Welcome to our

Bridex / Socomec

Seminar

Singapore March10th,2002

A French Manufacturer At Your Service

1922

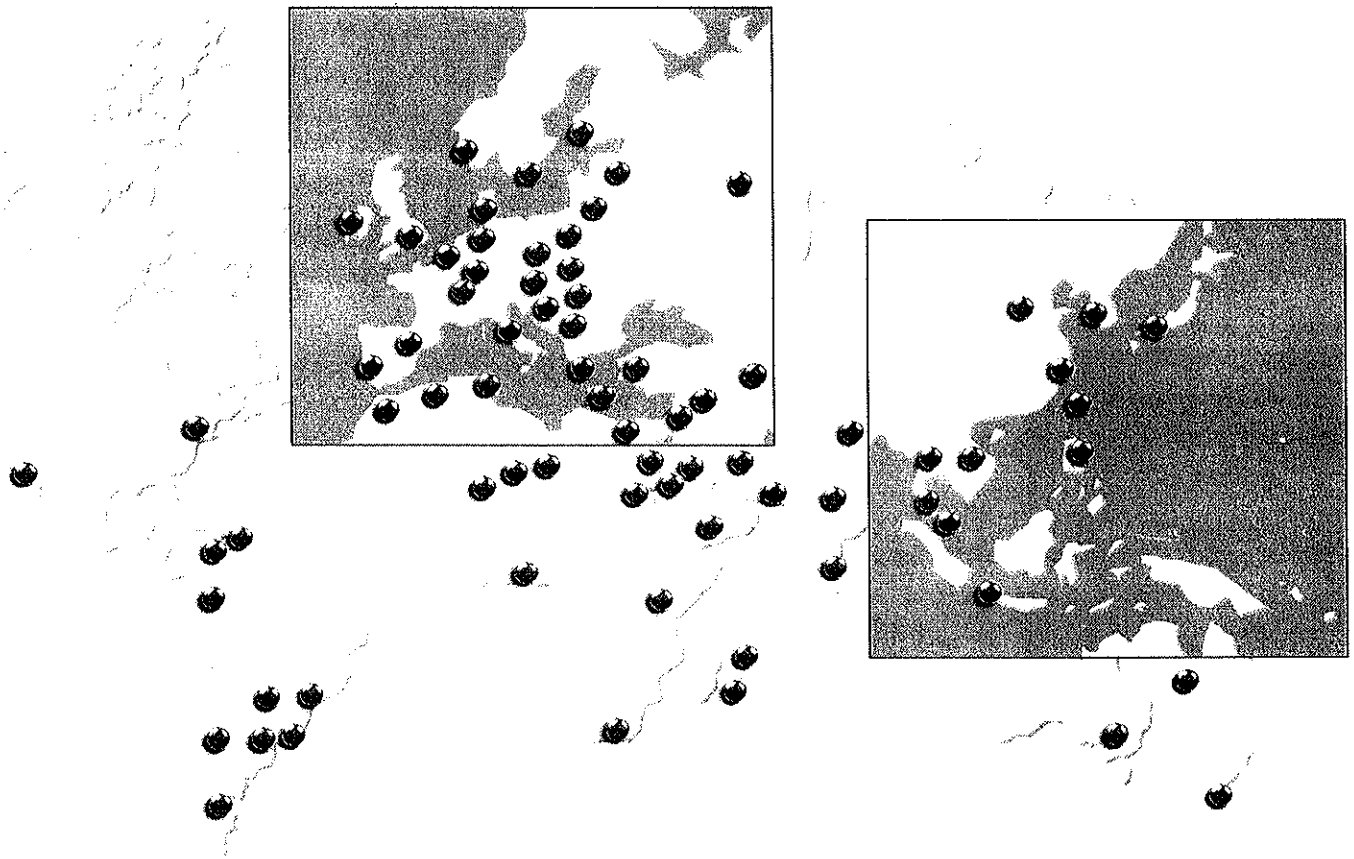
1600 Employees

250 M€



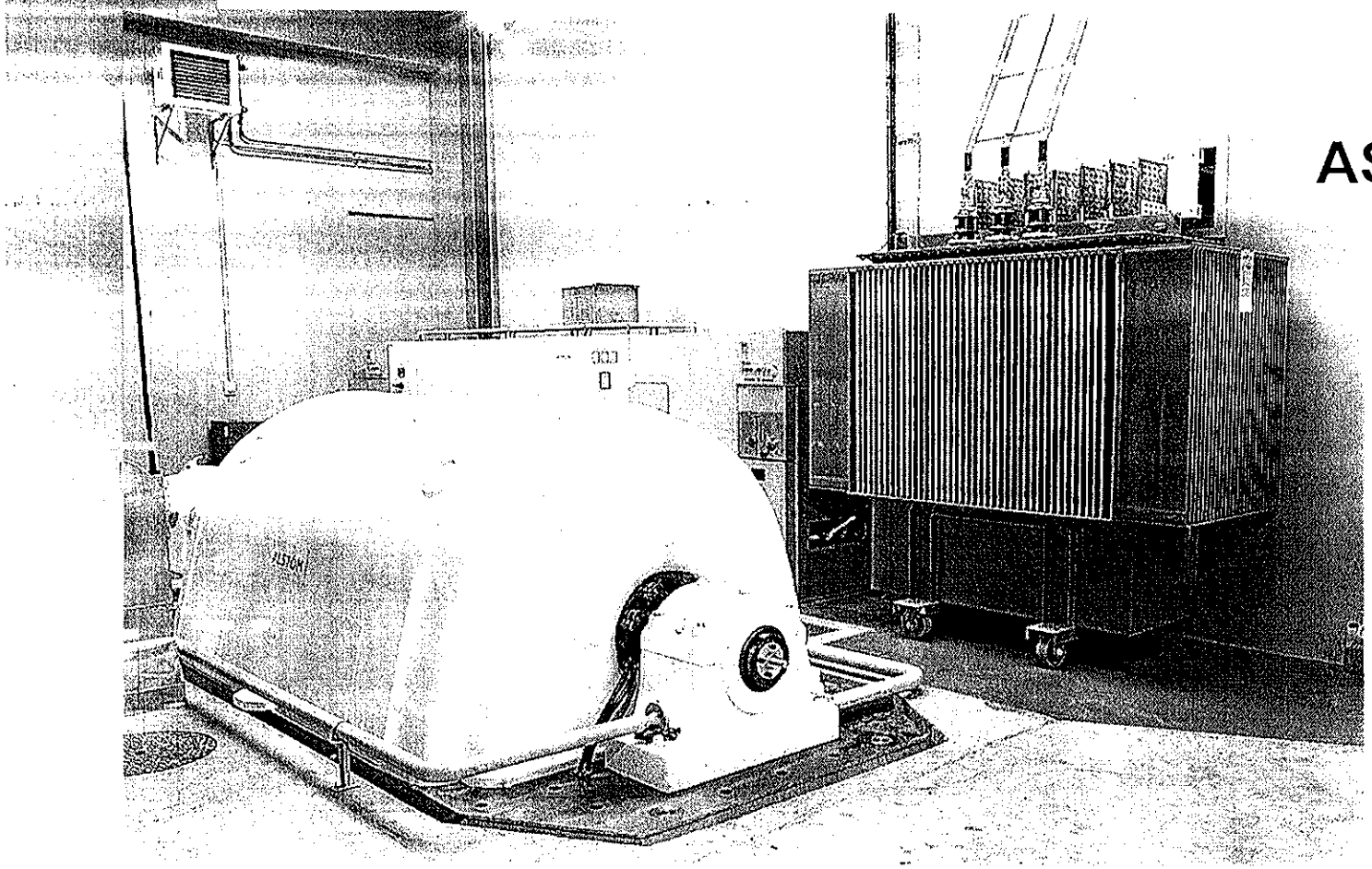
55% Export

A Worldwide Activitv



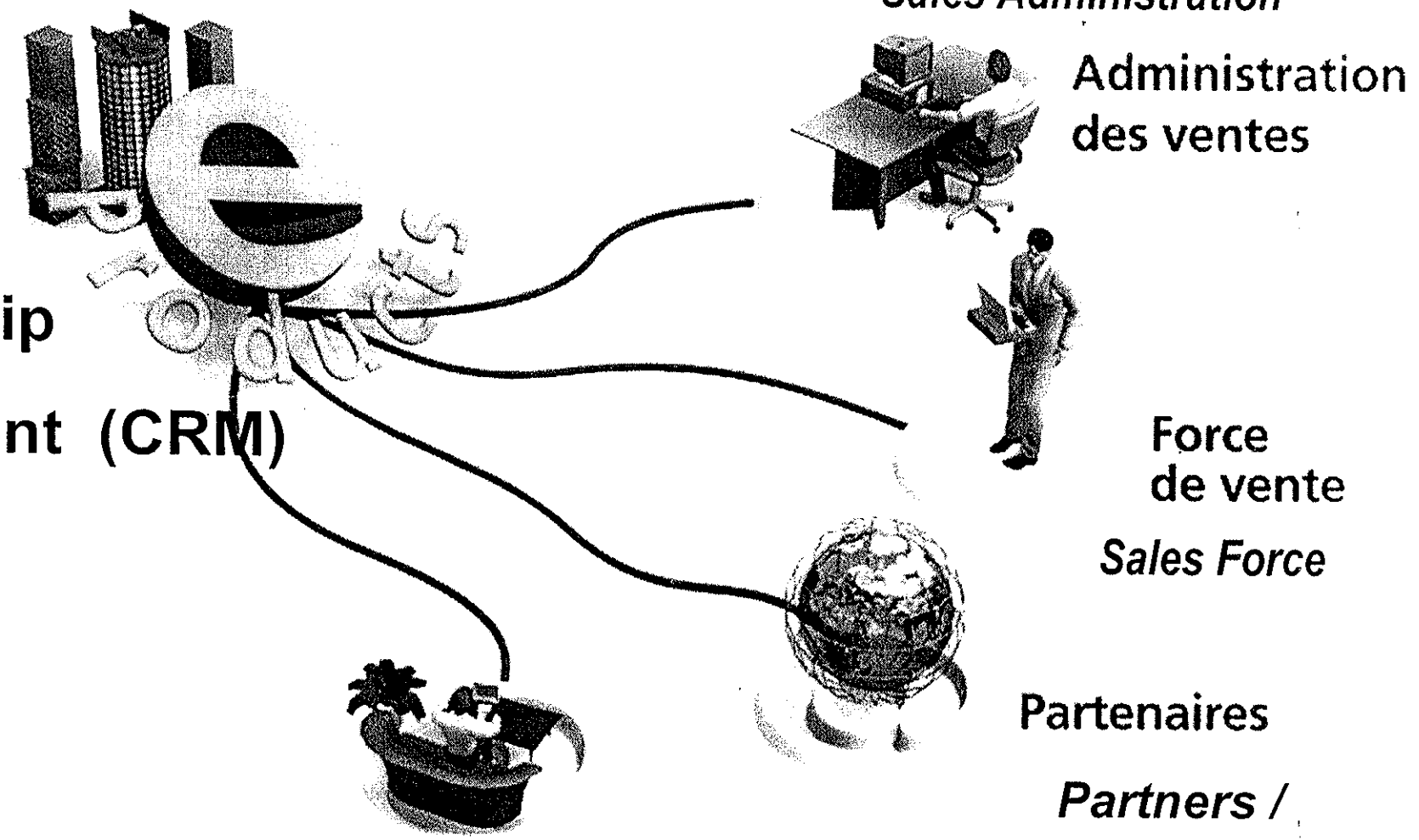
Socomec Sub & Offices Distributors

ASEFA Certified Laboratory



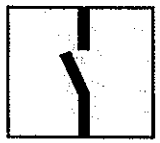
- 100 kA RMS S/C
- Test cerficates:

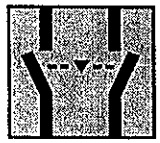
ASEFA , Kema...etc

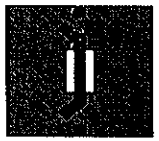

Customer
Relationship
Management (CRM)
Sales Administration
Administration
des ventes
Force
de vente
Sales Force
Partenaires
Partners /
Distributors
End Users
Market places
Clients finals
Places de marché

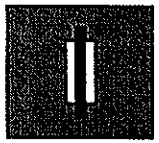
