ZIV COMMS

HV Telecommunication Systems

Making the Smart Grid Real

HV Telecommunications Portfolio

Universal Power Line Carrier

llt integrates a great variety of interfaces that allow the simultaneous transmission of analog and digital channels including different possibilities for the transmission of teleprotection signals.

Line Matching Unit

Adaptable Line-Matching Unit for PLC systems over HV lines.

Universal Teleprotection

Highly flexible configuration for diverse applications, compatible with IEC 61850 ed 2 standard.

OPU-1

UNIVERSAL POWER LINE CARRIER

- Analogue and Digital PLC in the same equipment.
- Both QAM and OFDM modulations available for the digital data transmission.
- One or two analogue channels (4kHz).
- Selectable total bandwidth (4, 8, 12, 16, 20, 24 or 32 kHz) depending on requirements.
- 20, 40 and 80W models (PEP).
- Multiple connection interfaces for the user (V.35, V.11, V.24, V.28, G.703, Ethernet).
- Teleprotection inside the digital QAM band or inside an independent analogue channel.
- Possibility of double HF stage for T-lines. Redundant power-supply and advanced management options (Web Management and SNMP agent).
- Possibility of synchronization by external GPS.

UAPA-1

LINE MATCHING UNIT

- Designed according to IEC 60481 standard (composite loss ≤ 2 dB and return loss ≥ 12 dB in the selected bandwidth).
- Nominal power (P.E.P): 400 W for two tones.
- Distortion and intermodulation: 80 dB below the level corresponding to the nominal P.E.P.
- Band-pass or high-pass filter configuration.
- Can be equipped with a differential hybrid circuit.
- Power frequency insulation: >10 kVrms.
- Frequency range: 40÷500 kHz.
- Coupling capacitor: 2 to 10 nF. Specific model for 2 to 12.5 nF.
- Equipment-side impedance: 50 and 75 Ω. Others on request. Specific model for 150 Ω.
- Line-side impedance: 100 to 600 Ω.
- Protection elements:
  - Line side: earthing switch, air-gap surge arrester and an optional solid-state surge arrester.
  - Equipment side: gas surge arrester.
- Optional mounting: line connection at the bottom of the chassis or protection elements on the outside.
- Box and cover: GRP (glass-fibre reinforced polyester) in RAL-7035. Specific model in stainless steel.

TPU-1

UNIVERSAL TELEPROTECTION

- For analogue and/or digital channels.
- Two communication channels available.
- Electrical and Optical digital line interfaces.
- Up to 4 commands over analogue channel.
- Up to 8 commands over digital channel.
- Command transits for “T-Lines” applications.
- Interface to protection relay by electrical contacts or IEC 61850 protocol.
- Optional redundant power supply.

