



IC - A00020

ID – A00251

Earth Continuity Relays

Operation Manual

IC – ID Operation Manual

Part number:

A00020	IC	Earth Continuity Relay	110VAC
A00251	ID	Remote Start Earth Continuity Relay	110VAC

24 – 48VAC/DC Optional

Version: 1.01

Date: June 2011

Copyrights

All rights reserved. This document may not, in whole or part, be copied, photocopied, reproduced, translated, or reduced to any electronic medium or machine readable form without the express written permission of Bramco Electronics.

Disclaimer

Bramco electronics has made every attempt to ensure that the information contained in this document is accurate and complete. Bramco electronics makes no representation or warranties of merchantability or fitness for any particular purpose. Bramco Electronics reserves the right to make changes to the system and/or document at any time without notice.

Bramco Electronics

Unit 2&3/2 Callistemon Close

Warabrook NSW 2304

Australia

www.bramco.com.au

Ph: +61 2 4014 4444

Fax: +61 2 4967 4100

Email: sales@bramco.com.au

Index

OVERVIEW	4
1. IC OPERATION	4
2. IC SPECIFICATIONS	4
3. ID OPERATION	5
4. ID SPECIFICATIONS	5
5. ID APPLICATION ISSUE.....	5
6. INSTALLATION	6
7. FAULT DIAGNOSIS	8
7.1. PHYSICAL LAYOUT.....	8
8. IC TYPICAL CONNECTION DIAGRAM	9
9. ID TYPICAL CONNECTION DIAGRAM	9

Overview

The IC relay has been designed to provide Earth Continuity monitoring of a supply cable by terminating the load end of the pilot core via a diode to earth.

The ID relay has been designed to provide Earth Continuity monitoring of a supply cable by terminating the load end of the pilot core through a start/stop circuit with a 100 ohm start resistor as per the connection diagram.

Pilot termination using a 1A diode.

Two sets of changeover relay contacts are provided.

Status LED's for: Power (on)
 Healthy (Relay Closed)

1.IC Operation

Local Mode:

Pilot termination uses a 1A diode at the external machine with the cathode end (Bar end) connected to earth.

When the Pilot to earth resistance is less than 45 ohms, no pilot short, and the pilot diode termination is healthy, then the EC relay is closed, i.e. healthy failsafe condition.

2.IC Specifications

Supply Voltage	A00020 110V (240V optional) 50/60Hz 2VA
Local Mode (FS Mode)	Relay is closed if pilot resistance with termination diode is less than 45 ohms.
Pilot/Earth Resistance	Relay opens at more than 45 ohms
Pilot Termination	1A 1000V diode
Drop out Delay	750ms typical
Relay Function	Failsafe
Temperature Range	0-50 Deg C
Contact Ratings	2 sets 5A 240VAC, 100VA max

3.ID Operation

Remote Start Mode

Remote Start Mode enables the ID relay to start and stop a load circuit. The remote start pilot circuit has a N/C stop button, in series with a 100R Start Resistor, with a N/O Start button across it, in series with a pilot termination diode with the cathode connected to earth.

When the pilot loop resistance is less than 145R, no pilot short, start button is pressed, shorting the 100R resistor, then the ID relay should close.

When the pilot loop resistance becomes larger than 145 ohms, the relay will open.

The ID relay op-ens with a pilot short.

4.ID Specifications

Supply Voltage	A00020 110V (240V optional) 50/60Hz 2VA 24-48VAC/DC 2VA OPTIONAL refer the factory
Remote Mode (NFS Mode) Pilot Control	Relay is open initially, and if ready LED is On (i.e pilot resistance is less than 145R), closes if pilot resistance drops by 1100R, (remote momentary start initiate – not sustainable) Relay opens when pilot resistance becomes greater than 145R
Pilot Termination	1A 1000V diode
Start Delay	100ms typical
Drop out Delay	750ms typical
Temperature Range	0-50 Deg C
Contact Ratings	2 sets 5A 240VAC, 100VA max

5.ID Application Issue

Application issue:

Engaging a Remote Start i-D PC relay without a 100 ohm start resistor in circuit, in place of an i-C EC relay with a 145 ohms maximum pilot earth resistance.

This is not recommended for the following reasons.

Normal arrangement:

The standard industry wide, Remote Start/Stop arrangement has a 100R Start resistor, which is momentarily shorted by the Start contact and remains in the pilot circuit after the Start button is released. The normally closed Stop contact is wired in series with the pilot circuit.

Remote EC relay used with 100 ohm start resistor missing:

When a Remote Start relay is used with this 100R resistor missing, the pilot /earth resistance can be as high as 145 ohms.

This is over 3 times the standard 45 ohms drop out, and increasing the possible touch voltage for an earth leakage fault. i.e. Decreased safety.

Therefore normal remote start/stop operation cannot be guaranteed. The use of ID (EC Remote Start) relay in place of an IC (EC Normal) is not recommended by Bramco.

Correct arrangement:

For EC of 45 ohms max with diode termination use Bramco IC, IC1 or IC2 in local Mode.