3 Product Lines

Switching


Switches

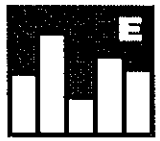

Transfer Sw


Fuse Switches

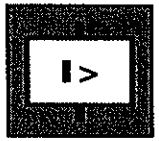

Fuses


Public Dist.

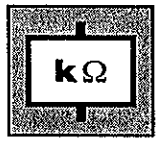
Control & Measure



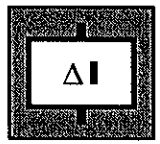
Multimeasure



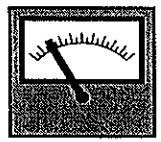
Protection



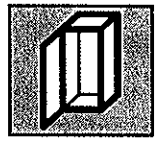
Insulation

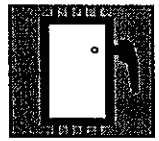


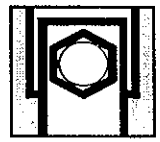
Mon.E.L.R.

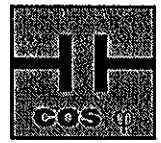

Analog Meas.

Systems


Enclosure

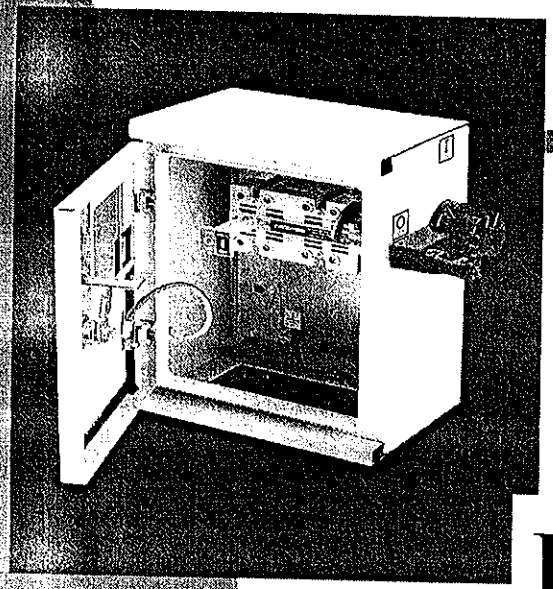

Safety Switches


Cabling accessories

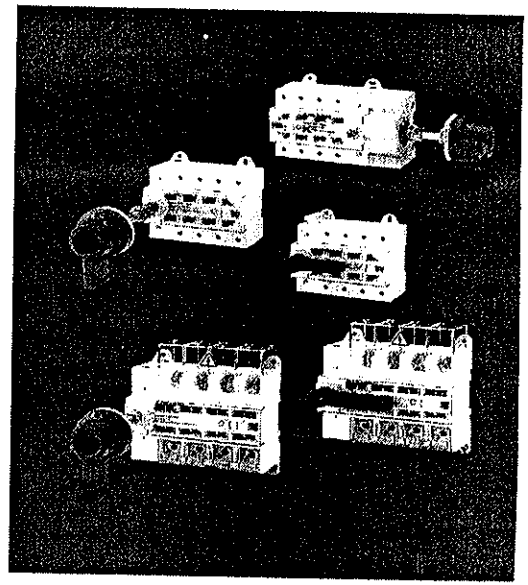


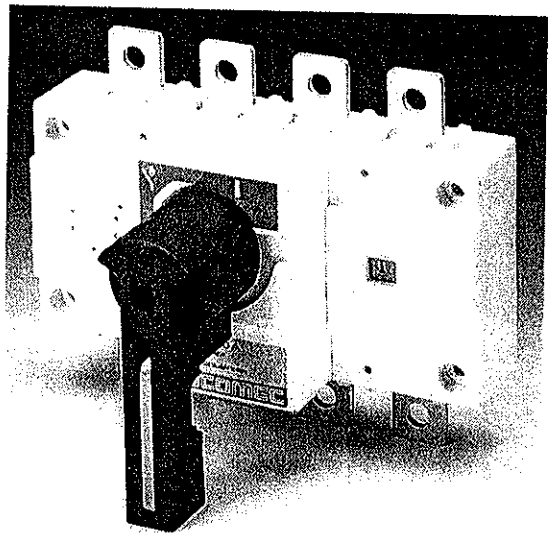
Cap. Bank and Acc.