UNIVERSAL TELEPROTECTION SYSTEM TYPE TPU-1

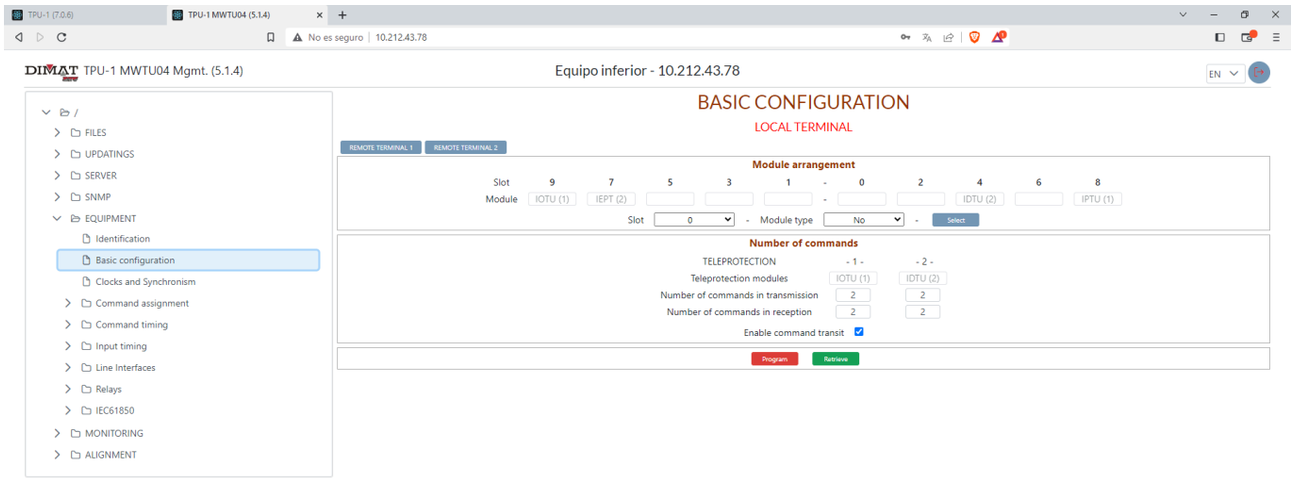
LATEST DEVELOPMENTS

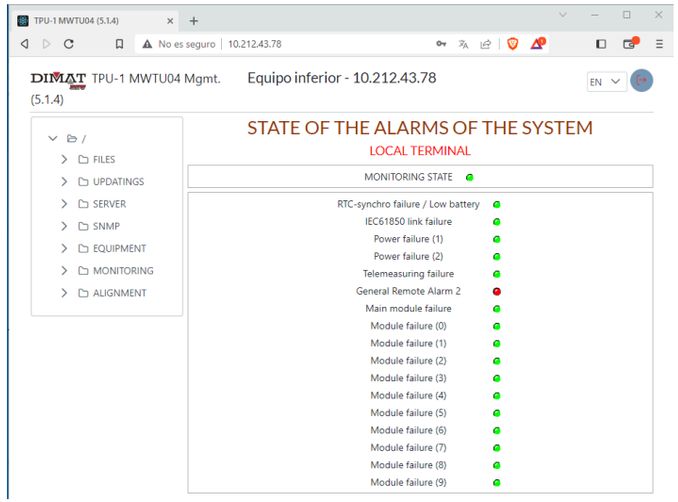
- Non-Java-based WEB management.
- New MWTU.02 Module.
- Cybersecurity.
- KWTU Submodule (IEC 61850 Ed.2).
- IOCS Module.

WEB MANAGEMENT

NON-JAVA BASED WEB MANAGEMENT

- New management WEB pages in HTML5 and Java Script.
- Java plugin not requested anymore.





MWTU.02 (6.X) MODULE

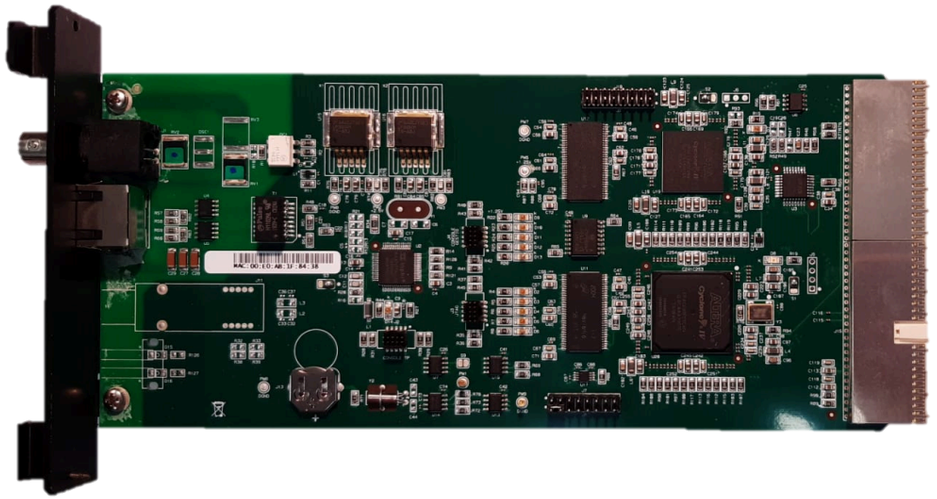
NEW FEATURES IN MWTU.02 (6.X) VERSION

All from of the MWTU.02 (4.x) module plus:

- Cybersecurity.
- IEC 61850 optional submodule.
- Management of IOCS module.
- Uploading fast transfer mode.
- Inputs, outputs and line Alias.
- Local time on the display.
- Customizable identifier text on main page.

RJ-45 connector (10/100 Base-TX interface)

BNC connector for time synchronization



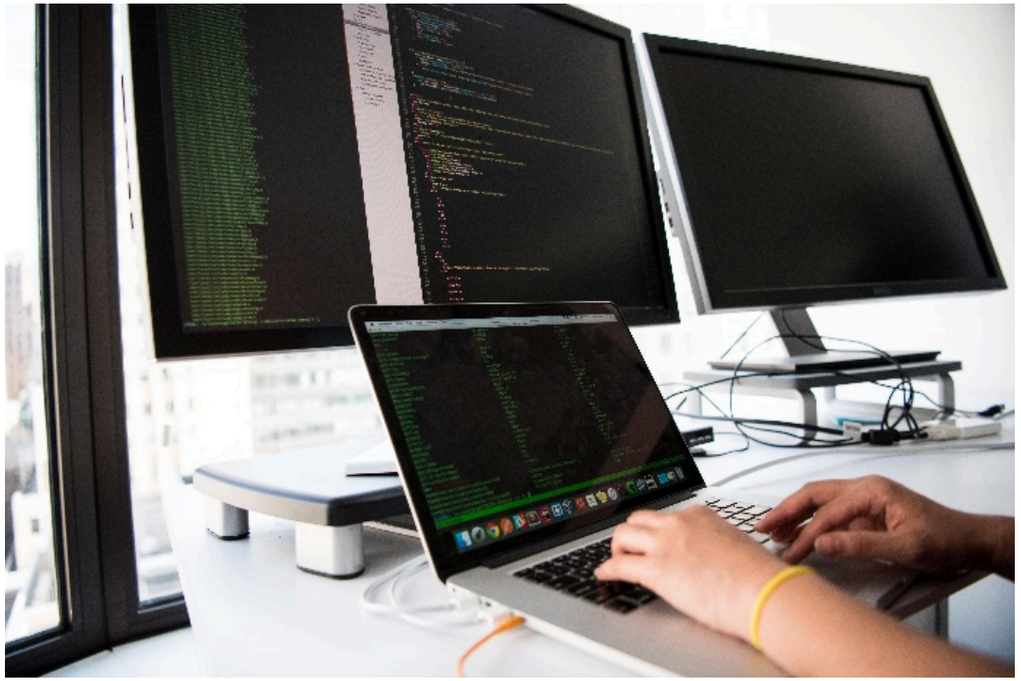
CYBERSECURITY

Inclusion on the new MWTU.02 (6.x) module of:

