

SWITCHGEAR & BUSDUCT SYSTEM SOLUTIONS







## **VISION STATEMENT**

Our vision is to create and maintain an organization of highly skilled manufacturing professionals that serve our clients needs with honesty and integrity. to provide an environment that promotes personal growth and self-pride. Ultimately, to differentiate ourselves as the panel builder of choice to those seeking quality and personal service and value.





## **EXECUTIVE DIRECTOR'S MESSAGE**

We take pride in being one of the upcoming Omani Low voltage panel Builder in the Sultanate, having achieved remarkable growth and contributing significantly to the development of Oman from the time of its inception in the year 2011. The Company has attained prominence in the field of panel manufacturing through competence, competitiveness and timely delivery with highest quality standards. We follow a good tradition of serving our valued customers to their complete satisfaction through efficient management and excellent workmanship. We continue to maintain our standars with our indefatigable efforts. As we look to the years ahead we replenish our assurance to remain committed to the excellence, innovations and are open to adopt better management skills and excel in our services for our valued clients.

> BADER HUSSAIN AL TOUBI Executive Director

## **SALASEL ELECTRIC SERVICES**

With pride we introduce to you our company **SALASEL ELECTRIC SERVICES (SES).** Established in 2011 with a main goal of meeting the growing demand for low Voltage Power Distribution & Control Panel for Oman & the neighboring countries.

We are confident that our high quality and safety based products combined with our engineering & design capabilities will enrich the market with a very reliable product.

Control Panel and Control System play a crucial role in many industrial endeavors where control or monitoring instruments are to be displayed. **SALASEL ELECTRIC SERVICES** is considered on industry design, assembling, and commissioning of custom power distribution, motor, and process control panels and assemblies. Our products include Industrial Control Panels (Machine Control Panel, Process Control and Instrumentation Panels, Electrical Panels, Shelter Houses), and Control Components/ Instruments for Control Panels (PLC Relay Cards, Multiplexers, Single Conditioners, etc...) to meet our customers' most demanding requirements in the field of pulp and paper, mining, woodworking, aquaculture, agriculture, food processing, minerals processing, energy sectors etc.

We remain committed to provide superior quality products and maintaining efficient and fast services. This has helped us to attain an enviable client list spread all across the sultanate of Oman. SES facility located in Nizwa industrial area. And is outfitted with the most sophisticated machines and equipment's to assemble superior quality products.

## **QULAITY**

Quality has always been the topmost priority for our company; we undertake every detailed test to ensure that our products are as per international standards of quality.

### **FUTURE PROSPECTS**

Our company believes in the vision of forward thinking and we live by this creed. Our rich experience has helped us to strengthen our technological and managerial expertise. Customer satisfaction is imperative for us in our work as we rely on our loyal and satisfied client base.

SES optionally offers to supervise Installation, Commissioning, Testing & Maintenance procedures: SES also optionally offers comprehensive products training, site activities management & Coordination related to SES products & solutions.





## **AUTHORIZATION CERTIFICATE**

Being SES, very proud to be the agent for two of the greatest manufacturer of Switchgear Components and BusDuct System (Dorman Smith UK &LectroBar Egypt) and we are fully authorized to use their Components in our Panels.









## **ABOUT DORMAN SMITH & LECTROBAR**

Dorman Smith Switchgear (DSS) Dubai is a wholly owned subsidiary of Dorman Smith UK and has been in Operation for over 35 years supplying and servicing a large number of iconic projects all over the Middle East. Headquartered in the United Kingdom, DSS designs, manufactures, assembles, performs routine tests and supplies the whole range of Low Voltage Switchgear products ranging from the simplest distribution board to the most complex multi-cubicle switch boards.

Set up in 1980, Lectro Bar Egypt (LB) is a specialized manufacturer of Type Tested Bus Duct Systems and has carried out over a thousand installation of Bus Duct System for prestigious projects in Egypt and abroad. Equipped with two state of the art factories and total manufacturing area of 7000 sq meters, LB provides the highest quality of Bus Duct Systems in the region. LB's facilities are ISO certified and strategically located to help serve our customers efficiently. While one of our manufacturing facilities is located in Borg El Arab Industrial City in Egypt, the other is located in Sharjah, UAE thus ensuring local service and customer support of the highest quality.

