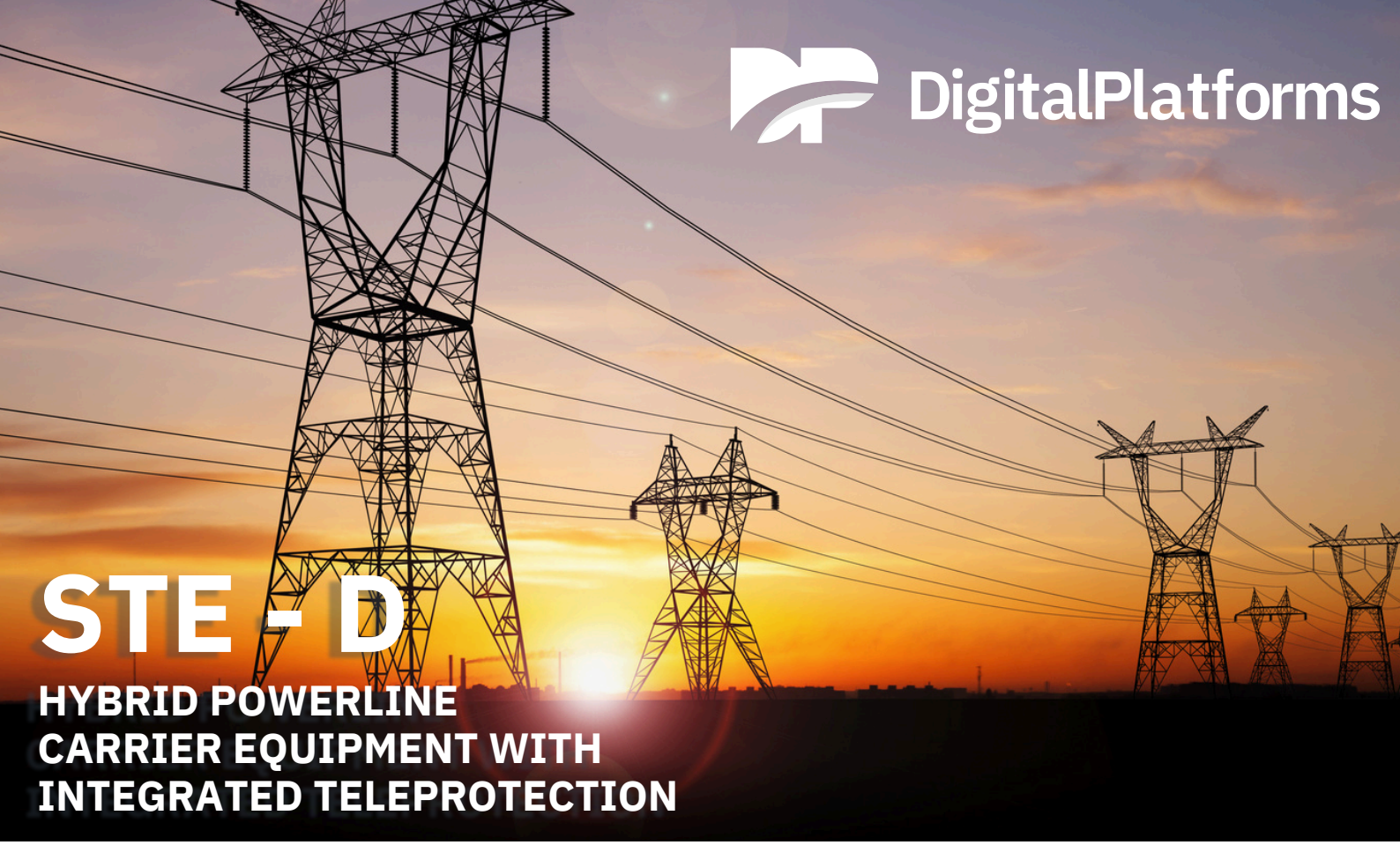


DigitalPlatforms

STE - D

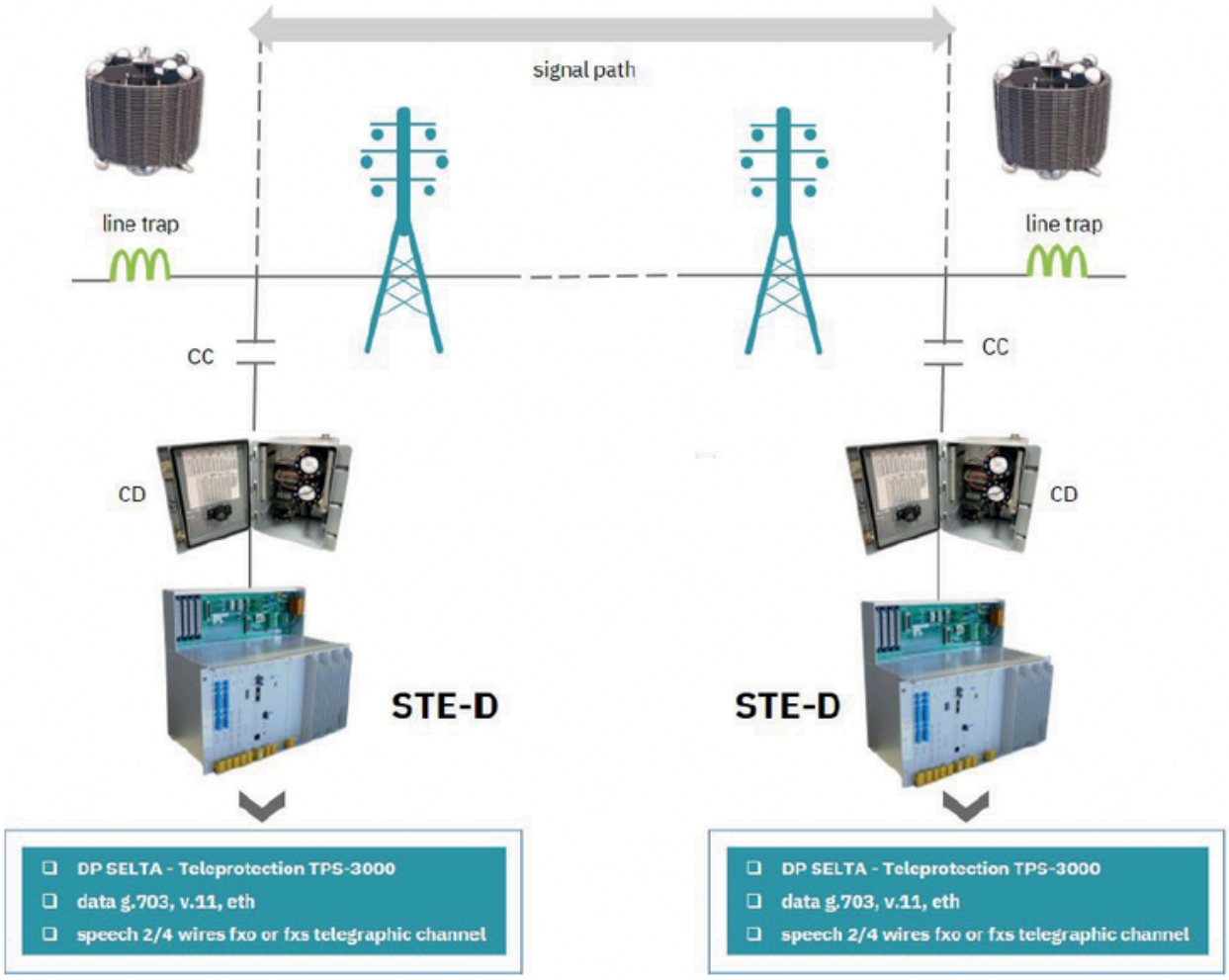
HYBRID POWERLINE CARRIER EQUIPMENT WITH INTEGRATED TELEPROTECTION

ADVANTAGES

- Cost attractiveness' in case of transmission of small to medium information flows over medium/long distances;
- high reliability for service operation communications (in particular voice, remote control and teleprotection) through the use of HV and HHV power lines;
- establishment of a network as back-up bearer to increase the availability of telecommunication service back-up application with high availability
- security of maintenance and configuration through Radius authentication and SSH support.

