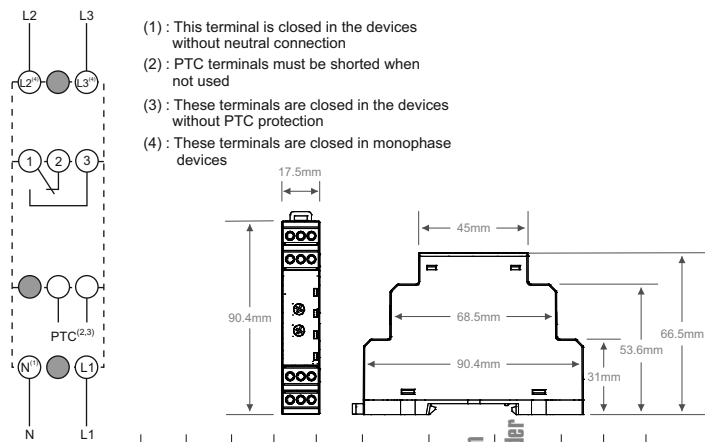


Klemsan® C1, V1, F1 Series

Protection Relays

Operating voltage (U _N)	60 .. 185V AC (V1-M-L) 85 .. 320V AC (C1,V1,F1 Series) 150 .. 500V AC (C1D,V1D Series)
Supply input	L1 - N (C1,V1,F1 Series) L2 - L3 (C1D,V1D Series)
Operating frequency	35 .. 70 Hz
Voltage measurement range	U _N
Voltage adjustment range	80 .. 110V AC (V1-M-L) 150 .. 210V AC (C1,V1 Series) 270 .. 370V AC (C1D,V1D Series)
Lower limit	
Upper limit	125 .. 155V AC (V1-M-L) 240 .. 300V AC (C1,V1 Series) 400 .. 500V AC (C1D,V1D Series)
Voltage hysteresis	6V AC
Time delay adjustment range	0.1 .. 10s / 1 .. 10s (F1) / 0.1 .. 20s (V1-T)
Frequency adjustment range (F1)	
Lower limit	40 - 42.5 - 45 - 47.5 .. 62.5 Hz
Upper limit	42.5 - 45 - 47.5 - 50 .. 65 Hz
*Upper limit must be at least 2.5Hz greater than lower limit for proper operation	
Frequency hysteresis (F1)	0.4Hz
Unbalance adjustment range	%5 .. %20
Unbalance hysteresis	%3 x 230V AC (P1 Series) %3 x 400V AC (P1D Series)
PTC alarm threshold	≈1100Ω
Over over voltage threshold	165V AC (V1-M-L) 310V AC (C1,V1 Series) 510V AC (C1D,V1D Series)
Under under voltage threshold	68V AC (V1-M-L) 140V AC (C1,V1 Series) 240V AC (C1D,V1D Series)
Output contact	1 C/O
Maximum switching current	10A
Maximum switching voltage	250V AC
Maximum switching power	1250VA
Operating temperature	-20°C .. 60°C
Storage temperature	-40°C .. 75°C
Protection class	IP20
Connection	Rail mounted



type	neutral connection	phase failure	phase sequence	unbalance	PTC protection	adjustable voltage protection	adjustable frequency protection	over over/under under voltage protection	On delay	Off delay	order no
C1-SA	✓	✓	✓	✓				✓		✓	270 156
C1-SAP	✓	✓	✓	✓	✓			✓		✓	270 157
C1-SVP	✓	✓	✓	✓		✓		✓		✓	270 158
C1D-SA		✓	✓	✓	✓			✓		✓	270 256
C1D-SAP		✓	✓	✓	✓			✓		✓	270 257
C1D-SVP		✓	✓		✓	✓		✓		✓	270 258
C1D-SVPT		✓	✓		✓			✓		✓	270 261
V1	✓	✓				✓		✓		✓	270 159
V1-S	✓	✓	✓			✓		✓		✓	270 160
V1-T	✓	✓				✓		✓	✓	✓	270 162
V1-M	✓					✓		✓		✓	270 170
V1-M-L	✓					✓		✓		✓	270 171
V1D		✓				✓		✓		✓	270 259
V1D-S		✓	✓			✓		✓		✓	270 260
F1	✓						✓			✓	270 161

FAILURE TYPE	LED INDICATION	DESCRIPTION
phase failure	A1: A2:	L1: L2: L3: R:
phase sequence error	A1: A2:	L1: L2: L3: R:
unbalance	A1: A2: devices with neutral connection $A(\%) = \frac{V_{LN(max)} - V_{LN(min)}}{230V} \times 100$ devices without neutral connection $A(\%) = \frac{V_{LL(max)} - V_{LL(min)}}{400V} \times 100$	L1: L2: L3: R: t
PTC error	A1: A2:	PTC sensor R:
over voltage	A2:	L1: L2: L3: R: t
under voltage	A1:	L1: L2: L3: R: t
over frequency	A2:	Freq. R: t
under frequency	A1:	Freq. R: t
over over voltage	A2:	L1: L2: L3: R: t
under under voltage	A1:	L1: L2: L3: R: t
frequency error (F < 32Hz or F > 100Hz)	ON:	Freq. R: t