LOW VOLTAGE SYSTEMS

POWER AND CONTROL

COMPLYING TO NEW IEC STANDARD 61439-2

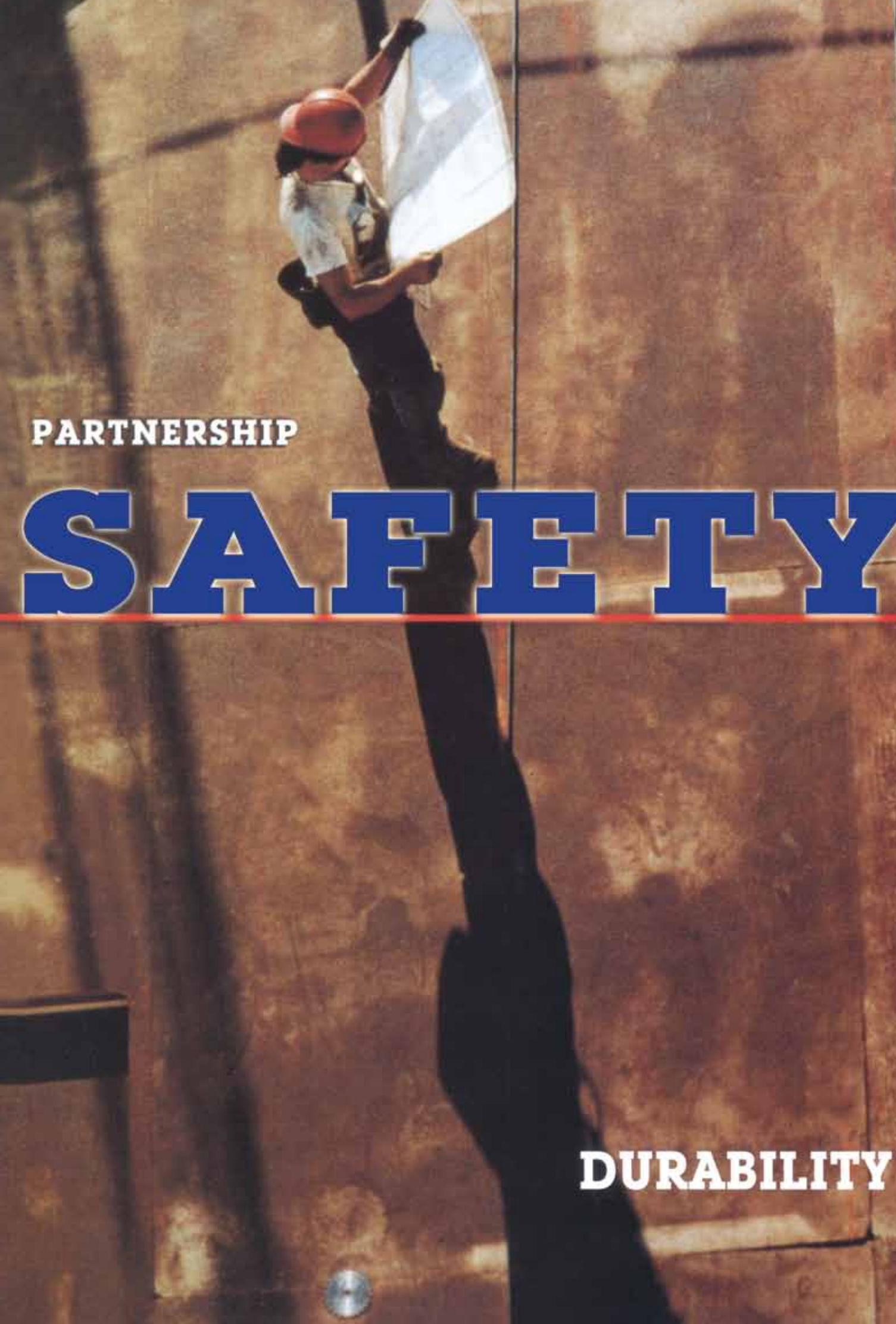
QUALITY
الفنار
alfanar
PRODUCT

علامة الجودة
SASO
QUALITY MARK

MGMT. SYS.
R.v.A. C 046
ANAB

ISO 9001:2008
Certificate No: 34039

الفنار
alfanar


PARTNERSHIP
SAFETY
DURABILITY

Contents

الفنار alfanar

1 Low Voltage Switch Boards (New MF)

alfanar's new MF panel is designed and tested as per new IEC standard 61439-2. This panel is available up to 6300A, 100kA 1 Sec, Form 4b.

Compliance to IEC 61439-2 ensures safety for people and installations.

APPLICATION

Low Voltage Switchboards are mainly used for electrical power distribution and control. They are generally installed downstream of transformers or generators that contain the main and distribution circuit breakers on LV side. Loads are motors, heating equipment, lighting and air-conditioning units.

Industrial Applications

- Distribution & Transmission Substations
- Oil & Gas Plants
- Petrochemical Plants
- Factories
- Waste & Water Treatment Plants

Commercial Applications

- Commercial Offices
- Shopping Malls
- Schools
- Airports
- Hospitals
- Restaurants
- Banks

CONSTRUCTION

Standard	Installation Type	Degree of Protection	Busbar Type
IEC 61439-2	Free standing	Up to IP54	ETP (Electrolytic Tough Pitch) Copper

- Fully tested up to 6300Amps in accordance with IEC 61439-2
- Made of electro-galvanized sheet steel (2.0mm to 3.0mm thick for frames and 1.6mm to 2.0mm thick for covers) polyester powder coated in RAL 7035
- Busbar rating with Current density of 1.6A/mm² up to 1A/mm² can be considered in busbar designing
- Accessible from the front and rear
- Cable entry from the top and bottom; with removable gland plates
- Neutral busbars are rated at 50% of the main busbar and Earth busbars are rated 50% of the Neutral busbar
- Forms of internal separation from Form 1 to Form 4