THE PRODUCT

STE-D, a universal power-line carrier (PLC) device with an integrated interface for teleprotection systems, represents the new generation of high-performance analog, digital, and hybrid analog-digital PLC solutions. Based on Digital Signal Processing (DSP) technology, it supports a full range of applications—from legacy analog systems to the most advanced digital solutions—with a long-term perspective.



PLC UNIVERSAL EQUIPMENT

STE-D can be configured through a dedicated tool depending on customer's need:

- it can be used as an access node in TDM networks through a multiplexer with drop/insert function;
- it can be employed in IP networks through an integrated router;
- it works as analogue or as hybrid analog/ digital PLC equipment with a dedicated BBPU (Base Band Processing Unit);
- an interface for teleprotection reduces costs and manages 1 to 8 commands.

STE-D integrates the key applications of energy utilities:
• transparent transmission of voice-frequency signals, such as band limited speech with superimposed remote operation;
• transmission of up to 4 voice channels not compressed;
• fully transparent transmission of asynchronous data up to 19200 bps with minimum delay in point-multipoint applications, typical of SCADA polling;
•synchronous data transmission from 1,2 kbps up to 92,8 kbps;
• ethernet/IP routing/bridging for LAN interconnections;
• easy connection of external switches, multiplexers and routers for network integration, service aggregation and traffic management via standard interfaces.

STE-D can transmit at different bit rates with error correction through the Trellis Code Modulation and the use of FEC (Forward Error Correction) technologies.

INTEGRATED REMOTE PROTECTION

The STE-D device integrates a remote protection unit capable of managing up to 8 commands, offering several advantages
• complete configurability of both use and command priority;
• independent and / or simultaneous management of commands;
• different configurable protection regimes, with reliability, safety and transmission times compliant with IEC 60834-1;
• extensive programming of command parameters;
•Set-reset command (continuous commands);
• configurability of alarms;
•recording of events in non-volatile memory (2048 events: commands and alarms, 1ms resolution);
• command analysis and statistics;;
• TAC test (Command Crossing Time);
• LAN interface for configuration and diagnostics;
• time synchronization via IRIG-B and NTP.

SCA COUPLING DEVICE

The SCA/SGA universal coupling device allows the connection between PLC equipment and the power line. It is one of the main equipment for the PLC systems, offering very important advantages:
• efficient carrier frequency signal transmission between the PLC equipment and the power line;
• highest protection of the low voltage equipment from the power frequency voltage and transient overvoltage;
• easy to program and to install;
• maximum operating safety;
•500 W PEP Power rating;
•IEC-481 compliant;
• long life for outdoor installation;
• phase-to-ground and phase-to-phase coupling.

LINE TRAP

PLC devices are part of a communication system and are aimed at providing voice and data transmission functions enabling, e.g.: remote control, teleprotection, telephony which are needed in utilities network infrastructures.
PLC Line Traps, like Selta-DP SBS-N, are used to limit the PLC signals transmission vs undesidered networks directions enabling reuse of power network frequency bands.

HIGH FREQUENCY SECTION (HF
HF bandwidth 40 ÷ 500 kHz, 500 ÷ 1000 kHz
Output power (P.E.P.) 2-80 W Line impedance (2 wired) 50, 75 Ω unbalanced and 124,150 Ω
balanced AGC available

DIGITAL APPLICATION
Modulation TCM-QAM
Interfaces V.11/X21 up to 92.8 kb/s, G.703 codirectional to 64 kb/s (plotted and unplotted), Ethernet 10/100 BaseT (Bridging IEEE 802.1d or Routing) up to 92.8 kb/s
Bandwidth 4-8-16 kHz
Transmission capacity up to 92,8 kb/s (also with overlapping bands)
FEC (Forward Error Connection) schedulable
Adaptive speed available
Channel equalization adaptive
Echo deleting adaptive

