

ELECTRICAL

LOW VOLTAGE DRIVES & MOTORS



ENERGY OPTIMIZATION:

- High-efficiency Fixed Speed and Variable Speed Solutions



- Calculate your own savings



Control Techniques™
Leroy-Somer™



LV VARIABLE SPEED DRIVES / VFD STANDALONE PANEL



CONTROL TECHNIQUES LEROY-SOMER

POWERDRIVE MD2 - HIGH POWER VFD STANDALONE PANEL MODULAR DESIGN

- Industrial drive **45 kW - 2.8 MW**
- 200 V / 400 V / 575 V / 690 V
- Application - Fan, Pumps, Blower, Compressors, HVAC**
- Power to suit your needs: modular design, flexible.
- 6, 12, 18 or 24-pulse converter, 2 or 4 quadrants/Regenerative
- Energy savings: POWERDRIVE MD2 is the Solution!
- Systems: to customer specification, complete turnkey offer.
- Integrated safety functions: Safe Torque Off inputs, diagnostics menu, emergency run mode.
- Permanent magnet synchronous motors in virtual sensor mode: Elimination of restrictions relating to the sensor wiring, 75% of Tn on starting, precise speed control from 1/20th of the rated speed.
- Optimized dimensions: 250 kW 6 pulses in 400 mm cabinet.
- Optimized operation: self-diagnostics of power and control on each power-up, customized functions, maintenance reduced to the absolute minimum.



Reliable motor and drive technologies that maximize energy savings and performance reduced to the absolute minimum.

POWERDRIVE MD2 - HIGH POWER VFD STANDALONE PANEL MODULAR DESIGN

- Industrial drive
0.25 kW - 2.8 MW
- 200 V / 400 V / 575 V / 690 V
- Application - Fan, Pumps, Blower, Compressors, HVAC**
- Unidrive M - an industrial drive family that is tailored to customer needs**
- Unidrive M is designed specifically for industrial applications. Led by the results of extensive customer-driven market research, we have tailored each Unidrive M model to specific application needs identified within industry. Unidrive M is evolving the future of industry with the latest drive technology which includes over 21 patents granted and 42 patents pending.
- FX Drives with Dynamic braking: naturally regenerative input bridge
- Control Techniques (UK) is the Leroy-Somer (France) sister company specialized in the design and manufacture of motor control drives and power conversion technologies.



LV VARIABLE SPEED DRIVES / VFD PANEL MOUNTED MODULES



POWERDRIVE F300

- Industrial drive
1.1 kW - 2.8 MW (1.5 - 4,200 hp)
- 200 V / 400 V / 575 V / 690 V
- Application Fan, Pumps, Blower, Compressors, HVAC
- Powerdrive F300 is designed to control all AC induction motors and sensorless permanent magnet motors on the market. Even greater performance and energy efficiency savings can be achieved with our Dyneo package which includes the Powerdrive F300 and the LSRPM permanent magnet motor. FX Drives with Dynamic braking: naturally regenerative input bridge.



POWERDRIVE FX - DRIVES WITH DYNAMIC BRAKING

- Industrial drive
22 - 90 kW
- 400 - 480 V
- Application - Fan, Pumps, Blower, Compressors, HVAC
- Unidrive M - an industrial drive family that is tailored to customer needs
- Integrating the new C-Light 4 Quadrant technology, the POWERDRIVE FX variable speed drive offers an exceptionally compact regenerative solution. Thanks to latest generation high-performance control, POWERDRIVE FX is ideally suited to sensorless control of magnet motors. FX Drives with Dynamic braking: naturally regenerative input bridge.
- Dynamic braking: naturally regenerative input bridge.
- Integrated safety functions: Safe Torque Off inputs, diagnostics menu, emergency run mode.



LV VARIABLE SPEED DRIVES / VFD PANEL MOUNTED MODULES



DIGITAX ST

The drives can connect to a wide range of motion controllers through I/O or dedicated communication networks such as SERCOS and EtherCAT or alternatively, take control of the automation system through the drives integrated motion controller.

- Industrial drive
SERVO DRIVE 1.1 - 8 A
- 200 V / 400 V
- Application - Fan, Pumps, Blower
- Digitax ST is a dedicated servo drive optimized for pulse duty.
- The servo drive is available in five variants, and is designed to meet the demands of modern manufacturers for smaller, more flexible and higher performing machinery.
- Maximize throughput with superior motor control
- Reduce cabinet size with compact drive design
- Flexible machine design with option modules
- Quicker installation
- Reduce commissioning time



LV MOTORS & GEARBOX



INDUCTION MOTORS

- Over a power range up to 1500 kW, the range of IP65/IP55 enclosed or IP23 protected induction motors satisfies the demands of industrial processes for standard or special environments.
- IMfinity: The new platform of high efficiency IE2, IE3, IE4 and non IE motors for variable or fixed speed.
- Single phase induction motors

Single phase induction motors relay or permanent capacitor - 0.06 to 5.5 kW

- Three-phase motors for normal applications

Three-phase induction motors IE1, IE2, IE3, IE4 efficiency, Aluminum, cast iron or steel frame IP 55 or IP 23 - 0.09 to 1500 kW

- Integrated drives on three-phase induction motors

Three-phase induction motors with integrated drive - 0.25kW to 11kW



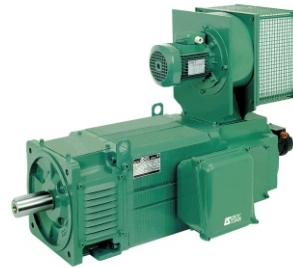
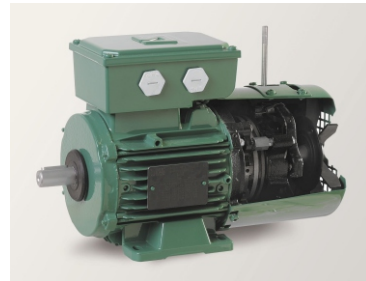
LV MOTORS & GEARBOX

DC MOTORS

- DC motors from 0.18 to 750 kW, whether drip-proof or enclosed, are used in applications requiring variable speed operation and deliver constant torque at low or high speed.
- **Application** - Any belt Driven Application, Industrial and Automotive applications

BRAKE INDUCTION MOTORS

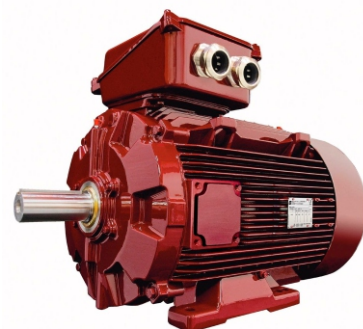
- From 0.06 to 160 kW, Leroy-Somer brake induction motors are used for intermittent duty, emergency stops or for holding a device under load. They are designed to operate in normal or special environments. IP55
- Failsafe brake operating when supply off (a braking force is applied when de-energized) on LS non IE, LSES IE2, IE3 asynchronous three phase IMfinity motors range
- Asynchronous brake motors 1.2 up to 160 N
- **Application** - Heavy duty Loads, Saws & Grinders, Elevators, Cranes etc.



PERMANENT MAGNET SYNCHRONOUS MOTORS

Permanent Magnet motors are based on Induction Motor components offering reliability, robustness, efficiency, flexibility and express availability.

- LSRPM - 3 to 350 kW - 1500 to 5500 rpm. Based on IEC mechanics, IP55 (TEFC) with aluminium housings
- PL SRPM - 315 to 500 kW - 1500 to 3600 rpm. Based on IEC mechanics, IP23 (ODP)
- Voltage : upstream of the drive 400V +/- 10%
- Interchangeable range with IEC mechanics equivalent to an Induction Motor
- Energy savings resulting from much higher efficiency than induction motor solutions: up to 20 points better efficiency
- Savings on machine manufacturing and transportation costs: up to 60% lighter
- Variable speed operation
- Proven high efficiency exceeding IE4 and NEMA Super Premium requirements
- **Application** : Pumps, fans, blowers, compressors, mills, hoists, handling systems



LV MOTORS & GEARBOX

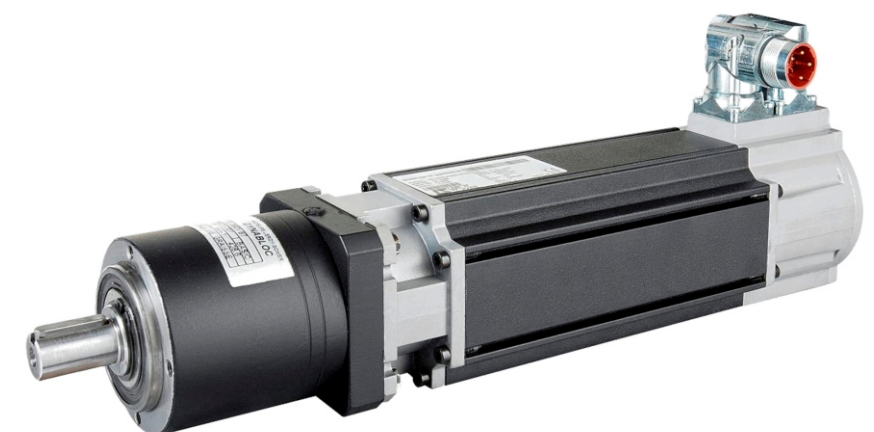
UNIMOTOR HD - PULSE DUTY SERVO MOTOR

- **Pulse duty servo motor**
0.72Nm to 85Nm (255Nm peak)
055 to 190 Frames
- Voltage - 200/240 or 380/480
- Unimotor hd is a high dynamic brushless AC servo motor range with frames from 55mm to 190mm
- **Application** - Unimotor hd is a high peak torque, low inertia motor range. The motor is designed for high dynamic applications requiring hard accelerations and decelerations including:
 - Flying shear
 - Pick and place
 - Cut-to-length
 - Industrial robotics
- Unimotor hd motors are a perfect match to Unidrive M and Digitax ST servo drives.



DYNABLOC GEARED SERVO MOTORS

- Dynabloc geared servo motor range combines low and standard backlash
- Dynabloc gearboxes with high-performance Unimotor servo motors to provide a complete servo solution, when paired with our Digitax ST and Unidrive M drives.
- Rated torque - 23 to 668 NM
- Max acceleration torque - Up to 1100 NM
- Motor Speed - 3000 RPM
- Efficiency - depending on Ratio
- **Application** - Packaging / Machining / Robotics / Textiles / Printing



SOFT STARTERS

SOFT STARTERS - DIGISTART IS

- Digistart is Control Techniques' flexible soft starter range for motor control and protection in constant-speed applications. The Digistart range combines advanced control features with simple installation and commissioning.
- **Application** : Conveyers Fans & Pumps Etc ..
- Models from 23 A to 1600 A, 5 hp to 2,000 hp
- 200-440 VAC and 380-690 VAC models
- In-line Motor Connections
- Control Voltage 110 V - 460 V
- Adaptive Acceleration Control
- Easy to install
- Complete feature set
- Ultimate motor protection



SOFT STARTERS - DIGISTART CS

- The smallest and easiest to use Digistart CS series sets up with simple potentiometer adjustments. It has one of the smallest foot prints available and includes a built-in bypass contactor, which allows smaller, non-ventilated enclosures, making it ideal for MCC applications.
- **Application** : Conveyers Fans & Pumps Etc.
- Up to 60 A, 5 hp to 150 hp
- 200-575 VAC models
- Motor Current Protection
- Built-in Bypass Contactor
- Modbus, Profibus and DeviceNet Options
- Remote Operator Option
- Constant Current Start
- Current Ramp Start
- Equi-Vec™ Balanced Vector Control Technology



