

# Iskra MIS - Product Lines



# Efficient Installations



Bistable Switches  
up to 32 A

NEW

Energy Saving



Remote light control and switching other inductive, capacitive and resistive load without hold coil consumption

Energy Meters



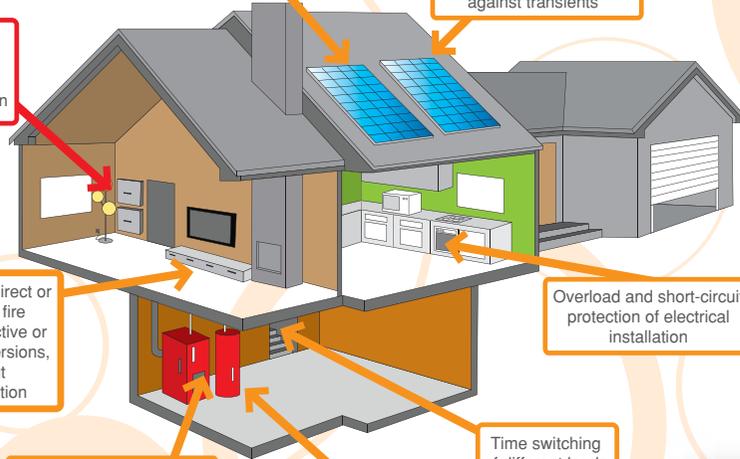
Efficiency energy metering in accordance with MID directive

Surge Protection Devices



Protection electrical and electronic equipment against transients

Installation Contactors



Residual Current Circuit Breakers  
Type A, Type AC  
Type S, Type G/K  
Plug-in Type

Protection against indirect or direct contact and fire protection, also selective or short-time delayed versions, with and without overcurrent protection