Integrated multiplexer performances
Data interfaces X.20bis/V.28 (synchronous) and X.21bis/V.28 (asynchronous) from 1.2 kb/s to 19.2 kb/s
Data channels up to 20
Connections Point-Point and Point-Multipoint
Voice interfaces E/M (2/4 wires), FXS, FXO
Voice channels up to 6
Voice compression ITU-T G.729A (8 kb/s) or G.726 ADPCM (16, 24, 32, 40 kb/s)
Echo canceller G.168

ANALOG APPLICATION
User Interfaces
Voice, telegraphic ch., low/high-speed data, teleprotection signalling
Channels number up to 4
Effective BF bandwidth 300 ÷ 3720 Hz
Transmission type SSB
Bandwidth 4 kHz
Canalization Tx/Rx on adjacent or on spaced bandwidths
Modulation type FSK, OOK
Transit functionality available
Equalisation automatic/user-configurable

Voice section
Available phonic bandwidth (programmable) 300÷2000; 300÷2200 Hz;
300÷2400; 300÷3400 Hz
Interface E/M (2/4 wires), FXS, FXO, BC e BL
Impendance 600 Ω balanced
Compandor features excludable via programming or external control
Telecommunication service (EOR) available

Telegraphic transit
N° of channels 1 to 3
Selectable bandwidth 2160÷3400 Hz; 2240÷3720; 2440÷3720 Hz;2640÷3720; 300÷3720 Hz
Interface 4 wires
I/O Impedance 600 Ω balanced

Asynchronous data interface
Interface ITU-T V.24/EIA RS232
Standard ENEL, ITU-T (R.35, R.37, R.38 A/B e V.23)

ANALOG INTERFACE FOR SELTA TPSNU/TPS-3000 (TPU-BF) TELEPROTECTION EQUIPMENT

4-wire interface type
Transmission/reception bandwidth
300 ÷ 3720 Hz / 12300 ÷ 15720 Hz
Impedance 600 Ω unbalanced
Operating bandwidth of the OCV link: 4, 8, 16 kHz

DIGITAL INTERFACE FOR SELTA TPSNU/TPS-3000 (TPU-POF) TELEPROTECTION EQUIPMENT

POF (Plastic Optical Fiber) interface type
Link operating bandwidth
OCV: 8 and 16 kHz with TPS-NU; 4, 8, and 16 kHz with TPS-3000

INTEGRATED TELEPROTECTION

Controls 4/8
Start management available
R.37 and R.35 ducting

SAFETY

Secure SSH communication session with authentication via a local server or a RADIUS server

DIAGNOSTICS AND MAINTENANCE

In-line diagnostics: configuration check, Tx power monitoring, HF line attenuation, signal-to-noise (S/N) ratio measurement, alarm monitoring, and line measurements.
SNMP agent (SNMPv3) (CMU-adv)

POWER

Input voltage 48 VDC – 110 VDC (+20%, -15%)
Power consumption ≤ 400 Watts (with full equipment, P=80 W)

ENVIRONMENTAL FEATURES

Temperatures -5 ÷ 55 °C
Relative humidity 93% at 40°C (compliant with IEC 721-3-3)

MECHANICAL FEATURES

Dimensions for P.E.P. 40W: D 483 x H 400 x W 280 mm
Dimensions for P.E.P. 80W: D 483 x H 487 x W 280 mm
Weight < 14 kg fully equipped

CERTIFICATIONS

TIPO	PRINCIPALI NORME DI RIFERIMENTO	
FUNZIONALE	IEC 60495	IEC 62488-1
EMC ED ISOLAMENTO	IEC 62488-1 IEC 61000-6-5 IEC 60255-26 IEC 60870-2-1	EN 61000-6-2 EN 61000-6-4 IEC 60255-27 IEC 60834-1
CLIMATICA	IEC 62488-2 IEC 60068-2-1 IEC 60068-2-2	IEC 60068-2-78 IEC 60068-2-14 IEC 60068-2-30
MECCANICA	IEC 62488-2 IEC 60068-2-6 IEC 60068-2-27	IEC 60068-2-31 IEC 60068-2-32 IEC 60068-2-64
SICUREZZA ELETTRICA	IEC 62368-1	

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