

OUR ACHIEVEMENTS

DECLARATION OF CONFORMITY

Product: Series 94 Relays
 Model: Earth Leakage Relay: ELR94-1/I (Unit under test)
 Variant: Earth Fault Relay: EFR94-1/I
 Earth monitoring Relay: EMR94-1/I
 Voltage Relay: VR94-1
 Current Relay: CR94-1
 Frequency Relay: FR94-1

We hereby under sole responsibility declare that the product to which this declaration complies with essential protective requirements and objective of the following directives:

EC Low Voltage Directives: 73/23/EEC
 EC EMC Directives: 89/336/EEC

When evolved at test Laboratory ERTL(W), Mumbai under Report reference ERTL(W)/2008M43179 and ERTL(W)/2008M43190 applying EUROPEAN harmonized standards LVD-EN61010-1:2001 (Second Edition) EMC-BS EN61000-6-1:2001 & BS EN61000-6-3:2001 when installed & used as per details provided in the product literature.

Manufacturer: Protech Engineering & Controls Pvt. Ltd., Mumbai-72

Date & Place of Issue: 1/04/2007 Mumbai

Nitin Gosalia
 (Managing Director)

Protech Engineering & Controls Pvt. Ltd., Mumbai, India

CE COMPLIANCE CONFORMITY

REPORT NO. ERTL(W)/2008M43190

DATE: 8 MAR 2007

SUBJECT: EMC TEST ON EARTH LEAKAGE RELAY

1. SCOPE

1.1 Service Request No.: ERTL(W)/20072147

1.1.1 Service Request finalised on: 11 Dec 2007

1.2 Requested by: (Name and address of manufacturer) M/s. - 12, Nand Jyot Industrial Estate, Safed pool, Andheri (E), Mumbai - 400 072.

1.3 Item No. 01 Description Earth Leakage Relay Qty 01 Manufacturer and Type No. M/s. Protech Engineering & Controls Pvt. Ltd. PE/09/02126

1.4 Test specifications BS EN 61000-6-1:2001 Electromagnetic compatibility (EMC) - Part 6-1: Generic standards - Immunity for Residential, Commercial and Light Industrial environments
 BS EN 61000-6-3:2001 Electromagnetic compatibility (EMC) - Part 6-3: Generic standards - Emission standard for Residential, Commercial and Light Industrial environments

1.5 Lab Ambient Temperature: 35±2 °C Humidity: 85±5 % RH

1.6 Test Equipment used ESD Simulator - EM TEST Antenna Kit - (EMCO) L & N (12 Phase) EM EM Test Receiver - HP Continuous Wave Simulator 3 s Immunity Test System EM TEST Related EM Field Simulator Keytek

1.7 Contents of the report Test Date: 1 to 13 pages Annexes A - Results of Conducted Emission (1 Page) B - Results of Radiated Emission (1 Page)

Representative Model Tested (Refer 2.1 for details)

EMC COMPLIANCE BS EN 61000-6-1:2001 BS EN 61000-6-3:2001 TESTED BY ERTL

TEST REPORT IEC 61010-1 27 MAR 2007

Safety requirements for electrical equipment for measurement, control, and laboratory use

Part 1: General requirements

Report Reference No.: 2008M43179

Complied by (+ signature): Jagjit Khatke

Reviewed by (+ signature): V K Dhar

Approved by (+ signature): K. Murari

Date of issue: Please see stamping on each page

CB Testing Laboratory: Electronics Regional Test Laboratory (WRL) Ministry of Information Technology, Govt. of India Opposite SEEPZ, Andheri (E), Mumbai 400 083 INDIA

Testing location: CRTL ☐ WMT ☐ WMT ☐ TMT ☐ Address: Electronics Regional Test Laboratory (WRL) Ministry of Information Technology, Govt. of India Opposite SEEPZ, Andheri (E), Mumbai 400 083 INDIA

Applicant's name: M/s. Protech Engg. & Controls Pvt. Ltd. Address: E-12, Nand Jyot Industrial Estate, Safed Pool, Andheri (E), Mumbai 400072, INDIA

Test specification: Standard: IEC 61010-1:2001 (Second Edition)

Test procedure: CB Scheme

Non-standard test method: NA

Test Report Form No.: IEC61010_1D

TRF Originator: UL

Master TRF: Dated 2004-09

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Test item description: Earth Leakage Relay

Trademark:

Model / Type reference: ELR94-1

Manufacturer: M/s. Protech Engg. & Controls Pvt. Ltd.