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Industrial Switching & Protection Systems

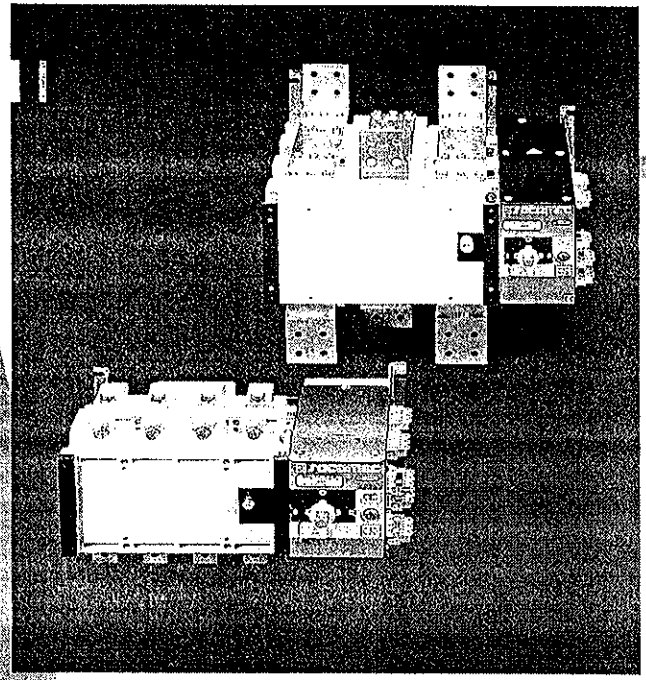


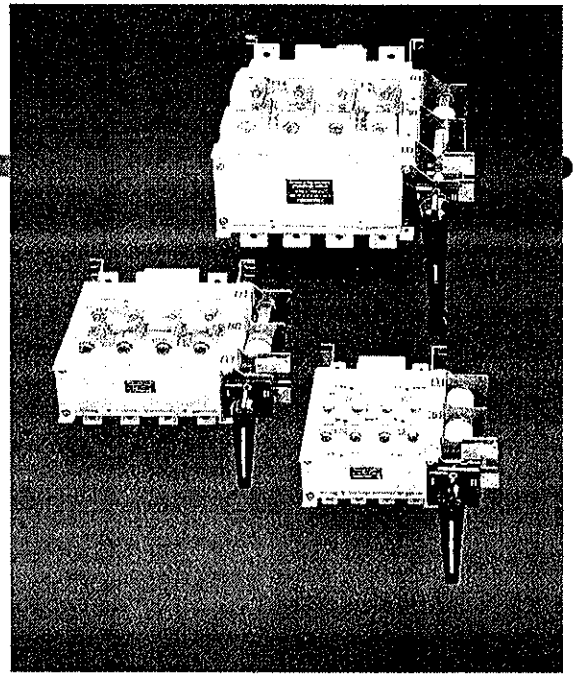
Load Break Switches
16 - 5000 A





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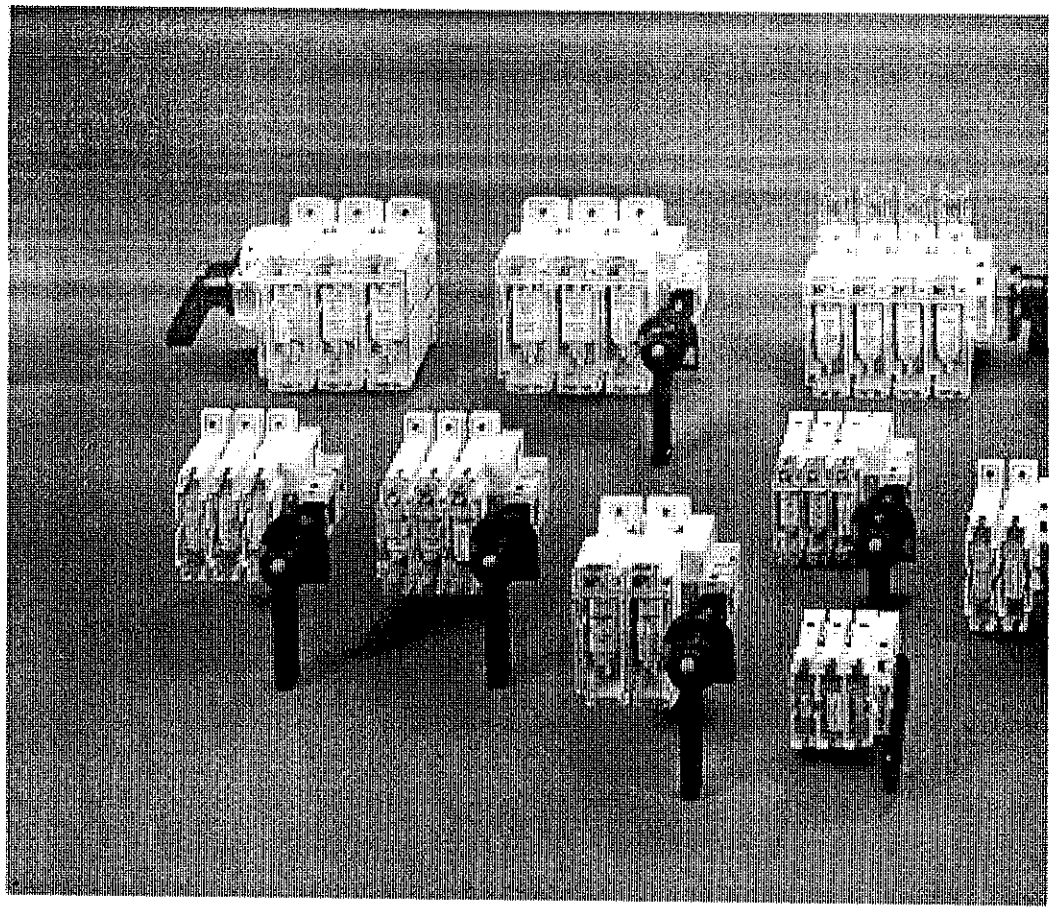


