

Features

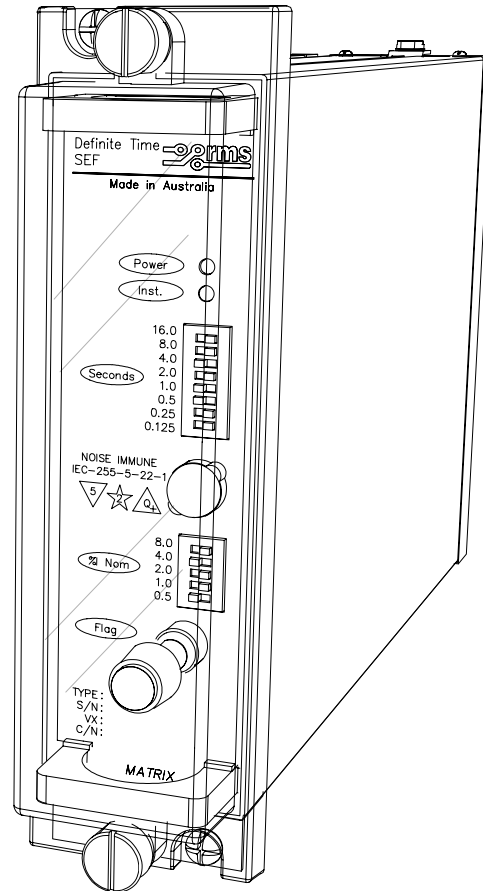
- High sensitivity
- 3rd harmonic & HF noise suppression - tuned to 50 Hz
- Optional reset functions
Instantaneous, definite time, count down
- High reset / operate ratio
- Wide auxiliary supply range with fail alarm contact
- Auxiliary supply fail alarm
- Low CT burden & high thermal rating
- Optional 1A or 5A CT input
- Instantaneous pick up LED
- Instantaneous output contact
- 0-31s time delay (125ms steps)
- Push button / electrical flag reset
- Non-volatile trip indication
- Multi voltage inhibit / enable input
- Multi voltage flag reset input
- Size 2M draw out case

Application

The main earth fault protection relays in distributions systems, power stations & large manufacturing / processing plants can fail to detect a high impedance breakdown to earth causing hazard to human life & potential damage to plant & equipment. In these & other situations demanding extra sensitive earth fault protection, the 2C137 relay using solid state techniques, can be applied to detect earth currents down to 0.5% of the CT nominal current.

The relay is tuned to reject 3rd & higher harmonic frequencies to avoid problems under quiescent conditions. An adjustable time delay is built in to provide stability during switching & other transient disturbances & to allow adequate grading with other protection systems at high fault current levels.

The relay can be connected in the residual circuit of three line current transformers, or to a neutral, or core balanced CT. The case is fitted with a CT shorting switch to avoid an inadvertent open circuit when the relay module is removed from the case.



2C137 depicted in a 2M28 case

Operation

Made in Australia

The 2C137 type relay provides sensitive earth fault protection with a high degree of accuracy over a wide range of input current settings & offers the high sensitivity & harmonic suppression required for this application. The harmonic suppression feature combined with high frequency noise immunity minimizes any possibility of malfunction.

The 2C137 also offers an adjustable time delay, to manage situations where high impedance faults develop slowly, ensuring the main protection operates on high fault currents. An instantaneous output contact is also fitted.

Current & time settings are fully adjustable using DIL switches readily accessible on the front panel of the relay & provide a high level of repeatability & accuracy. Visual indication of an output relay operation is provided by a bistable magnetic disc flag also located on the front panel which may be hand reset & remotely reset where specified.

The status input can function as a relay inhibit or as a relay enable. The status input function is factory set to inhibit relay operation during the application of a control voltage. Changing a link on the PCB can change the status input to operate on the removal of a control voltage. A separate status input may be specified for remote flag reset.

The 2C137 may be specified with a number of different reset functions to provide instantaneous reset, definite time reset or induction dist reset emulation. These functions are specified at time of order & are factory programmed.

A switchmode power supply provides a very wide auxiliary operating range. A relay fail alarm is provided in the form of a C/O contact which is picked up when the auxiliary supply is healthy.

