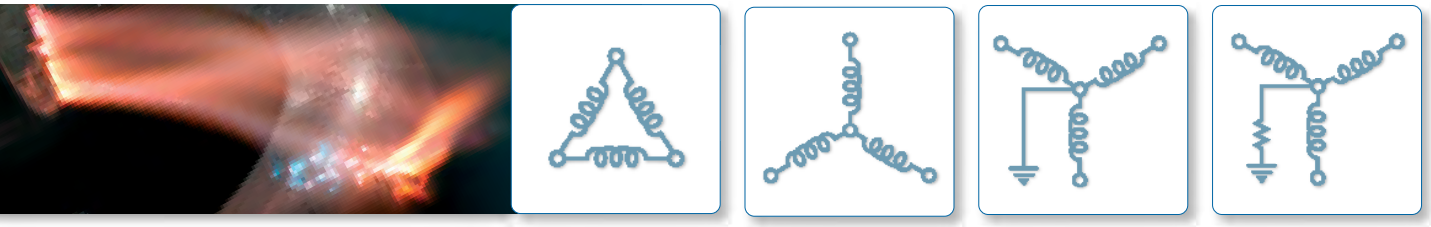
GARD

Unparalleled Protection

ARC-i-TEC

ARC FLASH PROTECTION RELAY



Instruction Manual, April 2026 Rev. 20042026

ABOUT I-GARD

I-Gard's commitment to electrical safety provides both industrial and commercial customers with the products needed to protect their electrical equipment and the people that operate them.

As the only electrical-safety focused company whose product portfolio includes neutral grounding resistors, high-resistance grounding systems and optical arc mitigation, we take pride in our technologies that reduce the frequency and impact of electrical hazards, such as arc flash and ground faults.

For those customers who have purchased from us over the last 30 years, you know us for the quality and robustness of our products, our focus on customer service and technical leadership. We build on this foundation by investing in developing new products in electrical safety education by actively participating in the IEEE community programs on technical and electrical safety standard, and working with local universities at discovering new technologies. We remain unrelenting in our goal of improving electrical safety in the workplace.

Our commitment to excellence is validated by long-standing relationships with industry leaders in fields as diverse as petroleum and gas, hospitals, automotive, data centers, food processing, aerospace, water and waste water plants, and telecommunications. We provide our customers with the product and application support required to ensure that their electrical distribution system is safe and reliable.

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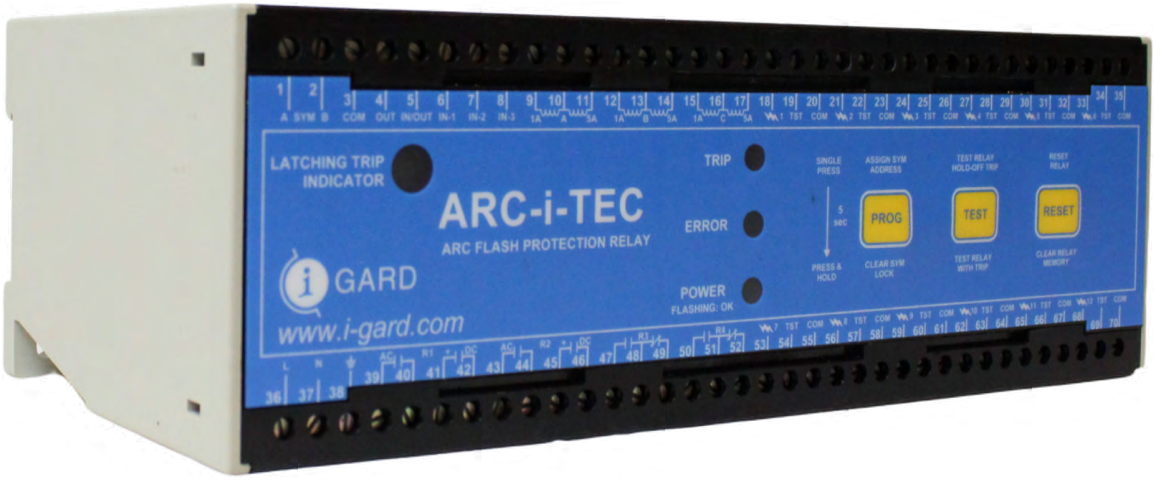
1. INFORMATION ON ARC PROTECTION

Arc Flash is the result of a rapid release of energy due to an arcing fault occurring phase to phase, phase to neutral or phase to ground causing severe damage to equipment and personnel. Commonly known as a discharge of electricity between two or more conductors, an arc flash can result in large values of pressure, heat and light released. The energy released by an arcing event is proportional to the voltage, current and the duration of the event.

An arc flash progresses at a speed of 30 m/s, burning and consuming all materials in the short circuit current path. The arc remains as long as there is enough power to maintain it. In order to extinguish an arc the protection system must detect the presence of the arc and provide a trip signal to an interrupting device to isolate the arc immediately.

2. ARC-i-TEC INTRODUCTION



The I-Gard ARC-i-TEC reduces incident energy. Optical sensors detect and de-energize the arc flash hazard or arcing event resulting in a safer electrical system, protecting personnel and equipment.

The ARC-i-TEC Arc Protection System provides the capability to configure the trip functions of the Arc Protection System to match multiple different power distribution designs and alternate switching arrangements.

The ARC-i-TEC utilizes solid state relay technology that ensures the tripping sequence occurs in the shortest possible time, reaching the trip coil of the supply circuit breakers in less than 1 ms after the arc has been detected and the pre-set current value has been exceeded.

The ARC-i-TEC is configurable to suit the specific arrangements of the switchgear and can be deployed using light and current or light only for detection purposes.

The I-Gard ARC-i-TEC utilizes continuous monitoring processes to ensure the optical/fiber sensors are functional at all times.

