PKUS EO1 AND PKUS EO2 INTERFACE CONVERTERS

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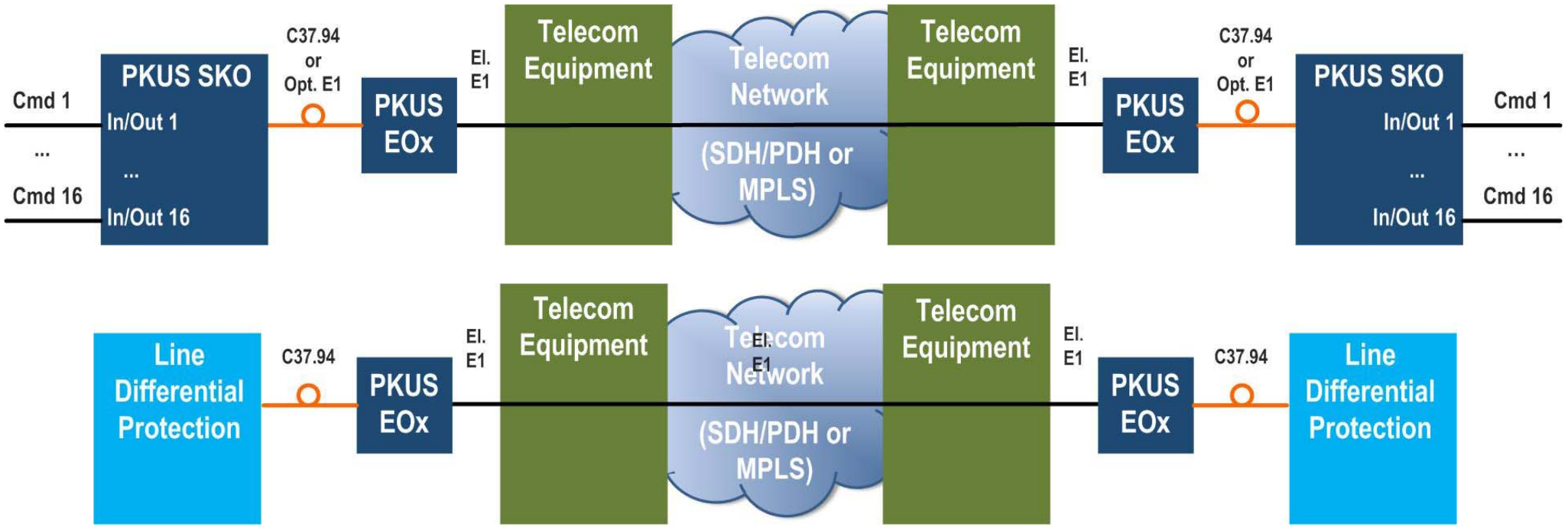
- Interface converters to connect relay protection equipment including Line Differential Protection Relays and Teleprotection Units with C37.94 or optical E1 (CMI, G.704) ports to telecom networks via electrical E1 (HDB3, G.704)
  - PKUS EO1 – single C37.94 or optical E1 to electrical E1 interface converter
  - PKUS EO2 – dual/quad C37.94 or optical E1 to dual/quad electrical E1 interface converter with cross connection functionality