Rating (A): 415 V a.c. at 15% 50Hz

SAFETY COMPLIANCE IEC 61010-1 TESTED BY ERTL

Some of our Prestigious Client

- > ABB LTD.
- > AIRPORT AUTHORITY OF INDIA LTD., MUMBAI
- > BPL MOBILE COMMUNICATIONS LTD.
- > CROMPTON GREAVES LTD.
- > HINDUSTAN LEVER LTD.
- > HINDUSTAN PETROLEUM CORP. LTD.,
- > PAN INDIA PARYATAN LTD.,
- > INDIAN AIRLINES LTD.
- > INDIAN NAVY
- > NUCLEAR POWER CORPORATION LTD.
- > TATA TELESERVICES LTD.
- > AND MANY MORE.....
- > NORTHERN RAILWAY
- > RELIANCE PETROLEUM PVT. LTD
- > MAZAGON DOCK LTD.
- > INDIAN OIL CORPORATIONS LIMITED
- > RCF-RASHTRIYA CHEMICAL & FERTILIZER
- > CENTRAL RAILWAY
- > ADLABS FILMS LIMITED
- > BARC
- > MAHNAGAR GAS LIMITED
- > LARSEN & TOUBRO LTD. (AUTOMATION SYSTEMS CENTER)
- > LARSEN & TOUBRO LTD. (ESE-COIMBTOR)

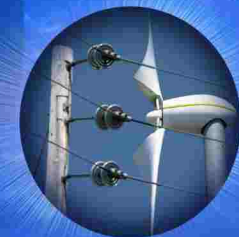
Authorised dealer

Cat. No.: 40108
 This is a sales promotion literature,
 Pls. contact for latest technical data of individual products.

- WORKS :- E-12, Nand Jyot Industrial Estate, Andheri Kurla Road, Safed pool, Mumbai - 400072. Tel. 2851 3328 , Tele fax: 2856 0589
- E-mail: future@protechengg.com ■ Visit us @ : www.protechengg.com

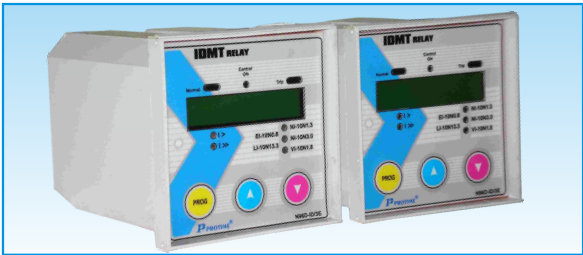


PROTIME®
 PIONEERS IN CREATING FUTUTRE



The only of its kind compact yet flexible digital programmable IDMT Relays

- User programmable Over Current (Phase) & Earth Fault Protection function
- User Programmable 5 curves in one unit
- Individual I/P (phase or Earth fault) Range selectable in 3/4 Element model
- Designed using latest 12 bit Micro controllers
- True RMS Measurement & Display of parameters
- Option of extra O/P Relay far each Fault
- Optional – RS 232/RS485 communication
- Selectable Inverse time under & over voltage relay with respective curves