Developed in the UK & Egypt specifically to suit the requirements of the Middle Eastern market, the offering meets the most stringent of technical requirements and is approved to the latest IEC 61439 standards. Type Test Certificates from reputed independent certification specialist such as ASTA and DEKRA are a testament to the quality and technical conformance of our product range.

Our capabilities stem from our engineering expertise and our unwavering commitment to quality and service. We have extensive experience in designing and constructing Low Voltage Switchboards & Bus Duct Systems. Our dedicated engineering team utilizes the latest CAD software to design switchboard & bus duct assemblies. Our presence in the local market enables rapid turnaround ensuring timely project completion and prompt After Sales Service.

Our client list includes various distinguished entities such as Etisalat, Dubai Municipality, and Ministry of Public Works & Housing, ADNOC, ENOC, Qatar Olympic Committee, Qatar Petroleum, Qatar Foundation, Royal Oman Police, Ministry of Manpower Oman, Bank Muscat, Sohar Aluminum, Carrefour and Vodafone to name a few. The Technical Collaboration between Dorman Smith & Lectro Bar aims to provide developers, consultants and contractors with an integrated Loa Voltage solution to fulfill their technical and commercial needs.





## **OUR PRODUCTS OFFERING**

## LV SWITCH GEAR SYSTEMS Up to 6300A BUSDUCT SYSTEMS FROM 300A TO 6400 A

Main Power Distribution Boards
Sub Main Distribution Boards
Final Distribution Boards
Synchronizing Panels
Trolley Bus bar
Control Panels
Lighting Bus duct
Motor Control Centers
Automatic Transfer Switches
Power Factor Correction Panels

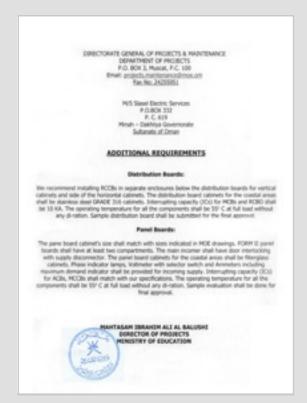




## **APPROVALS**

#### MINISTRY OF EDUCATION





**JSRS** 







## **CERTIFICATION**

Dorman Smith Lectro Bar prides itself on providing Bus Duct Systems of the highest quality meeting the most stringent of technical requirements. All our product offerings are fully type tested assemblies and are certified by KEMA/ DEKRA and ASTA in compliance to IEC 61439.



#### ISO 9001:2000

Dorman Smith Lectro Bar prides itself on the quality of its product offering and services. We conform to ISO 9001:2008 standards and the stringent implementation of these standard results in exceptional levels of customer satisfaction.



#### **Patents**

DSLB attributes its success to the culture of technical innovation and ground breaking research. As recognition of our efforts, our R&D department holds three patents, one of them approved by the Westinghouse Laboratory and witnessed by UL







## **PRODUCT OFFERING**

The dorman smith product portfolio begins with the simplest of distribution boards and continues up to custom designed, factory built low voltage electrical switchboards for a broad range of commercial and industrial applications.

We continue to build on our extensive technical knowledge and awareness of market demands, operating conditions and current regulations to serve our clients. The wealth of our electrical products to exceeds industry standards.

#### **SYSTEM**

The **main distribution board** range named **MODIS**, is a fully type Tested/Designed Verified Assembly tested to the latest BS EN 61439 standards for operation at 50o C ambient. It is a floor mounting and free standing system available in sheet steel cubicles of forms 2 to 4 with current ratings up to 6300A and fault rating of 50kA, 1 sec/ 3 sec or 80kA. 1 sec and 100 kA, 1 sec.t

The **Sub Main Distribution Boards** are in SYSTEM **LOADBANK** design. fully type tested to latest BS EN 61439-2 standard. It is a wall mounting, sheet steel clad assembly with busbar ratings of 250A, 400A and 800A TP & N available ratings of 25kA for 1 sec, 25kA for 3 seconds, 36kA for 1 sec or 50kA for 1 sec. The standard construction is form 2 with form 4 option provided in the 800A system.