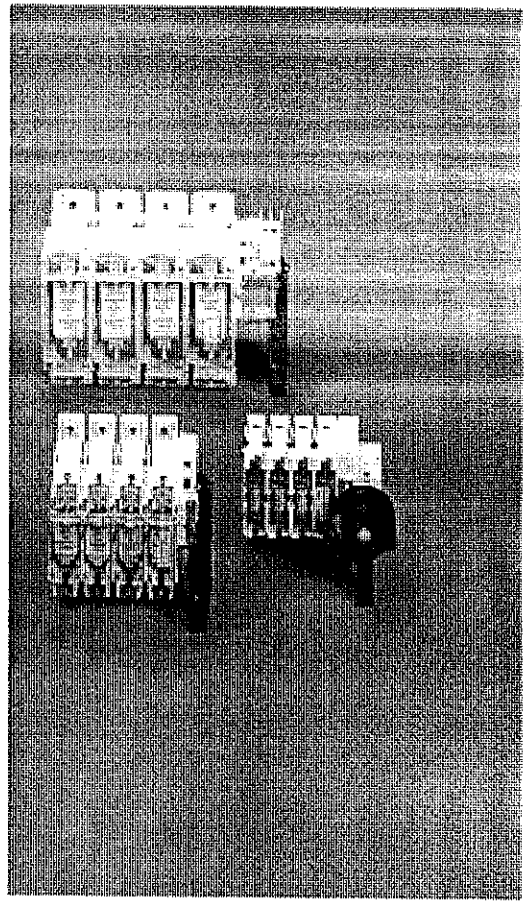
Manual & Automatic Transfer Switches

Manual By-pass

20 - 5000 A

Fuses Switches 20 to 1800 Amp

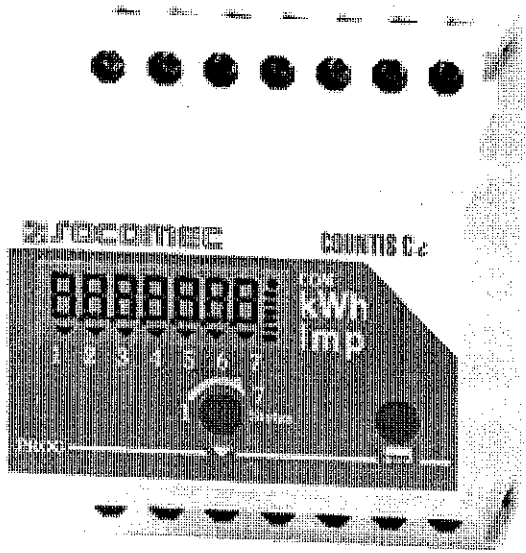


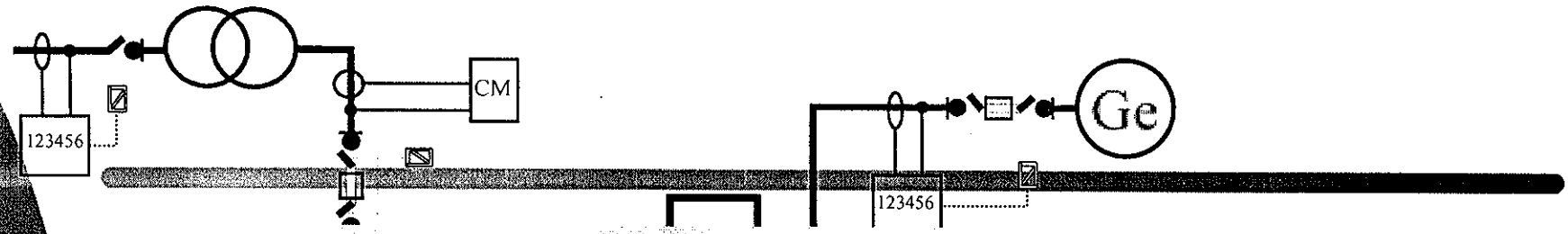


Multi-measurement & Control



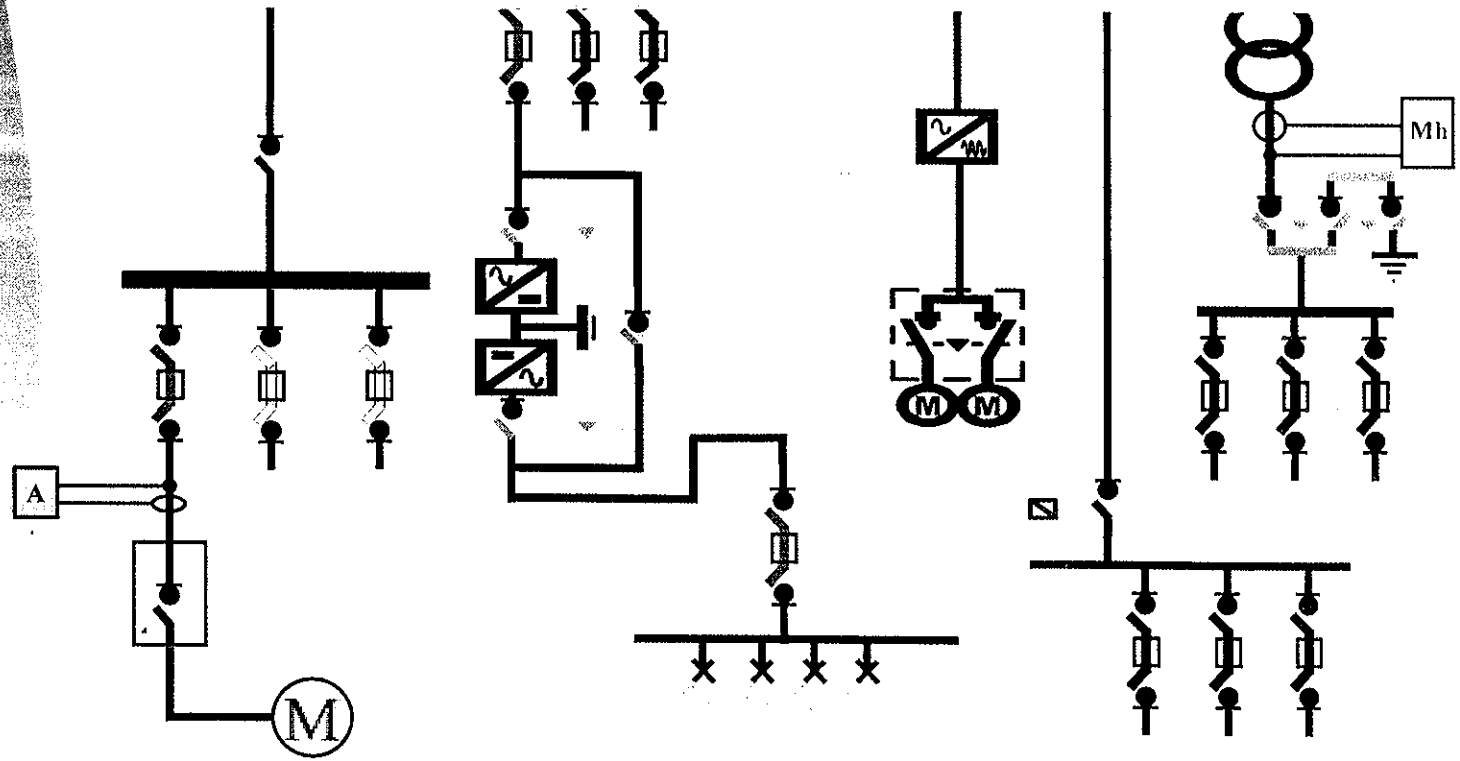
- Measuring
- Metering
- Alarm
- Control
- Protection
- Communication



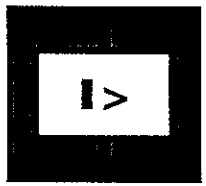


SOCOMEC offers you

A comprehensive range of products for L.V application



Electrical protection equipments



Protection generalities

Digital protection : DIRIS

DIRIS exploitation

SOCOMEC

Electrical protection equipments

Protection generalities

Digital protection : DIRIS

DIRIS exploitation

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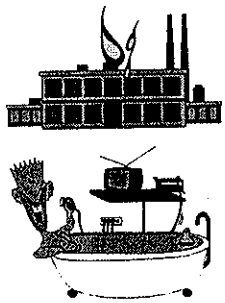
Protection's PURPOSE

