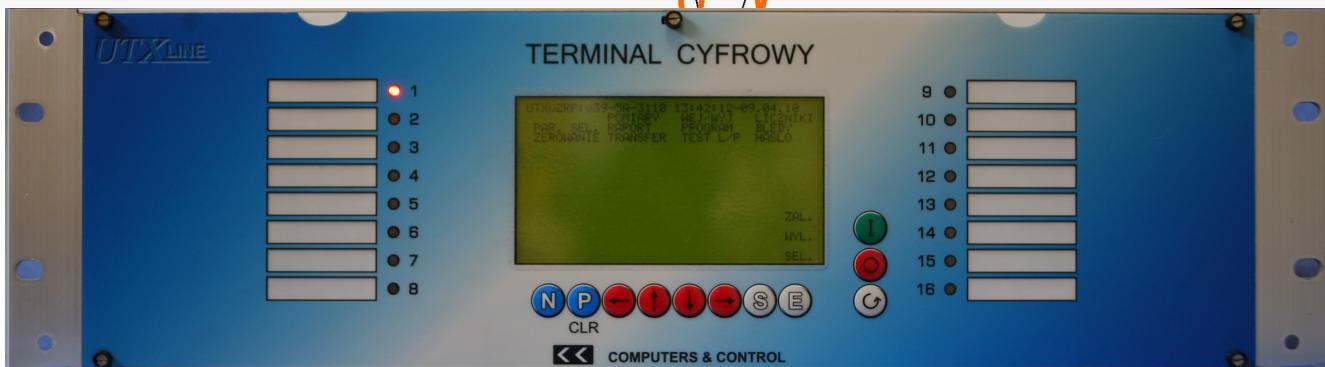


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**UTXvL****UNIVERSAL MV/HV CB BAY PROTECTION RELAY:** cable line, feeding TR, capacitor bank, bus coupler, section VT

UTXvL protection is intended for protecting CB Bays which operate with earthed neutral point in any configuration. It provides quick and effective CB tripping while any: PTP or PTG fault will be detected. Reliable operation of the device is based on precise and quick analog value measurements, resulting in fast (voltages, currents, Earth Fault Admittance) vectors finding. UTXvL is equipped with: 14 Bit A/C converters, serial transmission interfaces (RS 232 – supervising channel and RS 485 – using IEC 870-5-103 standard protocol), with optional optical fibre and/or network communication – TCP/IP. Individually configured UTXvL relay is intended for protecting CB Bays (Overhead Line/ Underground Cable, Feeding HV/MV Power Transformer, Auxiliary Voltage MV/LV Transformer, MV Bus Coupler, Capacitor Bank).

**Device characteristics**

UTXvL is characterised by:

- multi-processor digital measuring and decision-making system equipped with three groups of protection settings
- galvanically insulated inputs and outputs (analog and digital)
- 50/51/51A/67** - four overcurrent measuring stages for each phase: directional or non-directional ( $4 \times I >$ )
- 59 - two phase overvoltage stages ( $2 \times U >$ )
- 27 - two phase undervoltage stages ( $2 \times U <$ )
- 32 - one reverse active overpower stage ( $P >$ )
- 32VAR** - one reactive power stage ( $Q <, tg >$ ) for compensation purposes
- 50N/51N** - three independent, non-directional earth fault overcurrent stages ( $3 \times IE > T$ )
- 59N - three residual overvoltage (neutral displacement) stages ( $3 \times UE > T$ )
- 67N - two sensitive earth fault overcurrent stages ( $2 \times I_{Edir.} > T$ )
- 67YN - one sensitive earth fault admittance stage (RYe, RBe, RGe)
- 67YN - one sensitive earth fault admittance differential stage (RYYe)
- 50/51** - two non-directional overcurrent stages – for internal faults ( $2 \times ly > T$ )
- 46/47** - negative sequence overcurrent and overvoltage protections
- 50H/51H(2)** - second harmonic phase current compound detector
- 50/51** - simplified overcurrent substation bus protection function
- 50BF/51BF** - freely programmable substation circuit breaker failure protection function
- 81L/81H** - four internal Underfrequency Load Shedding and two AR after Underfrequency Load Shedding stages ( $4 \times LS + 2 \times ARLS$ )
- four external Underfrequency Load Shedding and AR after Underfrequency Load Shedding stages ( $4 \times LS + 4 \times ARLS$ )
- 79N** - neutral point – automatic resistance insertion logic
- 79C/86** - capacitor bank automatic switching logic
- 79(3)** - four shot, six mode, three pole AR cycle for any protective or logic function
- 74 - bay failure or trip/relay internal trouble signalling: UP, AL, AW (three standard substation busses)
- 30/74TC** - fully programmable digital inputs for signals from external protection relays
- 11 - CB switching onto fault (SOTF) protection logic
- 33 - LCD bay terminal screen, displaying actual (CB, bus and line reclosers, earthing switches) status
- each protection stage can be set as signal operating only (operational report)
- analog signal vector stabilization and compensation (due to unstable fault evolving) for precise and selective fault detection
- permanent monitoring of bay internal element operational status/ condition
- three-level password protection
- event and disturbance recording ( $4 \times U; 4 \times I; 16 \times$  digital signals)
- analog signal synchro-sampling and external clock synchronization
- permanent monitoring of CB operational circuits (1 x ON; 2 x OFF)
- CB internal operational status (ready/ failure) monitoring and remote control
- analog signal/ value (I, U, S, P, Q, f, Ep, Eq) front panel (local) visualisation and remote data transfer
- CB currents tripping (per phase basis) cumulative function, number of operations and protection relay operating time
- detailed fault monitoring, for local/remote fault clearance evaluation
- graphic LCD display, 11-key keypad and 16 LEDs (15 freely programmable)
- four quadrant energy counters
- 32 logic functions with programmable modifiers for realization of simple and complex algorithms.
- possibility of visualization, control and configuration by SAZ 2000 program
- possibility of cooperation with Automatic Over Ethernet (AoE) systems and with Alice '79 system.

