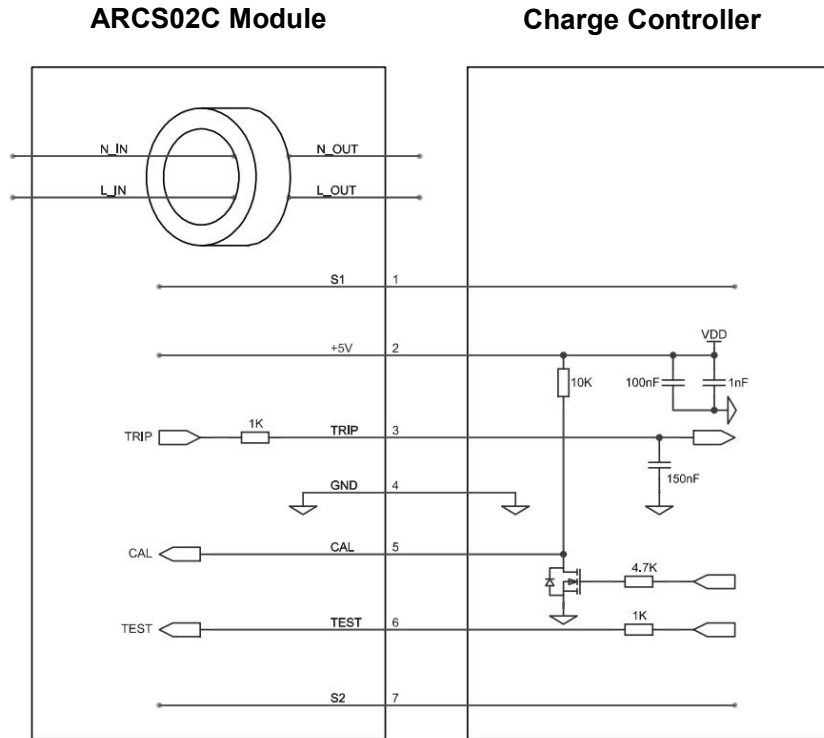
#	Description		ARCS02C
501	Residual Action Current	Smoothed DC	4.0~6.0 mA
502		Sinusoidal AC	22.0~28.0 mA
503		Pulsating DC A0 degree	10.5~42.0 mA
504		Pulsating DC A90 degree	7.5~42.0 mA
505		Pulsating DC A135 degrees	3.3~42.0 mA

Action time

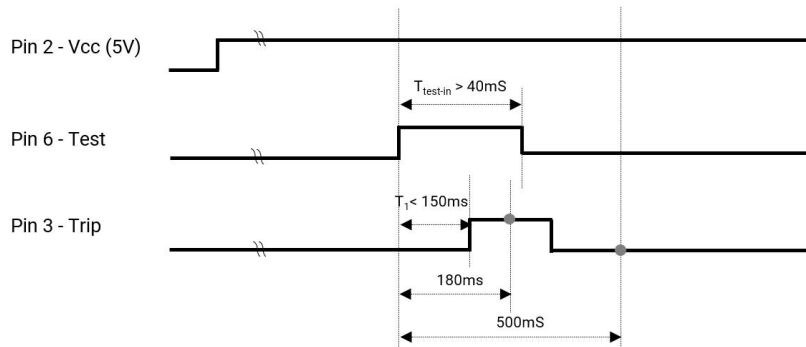
#	Description			ARCS02C
601	Residual Current Action Time	Smooth DC	6mA	≤ 500 ms
602			60mA	≤ 200 ms
603			200mA	≤ 70 ms
604			300mA	≤ 20 ms
605		Sinusoidal AC	30mA	≤ 80 ms
606			60mA	≤ 60 ms
607			150mA	≤ 20 ms
608			5A	≤ 20 ms