Overload and short-circuit protection of electrical installation



Miniature Circuit Breakers  
up to 63 A

Remote control of motors, electric heating, lighting and other loads

Time switching of different loads

NEW



Installation Contactors with UL certificate

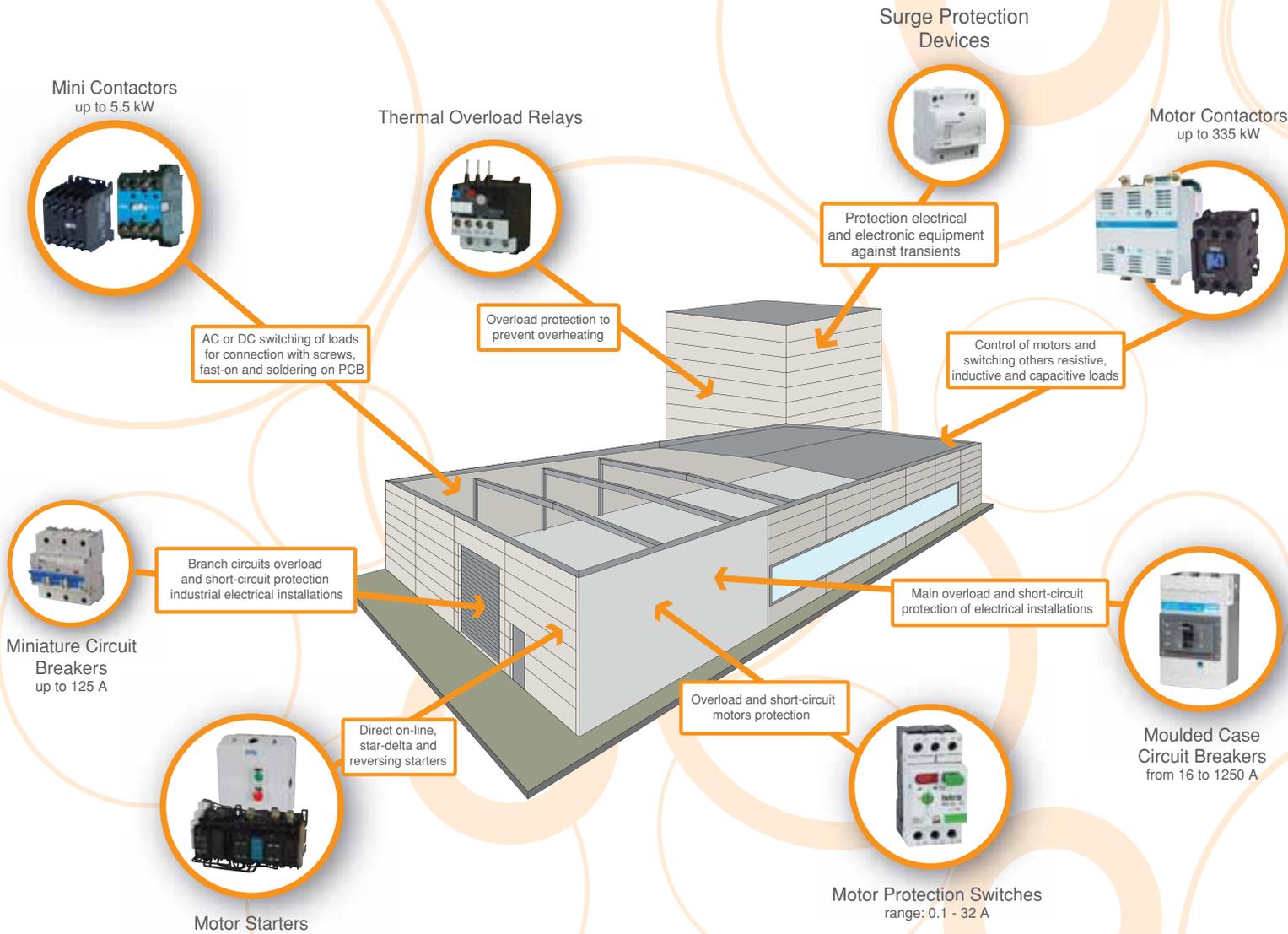


Switch Disconnectors



Time Relays  
(staircase switch)

# Efficient Installations



# Low Voltage Switchgear

## BISTABLE SWITCHES



Bistable switches are mainly used for switching of lighting, but they are also becoming an alternative to installation relays and contactors. At remote switching of lighting, parallel connection of push-buttons is used. In this way, a number of conductors are smaller than in case of connection with cross-point and reversing switches. Owing to pulse control of a bistable switch, continuous control current does not flow through the switch coil, which results in a considerable saving of electric energy.

## MINIATURE CIRCUIT BREAKERS, RESIDUAL CURRENT CIRCUIT BREAKERS



Circuit breakers RI series are mechanical switching devices able to switch, conduct and switch-off the current under normal conditions and able to switch-on, conduct and automatically switch-off the current under abnormal circuit conditions such as short circuit. They are used to protect house installations and industrial electric distributions and devices against overcurrents. With a residual current circuit breaker FI, NFI (RCCB) the following protective measures are available: protection against indirect contact, fire protection, additional protection in the event of direct contact. RFI2 (RCBO) is a combination of residual current circuit breaker and circuit breaker for rated current 6, 10, 16, 20, 25, 32, 40 A. They are used in house and similar installations. Protection against: additional protection in the event direct contact, indirect contact, fire, overcurrents, short circuit (breaking capacity 10 kA).

## MOTOR PROTECTION SWITCHES, MOTOR PROTECTIVE CIRCUIT BREAKERS



Start-up and protection of electric motors (industry, small machines, external use, agricultural machines, compressors, repair shops, etc.). Higher possible setting current: 32 A instead of 25 A. Higher short circuit breaking capacity because of different contact system solution: till 10 A has 100 kA higher ranges 25 kA. More additional moduls like auxiliary contacts HSV and relative auxillary contacts.

## INSTALLATION CONTACTORS, DISTRIBUTION BOARDS



Installation contactors are applied for automatic control of electric devices in installations of dwellings, offices, shops and hospitals. They are particularly suitable for switching, lighting, heat pumps, air-conditioning and similar equipment and are also intended for switching single phase and three phase electric motors. They excel in silent operation. Sealing of a contactor cover is also possible. An auxiliary switch with two contacts can be attached. We offer flush mounted and surface mounted compact distribution boards: 4 to 36 modules, protection class III, degree of protection IP40, IP65, additional terminals for PE- and N-conductors.