Over Voltage Relay



Over Current Relay



Model	Relay Type	Signal	Range	Curves
N96-IDMT/1E	Single Element IDMT Relay	5A CT	Lowest : (I >) For phase : 40% to 240% in steps of 10% For Earth : 10% to 100% in steps of 10% Highest : (I >>) For phase : 200% to 1600% in steps of 25% For Earth : 100% to 800% in steps of 25%	Normal inverse : 10N-1.3 sec Normal inverse : 10N-3 sec Very inverse : 10N-1.5 sec Extremely inverse : 10N-0.8 sec Long time inverse : 10N-13.3 sec
N96-IDMT/3E	Three element IDMT Relay			
N96-IDMT/4E	Four Element IDMT Relay			
N96-IVR	Inverse Time Relay			
		230 VAC 415 VAC	U/V= 35-95% O/V=105-140%	U/V= 5sec @ 0V O/V=7sec @

* Aux Supply = 90-270V AC/DC or 18-60VDC

Model	Relay Type	Signal	Range	Time Dly.	O/p
N96-DELR	Digital Earth Leakage Relay	CBCT	A=25-250mA / 50-500mA B=0.1-1A / 0.2-2A C=0.4-4A /0.8-8A	0-10 Sec in steps of 100 ms	2 C/O
N96-DEFR	Digital Earth Fault Relay	CBCT/ 1A-5A CT	10-100% (0.5-5AFor 5A CT Sec) 50-100% (2.5 - 5AFor 5A CT Sec)		
N96-DCR	Digital Current Relay	1A CT/ 5A CT	U/C=15-90% O/C=20-120% (1-6AFor 5A CT Sec)		
N96-DVR	Digital Voltage Relay	230 VAC 415 VAC	U/V= 70-95% O/V=105-120%		
N96-DVR/D	Digital Dc Voltage Relay	12V/24V/48V/ 220V/110VDC	U/V= 70-95% O/V=105-120%		
N96-DCR/D	Digital Dc Current Relay	Shunt (75mm)	U/C=15-90% O/C=20-120%		
N96-DEMR	Digital Earth Monitor Relay	230 VAC	1-10 VAC		
N96-DFR	Digital Frequency Relay	230 VAC 415 VAC	U/F=30-45Hz O/F=55-60 Hz		

* Aux Supply= 90-270V AC/DC or 18-60VDC



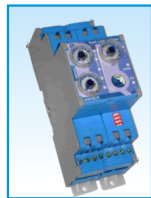
Programmable Digital Power Protection Relays with LCD display

- Digital Programmable Earth Leakage/Earth Fault & other protection Relays
- Wide Time delay ranges with precise settings
- Designed using latest 12 bit Micro controllers
- True RMS Measurement & Display of parameters
- 2 selectable tripping ranges
- C.B.C.T./C.T. Open/No signal fault indication
- Under/ over Voltage or Current selection with range
- Combine Under / over voltage Relay
- RS 232/485 output- Optional
- 0-5V Analog Output –Optional
- Wide Power Supply range from 90-270V AC/DC

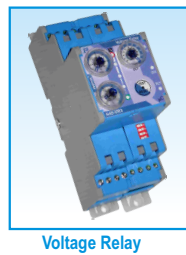
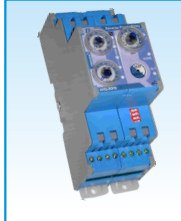
Another Spear in PROTIME's Range, the advanced version N45 Series relays

- First time Two Tripping & Two Time delay ranges in one unit
- User selectable Auto/ Manual Reset
- User selectable Normal / Fail safe Modes
- Micro Controller based True RMS Measurement
- Wide Power Supply range from 90-270V AC/DC
- Dynamic 5 LED Bar Graph status indicator
- RS 232/485 output- Optional
- 0-5V Analog Output -Optional