PURPOSE

Security

Goods

Persons



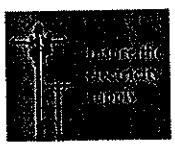
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Protection's PURPOSE

Productivity

SERVICE CONTINUITY



MAINTENANCE

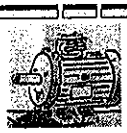


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EQUIPMENTS to protect

WHAT



Motor



Cables and Networks

Alternator



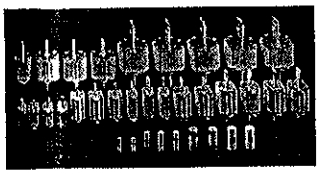
Transformer



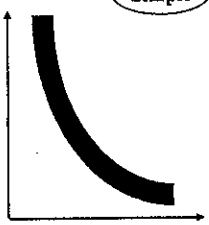
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Protection DEVICE : Fuse



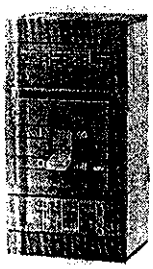
Simple



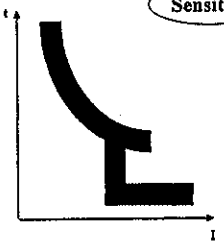
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Protection DEVICE : Circuit breaker



Sensitive



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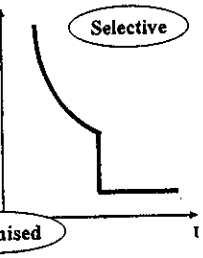
Protection DEVICES : Relays

✓ Electromechanical relay

I> | I>> | Io> | Io>>

✓ Digital relay





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Protection REQUIREMENTS

HOW



- Simple
- Sensitive
- Selective
- Optimized (function/cost)

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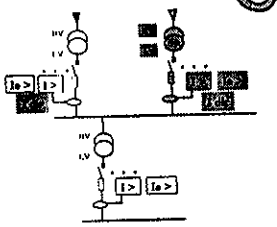
FEEDER protection

Networks and Cables



at 1 line

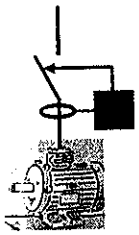
- Fault between phases
- Earth fault



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MOTOR protection



Main faults

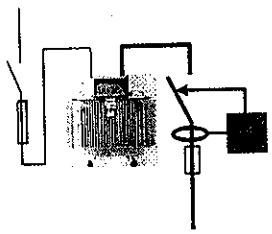
- Overload (thermal)
- Short -circuit
- Failure phase
- Max. frequency.
- Mini.. voltage

Others faults

- Start time
- Number of starts
- Min. current
- Rotor earth
- Stator earth
- Temperature ...

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TRANSFORMER protection



Main faults

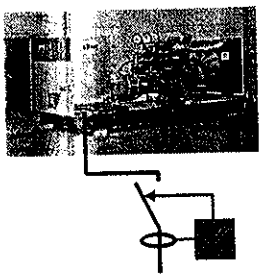
- Overload (T° or I th)
- Short circuit (in, out)
- Earth fault

Others faults

- DGPT (gaz, pressure, T°)
- Differential (HV)

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GEN SET protection



Main faults

- Overload
- Short circuit (in, out)
- Fault between stator and rotor

Others faults

- Phases failure
- Excitation loss
- Frequency min. max.
- Voltage min. max.

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Electrical protection equipments

Protection generality

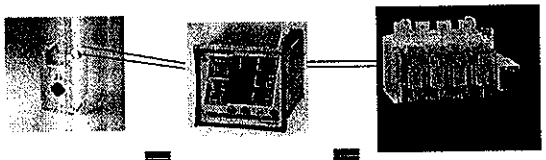
Digital protection : DIRIS

DIRIS exploitation

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Electronic protection STRUCTURE

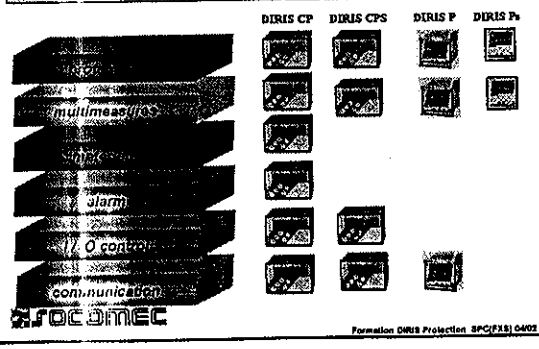


MEASURING TRIPPING

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DIRIS system « PROTECTION»

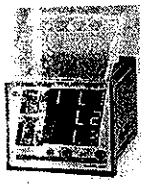


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DIRIS P/Ps

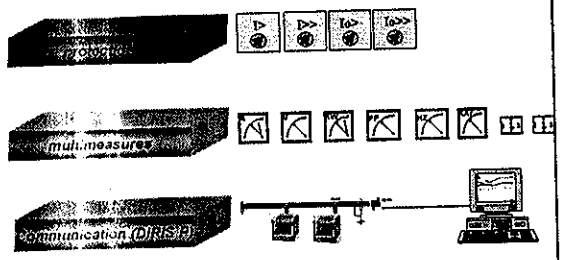
OVERCURRENT AND EARTH FAULT PROTECTION RELAYS FOR LV





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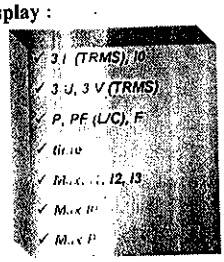
FUNCTION : DIRIS P

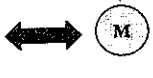


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MEASUREMENT : Diris P

Display :







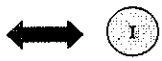
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MEASUREMENT : Diris Ps

Display :







MEASUREMENT : Advantages



- Combination with protection
- Real value displayed before setting
- Display update every 1 s



PROTECTION : Protection functions

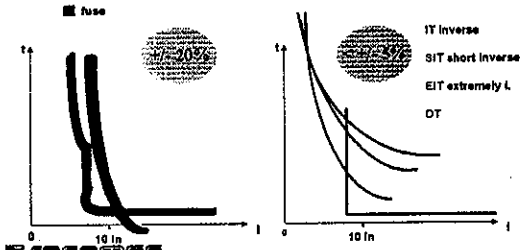
IDMT & DT

IDMT	Overcurrent	I>	: IT, SIT, (EIT)
	Earth	Io>	: IT, SIT, (EIT)
DT	Overcurrent	I>>	: DT
	Earth	Io>>	: DT

PROTECTION : Curves

Comparison of protection devices

- circuit breaker
- fuse



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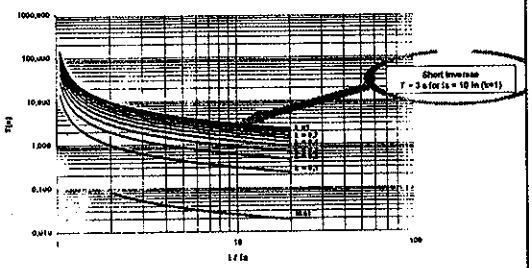
PROTECTION : Curves

DIRIS P	DIRIS Ps
IT curve : • T = 1.3 s at 10 In (k=1)	IT curve : • T = 1.3 s at 10 In (k=1)
SIT curve : • T = 3 s at 10 In (k=1)	SIT curve : • T = 3 s at 10 In (k=1)
EIT curve : • T = 0.65 s at 10 In (k=1)	

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PROTECTION : Curve

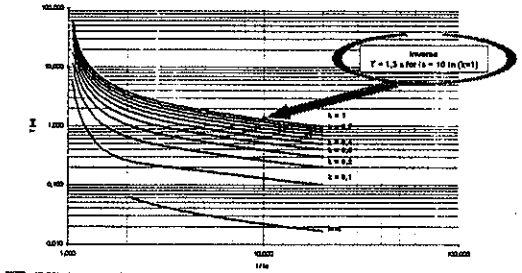
⇨ IDMT CURVES SIT (CDG 11, CDG 16)