# Low Voltage Switchgear

## OVERVOLTAGE PROTECTION



We offer different devices for internal mounting for protection against overvoltages at low-voltage networks, also for photovoltaic and wind turbine systems. Types TN, TNC, TNS, TT for:

- class B - protection against overvoltage caused by lightning, with the method of sparks, where no loss currents occur. They are tested with a signal 10/350  $\mu$ sec. to 60 kA;
- class C - protection against voltage caused by manipulation at electric energy distribution network. They are of with varistors and gas arresters;
- class D - protection against overvoltage for individual devices.

## MOULDED CASE CIRCUIT BREAKERS



SN moulded case circuit breakers are used for switching and protection of low-voltage electrical installations in larger dwellings as well as business and industrial buildings. They assure a reliable protection against overload and short circuits, and can also be used as a main disconnecter. Rated currents of SN moulded case circuit breakers are in the range from 16 A to 1250 A.

## MINI CONTACTORS, CONTACTORS, CAPACITOR DUTY CONTACTORS



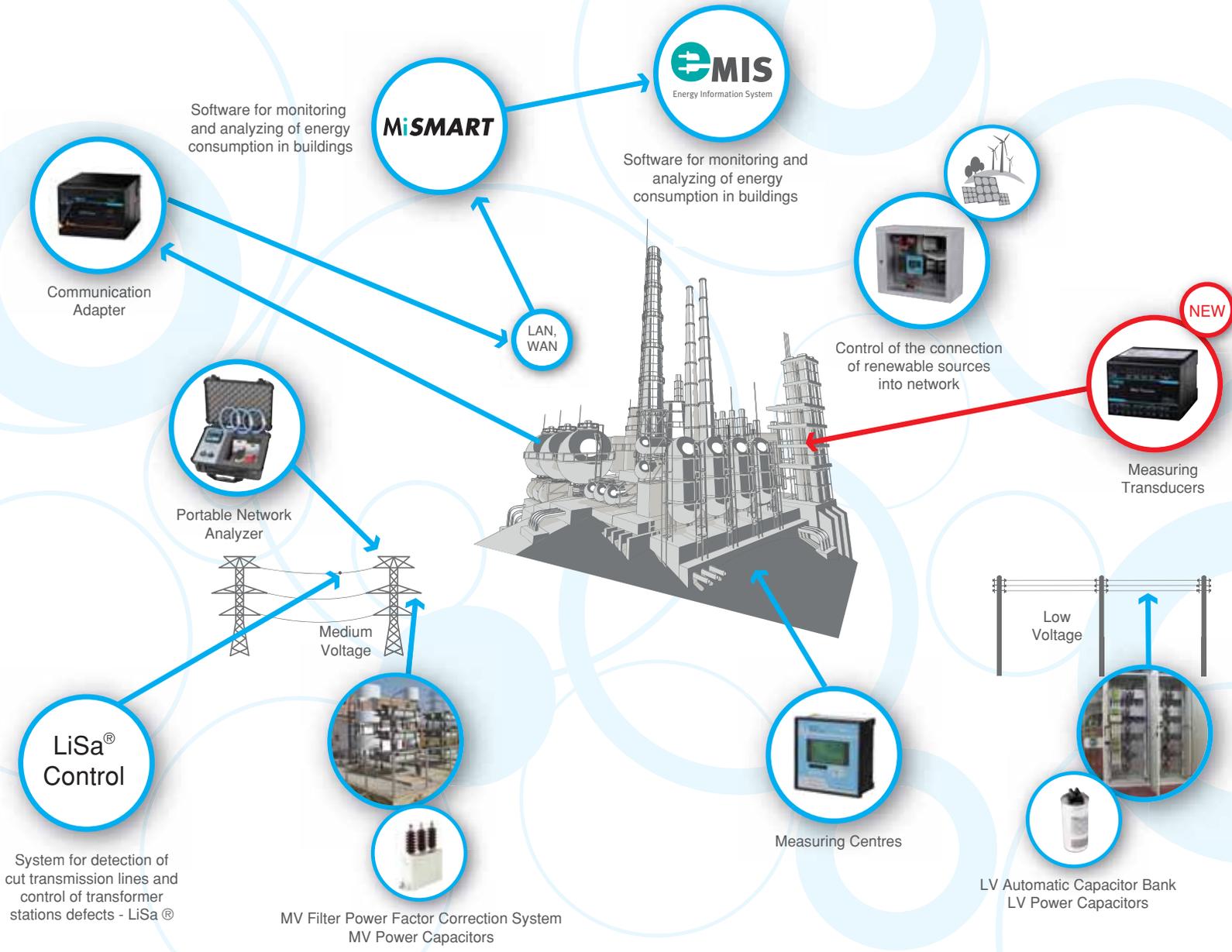
In our product lines are all kinds of contactors from 2.2 kW up to 335 kW. They can be controlled with all kind of control voltages from 12 V up to 500 V. The accessories include a lot of different kind of auxiliary contacts, mechanical interlocks, RC suppressors, thermal overload relay and equipment for assembling. Special contactors are for switching capacitor banks from 12,5 kvar up to 60 kvar.