MEDIUM VOLTAGE VARIABLE SPEED DRIVES / VFD

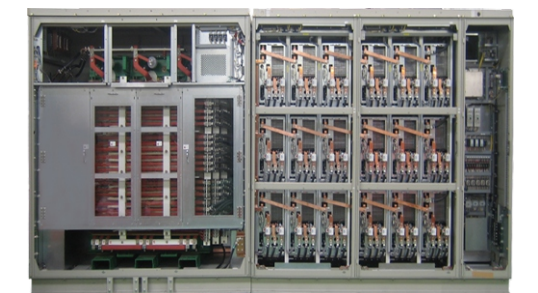
TMEiC
We drive industry

TMEIC (TOSHIBA MITSUBISHI ELECTRIC INDUSTRIAL SYSTEM CORP.), JAPAN

- **Type:** TMdrive-MVG2
- The TMdrive-MVG2 is a medium voltage, AC fed drive designed for high-efficiency and power-friendly operation in a broad range of industrial applications.
- High reliability, low harmonic distortion, and high power factor operation are designed into the drive
- **3.3 - 11 kV, up to 19500kVA**
- Multi-pulse converter rectifier and phase shifted transformer:
- 3.3 kV Class: 18 pulse
- 6.6 kV Class: 30/36 pulse
- 10 kV Class: 48 pulse
- 11 kV Class: 54 pulse

Applications

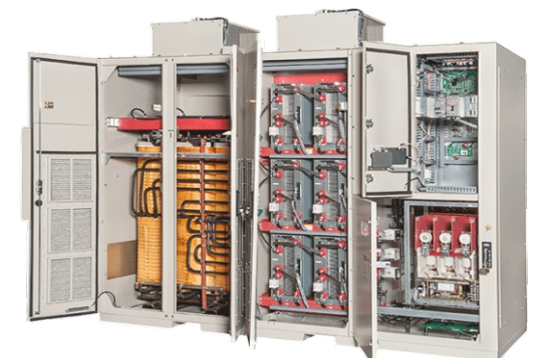
- The TMdrive-MVG2 is designed for a wide range of industrial applications, including: Centrifugal pumps, fans, and compressors, screw compressors, blowers, refiners, mixers, extruders, conveyors, press machines, slurry pipelines, and mills.



TMEIC (TOSHIBA MITSUBISHI ELECTRIC INDUSTRIAL SYSTEM CORP.), JAPAN

TMEiC
We drive industry

- **Type:** TMdrive-MVe2
- **3.3 - 11 kV, up to 120,000 kVA**
- The TMdrive-MV is a medium voltage, AC fed drive designed for high-efficiency and power-friendly operation in a broad range of industrial applications.
- High reliability, low harmonics distortion, regenerative operation and reactive power control operation are designed into the drive.
- **Applications:** The TMdrive-MV is designed for a wide range of industrial applications, including: Centrifugal pumps, fans, and compressors, screw compressors, blowers, refiners, mixers, extruders, conveyors, press machines, slurry pipelines, mills, hot gas expanders, etc.
- Energy regeneration capability is included, allowing braking of overhauling loads and rapid stopping of loads such as fans and pumps.
- Certifications: CE, CSA, IEC, JEC, UL
- **Control Modernization for Legacy LCI Drive Systems**
- **Configuration** - Multipulse IGBT, IGET, Active Front End, Regenerative

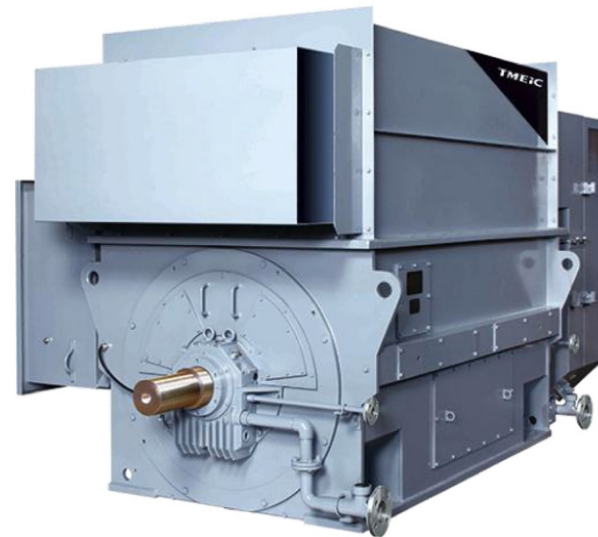


MEDIUM / HIGH VOLTAGE MOTORS & GENERATORS



TMEIC (TOSHIBA MITSUBISHI ELECTRIC INDUSTRIAL SYSTEM CORP.), JAPAN

- **Type:** TM-AC, 21-L Series, 21-G Series, 21-H Series, 21-VLL
- **Voltage :** 2.3 to 13.8 kV,
- **Power:** Upto 100,000 KW
- **Poles:** 2 to 30 Poles
- **Standards:** IEC, NEMA, BS, AS, ATEX, NEC, GOST, CSA, EN
- **Classification Area:** Safe Area, Ex-Proof Exn, Exe, Exd, Exp
- **Enclosure:** Totally Enclosed Air Cooled, Water Cooled/IP55.
- **Applications:** For all type of applications, including: Centrifugal pumps, fans, and compressors, screw compressors, blowers, refiners, mixers, extruders, conveyors, press machines, slurry pipelines, mills, hot gas expanders, etc.



TMEIC (TOSHIBA MITSUBISHI ELECTRIC INDUSTRIAL SYSTEM CORP.), JAPAN



- **Type:** 21 FII Series Motor
- **Voltage :** 2.3 - 13.8 kV,
- **Power:** 250 KW Upto 100,000 KW
- **Poles:** 2 to 30 Poles
- **Standards:** IEC, NEMA, BS, AS
- **Classification Area:** Safe Area, Ex-Proof Exn, Exe, Exd, Exp
- All medium AC rotating machines are manufactured to meet ISO9001 and ISO14001 standards, with certifications from Lloyd's, SGS-Bashefa and CSA.
- The 21- FII Series is compatible with variable frequency drive applications.
- Efficient performance reduces cost of ownership
- Compact size reduces installation costs
- Well-designed frame construction provides low noise and vibration
- High quality insulation system provides electrical and mechanical reliability

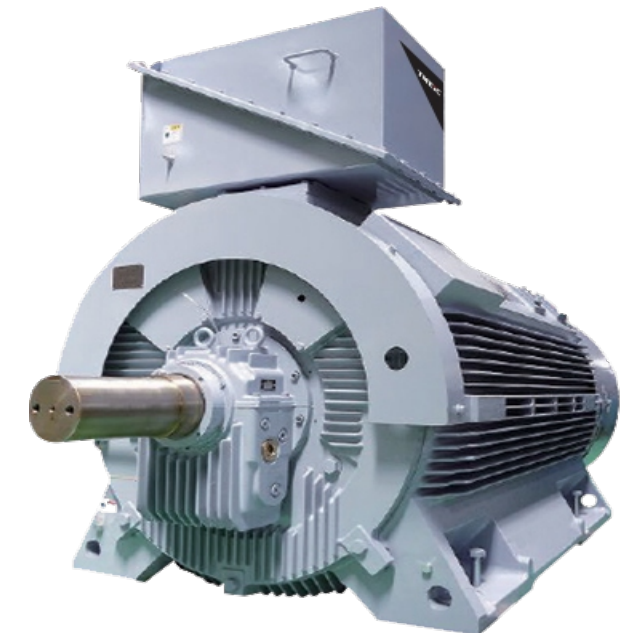


MEDIUM / HIGH VOLTAGE MOTORS & GENERATORS



TMEIC (TOSHIBA MITSUBISHI ELECTRIC INDUSTRIAL SYSTEM CORP.), JAPAN

- **Type:** Custom Designed Induction Motors
- **Voltage :** 2.3 - 13.8 kV
- **Power:** 250 KW Upto 100,000 KW
- **Poles:** 2 to 30 Poles
- **Standards:** IEC, ATEX , NEC
- **Classification Area:** Safe Area, Ex-Proof Exn, Exe, Exd, Exp
- All medium AC rotating machines are manufactured to meet ISO9001 and ISO14001 standards, with certifications from Lloyd's, SGS-Bashefa and CSA.
- Superior efficiency resulting from detailed analysis of the electromagnetic field patterns and ventilating air flows.
- **Application :** These custom designs are reliable, high performance machines that can perform under the harshest of operating conditions. Ideal for industrial applications such as small and medium size fans, blowers, compressors, pumps and conveyors.



TMEIC (TOSHIBA MITSUBISHI ELECTRIC INDUSTRIAL SYSTEM CORP.), JAPAN



- **Type:** Custom Designed 2 Pole Synchronous Generators
- **Power:** Upto 100,000 KW
- **Standards:** IEC, ATEX , NEC
- **Classification Area:** Safe Area, Ex-Proof Exn, Exe, Exd,
- Superior insulation, low vibration and special rotors are simply a few of the features that contribute to ensuring long service life, minimal maintenance and outstanding cost performance.
- All medium AC rotating machines are manufactured to meet ISO9001 and ISO14001 standards, with certifications from Lloyd's, SGS-Bashefa and CSA.
- Lowest vibration levels, enhanced efficiency, and prediction and solution of natural resonances, TMEIC 2-pole synchronous generators are efficiently operating in major first class facilities throughout the globe.
- **Application :** Steam Turbines , Gas Turbines , reciprocating engines



MV & HIGH VOLTAGE SWITCHGEAR – GIS/AIS



TMEIC (TOSHIBA MITSUBISHI ELECTRIC INDUSTRIAL SYSTEM CORP.), JAPAN

- Type: Gas Insulated Swicthegar (SF6) & Air Insulated Switchgear
- Voltage : 6.6 to 220 kV,
- Rated Current: Upto 6300A
- Rated Short time withstand current: 40/50kA for 3 sec.
- Standards: JEC-2300, IEC 60056 (1987)
- Certifications: KEMA and CESI certification
- Applications: Electrical Distribution network, upstream power distribution.



POWER COMPONENTS



PRODUCTS: ACB & MCCB

- Standards: IEC 60947
- Type: ACB Emax2 / E1.2 - E4.2 & MCCB Tmax / T1-T7
- Rated Current: 630A - 6300A
- Version: Fixed & Draw out Type
- Operation: Manual & Motorised
- Rated Short time withstand current: Upto 120 kA for 1 sec.
- Certifications: KEMA and CESI certification
- Applications: Electrical Power Distribution network.



CONTROL COMPONENTS



PRODUCTS: CONTACTORS (BLOCK, MINI & BAR MOUNTED)

- AC Operated 3P 9A - 300A AC3 Rating.
- AC/DC Operated 400A - 1050A AC3 rating.
- AC Operated 4P 25A - 1000A AC1 Rating.
- AC/DC Operated 2050A AC1 Rating.
- Mini Contactor - Low Switching burden in both Power and Auxiliary.
- Bar Mounted Contactors from 63A to 4000A in 2, 3 and 4 Pole.