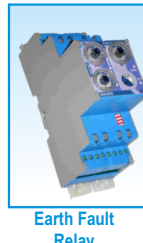
Earth Leakage Relay



Reverse Power Relay



Voltage Relay

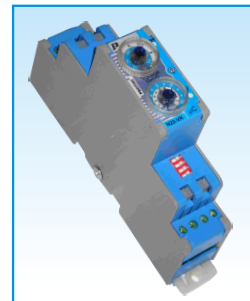


Earth Fault Relay

Model	Relay Type	Signal	Range	Time Dly.	O/p
N45-ELR	Earth Leakage Relay	CBCT	A=25-250mA / 50-500mA B=0.1-1A / 0.2-2A C=0.4-4A /0.8-8A	Trip= 0-1Sec/ 0-10 Sec	2 C/O
N45-EFR	Earth Fault Relay	CBCT/ 1A-5A CT	10-100% (0.5-5A For 5A CT Sec) 50-100% (2.5 - 5A For 5A CT Sec)	Pick up 0-10 Sec	
N45-CR	Current Relay	1A CT/ 5A CT	U/C=15-90% O/C=20-120% (1-6A For 5A CT Sec)	Pick up 0-10 Sec	
N45-VR	Voltage Relay				
N45-VR/3-4W	Voltage Relay (3 Phase-4 Wire)	230 V AC/ 415 V AC	U/V= 70-95% O/V=105-120%	Pickup delay= 1,2,4,8 Trip Delay= 0-1/10sec	
N45-VR/3-3W	Voltage Relay (3 Phase-3 Wire)				
N45-VRD	DC Voltage Relay	12V/04V 48V/110 VAC	U/V= 70-95% O/V=105-120%		
N45-FR	Frequency Relay	230 V AC/ 415 V AC	U/F= 30-45Hz O/F=55-60Hz		
N45-CRD	DC current Relay	SHUNT 75mV	U/C=15-90% O/C=20-120%	Trip Delay= 0-1Sec 0-10 Sec Pick up= 0-10SEC	
N45-RPR	Reverse Power Relay	5A CT & 230 V AC	2-20% current sensitivity		
N45-EMR	Earth Monitor Relay	230 VAC	1 to10 VAC		

* Aux Supply= 90-270V AC/DC or 18-60VDC

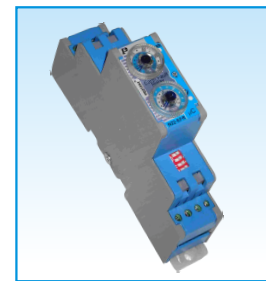
- Only 3 Phase Voltage Relay with U/V-O/V & Phase fail/ Sequence Protection
- Under & over Voltage/ Current selection with auto Range selection



Voltage Relay



Current Relay



Earth Fault Relay

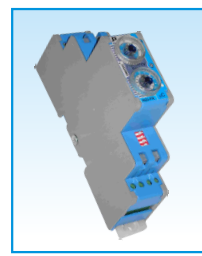
Model	Relay Type	Signal	Range	# Trip Dly.	O/p
N22-ELR	Earth Leakage Relay	CBCT	A=25-250mA / 50-500mA B=0.1-1A / 0.2-2A C=0.4-4A /0.8-8A	0-1 Sec/ 0-10 Sec	1 C/O
N22-EFR	Earth Fault Relay	CBCT/ 1A-5A CT	A=10-100% (0.5-5A For 5A CT Sec) B=50-100% (2.5 - 5A For 5A CT Sec)	0-1 Sec/ 0-10 Sec	
N22-CR	Current Relay	1A CT/ 5A CT	U/C=15-90% OR O/C=20-120% (1-6A For 5A CT Sec)	0-1 Sec/ 0-10 Sec	
N22-VR	Voltage Relay	230 V AC/ 415 V AC	U/V= 70-95% OR O/V=105-120%	0-1 Sec/ 0-10 Sec	
N22-VRD	Dc Voltage Relay	12V/04V 48V/110 V AC	U/V= 70-95% OR O/V=105-120%	0-1 Sec/ 0-10 Sec	
N22-CRD	Dc Current Relay	Shunt (75mm)	U/C=15-90% OR O/C=20-120%	0-1 Sec/ 0-10 Sec	
N22-TR	Toggle Relay	Potential Free	Two Output	-----	
N22-IR	Impulse Relay	12V OR 24V DC	ON:1,2,3,4,5 Sec. OFF:2,4,6,8,10 Sec.	-----	