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PROTECTION : Curve

- IDMT CURVES IT (CDG 11, CDG 16)

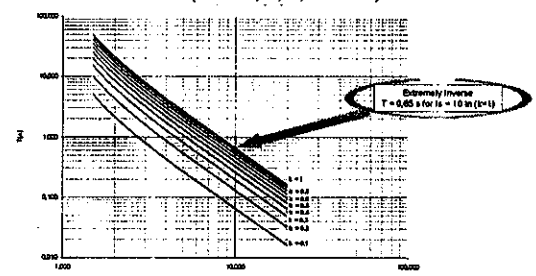


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PROTECTION : Curve

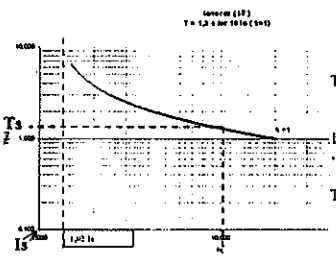
- IDMT CURVES EIT (TMJ30,31,32, CDG 14)



SOCOMEC

Formation DIRIS Protection SPC(FXS) 04/02

PROTECTION : IDMT settings



Threshold = Is = axe (no tripping)

1,02 Is = pick up current

Time delay at 10 s

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Formation DIRIS Protection SPC(FXS) 04/02

PROTECTION : Relay(s)

DIRIS P	DIRIS Ps
3 Relays :	1 Relay :
• R1 for Is or Io (NO)	[illegible]
• R2 for Is or Io (NO)	
• 1 relay (fault) for internal fault (NC)	

socomec

Formation DIRIS Protection SPC(FXB) 04/02

CURVES : Advantages /Electromechanical

Range : only 1 product

Curves : flexible

setting : wide range
0,05 In to 1,5 In

socomec

Formation DIRIS Protection SPC(FXB) 04/02

DIGITAL DISPLAY : Advantages

Setting : accurate, reliable

Measure : permanently

Fault display : type, level, phase

Maintenance : simplified

socomec

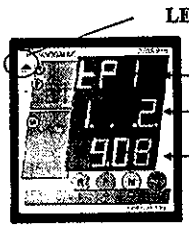
Formation DIRIS Protection SPC(FXB) 04/02

ERGONOMY : Advantages

Display	:	bright
Size	:	reduced - standard
Setting	:	access code
Cover	:	Sealable
Fixation	:	Clips

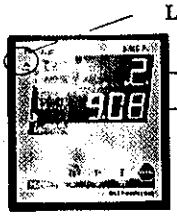
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TEST MODE : DIRIS P



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TEST MODE : DIRIS Ps



socomec

TEST FUNCTION : Advantage

- TEST OF THE SETTINGS
  - CURVES
  - TRIPPING TIME
- TEST OF THE TOTAL PROTECTION
  - RELAYS
  - WIRINGS
  - BREAKING DEVICE

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Formation DIRIS Protection SPC(FXS) 04/02

COMMUNICATION : DIRIS P

- COMMUNICATION (OPTION)
  - RS 485
    - SPEED: 1200 - 9600 bauds
    - 1,2 km
  - PROTOCOL
    - MODBUS

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Formation DIRIS Protection SPC(FXS) 04/02

Electrical equipment protection

I>

Protection generality

Digital protection : DIRIS

DIRIS explication

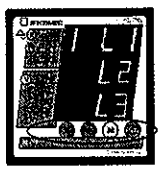
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Formation DIRIS Protection SPC(FXS) 04/02

KEYBOARD DIRIS P

MEASUREMENT MODE

4 keys for direct access to :

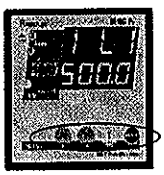


- Reset
- Visualisation of protection parameters
- M → Measurements
- Configuration

KEYBOARD DIRIS Ps

MEASUREMENT MODE

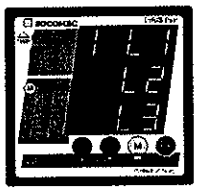
4 keys for direct access to :

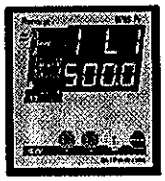


- Reset
- Visualisation of protection parameters
- I → I Measurements
- Configuration

DISPLAY DIRIS P/Ps

MEASUREMENT MODE





DISPLAY DIRIS P

FAULT MODE



LED trip

Fault message

Phase in fault

Reset

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Formation DIRIS Protection SPC(FXS) 04/02

Configuration : PRINCIPLE

CONFIGURATION MODE



- ✓ Access codes
- ✓ Sealable Cover
- ✓ Scrolling Menu

Configuration with 3 keys only

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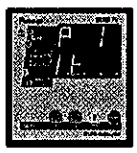
Formation DIRIS Protection SPC(FXS) 04/02

Configuration : CURVES

DIRIS P



DIRIS Ps



Curve type (IT,SIT,...)

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Formation DIRIS Protection SPC(FXS) 04/02

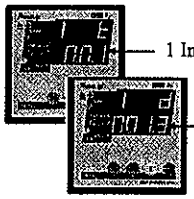
Configuration : CURVES

IDMT

DIRIS P



DIRIS Ps



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Formation DIRIS Protection SPC(FXS) 04/02

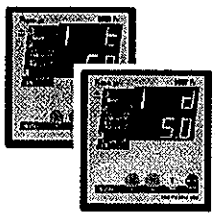
Configuration : CURVES

DT

DIRIS P



DIRIS Ps



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Formation DIRIS Protection SPC(FXS) 04/02

Configuration : Relays allocation

DIRIS P



I protection is assigned on relay 1 and 2

Io protection is assigned on relay 1

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Formation DIRIS Protection SPC(FXS) 04/02

RUDOLF

Welcome

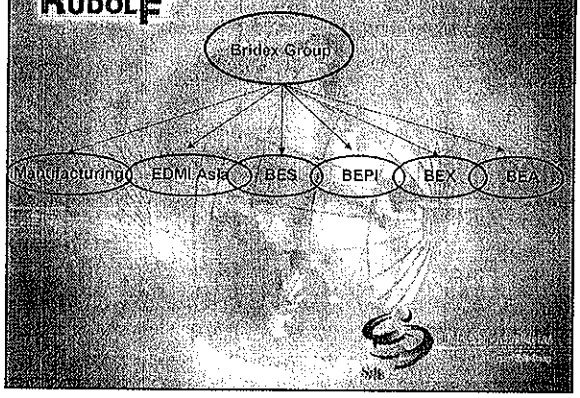
RUDOLF

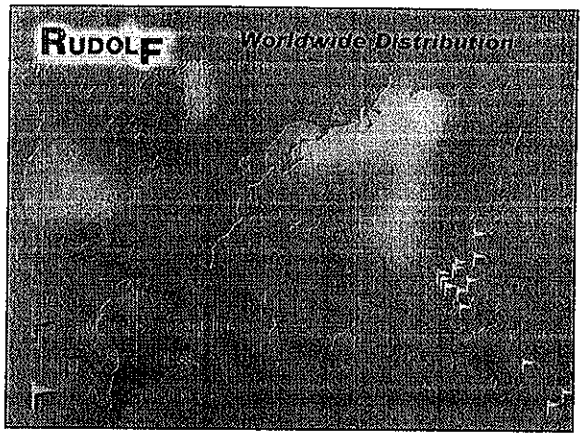
Bridex Singapore Pte Ltd was founded in *1978* as a manufacturer of instruments transformer for the Asian market. We are the first local electrical switchgear components manufacturer that launches our own Asian identity – RUDOLF.