## STAR-DELTA MOTOR STARTERS, REVERSING STARTERS DIRECT ON-LINE STARTERS, COMBINATION STARTERS



They are used not only for start-up, overload protection and switch-off of electric motors, but also for other loads. They could be built into the enclosure of IP55 protection degree. Starters are built of contactors with various type of coils, motor protection switches, thermal overload relays, mechanical interlocks, timers and connections.

# Energy Products Control



# Electrical Measuring Instruments

## MEASURING CENTRES & ANALYZERS



The measuring centres and analyzers are intended for monitoring and measuring electrical quantities of a three-phase electric-energy distribution system. They are provided with up to 32 program adjustable alarms, up to four inputs or outputs and communication. With the RS 232/RS 485 or Ethernet communication they can be set and measurements can be checked. The meters function also as an electricity meters, with the additional function of cost management by tariffs. The most powerful MC 760 Network Analyzer is used for permanent analysis of electric voltage quality in compliance with the SIST EN 50160 standard.

## ENERGY METERS FOR RAIL MOUNTING



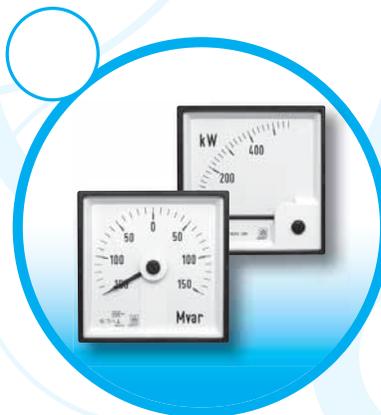
Energy meters display energy in three-phase electric energy distribution system. They can give you information about energy consumption in production plants. Family WSx10x is approved by PTB according to MID directive. Accuracy of the meters is class 1, according to the standard EN SIST 62053-21 for active energy meter.

## PROGRAMMABLE MEASURING TRANSDUCERS



Measuring transducers are instruments used for conversion of electrical quantities in single and three phase electrical systems. The most capable measuring transducer MT 560/UMT 560 - Network Analyzer is used for permanent analysis of electric voltage quality in compliance with the SIST EN 50160. Transducers can be programmed via serial/ethernet/USB port. Data used for system analyses can be sent to a PC. Input-output characteristics can be created with five breaking points for unipolar and bipolar output signals. Additional to "classical" analogue outputs, our measuring transducers can also provide you with tariff, digital, alarm and pulse outputs for monitoring different tariffs or as PLC inputs and with digital and tariff inputs. Accuracy of all basic quantities of MT/UMT family is 0.2 in compliance with the IEC EN 60688.

## ACTIVE OR REACTIVE POWER METERS



Power meters are electronic meters intended for measuring active or reactive power in single phase or three phase networks, with balanced or unbalanced load. The accuracy class is 1.5. The scale value depends on primary values of current and voltage. The scales are exchangeable. They can have power supply from measuring system or separated. Power consumption of our power meters is low.