Time Delay Options

OPERATE TIME

Timer set to zero: 30ms approx. at 10X setting.

RELEASE TIME

Once the preset time delay has been reached & the output relay picked up, reduction of I_s below set point plus hysteresis will reset the output contact with 50ms.

TIMER SETTING

Range: Instantaneous (30ms) to 31s in 125ms steps.
Accuracy: +/-5% of setting +/- 0.5s.

STATUS INPUT FUNCTION

The status input function is factory set to inhibit relay operation during the application of a control voltage. Changing a link on the PCB will change the status input to operate on the removal of a control voltage.

Removal of the initiate signal during timing will reset the timer instantaneously (Irrespective of the sensing input reset option).

Removal of the initiate signal after time out will cause the output contact to reset within 50ms.

SENSING INPUT RESET OPTIONS (Refer timing diagrams)

Instantaneous

If the SEF element drops out before the pre set time delay is reached the timing element will reset in 20 to 50 ms at 10X I_s .

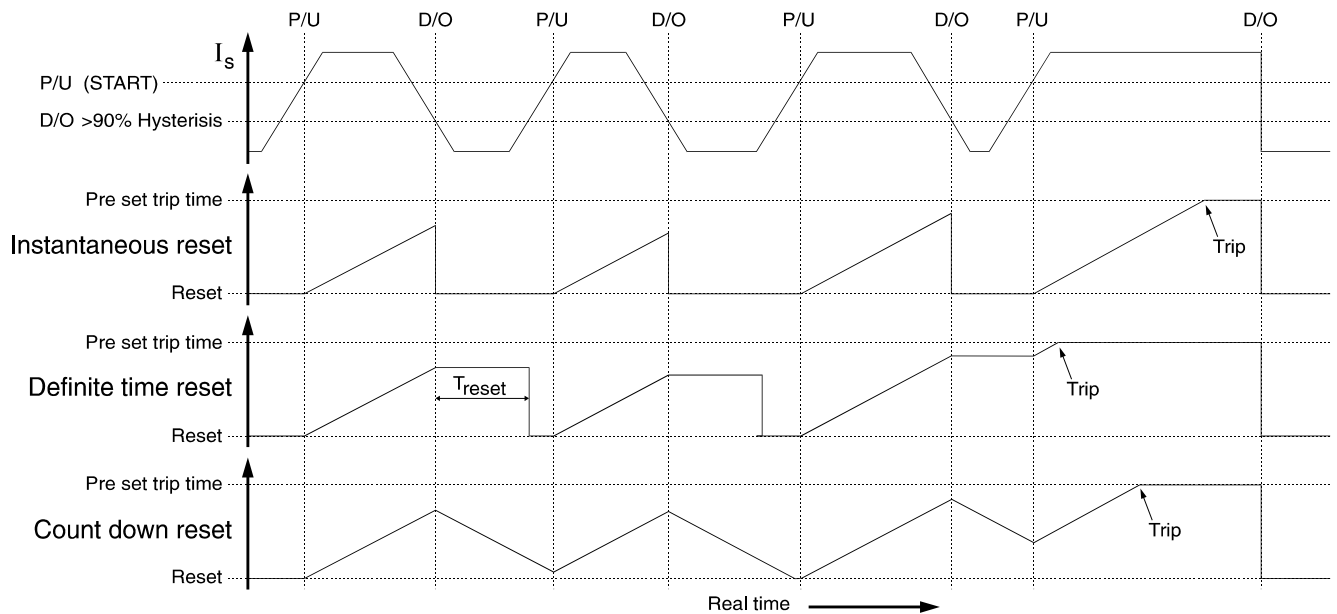
Definite Time Reset (Treset)

With this reset option a definite reset time must be specified. If the SEF element drops out before the preset time delay is reached the delay timer will pause until the reset time has elapsed before resetting. If the SEF element picks up again before the reset time has elapsed, the delay timer will restart the timing sequence from the paused timing point.

Count Down Reset

If the SEF element drops out before the pre set time delay is reached, the timer will count down toward reset. If the SEF element picks up again before reset is reached the timer will start counting back up towards the time delay pre set.

