

RÖLESAN

MEASUREMENT • SCADA
CONTROL • PROTECTION





Significant increase of demand for energy and privatization of electricity market worldwide has increased the importance of production, distribution and transmission of electrical energy. Especially in electricity transmission and distribution, companies define strategic objectives and seek solutions in order to continuously meet the demand.

To support this constant pursuit of solutions in the field of protection and control of electrical energy, ROLESAN follows the current technology closely and continues its activities with the most innovative approaches combined with an experience of over 20 years.

Electronic, Mechanical design and production of MV, LV and HV products are carried out entirely within our organization considering the electricity transmission and the distribution systems as a whole. For Scada systems and stable relay coordination, our product range with fast response and high quality materials is as follows:

- Industrial Rectifiers– Battery Chargers
- MV Toroidal Current Transformers – Low Power Current Transformers
- Short Circuit and Earth Fault Indicators (W/WO communication)
- Annouciator (6-8-16-32-48 channels)
- LRM Voltage Indicators W/WO Digital Inputs
- Obstruction Lights (Low – Medium Intensity)

SYSTEM INTEGRATION IS NOW IN EXPERT HANDS

Design and production of the MV protection and control equipments dates back to 1995 and continue to develop according to the technological changes, which indicates incessant exchange of information between ROLESAN and its customers. This close interaction policy enables us to experience the problems in the field and detect the requirements of changing conditions which in turn guides our R&D team to carry out the revision of existing products or the design of completely new products.

Region based variations of these experienced problems and requirements of the interconnected system structure enabled us to have the complete expertise of the MV system through accumulation of 20 years of experience.

ROLESAN, as the first class expert with its manufactured products for the energy systems worldwide, is ready to find the optimum solutions for its prospective customers and to serve with agility and integrity.

Compliance With Standards:

IEC-60146-1-1, IEC-61000-6-2, IEC-61000-6-4, IEC-61243-5, IEC-60068-2-11, IEC-60255-27, IEC-62262:2002, IEC-60068-2-78



ASC 24XX / ASC 48XX / ASC 110XX SERIES

Hardware	SCR Based, Wide Graphical LCD
Input Voltage	176 - 264 Vac
Output Voltage	24Vdc / 48Vdc / 110Vdc
Output Current	2A - 100A (Specify with Order)
Battery Capacity	7Ah - 200Ah (Specify with Order)
Ripple	W/Battery <%1,0 / W/O Battery<%5,0
Power Factor	0,7
Voltage Regulation	<%2
Efficiency	>%80
Operating Temperature	-20°C / +55°C
Noise Level	<45db
Protection Class	IP 21 - IP 54

**48XX
110XX**

- Manufactured According to International Standards
- DC Low - High, AC Low - High, Earth (+) (-) Leakage, Battery Alarm, Temperature and Fan Alarm, Short Circuit Alarm, AC On Alarm Signals
- Low Ripple Voltage
- SCADA Compatible (Optional MODBUS)
- Automatic Battery Maintenance - Best Battery Life
- Stable Output Voltage - Discharge Curves
- 0 - 10V / 4-20mA Communication Module - Optional
- Digital Fan Control Module - Optional
- Deep Discharge Protection Module - Optional
- Surge Protection Module - Optional
- Modbus Communication Module - Optional
- Battery Capacity Selection Module - Optional

**ASC 19" RACK****Monophase DC Supply Systems****24XX**
**48XX
110XX**

- Manufactured According to International Standards
- DC Low - High, AC Low - High, Earth (+) (-) Leakage, Battery Alarm, Temperature and Fan Alarm, Short Circuit Alarm, AC On Alarm Signals
- Low Ripple Voltage
- SCADA Compatible (Optional MODBUS)
- Automatic Battery Maintenance - Best Battery Life
- Stable Output Voltage
- 0 - 10V / 4-20mA Communication Module - Optional
- Digital Fan Control Module - Optional
- Deep Discharge Protection Module - Optional
- Surge Protection Module - Optional
- Modbus Communication Module - Optional
- Battery Capacity Selection Module - Optional