- HTTPS
- Password and User modification LOGs
- Only one management session at once

Future developments:

- Role Based Access Control (RBAC)
- Independent security LOG



Features based on IEEE 1686, IEC 62351 and NERC-CIP

KWTU SUBMODULE

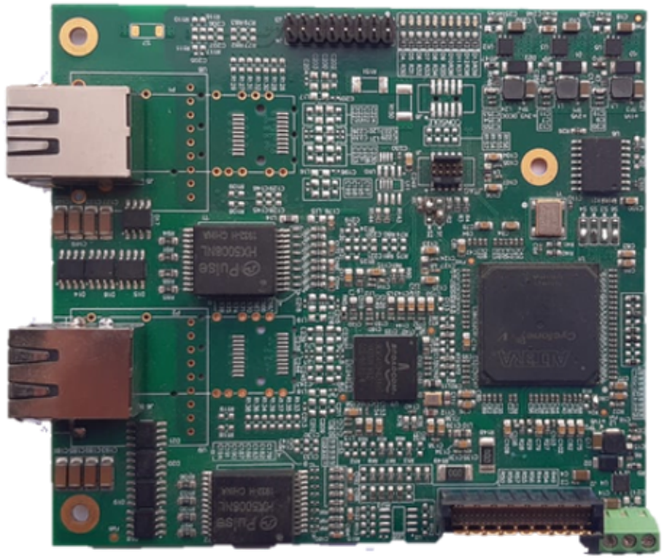
IEC 61850 ED2

Development of the KWTU daughterboard for the new MWTU module supporting a complete IEC 61850 Ed2 server:

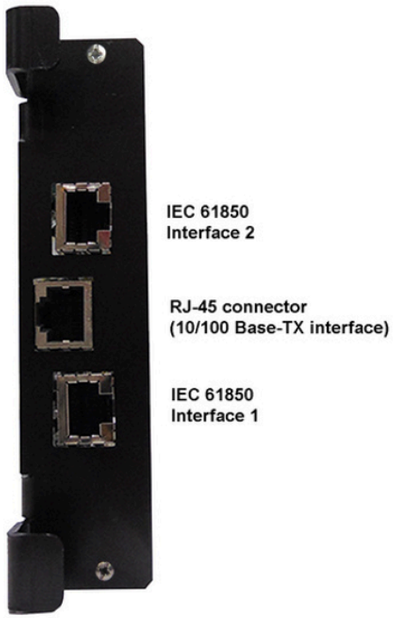
- GOOSE.
- BRCB and URCB.
- ICD File.
- Configuration through CID file.

Available interfaces:

- SFP.
- RJ-45.