* Aux Supply= 90-270V AC/DC

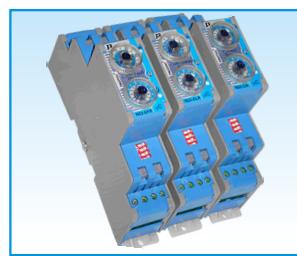
fixed P.up delay of 2 sec in fail safe mode

“Protime” is once again pioneers in its futuristic approach in designing power protection Relays. New N22 Relays are the result of its in depth research for user's flexibility & on field requirements

- Only Most compact yet ultra flexible protection Relays
- First time Two Tripping & Two Time delay ranges in one unit
- User selectable Auto/ Manual Reset
- User selectable Normal / Fail safe Modes
- Micro Controller based True RMS Measurement
- Under & over Voltage/current selection with auto Range selection
- Wide Power Supply range from 90-270V AC/DC



Frequency Relay



Earth Leakage Relay

- Only adjustable Reverse / Forward Timer with Run & Jog mode.
- Tailor - made solutions for laundry washing machine and chemical pumps.

- **Designed using latest Micro-controller technology**
- **MIMIC type of front fascia makes it easy to use, even for an unskilled person**
- **ANNUNCIATION with flasher & buzzer both; including ACCEPT, RESET & TEST facility.**

Fire Futuro



- Most Compact & Simplest Diesel Engine Controller for FIRE HYDRANT Systems
- MIMIC/Window type front fascia makes it easy to use, even for a unskilled person
- INDICATIONS for Mains ON, FIRE, Engine RUN, Fuel, and all faults (Low Lube Oil Pressure, Batt. Low, Fails to Start, HWT, O/S and Low Fuel)
- Existing Conventional panels can be easily converted in to Automatic panels using Fire-Futuro.
- Potential Free Contacts for all faults for external integration (Optional)
- Programmable fault inputs



- INDICATIONS for Mains ON, Gen-set ON, Load on Mains/Gen-set and all faults (Mains Fail, Low Lube Oil Pressure, Batt. Low, Set Fails to Start, Alternator Fail, HWT, O/L and Low Fuel level)
- PROGRAMMING not required
- Potential Free Contacts for all the faults for external integration (Optional)
- Programmable fault inputs
- Inbuilt manual mode with Start/Stop and Close/Trip functions
- RS 232/485 compatibility (optional)

Mini Futuro 3 PH



Mini Futuro 1 PH



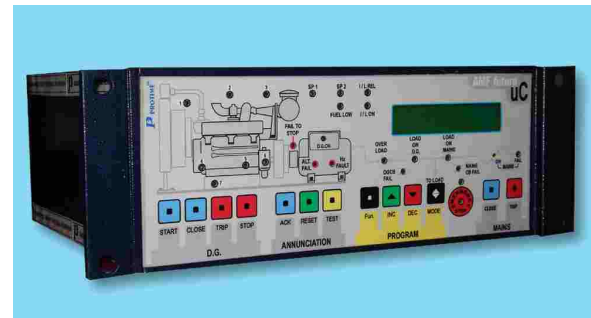
- Most Compact & Simplest Single Phase AMF Controller
- INDICATIONS for Mains ON, Gen-set ON, Load on Mains/Gen-set, CRANK ON, FUEL ON and all faults (Mains Fail, Low Lube Oil Pressure, Batt. Low, Set Fails to Start, Alternator Fail, HWT and Low Fuel)
- Contactors not required for Single phase application up to 5 KVA
- Existing non-AMF panels(std. panel) can be easily converted in to AMF panels using Mini-Futuro
- Load Changeover Works even in Manual Mode (when DC Supply is not given)
- Potential Free Contacts for all the faults for external integration(Optional)

