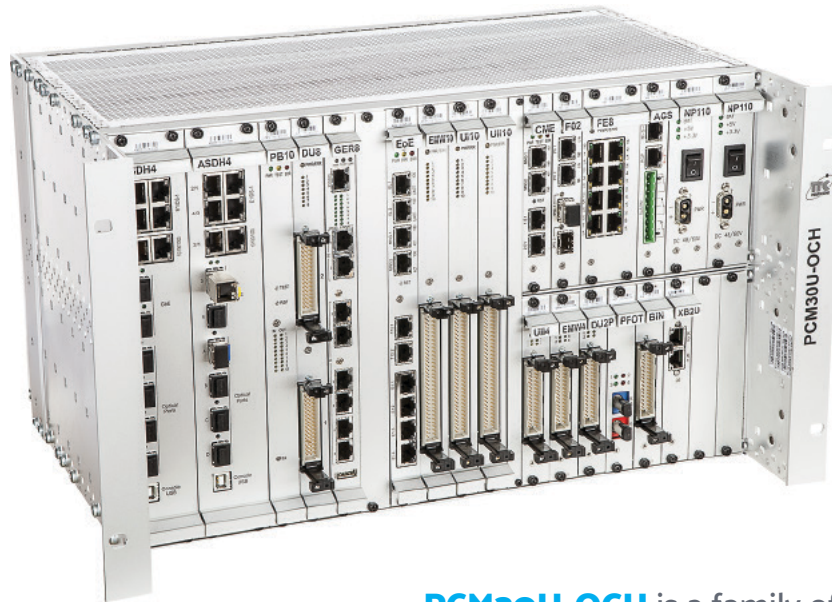


# PCM30U-OCH

## Teleprotection and communication system



### MAIN FEATURES

- MODULAR AND SCALABLE
- SDH, PDH, IP/ETHERNET, OPTICAL FIBER, DATA
- GUARANTEED DELAY NOT EXCEEDING 2ms
- TELEPROTECTION, VOICE AND DATA
- RELIABLE, BACKUP POSSIBILITIES

### SUITABLE FOR



TRANSMISSION AND DISTRIBUTION ELECTRIC ENERGY NETWORKS



ENERGY DISTRIBUTION NETWORKS FOR RAILWAYS



HEAVY INDUSTRY



TELECOM. SYSTEM FOR ACCESS NETWORKS

**PCM30U-OCH** is a family of transmission systems based on PDH and SDH multiplexers, transmitting standard telecommunication signals, such as voice, data and Ethernet (bridge) as well as protection relay commands, either in the form of analogue binary commands or in the digital form using various protocols (such as C37.94). In addition, the system provides transmission of 50 Hz frequency for specific solutions.

**PCM30U-OCH** is primarily used by power utilities as a teleprotection system providing reliable and fast connection between protection devices. It is able to guarantee the reaction time within milliseconds in order to minimize damage to power installations worth millions of dollars if a failure occurs.

## ADDITIONAL FEATURES

- TELEPROTECTION SERVICES**  
 DIFFERENTIAL (C37.94) AND DISTANCE (BINARY COMMANDS) PROTECTION
- OPEN MODULARITY**  
 PROTECTS FUTURE INVESTMENTS, WHILE THE TECHNOLOGY DEVELOPMENT AND THE NEED TO CONCENTRATE A WIDE RANGE OF SERVICES DO NOT LIMIT FURTHER DEVELOPMENT OF CUSTOMER'S NETWORK TO ONE SUPPLIER
- FAST BACK UP POSSIBILITY**  
 LINE SIGNAL PROTECTION (THE CHEAPEST SOLUTION, 50 ms SWITCHING TIME)  
 PATH SIGNAL PROTECTION (DUAL MUX IN ONE SUBRACK, 5 ms SWITCHING TIME)  
 DOUBLE SYSTEM PROTECTION (HIGH RELIABILITY, USED FOR CONNECTION POWER STATION - SUBSTATION)
- SUPPORT OF VARIOUS TOPOLOGICAL STRUCTURES**  
 MESH, RING, MIDSPAN, TERMINAL, T-LINE
- MANAGEMENT SYSTEM LOCAL AND CENTRAL**  
 SNMP BASED
- CROSS-CONNECT**  
 SDH LEVEL (VC12, VC3, VC4, CONCATENATED VCX)  
 PDH LEVEL (64KBIT/S GRANULARITY)