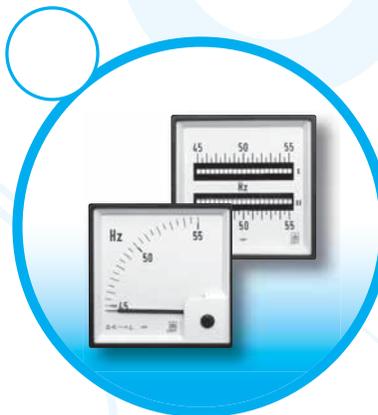
# Electrical Measuring Instruments

## SYNCHRONIZATION METERS



Synchronization meters are intended for manual or semiautomatic synchronization of two electric-energy distribution systems. They are the instruments for measuring a phase angle between two electric-energy distribution systems. The SQ 0x14 type also measures voltages and frequencies of both systems and in one housing includes functions of five different meters. All types of instruments can be, on request, provided with the built-in relay output which signalises if the conditions for synchronization have been met.

## FREQUENCY METERS



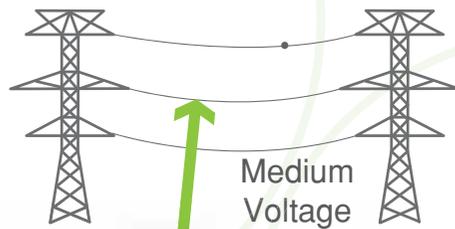
Pointer frequency meter is designed for measurement of mains voltage frequency within five different measuring ranges (45-55 Hz, 48-52 Hz, 45-65 Hz, etc). Dial has to be exchanged, when the measuring range is changed. The meter is powered through measuring terminals. Reed frequency meters are intended for measurement of frequencies in the range from 45 Hz to 65 Hz. The accuracy class is 0.5.

## METERS FOR DC VOLTAGE OR CURRENT WITH A MOVING COIL, METERS FOR AC VOLTAGE OR CURRENT WITH A MOVING IRON



Meters with a moving coil (designations BQ xx07, BN 0x03) are intended for measurement of direct currents or voltages. A measuring system with a core magnet is not sensitive to external electromagnetic fields and is resistant to mechanical impacts and vibrations. The scale is entirely linear and interchangeable. The accuracy class is 1.5. Meters with a moving iron (designations FQ xx07 and FN 0x0x) are intended for measurement of AC currents or voltages of frequencies from 15 Hz to 100 Hz. They measure rms values independently on the signal form of current or voltage. The accuracy class is 1.5. The scale is interchangeable.

# Electric Energy Distribution



MV Filter Power Factor Correction System  
MV Power Capacitors  
Reactors



LV Automatic Capacitor Bank  
LV Power Capacitors  
Capacitors Duty Contactors  
Power Factor Regulators  
Fuse Systems

# Power Capacitors

## HIGH VOLTAGE POWER CAPACITORS



KLV capacitors are designed for reactive power compensation of electrical networks and industrial plants. When required voltages are higher than rated voltage of individual capacitor, units are integrated into banks by means of series connection. Fusing is provided according to national requirements. Owing to high partial discharge inception voltage, KLV capacitors are suitable for installation in networks with higher harmonics and transient voltages. Low temperature dependent capacitance change makes them particularly suitable for filter circuit installations.

## POWER FACTOR REGULATORS



Power factor regulators PFC max 6 (6 steps) and PFC max 12 (12 steps) measure  $\cos \varphi$  of a supply system and control the automatic connection and disconnection of compensation capacitors according to desired  $\cos \varphi$ .

## LOW VOLTAGE POWER CAPACITORS



The KNK capacitors are used for power factor correction of inductive consumers (transformers, electric motors, rectifiers) in industrial networks for voltages up to 690 V.