SWITCH DISCONNECTOR & SWITCH FUSE UNIT



- Front Operated Switch Fuse Units & Switch Disconnectors
- No. of Poles : 3 & 4
- BS & DIN versions
- SFU Current Rating : 32A - 1600A
- Switch Dis-connector rating from 16A - 3150A AC23 rating.
- No. of Poles : 3 & 4
- Changeover Switch current rating from 16A to 1600A
- No. of Poles : 3 & 4



DIN-RAIL COMPONENTS

MAIN PRODUCT LINES

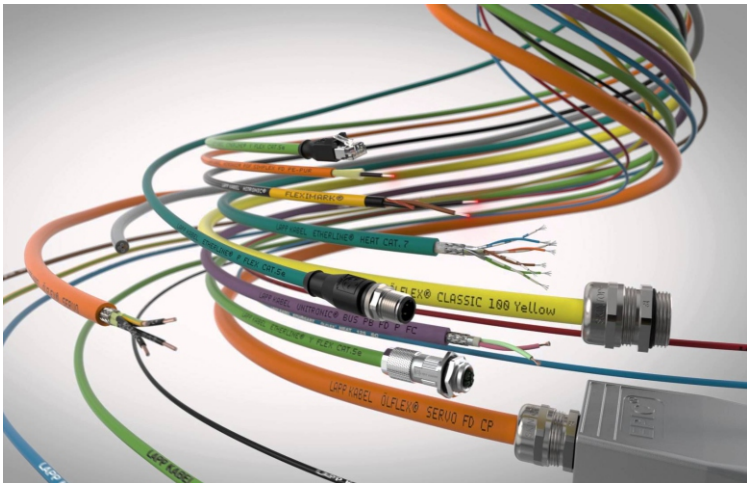
- Miniature circuit breakers (MCBs)
- Residual current devices (RCDs), RCCBs, RCBOs
- Surge Protection Devices, Isolator
- Timers, Twilight Switches, Photo Sensors.
- Modular DIN-rail components
- Accessories for connection and Installation



SPECIAL CABLES

LAPP CABLES

- In the field of cables, control cables, drag chain cables, cables for servomotors, temperature-resistant cables as well as data, LSN and bus cables are offered. There are also automation products for Profibus and Interbus applications. As a system solutions, the company offers store customer individual system solutions from development and production to logistics and services.
- The most prominent brands of the company are OLFLEX (flexible, oil-resistant connection and control cables), HITRONIC (fiber optic cables for data transmission), UNITRONIC (data cables for various applications), ETHERLINE (components and system solutions for active network technology)



SPECIAL CABLES

OLFLEX POWER AND CONTROL CABLES

OLFLEX has become synonymous with power and control cables. Our flexible and oil-resistant cables satisfy the highest demands and can withstand even the very toughest conditions.

Construction:

- Fine-wire strand made of bare copper wires
- PVC insulation LAPP P8/1
- Cores twisted in layers
- PVC outer sheath, grey (RAL 7001)

Applicable Standards: Based on IEC 60227-5 and EN 50525-2-51

Temperature Range: -5 DegC to +70 DegC

Applications :

- Industrial machinery, machine tools, plant and equipment engineering
- Measurement, control, heating and air conditioning systems
- Wind power and photovoltaic systems.
- Public buildings, airports and stations.
- Medical technology, chemical industry, composting plants and sewage works
- Food and beverage industry.



UNITRONIC DATA COMMUNICATION SYSTEMS

Our high-quality UNITRONIC data network cables and field bus components provide a forward-looking solution for all applications in industrial machinery and plant engineering. From transmission of simple control signals to field bus signals in complex network structures - we offer a dependable cabling and connection solution for almost every situation.

Construction

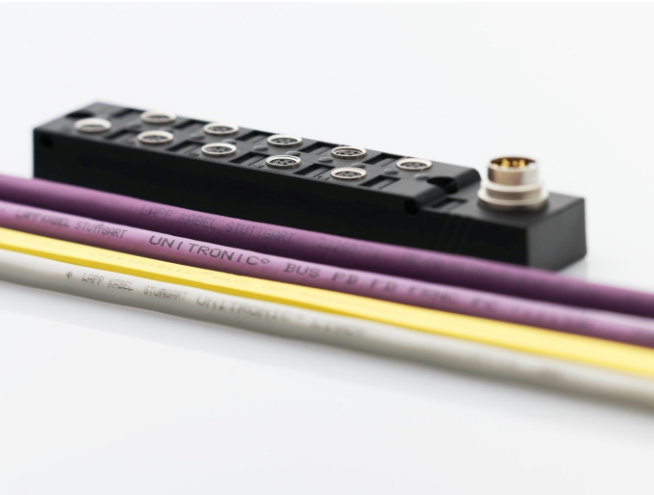
- Fine-wire/multi-wire strand bare copper wires
- Core insulation made of PVC
- Outer sheath made of PVC
- Outer sheath colour: grey (RAL 7001)

Applicable Standards : VDE 0814 or VDE 0812

Temperature Range: -5 DegC to +70 DegC

Applications

- Industrial machinery and plant engineering
- Sensors and actuating elements appliances
- Measurement and control technology
- Automated production processes and industrial robots
- Bus systems
- Computing and communication



SPECIAL CABLES



ETHERLINE DATA COMMUNICATION SYSTEMS FOR ETHERNET TECHNOLOGY

Our ETHERLINE branded products open up a secure, fast and reliable path to the future of Ethernet applications. The systems are made up of durable and robust cables and connection components for passive network technology.

Construction :

- Solid conductor Core insulation made of foam skin 2 or 4-pair version
- SF/UTP: braid of tinned copper wire and plastic
- Laminated aluminum foil as overall screening
- Outer sheath as either PUR or LSZH
- Colour: water blue (RAL 5021)

Applicable Standards:

UL AWM Style 21576, IEC 60332-1-2, IEC 60754-1, IEC 60754-2

Temperature Range: -30 DegC to +80 DegC

Applications

- Industry and building networks
- Industrial machinery and plant engineering
- Automation technology
- Control engineering



HITRONIC OPTICAL TRANSMISSION SYSTEMS



HITRONIC fibre optic cables make transmitting large data volumes easy: fault free, bug proof and at almost light speed. Even electromagnetic radiation does not interfere with the transmission. The HITRONIC range includes the ideal solution for indoor or outdoor use, for demanding conditions, and even for use in power chains

Construction

- Polymer Optical Fibre (POF)
- PE buffer tube Without outer sheath
- Colour: black

Applicable Standards

UL AWM Style 21576, IEC 60332-1-2, IEC 60754-1, IEC 60754-2

Temperature range : -55 DegC to +85 DegC

Applications

- Telecommunications and network technology
- Industrial cabling and automation level
- Industrial machinery and plant engineering
- Data transmission under harsh conditions (mining and tunnel construction, oil and gas platforms, wind power plants)



CABLES

BUILDING WIRES & FLEXIBLE CORDS

Single core cables are used in buildings for fixed wiring & lighting, electric switches, distribution boards, internal wiring in apparatus, for earthing purpose, etc. Voltage range includes 450/750 V. These cables are manufactured to BS & IEC standards.

Flexible cables are used in auxiliary circuits & equipments, CCTV power supply, etc. Voltage range includes 300/500V. These cables are manufactured to BS & IEC standards.

Construction:

- Annealed Plain Copper Conductor (Class 5)
- PVC or Heat Resistant PVC Insulation
- PVC or Heat Resistant PVC Sheath

Applicable Standards : BS EN 50525-2-11 (previously BS 6500), IEC 60227-5

Product Range :

- 1.5 to 1000 mm²,
- 2 core - 0.5 to 10 mm²,
- 3 core - 0.5 to 10 mm²
- 4 core - 0.5 to 10 mm²,
- 5 core - 0.5 to 10 mm²

Application : In dry rooms, laying in conduit on or under plaster and on insulating support above plaster. For household appliances under medium mechanical stress in damp & wet conditions.



LOW VOLTAGE CABLES

Low voltage cables are most widely used among all cables. Low voltage power cables are used in electric power distribution substations, industrial applications to distribution electric panels, etc. Voltage range includes 0.6/1.0 kV & 1.8/3.0 kV for power cables and 0.6/1.0 kV for control cables.

Construction:

- Annealed Plain Copper Conductor
- XLPE Insulation
- Armoured or Unarmoured
- PVC Outer Sheath

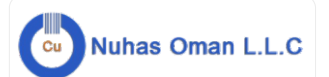
Applicable Standards : BS 5467 / IEC 60502-1 / BS 7889 / Utility Standards

Rated Voltage : 0.6/1.0 (1.2) kV , 1.8/3 (3.6) kV

Product Range :

- 1 core - 50 to 1000 mm²
- 2 core & 5 core - 1.5 to 120 mm²
- 3 core & 4 core - 1.5 to 400 mm²
- Above 5 core to 48 Cores - 1.5 to 4 mm²

Application : For fixed installation in industrial areas, buildings and similar applications for carrying out electric power and in control circuits.



CABLES

MEDIUM VOLTAGE CABLES

Medium voltage cables are large power carriers from electric stations to transmit & distribute further to substations in residential areas. Also used in industries, commercial complexes with high energy requirements. Voltage range includes from 3.6/6 kV to 19/33 kV.

Construction:

- Annealed Plain Copper Conductor
- XLPE Insulation
- Armoured or Unarmoured
- PVC Outer Sheath

Applicable Standards : IEC 60502-2 / BS 6622, Utility standards OES-2, ADWEA, DEWA, FEWA, SEC, KHRAMAA, MEW Kuwait, EDD Bahrain

Rated Voltage : 3.6/6 (7.2) kV or 3.8/6.6 (7.2) kV, 6/10 (12) kV or 6.35/11 (12) kV

Product Range :

- 1 core - 50 to 1000 mm²
- 3 core - 16 to 400 mm²

Application : For fixed installation in industrial areas, buildings and similar applications for carrying out electric power and in control circuits.



INSTRUMENTATION & CONTROL CABLES

Instrumentation cables are used for carrying data signals from critical instruments used for measurements. Voltage range includes 300/500 V. These cables are manufactured to BS EN 50288-7.

Construction:

- Annealed Plain Copper Conductor
- XLPE Insulation
- Armoured or Unarmoured
- PVC Outer Sheath

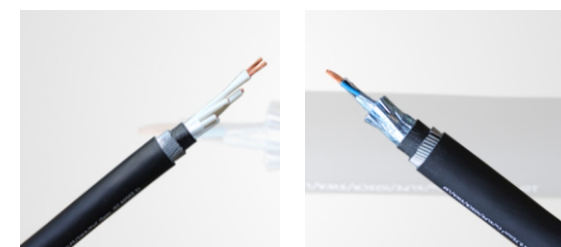
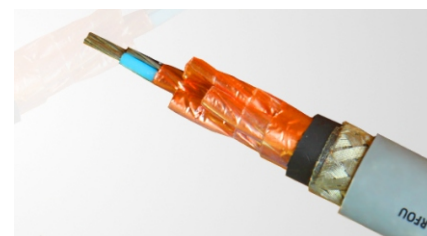
Applicable Standards : BS 5467 / IEC 60502-1 / BS 7889 / Utility Standards

Rated Voltage : 0.6/1.0 (1.2) kV, 1.8/3 (3.6) kV

Product Range :

- 1 core - 50 to 1000 mm²
- 2 core & 5 core - 1.5 to 120 mm²
- 3 core & 4 core - 1.5 to 400 mm²
- Above 5 core to 48 Cores - 1.5 to 4 mm²

Application : For instrumentation purpose to reduce the cross-talk and to protect signals from outside electromagnetic, electrostatic & radio frequency interference.