19" RACK Monophase DC Supply Systems

Charger Section	Total 10U, All in one usage in same Cabinet Scada / Protection / Spare Chargers
Battery Section	Total 11 Batteries For Scada and Protection in same Cabinet
Hardware	SCR Based, Wide Graphical LCD
Input Voltage	176-264 Vac
Output Voltage	24Vdc / 48Vdc / 110Vdc
Output Current	5A - 40A (Specify with Order)
Battery Capacity	7Ah - 200Ah (Specify with Order)
Ripple	W/Battery <%1,0 / W/O Battery<%5,0
Power Factor	0,7
Voltage Regulation	<%2
Efficiency	>%80
Operating Temperature	-20°C / +55°C
Noise Level	<45db
Protection Class	IP 21 – IP 54

ASC 3000XX SERIES

Hardware	SCR Based, Wide Graphical LCD
Input Voltage	176 - 264 Vac
Output Voltage	24Vdc / 48Vdc / 110Vdc
Output Current	10A - 250A (Specify with Order)
Battery Capacity	7Ah - 200Ah (Specify with Order)
Ripple	W/Battery <%1,0 / W/O Battery<%5,0
Power Factor	0,7
Voltage Regulation	<%2
Efficiency	>%80
Operating Temperature	-20°C / +55°C
Noise Level	<45db
Protection Class	IP 21 - IP 54



TriPhase DC Supply Systems

- Manufactured According to International Standards
- DC Low - High, AC Low - High, Earth (+) (-) Leakage, Battery Alarm, Temperature and Fan Alarm, Short Circuit Alarm, AC On Alarm Signals
- Low Ripple Voltage
- SCADA Compatible (Optional MODBUS)
- Automatic Battery Maintenance - Best Battery Life
- Stable Output Voltage - Discharge Curves



**ASC
3000XX**

DC Supply Systems with Auto Changeover Unit

- Manufactured According to International Standards
- DC Low - High, AC Low - High, Earth (+) (-) Leakage, Battery Alarm, Temperature and Fan Alarm, Short Circuit Alarm, AC On Alarm Signals
- Low Ripple Voltage
- SCADA Compatible (Optional MODBUS)
- Automatic Battery Maintenance - Best Battery Life
- Stable Output Voltage - Discharge Curves
- 0 - 10V / 4-20mA Communication Module - Optional
- Digital Fan Control Module - Optional
- Deep Discharge Protection Module - Optional
- Surge Protection Module - Optional
- Modbus Communication Module - Optional
- Battery Capacity Selection Module - Optional



ASC ATU



ATU RACK SERIES

Charger Section	Total 10U, All in one usage in same Cabinet Protection / Spare / Changeover
Hardware	SCR Based, Wide Graphical LCD
Input Voltage	176 - 264 Vac
Output Voltage	24Vdc / 48Vdc / 110Vdc
Output Current	5A - 40A (Specify with Order)
Battery Capacity	7Ah - 200Ah (Specify with Order)
Ripple	W/Battery <%1,0 / W/O Battery<%5,0
Power Factor	0,7
Voltage Regulation	<%2
Efficiency	>%80
Operating Temperature	-20°C / +55°C
Noise Level	<45db
Protection Class	IP 21 – IP 54

Designed for supplying continuous DC with having auto changeover unit for Airports, Factories, Distribution Centers, Wind, HydroElectric, Solar Plants where DC is the critical issue and must always be in operation.

Announciators**RIK 68****RIK 83****RIK 68 / RIK 62 / RIK 62AK / RIK90 / RIK83 / RIK162**

Auxiliary Supply	24Vdc / 48Vdc / 110Vdc (Specify with Order) RIK 162 / RIK 83 / RIK 90 Universal
Scada Output	RIK 68 - 5A Contact Capacity 6 Output (6 pieces of Normally Open)
Horn Output	5A Contact Capacity
Trip Output	5A Contact Capacity
Hardware	Microprocessor Controlled
Signal Processing Speed	<5ms
Signal Transmitting Speed	<30ms
Indication	100.000 hours Life Time LEDs
Assembly	Front
Dimensions	96 x 96 x 75
Operating Temperature	-20°C / +55°C
Weight	0,2kg