The Final MCB SPN & TPN Distribution Boards are of LOADCENTRE type, wall mounting, sheet steel clad ststem with isolator, RCCB & MCCB as incoming option. They are available standard or split bus bar versions and are type tested to BS EN 61439-3, In addition, Row type DB's are also available in our range.

The system range in rounded off by Motor Control Centres, Power Factor Correction Panels, Control Panels, Synchronizing Panels and Automatic Transfer Switches.











#### **COMPONENTS**

Dorman Smith Switchgear offers a wide selection of components covering a broad range of modules and ratings. The **Loadline** range of Air Circuit Breakers utilize leading technology featuring a number of innovations making them an ideal choice of incomer for all system. All breakers are complaint with the lasts BS EN 60947-2 standard and are available in three different frame sizes ranging from 630A to 6300A.

The **LoaLine** range of **Molded Case Circuit Breakers** are available in current ratings of 20A to 1600A. The devices are available in Fixed/ Adjustable Thermal Magnetic and Electronic variant complaint to the latest BS EN 60497-2 standard. The breakers are calibrated to carry current at 500C ambient with options ranging from 25kA to 85kA fault ratings.

Our comprehensive product range also includes Miniature Circuit Brakers Residual Current Devices, Isolators, Modilar Contractors, Transient Voltage Surge Protectors, Timers & Time Switches, On-Load Changeover Switches, On-Load Switch Disconnectors, Power Contractors And Thermal Overload Relays.







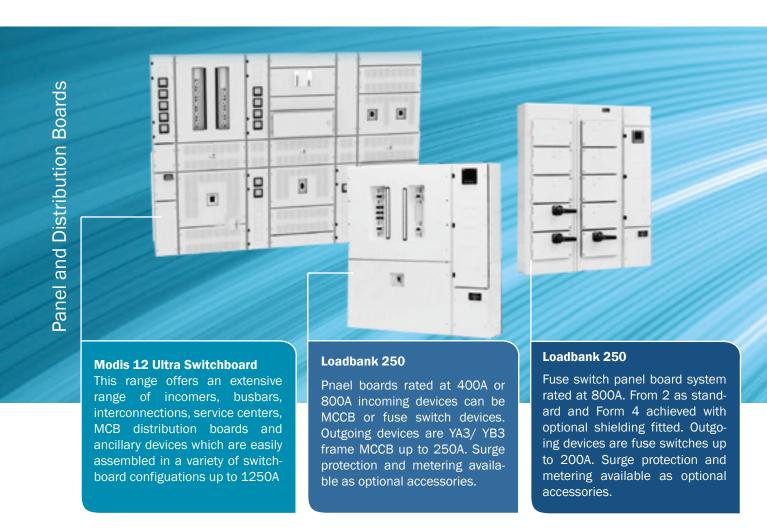
## **DORMAN SMITH SWITCHGEAR LIMTED**

With over 130 years of experience in switchgear design and production, Dorman Smith continues to provide high quality equipment for low-voltage electrical distribution and circuit protection.

The Dorman Smith product range starts with simple SP&N distribution boards and continues up to custom designed, factory built low-voltage electrical switchboard for a broad range of commercial, industrial or retrofit applications.

Dorman Smith continues to build on the extensive technical know-how and close awareness of local demands, operating conditions and regulations. This breadth of experience supports the development and manufacturing of electrical systems which meet or exceed industry requirements.

## **LOADBANK 125,200 & 250**







## **CIRCUIT PROTECTION, METERING AND SURGE PROTECTION**

#### **Circuit protection Devices**



MCBs up to 63A, RCBOs up to 45A, RCCBs up to 100A, MCCBs up to 1600A, ACBs up to 6300A

vast range of accessories available.

#### **Fuse Combination Units**



Available as housed or skeleton units in three and four - pole configurations from 32A to 800A. All switches have a short - circuit capacity of 80kA rms.

#### **Surge Suppression**



Available in type 1 and Type 2 and can be used with our ranges of the distribution or panel boards. Enclosures are available for each range.

#### Metering



Our range includes digital multifunction meters, single and three-phase MID meters and dual load meters. The dual load meter is a cost effective and space saving metering system designed especially to provide energy readings from two separate current transformers in split load applications for power and lighting.