Application Introduction

Typical Application Integration

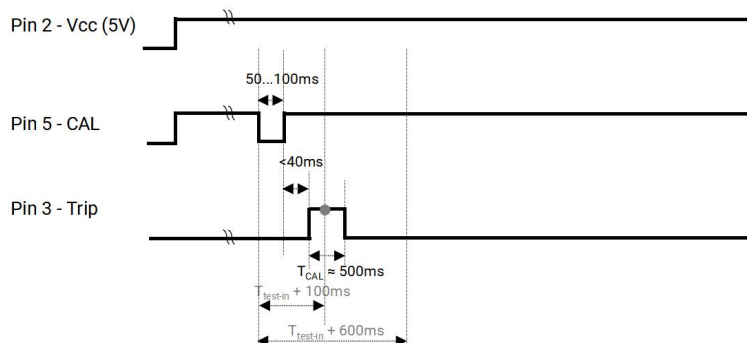


Self-test Timing Diagram



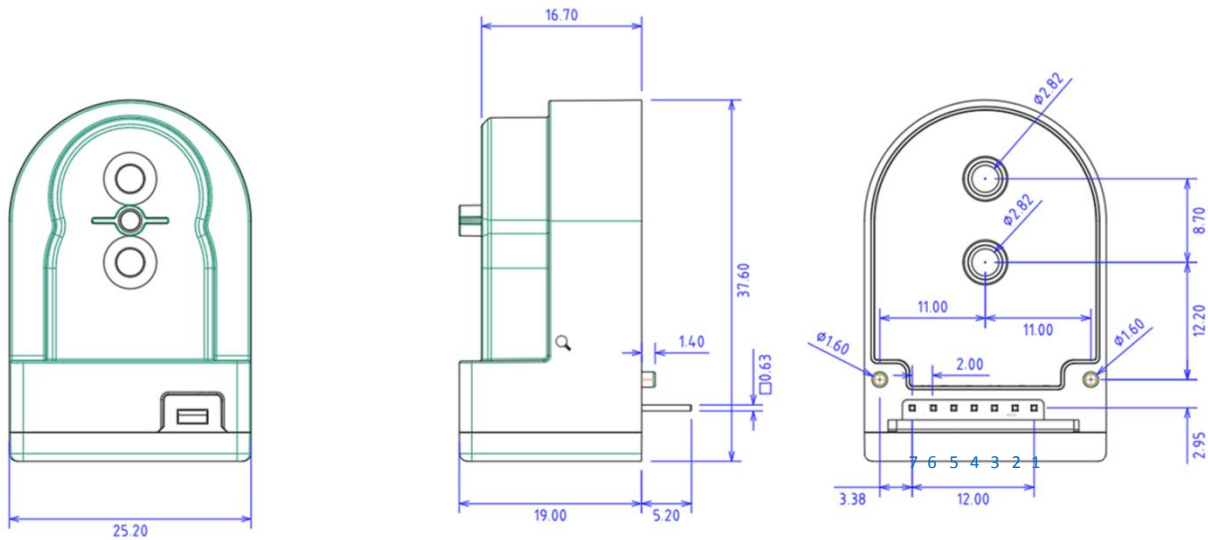
If the control circuit Pin 6 - Test is connected to a high level for more than 40ms, the self-test procedure without calibration is activated. t_1 is the response time to the simulated leakage current inside the module.

Calibration Timing Diagram



If the control loop Pin 5 - CAL is pulled down to GND and lasts for 50mS to 100mS, the module enters calibration mode. Calibration can be performed regularly (such as during the charging pile startup self-test process) or after a special event (such as a main circuit short circuit). Note: The main circuit must be disconnected during calibration, and no residual current or any other current can flow through the sensor to prevent abnormal product calibration values. In addition, the supply voltage of the control loop Pin 1 - Vcc should be maintained at 5VDC±3%.

Mechanical Dimensions



Interface Description

- Pin 1 - Current transformer output S1 ; Pin 7 - Current transformer output S2
- Pin 2 – Vcc (5V power supply);
- Pin 3 – Trip (fault alarm);
- Pin 4 - GND (Power Ground);
- Pin 5 – CAL (Calibration);
- Pin 6 – Test (Self-Test)

Ordering Information

#	Product No.	Product Description
1	ARCS02C-ADC-L	ARCS02C Residual current and charging current two-in-one detection module, A30+DC6mA, Onboard, 7 Pin, 2.00 mm spacing

Additional Information

- Do not allow strong static electricity to approach the residual current detection module, as static electricity can damage the chip inside the module. Take electrostatic protection measures when handling the module.
- Do not allow the wave soldering temperature to exceed 260°C, which is the maximum heat resistance level of the module. The maximum duration of wave soldering is no more than 10 seconds.
- Do not immerse the central isolation column in the tin furnace during the wave soldering process. The central isolation column can be installed after the module wave soldering is completed.
- Do not drop the module or apply any other mechanical stress to the module, as such stress may change the module performance characteristics.
- To ensure accurate detection of the module, keep an appropriate distance from components that generate strong magnetic fields, such as relays or contactors.
- When designing AC charging equipment with integrated residual current protection function, please strictly comply with the product standards of relevant residual current protection devices.



The module is easily damaged by electrostatic discharge (ESD) events, and electrostatic protection measures should be taken when handling the module.

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