3. OPERATION

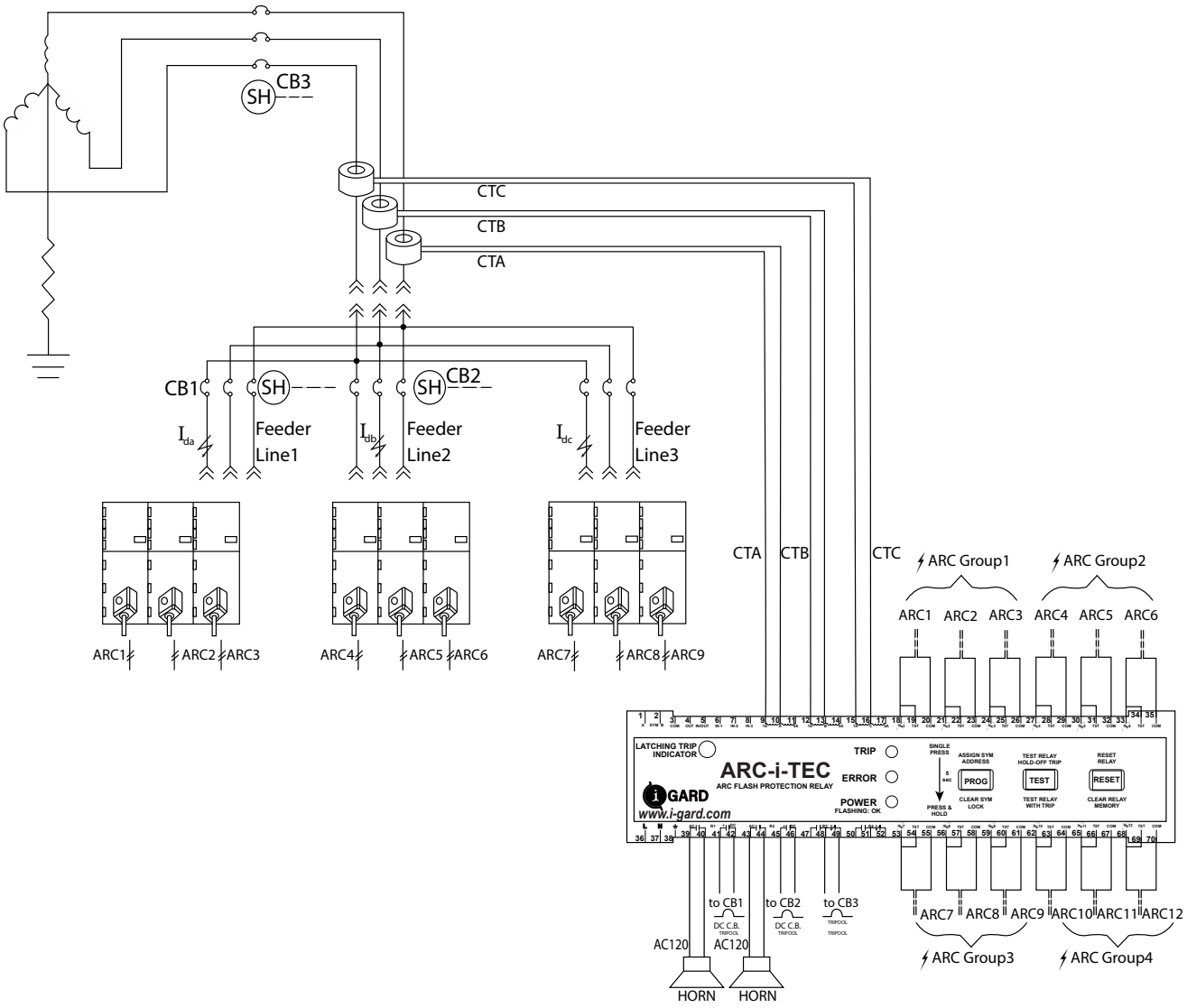


Figure 3.1: Typical ARC-i-TEC Application Drawing

3.1 INDICATION

Power LED indicator:
A green LED on the front of the ARC-i-TEC displays the status of the control voltage
LED Off: No control voltage or ARC-i-TEC defective
LED Slow Flashing: Normal, control voltage is normal
LED Steady On: Control voltage too low or ARC-i-TEC defective

Trip LED:
A red LED on the front of the ARC-i-TEC displays the status of the arc flash relays
LED off: No trip
LED Steady on: One of the Sensors detected a flash that met the programmed conditions and tripped the companion relay

ERROR LED:
Programmable to show red when one or a combination of sensor error, programming error or software errors are detected.

3.1.1 LATCHING TRIP INDICATOR

The ARC-i-TEC has an electromagnetic status indicator which provides trip indication. The indicator will show "red" after any one of the four relays trip due to its programmed formula being met. The indicator will maintain the same status even if the control power is lost after tripping a breaker (if the control power supply to the ARC-i-TEC is taken from the load side of the breaker). The electromagnetic SYM indicator can be manually reset by momentarily depressing the reset push button.

3.2 FLASH SENSORS

The ARC-i-TEC has built in provision for up to twelve optical flash sensors. Each optical flash sensor can detect a high intensity flash and is tuned to pick up in the infra-red range on the electromagnetic spectrum. Figure 3.2.a shows the frequency response of the sensors. Once a flash is detected the ARC-i-TEC will trip the corresponding relay in under 1 ms provided the sensor is programmed to trip on light only. If the sensor is programmed to trip on light and over current then the ARC-i-TEC will search for an over current signal. If and only if this signal is found the ARC-i-TEC will trip the corresponding relay, again in under 1 ms.

Two types of flash sensor are available: both come with a 20 foot cable (other custom lengths are available) that contains two conductors and a shield to protect against electromagnetic noise interference. Sensors can be mounted directly in a cell/panel or on the outer wall with the sensor element popping through a hole in the panel if there are space constraints. See Section 10 for dimensional drawings.

The ARC-i-TEC continuously monitors the function of the arc sensors. Any failure of the sensors results in a signal to the ERROR LED.

3.2.1 TRIP RELAYS

Flash trip relays are solid state and are capable of tripping in less than 1 ms. Relays one and two have a form A N.O. contact for AC and a polarity sensitive set of DC contacts for alarm circuits. Relays three and four each have one form C contact for alarm circuits.

Flash sensors 1, 2 and 3 provide signals to relay 1.
Flash sensors 4, 5 and 6 provide signals to relay 2.
Flash sensors 7, 8 and 9 provide signals to relay 3.
Flash sensors 10, 11 and 12 provide signals to relay 4.

Each flash trip relay can be individually programmed for operation on light only or light and over current.

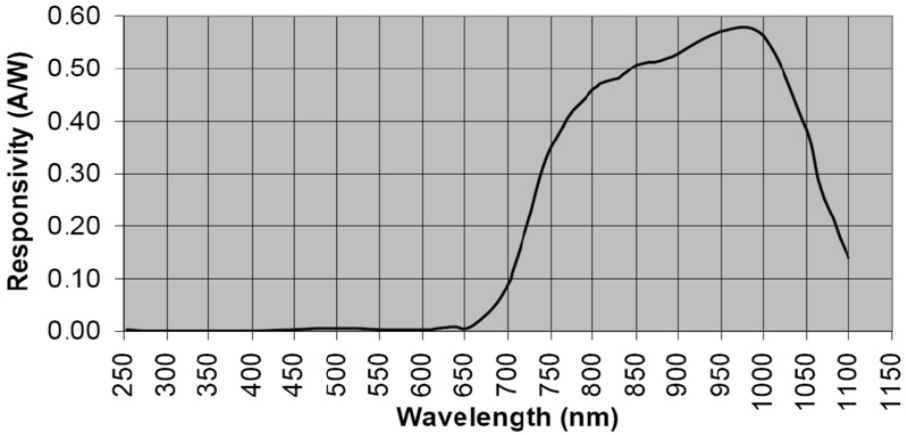


Figure 3.2.a: Flash Sensor Spectral Response

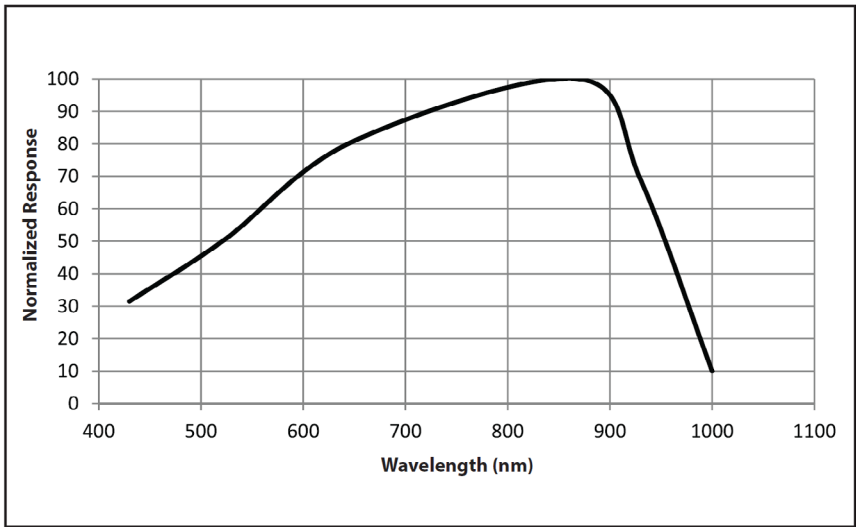


Figure 3.2.b: Fiber sensor spectral response

3.3 TEST

The "flash only" mode can be tested by activating a high intensity flash light source within line of sight of the flash sensor.