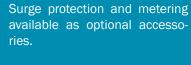
#### Loadlimiter 63

SP&N boards rated at 125A and TP&N rated at 250A with various incoming options. Outgoing devices are MCB up to 63A and RCBO unto 45A. Factory built assemblies complete with metering installed, now available as vertical or horizontal split load for power & lighting application.



# **General Purpose MCCB Enclosures**

Range of MCCB general purpose enclosure from 16A to 1000A include a mounting facility for integral meter and / or earth leakage relay and current transformers



Panel boards rated at 250A or

400A with YA2 frame MCCB

outgoing devices up to 125A.

Loadbank 125





## AT THE FOREFONT OF INNOVATION

#### **MODIS ULTRA**

At Dorman Smith, we believe that standing still is tantamount to going backwards. We see innovation as one of the key drivers to our growth, starting from our varied product offerings. The newest addition to the Dorman Smith product family is the MODIS ULTRA fully verified LV Switchboard system.



The MODIS ULTRA LV system is a fully type tested switchboard assembly compliant with the latest EN/IEC 61439-2 standards and is certified by ASTA. The system is available in 1250A, 1600A, 2500A and 3200A busbar ratings with certified shot circuit rating of 50kA for 3 sec. The system is also certified for temperature rise at an ambient operation of 50°C



Compliance :		Switchboard	EN 61439 - 2					
ACBs	EN 60947 - 2	MCCBs	EN 60947 - 2					
MCbs	EN 60898	RCBOs	EN 61009					
<b>RCCBs</b>	EN 61008	Fuse Switch	EN 60947 - 3					

#### **Frames**

Three different frame widths and two different frame depth options available. All frames have a standard height for modular design.

#### **Ingress Protection**

The Modis Ultra System has a standard rating of IP43 with IP54 option available upon request.

#### Form

The Mods Ultra system is designed with form 4b type 2 or type 6 separations as standard with front or rear cabling access options.

#### **Protective Earth Conductors**

Modis Ultra switchboard is fitted with a horizontal earth conductor mounted either at the top or the bottom of the frame depending on the cable entry. The conductor runs the full length of the system and is sized according to the fault withstand of the busbar system. Pre-punched holes in the conductor allow quick and reliable connection thereby reducing the installation time whilst maintaining a high level of confidence in the integrity of the joints.

#### **Termination**

The Modis Ultra switchboard offers good all-round access and has rear access for cabling. Removable gland plates make cable glancing quick and safe. Removable barriers simplify cable connection and termination for outgoing devices.

#### **Internal Segregation**

The Modis Ultra system has been designed to exceed the requirement of EN 61439-2 with regard to providing form 4b type 2 and type 6 separation options as standard. Type 7 construction is available upon request.

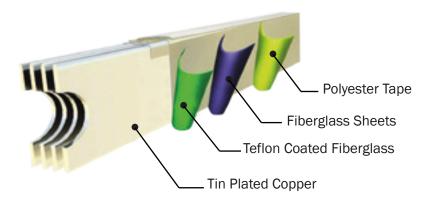




#### **BUS DUCTS**

DSLB's compact busduct design has a sandwich type non-ventilated configuration which ensures that potential points of penetration by moisture and dust are nullified. The Bus Ducts are fabricated from high strength pure electrolytic copper and are tin coated to provide high conductivity, surface protection and good contact. Our manufacturing facilities are ISO 9001:2008 certified to ensure compliance with best practices and an unmatched product quality.

The Bus Ducts are constructed with an extruded aluminum profile where the non-magnetic housing ensures excellent heat dissipation and a significant reduction in reactance and magnetic flux leakage. This system is designed and certified independently to work at 50° C without any derating requirement.



Bus Bars for plug in applications, have full sized welded conductor tabs. The design serves to extend the contact surface outside of the busduct casing and into the plug in outlet, thus maintaining a true sandwich design throughout the entire busduct length for both feeder and plug in busduct. This in turn eliminates the need to separate or flare the conductor bars at the plug in opening.

The Bus Duct are made of two different insulation materials; Teflon Coated fiberglass film and fiberglass sheet to ensure the highest standard of protection. All busbars are wrapped with polyester tape post assembly and all insulation materials used in our products are rated higher than class H and are non-flammable. Our standard offering comes with IP54 degree of protection and we are able offer IP55, IP65, and IP67 casings on request.