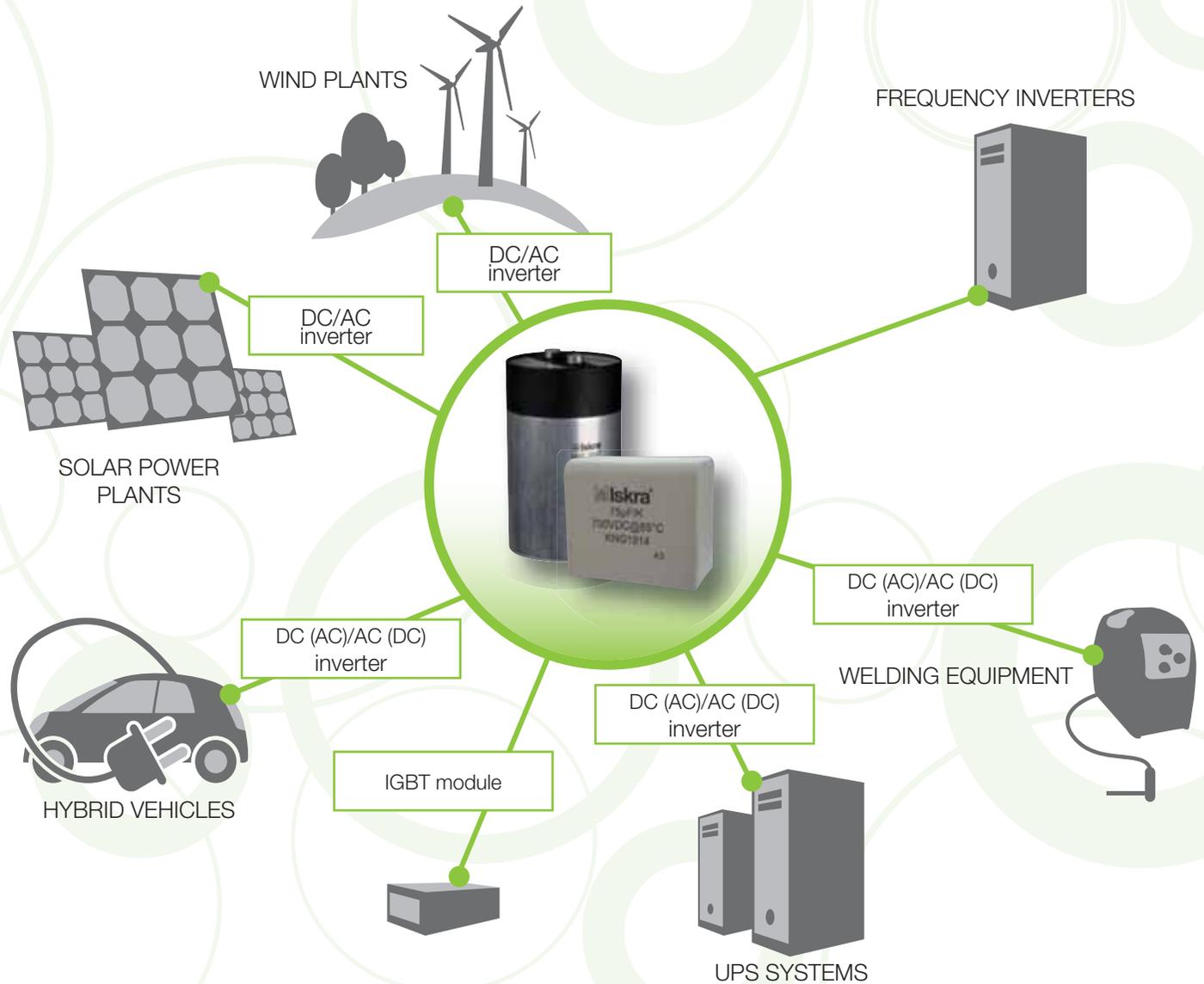
# Capacitors for Renewable Technology



## DC LINK AND SNUBBER CAPACITORS

DC LINK capacitors are useful at wind plants, solar power plants, medical and industrial equipment, car electronics, etc.

SNUBBER capacitors are used in applications where high pulse loadings and high frequencies are presented. Purpose of snubber capacitors is to eliminate voltage spikes which are caused by semiconductors or other devices.



# System and Device Parts

## RADIO INTERFERENCE SUPPRESSION COMPONENTS

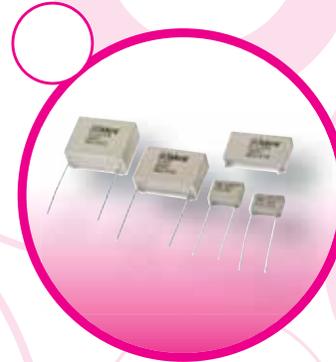


Due to their structure, electric devices cause radio-frequency interference that spreads into the environment. To prevent these interferences, we install special components into white goods and other electric devices.