- Easy interchangeability of components

SPECIFICATIONS

- Rated insulation voltage 800V
- Main busbars rated from 630A to 6300A
- Busbar short-circuit withstand capacity up to 100kA for 1 Sec
- Ambient temperature 40 °C
- Degree of protection up to IP54
- Enclosure types available in NEMA -1, 12, 3R & 4
- Enclosure types available in stainless steel for NEMA-4X indoor & outdoor applications

AVAILABLE OPTIONS

- Ambient temperature up to 55 °C
- Silver Plated and PVC sleeved Copper Busbars
- Neutral busbar rated 100% of main busbar
- Aluminum gland plates
- Other paint shades
- Extendable on both the sides
- Rated insulation voltage up to 1000V
- Can be interfaced with the Building Management System (BMS) for monitoring and controlling circuit breakers

2 Distribution Boards (MB)

alfanar Custom-built Distribution Board (MB) is available up to 630A. The design provides complete flexibility to the customers at the time of installation. It serves as a complete solution for the distribution of power.

APPLICATION

The distribution boards are used in commercial, residential as well as industrial buildings to distribute the power from Main Panel to the downstream equipment, such as Load Centers, etc.

CONSTRUCTION

Standard	Installation Type	Degree of Protection	Busbar Type
IEC 61439-2	Wall mounted and free standing (for indoor and outdoor applications)	Up to IP65	ETP (Electrolytic Tough Pitch) Copper

- Fully tested up to 630Amps in accordance with IEC 61439-2
- Made of electro-galvanized sheet steel (1.6mm thick) polyester powder coated in RAL 7035
- Busbar designed for current density of 1.6A/mm²
- Accessible from the front for cable termination
- Cable entry from the top or bottom; with removable gland plates
- Neutral busbars are rated at 50% of the main busbar and Earth busbars are rated 50% of the Neutral busbar