The "flash and over current" test mode can be tested by direct injection of over current into one of the three phase current sensors AND activating a high intensity flash light source within line of sight of the flash sensor.

4. QUICK START GUIDE: ARC-i-TEC AND ARC-i-TEC-SYM SYSTEM

4.1 INTRODUCTION

The ARC i TEC Current Fault Relay is designed to detect overcurrent and arc flash events using current transformers (CTs) and up to twelve optical arc flash sensors. When paired with the ARC i TEC SYM display unit, the system provides real time monitoring, configuration, diagnostics, and event logging.

Symbols:

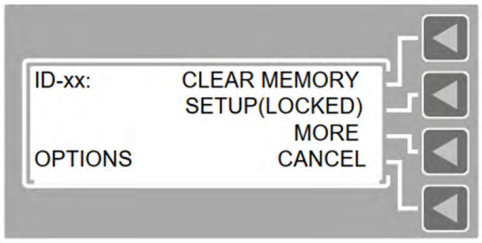
SYMBOL	DESCRIPTION
⭱	General Digital Output
⭳	General Digital Input
⭳ 1	No. 1 Digital Input (#6 terminal of ARC-i-TEC)
⭳ 2	No. 2 Digital Input (#7 terminal of ARC-i-TEC)
⭳ 3	No. 3 Digital Input (#8 terminal of ARC-i-TEC)
⭱ 0	No. 0 Digital Output (#5 terminal of ARC-i-TEC) *
⭱ 1	No. 1 Digital Output (#4 terminal of ARC-i-TEC)
ϟ x	No. x ARC Flash Sensor (x = 1 ~12)
ϟ G1	No. 1 Group for ARC Flash Sensors
ϟ G2	No. 2 Group for ARC Flash Sensors
ϟ G3	No. 3 Group for ARC Flash Sensors
ϟ G4	No. 4 Group for ARC Flash Sensors
ϟ G	General Group for all ARC Flash Sensors (from ϟ1 to ϟ 12)
ΦA	Phase A Feeder Line
ΦB	Phase B Feeder Line
ΦC	Phase C Feeder Line
SYM	Display Screen for ARC-i-TEC
↑	No.1 tactile button on the front panel of SYM Display Screen
↓	No.2 tactile button on the front panel of SYM Display Screen

4.2 FRONT PANEL CONTROLS

The ARC i TEC relay includes four tactile buttons: **PROGRAM, RESET, TEST,** and **VIEW** (via SYM). Each button supports specific operational and configuration functions.

4.2.1 PROGRAM BUTTON

- Used to acknowledge ID assignment requests from the SYM display.
- Hold for 5 seconds to unlock the SETUP menu when SYM displays SETUP (LOCKED) (Refer to Figure 4.2.1).
- Enables access to configuration options through the SYM interface.



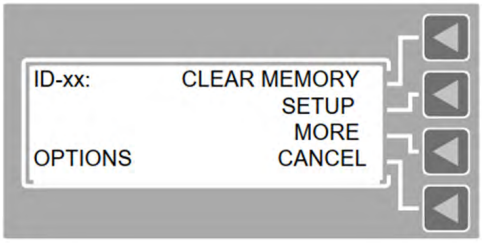


Figure 4.2.1: Enter ARC-i-TEC Setup mode using SYM

4.2.2 RESET BUTTON

- The ARC-i-TEC has a tactile Reset button. After a trip, the relay stays tripped until the fault is cleared and the Reset button is pressed, or until control power is removed from L & N.
- Holding the Reset button for 5 seconds clears the device's internal memory (trip status and counter registers).
- This reset affects only the selected ARC-i-TEC, not any other IDs in the queue.

4.2.3 TEST BUTTON

The TEST button supports two test modes:

- Verifies whether CT output is too low.
- Checks for simulated current which exceeds the trip setting

4.2.4 SERVICE ENTRANCE RELAY

- If the CT signal is too weak, the screen shows "CHECK CT OPEN CIRCUIT"; clear it using OPT → CLEAR CURR.
- To test the current sensor, turn Flash Relay 3 DIP switch OFF and make sure no flash sensor is plugged into Relay 3.
- Press and release the Test button to activate the test relay.
- To test without causing a trip, press Test + Reset together, then release.
- In test mode, the Power LED flashes fast; if a trip happens, it slows down again and you can reset normally.
- If no trip happens, the relay stays in test mode for up to 2 minutes, then goes back to normal.

4.2.5 SIMULATED TEST

- Hold TEST ~5 seconds until Power LED flashes rapidly to start simulated test.
- Relay uses 4× trip setting simulated current and trips after the programmed delay.
- Hold TEST + RESET to run the test without tripping the breaker.
- Simulated test mode also ends automatically after 2 minutes.

4.3 COMMUNICATION AND WIRING

4.3.1 SYM DISPLAY COMMUNICATION

- One SYM display acts as master; multiple ARC i TEC units act as slaves.
- Devices connect in a daisy chain using shielded twisted pair cable.
- SYM terminals: A, B, C must match slave terminals A (1), B (2), C (3) (Refer to Figure 4.3.1).

WARNING
Incorrect wiring between Power and COM1 will damage equipment.

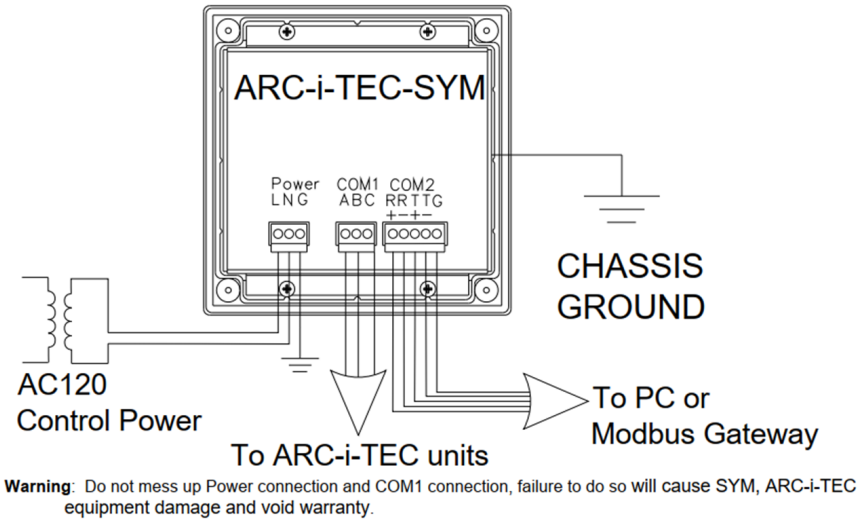


Figure 4.3.1: Communication between ARC-i-TEC and ARC-i-TEC-SYM

4.3.2 MODBUS COMMUNICATION

- ARC i TEC SYM provides an isolated RS 485 connection for Modbus RTU networks.
- The RS 485 cable shield must be grounded at the ground terminal on the 5 pin jack.
- The SYM can connect to a PC using a RS 485 to RS 232 converter or operate as a node in an existing Modbus network.
- External software is required to read Modbus registers. All the registers are READ only.