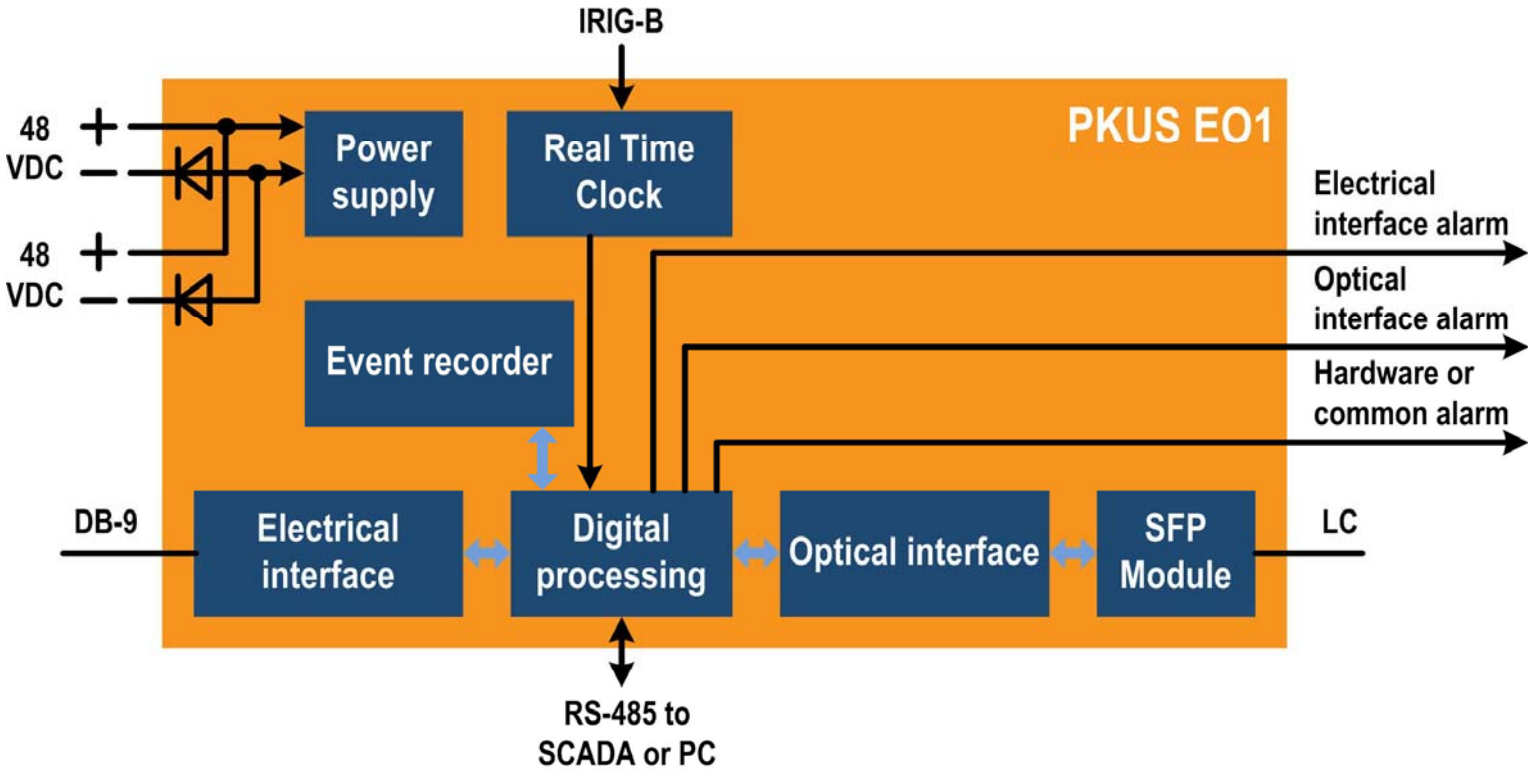
- In-operation testing
- Optical ports with SFP transceivers (MM or SM; 850 nm, 1310 nm, 1550 nm, CWDM/DWDM);
- Integrated non-volatile and not editable event recorder for alarm and manipulation with 1 ms time stamps, COMTRADE file format support
- Real Time Clock with optional IRIG-B synchronization
- Diagnostic LEDs for Status and Alarms indication, Link and Hardware Alarm contacts
- Two-wire RS-485/IEC 60870-5-101 for SCADA
- MTBF – 125000 hours at 40^0C (according to MIL-HDBK-217F)
- Complies with or exceeds the requirements of EMC Directive 2004/108/EC and Low-Voltage Directive 2006/95/EC
- Windows® compatible PKUSConverter software for whole PKUS® Family
  - Configuration (on-line and off-line modes)
  - Changing the configuration is password protected
  - Testing and Commissioning