Typical Dimensions

Up to 250Amps

No. of Ways	Without Metering		
	Height (mm)	Width (mm)	Depth (mm)
4way	1100	800	250
6way	1100	800	250
8way	1200	800	250
10way	1400	800	250
12way	1400	800	250

For 400Amps & 630Amps

No. of Ways	Without Metering		
	Height (mm)	Width (mm)	Depth (mm)
4way	1200	800	250
6way	1200	800	250
8way	1300	800	250
10way	1500	800	250
12way	1500	800	250

Note:

Since design is a continuous development process, the dimensions are subject to change without prior notice.

SPECIFICATIONS

- Rated insulation voltage 800V
- Main busbars rated up to 630A
- Busbar short-circuit withstand capacity 35kA for 1 Sec
- Degree of protection up to IP42
- Enclosure types available in NEMA -1, 12, 3R & 4
- Enclosure types available in stainless steel for NEMA-4X indoor & outdoor applications
- Wall mounted and free standing designs
- Available in 4way to 12way outgoing triple pole MCCBs

OPTIONS

- Ambient temperature up to 55 °C
- More than 12-way outgoing breakers
- Busbar short circuit withstand capacity 50kA for 1 Sec
- Enclosure with sheet thickness of 2.0mm
- Other paint shades
- Silver Plated and PVC sleeved Copper Busbars
- Busbar rating with Current density of 1A/mm² can be considered in busbar designing
- Neutral busbar rated 100% of main busbar
- Aluminum gland plates
- Can be interfaced with the Building Management Systems (BMS) for monitoring and controlling circuit breakers
- Degree of protection up to IP54

3 Motor Control Centers (MCC Panels)

alfanar Motor Control Center (MCC) Panel comprises of compartmental modules or form-1 fixed type conveniently grouped to control equipment like motors and chillers, etc.

APPLICATION

Motor Control Center is a combination of motor starters, power feeders and interlocking relays in a modular enclosure. MCCs are mainly used in industrial process plants to control motor loads and other similar applications.

Industrial Applications

- Power Generation Plants
- Oil & Gas Plants
- Petrochemical Plants
- Waste & Water Treatment Plants

Commercial Applications

- Business & Public Premises
- Commercial Premises
- Shopping Malls
- Warehouses
- Schools
- Banks
- Airports
- Hospitals
- Hotels

CONSTRUCTION

Standard	Mounting Type	Degree of Protection	Busbar Type
IEC 60439-1	Free standing (for indoor application)	Up to IP54	ETP (Electrolytic Tough Pitch) Copper

- Made of electro-galvanized sheet steel polyester powder coated in RAL 7035. Removable modules and their chassis are made of Alu-Zinc sheet steel
- Busbar designed for current density of 1.5A/mm²
- Neutral busbars are rated 50% of main busbars and Earth busbars are rated 50% of neutral busbar
- Fully compartmentalized design conforming to form of separation Form-3B
- Draw-out and Fixed type modules:
  - Draw-out Module - up to 225A
  - Fixed type - More than 225A
- Draw-out modules of same size are interchangeable, which helps in reducing the maintenance time
- All module covers are an integral part of the modules and come with positive interlocks, i.e. Operating handles of the main power devices at the front of the module are interlocked with the cover and chassis to avoid accidental withdrawal of the modules during operation

TYPES OF STARTERS

Fixed/Draw-out Module

- Direct On-line (Reversing & Non-reversing)
- Star/Delta

Fixed Module

- Auto Transformer
- Soft Start Unit
- Variable Speed Drive

SPECIFICATIONS

- Rated insulation voltage 800V
- Main busbars are rated up to 4000A
- Main Busbar short-circuit withstand capacity up to 100kA for 1 Sec
- IP42

OPTIONS

- Silver Plated and PVC sleeved Copper Busbars
- Neutral busbar rated 100% of main busbar
- Aluminum gland plates
- Degree of protection up to IP54
- Other paint shades
- Top cable entry
- Rated insulation voltage up to 1000V
- Ambient temperature up to 55 °C
- Can be interfaced with the Building Management Systems (BMS) for monitoring and controlling circuit breakers & contactors

4 Capacitor Banks (Power Factor Correction Panels)

alfanar Capacitor Bank (Power Factor Correction Panel) improves power factor to increase energy efficiency, save energy and electric power for greater profits.