4.4 SYM DISPLAY OPERATION

- SYM uses a simple 4 button interface, with each button corresponding to on screen menu items.
- Menu items change dynamically as you navigate through screens.
- Two LEDs are located at the bottom of the display.

4.4.1 GREEN LED (POWER LED)

- Slow flashing: Display powered and operating correctly.
- Constant off: No control power or system not functioning.
- Constant on: System fault or malfunction.

4.4.2 RED LED (ALARM LED)

- Flashes quickly if a device trips, loses communication, or loses control power.
- Remains off when no alarm is present.

4.4.3 INTERNAL BEEPER

- Built in beeper provides audible alerts based on system configuration.
- ON: Beeps for trip, power loss, or communication loss
- OFF: Never beeps
- TRIP: Beeps only for trip events

4.5 ASSIGNING SLAVE IDS

On first power up, SYM must assign IDs to each ARC i TEC unit (Refer to Figure 4.5).

- Allowed IDs: ID8 to ID23
- Use SYM buttons to select ID and press SET.
- Press and hold PROGRAM on the relay for 2 seconds to confirm.

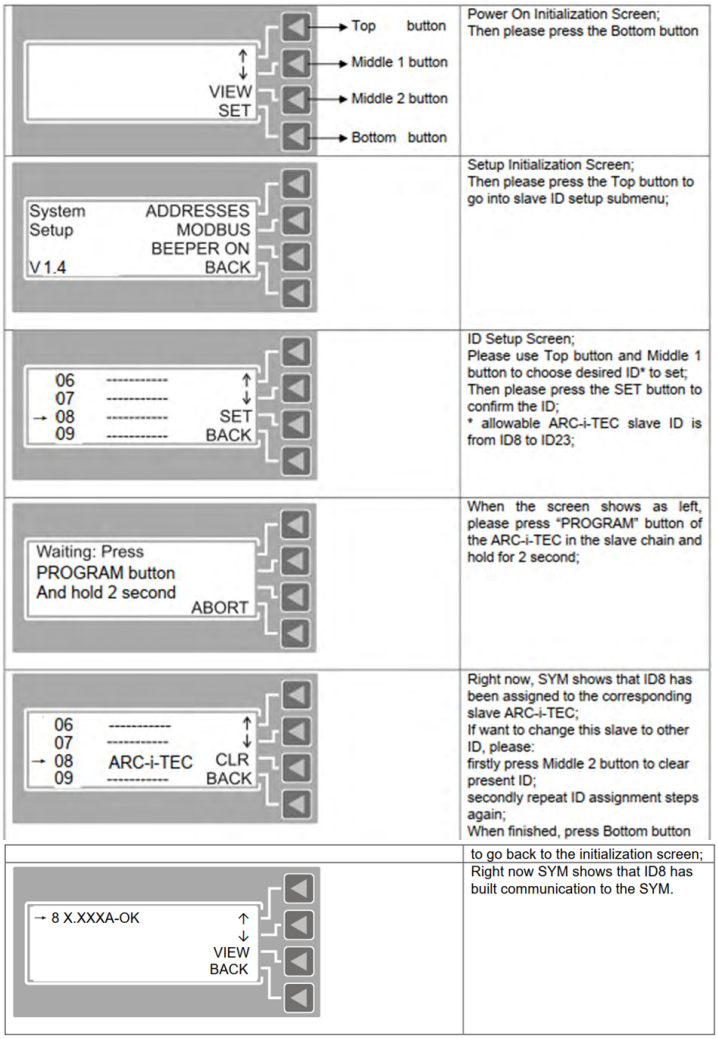


Figure 4.5: Slave ID Set-Up

4.6 VIEWING OPERATING STATUS

4.6.1 MAIN PAGE

Press VIEW to access the Main Page. It displays (Refer to Figure 4.6.1.a):

- Three phase current
- Arc flash sensor status
- Digital inputs/outputs
- Relay trip logic status

If a relay has tripped, the Main Page shows TPR1, TPR2, TPR3, TPR4, or combinations.
If an arc flash sensor triggers briefly, the Main Page may not capture it, but detailed ARC pages will show the trigger count (Refer to Figures 4.6.1.a to 4.6.1.d).

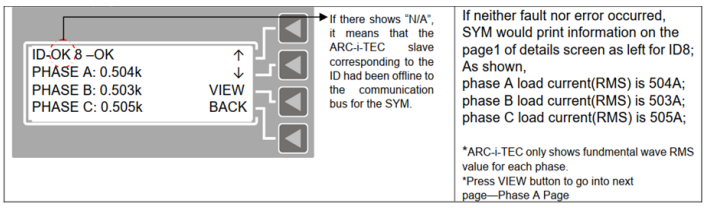


Figure 4.6.1.a: Main page when Normal

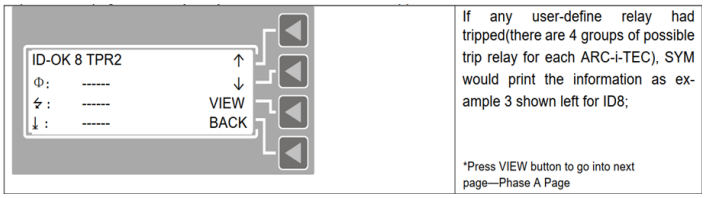


Figure 4.6.1.b: Main page when Relay 2 of Slave has tripped

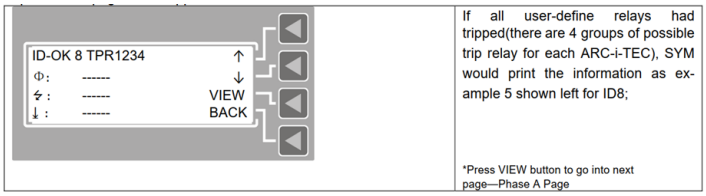


Figure 4.6.1.c: Main page when Relay 1,2,3,4 of Slave has tripped

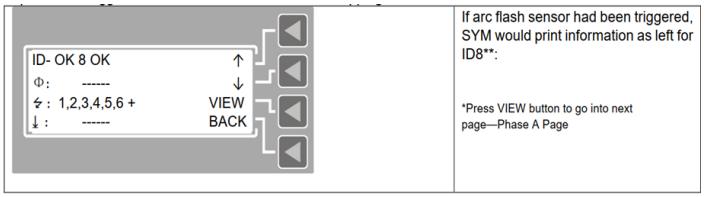


Figure 4.6.1.d: Main page Arc flash trigger count

4.6.2 PHASE DETAIL PAGES

Each phase (A, B, C) shows (Refer to Figures 4.6.2.a to c):

- Pickup level
- Real time RMS current
- Trigger count
- Whether a trigger lasted more than 5 seconds