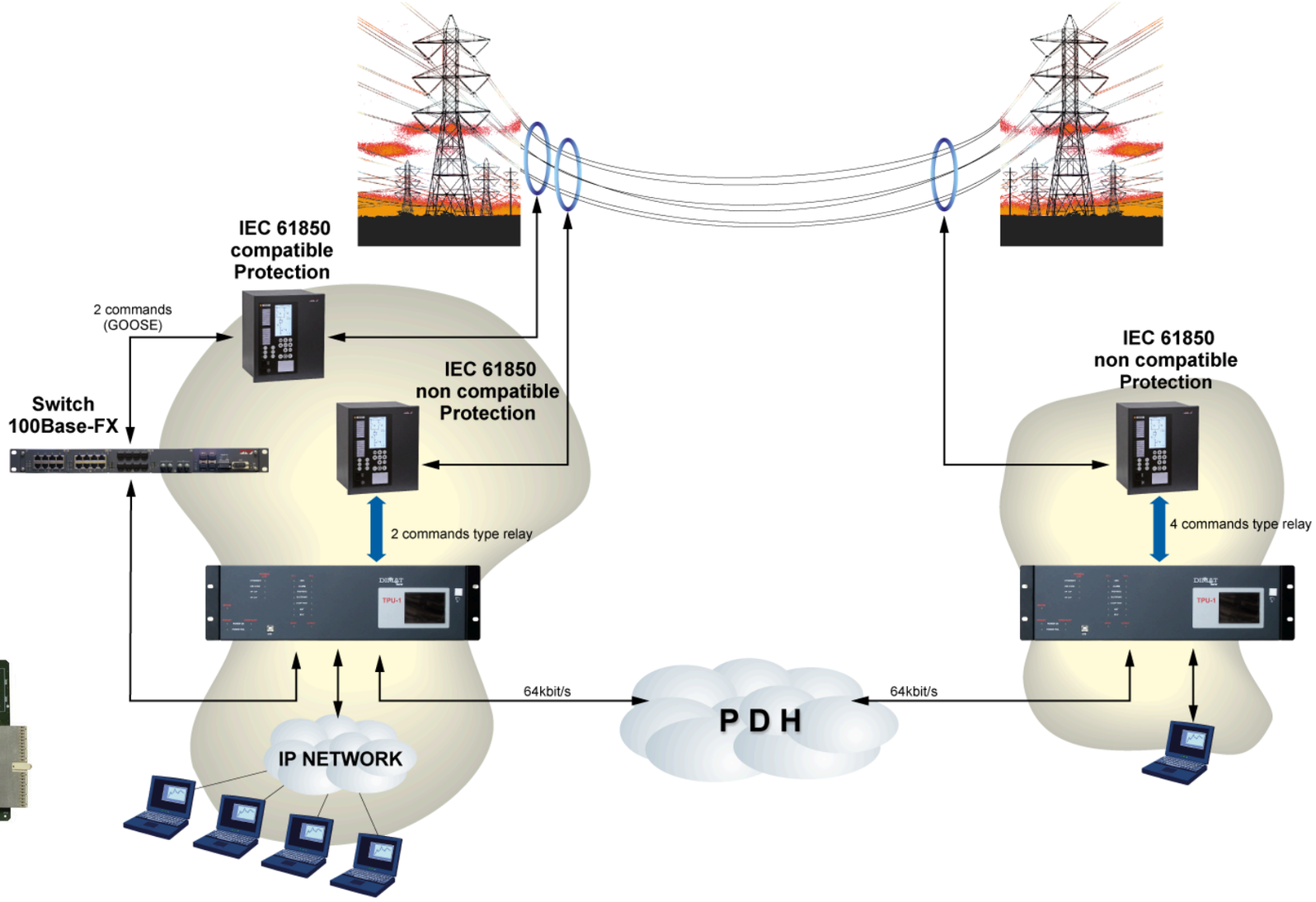
KWTU



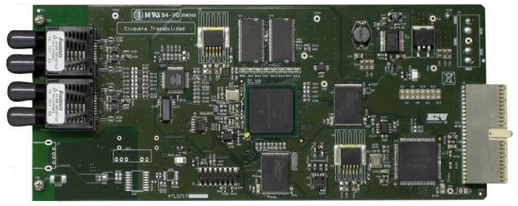
MWTU + KWTU
front plate

Note: more flash memory required for managing the IEC 61850 server
MWTU.03 (1.x)

IEC 61850 COMPATIBILITY



IEPT Module

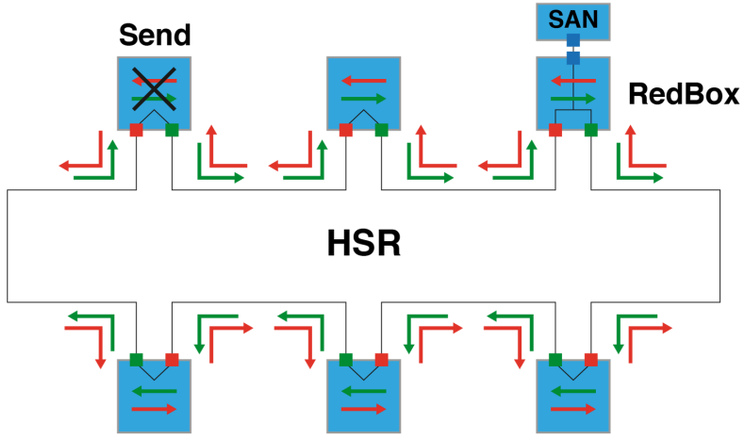


GOOSE Messages

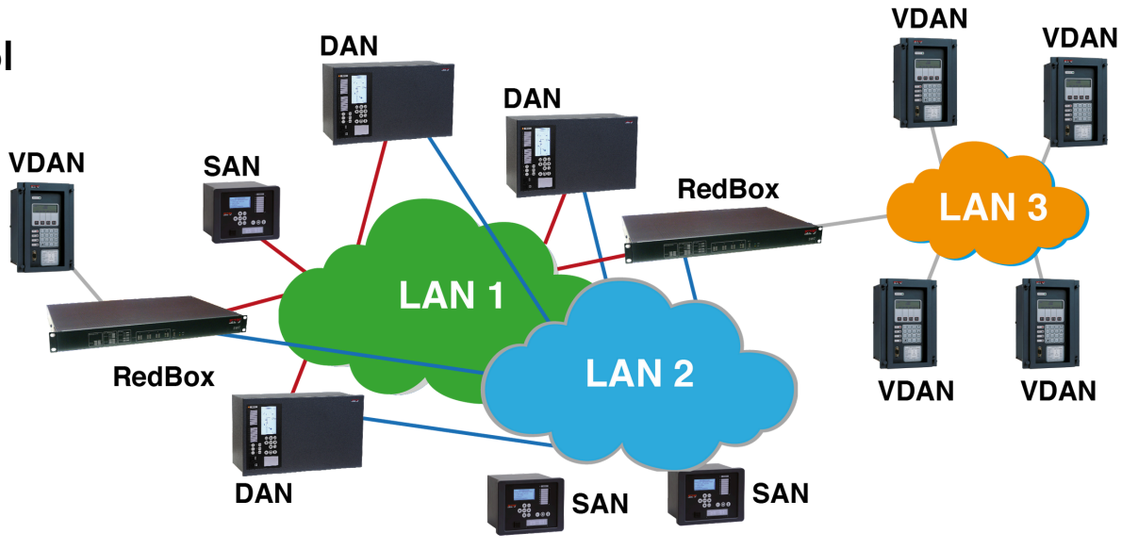
APPLICATIONS

IEC 61850 COMPATIBLE

- GOOSE
- BRCB and URCB
- ICD File
- Configuration via CID file



- HSR – High availability Seamless Redundancy Protocol
- PRP – Parallel Redundancy Protocol
- PTP – Precision Time Protocol (IEEE 1588)



