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D165T - D265T

LV Pole Circuit Breaker / Digital Trip Unit

Better life.
With electricity.

The protection and management of MV/LV transformers in a rural environment requires specific Circuit Breakers compatible with significant unbalanced overloads, thus ensuring full exploitation of the installed power, even in unbalanced operations.

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Description

Circuit Breaker Unit

Tetrapolar circuit breaker (three-phases protected + neutral) uses air break technology: arc is divided into different sections by metal barriers.

When the circuit breaker is open, electrical connection is made to put the transformer's neutral to the earth.
When the circuit breaker is closed, a spark gap limits the rise in potential of the LV neutral from the earth, for a value exceeding 10 kV.

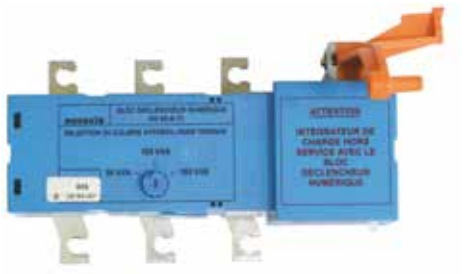
This device is designed for outdoor applications, using an IP337 GRP case

Digital Trip Unit

Digital Trip Unit protects the pole-mounted transformer of 50 kVA, 100 kVA or 160 kVA, and works with conventional transformer (no internal protection) or new transformer with MV fuses (TPC). User has just to set the correct rate from a selector, according to transformer's power.

Operating principle is called «thermal image»: the micro-controller assesses the transformer temperature in real time, based on the currents in the three phases and the external ambient temperature. This ambient temperature is computed based on a probe and a mathematical model, also a function of the three phase's currents.

In case of integration of a Digital Trip Unit into an old-generation pole circuit breaker with load integrator option, this load integrator function will be inhibited.



Technical characteristics

1- Pole Circuit Breaker

	CIRCUIT BREAKERS D165T	D265T
Standard	HN 63-S-11	HN 63-S-11
Rated Voltage	440 V	440 V
Rated Current	165 A	265 A
Rated short-circuit breaking capacity	4 000 A	6 400 A
Rated short-circuit making current	6 800 A	11 700 A
Number of poles	4	4
Number of outputs	1 ouput	2 outputs
Cables cross-sections	25 / 70 mm²	50 / 150 mm²
Rated power-frequency withstand voltage (50Hz - 1min)		
• Phase / Phase	4 kV	4 kV
• Phase /Earth	10 kV	10 kV
Rated lightning impulse withstand voltage (1.2/50µs)	20 kV	20 kV
Control system	Manual	Manual
Installation	Middle or Top pole	Middle or Top pole

2 - Digital Trip Unit

	P = 50 kVA U = 440 V I = 72,2 A Current in each phase (in A)			P = 100 kVA U = 440 V I = 144,3 A Current in each phase (in A)			Trip time		P = 160 kVA U = 440 V I = 231 A Current in each phase (in A)			Trip time	
	1	2	3	1	2	3	Min	Max	1	2	3	Min	Max
Temperature = + 20 °C													
Initial load	48	48	48	96	96	96			155	155	155		
Three-phases balanced overload	85	85	85	170	170	170	1 h 35		280	280	280	55 mn	
	100	100	100	200	200	200	25 mn	1 h 10	320	320	320	26 mn	1 h 10
	160	160	160	320	320	320	30 s	6 mn	500	500	500	30 s	7 mn 30 s
	950	950	950	1900	1900	1900	**0,02 s**	**0,2 s**	3000	3000	3000	**0,02 s**	**0,1 s**
									5640	5640	5640	**0,015 s**	**0,025 s**
	2000	2000	2000	4000	4000	4000	**0,02 s**	**0,05 s**	6400	6400	6400	**0,015 s**	**0,020 s**
Three-phases unbalanced overload	58	58	120	116	116	240	1 h 50		185	185	400	32 mn	
	58	58	160	116	116	320	15 mn	50 mn	185	185	500	11 mn	33 mn
	58	58	220	116	116	440	30 s	7 mn	185	185	700	30 s	4 mn
	0	0	950	0	0	1900	**0,02 s**	**0,2 s**	0	0	3000	**0,02 s**	**0,1 s**
Temperature = - 25 °C													
Initial load	76	76	76	152	152	152			240	240	240		
Three-phases balanced overload	110	110	110	220	220	220	1 h		350	350	350	1 h	
	130	130	130	260	260	260	14 mn	44 mn	420	420	420	14 mn	45 mn
	190	190	190	380	380	380	30 s	5 mn	600	600	600	30 s	5 mn
Three-phases unbalanced overload	87	87	130	174	174	260	2 h 15		280	280	420	2 h 15	
	87	87	180	174	174	360	10 mn	30 mn	280	280	560	13 mn	48 mn
	87	87	240	174	174	480	30 s	6 mn	280	280	760	40 s	5 mn 40 s
Temperature = + 50 °C													
Initial load	25	25	25	50	50	50			80	80	80		
Three-phases balanced overload	70	70	70	140	140	140	1 h 30		231	231	231	1 h 05	
	90	90	90	180	180	180	20 mn	1 h 07	300	300	300	17 mn	1 h 05
	160	160	160	320	320	320	45 s	5 mn	500	500	500	35 s	5 mn 40 s
Three-phases unbalanced overload	48	48	100	96	96	200	1 h		155	155	320	1 h	
	48	48	130	96	96	260	15 mn	1 h	155	155	420	15 mn	1 h
	48	48	200	96	96	400	30 s	7 mn	155	155	650	30 s	7 mn

Trip times as per HN 63-S-11 + corrected values (in bold type) to match the selectivity of the TPC fuses.

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