CABLES

FIRE RESISTANT AND FIRE ALARM CABLES

Fire resistant cables are used in emergency circuits to tackle during fire, in lifts or similar critical areas where continuous functioning is necessary even in the case of fire. Voltage range includes 0.6/1.0 kV. Cables are mostly manufactured to BS 7846 standard

Construction:

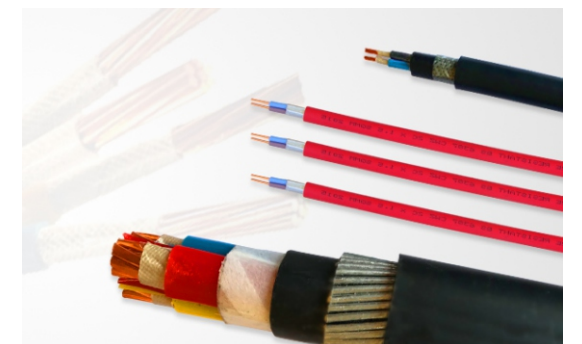
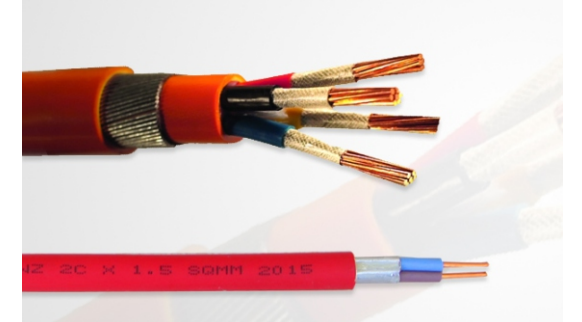
- Annealed Plain Copper Conductor
- Fire Barrier Tape
- XLPE Insulation
- Galv. Steel Wire Armour
- LSF/LSOH Outer Sheath

Applicable Standards : BS 7846, Category F2

Rated Voltage : 0.6/1.0 (1.2) kV

Product Range : 2 core, 3 core & 4 core - 1.5 to 400 mm²

Application : In populated places where there is risk of fire and no breakage of power supply to devices is utmost important e.g in hospitals.



ENCLOSED SWITCH-DISCONNECTORS

ENCLOSED SWITCHES - PLASTIC ENCLOSURES

Construction: Enclosure in PBT (Thermoplastic polyester) plastic, high impact strength and chemical resistant

Degree of protection: IP65, IEC 60529

Rated Voltage : 0.6/1.0 (1.2) kV

Product Range : 16 to 100 Amperes

Application : The plastic enclosures are most suitable for locations with high chemical and moisture requirements. In addition they are light and easy to install and handle.



ENCLOSED SWITCH-DISCONNECTORS



ENCLOSED SWITCHES - ALUMINUM ENCLOSURES

Construction: Enclosure in Aluminum alloy (Silumin) with metric threaded cable entries and handle in PBT plastic

Degree of protection: IP65, IEC 60529

Rated Voltage : 0.6/1.0 (1.2) kV

Product Range : 16 to 630 Amperes

Application : Aluminum enclosures have very good impact strength and protection against UV light. They are suitable both for indoor and outdoor use in medium to heavy-duty applications.



ENCLOSED SWITCHES - STAINLESS STEEL ENCLOSURES

Construction: Enclosure are made of AISI 304 stainless steel.

Degree of protection: IP65, IEC 60529

Rated Voltage : 0.6/1.0 (1.2) kV

Product Range : 16 to 2500 Amperes

Application : They are used particularly in the food and beverage industry and in locations where high hygiene is required.



ENCLOSED SWITCH-DISCONNECTORS



ENCLOSED SWITCHES - STEEL SHEET ENCLOSURES

Construction: Enclosure are hot dip galvanized and the surface is polyester powder painted.

Degree of protection: IP65, IEC 60529

Rated Voltage : 0.6/1.0 (1.2) kV

Product Range : 16 to 2500 Amperes

Application : They are used particularly in the food and beverage industry and in locations where high hygiene is required. The smooth surface does not require any painting and is easy to clean.



LIGHTNING PROTECTION SYSTEM-FURSE ABB



CONDUCTORS-CU TAPE

Purpose: Structural lightning protection or below ground earthing installation.

Application: Commercial Buildings, Oil & Gas / Petrochemical, Utilities, Rail & Infrastructure, High tech & Industrial, Sports & Recreation, Government & Public Sector, Residential, Cultural & Heritage etc.

Size Range: Flat tape conductor-25 x3mm, 25 x 6mm, 50 x3mm, 50x6mm and also available in variety of conductor sizes

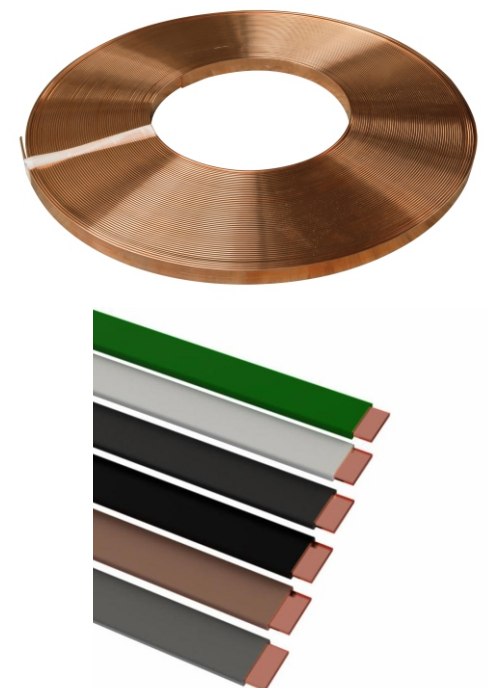
Type - Bare Cu tape, Pvc covered Cu tape, Tinned Cu tape

Standards:- BS EN 13601

Material : Copper , Aluminum & Pvc Covered Cu tape, Tinned Copper

Technical Specification:

- For most installations, copper is specified to due to its high conductivity and anti-corrosive properties.
- Conductor ratings are based upon the recommendations of BS7430 with an initial conductor temperature of 30 Deg C and a maximum temp of 250 Deg C.



LIGHTNING PROTECTION SYSTEM-FURSE ABB



CONDUCTOR NETWORK-ACCESSORIES

Purpose: Used for installing Cu Tape / Conductor network

Application: Commercial Buildings, Oil & Gas / Petrochemical, Utilities, Rail & Infrastructure, High tech & Industrial, Sports & Recreation, Government & Public Sector, Residential, Cultural & Heritage etc.

Size Range : Available in all conductor sizes

Types - Metallic / Non metallic DC Tape Clip, Square tape clamp, Junction Clamp, Jointing clamp, Square clamp, Tee clamp, Test clamp, Expansion braid bonds, etc.

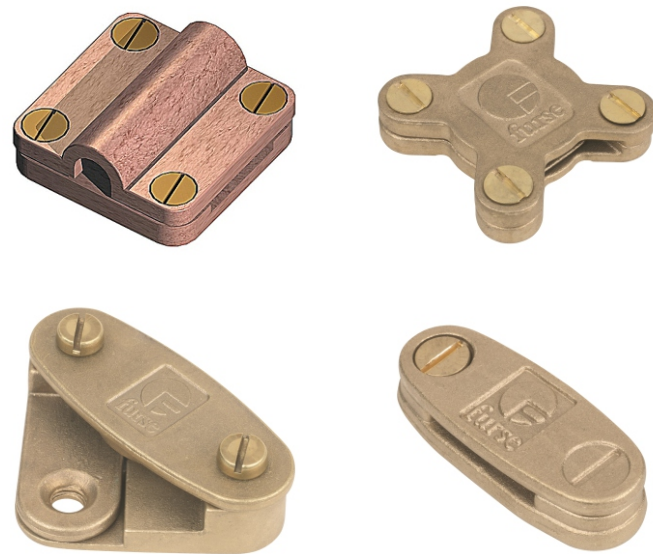
Standards: IEC/BS EN62561-4

Material .: High quality Copper alloys / Aluminum alloys/ High grade Polypropylene

Technical Specification:

Excellent Corrosion resistance.

High pull of loads



AIR TERMINATION

Purpose: Lightning protection

Application: Commercial Buildings, Oil & Gas / Petrochemical, Utilities, Rail & Infrastructure, High tech & Industrial, Sports & Recreation, Government & Public Sector, Residential, Cultural & Heritage etc.

Size Range: 500mm - 3000mm Interception Air rod-8m-10m height

Standards:- BS EN 50164-2

Material: High conductivity hard drawn copper or aluminum with rolled thread

Technical Specification:

High conductivity hard drawn copper or aluminum with rolled thread

Fixed with Air rod base



LIGHTNING PROTECTION SYSTEM-FURSE ABB



FREE STANDING AIR TERMINATION

Purpose: Free standing interception air rods are designed to protect roof top mounted or exposed equipments, from lightning strike

Application: Commercial Buildings, Oil & Gas / Petrochemical, Utilities, Rail & Infrastructure, High tech & Industrial, Sports & Recreation, Government & Public Sector, Residential, Cultural & Heritage etc.

Size Range : 3m - 10m

Standards : BS EN/IEC 62305

MATERIAL: Copper / Aluminium / Stainless steel

Technical Specification:

- Light weight construction
- Corrosion resistant
- Range of frames and concrete weights for different wind zones
- Large protection zones
- Modular, versatile and robust



EARTHING SYSTEM- FURSE ABB



EARTH ELECTRODES & ACCESSORIES

Purpose: Earth rods and plates or any combination thereof can be achieve an effective earth depending on site conditions

Application: Commercial Buildings, Oil & Gas / Petrochemical, Utilities, Rail & Infrastructure, High tech & Industrial, Sports & Recreation, Government & Public Sector, Residential, Cultural & Heritage etc.

Size Range: 15mm - 20mm dia & 1200mm - 3000mm length

Standards: BS EN50164-2, Bs7430

Types of rods: Copper bonded, Solid copper & Stainless steel.

Material: Copper bonded, copper & Stainless steel.

Technical Specification:

- Highly resistance to corrosion
- Cu bonded rods are made of molecularly bonding 99.9% pure electrolytic copper onto a low carbon steel core.
- Copper thickness min 250 microns



EARTHING SYSTEM- FURSE ABB

EARTH ROD SEAL

Purpose: Use in construction where internal earths are specified

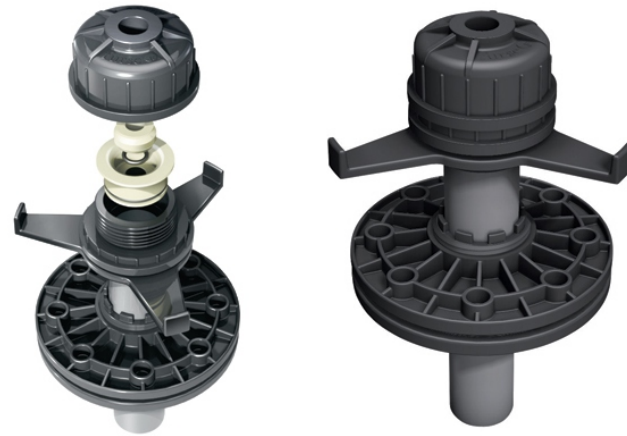
Application: Commercial Buildings, Oil & Gas / Petrochemical, Utilities, Rail & Infrastructure, High tech & Industrial, Sports & Recreation, Government & Public Sector, Residential, Cultural & Heritage etc.

Size Range: Based on rod diameter

Material : High density polyethylene

Technical Specification:

- A water proof earth electrode seal manufactured from high density polyethylene for use in construction where internal earths are specified
- The unique design allows the seal to be effective across a board range rod diameters.
- For use with Light weight inspection pit.



EARTH INSPECTION PIT

Purpose: Suitable for most types of earthing and lightning protection installations

Application: Commercial Buildings, Oil & Gas / Petrochemical, Utilities, Rail & Infrastructure, High tech & Industrial, Sports & Recreation, Government & Public Sector, Residential, Cultural & Heritage etc.

Size : 300mm

Types- Concrete inspection pit & Light weight inspection pit

Standards: BS EN 50164-5, IEC 62561-5

Material Grade: Concrete, Light weight pit - UV stable and chemically resistant polymer

Technical Specification:

- Concrete inspection pit is load rated to 3500 kg
- The lightweight inspection with polymer lid is load rated to 5000 kg.