#### **TYPE OF BUS DUDCT**

#### Feeder Busduct

300A, 450A, 700A, 800A & 1000A 1300A & 1600A 2250A & 2500A 3200A, 3500A & 4500A 4000A, 5000A & 6400A

Lighting Busduct

Plug-in Busduct 300A, 450A, 700A, 800A & 1000A 1300A & 1600A 2250A & 2500A 3200A, 3500A & 4500A 4000A, 5000A & 6400A Trolley Busbar





## **UNIQUE FEATURES**

## **UNIQUE JOINT DESIGN**

#### **Double Head Bolt**

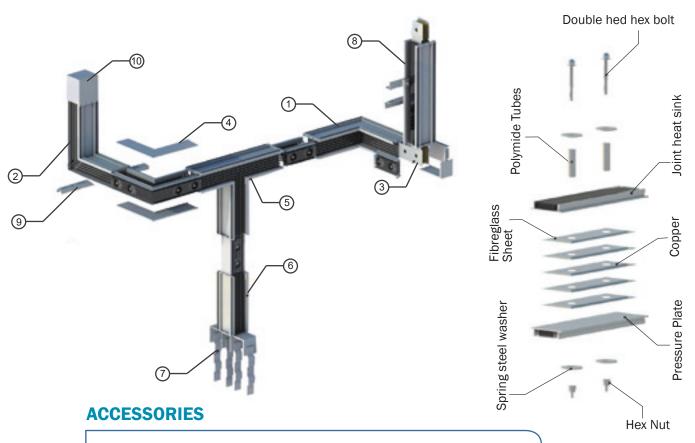
- One Head breaks at the required torque
- No need for torque wrench
- Best tightening for the joint

#### **Heat Sink**

Unique design for the joint to make its temperature less than the rest of the busduct

#### Two Bolt patent joint design

- More than two tons pressure on overlapping busbars at each bolt
- Adjacent phases separated with non-flammable fiberglass sheets (2mm, 80kV/cm)
- Joint alignment with two bolts instead of one to ensure correct installation even with non-skilled labor.



- 1. Edgewise Elbows
- 2. Flat Elbows
- 3. Corner Flat Elbows
- 4. Corner Edgewise Elbows
- 5. Tees & Crosses
- 6. Transformer & Switchboard Flanges
- 7. Flexible Joints
- 8. Spring Riser
- 9. Angle Hanger
- 10. nd Closure