Code	Item	Range	Supply
AMF-1/uC	AMF-Futuro with front control	-	8-30 V DC
AMF-N96/3*	Mini Futuro for 3 phase DG sets	-	8-30 V DC
AMF-N96/1C	Mini Futuro for 1 ph DG sets with load C/O upto 5 KVA	-	12/24 V
AMF-96/1*	Mini Futuro for 1 ph DG sets W/O load C/O upto 5KVA	-	12/24 V
FEC-N96*	MIMIC based Fire Futuro for Diesel Engine driven fire pumps	-	8-30 V DC
FEC-N192	Annunciator window based Fire Futuro for Diesel Engine driven fire pumps	-	12/24 V

*Potential free contacts for all faults available on demand

AMF- futuro

. . . Most simple yet complete AMF (Auto Mains Failure) solution for D.G. set users.

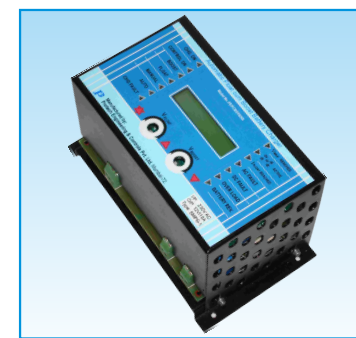
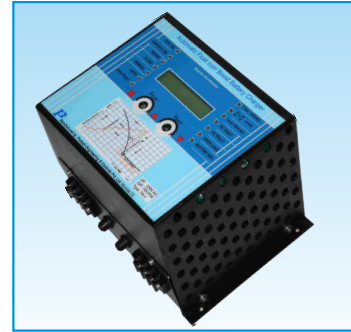


- COMPACT with total wireless interiors.
- Only of its kind with LCD AND MIMIC type of front fascia makes it easy to use, even for an unskilled person.
- INDICATIONS for D.G. set start & stop and all faults (LLOP, HWT, O/S, O/L, LOW battery, SFS, LFL, Hz Fault, Fail to stop, C.B. Fail etc) and AUTO LOAD CHANGE-OVER.
- Connection of external Indicating lamps & pushbuttons is possible with very simple wiring.
- RS 232/485 compatibility (optional).

- ANNUNCIATION with flasher & buzzer both, including ACCEPT, RESET, & TEST facility.
- Facility for connection of external HOOTER.
- Design facilitates easy and quick installation.
- Virtually MAINTENANCE FREE.
- Existing non-AMF panels can be easily converted in to AMF panels using AMF-futuro.
- First time With Semi Auto Mode of Operation
- Password protected settings. ➤ Programmable fault inputs.

Protech is one of the leading names in manufacturing the Battery Chargers for almost any industrial applications. Now launches for the first time fully automatic Micro controller based Digital Battery Charger modules for OEM(Panel boards) for AMF & Automation Panels

Float cum Boost Chargers Modules



Prologic.... brain of battery charger



- Eliminates need of human judgments, hence avoiding risk to batteries, which occurs due to erroneous selection of modes, thus increasing effective life of batteries

- First & Only Digital Battery Charger Modules using SMPS or Thyristor control
- With dv/dt & di/dt sensing for precise selection of modes
- Using latest Micro controller technology for sensing & Protections
- Equipped with all protections on mains & DC Side
- Makes Automation Solution highly reliable.
- Intelligent selection for auto changeover from Float to boost & vice versa

Ratings	Model	Type of Control	Input	Output Volts	Size (L X H X D) in mm	
12V/6A	S M P S -12100	S M P S	195-260V AC	Float = 13.5V, Boost = 15V	S M P S =	180 X 100 X 115
12V/10A	S M P S -12150	S M P S			THY-1=	180 X 160 X 180
12V/15A	S M P S -12180/THY-1215	S M P S / Thyristor			S M P S =	180 X 100 X 115
24V/6A	S M P S -24180	S M P S		Float = 27.5V , Boost = 30V	THY-1=	180 X 160 X 180
24V/10A	THY-2410	Thyristor			THY-1=	180 X 180 X 220
24V/15A	THY-2415	Thyristor				
24V/20A	THY-2420	Thyristor				