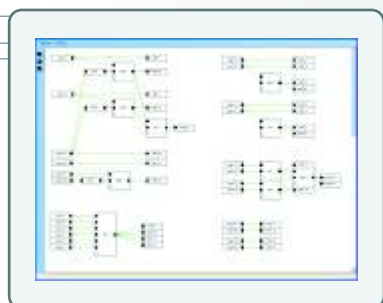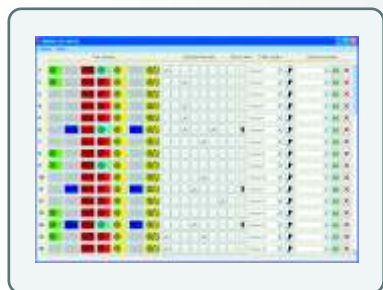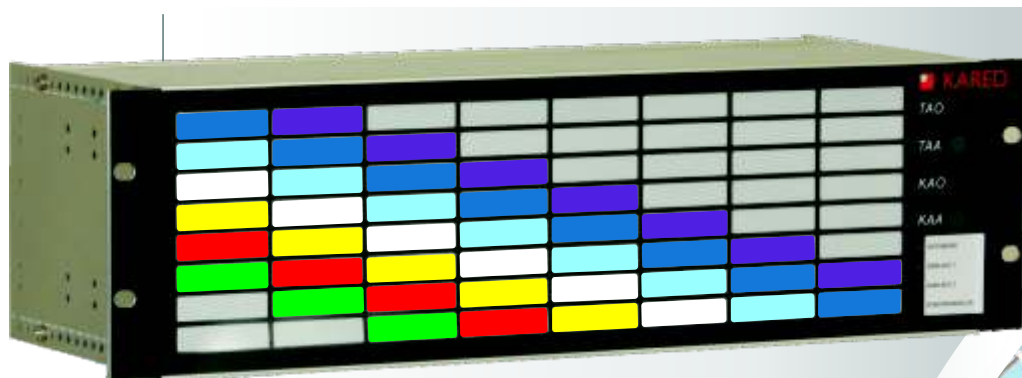# KARED

SIGNALLING MODULE **KSR-64**
AND RESERVE EMERGENCY SIGNALLING (RSA) SYSTEMS

Signalling module **KSR-64** and Reserve Emergency Signalling (RSA) systems

The KSR-64 signalling module is designed to provide the functionality of visual and sound control and recording of events, i.e. 64 limit states in a supervised facility, and to develop reserve emergency signalling (RSA) systems that can comprise even very large numbers of alarm inputs.

The manner each module input reacts to activation with a specific alarm state is defined by the user. It is possible to ascribe device inputs to alarm fields at will and to join inputs and alarm fields into groups. The user may also define simple logical relationships (AND/OR) between particular inputs. The module is fitted with (a) module(s) of relay outputs to allow it to interact with external devices. The mode of relay output operation is also defined by the user at will.

The device is fitted with an RS485 connector that, apart from the function of communication with a master system, may be used to connect modules into groups of modules and to develop a signalling column (a reserve emergency signalling system), where the number of signals is a multiple of 64. It is an advantage of such connection that the entire signalling column (the reserve emergency signalling system) is visible as a single device in a master system.

The device can communicate with a master system over RS485 and RJ45 ports, as well as over optic-fibre connections. The device is configured over a servicing USB port. Available protocols: IEC 60870-5-103, IEC 61850 and manufacturer's protocol. By means of these protocols, the user can read the current status of alarm inputs, the signalling status and download the log of events recorded in device memory. In the mode of digital logging of input status, the device allows the state of light fields to be changed with commands sent from a master system. Built-in or external push-buttons allow the operator to accept or delete alarm signalling and to test, whether light diode fields and sound alarms function correctly.

The device is powered with 220 V DC over two power packs in a redundant configuration. Communication ports, input terminals, relay outputs are galvanically isolated. The device has a modular construction and it can be configured at will on demand. A CPU module and one power-pack module constitute the basic and indispensable outfit. The remaining modules can be added at will, while a single module and the entire system are configured to meet the requirements.

DESCRIPTION OF DEVICE OPERATION

The signalling module realizes the following functions:
Periodic reading of input states,
– Filtering of input signals at the user-defined temporal constant,
– Delaying of reaction to activation by a pre-determined time,
– Extension of the duration of activation.
– Logging of events: appearance of an alarm state, its disappearance and alarm acknowledgement by the operator, all with timestamps.

The reaction to an alarm state is defined at will by the user for each channel. The alarm signalling cycle consists of 5 or 7 phases, depending on the ascription (or its lack) of a given channel to a group of alarms, for which the alarm that was first to occur is signalled in a special manner. The user is in charge of defining the following phases, depending on the operation mode:

1. The first alarm not distinguished:
– Normal operation,
– Triggering of an alarm,- Acknowledgement of the alarm,
– Alarm disappearance before acknowledgement,
– Alarm disappearance after acknowledgement.

2. The first alarm is distinguished:
– Normal operation,
– Triggering of the first alarm,
– Triggering of successive alarms,
– Acknowledgement of the alarm,
– Disappearance of the first alarm before acknowledgement,
– Disappearance of the remaining alarms before acknowledgement,
– Alarm disappearance after acknowledgement.

For each of the phases, the user should define:

1. The lighting mode:
– Diode field off,
– Diode field lit continuously,
– Diode field blinks slowly (1 Hz),
– Diode field blinks quickly (2Hz).

2. Light colour:
– Green,
– Red,
– Blue,
– Yellow,
– White.

3. Additional reactions:
– Relay(s) switching.

4. Alarm triggering method:
– With the leading edge,
– With the trailing edge.