## **ELECTRICAL DATA SHEET**

#### **DESCRIPTION**

Casing :Extruded Aluminium

Protection Degree (IP) : Standard – IP54, Optional – IP65, IP67

Rated Insulation Voltage (V) : 1000

Rated Operation Voltage (V) : upto 1000

Rated Impulse Voltage (KV ) : 8
Frequency (Hz) : 50

## **Ampere Rating (A)**

	300	450	700	800	1000	1300	1600	2250	2500	3200	3500	4000	4500	5000	6400
Short Circuit current															
Short circuit current for 1sec (kA)**		20	25	40	50	60	70	80	100	130	140	150	150	150	150
Peak short Circuit (kA)		40	52.5	84	105	132	154	176	220	286	308	330	330	330	330
Characteristic under normal operation															
Phase resistance(μΩ/m)		240	120	75	60	50	37.5	30	25	20	16.7	15	12.5	12.5	10
Phase reactance ( $\mu\Omega$ /m)	32	30	25	23	28.4	25.8	14.6	13.5	11.5	9.1	6.8	6.7	6.8	6	6
Phase impedance (μΩ /m)	401.5	241.7	122.5	78.4	66.4	56.3	40.3	32.9	27.5	22	18	16.4	14.22	13.9	11.6
Phase resistance( $\mu\Omega$ /m)	72	68	49	31	28	19	15.5	14	9.5	9.5	6.3	7	6.3	4.75	4.7
Voltage drop for distributed load* (uV/M)A															
CosØ-0.8	294.9	181.6	96	63.8	56.2	48	33.5	27.7	23.3	18.5	15	13.8	12.18	11.7	10
C o s-0.9	324.7	198.2	102.9	67.1	57.5	48.7	34.7	28.5	23.8	19	15.5	14.2	12.32	12	10.08
C o s-1.0	346	207.6	103.8	64.8	51.9	43.2	32.4	25.9	21.6	17.3	14.4	12.9	10.81	10.8	8.55
Characteristic under fault conditions															
Phase to neutral resistance ( $\mu\Omega/m$ )	1200	800	400	308.2	200	198	154	100	97	67	66	50	49	48.5	47
Phase to neutral reactance ( $\mu\Omega/m$ )	185	159	99	89.9	80	58	53	47	35	31.4	22.8	27.6	25	20.6	20
Phase to neutral impedance ( $\mu\Omega/m$ )	1214	815.6	412.1	321	200	206	163	110.5	103	74	69.83	57.1	56	52.7	51
Phase to earth resistance ( $\mu\Omega$ /m)	1060	720	360	357	180	116	178	90	56	60	38.7	45	35	28	26
Phase to earth reactance ( $\mu\Omega$ /m)		255	150	202	87	75	119	51	42	34	29.4	30	28	24.7	23
Phase to earth impedance ( $\mu\Omega$ /m)		763.8	390	410.2	179.9	138.1	214	103.4	70	96	48.6	54	46	37.3	35

<sup>\*</sup>The value of the voltage drop is for distributed load.

For voltage drop in  $\mu$  V/m multiply the table values by the actual current.

Shown values are line to line voltage drop.

\*\* Calculated values, tested value are: 40kA for 800A

50 kA for 1000A, 1300A & 1600A

75 kA for 2000A, 2500A 100 kA for 3200A and higher

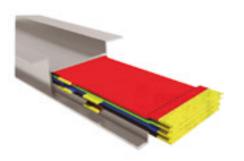




## THAT SET AS APART

#### True Sandwich for both feeder and plug-in

- No need to separate or flare the bars at the outlet
- High short circuit withstand for both feeder and plug-in
- Low impedance and low voltage drop
- Innovative design eliminates the use of internal fire barrier
- Design eliminates chimney effect. No flame, smoke or gas propagation in the housing

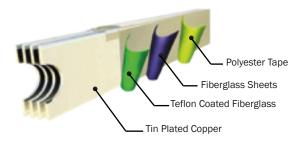


#### **Aluminum Casing**

- Excellent heat dissipation
- Significant reduction in reactance and magnetic flux leakage
- Excellent ground return path
- Excellent water and dust protection

## **Tin Coated High Purity Copper Bars**

- Oxygen free high purity ≥ 99.99%
- High Conductivity ≥ 99.95%
- Surface Protection
- Good contact



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#### **Tin Coated High Purity Copper Bars**

- Busduct meet the requirement of IEC-61439-6
- Fully Type tested at KEMA Laboratories
- Manufactured in an ISO 9001/2008 certi fied facility to ensure highest quality control
- Over 35 years of experience in the MiddlEast with over one thousand installation

## High Insulation Tested at 2500V

- Two insulation layers are used
- Main insulation is Teflon Coated Fiberglass (5000V, non-flammable, 260 degree working temperature)
- All insulation used is higher than class H
- Working temperature 500C, no-de-rating required

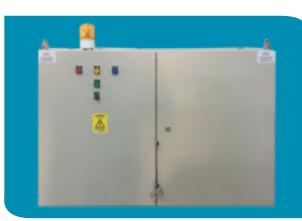




# **TESTING EQUIPMENTS**

- Fluke Digital Multi Meter true RMS
- Megger Digital Clamp Meter
- Fluke Digital Clamp Meter
- Programma Magnus Step Up Transformer Input 240V AC 50Hz
- Torque Wrench
- High Voltage Cable Test set



























SALASEL ELECTRIC SERVICES
ELECTRICAL SWITCHGEAR FACTORY, P.O BOX 332, POSTAL CODE 619, MANAH, SULATANATE OF OMAN
T +968 22052496

## **Corparate Office:**

Bowshar, Near Al Amin Mosque, Muscat

**M** +968 95330905, +968 92313721

E info@satechoman.com

**T** +968 24506932

W www.satechoman.com