RESET CHARACTERISTICS



BURDENS

Auxiliary supply: (at 110V DC nominal supply)
Less than 5W independent of range with output relays picked up.

Sensing circuits: VA per phase all settings.

I amps	1A CT input	5A CT input
1	0.9	-
2	3.8	-
4	16	-
5	25	1.0
8	56	2.4
10	-	4.1
15	-	9.5
20	-	17
25	-	26

CT INPUT THERMAL WITHSTAND

	1A CT	5A CT
Continuous	2	10
4.5s	20	100
3s	35	180
2s	40	200
1s	60	300
0.5s	90	450

AUXILIARY SUPPLY

40-275V AC / 40-300V DC or 20-70V DC switchmode supply.

AC CURRENT

Sensing Range: 0.5-15.5% of Is in 0.5% steps.
Dropout/Pickup Ratio: 90% minimum.

CURRENT SETTING ACCURACY

+/-5% of setting +/-0.05% of nom.

HARMONIC REJECTION

>20X setting for frequencies 100 Hz & above.

REMOTE FLAG RESET INPUT

Application of a control voltage to the optional remote flag reset input will cause the bistable flay to be reset.

OUTPUT CONTACTS

Delayed: 2 N/O contacts
Inst: 1 N/O contact

OUTPUT RELAY OPERATION INDICATOR

Delayed: Hand / remote reset magnetic disc (permanent memory)
Inst: LED indication

STANDARD OUTPUT CONTACTS (Idec RH PCB mounting type)

Make & carry

30A AC or DC (Limits L/R=40ms & 300V max.) for 0.2s
20A AC or DC (Limits L/R=40ms & 300V max.) for 0.5s
5A AC or DC continuously

Break (Limits 5A & 300V max.)

1,250VA AC resistive
250VA at 0.4PF AC inductive
75W DC resistive
30W DC inductive L/R = 40ms
50W DC inductive L/R = 10ms

Minimum recommended load

0.5W, 10mA or 5V minimum.

AMBIENT OPERATING TEMPERATURE RANGE

-5 to 55 degrees C.

HUMIDITY

40 degrees C & 95% RH non condensing

INSULATION WITHSTAND

IEC60255-5 2KV RMS & 1.2/50 5KV impulse between:

- ◆ all input terminals & frame
- ◆ all output terminals & frame
- ◆ all input & output terminals
- ◆ each input group
- ◆ each output group

