

# M306RCM

*Magenta  
Magnetic*

## Residual Current Monitor

IEC 62955 & IEC62752

### Overview

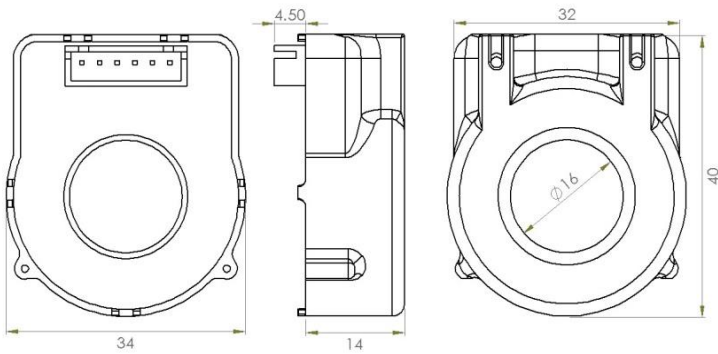


The **M306RCM** residual current monitor is an integrated fluxgate sensor and circuit designed to meet the needs of Mode 2 and Mode 3 electric vehicle charging. It satisfies the requirements of both IEC62752 and IEC 62955 in one device with separate monitor outputs. Also included is an integrated calibrate-test function and also a PWM output for residual current indication.

### Application

In Mode 2 and Mode 3 Electric Vehicle charging systems the conductors to the vehicles need to be monitored for DC residual current faults. Fault current in excess of 6mA DC can impair the operation of the upstream RCD. If the system is functioning correctly the sum of all currents is zero and the sensor measures nothing. If a fault occurs the sum of the currents is no longer zero and the sensor detects and signals this condition.

### Mechanical



### Connection

<p><b>PIN 1: PWM-OUT</b> On this pin a duty cycle (3.33%/mA) proportional to the DC residual current is available at 8kHz.</p>	<p><b>PIN 5: VCC</b> Supply voltage. <b>JST XHP-6</b></p>	<p><b>PIN 3: 62955-OUT</b> This pin is pulled to GND, unless a residual fault is detected. This is compliant with the requirements of IEC62955. (open drain)</p>
<p><b>PIN 2: 62752-OUT</b> This pin is pulled to GND. unless a residual fault is detected. This is compliant with the requirements of IEC62752. (open drain)</p>	<p><b>PIN 6: GND</b> Ground connection.</p>	<p><b>PIN 4: TEST-IN</b> If this pin is pulled to GND between 40ms and 1.2s, a calibration &amp; functional test is performed. No current may flow during this test.</p>

### Technical Data

#### General

	min	typical	max	
Supply voltage	4.8	5 - 12	13.2	Vdc
Supply current		4	7	mAdc
Rated primary current		40		A
Operating/storage temperature	-40		85	°C

#### IEC 62955 output

	min	typical	max	
Residual detection level	3	4.5	6	mAdc
Response time:				
6mAdc	1000	2000	4000	ms
60mAdc	40	60	80	ms
200mAdc	15	25	35	ms
Non-response time:				
30mAac		∞		ms
60mAac		∞		ms
150mAac		∞		ms
5Aac	80			ms

#### Release time dc

250	ms
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#### IEC 62752 output

	min	typical	max	
Residual detection level	3	4.5	6	mAdc
Response time:				
6mAdc	1000	2000	4000	ms
60mAdc	15	25	35	ms
300mAdc	5	10	20*	ms
>5Aac	5	10	20*	ms
Residual detection level	19	21	23	mAac
Response time:				
30mAac	100	130	180	ms
60mAac	20	35	50	ms
150mAac	5	15	20*	ms
>5Aac	5	10	20*	ms

#### Composite detection level

24	28	32	mAac	
Response time:				
210mAac	5	10	20*	ms

#### Release time dc

250	ms
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#### Release time ac

40	ms
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#### Outputs

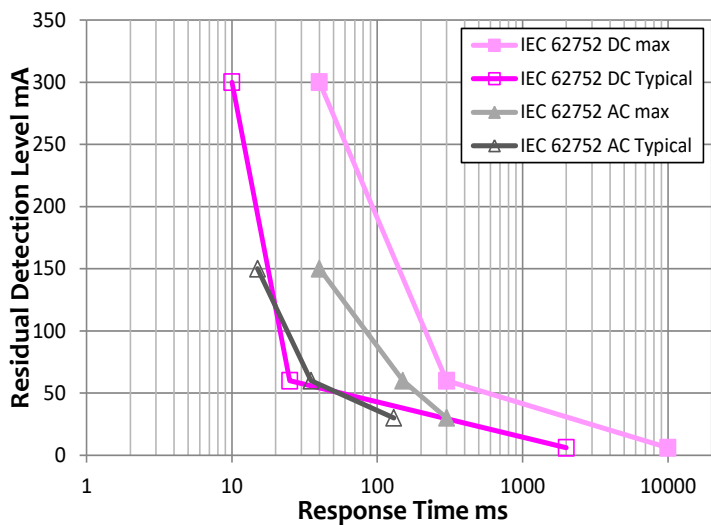
	min	typical	max	
Monitor output (open drain)	0		13.2	Vdc
Monitor output sink current	0		50	mAdc
PWM monitor out		3.33		%/mA
PWM frequency	7.8	8	8.2	kHz

