

PRO-TEC 4000 ®

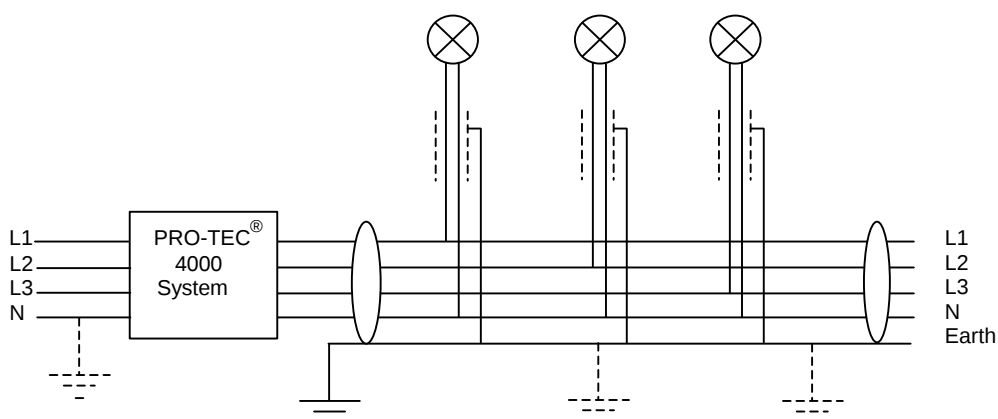
Use nc: 05-04000

Specification sheet preliminary

The Pro-tec 4000 Unit is part of the Pro-tec 4000 cable protection and management system for optimal protection of people, animals and equipment against electrical malfunctions. It is used for the feeding of distributed users over long cables where an optimum of protection can become with a minimum of cable cross-sections. The Pro-tec 4000 system protect against electric jammings of single pole loads connected to single and / or three pole nets.



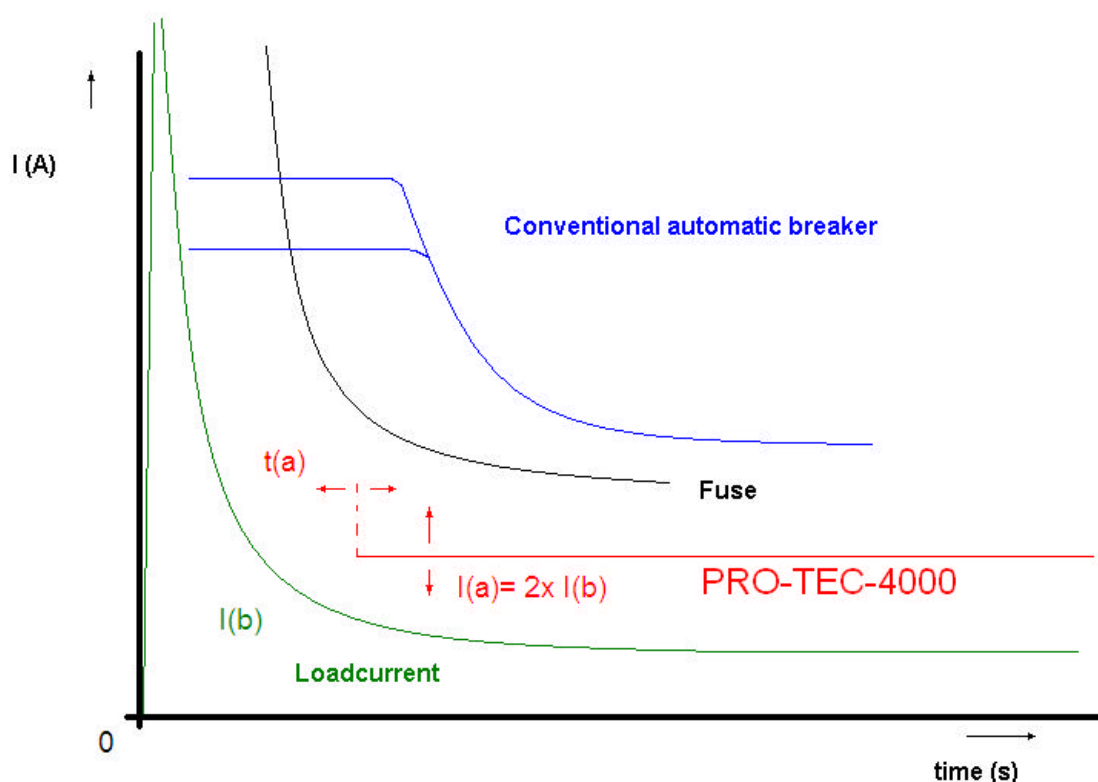
The Pro-tec 4000 system exists from a number of conventional components (installation automats, magnet switches) as well as the Pro-tec 4000 system unit (including the CP 4000 / PS 4000), which forms the heart of the protection system.