EARTHING SYSTEM- FURSE ABB

CONDUCTIVE AGGREGATE- FURSECER

Purpose: Used as backfill for earth electrodes.

Application: Electrical / construction industry

Size Range: 25 kg bag

Standards: BS EN50164-7

Material : FurseCem

Technical Specification:

- When used as backfill for earth electrodes, FurseCem impregnated concrete greatly increases the electrode's surface area thus lowering its resistance to earth.



FURSE WELD

Purpose: Cost efficient method of making large or small numbers of high quality electrical connections. It is a simple, self-contained system that uses high temperature reaction of powdered copper oxide and aluminium, within a mould, to form permanent electrical connections.

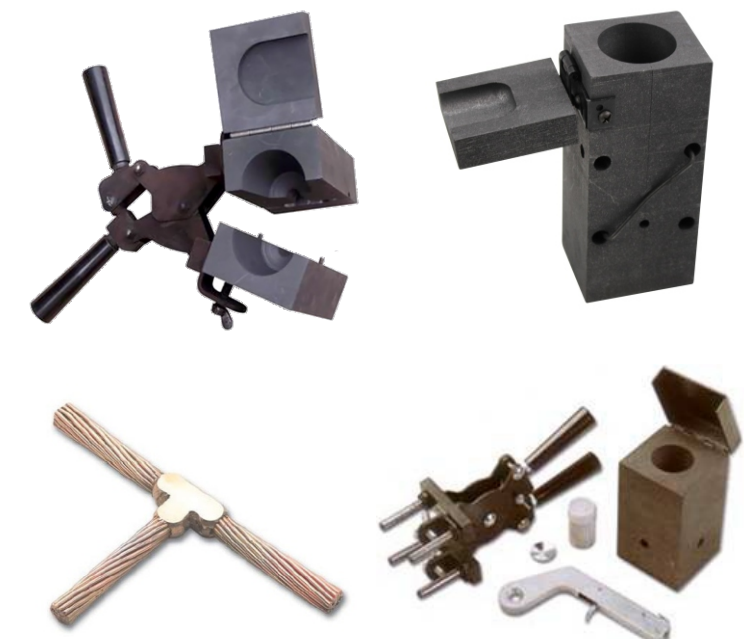
Application: Earthing for power plants and substations, Telecommunications, Transmission and power distribution lines, Cathodic protection, Rail connections.

Size Range: Different type of moulds are available based on the type of connections / requirements of projects.

Material : Graphite Moulds

Technical Specification:

- Tolerant to repeated fault currents
- Highly conductive
- Corrosion Resistance
- Used with Furseweld products



CABLE MANAGEMENT SYSTEM



CABLE TRAY

Purpose: In the electrical wiring of buildings, a cable tray system is used to support insulated electrical cables used for power distribution, control, and communication.

Application: Commercial buildings, Oil & Gas / petrochemical, Utilities, Rail & infrastructure, High tech & industrial, Sports & recreation, Government & public sector, Residential, Cultural & heritage, Marine etc.

Size Range:

Height -15mm - 100mm,

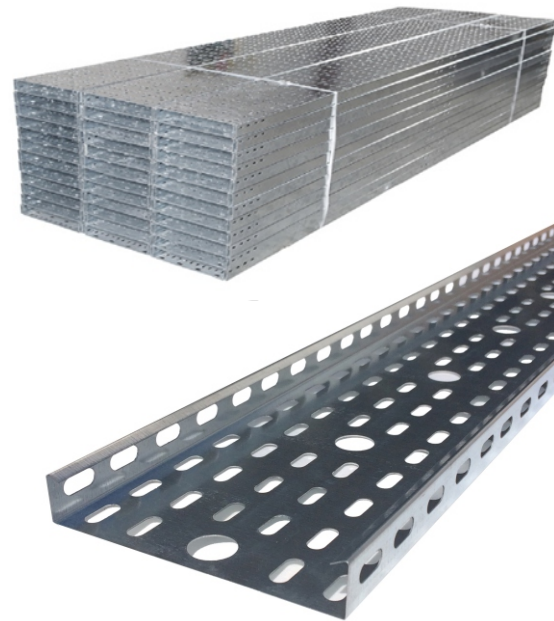
Width - 50mm - 900mm

Thickness- 1mm-3mm

Finish - Pre-Galvanized, HDG, Aluminium, Epoxy coated & Stainless Steel

Standards- BS EN 61537, BS EN ISO 1461, PG- BS EN 10142

Material : Hot dip galvanized / Pre galvanized zinc coated steel / Stainless steel / Aluminium



CABLE LADDER



Purpose: Use in Heavy industry applications

Application : Oil & Gas / Petrochemical, Utilities, Rail & infrastructure, High tech & Industrial, Sports & Recreation, Government & Public Sector, Cultural & Heritage etc.

Size Range:

Height -75mm to 150mm,

Width - 100mm - 1000mm

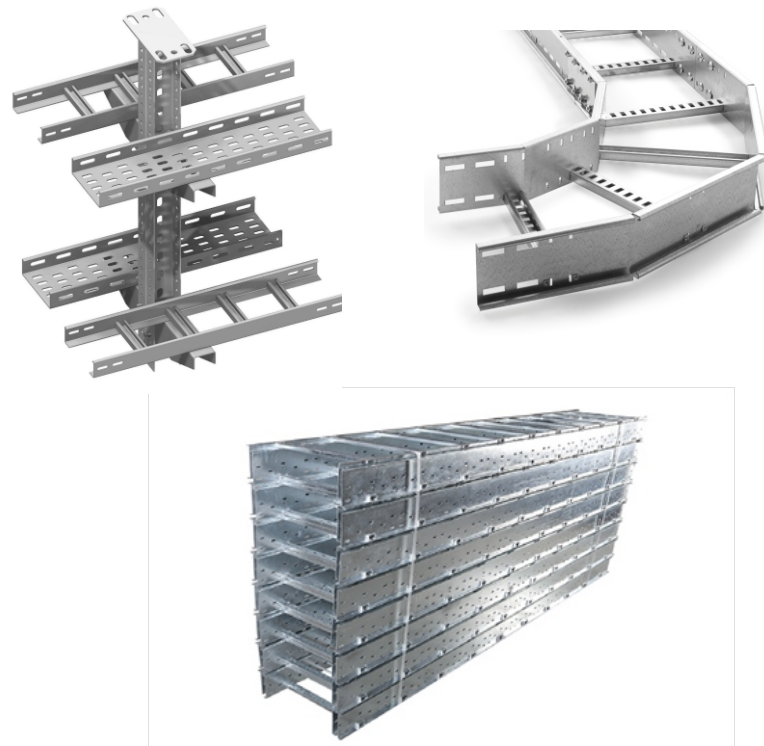
Thickness - 1.5mm - 3mm

Finish - HDG, Aluminium, Epoxy coated & Stainless Steel

Accessories- Available in all sizes(Bend, Equal Tee, Coupler, Etc)

Standards- BS EN 61537, BS EN ISO 1461

Material : Hot dip galvanized / Pre galvanized zinc coated steel / Stainless steel / Aluminium



CABLE SUPPORT SYSTEM



CABLE TRAY & LADDER ACCESSORIES

Purpose: Use for Installation of Cable Tray & Ladders

Application: Oil & Gas / Petrochemical, Utilities, Rail & Infrastructure, High Tech & Industrial, Sports & Recreation, Government & Public Sector, Cultural & Heritage etc.

Size Range:

Height -75mm - 150mm,

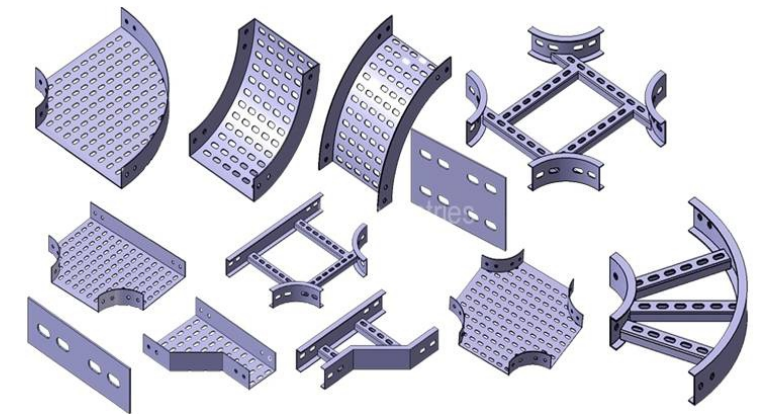
Width - 100mm- 1000mm

Thickness- 1mm- 3mm

Finish - HDG, Aluminium, Epoxy coated & Stainless Steel

Accessories- Available in all sizes (Bend, Equal Tee, Coupler, Covers Etc)

Material : Hot dip galvanized / Pre galvanized zinc coated steel / Stainless steel / Aluminium



GI TRUNKING & ACCESSORIES



Purpose: Provide containment for light applications such as structured cables and LV Systems

Application : Oil & Gas / Petrochemical, Utilities, Rail & Infrastructure, High Tech & Industrial, Sports & Recreation, Government & Public Sector, Cultural & Heritage etc.

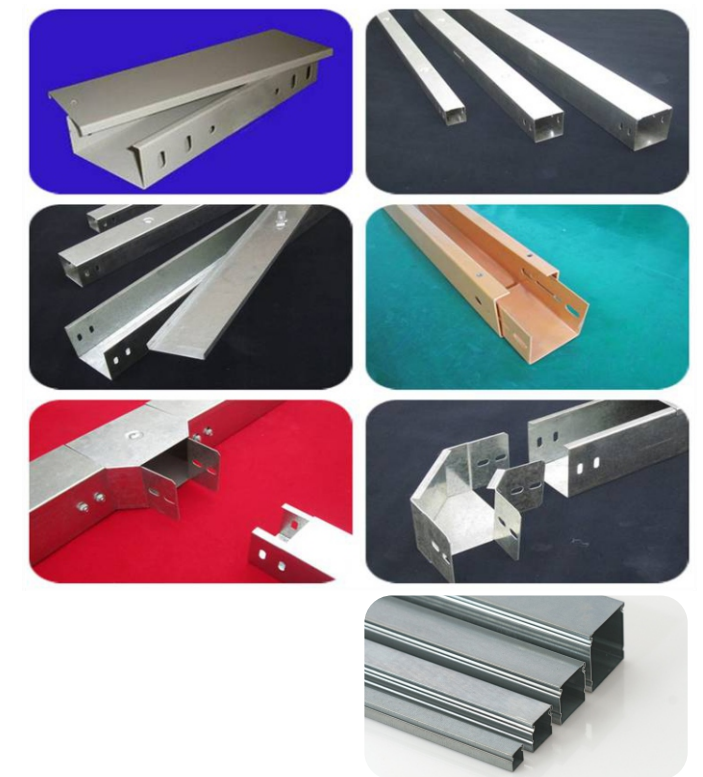
Size Range: 50 x 50mm-150x150mm, other sizes based on request

Finish - HDG, Aluminium, Epoxy coated & Stainless Steel

Accessories- Available in all sizes (Bend, Equal Tee, Coupler, Etc)

Standards : BS 4678 / BS 50085

Material : Hot dip galvanized / Pre galvanized zinc coated steel / Stainless steel / Aluminium



CONDUIT SYSTEM

GI CONDUIT & ACCESSORIES

Purpose: An electrical Gi conduit is a tube used to protect and route electrical wiring in a building or structure

Application : Oil & Gas / Petrochemical, Utilities, Rail & Infrastructure, High Tech & Industrial, Sports & Recreation, Government & Public Sector, Cultural & Heritage etc.