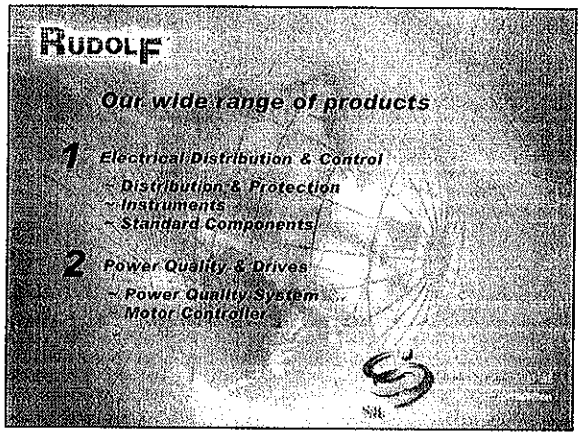
Today, we aim to become a ***knowledge-based, technology-driven engineering organization***, with emphasis on providing solution for electrical distribution and control, in area of ***instruments, distribution & protection and standard components***.

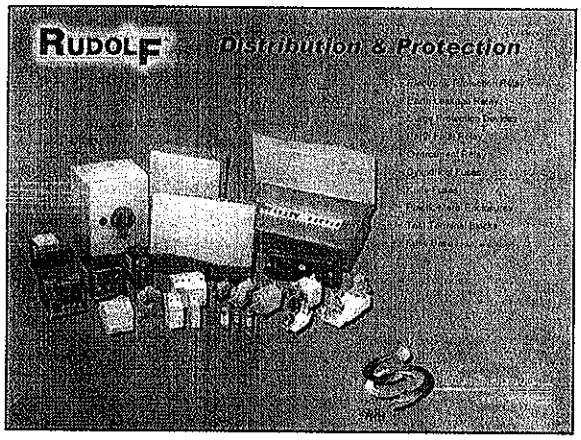
With our present headquarter in Singapore and subsidiaries that are located in Philippines, China and Australia, we are well equipped to service both local and Asia Pacific countries.

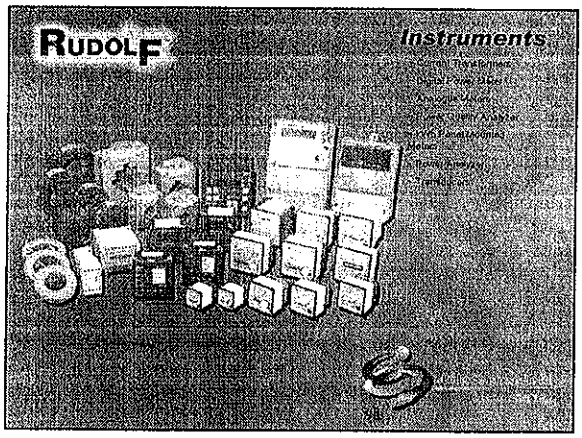
RUDOLF

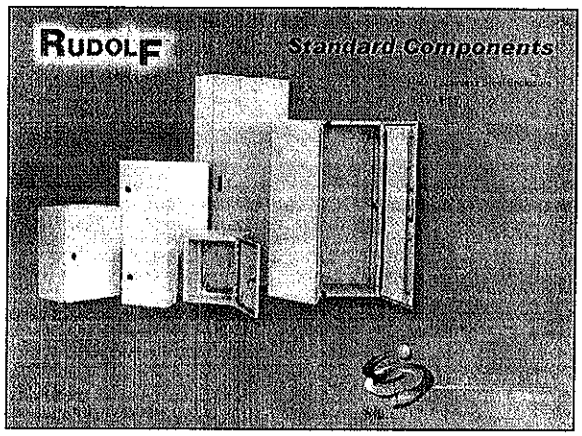


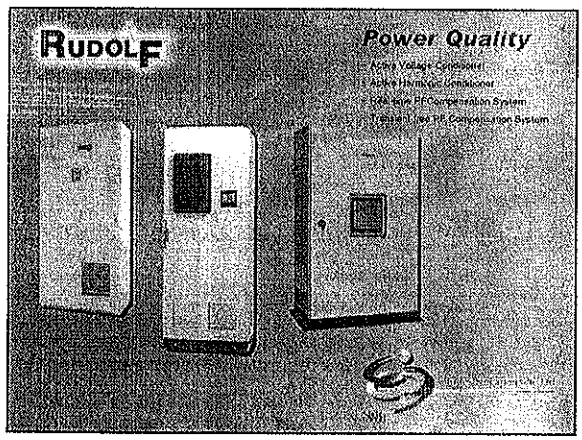

RUDOLF
Worldwide Distribution

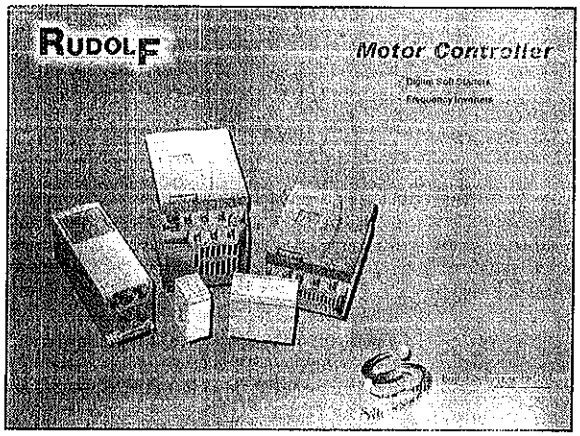

RUDOLF
Our wide range of products
1 Electrical Distribution & Control
~ Distribution & Protection
~ Instruments
~ Standard Components
2 Power Quality & Drives
~ Power Quality System
~ Motor Controller


RUDOLF
Distribution & Protection


RUDOLF
Instruments


RUDOLF
Standard Components


RUDOLF
Power Quality


RUDOLF
Motor Controller

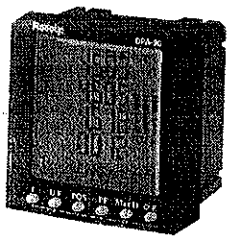
RUDOLF

Welcome

Rudolf R-DPA96 Digital Power Analyser

Welcome Back

Part II



Energy management-Requirement

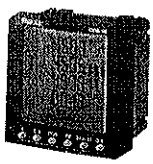
Multi-measurement and Metering

Harmonics analysis

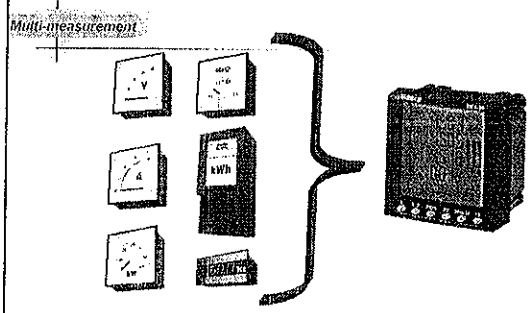
Monitoring

Communications

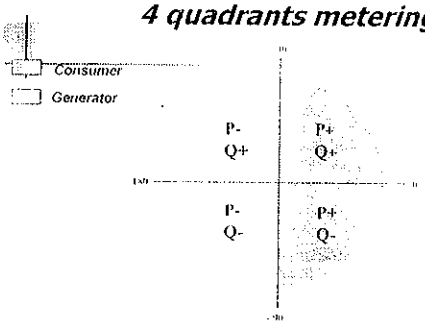
Control



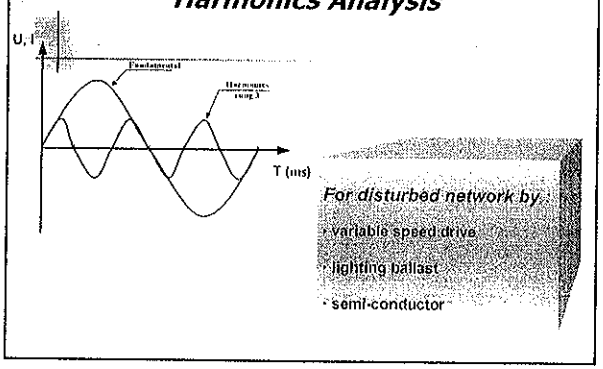
Multi-measurement



4 quadrants metering



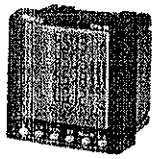
Harmonics Analysis



Harmonics analysis

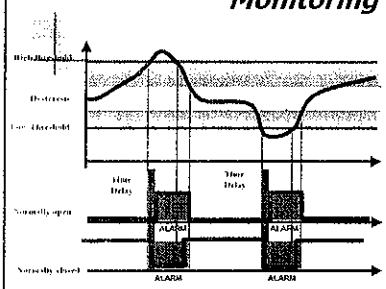
Solutions

R-DPA96



- ✓Local display of Current THD
- ✓Local display of Voltage THD
- ✓Local display of individual harmonics upto 15th level (both voltage (L-L, L-N) & current)