DCC 01

Auxiliary Supply	24 / 48 / 110 / 220Vdc (Specify with Order)
Input Voltage Value (Measurement)	Up to 250VAC Depending on the Requirement
Low Voltage Setting	Un x 0,8
Time Setting	0,5 - 10sec 0,1sec Interval
Contact Capacity	5A @ 230Vac
Weight	<0,4kg

- Manufactured According to International Standards
- 24Vdc / 48Vdc / 110Vdc / 230Vdc (Specify with Order)
- SCADA Compatible

DC Leakage Relay**DCC 01**

- Microprocessor Controlled
- Simultaneous Measurement Reading and Indication
- 3 Signal Outputs

AC Low Voltage Relay**ACC 01**

- Manufactured According to International Standards
- 230Vac Auxiliary Supply
- SCADA Compatible

ACC 01

Auxiliary Supply	230 Vac
Input Voltage Value (Measurement)	Upto 250VAC Depending on the Requirement
Low Voltage Setting	Un x 0,8
Time Setting	0,5 - 10sec 0,1sec Interval
Contact Capacity	5A @ 230Vac
Weight	<0,4kg

- Microprocessor Controlled
- Simultaneous Measurement Reading and Indication
- 2 Signal Outputs

OKR-01

Auto Recloser Relays for Switchgears

OKR-01, designed for safe trip - reclose to avoid any damage to network equipments and according to OHS regulations in case of any failure in transmission and distribution lines.

Auxiliary Supply	24 / 48 / 110Vdc (Specify with Order)
Outputs	1 For CB Closing 1 For CB Tripping
Inputs	Low Voltage General Trip CB Status Manual Trip and Close
Contact Capacity	5A
Hardware	Microprocessor Controlled
Signal Processing Speed	<5ms
Signal Transmitting Speed	<30ms
Indication	100.000 Horus Life Time LEDs
Assembly	Front / Din Rail
Dimensions	96 x 96 x 75
Operating Temperature	-20°C / +55°C
Weight	0,2kg


OKR 01

- 5 Inputs / 2 Outputs
- 24 / 48 / 110Vdc (Specify with Order)
- 100.000 Hours Life Time LEDs
- CB Status Information
- Cancel Function
- Manual Trip Function
- Time Delayed Manual Close Function
- Front or Din Rail Assembly

Circuit Breaker and Load Breaker Control Relay


YKR 02B

YKR 02

Auxiliary Supply	24 / 48 / 110Vdc (Specify with Order)
Horn Output	5A Contact Capacity
Trip Output	5A Contact Capacity
Hardware	Microprocessor Controlled
Power Consumption	<5 Watt
Indication	100.000 Hours Life Time LEDs
Assembly	Front
Dimensions	96 x 96 x 75
Storage Temperature	-20°C / +70°C
Operating Temperature	-15°C / +55°C
Weight	0,2kg

YKR 02B / YKR 02

- 2 Digital Outputs for Circuit Breaker Status Information
- 2 Relay Outputs for Trip and Close Operations
- Status and Power LEDs
- YKR 02 - Internal Lightning Function
- YKR 02B - Cancel Function
- Power Consumption <5W
- 5 years Guarantee
- Safe Trip and Close Operations - Time Delayed

Analogue Over Current Protection Relays - Dip Switch

AAR 201 / AAR 301**AAR 301**

- AAR 201 - 2 Phase / 1 Ground
- AAR 301 - 3 Phase / 1 Ground
- 8 Different Curve Settings - Dip Switch
- Microprocessor Controlled
- X/1 - X/5
- 7 LEDs
- Test and Reset Buttons
- EN 60255-6 Compatible
- 10A Contact Capacity
- Operating Temperature -5°C / +40°C