Size Range: 20mm, 25mm, 32mm, 38mm, 50mm

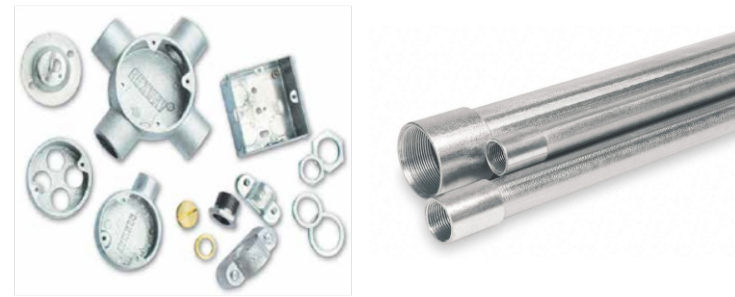
Types - Gi Conduit, EMC conduit, IMC conduit

Finish - Class 4 -HDG, Class 3 Pre-Galvanized

Accessories:- Available in all sizes (Bend, Equal Tee, Coupler, Junction boxes Etc)

Standards:- BS 4568 / BS EN 50086-2-1

Material : Gi Conduit - Hot dip galvanized / Pre galvanized Accessories Malleable Iron



FLEXIBLE CONDUITS & ACCESSORIES

Metallic Conduits & Accessories

Purpose: These products protect electrical wiring that provides current for power in commercial and industrial buildings.

Application : Oil & Gas / Petrochemical, Utilities, Rail & Infrastructure, High Tech & Industrial, Sports & Recreation, Government & Public Sector, Cultural & Heritage etc.

Size Range: 16mm, 20mm, 25mm, 32mm, 38mm, 50mm, 63mm, 75mm

Types - GI, Gi Pvc coated, Gi LFHU coated, LTP conduit, SS conduit

Accessories:- Available in all sizes (Glands, Lock nuts, Elbow Etc)

Standards:- BS EN IEC 61386

Material : Galvanized steel helically wound and with Pvc / Lfhu coated

Accessories- Brass Nickel Plated Glands

Technical Specification:

- High Mechanical Strength, Highly Flexible, Temp range- -15 - +70 deg C
- IP rating:- IP 54 with standard fittings, IP 65 with type C compression fittings



CONDUIT SYSTEM

FLEXIBLE CONDUITS & ACCESSORIES

Non Metallic Conduits & Accessories

Purpose: These products protect electrical wiring that provides current for power in commercial and industrial buildings.

Application. : Oil & Gas / Petrochemical, Utilities, Rail & Infrastructure, High Tech & Industrial, Sports & Recreation, Government & Public Sector, Cultural & Heritage etc.

Size Range: 16mm, 20mm, 25mm, 32mm, 38mm, 50mm, 63mm, 75mm

Types - Nylon flexible conduit Color Black /Grey (RAL 7031)

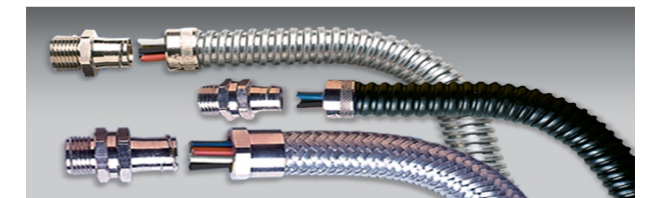
Accessories:- Available in all sizes (Glands,, Straight connectors, Elbow Etc)

Standards:- BS EN IEC 61386

Material : Flame retardant nylon (PA6)

Technical Specification:

- High impact Strength and recovers if crushed, Highly Flexible, UV resistant
- Temperature range - 40 DegC to +120 DegC, Abrasion resistant
- Halogen, sulphur and phosphorous free



INDUSTRIAL PLUGS & SOCKETS

INDUSTRIAL PLUGS AND SOCKETS

MENNEKES, a leading German manufacturer, has a product range of 15,000 articles which are exported in more than 90 countries.

The product range includes industrial plugs and sockets of various types and designs: plugs, connectors, receptacles, switched interlocked sockets and plugs and sockets for containers according to IEC 309, receptacle combinations etc. for a huge range of applications.



INDUSTRIAL PLUGS & SOCKETS



AM - TOP PLUGS AND CONNECTOR

AM-TOP plugs and connectors. Safety first, in a single-part enclosure.

Description:

Well designed and field proven, AM-TOP offers solutions for highest specifications, and makes fast, professional work possible with ease.

Application :

Industries, Commercial Malls, Service centers, Workshops

Ranges : 16A 3P to 125A 5P

Protection : IP 44 and IP 67



WALL MOUNTED/ PANEL MOUNTED RECEPTACLES



Description :

Removable cover for easy access to wiring space. All contact screws face the same way. Open terminals. Terminals visible through slits.

Application :

Industries, Commercial Malls, Service centers, Workshops and Panel Assemblers.

Ranges : 16A 3P to 125A 5P

Protection : IP 44 and IP 67



INDUSTRIAL PLUGS & SOCKETS



POWERTOP XTRA

Description :

PowerTOP Xtra is rubberised for the best grip. Improved impact resistance even under humid conditions. Highly heat resistant contact carrier, frame terminals, cable gland and sealing, strain relief and protection against kinking. Enclosure with thread lock, two safety slides and plugs with nickel plated contacts.

Application :

Industries, Commercial Malls, Service centers, Workshops.

Ranges : 16A 3P to 125A 5P

Protection : IP 44 and IP 67



AMAXX - COMBINATION UNITS



Application : Industries, Commercial Malls, Service centers, Workshops

Protection type : IP 44 and IP 67

Enclosure Materials : AMAPLAST and especially chemical resistant AMELAN

Sizes : CEE 16A to 63A, 5P receptacles, IP44 and IP67, wall mounted, hangable up from the ceiling, mobile and floor mounted (in combination with CombiTOWER)

Colours : Grey (Black), also in Silver (Black) and Yellow (Black)

Special Solutions : Switched interlocked (DUO) with RCD/ MCB Protection, 16A to 63A, IP44/67

Additional : Data ports (RJ45), USB, Antenna, etc (keystone), Compressed air, 9 or 13mm hose connection

Standards : IEC 61439/ EN 61439



INDUSTRIAL PLUGS & SOCKETS

MOBILE DISTRIBUTOR

Mobile Distributer:

Description : The new mobile receptacle combinations are available in a variety of assembly fittings.

The robust, stackable insulating enclosure are ideally suited for indoor and outdoor use.

Protection : Available in IP 44 and IP 67.



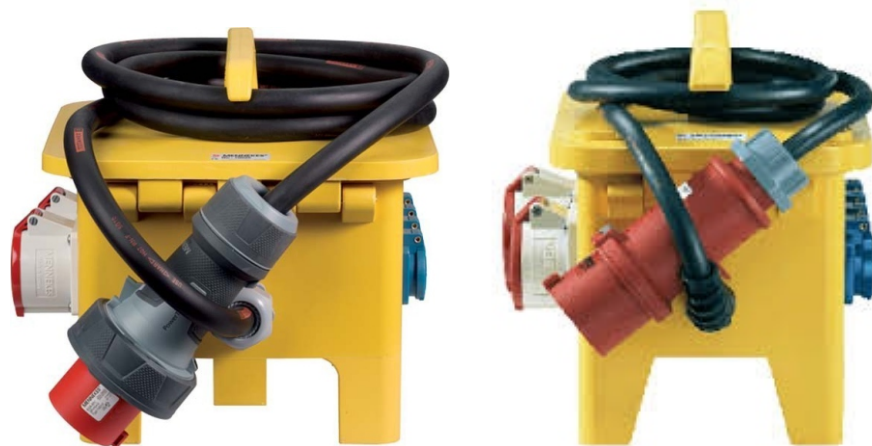
MENNEKES®
Plugs for the world

EVERGUM RECEPTACLE

EverGUM receptacle combinations with solid rubber enclosures.

Description : With the EverGUM range MENNEKES provide a solid rubber alternative to enclosures in plastic and sheet steel. This is an alternative which is suitable for the most diverse environments, especially when there is likely to be exposure to rough handling or aggressive cleaning agents. These products can also be supplied to conform to the standards of other European countries.

Protection : Available in IP 44 and IP 67.



MENNEKES®
Plugs for the world

POLYCARBONATE JUNCTION BOXES

INTRODUCTION:

The innovative product range of modern installation and distribution board systems has made Hensel into one of the market leaders in the tapping, fusing and distribution of electrical energy in the low voltage sector.

The high- quality Hensel products are processed in particular by the electrical trade, industry and in electrical installations. Wherever environmental influences, dust and humidity require a particularly sophisticated installation technology, Hensel with its innovative solutions enables the reliable and safe distribution of energy up to degree of protection IP67.



HENSEL
PASSION FOR POWER.

DK CABLE JUNCTION BOXES

Standard applications:

Suitable for outdoor installation and harsh environment.

- Cable entry via integrated elastic membranes up to IP 66, alternatively, a cable gland can be used after removing the elastic membrane
- Multi-level knockouts for cable glands in different sizes
- Degree of protection: IP 66
- Material: polypropylene or polycarbonate
- Burning behavior: Glow wire test according to IEC 60695-2-11: 750 DegC, flame-retardant, self-extinguishing
- Colour: Grey, RAL 7035



HENSEL
PASSION FOR POWER.

POLYCARBONATE JUNCTION BOXES



DK CABLE JUNCTION BOXES "WEATHERPROOF", FOR OUTDOOR INSTALLATION

Standard applications:

Suitable for outdoor installation and harsh environment.

- Degree of protection IP 66 / IP 67 / IP 69 with cable glands, temporary submersion up to 1 meter, max. 15 minutes
- Halogen-free: low toxicity, low fume development
- Weatherproof: UV resistant, rainproof, temperature resistant
- Material: polycarbonate with GFS
- Burning behavior: Glow wire test according to IEC 60695-2-11: 960 DegC, flame-retardant, self-extinguishing
- Colour: grey, RAL 7035 or black, RAL 9011
- VDE , DNV GL - Approved



DK CABLE JUNCTION BOXES, WATERPROOF FOR ENCAPSULATING



Standard applications:

Suitable for outdoor installation and harsh environment.