Product features :

- Cable protection system for long cables
 - o short-circuit
 - o earth faults (leakage)
- Build-in selfdiagnostics
- System diagnostics
 - o Detection of welded contacts external relays
 - o Detection of contacted failures external relays
 - o Detection of missing Current Probe
- Measurements
 - For each channel*
 - o Voltage
 - o Current
 - o Earth fault current - L1, L2, L3 and total.
- Controls
 - o Tripcurrent (Ia), Earth fault - symmetrical / asymmetrical, Overload and Undercurrent. Current values and there time parameters.
 - o Control Behaviour - On, Off, Trip, Alarm, Auto or Manual Reset, 1x Reset.

Specification sheet preliminary



- Monitoring
 - For each channel*
 - o Statistics : Switch On's, Trip counts, Running hours
 - o Powerinformation : Real, Apparent and Reactive power
 - o Trip and alarm information
 - o KWh indication : Total and day (reset-able)
- System parameters
 - o Communication address
 - o Name of Pro-tec unit
 - o Control mode
 - o Alarm relay function
- Master / Slave configuration over the Pro-tec communication bus.
- PC software tool for Monitoring and Programming – ProMPT® (Use nc 05-04111)
- Additional information about power quality by the PC software package ProMPT
 - o Trip / Alarm causes and states
 - o Power factor, displacement power factor (cos phi)
 - o Current indicator (RLC behaviour of load)
 - o CBEMA curve information
 - o System diagnostics – Voltage and current traces overview, pole relation
 - o System information, name, firmware, configuration

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- Configuration and programming support by the PC software package ProMPT, secured by an unique configuration / programming key.
 - Pro-tec Project manager
 - System diagnostics – CP polarity control for the 4 Current Probes
 - Application specific protection configuration (parameters time, current values, control behaviour)
- Sophisticated User interface to support direct system feedback
 - LCD with backlight (2x16 characters)
 - Key board (5 keys)
 - Status led information (ON, Alarm, Ok, PC communication, Pole trip)
- Modern fast DSP technology to support signal analysis for the spectrum Fundamental up to the 11th harmonics.
- Voltage monitoring
- Current monitoring with a Current Probe (CP 4000 use nc 05-04001)
- 3 external Relay control outputs (galvanic separation) with internal extinguish chain
- External hardware control
 - Inputs, daisy chain functionality
 - Alarm, status outputs (Transistor outputs, Relay outputs) (galvanic separation)
 - Led status information
- 1 of 3 Power Supply to supply 4 separate Pro-tec 4000 modules (PS 4000 use nc 05-04002)
- Rs232 communication
- Pro-tec internal communication bus (Rs485)

Product features (optional) :

- Remote monitoring with ProMPT and MOON
- Remote control with ProMPT Remote connections
 - GSM / GPRS and other wireless conncections
 - TCP/IP
- Full Harmonics spectrum (up to 51 harmonics)
- More power quality parameters.
 - Inrush currents
 - Sags and swells
 - Transients
 - Flicker
 - THD, k-Factor
 - V, I, P harmonics
 - Phases related to V1
- Numeric Reader traces of all the readers
- 1 of 3 Power Supply to supply up to 8 separate Pro-tec 4000 modules
- Auto optional I(a) configuring.
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Facts and numbers :