**UTXvL**

# Basic technical parameters



## Typical UTXvL activation time

20ms – for module pick-up (e.g. directional overcurrent phase protection relay),  
40ms – for vector pick-up (e.g. protection relay admittance),  
100ms – for frequency pick-up (e.g. LS).

## Analog inputs

Nominal current inputs ( $I_n$ ) - 1A or 5A  
Nominal voltage inputs ( $U_n$ ) - 57,7V

Current inputs max. power consumption – 0.1 W  
Voltage inputs max. power consumption – 0.04 VA (for  $U=1U_n$ )  
Inputs insulation resistance – 3kV AC/DC, 5kV impulse 5us

Analog inputs number – 8 (IL1, IL2, IL3, IE, UL1, UL2, UL3, UE)

### Measuring range:

for IL1, IL2, IL3 – 50  $I_n$   
for UL1, UL2, UL3, UE – 3  $U_n$

for IE – 1,2,10A

### Overload resistance

for voltage inputs – 2 $U_n$  fixed  
for current inputs  $I_n=1A$  – 100 $I_n/1s$ , 5 $I_n$  fixed

for current inputs  $I_n=5A$  – 100 $I_n/1s$ , 2 $I_n$  fixed

### Dynamic resistance

for  $I_n=1A$  – 250 $I_n/20ms$

for  $I_n=5A$  – 200 $I_n/20ms$

## Binary inputs

Inputs insulation resistance – 3kV AC/DC, 5kV impulse 5us

Maximal current consumption – 5mA

Binary inputs nominal voltages:

WD=110V DC, logic range „0”: 0V-60V, logic range „1”: 70V-121V

WD=220V DC, logic range „0”: 0V-145V, logic range „1”: 165V-242V

### Binary inputs number

$\mu$ UTX – 11 to 28 freely programmable

UTX – 26 to 63 freely programmable + 1 dedicated (ParSel)

## Binary outputs

### Contacts connecting resistance

Card with 4 „strong” relays (optional), max. connection parameters:

Power: 300W, Current: 5ADC, Voltage: 220VDC

Card with 8 relays: for 250VAC – 8.0A, for 250VDC – 0.30A

Card with 14 relays: for 250VAC – 6.0A, for 250VDC – 0.18A

### Binary outputs number

$\mu$ UTX – 8 to 18 freely programmable + 2 dedicated („ALarm”, „Bay Defect Indicator”)

UTX – 22 to 44 freely programmable + 2 dedicated („ALarm”, „Bay Defect Indicator”)

## Allowed inputs/outputs configuration

UTX: K0-8: 26+1 inputs, 22+2 outputs,

K1-8: 37+1 inputs, 30+2 outputs,

K2-8: 52+1 inputs, 44+2 outputs,

K3-8: 63+1 inputs, 30+2 outputs.

$\mu$ UTX:  $\mu$ K0-8: 14 inputs, 8+2 outputs,

$\mu$ K1-8: 28 inputs, 18+2 outputs,

$\mu$ K2-8: 28+1 inputs, 24+2 outputs.