HIGH FREQUENCY DISTURBANCE

IEC60255-22-1 2.5KV 1MHz common mode
1.0KV 1MHz differential mode

ELECTROSTATIC DISCHARGE

EN61000-4-2:1995 8KV Level 3

RADIO FREQUENCY INTERFERENCE

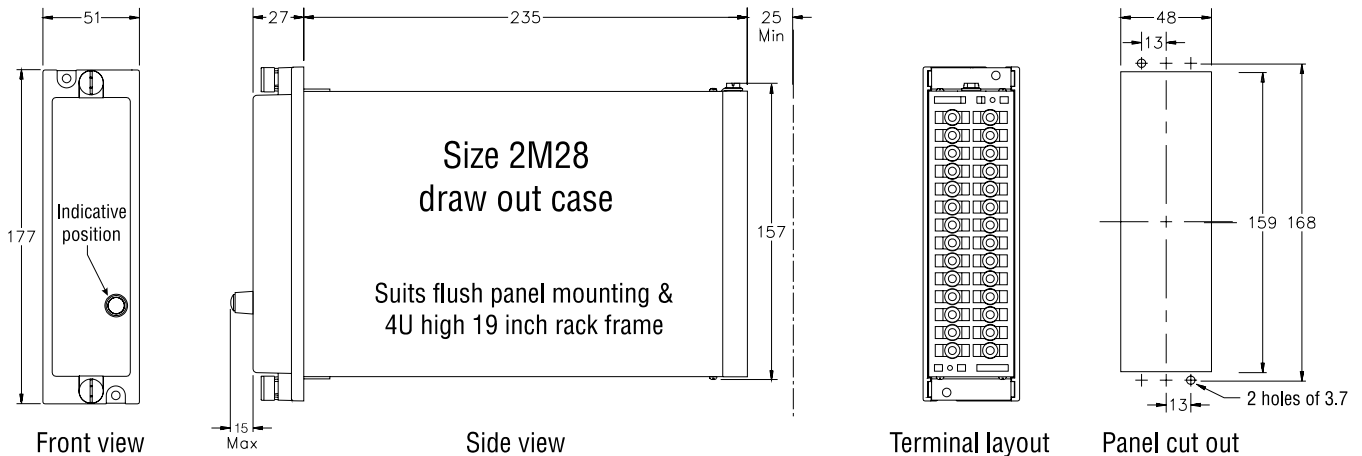
EN61000-4-3:1995 10V/m Level 3

FAST TRANSIENT DISTURBANCE

EN61000-4-4:1995 4KV Level 4

CASE

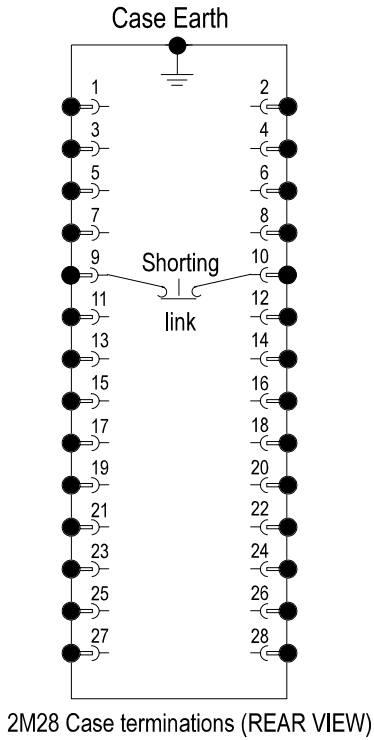
Size 2 draw out
28 M4 screw terminals
Flush panel mount or 4U high 1/4 width 19 inch rack mount
IP51 rating