KEY FEATURES OF PKUS EO1

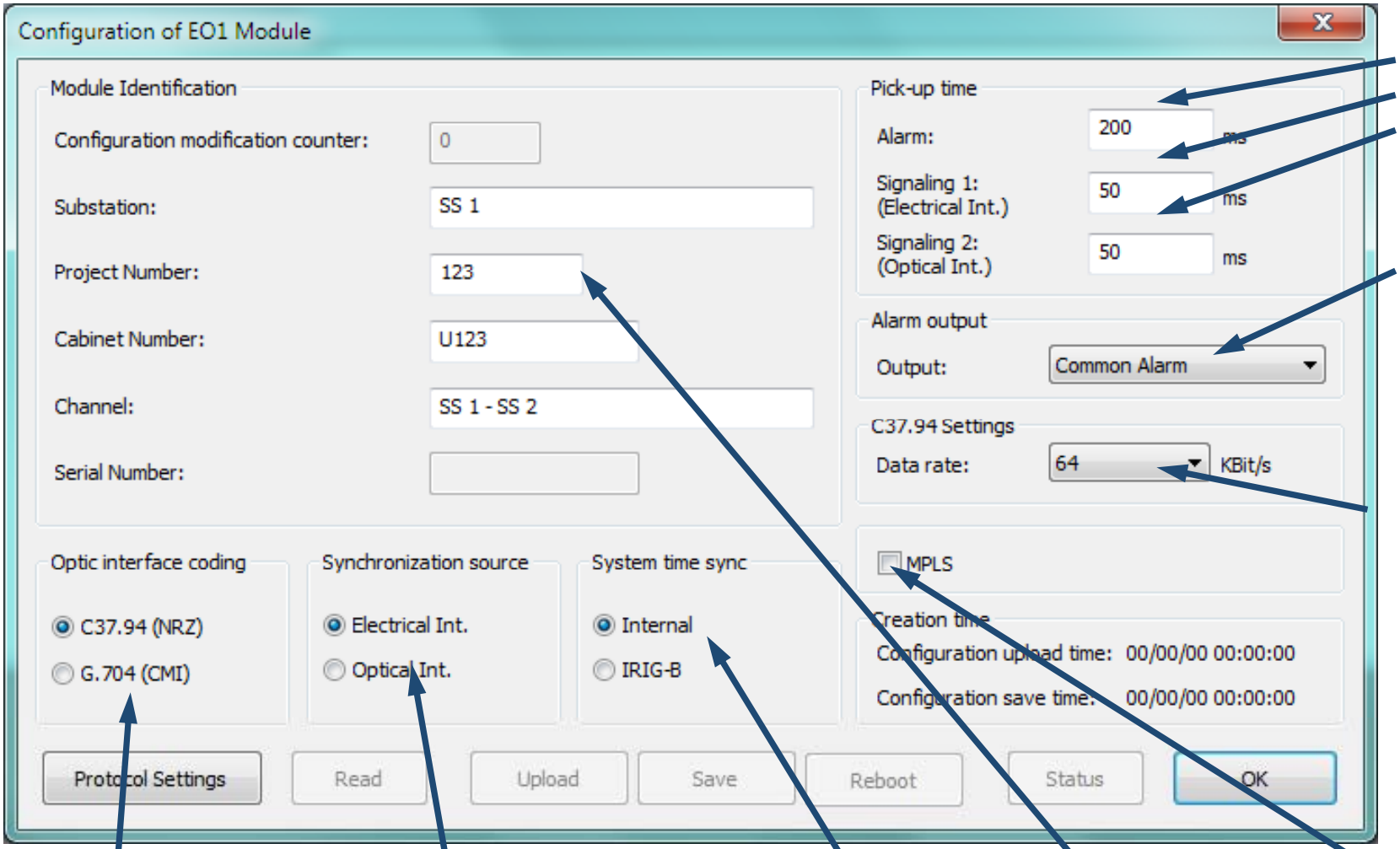
PKUS EO1 is compatible with any relay protection equipment with C37.94 port

- Operating mode — C37.94 / Electrical E1 or Optical E1 / Electrical E1 (programmable via PKUSConverter software)
- C37.94 port data rate — Nx64 kbps, N=1…12 (programmable via PKUSConverter software)
- Event recorder — non-volatile, not editable by user
- Size — 198x115x50 mm
- Mounting — DIN-rail
- Power supply — single 48 VDC module with two decoupled diode inputs
- Immunity against power interruptions — 500 ms