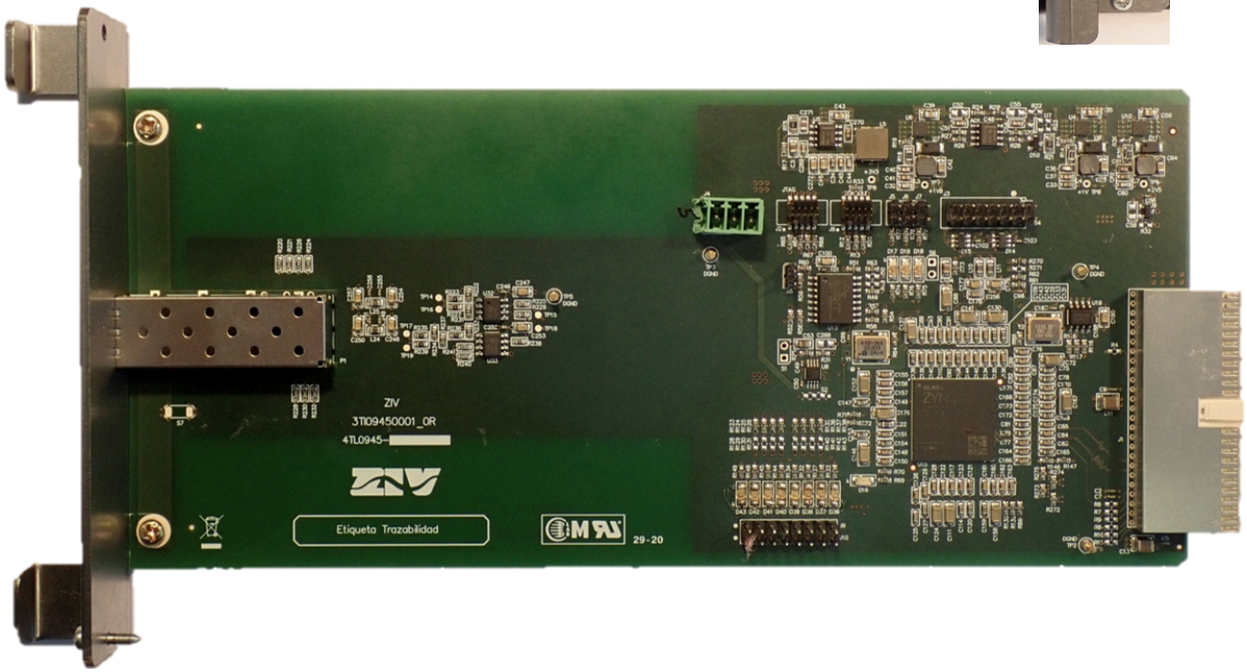
IOCS MODULE

IOCS: OPTICAL INTERFACE C.37.94 SFP

- According to IEC C.37.94 standard.
- Digital Communications at 2 Mbit/s over optical fiber (twelve 64 kbit/s slot used).
- Maximum transmission time: 3ms.
- SFP Interface.
- DDM (Digital Diagnostic Monitoring).
- Available SFPs:

Model	λ (nm)	L (km)
CT-0155NSP-SB2L-E 2M	850	2
CT-0155TSP-MB7L-E 2M	1310	60
CT-0155TSP-KBAL-E 2M	1550	120

Note: only supported by MWTU.02 (6.x) and MWTU.03 (1.x)



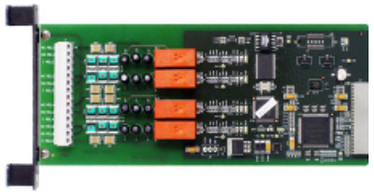
AVAILABLE MODULES

User interfaces

IPTU.OO
2 x I/O + 2 relays

IEPT.xx
GOOSE interface

IRTU.Ox
2 or 4 relays



Common modules

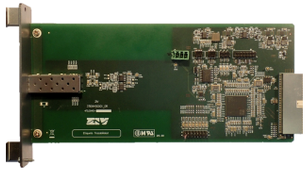
MWTU.02 (5.x)
Management module
- Cybersecurity
- Non-Java management

MWTU.03 + KWTU
Management module
- Cybersecurity
- 61850 server
- Non-Java management

ATPU.Ox
48Vdc power supply
110-220 Vac/dc power supply

Line interfaces

IPIT.xx
Ethernet interface

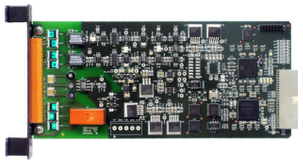


IOCS.00
FO SFP C37.94 interface

(+ IOTU and IOCT)