● APPLICATION

Capacitor Banks are installed in power systems to which mostly inductive loads are connected, like those in: Steel Plants, Chemical Plants, Paper Mills, Automotive Plants and other processing industries.

CONSTRUCTION

Standard	Mounting Type	Degree of Protection	Busbar Type
IEC 60439-1	Free standing (for indoor and outdoor applications)	Up to IP54	ETP (Electrolytic Tough Pitch) Copper

- Made of electro-galvanized sheet steel (2.0mm thick for frames and 1.6mm thick for covers) polyester powder coated in RAL 7035. Capacitor tray is made of 2mm thick Alu-Zinc sheet steel
- Accessible from the front
- Cable entry from the top and bottom; with removable gland plates
- Capacitor panel is in modular construction, each step is mounted in withdrawable module which is completely front accessible, facilitating ease in maintenance

SPECIFICATIONS

- Rated insulation voltage 1000V
- Degree of protection up to IP54
- Enclosure types available in NEMA -1, 12 & 3R

OPTIONS

- Silver Plated and PVC sleeved Copper Busbars
- Aluminum gland plates
- Other paint shades
- Designed for ambient temperature up to 55 °C
- Can be interfaced with the Building Management System (BMS) for monitoring and controlling circuit breakers

5 Automatic Transfer Switches (ATS Panels)

alfanar Automatic Transfer Switches (ATS Panels) provide a solution to handle transfer of critical loads to emergency sources with reliability. They ensure the continuity of electric supply to an installation with minimum interruption by making an automatic changeover from normal supply to emergency supply.

● APPLICATION

Mainly used for the essential loads to provide continuous power supply.

Industrial Applications

- Power Generation Plants
- Oil & Gas Plants
- Petrochemical Plants
- Waste & Water Treatment Plants

Commercial Applications

- Business & Public Premises
- Commercial Premises
- Shopping Malls
- Warehouses
- Schools
- Banks
- Airports
- Hospitals
- Hotels

CONSTRUCTION

Standard	Mounting Type	Degree of Protection	Busbar Type
IEC 60439-1	Free standing and surface mounting (for indoor and outdoor applications)	Up to IP54	ETP (Electrolytic Tough Pitch) Copper

- Made of electro-galvanized sheet steel (minimum 2.0mm thick for frames and 1.6mm thick for covers) polyester powder coated in RAL 7035
- Accessible from the front and rear
- Cable entry from the top and bottom; with removable gland plates
- Busbar rating with Current density of 1.6A/mm² up to 1A/mm² can be considered in busbar designing
- Neutral busbars are rated 50% of main busbars and Earth busbars are rated 50% of neutral busbar
- Automatic transfer of supply from conventional source to emergency source with open transition scheme
- Available in two models: Digital controller and conventional components

SPECIFICATIONS

- Rated insulation voltage 1000V
- Main busbars rated up to 6300A
- Short-circuit withstand capacity 100kA for 1 Sec
- Degree of protection up to IP54

OPTIONS

- Silver Plated and PVC sleeved Copper Busbars
- Aluminum gland plates
- Other paint shades
- With multiple incomers and bus-couplers
- With bypass
- Designed for ambient temperature up to 55 °C
- Can be interfaced with the Building Management System (BMS) for monitoring and controlling circuit breakers

6 Distribution Boards For Substation (AC/DC)

alfanar Distribution Boards are designed to take care of the AC and DC power needs. They are available up to 6300A rating for AC distribution and 800A rating for DC distribution.