PKUS EO1 FUNCTIONAL DIAGRAM



PKUS EO1 CONFIGURATION



Set pick-up time for each alarm

Select hardware or common alarm

Set C37.94, data rate

Select C37.94 or Optical E1

Select Electrical or Optical interface for sync

Select Real Time Clock sync source

Information about PKUS EO1

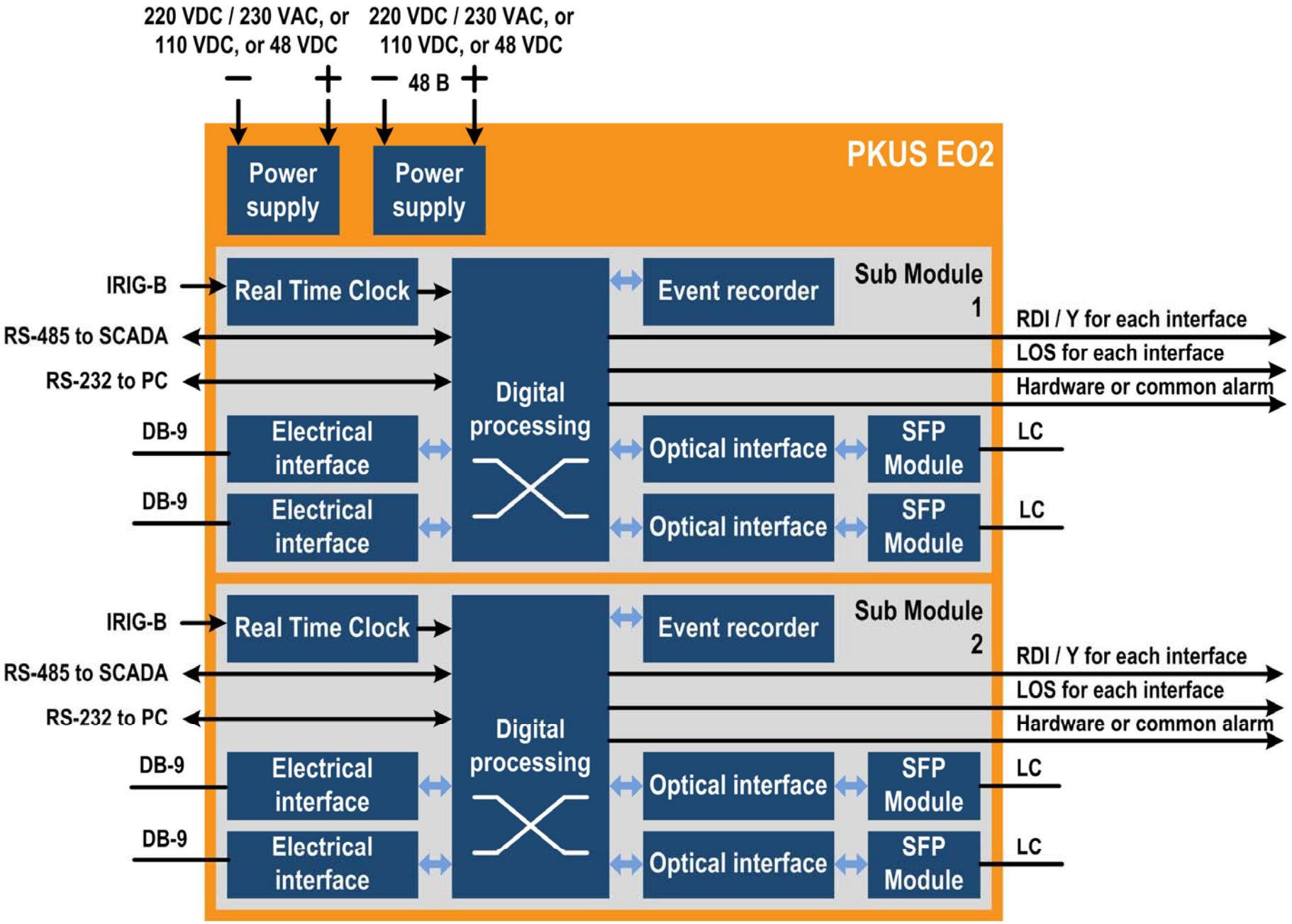
Operational with IP/MPLS router or MPLS-TP switch