Ordering Information

Generate the required ordering code as follows: e.g. 2C137 AABBC

2C137 1 2 3 4 5



1 AUXILIARY SUPPLY RANGE

- A 20-70V DC
- B 40-275V AC / 300V DC

2 CT INPUT RATING

- A 1A
- B 5A

3 INITIATE INPUT

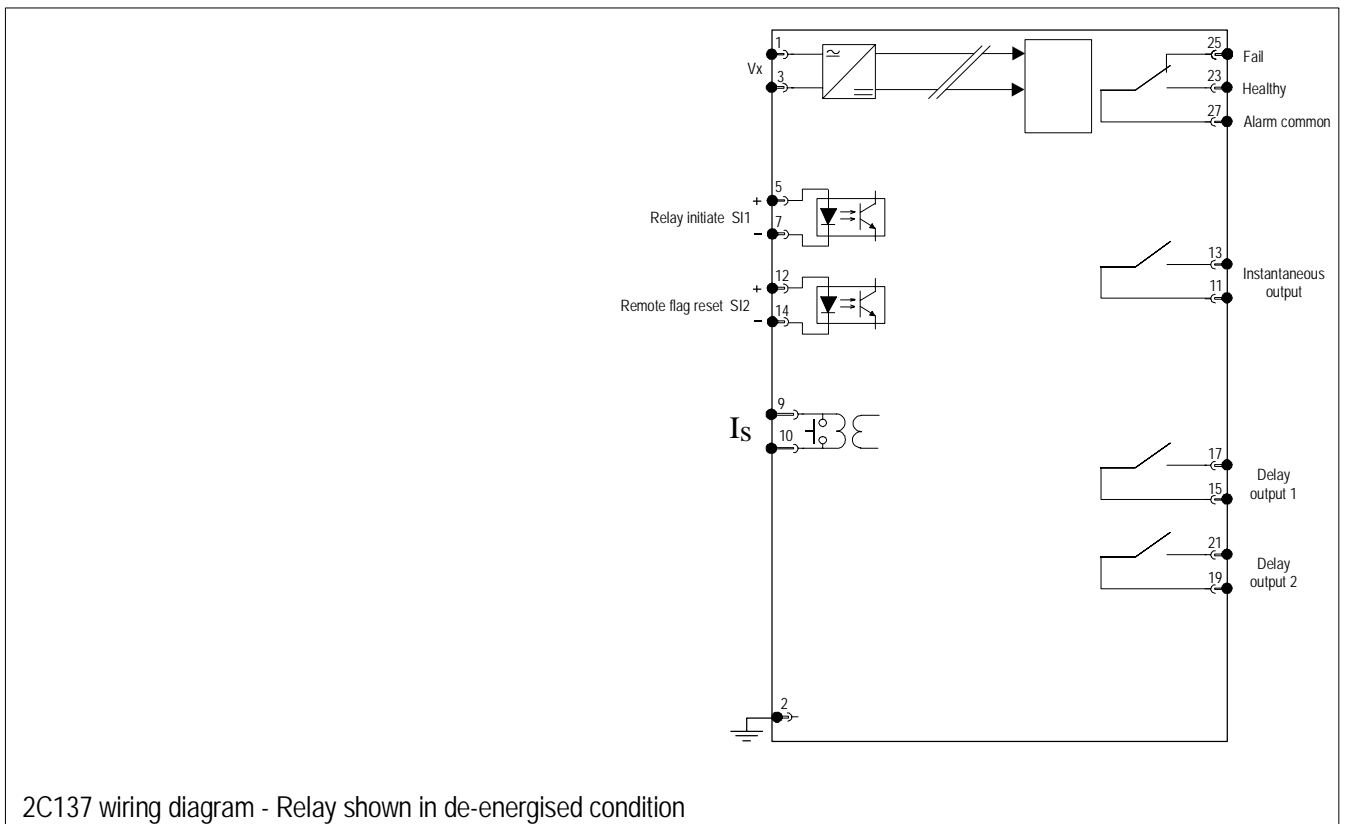
Opto-isolated input	Relay coil input
A 24-80V AC/DC	D 12V DC
B 75-150V AC/DC	E 24V DC
C 150-300V AC/DC	F 48V DC
	G 110V DC

4 REMOTE FLAG RESET INPUT

Opto-isolated input	Relay coil input
A 24-80V AC/DC	D 12V DC
B 75-150V AC/DC	E 24V DC
C 150-300V AC/DC	F 48V DC
	G 110V DC

5 TIMING RESET FUNCTION

- A Instantaneous reset
- B Definite time reset – Specify reset delay ____ s
- C Count down reset



Australian Content

Unless otherwise stated the product(s) quoted are manufactured by RMS at our production facility in Melbourne Australia. Approximately 60% of our sales volume is derived from equipment manufactured in house with a local content close to 90%. Imported components such as semi-conductors are sourced from local suppliers & preference is given for reasonable stock holding to support our build requirements.

Quality Assurance

RMS holds NCSI (NATA Certification Services International), registration number 6869 for the certification of a quality assurance system to AS/NZS ISO9001-2000. Quality plans for all products involve 100% inspection and testing carried out before despatch. Further details on specific test plans, quality policy & procedures may be found in section A4 of the RMS product catalogue.

Product Packaging

Protection relays are supplied in secure individual packing cardboard boxes with moulded styrene inserts suitable for recycling. Each product & packing box is labeled with the product part number, customer name & order details.

Design References

The products & components produced by RMS are based on many years of field experience since Relays Pty Ltd was formed in 1955. A large population of equipment is in service throughout Australia, New Zealand, South Africa & South East Asia attesting to this fact. Specific product & customer reference sites may be provided on application.

Product Warranty

All utility grade protection & auxiliary relay products, unless otherwise stated, are warranted for a period of 24 months from shipment for materials & labour on a return to factory basis. Repair of products damaged through poor application or circumstances outside the product ratings will be carried out at the customer's expense.

Standard Conditions of Sale

Unless otherwise agreed RMS Standard Terms & Conditions (QF 907) shall apply to all sales. These are available on request or from our web site.



Relay Monitoring Systems Pty Ltd

6 Anzed Court, Mulgrave, Victoria 3170, AUSTRALIA

Tel: 61 3 9561 0266 Fax: 61 3 9561 0277 Email: rms@rmspl.com.au Web: www.rmspl.com.au