Monitoring

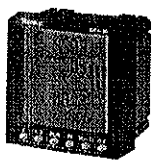


- ✓ Load shedding
- ✓ Undervoltage
- ✓ Alarms

Monitoring

Solutions

R-DPA96



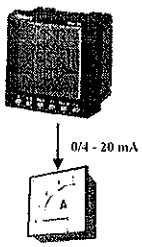
- ✓2 user programmable volt-free contact
- ✓High flexibiltiy
- ✓Any available parameters
- ✓Hysteresis 0-99%
- ✓Tempo 0-999sec
- ✓Contact status, NO /

Communication

- Analogue : 0/4 - 20 mA
- Digital : RS 485

Communication via Analogue

Analogue output : U, I, P, Q, S, F and PF



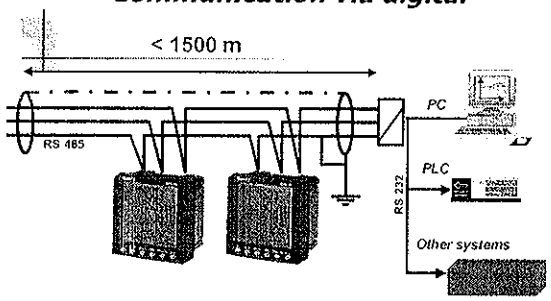
Communication via Analogue

- 4 - 20 mA output
- Configurable : 3U, 3V, 3I, In P, Q, S, F or PF

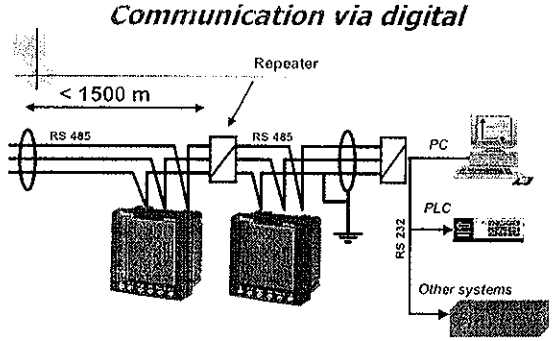
Communications via digital

- RS 485 link (+, - & 0V)
- JBUS/MODBUS protocol (RTU mode)
  - Function 3 : read n words
  - Function 6 : write one word
  - Function 8 : diagnostic
  - Function 16 : write n words

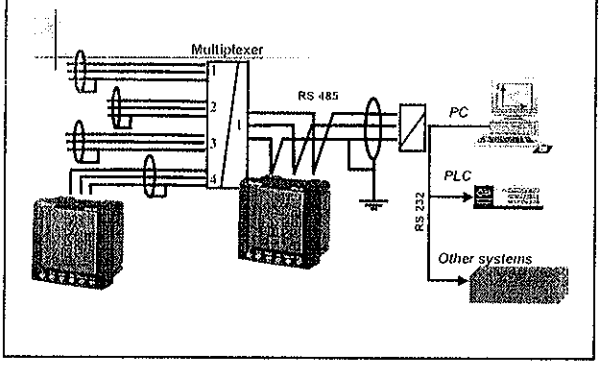
Communication via digital



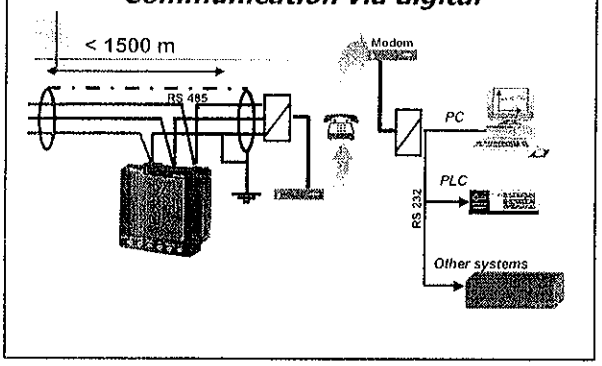
Communication via digital



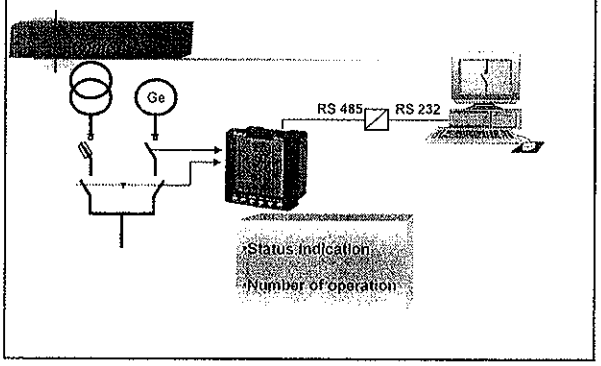
Communication via digital



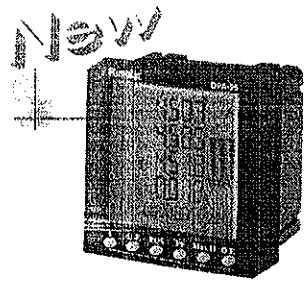
Communication via digital



Control



Rudolf R-DPA96 Digital Power Analyzer



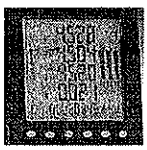
1. Multi-measurement & metering
2. Harmonics Analysis
3. Monitoring
4. Communications
5. Control

Rudolf R-DPA96-Basic Unit

- ✓ **Measurements** : 3I, In,
  3U, 3V,
  +/- P, Q, S : phases 1 / 2 / 3 / Σ,
  PF : phases 1 / 2 / 3 / Σ,
  F

  3I and $\Sigma P^{+/-}$, $\Sigma Q^{+/-}$, ΣS avg and max
  on 5, 10, 15, 20, 30 and 60 minutes

- ✓ **Hours run**



Rudolf R-DPA96-options

- ✓ **Module 1 : Metering** : +/- kWh, +/- kvarh *and* kVAh
  2 configurable outputs

- ✓ **Module 2 : Metering + Harmonics** :
  3I, In, 3U, THD I and THD U up to row 15 minimum



Rudolf R-DPA96-options

✓ **Module 3 : Communication :**
RS485 mode JBUS/MODBUS
(speed limit : 38400 bauds)

✓ **Module 4 : Analogue outputs :**
2 to 4 configurable outputs (0/4-20 mA)

Rudolf R-DPA96-options

✓ **Module 5 : Monitoring or Control/Command**
2 configurable outputs *for* alarms :
3U, 3I, In, $P^{+/-}$, $FP^{L/C}$, F, THD I/U
Storage of 3 last alarms by RS485

2 inputs for metering or control status.

Rudolf R-DPA96 - Concept