- Degree of protection of enclosures according to
- Sealing compound always fits to the product: The amount of sealing compound always fits to the product - never too much or too little material in the processing.
- Measurement and re-installation: The lid can be removed to measure electrical voltage. In case of re-installation the sealing compound can be removed easily.
- Material: Polycarbonate with GFS
- Burning behavior: Glow wire test according to IEC 60695-2-11: 960 DegC, flame-retardant, self-extinguishing
- Colour: grey, RAL 7035 or black, RAL 9011



POLYCARBONATE JUNCTION BOXES



DK CABLE JUNCTION BOXES TESTED FOR INTRINSIC FIRE RESISTANCE

Standard applications:

- Tested for insulation integrity P120 and intrinsic fire resistance E30/E60/E90
- Intrinsic fire resistance E30-E90 according to DIN 4102 Part 12 (German standard) together with function-retaining cables
- Insulation integrity PH120 according to BS EN 50200 in combination with insulation retaining cables
- Included screw anchors, connecting terminal made from ceramic with resistance to high temperatures E30 - E90 and cable entries as standard
- Multi-level knockouts for cable glands in different sizes
- Material: Polycarbonate with GFS
- Colour: orange RAL 2003



KV SMALL-TYPE DISTRIBUTION BOARDS UP TO 63 A 3 TO 54 MODULES DEGREE OF PROTECTION IP 54-65 PROTECTION CLASS II, 0 IN ACCORDANCE WITH IEC 60670-24 / DIN 43871



- Compact user friendly solution, optically optimized by cable entry cover
- Integrated compartment for accessories - everything has its proper place
- DIN-rails with stopper for proper position of installation device and Screws made of stainless steel V2A
- FIXCONNECT plug-in terminal technology for PE and N
- Connection for copper conductors
- KV Small-type distribution boards with up to four disconnectable N-potentials in one bar enable the installation of RCDs without additional efforts or accessories
- 12 to 54 modules: attached blanking strips for DIN rail equipment openings
- 3 to 9 modules: protective cover can be cut out
- Material: polystyrene
- Burning behavior: glow wire test in accordance with IEC 60695-2-11: 750 DegC, flame-retardant, self-extinguishing



MI POWER DISTRIBUTION BOARDS UP TO 630 A



MI POWER DISTRIBUTION BOARDS UP TO 630 A IN ACCORDANCE WITH IEC 61439-2 COMBINABLE ENCLOSURE SYSTEM DEGREE OF PROTECTION IP 65 MADE FROM POLYCARBONATE PROTECTION CLASS II, [0]

- Mi Power distribution boards up to 630 A
- combinable enclosure system, insulation-enclosed, total insulated, degree of protection IP 65, for the assembly of power switchgear and control gear assembly (PSC) up to 630 A in accordance with IEC 61439 Part 2
- Boxes can also be used as a single box
- Degree of protection IP 65: dust-proof and jet water-proof
- Application area: Mi enclosures are suitable for the protected outdoor installation - harsh environment and /or outdoor.
- Material: Polycarbonate
- Burning behavior: Glow wire test in accordance with IEC 60 695-2-11, self-extinguishing, flame-retardant
- UV-resistance in accordance with IEC 61439-1, Clause 10.2.4: The material is examined for UV resistance. Toxic behavior: silicone- and halogen-free
- Chemical resistance: Resistant against acid, lye, benzene and mineral oil



ELECTRICAL SAFETY PRODUCTS



PERSONAL AND COLLECTIVE PROTECTIVE EQUIPMENT

Collective protective equipment for preventing electrical hazards contains all the products that close off the hazard by distance, obstacles and Insulation. CPE must comply with the standards in force

Sizes : Available in different sizes

Voltage ratings : 500V to 36000 V

Standards :

- Insulated Rubber Gloves: IEC 60903/EN 60903
- Insulating Safety shoes : EN 20345/ EN 50321
- Safety Helmet : EN 12492/EN 50365/ANSI Z89.1/ EN 166/En 170/EN 397
- Safety Glasses : EN 166/EN 170



ELECTRICAL SAFETY PRODUCTS



ARC FLASH PROTECTION

- An electric arc follows a short circuit. It produces nearly instant effects with serious consequences without proper protection.
- When electric arc danger exists, heat-resistant clothing must be worn. The arc's characteristics are given by: The resistance value of the free arc, expressed in cal/cm² according to NFPA 70 E, ASTM standards, and IEC 61482-1-1. or The protection class (1 or 2) with a constrained arc according to IEC 61482-1-2.
- PROTECTION AGAINST ARC FLASH
- The following are used to determine the proper equipment for protecting against an electric arc.
- The maximum fault current value.
- The phase/ground rated voltage at the site of the risk.
- The distance between the source of the arc and the reception surface.
- The AC cycle number and the mono or three-phase circuit type.
- The location where the arc is produced (confined space).
- After recording these parameters, we can estimate the level of risk and determine
- The proper protective clothing and PPE to use: 8 to 100 cal/cm² or class 1 or 2.



MV SUBSTATION EQUIPMENT



Life saving kits for M.V. substations

Wall mounted kit.

In case of an electrical accident, quick response is essential seconds gained or lost can decide the life or death of a victim. Our life saving equipment is designed to make all necessary materials immediately available to rescue personnel

Compact carrying KIT

This compact kit is designed especially to be carried in a vehicle for safety electrical intervention. Made in two part (of moulded material: PEHD), the case is also on its red part, an insulating platform.



ELECTRICAL SAFETY PRODUCTS

INSULATING MATS & LADDERS

Insulating mats.

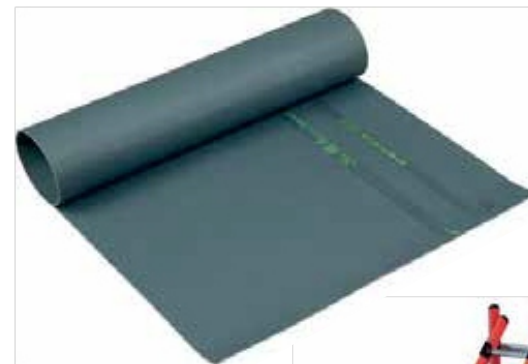
The insulating mats provide individual and collective protection. Elastomer, they are used to cover the ground for the electrical protection of operators during work or interventions on electrical installations.

Standards : IEC 61111/EN 61111

Insulating Ladders:

A complete range with top quality features: Insulation between two steps: 30,000 V (test performed after immersion in water for 24 hours). High mechanical resistance to bending and twisting. Good resistance/weight ratio. High fire resistance. High resistance against bad weather and corrosive elements.

Standards : EN 131



EXPLOSION PROOF PRODUCTS

JUNCTION BOXES

Suitable for installation in any areas of a plant where there is a risk of explosion and/or fire, or areas where combustible dust is present

Classification : Zone 1, 2, 21, 22.

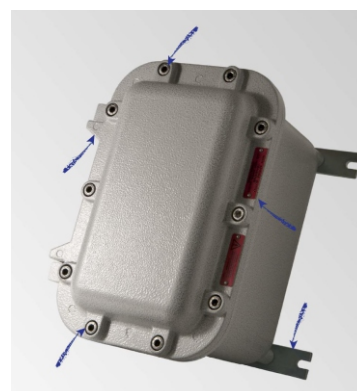
Material Of Construction : Body and lid in low copper content aluminium alloy. Stainless steel cover bolts. Internal/external earth screws. RAL 7035 epoxy coating. Galvanized steel mounting brackets. Silicon gasket Copper Free Aluminium

Installation: EN 60079.14 zone 1 - zone 2 (Gas) zone 21 - zone 22 (Dust)

Certification: ATEX CESA 00 ATEX 036U IEC Ex CES 14.0017U

Standards: CENELEC EN 60079-0: 2012, EN 60079-1: 2014, EN 60079-31: 2014, EN 60529: 1991 and EUROPEAN DIRECTIVE 2014/34/UE

Application : Oil refinery, Petrochemical, On Shore & Offshore Plants



EXPLOSION PROOF PRODUCTS

JUNCTION BOXES

Suitable for installation in any areas of a plant where there is a risk of explosion and/or fire, or areas where combustible gases or dust is present

Classification : Zone 1, 2, 21, 22.

Ambient temperature: -40DegC +55DegC (+40DegC)

Material Of Construction : Stainless steel body and lid. Acid/hydrocarbon-resistant gasket. Stainless steel bolts and screws. Impact protection IK10

Installation: EN 60079.14 zone 1 - zone 2 (Gas) zone 21 - zone 22 (Dust)

Certification: II 2GD Ex eb IIC T. Gb - Ex tb IIIC T. Db Ip66

Standards: Certification: CESA 03 ATEX 333 (ATEX) IEC Ex CES 13.0001 (IECEX)

Application : Oil refinery, Petrochemical, On Shore & Offshore Plants



JUNCTION BOXES

Suitable for installation in any areas of a plant where there is a risk of explosion and/or fire, or areas where combustible gases or dust is present

Classification : Zone 1, 2, 21, 22.

Degree Of Protection : IP66

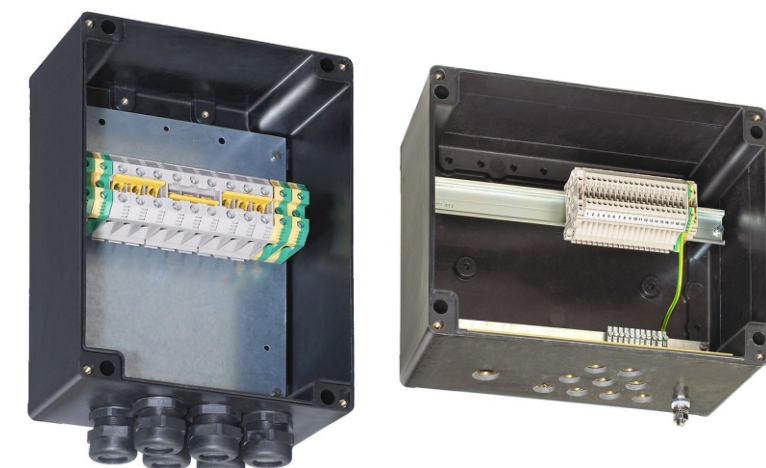
Material Of Construction : GRP (glass reinforced polyester resin) in RAL 9017 black coating (Ex e) or RAL 5015 blue coating (Ex i) UPON request. Stainless steel bolts and screws. Silicone gasket. Internal/external earth screws.

Installation: EN 60079.14 zone 1 - zone 2 (Gas) zone 21 - zone 22 (Dust)

Certification: ATEX CESA 00 ATEX 036U IEC Ex CES 14.0017U

Standards: CENELEC EN 60079-0: 2012, EN 60079-1: 2014, EN 60079-31: 2014, EN 60529: 1991 and EUROPEAN DIRECTIVE 2014/34/UE

Application : Oil refinery, Petrochemical, On Shore & Offshore Plants



EXPLOSION PROOF PRODUCTS

SOCKETS

PY series sockets, with a interlocked disconnecting switch included, are suitable for every explosive atmosphere.

Classification : Zone 1, 2, 21, 22.

Degree Of Protection : IP66

Material Of Construction : Body and cover in Low copper content aluminium alloy. Code : II 2 GD Ex d IIC T6 Gb; Ex tb IIIC T76DeC Db IP66

Installation : zone 1 - 2 - 21 - 22

Certification CESI 14 ATEX 017X , IECEx CES 11.0011X

Standards : EN 60079-0 - EN 60079-1 - EN 60079-31

Application : Oil refinery, Petrochemical, On Shore & Offshore Plants



PLUGS

SPY series PLUGS , with a interlocked disconnecting switch included, are suitable for every explosive atmosphere.

Classification : Zone 1, 2, 21, 22.

Degree Of Protection : IP66

Material Of Construction : Body and cover in Low copper content aluminium alloy.

Code : II 2 GD Ex d IIC T6 Gb; Ex tb IIIC T76DegC Db IP66

Installation : zone 1 - 2 - 21 - 22

Certification CESI 14 ATEX 017X, IECEx CES 11.0011X

Standards : EN 60079-0 - EN 60079-1 - EN 60079-31

Application : Oil refinery, Petrochemical, On Shore & Offshore Plants



UNINTERRUPTIBLE POWER SUPPLY

AC UPS

The UPS systems of the industrial ACU series make it possible to supply power to the critical AC loads safely and in full compliance with the requirements of the Client's installation. The high level of customization of an electrical, mechanical and topological nature allows total adaptation to client needs. The construction of a "made-to-measure" system for the Client not only increases reliability and performance, but also optimizes the entire infrastructure (rectifier,batteries and inverters) based on real needs.



DC UPS / BATTERY CHARGERS

The CBC rectifiers / battery chargers encapsulate years of consolidated experience in the field understanding the main requirements of our Clients. The type of system obtained is a new generation of rectifiers / battery chargers equipped with a defined layout and therefore able to optimize timing and implementation costs. Even if less flexible than the UBC series, they are in no way inferior in terms of robustness and reliability.