● APPLICATION

The Distribution Boards are built mainly for SEC (Saudi Electric Company) substations for supplying power to the auxiliary equipment of substations.

CONSTRUCTION

Standard	Mounting Type	Degree of Protection	Busbar Type	Ambient Temperature
IEC 60439-1 and Saudi Electric Company (SEC) specifications	Free standing and surface mounting (for indoor and outdoor applications)	Up to IP41	ETP (Electrolytic Tough Pitch) Copper with PVC sleeves	55 °C

- Made of electro-galvanized sheet steel (minimum 2.0mm thick for frames and 1.6mm thick for covers) polyester powder coated in paint shades strictly as per Saudi Electric Company (SEC) specifications
- Accessible from the front, rear and sides
- Cable entry from the top and bottom; with removable gland plates

In addition to Distribution Boards; Marshalling Panels such as CT, VT, and CVT panels are also manufactured for substation applications.

SPECIFICATIONS

- Rated insulation voltage 1000V
- Rated up to 6300A for AC and up to 800A for DC
- Short-circuit withstand capacity 85 kA for 1 Sec (for AC) and 35 kA for 1 Sec (for DC)
- Degree of protection is up to IP41
- Internal separations are available from Form 1 to Form 4b

7 Synchronizing Panels

alfanar Synchronizing Panels supply a large amount of power loads by using multiple generators working in parallel on load sharing.

APPLICATION

A Synchronizing Panel is used in industrial and commercial applications to control the source of multiple generators.

CONSTRUCTION

Standard	Mounting Type	Degree of Protection	Busbar Type
IEC 60439-1	Free standing (for indoor and outdoor applications)	Up to IP54	ETP (Electrolytic Tough Pitch) Copper

- Made of electro-galvanized sheet steel (2.0mm to 3.0mm thick for frames and 1.6mm to 2.0 mm thick for covers) polyester powder coated in RAL 7035
- Busbar rating with Current density of 1.6A/mm² up to 1A/mm² can be considered in busbar designing
- Neutral busbars are rated 50% of main busbars and Earth busbars are rated 50% of neutral busbars
- Accessible from the front and rear
- Cable entry from the top and bottom; with removable gland plates

SPECIFICATIONS

- Rated insulation voltage 1000V
- Main busbars rated up to 10,000A
- Busbar short-circuit withstand capacity 100kA for 1 Sec
- Degree of protection up to IP54

OPTIONS

- Silver plated and PVC sleeved Copper Busbars
- Neutral busbar rated 100% of main busbar
- Aluminum gland plates
- Other paint shades
- Designed for ambient temperature up to 55 °C

8 Package & Unit Substations

alfanar Package and Unit Substations are custom-built, factory-assembled and tested units. They are designed and manufactured as per a customer's specific needs. They are built in accordance with the IEC standards and Saudi Electricity Company (SEC) specifications. The design is provided with high level of flexibility to cover a wide range of applications.

● APPLICATION

alfanar Package and Unit substations are used for effective distribution of electrical power from Medium Voltage system to the Low Voltage distribution system.

CONSTRUCTION

Standard	Degree of Protection	Busbar Type
IEC 61330 standards and Saudi Electric Company (SEC) specifications	Up to IP54	ETP (Electrolytic Tough Pitch) Copper

- Polyester powder coated in RAL-7033 as per Saudi Electric Company (SEC) specifications
- Substation is housed in a segregated steel compartment made of aluzinc sheet steel with sloping double roof canopy
- Fully air ventilated design to prevent rise in temperature in internal components; fully louvered sidewalls with sand traps to prevent ingress of dust to the inside of a substation; double walled sloped roof to avoid the internal temperature rise due to sunrays
- All compartments with independent doors for easy operation and maintenance
- Removable gland plates and cable supports are provided at the base of the substation assembly for easy termination of HV and LV cables
- Transformer is directly connected to RMU through cable connection
- Customized to suit all site conditions