## Housing type and weight

UTX - Surface mounting:

C PRO 84 or C PRO 63, standard 6kg, max. 8kg

UTX - Flush mounting:

E PRO 3U (cassette 19") 84 or 64, standard 5kg, max. 7kg

$\mu$ UTX (text display) – 2kg

$\mu$ UTX (graphic LCD display) - 3kg

## Allowed ranges

Power supply input voltage: from 90VDC to 340VDC or from 65VAC to 240VAC

Working temperature: from -5°C to +50°C

Storage temperature: from -10°C to +60°C

Working and storage humidity: 40% to 80%

International Protection Rating: IP40 (option to IP65)

## Communication ports

*CCBus interface (for superior system and automation):*

RS232, CL (current loop) for UTX version, Ethernet (independent channel),

ST option, optical multi-mode (or FC single-mode)

*IEC 60870-5-103 interface (for superior system):*

RS485, ST option, optical multi-mode (or FC single-mode)

*CANBus interface (for superior system):*

2 x RS485, two galvanically separated channels (basic and spare)

## Fault recorder

Maximal capacity: 8 events

Number of registered analog inputs: 8

Number of registered binary inputs: up to 16

Pre-failure and failure time: programmable, 2 to 3630 ms

Handling of contacts sticking: yes

## Event recorder

Event recorder capacity: min. 1000 records

## Standards

PN-EN 50263

PN-EN 60255-22-2

PN-EN 55022

PN-IEC 60255-22-4 i PN-EN 61000-4-4

PN-EN 60255-22-5 i PN-EN 61000-4-5

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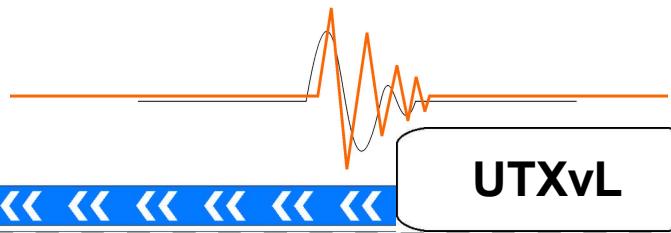
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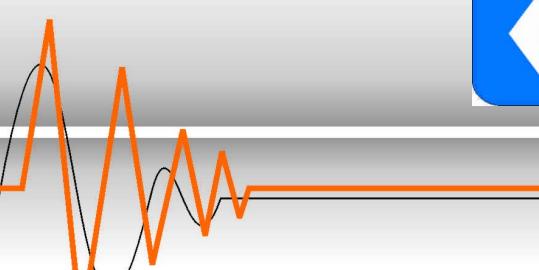
# Standards



| No. | Test type  | Standard   | Tested elements             | Testing scope   |
|-----|--|--|-----------------------------|---|
| 1   | Electrostatic discharge immunity                                       | PN-EN 50263:2002<br>PN-EN 60255-22-2:1999                          | Through-housing access port | - 6/8kV for contact discharges<br>- 8/15kV for discharges through the air   |
| 2   | Quick electrical transients resistance                                 | PN-EN 50263:2002<br>PN-IEC 60255-22-4:1996<br>PN-EN 61000-4-4:2005 | Power port<br>I/O ports     | class III – 2kV<br>class IV – 4kV   |
| 3   | Surge resistance   | PN-EN 50263:2002<br>PN-EN 60255-22-5:2003<br>PN-EN 61000-4-5:2006  | Power port<br>I/O ports     | class III :<br>- common-mode voltage – 2[kV]<br>- differential voltage – 1[kV]  |
| 4   | Electromagnetic fields interference resistance                         | PN-EN 60255-22-3:2002  | Device                      | - frequency: $(900 \pm 5)$ [MHz]<br>- electromagnetic field level: 10 [V/m]   |
| 5   | Resistance to conducted interference induced by radio-frequency fields | PN-EN 60255-22-6:2004  | Power port<br>I/O ports     | - frequency: $0,15 < f < 80$ [MHz]<br>- amplitude: 10[V] unmodulated r.m.s.<br>- source impedance: 150 [ $\Omega$ ]   |
| 6   | Sinusoidal vibrations resistance                                       | PN-EN 60068-2-6:2002   | Device                      | - frequency: $(10-150)$ [Hz]<br>- acceleration: 5[m/s <sup>2</sup> ] (rms)  |
| 7   | Tolerance to cold  | PN-EN 60068-2-1:2007(U)  | Device                      | Temperature: $(-5)^\circ\text{C}$<br>1. Temp. decrease time 60 [min.]<br>Test duration 1[h]<br>2. Temp. decrease time 25 [min.]<br>Test duration 16[h]<br>3. Initial temperature $(-5)^\circ\text{C}$<br>Test duration 1[h] |
| 8   | Tolerance to dry heat  | PN-EN 60068-2-2:2002   | Device                      | Temperature: $(+50)^\circ\text{C}$<br>1. Temp. increase time 30 [min.]<br>Test duration 96[h]   |
| 9   | Resistance to cold   | PN-EN 60068-2-1:2007(U)  | Device                      | Temperature: $(-10)^\circ\text{C}$<br>Test duration 96[h]   |
| 10  | Resistance to dry heat   | PN-EN 60068-2-2:2002   | Device                      | Temperature: $(+60)^\circ\text{C}$<br>Test duration 96[h]   |



# UTX versions for MV bay



Other functions listed in the datasheet are present in all versions

UTXvL