INSTRUMENTATION

FIRE AND GAS DETECTION SYSTEMS

HC POINT GAS DETECTOR GD10P

- Dual Sensor Dual Source detector
- 15 year warranty IR sources - solid state optics
- T90 < 1.6s with option for selectable response rate
- Individually heated sapphire mirror
- No field recalibration. FIT & FORGET!
- Dual skin weather protector - no filters / gauzes or sinters
- Planned maintenance with HART
- SIL 2 certified



MULTITOX DG-TT7-S MOS TOXIC GAS DETECTOR

- Flexible configuration
- Low Power consumption
- Colour coded LED alphanumeric display
- Reduced maintenance
- 4-20 mA + HART and relays standard output
- 3 month calibration recommended
- Ranges : 20ppm, 50ppm & 100ppm



FIRE AND GAS DETECTION SYSTEMS

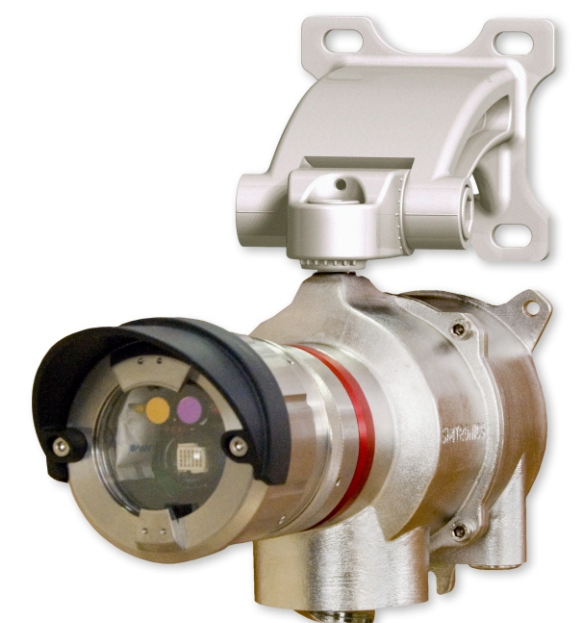
GD1 TOXIC LASER LOS GAS DETECTOR

- First Exd NIR Laser open path detector for H2S safety
- 5 years warranty
- Large area covered with a single unit
- Concept Real cost savings within 2 years
- Dual Proof test (CO2 & CO)
- Fail safe & Suitable for SIL 2 applications
- NO sleeping affects
- No cross interference, Negligible affects from atmospheric changes (fog, etc.)
- Fastest possible speed of response No zero-point drift,
- NO calibration required



MULTIFLAME DF-TV7 3IR FLAME DETECTOR

- Excellent false alarm immunity
- Wide field of view.
- Longest range of upto 80 mtr
- Through lens optical check
- 4-20 mA + HART and relays standard output
- Worlds 1st SIL 3 Certified Flame detector
- Fast response time of typical 6s



INTRODUCTION

- Founded in 1975, Chemtrols traces its origins to the Control of Processes in the Chemical Process Industries.
- Chemtrols Industries Ltd. is a leading solutions provider in Process Analytics, Environment and Emission Monitoring, Flow and Terminal Automation, Process Instrumentation, Steam Engineering, and Utility Management Systems.
- More than 32 years in on-line Process industry viz: Refinery, Petrochemicals, Fertilizers, Power, Steel supplying level, process analytical, environmental products.
- Nearly 2 decades in Analyzer Shelter business. Inhouse HVAC manufacturing and Fabrication for last 18 years
- Fabricates Analyzer shelter inhouse in 70000 sq. ft floor factory which is one of the biggest facilities.
- Projects with >150 Analyzer shelters & HVAC units working with 2000+ Analyzers.
- Process knowledge and experience of all Refinery and Petrochemicals plant and key requirements.

PROCESS ANALYTIC SOLUTIONS

- Stack & Heater Analyzers
- Process Analyzers including Mass Spectrometer
- Physical Property Analyzers / Blending Packages
- Gas Chromatographs
- Dust Concentration and Opacity Analyzers
- Analyzer Management System
- Integrated Analyzer package system with Shelter
- HVAC, Split and Window Air Conditioning units for installation in hazardous and non-hazardous areas
- Specialized Analytical solutions for FCCU, SRU, HDPE, CRACKER, VCM, MEG PP, Butadiene, H₂, NH₃, DRI plants based on Licensors philosophy.

CONTINUOUS EMISSION MONITORING SYSTEMS (CEMS)

Optimum solutions to the measurement and monitoring of various pollutants like SO₂, NO_x, CO, CO₂, NH₃, HCl, HF, THC, Mercury, etc. Based on the vast experience gained in such systems, Chemtrols today provide solutions on technology platforms of either Dilution Extractive, Hot Extractive or In-situ measurement.

- **Dilution System**
Sample is extracted and diluted with zero air in the probe. Since, dilution takes place within the probe, there is no need for a heat-traced sample transportation line.
- **Hot - Wet Extraction System**
Sample is extracted from stack / duct through a heated filter. Blow back arrangement provided for cases where there is high dust load. Extracted sample is transported using heat-traced line to the sampling system.
- **In-Situ Instruments**
An in-situ gas analyzer sits directly at the measurement point on the stack / duct. Both, cross duct and probe measurement techniques are available.



ANALYZER HOUSE



AMBIENT AIR QUALITY MONITORING (AAQMS)



Ambient Air Quality Monitoring Systems or AAQMS monitors the level of pollutants. From a single analyzer to complete turnkey systems (Both Mobile and Fixed) with shelters, hard wired or wireless data transfer to the pollution boards. Chemtrols provides a wide range of solutions to meet much of the Ambient Air Quality Monitoring demands.

- Conventional Analyzers - SO₂, H₂S, NO_x, NH₃, CO, CO₂, O₃, and HC BTX Analyzer - Benzene, Toluene, and Xylene
- Particulate Monitoring - TSP, PM₁₀, PM_{2.5}
- Sampling System Calibration Systems
- Meteorological Sensors
- Data Acquisition and Management Systems Analyzers designed according to US EPA regulations / equivalent regulations Ethernet connectivity for efficient remote access User-friendly interface with single button programming and large display screen.
- Well thought out of layout design for easy accessibility to components Report generation on an hourly / daily / weekly / monthly / yearly basis.

CHEMTROLS INDUSTRIES LTD



METERING SKIDS FOR GASES AND LIQUIDS

- Chemtrols Manufactures flow metering skids for liquids and gases.
- Gas Flow Metering Skids for Custody Transfer
 - Natural Gas
 - CNG (City Gas Dist.)
- Liquid Flow Metering Skids for Custody Transfer
 - LNG / LPG
 - Crude
 - Refined products
- Natural gas metering skids use Multi path gas ultrasonic flow meter, turbine meters, Coriolis mass flow meter, RPD meter and flow computer confirming to relevant standards.
- Liquid metering skids using positive displacements flow meters & related accessories, Coriolis mass flow meter, Multipath liquid ultrasonic flow meters or restriction orifice assemblies and flow computers



GAS METERING SKIDS



OMAN PROJECT REFERENCE

Client : Carmeuse Majan
End User : Oman Gas Company

Fiscal Metering System Skid for Gas Supply to Carmeuse Majan at SFZ Salalah Oman.

The FMS and the flow Control Valve is designed for 0.18 MMSCMD. Skid is designed for future train to be added. The FMS, Flow control valve and ESD (GOOA) valve was supplied as a package



GAS METERING SKIDS



ANALYZER HOUSE



CHEMTROLS INDUSTRIES LTD



AIR CONDITIONING UNITS / HVAC

- Creating a good environment inside the shelter by controlling the climatic condition outside through Cooling or Heating as required.
- If ambient conditions or heat release within the analyser shelter results in unacceptably high temperatures or vice versa, then Air Conditioner or Heater is used to keep the temp 26DegC to 2DegC within the Shelter.
- Ventilation is to dilute and dissipate any dangerous release within the Shelter sufficiently to create safe area inside the shelter.
- AC Capacity is designed on basis of Heat Load Calculation.
- Types of AC : Window, Split, VAC & HVAC.
- Heating is done by two ways : Steam or Electric



Window AC

Split AC



ADVANTAGES OF CHEMTROLS HVAC

- Over 12 years experience in HVAC for Process Industry
- Dedicated HVAC team at Factory
- Uses reputed components
- Field proven product and local support availability
- Design allows enough Maintenance access from all sides
- Available with multiple combinations
- Capacities : 3 Ton, 5 Ton, 7.5 Ton & 10 Ton



TEMPERATURE MEASUREMENT

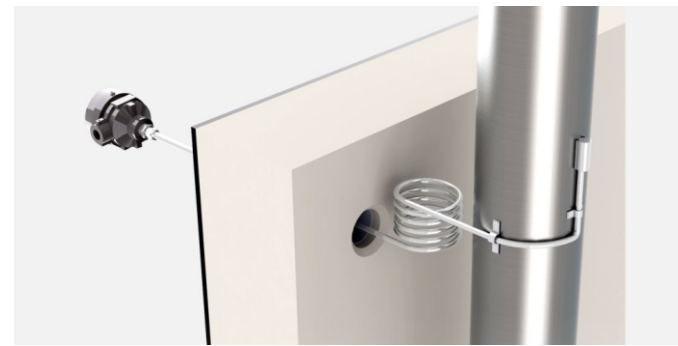


VORTEXWELL

When it comes to market-leading temperature measurement, we lead the way. Through our meticulous development of the VortexWell, you can be assured of unrivalled quality performance and safety.

At Okazaki, the focus is on solving your problems. Through the use of cutting-edge technology our engineers have developed a complex solution to your Thermowell resonance failure issues. Simple and effective, incorporating:

- No more vortex induced vibration
- Flow disturbance is minimized thanks to its aerodynamic tip

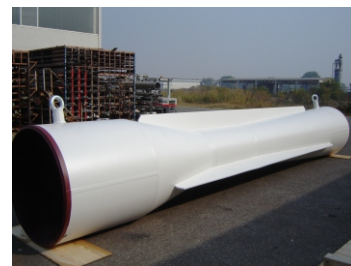


SKIN THERMOCOUPLES

- Proven High Accuracy
- Long Life with reliability and repeatability in Service
- Reduces process variability Easily Installed
- Fully Certified for use in Hazardous Areas

PRIMARY FLOW MEASUREMENT

- Orifice plates
- Orifice plates with handle type RTJ
- Restriction orifices
- Venturi elements
- Flow nozzle
- Multistage restriction orifices
- Pitot tube and mapflow (annubar)
- Venturi cone-meter



PRIMARY FLOW MEASUREMENT



ORIFICE PLATES

Accurate workmanship and high quality of finishing distinguishes TM orifice plates. Specially built up-to-date machinery ensures calibrated bore with burr free sharp edge & smooth ground upstream and downstream faces.

Technical specifications

Materials

Standard AISI 316 Stainless Steel for immediate delivery.

Other materials to request.

Types

Concentric with sharp Edge, 45° Bevel, quarter-circle, conical entrance, eccentric type, segmental type, etc.

Construction

In accordance with AGA-ASME recommendations.

Flow calculations

When requested, flow calculations can be made for determining bore diameter according to ISO 5167-2 : 2003, ASME 3M (2004), ANSI 2530/AGA-3/API - Ch.14



VENTURI TUBES

Venturi Tubes are used for measurement of flows when it is important to keep the net pressure permanent loss at a minimum. They are noted for their long life, their flow coefficient stability, and their ability to provide a dependable relationship between differential pressure and fluid velocity. They return from 75% up to 95% of the velocity head depending on diffuser outlet cone angle.

Technical specifications

Materials

Standard AISI 316 Stainless Steel, CS, Alloy

Other materials to request.

Types of Construction

Venturi Tube By Plate With Flanged Throat

Venturi Tube By Bar-Stock

Venturi Tube By Plate (Long Type)

Flow calculations

When requested, flow calculations can be made for determining bore diameter according to ISO 5167-2 : 2003