SPECIFICATIONS

- Ring Main Unit is a non-extensible type with two ring load break switches plus one fused switch/circuit breaker for the tee-off switching.
- Distribution Transformer rating is up to 3000 KVA.
- Up to IP54

OPTIONS

- Other paint shades
- Can be interfaced with the Building Management System (BMS) for monitoring and controlling circuit breakers

9 Control & Automation Panel

A. CONTROL PANELS

alfanar Control Panel is a custom-made assembly of conveniently grouped control equipment primarily used for controlling and supervising a motor load. Control panels are typically designed for operating and controlling motors.

● APPLICATION

The most demanding applications are:

- Local Control Panel
- Enclosed Starter
- Mimic & Indicating Panel
- Control Desk
- Operator Panel

● CONSTRUCTION

Standard	Mounting Type	Degree of Protection
IEC 60439-1	Free standing and surface mounting (for indoor and outdoor applications)	Up to IP55

- Made of electro-galvanized sheet steel (1.6mm thick) polyester powder coated in RAL 7035
- Cable entry from the top and bottom; with removable gland plates
- All power and control wires are connected to front accessible terminal blocks for easy cable termination

● OPTIONS

- Enclosures with 2mm and 3mm thick electro-galvanized sheet steel
- Other paint shades
- Designed for ambient temperature up to 55 °C
- Can be interfaced with the Building Management System (BMS) system for monitoring and controlling circuit breakers & contactors

B. AUTOMATION PANELS

alfanar Automation Panel is a custom-made assembly which is designed to provide automatic control solutions for specific applications.

● APPLICATION

alfanar has developed a practical and economical solution in the field of PLC and computer controlled systems for automatic control projects by providing:

- Solution for any automatic sequence requested
- Optimum Control Design with control diagram
- Translation into hardware using Conventional Logic Control Component and Programmable Logic Controller (PLC)
- Solutions to inveterate problems in an existing automation System by introducing optimum and satisfactory modifications
- Reviewing of control systems design and solutions in many field

PROGRAMMABLE LOGIC CONTROL (PLC):

- **PLC**
  For small to mid-range applications
  Flexible system (CPU Family)
  Expandable I/O system
- **Large Variety of I/O modules**
  Digital
  Analog
  TC/PT100
  Motion

SUPERVISORY CONTROL AND DATA ACQUISITION (SCADA) AND HUMAN MACHINE INTERFACE (HMI):

- Complete range of graphic touch panels
- Sizes 5, 6, 9, 10.4 and 12.1 inches
- LCD mono, LCD color, TFT color, EL
- 32-bit RISC processor provides excellent Performance
- Withstand water, oil and dust (IP65)
- Capacity to fix more than 100 PLC drivers

COMMUNICATION:

DATA-LINC manufactures the broadest line of industrial grade, custom configured modems in the world. Our solutions encompass all media types, ensuring that the best communication method is selected for each project. Our line of high-performance products includes:

- License-free frequency hopping, spread spectrum radio modems
- License-free ethernet wireless modems
- Industrial dial-up/leased-line/private-line modems
- Digital leased-line modems
- Spare-pair/dedicated-wire modems
- AC/DC power line modems
- Fiber optic modems