## SOLUTIONS FAMILY

(PCM30U-OCH)



## TECHNICAL SPECIFICATIONS

### LINE INTERFACES

#### SDH

**SFP:** STM-4/ STM-1  
**WAVELENGTH:** 820 /1310 /1550 nm  
 WDM 1310/1550 nm (1 fiber)  
**DISTANCE:** up to 180 km  
**SYNCHRONIZATION:** internal, STM, E1  
**PROTECTION:** SNCP, MSP, ring  
**TRIBUTARY INTERFACES E1:** N x 12 E1 (Nmax = 2x28)  
**TRIBUTARY INTERFACES Eth:** N x 10/100/1G (Nmax = 4)  
 N x 1G (SFP) (Nmax = 4)

#### ETHERNET

**E1 OVER IP**  
**ETH:** 10/100  
**SYNC:** internal, E1, T12  
**ENCAPSULATION:** AAL1, CESoPSN.  
**FRAMING:** unstruct, struct Nx64 / CAS

#### PDH

**E1 SIGNALIZATION:** CAS  
**FRAME COMPOSITION:** G.703, G704  
**PERFORMANCE MONITORING:** G.706 (CRC-4)  
**LINE CODE:** G.703, HDB3  
**IMPEDANCE:** 120Ω  
**SYNCHRONIZATION:** internal, E1, external, T12

#### OPTICAL

**OPTICAL INTERFACE:** SFP modules  
**WAVELENGTH:** 820 /1310 /1550 nm  
 WDM 1310/1550 nm (1 fiber)  
**DISTANCE:** up to 180 km

### TELEPROTECTION INTERFACES

#### COMMANDS

**NOMINAL VOLTAGE:** 220, 110 VDC  
**INPUT TRESHOLD:** 158-170 / 79-85 VDC  
**INPUT CURRENT:** 20 - 25 mA  
**OUTPUT SWITCH. CURRENT:** 2 (4) A DC  
**CHANNELS PER MODULE:** 10 / 4  
**TRANSMISSION TIME:** 1 - 9 ms

#### DIGITAL TELEPROTECTION

**GENERAL:** IEE C37.94  
**ABB:** REL551, RED670  
**SIEMENS:** 7SD5111, 7SD512  
 7SD523, 7SD61  
**SEL:** SEL311L  
**WAVELENGTH:** 820 nm / 1310 nm

**4w/4w 50/60 Hz**  
**INPUT VOLTAGE:** 57,7 / 100 V RMS  
**OUTPUT VOLTAGE (2kΩ load):** 27 - 50 / 54 - 100

### VOICE AND DATA INTERFACES

#### DATA

**DATA CHANNEL INTERFACES:** RS232/V.28, RS422/V.11, RS485-4w, RS485-2w, V.35, V.36, RS449, RS530, Optical 820 nm  
**TYPES AND BIT RATES:** Sync. or async. up to 64 kbps, Nx64 kbps, N = 2, 4, 8  
**ETHERNET L1:** N x 64 kbps, N = 1 to 30  
 N x VC12, Nx VC3  
**CODIRECTIONAL:** 64 kbps G.703

#### VOICE

**FXO, FXS (CB / LB)**  
**CODING:** G.711 / A law  
**MAX. LOOP IMPEDANCE:** 1400Ω  
**4W / 2W WITH E&M**  
**ISDN REMOTE So**  
**FXS, 4W WITH GALVANIC SEPARATION**

### MANAGEMENT, ETHERNET L2

#### MANAGEMENT

**LOCAL:** Windows oriented, IP access  
**NETWORK:** SNMP  
 IEC 60870-5-104  
**CENTRAL:** TopoNet (HP, LINUX oriented)  
 Server backup, NBI interface, workstations Windows, IP access

#### ETHERNET L2

**N X 64 KBPS, N = 1 TO 30**  
**10 / 100 / 1000, FE RJ45 OR GE SFP**  
**L2 SWITCH WITH VLAN SUPPORT, BRIDGE**

## APPLICATIONS

### MULTIPURPOSE SOLUTION

(FLEXIBLE SYSTEM SUPPORTING VARIOUS SERVICES AND TRANSPORT NETWORKS)