IDTU.00
2 Mbit/s G.703 interface

IETU.00
64 kbit/s interface



IBTU.00
4W analog interface

UNIVERSAL TELEPROTECTION SYSTEM TYPE TPU-1

FUTURE DEVELOPMENTS

- 4 independent commands in analogue mode
- Cybersecurity improvement
- New IDTU.00 internal frame
- New ICPT.00 Module
- Remote alarms
- New IECT.00 Module

4 INDEPENDENT COMMANDS IN ANALOGUE MODE

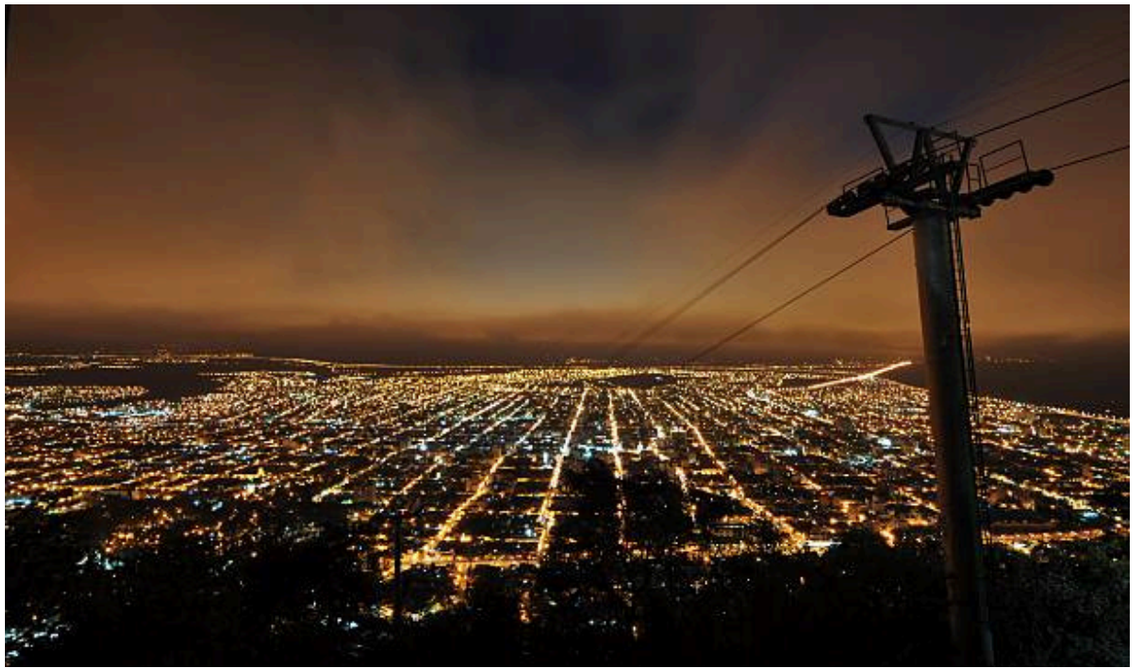
IBTU.00 (ANALOGUE LINE INTERFACE)

Inclusion on the IBTU.00 module the digital signal processing for the transmission of up to four independent commands in analogue channels (*).

- Bandwidth: 1, 2 and 4 kHz.
- Transmission time: 6 to 14 ms, depending on the BW and the requested Pmc and Puc.

Expected availability: Q2 2024

(*) Already developed for the OPU-1 Power Line Carrier Terminal



CYBERSECURITY IMPROVEMENT

RBAC (Role Based Access Control)