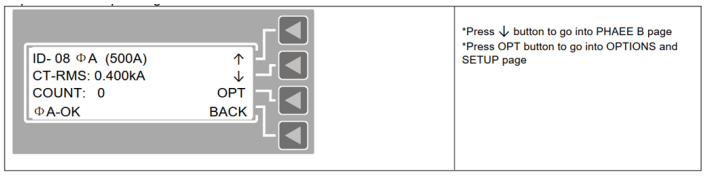


Figure 4.6.2.a: Phase A page – Normal Status

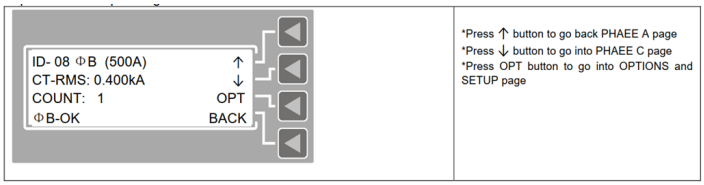


Figure 4.6.2.b: Phase B page – Normal Status, but triggered once

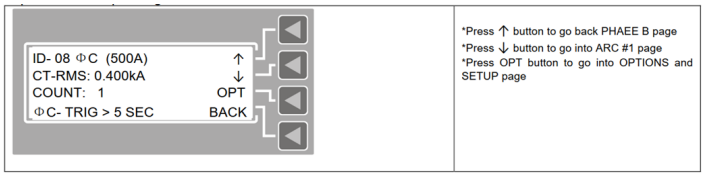


Figure 4.6.2.c: Phase C page – Triggered once and > 5 sec

4.6.3 ARC FLASH SENSOR OVERVIEW

- ARC i TEC supports 12 optical ARC flash sensors, tuned to detect high intensity infrared light.
- A flash lasting >850 µs increments the sensor's trigger counter (Sensor 1 = Channel 1, etc.).
- Sensors can be enabled/disabled via the SYM SETUP menu.
- If enabled but not connected (open circuit) or shorted, the red ERROR LED flashes.
- If disabled, no triggers or errors are generated, but the counter still records activations.
- Sensor status and counts are shown on the ARC Sensor pages of the SYM display.

4.6.4 APPLICATION NOTES

- All 12 sensors must be assigned to Groups G1–G4 for relay logic.
- A shorted enabled sensor is treated as both an error and a trigger.
- A disabled sensor ignores faults/triggers but still increments its internal counter.

4.6.5 SENSOR TYPES & INSTALLATION

- Sensors can be enabled/disabled through the SYM SETUP menu.
- Two sensor types available:
    - o ARC i TEC L1: Direct mount
    - o ARC i TEC L2: Panel mount with protruding sensor
- Both use 20 ft shielded 2 core cable.
- Always disable ARC Flash logic before wiring or modifying sensors.

4.6.6 CHECKING STATUS AND HISTORY

- All 12 ARC sensors must be assigned to a group (G1–G4) for relay logic evaluation.
- An enabled sensor with a shorted wire (signal to COM) generates both an ERROR and a trigger.
- A disabled sensor generates no triggers or errors, but its counter still increments on valid flashes
- SYM includes a HISTORY page showing past relay trips and ARC sensor triggers (Refer to Figure 4.6.6).
- The HISTORY page appears after ARC Sensor #12 in the menu.
- The screen lists which relay tripped and which ARC sensor triggered.
- Example: Viewing ARC Sensor #2 will show its trigger history and related relay activity.

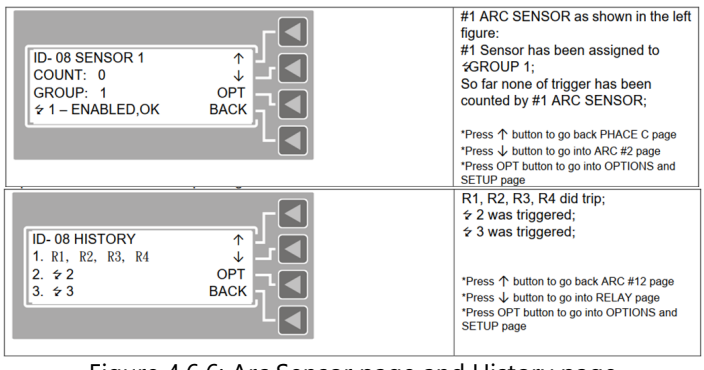


Figure 4.6.6: Arc Sensor page and History page

4.7 DIGITAL INPUT/OUTPUT

- Digital I/O is multi function and can be programmed through the IN/OUT SETUP menu on the SYM (Refer to Figure 4.7).
- DI/DO terminals are typically interconnected between multiple ARC i TEC units to synchronize logic signals.
- Warning: Do not apply any external voltage on digital input/output. These digital ports are to be voltage free (dry) contacts and switched to the common terminal provided.

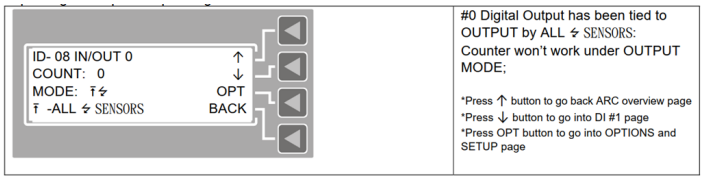


Figure 4.7: Phase A page – Normal Status

4.8 OPTION, RESET, SET-UP MENU

- From any page except the Initial Page or Main Page, press OPT to open the OPTION menu (Refer to Figure 4.8).
- Example: When viewing ARC Flash Sensor #1, pressing OPT opens its configuration options.
- Under the #1 OPTION page, the TEST button performs an optical simulation test on all enabled ARC sensors.
- This test does not trigger relay logic and does not affect ARC sensor counters.
- If sensors detect the simulated light, no warnings are shown.
- If detection fails, the SYM identifies the faulty sensors, triggers an ERROR, and turns on the red ERROR LED.
- If an ERROR mode is assigned to a relay (e.g., R4), that relay will also trip (failsafe: normally energized).

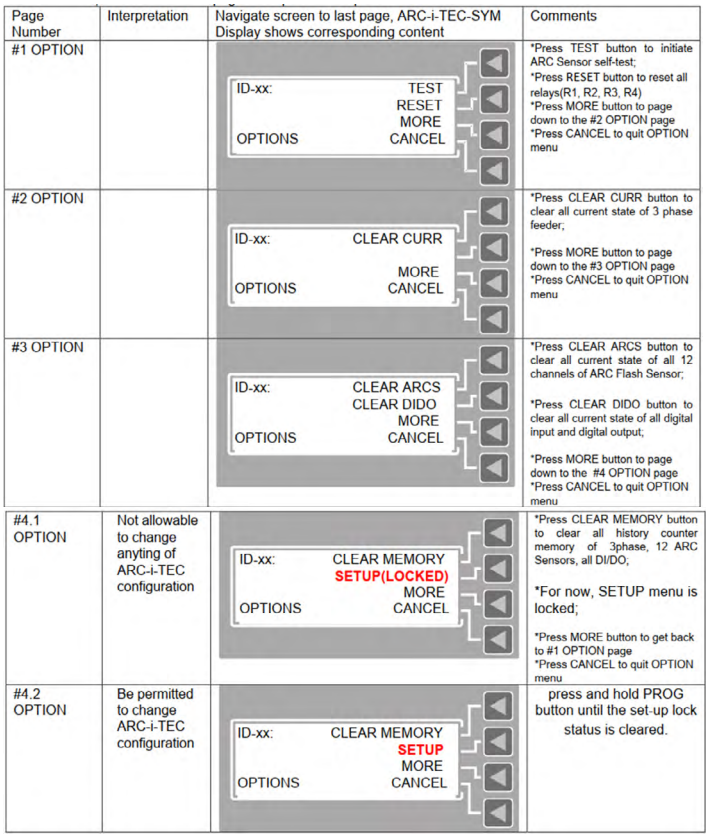


Figure 4.8: Different pages of OPT menu

4.9 ARC FLASH SENSOR SETTING

- Change only one setting at a time before pressing SAVE.
- Each ARC Flash sensor must:
    - o Be set to Enabled or Disabled.
    - o Be assigned to Group G1, G2, G3, or G4.
- Use only ARC Group elements (G1–G4 or G) as valid logic sources for relays R1–R4.
- ARC Groups are evaluated individually (G1 → G2 → G3 → G4 → overall Group G).
- If any group's result is TRUE, that ARC Group is considered triggered; FALSE means no trigger.