Pro-tec 4000 information

Units

Voltage inputs V1..V3, VN			
Parameter	Range		Unit
Voltage range (pole –PE, RMS @ fundamental)	0 .. 264		[Vac]
Voltage range (pole –pole)	0 .. 460		[Vac]
Resolution	0.1		[Vac]
Accuracy @ 25 °C	1% + 4 counts		[-]
Maximum workvoltage	1600		[Vpk]
Peakvoltage	8		[kV]
Temperature drift	0.02		[%/°C]
Inputimpedance (@ 25 °C)	1 ± 5%		[MO]
Fundamental frequency (Sinus)	45 .. 70		[Hz]
Harmonic range	11 th harmonic		[Hz]
Connection	Screw terminal		[-]
Overvoltage category	600V CAT 2		[-]
Current inputs I1..I3, IN (CTs 1000:1)			
Parameter	Range		Unit
Inputcurrent range I1 .. I3	4 .. 80		[Aac]
Resolution I1 .. I3	0.1		[Aac]
Inputcurrent range IN	0.04 .. 5		[Aac]
Resolution IN	0.01		[Aac]
Accuracy @ 25 °C	1% + 4 counts		[-]
Maximum Work current	350		[mApk] exclusive CP
Peak current	1		[A]
Temperature drift	0.02		[%/°C]
Input Impedance	20 ± 5%		[O]
Fundamental frequency (Sinus)	45 .. 70		[Hz]
Harmonic range	11 th harmonic		[Hz]
Connection	Screw terminal		[-]
Overvoltage category	60V CAT1		
Control inputs			
Parameter	Range		Unit
Inputvoltage Low	0 .. 4		[Vdc]
Inputvoltage High	7 .. 42		[Vdc]
Input current Low	10 ± 5%		[mAdc]
Input current High	-1 .. 1		[mAdc]
Peak Voltage	600		[V]
Input Impedance	2.4 ± 5%		[kO]
Frequency Response	10		[Hz]
Connection	Screw terminal		[-]
Overvoltage category	30V CAT1		
	Non-isolated		

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Control outputs

Parameter	Range	Unit
Outputstage	Opendrain	[-]
Outputcurrent	50	[mAdc]
Connection	Screw terminal	[-]
Overvoltage category	30V CAT1	

Control outputs

Parameter	Range	Unit
Switchable Voltage AC	250	[Vac]
Switchable current AC resistive	8	[Aac]
Switchable current AC inductive	5	[Aac]
Switchable Voltage DC	30	[Vdc]
Switchable current DC resistive	5	[Adc]
Switchable current DC inductive	2	[Adc]
Type Contact	Make	[-]
Isolation Voltage	1	[kVac]
Connection	Screw terminal	[-]
Overvoltage category	400V CAT2	

Power supply (best of 3)

Parameter	Range	Unit
Input voltage	180 .. 240	[Vac]
Outputvoltage	24 ± 10%	[Vdc]
Outputcurrent	0.6	[Adc]
Efficiency	70	[%]
Holduptime @160VAC	1	[s]
Holduptime @ 70VAC	100	[ms]

Mechanics

Parameter	Range	Unit
Dimension WxLxH	70x100x102	[mm]
Housing	DIN-rail	[-]
	4xM5	[-]
Shock/Vibrations withstand capability	15G / 5ms	[G]

Environment

Parameter	Range	Unit
Temperature operating	-20 .. +70	[°C]
Incl. LCD (WIDE)	-10..~60	[°C]
Temperature Powersupply operating	-40 .. +105	[°C]
Temperature stock	0 .. 90	[%rh]
RH operating -20..35 °C non condensing	0 .. 70	[%rh]
RH operating 35..60 °C non condensing	0 .. 90	[%rh]
RH stock non condensing		