

# PENET - SYSTEM OF REMOTE TRANSMISSION MODEMS

- Assigned for one or four channels of the RS485 industrial interface in the semi-duplex mode over metallic or fibre-optic remote cables
- Possibility to develop line networks with several nodes with distances up to 15 km or 40 km according to the modem type
- Two-way transmission of four binary signals for supervision of remote object
- Possibility of remote power supply of distant nodes
- Close architecture
- Modular system, variability according to the modem types and power supply units
- High reliability and availability, low maintenance costs
- Simple installation



## General Description

The remote transmission modem system PENET is a modular system for remote transmission of industrial signals with the RS485 interface in the semi-duplex mode. In individual route sections (outside the main channels) four binary signals for transmission of remote object supervision or for transmission of other states and commands are transmitted in both directions.

The remote nodes of transmission routes can be supplied by superimposed voltage to the cable pair (in the case of the route with metallic cables) or by a special parallel laid metallic cable (in the case of the fibre optic route).

Transmission routes with PENET modems are designed primarily for data communication between station interlocking systems and their decentralised object controllers, or for other

remote control communications and diagnostics.

## Basic Technical Description

System consists of five variants of 900 mm wide panels with sub-racks for which the plug-in units of modems and power supply units (according to configuration of one or two parallel transmission routes) are designed.

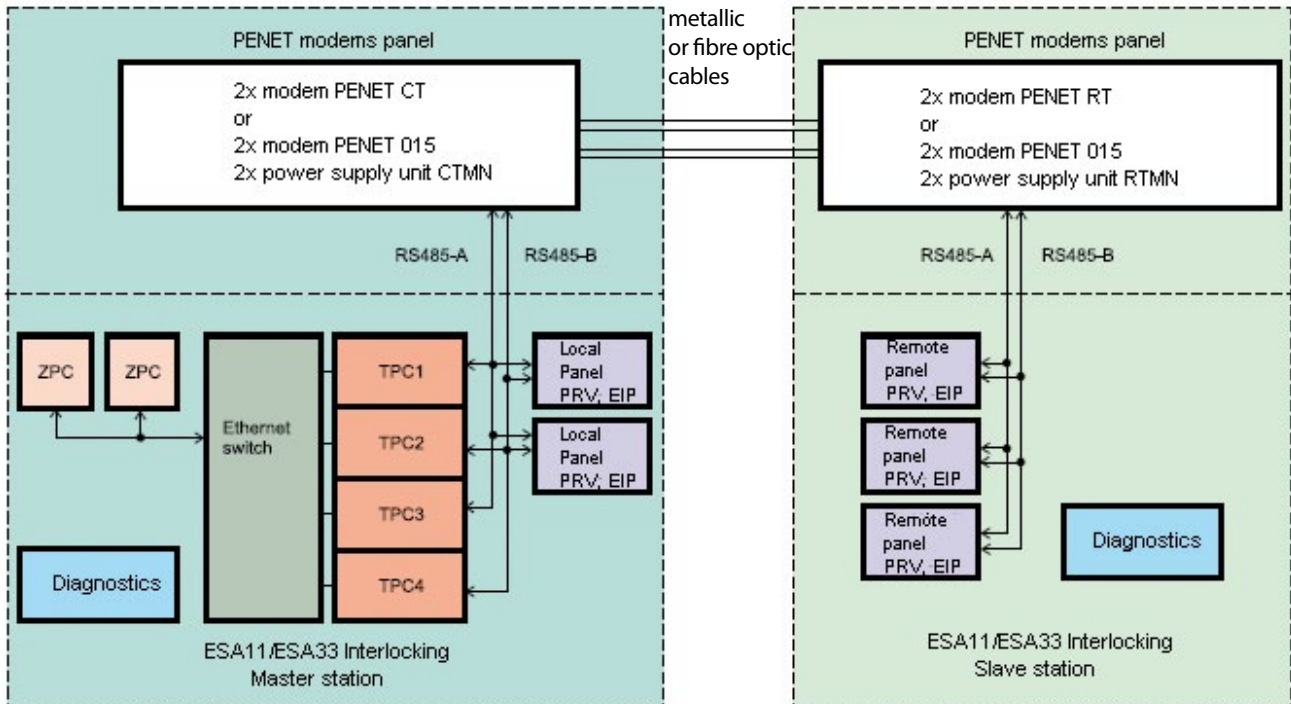
The transmission routes with metallic cables are fitted with central, end and intermediate modems (according to design) integrating the power supply sources, including voltage sources for power supply of the remote nodes.

The transmission speed of the user's channel RS485 is 62,5 kb/s (PENET).

Transmission routes with optical fibres are fitted with modems for routes up to 15 km or modems

with more powerful transmitters for 15 to 40 km routes. Optical modems are supplied by plug-in power supply units integrating the local feeder, source of the remote power supply or source using the remote power supply. The transmission speed of each of four channels is individually adjustable from 1,2 kb/s to 115,2 kb/s.

The basic characteristics of routes with metallic cables are a high resistance against transmission interference and modesty regarding cable quality. For routes with fibre optic cables it is very small signal delay in transmission routes, independence on user data protocols and resistance against overvoltage impacts.



### Basic Technical Parameters

Temperature range		-5 °C to +55 °C
Power supply	Nominal DC power supply voltage	24 V
	Range of power supply voltage	19,2 V to 34 V
Remote power supply	Nominal DC power supply voltage	96 V or $\pm 96 V \pm 3 \%$ (optical routes)
	Intake with power supply voltage 24 V	max. 80 W (according to the unit type)
	User's interface	RS485 according to TIA/EIA-485-A (CCITT V.11, X.27)
Interface of binary signals	4 parallel inputs	6 V to 24 V, 8 mA, $U_{max} = 34 V$
	4 parallel outputs	$I_{max} = 100 \text{ mA}$ , $U_{max} = 34 V$
Optical parameters	synchronous transmission	125 Mb/s, wavelength 1310 nm
	Fibre optic cables	SM 9/125 optic fibres, connector type SC
	attenuation	max. 16 / 23 dB (route max. 40 km)
Line parameters (metallic cable)	duplex transmission	144 kb/s, ISDN Uk0 with modulation 2B1Q (ITU-T G.961)
	loop resistance	max. 1 k $\Omega$
	line insertion attenuation	max. 37 to 50 dB with 80 kHz (route up to 15 km)
Insulation resistance	in the standard environment	min. 50 M $\Omega$
	after test in humid	min. 7 M $\Omega$
Electric strength		500 V