For EC of 45 ohms max with Remote Start with diode termination use Bramco ID, IC1 or IC2 in Remote mode.

6. Installation

6.1. General Recommendations

Following are some key recommendations for installation and wiring to help achieve successful operation.

A typical connection diagram is included in section 8

6.2. Pilot and Earth

Wire from pilot terminal 15 direct to the pilot pin on the restrained receptical.

Wire from earth terminal 16 direct to the physical earth.

Do NOT pass the pilot wire through the EL Toroid

6.3. Pilot Termination

Uses a 1A 1000V diode 1N4007 for pilot to earth termination in the remote machine.

6.4. Physical Layout

The IC-ID relay enclosure provides facilities for both DIN rail mounting, or screw mounting.

See Section 2-3 for IC Operation and Specifications.

See Section 4-5 for ID Operation and Specifications.

See Section 6 for Installation Recommendations.

See Section 2-3 for fault diagnosis.

See Section 2-3 for Typical Connection Diagrams.



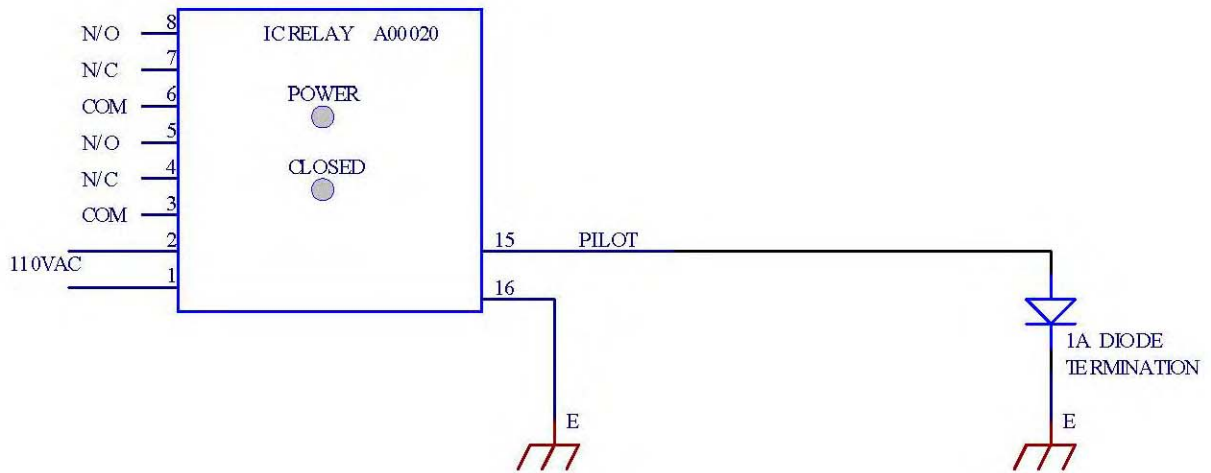
6.5. Terminal Connections

Terminal Number	Description
1	AC power /DC POS
2	AC power/DC NEG
3	COM1
4	N/C1
5	N/O1
6	COM2
7	N/C2
8	N/O2
9	NO CCNNECTION
10	NO CCNNECTION
11	NO CCNNECTION
	NO CCNNECTION
13	NO CCNNECTION
14	NO CCNNECTION
15	PILOT
16	EARTH

7. Fault Diagnosis

INDICATION	POSSIBLE CONDITION/SUGGESTION
IC Relay	
<i>Power</i> Led is Off	- Check power supply
<i>Healthy</i> Led is Off	<ul style="list-style-type: none"> - Measurable resistance in the pilot is above the 45 Ohms. - Ensure that there are no "stop" or safety circuits in operation that may be holding the pilot circuit open. - Perform a complete continuity and resistance test on the pilot circuit. - The Diode termination may be faulty. If a new machine, ensure that the termination diode is wired with the correct polarity.
<i>Healthy</i> Led is On	- The pilot circuit is diode terminated and less than 45 ohms.
INDICATION	POSSIBLE CONDITION/SUGGESTION
ID Relay	
<i>Power</i> Led is Off	- Check power supply
<i>Healthy</i> Led of Off	<ul style="list-style-type: none"> - The pilot circuit resistance is above 145 ohms. ie this includes the 100 ohm start resistor. - Momentary operating the Start contact will short the 100 ohm resistor and the ID Relay should close. ie The Healthy Led should now be on. <p>Unless:</p> <ul style="list-style-type: none"> - A pilot leakage resistance below 2000 ohms has been detected. - Perform a complete short circuit test on the pilot circuit. - If a new machine, ensure that the termination diode is wired with the correct polarity. - Inspect panel wiring and termination wiring for obvious shorts due to poor connections etc. - Inspect the trailing cable for damage. Replace cable if necessary. - The Diode termination may be faulty.
<i>Healthy</i> Led is On	- The pilot circuit is diode terminated and the pilot circuit resistance is less than 145 ohms.

8.IC Typical Connection Diagram



9.ID Typical Connection Diagram