Certification

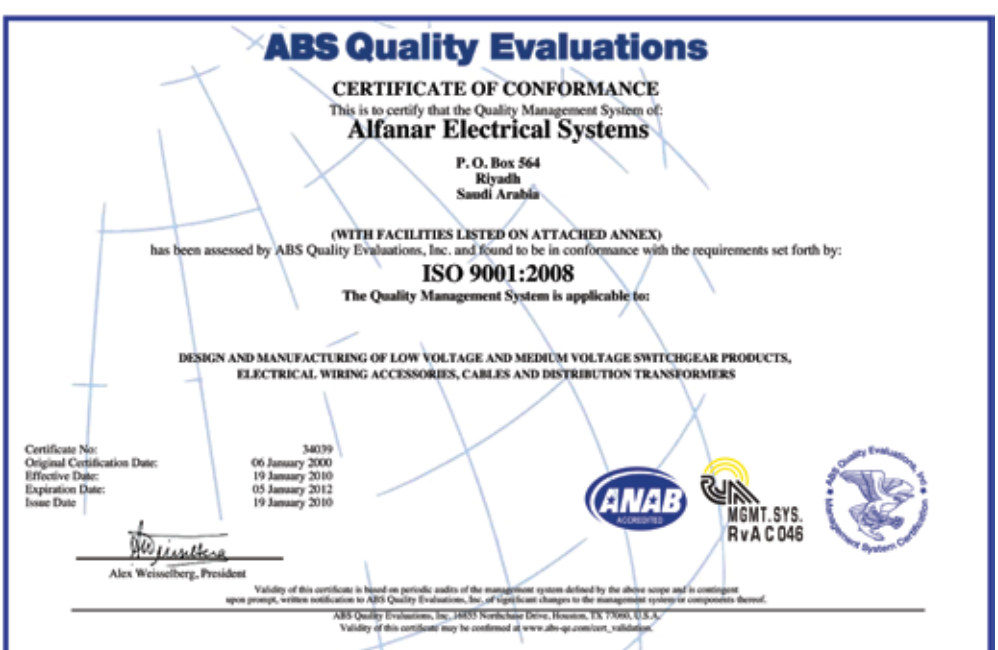
alfanar Low Voltage Systems (Power and Control) are approved by:

APPROVALS

- Saudi Electricity Company
- Ministry of Education (Boys Schools Project)
- Ministry of Education (Girls Education)
- General Presidency of Girls Education
- Technical and Vocational Training Corporation (TVTC)
- Al-Imam University
- King Khaled University
- King Faisal University
- King Fahad University of Petroleum and Minerals
- King Saud University
- Ministry of Justice
- Saudi Telecom Company (STC)
- GSM Network (STC)
- Ministry of Health
- Saline Water Conversion Corporation (SWCC)
- Ministry of Higher Education
- General Authority of Civil Aviation
- Ministry of Interior
- Ministry of Islamic Affairs
- Saudi Post
- Ministry of Defense and Aviation (MODA)
- Ministry of Rural and Municipal Affairs (Riyadh, Jeddah, Dammam)
- Saudi Arabia National Guard Modernization
- Ministry of Transportation
- Ministry of Information
- Ministry of Civil Affairs
- Ministry of Finance and Economy
- Ministry of Public Works and Housing
- Ministry of Agriculture
- Saudi Ports Authority
- Grain Silos and Flour Mills Organization
- Ministry of Water and Electricity, Saudi Arabia
- Saudi Arabian Oil Company (Saudi Aramco)
- Royal Commission for Jubail and Yanbu
- Saudi Basic Industries Corporation (SABIC)
- Power and Water Utility Company for Jubail and Yanbu (Marafiq)
- Saudi Texaco Company
- Abu Dhabi Water and Electricity Company (ADWEC)
- Qatar Electricity and Water Company (QEWC)
- Ministry of Electricity and Water (MEW), Bahrain
- Ministry of Electricity - Public Electricity Corporation, Republic of Yemen

Major Engineering and Consulting Firms

- Dar Engineer
- Saudi Consolidated Engineering Company (Khatib and Alami)
- Saudi Consulting Services (Saud Consult)
- Otaishan Consulting Engineers
- Al-Roken Consultant Office
- Al-Beeah Planners, Architects and Engineers
- Mohmmed Al-Naeem Consultant Office
- El-Sief Consultant Office
- Al-Sokair Consultant Office
- Consultancy Group
- Al-Gowainy Consultant Office
- Dar Al-Maged Consultant Office
- Zuhair Fayez Partnership Consultants
- Shabant Consultant Office
- Omrania Architecture and Engineering Consultant
- Khozam Consulting Engineers
- Al-Kussayer Consultant Engineer
- Saudi Architects
- Al-Hussan Consultant Office
- Al-Mazroe Consultant Office