KEY FEATURES OF PKUS EO2

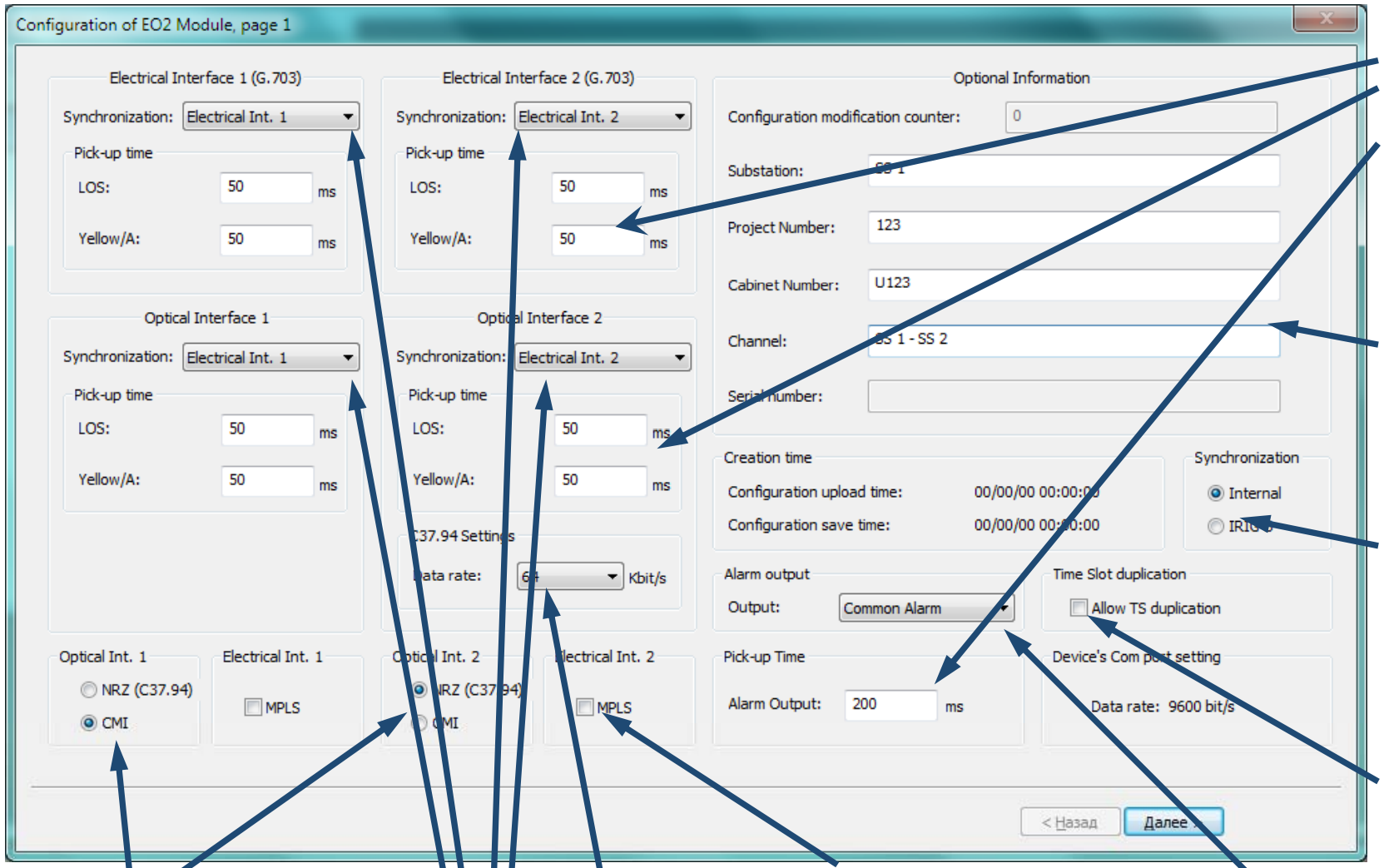
PKUS EO2 is compatible with any relay protection equipment with C37.94 port

- **Number of converters** two independent 2-channel sub modules
- **Operating mode** C37.94 / Electrical E1 or Optical E1 / Electrical E1 (programmable via PKUSConverter software)
- **C37.94 port data rate** Nx64 kbps, N=1…12 (programmable via PKUSConverter software)
- **Event recorder** non-volatile, not editable by user
- **Cross connection functionality** 64 kbps (time slot level) within 2-channel sub module
- **Size** 19-inch rack, 1 height unit (1U)
- **Power supply** Dual (redundant) 48 VDC, 110 VDC or 220 VAC/VDC (on request) power supply with passive load sharing
- **Immunity against power interruptions** 500 ms

PKUS EO2 FUNCTIONAL DIAGRAM



PKUS EO2 CONFIGURATION



Set pick-up time for each alarm

Information about PKUS EO2

Select Real Time Clock sync source

Widespread command transmission (for PKUS SKO only)