Class X capacitors are suitable for applications where there is no danger of electrical shock in case of breakdown.

Class Y capacitors are suitable for applications where the breakdown of the capacitor can lead to a dangerous electric shock.

## CAPACITORS FOR USE IN ELECTRONICS

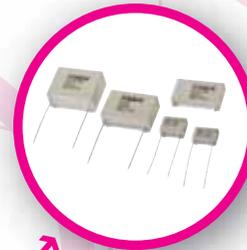


Our electronic capacitors are built into consumer electronics and personal computers.

Capacitors for use in electronics are made of dielectric materials as follow: polypropylene film, polyester (polyethyleneterephtalate).



Filters for radio-interference suppression



Capacitors for use in electronics



# System and Device Parts



# System and Device Parts

## ANTENNA SYSTEMS



Antennas feature a robust design and a long life span and are optimized for best signal reception in the frequency band for which they are intended. They ensure quality and smooth operation, the transmission of data, sound and images, even in the most unfavourable weather conditions as they are produced from quality aluminium alloy with high mechanical strength. In our programme are:

- Radio antennas
- LOG antennas
- Professional antennas
- YAGI antennas

We also offer a full range of antenna electronics, in door antennas, digital receivers, satellite systems and other antenna accessories, etc.

## PROFESSIONAL BATTERIES



We produce three battery lines:

- Compact
- Air - Alkaline
- Air - Saline

Air batteries require oxygen from ambient air in order to operate. As the operation of the battery depends on ambient matter, these batteries feature very high energy density levels (Wh/kg).

Air - Alkaline battery line for electric fences - These are professional batteries used for electric fences of up to 0.8 Joules (two battery types can manage 1.5 J).

- Air - Saline battery line for electric fences
- Road signalling batteries and equipment - Have been developed for portable road signalling lamps to be mounted on red-and-white delineators and belong to the group of compact batteries.
- Railway signalling - Are meant for the purposes of railway signalling, we produce single cells of 1.4 V and batteries of 4.5 or 9 V. The batteries can be used for safety lamps on the train composition or in lamps used by workers on the railway station.

## MOTOR RUNNING CAPACITORS



Motor running capacitors type KNM are designed for obtaining an auxiliary phase in single-phase and in three-phase motors connected to a single phase. The capacitors provide a starting moment of 25 % to 30 % of rated moment.

# System and Device Parts

## POTENTIOMETERS



Potentiometers can be used for various household appliances, hand tools, medical devices as well as automobiles and entertainment electronics. Apart from a wide variety of uses our potentiometers boast a top quality and high level of resistance. They have rotational life up to 1 million cycles.

## ELECTROPLATING



We are the largest electroplating shop in Slovenia offering a broad range of reliable and quality services in the field of electroplating technology:

- Chromium plating
- Nickel plating
- Zinc plating
- Silver plating
- Copper plating
- Tin plating.

Our services are characterized by a striving for perfection, the precision of metal plating and a high level of flexibility with regard to customer demands. We have large production capacities, while modern technology also allows us to produce small series in a short period of time.

## CORES



We manufacture a diverse array of quality cores:

- Toroidal cores
- Rectangular and oval cores
- Cut C and E cores
- Customized cores.

Cut C and E cores are mainly used in power transformers, chokes and custom-made transformers.

C cores are available in different standard dimensions and can be divided into the following groups: CE, CG, CM and CU.

We insulate the cores using insulating tape or are coated with an epoxy. What is more, C cores and other cut cores are supplied with clamps of appropriate lengths.

## OTHER SERVICES



- Contact components
- Dial Printing Technology
- Instrument Calibration (Photometric Quantity, Power and Energy)
- PCB Assembling

NOTE:

For system solutions - look at our other brochures and [www.iskra-mis.si](http://www.iskra-mis.si)



**Iskra**<sup>®</sup>

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