4.10 USE DEFINED PROGRAMMABLE RELAY

- ON: Relay normally de energized; closes on trip and stays closed until power is removed.
- ON MON: Relay normally de energized; auto resets 1 second after fault clears (trip LED stays ON) (Refer to Figure 14).
- BKP R1: Acts as backup; trips only if R1 logic is TRUE and held for 110 ms.
- BKP R2: Acts as backup; trips only if R2 logic is TRUE and held for 110 ms.
- ERROR (Failsafe): Relay normally energized; trips only on system errors (sensor open/short, overcurrent >5 s, input >5 s).
- OFF: Relay always de energized.

4.10.1 SET-UP DEFINED RELAY

- In the RELAY configuration menu, each relay's trip logic can be edited.
- Select the desired relay, adjust the logic formula, then SAVE and exit.
- Example: Program Relay 1 to trip when (ARC4 OR ARC5 OR ARC6) AND OVERCURRENT.

Step	Check Items: if ARC-i-TEC-SYM Display shows corresponding content	Comments
1	ID-xx: R1 SETUP SET1 MODE: ON-CNT LOGIC (↯G2 OR OFF) & SAVE (3Φ OR OFF) BACK	

Step	Check Items: if ARC-i-TEC-SYM Display shows corresponding content	Comments
1	ID-xx: R2 SETUP SET1 MODE: ON-CNT LOGIC (↯G1 OR OFF) & SAVE (3Φ OR OFF) BACK	

Step	Check Items: if ARC-i-TEC-SYM Display shows corresponding content	Comments
1	ID-xx: R3 SETUP SET1 MODE: ON-CNT LOGIC (↯G1 OR ↯G2) & SAVE (3Φ OR OFF) BACK	The first kind of Program to conduct the (ARC1 OR ARC2 OR ARC3 OR ARC4 OR ARC5 OR ARC6) AND OVERCURRENT logic to Relay3
2	ID-xx: R3 SETUP SET1 MODE: ON-CNT LOGIC (OFF OR 3Φ) & SAVE (↯G1 OR ↯G2) BACK	The second kind of Program to conduct the (ARC1 OR ARC2 OR ARC3 OR ARC4 OR ARC5 OR ARC6) AND OVERCURRENT logic to Relay3

Figure 4.10.1: Example Set-up of User Defined Relay

4.11 MODBUS COMMUNICATION

- The ARC i TEC SYM provides Modbus RTU access to all connected relays, allowing external systems to retrieve operational data.
- Through Modbus, users can read the relay status byte, three phase RMS current values, and event counters such as phase overcurrent counts, digital input activations, and ARC sensor triggers.
- Each relay has its own register set based on its assigned ID, and the SYM supports up to sixteen relays on a single Modbus address. External systems read the appropriate Modbus registers through the SYM, which acts as the communication gateway for the entire network.
- Each ARC i TEC device has its own register set based on its assigned ID. Data is retrieved by reading the appropriate Modbus registers through the SYM.
- The SYM supports up to 16 ARC i TEC devices from IDs 8-23 on a single Modbus address.

Register no. in decimal	Contents	Format in HEX	Comments
1609	Status of ID8	0x00nn	ID 8 Equipment Relay Group Trip Status
1611	PhA low byte	0x00nn	ID 8 Equipment IA RMS= (1610 Low Byte * 255 + 1609 Low Byte)
1612	PhA high byte	0x00nn	
1613	PhB low byte	0x00nn	ID 8 Equipment IB RMS=(1612 Low Byte)
1614	PhB high byte	0x00nn	
1615	PhC low byte	0x00nn	ID 8 Equipment IC RMS=(1614 Low Byte)
1616	PhC high byte	0x00nn	
1617	PhA Counter	0x00nn	ID 8 Equipment Phase A triggered count
1618	PhB Counter	0x00nn	ID 8 Equipment Phase B triggered count
1619	PhC Counter	0x00nn	ID 8 Equipment Phase C triggered count
1624	DI1 Counter	0x00nn	ID 8 Equipment #1 Digital IN triggered
1626	DI2 Counter	0x00nn	ID 8 Equipment #2 Digital IN triggered
1628	DI3 Counter	0x00nn	ID 8 Equipment #3 Digital IN triggered
1629	DI0 Counter	0x00nn	ID 8 Equipment #0 Digital IN triggered
1631	ARC1 Counter	0x00nn	ID 8 Equipment #1 ARC Channel
1632	ARC2 Counter	0x00nn	ID 8 Equipment #2 ARC Channel
1633	ARC3 Counter	0x00nn	ID 8 Equipment #3 ARC Channel
1634	ARC4 Counter	0x00nn	ID 8 Equipment #4 ARC Channel
1635	ARC5 Counter	0x00nn	ID 8 Equipment #5 ARC Channel
1636	ARC6 Counter	0x00nn	ID 8 Equipment #6 ARC Channel
1637	ARC7 Counter	0x00nn	ID 8 Equipment #7 ARC Channel
1638	ARC8 Counter	0x00nn	ID 8 Equipment #8 ARC Channel
1639	ARC9 Counter	0x00nn	ID 8 Equipment #9 ARC Channel
1640	ARC10 Counter	0x00nn	ID 8 Equipment #10 ARC Channel
			ID 8 Equipment #11 ARC Channel
1641	ARC11 Counter	0x00nn	ID 8 Equipment #12 ARC Channel
1642	ARC12 Counter	0x00nn	ID 8 Equipment #1 ARC Channel

Register no. in decimal	Contents	Format in HEX	Comments
1513	Status of ID9	0x00nn	ID 9 Equipment Relay Group Trip Status
1515	PhA low byte	0x00nn	ID 9 Equipment IA RMS= (1516 Low Byte * 255 + 1515 Low Byte)
1516	PhA high byte	0x00nn	
1517	PhB low byte	0x00nn	ID 9 Equipment IB RMS= (1518 Low Byte * 255 + 1517 Low Byte)
1518	PhB high byte	0x00nn	
1519	PhC low byte	0x00nn	ID 9 Equipment IC RMS= (1520 Low Byte * 255 + 1519 Low Byte)
1520	PhC high byte	0x00nn	
1521	PhA Counter	0x00nn	ID 9 Equipment Phase A triggered count
1522	PhB Counter	0x00nn	ID 9 Equipment Phase B triggered count
1523	PhC Counter	0x00nn	ID 9 Equipment Phase C triggered count
1528	DI1 Counter	0x00nn	ID 9 Equipment #1 Digital IN triggered
1530	DI2 Counter	0x00nn	ID 9 Equipment #2 Digital IN triggered
1532	DI3 Counter	0x00nn	ID 9 Equipment #3 Digital IN triggered
1533	DI0 Counter	0x00nn	ID 9 Equipment #0 Digital IN triggered
1535	ARC1 Counter	0x00nn	ID 8 Equipment #1 ARC Channel
1536	ARC2 Counter	0x00nn	ID 8 Equipment #2 ARC Channel
1537	ARC3 Counter	0x00nn	ID 8 Equipment #3 ARC Channel
1538	ARC4 Counter	0x00nn	ID 8 Equipment #4 ARC Channel
1539	ARC5 Counter	0x00nn	ID 8 Equipment #5 ARC Channel
1540	ARC6 Counter	0x00nn	ID 8 Equipment #6 ARC Channel
1541	ARC7 Counter	0x00nn	ID 8 Equipment #7 ARC Channel
1542	ARC8 Counter	0x00nn	ID 8 Equipment #8 ARC Channel
1543	ARC9 Counter	0x00nn	ID 8 Equipment #9 ARC Channel
1544	ARC10 Counter	0x00nn	ID 8 Equipment #10 ARC Channel
1545	ARC11 Counter	0x00nn	ID 8 Equipment #11 ARC Channel
1546	ARC12 Counter	0x00nn	ID 8 Equipment #12 ARC Channel