Inclusion of RADIUS, TACACS and LDAP

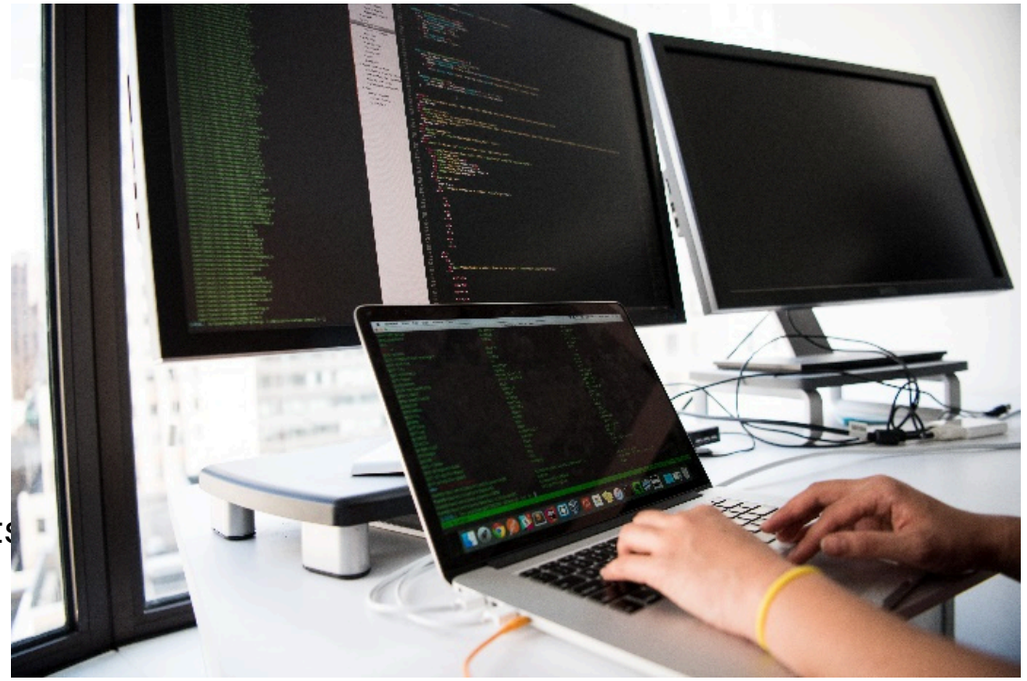
Security Certificate

Possibility of loading the user certificate

Security Log

Fully independent security log with improved list of monitored events

Expected availability: Q2 2024

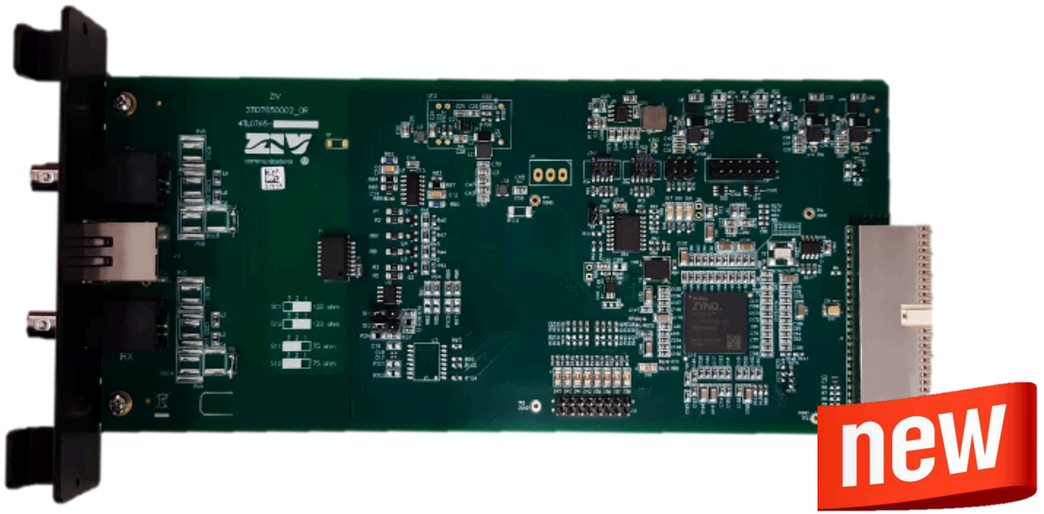


NEW IDTU.00 MODULE INTERNAL FRAME

NEW IDTU.00 MODULE (E1 LINE INTERFACE) INTERNAL FRAME

Use on the IDTU.00 of the internal frame developed for the IOCS.00 module, being its main characteristics as follows:

- Use of 12 bytes of the 2 Mbit/s E1 frame.
- Shorter Transmission Time (lower than 3ms) .
- 216 different identifier codes (no need of SIC).
- Internal channel @ 64 kbit/s.
- 2 bytes reserved for future applications.
- 32-bit CRC.

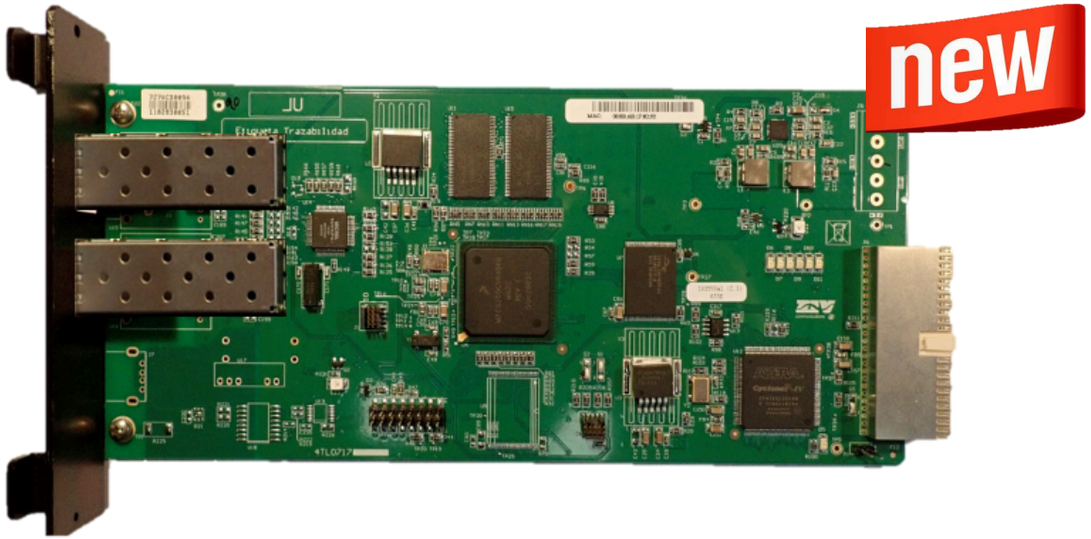


NEW ICPT.00 MODULE

NEW ICPT.00 MODULE (ETHERNET LINE INTERFACE)

Development of a new ICPT.00 module, to replace the existing IPIT, with the following characteristics:

- 2 SFP interfaces (up to 1 GBEth).
- New internal frame.
- Optimized Ethernet frame.
- Communications encryption.
- PRP Protocol.
- PTP synchronization.