ABS Quality Evaluations

CERTIFICATE OF CONFORMANCE

This is to certify that the Quality Management System of:

Alfanar Electrical Systems

P. O. Box 564
Riyadh
Saudi Arabia

(WITH FACILITIES LISTED ON ATTACHED ANNEX)

has been assessed by ABS Quality Evaluations, Inc. and found to be in conformance with the requirements set forth by:

ISO 9001:2008

The Quality Management System is applicable to:

DESIGN AND MANUFACTURING OF LOW VOLTAGE AND MEDIUM VOLTAGE SWITCHGEAR PRODUCTS, ELECTRICAL WIRING ACCESSORIES, CABLES AND DISTRIBUTION TRANSFORMERS

Certificate No:	34039
Original Certification Date:	06 January 2000
Effective Date:	19 January 2010
Expiration Date:	05 January 2012
Issue Date	19 January 2010

ANAB ACCREDITED

MGMT.SYS. RvA C 046

Alex Weisselberg, President

Validity of this certificate is based on periodic audits of the management system defined by the above scope and is contingent upon prompt, written notification to ABS Quality Evaluations, Inc. of significant changes to the management system or components thereof.

ABS Quality Evaluations, Inc. 16855 Northchase Drive, Houston, TX 77060, U.S.A.

Validity of this certificate may be confirmed at www.abs-qe.com/cert_validation.

STANDARDS

alfanar Low Voltage Systems (Power and Control) conform to the following standards and specifications:

Product Design and Manufacturing	IEC 61439-2
Degree of Protection	IEC 60529
Package & Unit Substations	IEC 61330 and SEC Specifications

QUALITY POLICY

The Quality Policy of alfanar is to:

- Provide products conforming to governing standards and of consistent quality
- Excel in all our operations to achieve customer's satisfaction for products and services through continual improvement
- Develop and maintain a motivated team of competent employees and vendors
- Redefine and execute new processes and systems that meet the changing market requirements.

ROUTINE TESTS

Factory routine tests are conducted on each of the alfanar Low Voltage System (Power and Control) products in accordance with relevant specifications and standards.

OUR OBJECTIVE

WE REACH EXACTING STANDARDS IN THE SAFETY AND DISTRIBUTION OF POWER AND GO WELL BEYOND A CUSTOMER'S EXPECTATIONS. THIS IS DONE BY FOCUSING OUR TECHNOLOGY AND EXPERTISE ON THE ULTIMATE REWARD WE CAN GET, COMPLETE SATISFACTION OF OUR CUSTOMERS.

alfanar PRODUCTS

- Oil-Immersed Distribution Transformers
- Switches and Socket Boxes
- Junction Boxes
- Service Enclosures IP65
- Stainless Steel Enclosures NEMA-4X
- Telephone Enclosures
- Circuit Breaker Enclosures – NEMA 1 & NEMA 3R Types with Multiple Outlets
- Modular Enclosures
- Load Centres
  - NEMA Type LA Load Centres
  - IEC Type LD Load Centres
  - Split Busbar Unit Type LAS/LDS Load Centres
- MCCB Distribution Boards
- Pump Control Panels
- Motor Control Centres
- LV Switchboards up to 6300A, Tested for 100KA, 1 Sec Short Circuit Withstand
- Package Substations
- Control and Automation Panels
- Relay and Control Panels
- Medium Voltage Switchgears
- Pole Mounted Metering Structures
- AC/DC Panels up to 5000A, Tested for 85kA, 1 Sec Short Circuit Withstand
- Extendable and Non-Extendable Ring Main Units

Continuous efforts
being made to impr
the design and qua
of our products
Hence, the produ
supplied may sligh
differ from thos
illustrated in thi
catalogue.

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