5. TECHNICAL SPECIFICATIONS

Control Power:
10VA AC or 10W DC
80-240 V AC/DC +/- 10%

Temperature Range (Celsius):
Operating Temperature: -40 to +65
Storage Temperature: -40 to +85

Dielectric:
Relay contacts to chassis:
1480V rms. For 1 minute

Control Terminals to chassis:
1480V rms. For 1 minute

Output Contacts
Trip Relays 1 and 2:
Type: "A" N.O. (Normally Open)
Rating: 10A @ 240V AC
8A @ 24 V DC
Operating Time: < 1ms

Type: Polarity sensitive DC N.O.
Rating: 8A DC @ 24V DC
100W @ 240V DC
Operating Time: < 1ms

Trip Relays 3 and 4:
Type: "C"
Rating: 10A @ 240V AC
8A @ 24V DC
1/2HP @ 240V AC
Operating Time: < 7ms typ. (excluding bounce)

Physical:
Weight: 0.50 kg (0.00 lbs)
Dimension: See Figure 4

Mounting:
DIN Rail 35 mm
Two Screw #8 x ¾" (M4 x 20 mm)

I-Gard reserves the right to change specifications of its products without notice.

5.1 BUTTONS FUNCTION

PROG: single press serves to assign a system address
A five second press and hold is used to clear a SETUP lock of ARC-i-TEC SYM

TEST: A single press is used to test a relay without allowing the relays to actually trip
A five second press and hold is used to test while allowing the relay to trip

RESET: A single press is used to reset all relays and FLAG trip status
A five second press and hold is used to clear a relay memory (digital IN counters, ARC SENSOR counters).

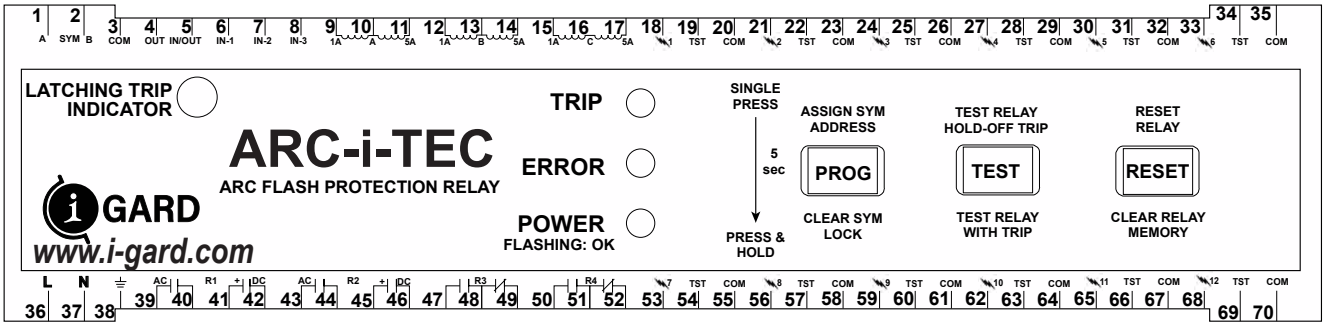


Figure 5.1: ARC-i-TEC Connection Diagram

Communication Peripherals
1. ARC-i-TEC-SYM A
2. ARC-i-TEC-SYM B
3. ARC-i-TEC-SYM COM

Digital Input/Output
4. Programmable Output: OUT1
5. Programmable Input: IN0
   Programmable Output: OUT0
6. Programmable Input: IN1
7. Programmable Input: IN2

Terminal 3 is also used as the COMMON terminal for all digital IN/OUT channels.

CT
9. Phase A Input (1k/1)
10. Phase A COM (1k/1)
11. Phase A Input (5k/1)
12. Phase B Input (1k/1)
13. Phase B COM (1k/1)
14. Phase B Input (5k/1)
15. Phase C Input (1k/1)
16. Phase C COM (1k/1)
17. Phase C Input (5k/1)

Control Power
18. Line
37. Neutral
38. Ground

Flash Sensors
18. Flash 1
19. Flash 1 Self Test
20. Flash 1/Shield
21. Flash 2
22. Flash 2 Self Test
23. Flash 2/Shield
24. Flash 3
25. Flash 3 Self Test
26. Flash 3/Shield
27. Flash 4
28. Flash 4 Self Test
29. Flash 4/Shield
30. Flash 5
31. Flash 5 Self Test
32. Flash 5/Shield
33. Flash 6
34. Flash 6 Self Test
35. Flash 6/Shield

Trip Relays
39, 40. Universal N.O. Contact for Relay 1
41. DC N.O. Contact for Relay 1 (Positive)
42. DC N.O. Contact for Relay1(Negative)
43, 44. Universal N.O. Contact for Relay 2
45. DC N.O. Contact for Relay 2 (Positive)
46. DC N.O. Contact for Relay 2 (Negative)
47. N.O. Contact for Relay 3
48. Relay 3 COM
49. NC Contact for Relay 3
50. N.O. Contact for Relay 4
51. Relay 4 COM
52. NC Contact for Relay 4

Flash Sensors
53. Flash 7
54. Flash 7 Self Test
55. Flash 7/Shield
56. Flash 8
57. Flash 8 Self Test
58. Flash 8/Shield
59. Flash 9
60. Flash 9 Self Test
61. Flash 9/Shield
62. Flash 10
63. Flash 10 Self Test
64. Flash 10/Shield
65. Flash 11
66. Flash 11 Self Test
67. Flash 11/Shield
68. Flash 12
69. Flash 12 Self Test
70. Flash 12/Shield

USE ARC-I-TEC SYM FINISH THE FOLLOWING PROGRAM

ARC Group1= ARC Channel1 OR ARC Channel2 OR ARC Channel3
ARC Group2= ARC Channel4 OR ARC Channel5 OR ARC Channel6
ARC Group3= ARC Channel7 OR ARC Channel8 OR ARC Channel9

Relay X trip formula= [(trigger source A) OR (trigger source B)] AND [(trigger source C) OR (trigger source D)]

Program 4 Relay Logic formulas as followings:

Relay 1 trip formula= (3Ph Over I)	working mode= Normally OPEN
Relay 2 trip formula= (3Ph Over I) AND (ARC Group1)	working mode= Normally OPEN
Relay 3 trip formula= (3Ph Over I) AND (ARC Group2)	working mode= Relay 1 Backup 100mS
Relay 4 trip formula= Any ARC Group	working mode= Normally OPEN