Select C37.94 or Optical E1

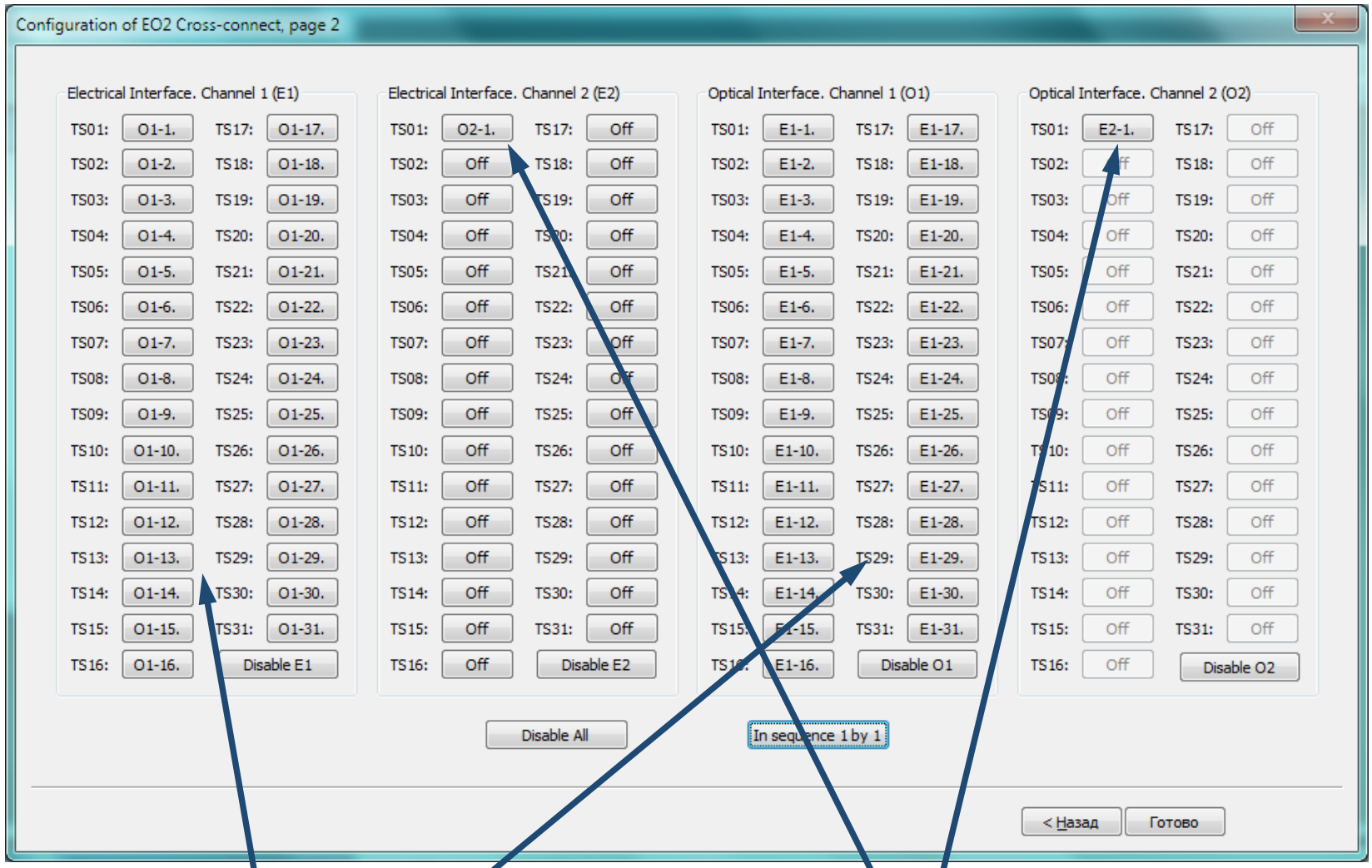
Select sync source

Set C37.94, data rate

Operational with IP/MPLS router or MPLS-TP switch

Select hardware or common alarm

EXAMPLE OF TIME SLOT CROSS CONNECTION IN PKUS EO2



All time slots are transmitted and received between electrical E1 interface 1 and optical interface 1

1st time slot is transmitted and received between electrical E1 interface 2 and optical interface 2