Expected availability: Q2 2024

REMOTE ALARMS

Transmission remote alarms (*)

- Transmission of all the alarms of one terminal to the collateral terminal through the internal channel.
- Inclusion of remote alarms in the time log, in SNMP Trap messages and in the signalling relays of the local equipment.

(*) Only available with IOCS.00, IDTU.00 and ICPT line modules.

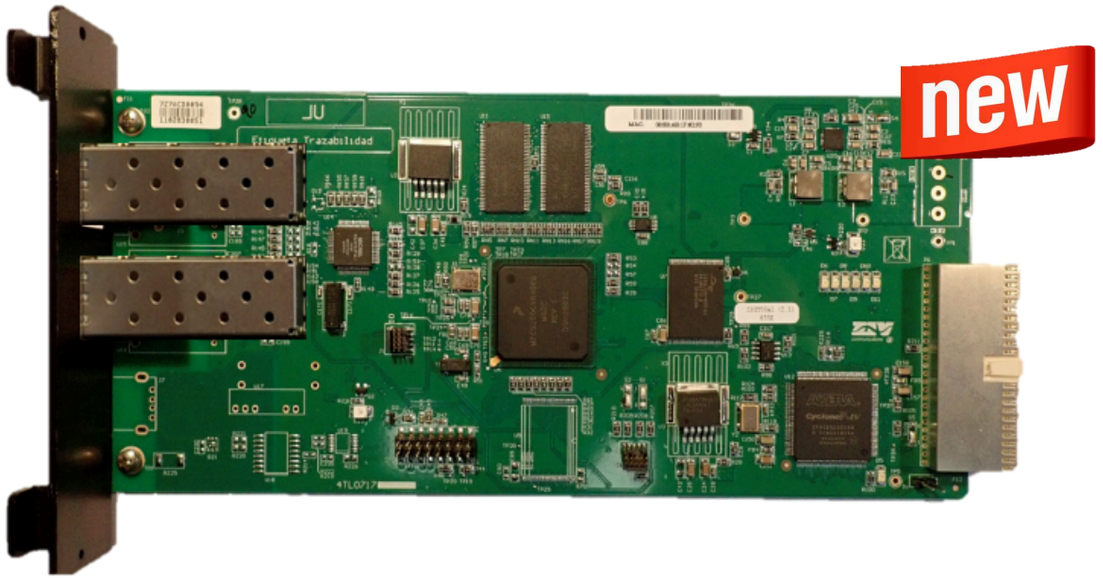
Expected availability: Q2 2024

NEW ICPT.00 MODULE

NEW ICPT.00 MODULE (IEC 61850 INTERFACE)

Development of a new IECT.00 module to substitute the KWTU submodule, with the following characteristics:

- 2 SFP interfaces (up to 1 GBEth).
- Full IEC 61850 Ed.2 server
  - GOOSE.
  - BRCB and URCB.
  - Programming through CID file.
- Up to16 logic I/Os.
- HSR and PRP protocols.
- PTP synchronization.



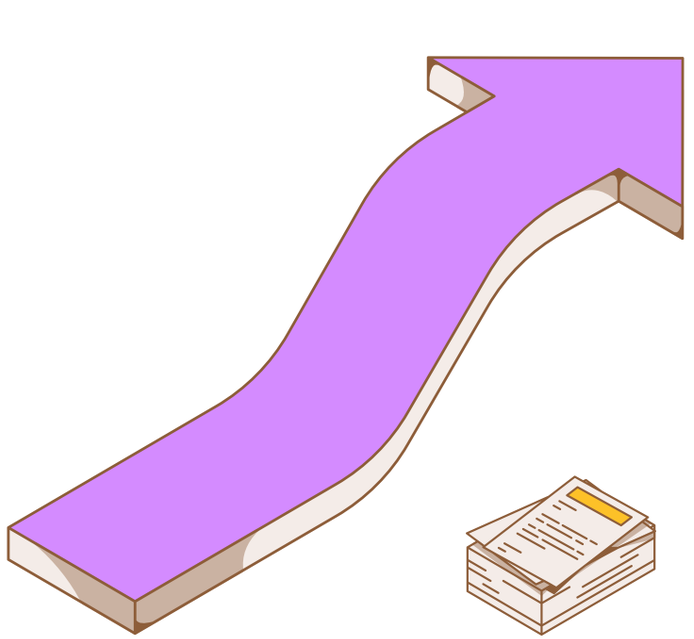
Expected availability: Q3 2024

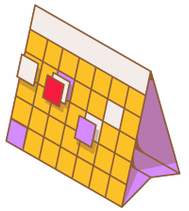
NEW DEVELOPMENTS IN TPU-1

	Q2 2024	Q3 2024
4 independent commands in analogue mode		
Cybersecurity improvement		
New IDTU.00 internal frame		
New ICPT.00 Module		
Remote alarms		
New IECT.00 Module		

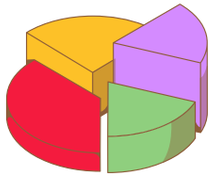
Next steps

Let`s spend 10 min together to identify





NEXT MEETING



KEY ISSUES

TASKS

Making the Smart Grid Real

Contact us now for further information
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