Nominal Current	5A Phase 1A Ground
Over Load Current	2In Continous / 100 In 1sec
Dynamic Current	250 In
Power Consumption	0,1VA (I=In)
Trip Current Setting (Phase)	0,2A - 16,75A - 0,25A Interval
Trip Current Setting (Ground)	0,2A - 3,35A - 0,05A Interval
Setting Accuracy - Stability	%5
Reverse Ration	%1
Instantaneous Trip	%98
Current Setting	2 - 20 x Is
Instantaneous Trip Setting	40ms (1,2 x set value)
Integration Value	1,0 x Is - Definite Time 1,25 x Is - Inverse Time
Time Delay Setting	0,05 - 1,0 - 0,05A Interval
Auxiliary Supply	24Vdc / 48Vdc / 110Vdc / 220Vdc
Error Class	%5
Trip Power	L/R Ms Inductive Load 35W - 110Vdc 100W - 24Vdc
Contacts	Normally Open (3 Pieces)

RAT SERIES (TOROIDAL)**MV Current Transformers**

Maximum Operating Voltage	0,72k
Nominal Isolation Test V (1min.)	3kV
Nominal Frequency	40 - 60 Hz
Primary Nominal Current	50 - 2000A
Secondary Nominal Current	1A, 5A
Measurement Class	1 - 3
Protection Class	5P - 10P - 20P
Short Term Nominal Thermal A (1 sec.)	Ith Min. 100 x In
Isolation Class	E
Weight	0,2kg

**RAT**

Nominal Output V	100A/22,5mV
Nominal Primary A	100A
Short Circuit A	16kA
Protection Class	IP55
Nominal Frequency	45 - 55 Hz
Weight	0,2kg

- Compact and Light Weight Design
- Wide Range including 25/5 Toroidal Type
- Isolated @ 0,72kV
- 10.000 Gauss Magnetic Core
- For Measurement and Protection
- Modular Design - Multiple Usage
- Easy Assembly

- Compact and Light Weight Design
- Almost "0" Phase Difference
- 10.000 Gauss Magnetic Core
- No interference between Phases
- Stable Operation in all Environments
- Up to 1600A
- Easy Assembly - RJ45 Socketed Type

LPCT

ARG 03H RTC
EFI with Communication

Auxiliary Supply	24Vdc - 48Vdc - 110Vdc Universal
Operating Voltage	6 - 72kV
Application	Phase - Phase / Phase - Ground
Phase - Ground Fault Current Values	50 - 500A / 50A Interval
Phase - Ground Fault Detection Time	50ms - 500ms
Phase - Phase Fault Current Values	100 - 1000A / 100A Interval
Phase - Phase Fault Detection Time	50ms - 500ms
Reset Time Setting	1 - 6 Hours
Contact Capacity	2 NO - NC Dry Contact - 5A
Front Port	RJ 45
Communication Protocol	RS 232 - RS 485 Modbus


ARG 03H RTC

- Manufactured According to International Standards
- 24 - 48 - 110Vdc Universal Auxiliary Supply
- Integrated Real Time Clock (RTC)
- ROLESAN Software
- Offline Mode
- Last 10 Events - Fault Records and Displayed in LCD Screen
- Manual - Auto and Time Delayed Reset
- 100.000 hours Life Time LEDs with Unbreakable Indicator
- Simultaneous Measurement Reading and Monitoring
- Easy Assembly with Open Core RJ 45 Socketed Sensors
- Wall Mounting Accessory - Optional

EFI without Communication
ARG 03S

ARG 03S

Auxiliary Supply	24Vdc-250Vac
Operating Voltage	6 - 72kV
Application	Phase - Phase / Phase - Ground
Phase - Ground Fault Current Values	5 - 160A / 5A Interval
Phase - Ground Fault Detection Time	50, 100, 200, 300ms
Phase - Phase Fault Current Values	225, 450, 575, 700A
Phase - Phase Fault Detection Time	50, 100, 200, 300ms
Auto Reset	When Voltage or Current Turns Back
Manual Reset	With Button on Front Panel
Reset Time Setting	2- 4 Hours two steps selectable
Contact Capacity	1 Normally Open Dry Contact - 5A

- Manufactured According to International Standards
- 24Vdc-250Vac
- 10 Years Life Time Battery in addition to Auxiliary Supply

- Manual - Auto and Time Delayed Reset
- 100.000 hours Life Time LEDs with Unbreakable Indicator
- Easy Assembly with Open Core RJ 45 Socketed Sensors

LRM Capacitive Voltage Indicator**KGS 03 LRM**

KGS 03 – 03K LRM measures Phase - Phase and Phase - Earth Voltages from the terminals on the front panel and allows tracking of each phase via high efficiency LEDs. In case of any over voltage occurs in the network, KGS 03 - 03K LRM protect themselves with integrated surge arresters.