6. DIMENSIONAL DRAWINGS

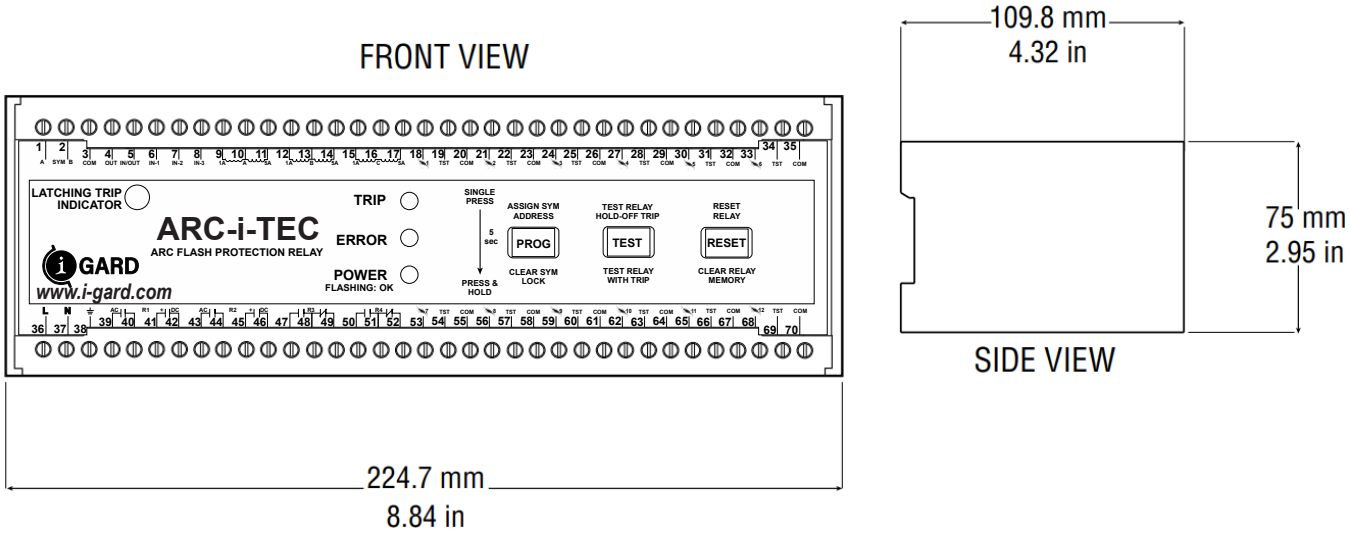


Figure 6.1: ARC-i-TEC Dimensions (Inches)

Refer to Figure 6.2 for ARC-i-TEC SYM dimensions. The ARC-i-TEC SYM is designed to be mounted with four #6-32 x 1/2" mounting screws which are included with the display.

Suggested panel cut-out dimensions are shown below.

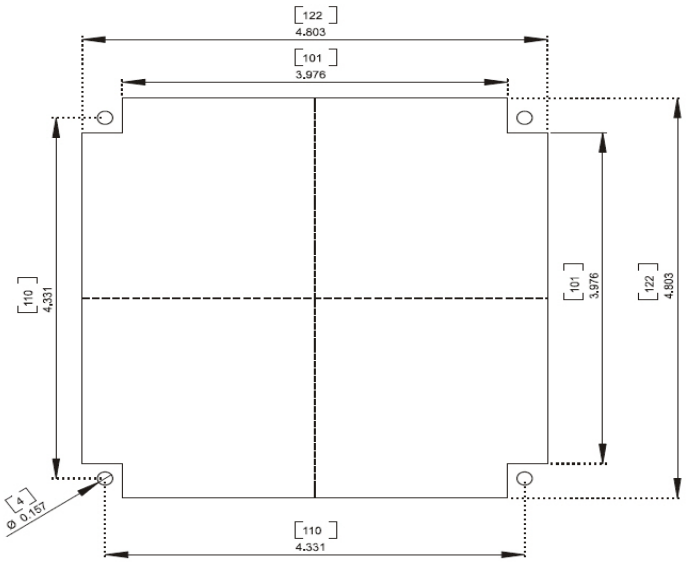


Figure 6.2: Suggested Panel Cut-Out Dimensions - inches (millimetres)

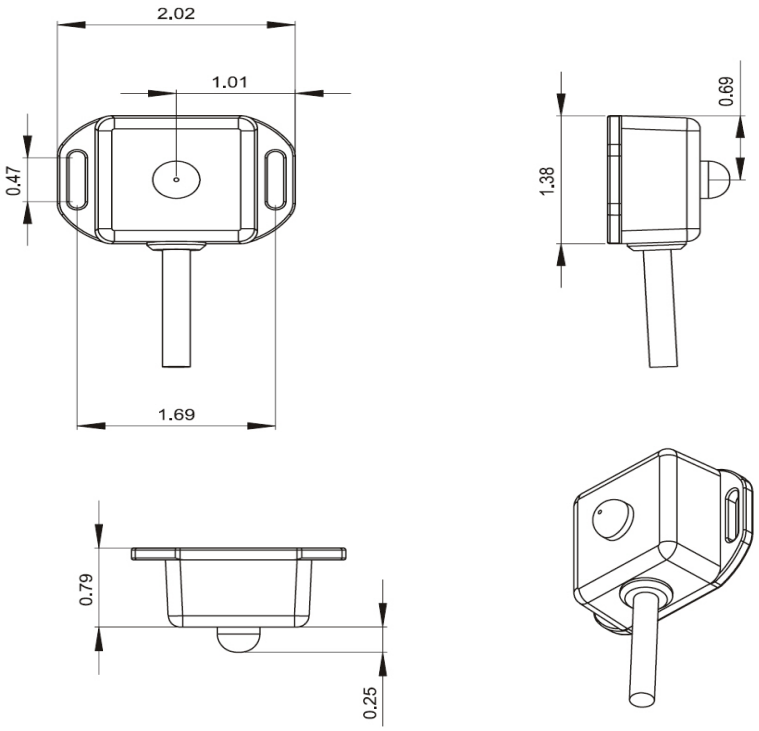


Figure 6.3: SENSOR-L1 Flash Sensor

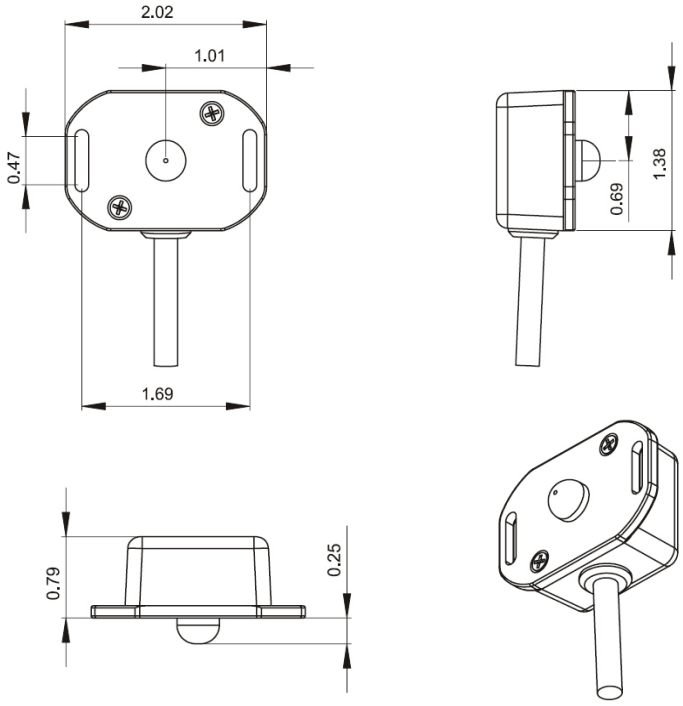


Figure 6.4: SENSOR-L2 Flash Sensor

GARD

Unparalleled Protection

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Phone: 905-673-1553
Toll Free: 1-888-737-4787

Fax: 905-673-8472
support@i-gard.com

www.i-gard.com