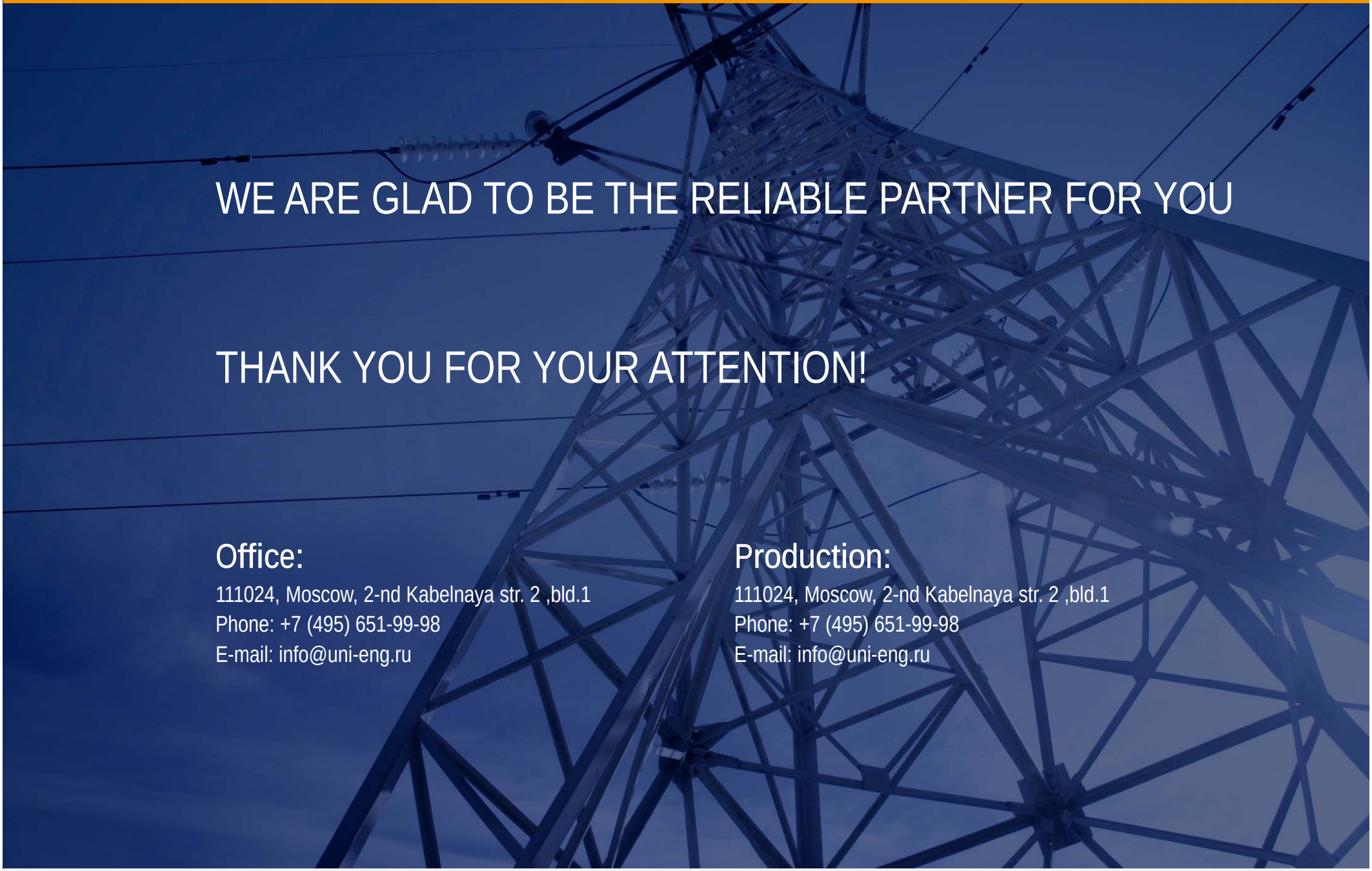
PKUS EO1 and PKUS EO2 non-volatile event recorder is not editable by user

- Start time and end time of — alarms
  manipulations (start up / power down / user-reset / configuration download / set of date and time)
- Operations — upload of all events recorded in the converter,
  text display recorded events,
  events can be saved to file

Number of recordable events before overwriting of the oldest event is more than 2800

- Time resolution — 1 ms

Real Time Clock operation in case of power supply failure is more than 24 hours (supercapacitor is used instead of a battery)



WE ARE GLAD TO BE THE RELIABLE PARTNER FOR YOU

THANK YOU FOR YOUR ATTENTION!

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