Designed according to IEC 61243-5 KGS 03 - 03K, Tracks bus bar voltage continuously and activates LEDs when $U > \%10$ U_n and deactivates LEDs when $U < \%10$ U_n .

Auxiliary Supply	None
Operating Voltage Level	2kV – 72kV
Indication	100.000 hours Life Time LEDs
Measurement Point	3 Phase + Earth
Capacitive Voltage Divider	20-15-10 pf(12-24-36 kV)
Protection	Surge Arrester
Assembly	Front
Cable Cross Section	2,5mm
Dimensions	96 x 48 x 50
Protection Class	IP 20
Operating Temperature	-30°C / +85°C
Weight	0,1kg

**KGS 03**

- Manufactured According to IEC 61243-5
- 2kV – 72kV Wide Operating Range
- Maintenance Free
- Easy to use with Socketed Rear Terminals
- Allows Measurement from Front Panel
- Protection Against Over Voltage
- No need Auxiliary Power
- Special Design for Any Requirement

KGS 03K LRM**LRM Capacitive Voltage Indicator With Contacts**

Auxiliary Supply	24 – 48 - 110 VDC $\pm \%20$
Frequency	50 – 60 Hz
Operating Voltage Level	2kV – 72kV
Indication	100.000 hours Life Time LEDs
Measurement Point	3 Phase + Earth
Capacitive Voltage Divider	20-15-10 pf(12-24-36 kV)
Protection	Surge Protector
Relay Contact Capacity	5A
Assembly	Front Panel
Cable Cross Section	2,5mm
Dimensions	96 x 48 x 50
Protection Class	IP 20
Operating Temperature	-30°C / +55°C
Weight	0,1kg

**KGS 03K**

- Scada Compatible
- Normally Open and Normally Close Relay Outputs
- IEC 61243-5
- Maintenance Free
- 2kV – 72kV Wide Operating Range
- Easy to use with Socketed Rear Terminals
- Allows Measurement from Front Panel
- Protection Against Over Voltage
- Special Design for Any Requirement

SOBRAN IS A BRAND OF ROLESAN

Hardware	SCR Based, Wide Graphical LCD
Supply Voltage	16-32Vdc
Measurement Voltage	50VAC-350VAC
Measurement Frequency	40Hz-60Hz
Output Relay	2 pcs. 5A 230Vac
Communication	Modbus RTU(RS485)
Event Record	18
Number Of Input	4
ASCII Protection Code	27,52,59,74,81R,81U/O
Operating Temperature	-20°C / +55°C
Dimensions	96x96x75

LOSS OF MAIN RELAY



SOBRANO LINE 24

Input Voltage	184- 276 Vac
Output Voltage	24Vdc
Output Current	5A - 25A (Specify with Order)
Battery Capacity	7Ah - 200Ah (Specify with Order)
Ripple	W/Battery <%1,0 / W/O Battery<%5,0
Power Factor	0,8
Voltage Regulation	<%2
Efficiency	>%75
Operating Temperature	-20°C / +55°C
Noise Level	<45db
Protection Class	IP 22

- Manufactured According to International Standards
- DC Low - High, AC Low - High,
Earth (+) (-) Leakage, Battery Alarm, Temperature and
Fan Alarm, Short Circuit Alarm, AC On Alarm Signals
- Low Ripple Voltage
- SCADA Compatible (Optional MODBUS)
- Automatic Battery Maintenance - Best Battery Life
- Stable Output Voltage
- 0 - 10V / 4-20mA Communication Module - Optional
- Digital Fan Control Module - Optional
- Deep Discharge Protection Module - Optional
- Surge Protection Module - Optional
- Modbus Communication Module - Optional
- Battery Capacity Selection Module - Optional
- Battery reverse connection protection

NEW DESIGN BATTERY CHARGER



RÖLESAN

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