#### Calibrate - Test

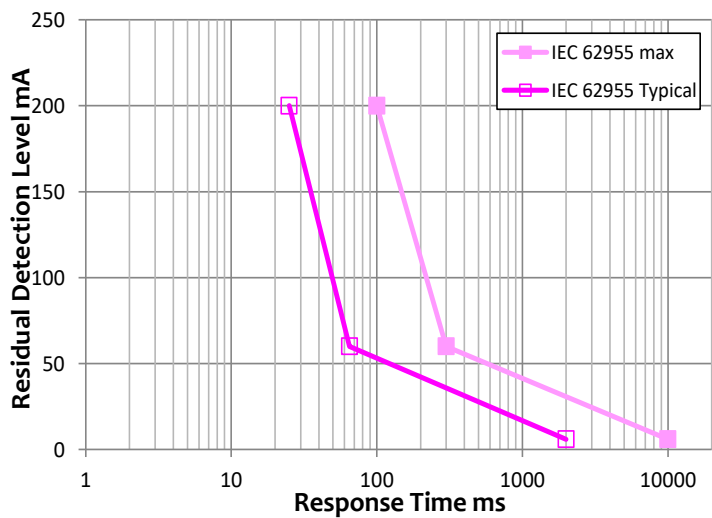
	min	typical	max	
Test input voltage (active low)	0	2.5	5	Vdc
Test active voltage			1	Vdc
Equivalent test current <b>(No current can flow during test)</b>		10		mAdc

\* Allows 20ms for suitable contactor to disconnect.

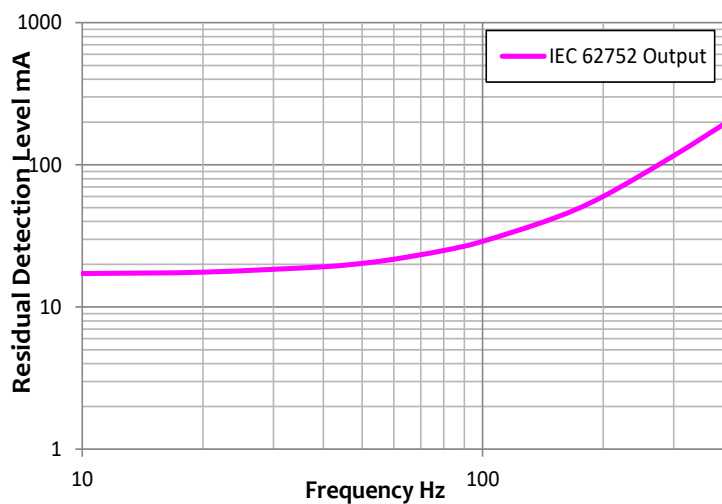
## Response Times IEC 62752



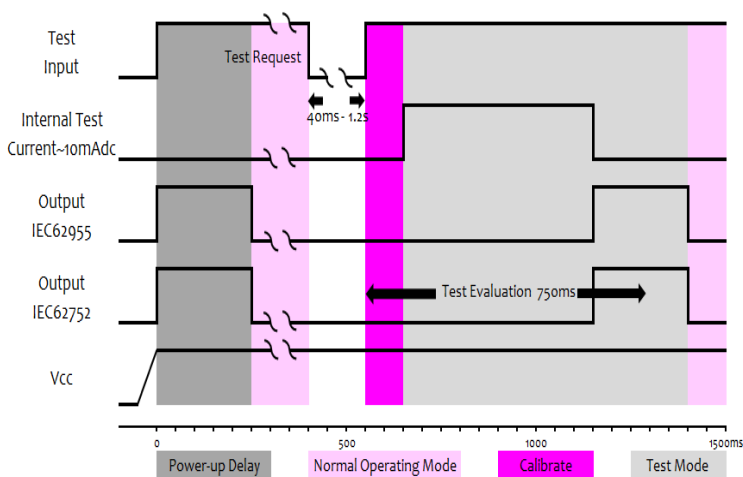
## Response Times IEC 62955



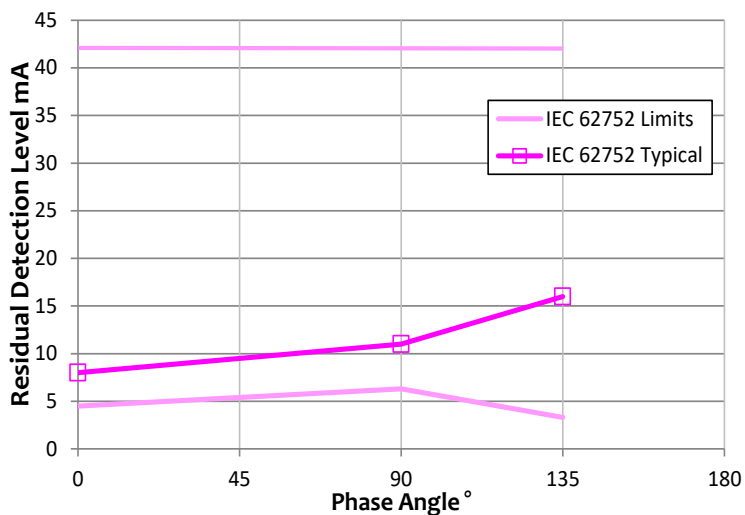
## Frequency Response



## Timing Diagram



## Pulsating DC Response Level



## Typical Circuit

