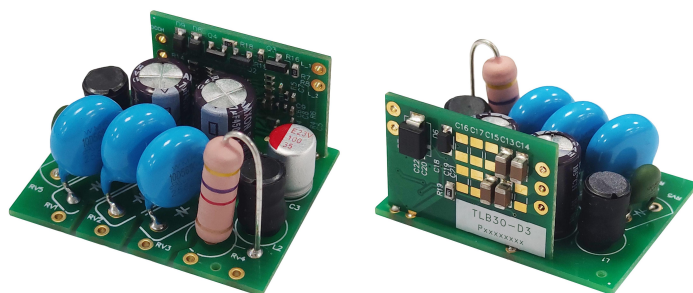


Residual Current Detection Module TLBxx-D3



RoHS



Features

- Cover type B residual current detection
- Small size, can be built into the circuit breaker for use
- Low response time
- High immunity to external interference
- Meets the requirements of GBT22794-2017 for residual current
- Customization available

TLBxx-D3 series product is a residual current protection module. The fluxgate detection technology is used to detect the residual current of DC, AC and various pulsating waveforms, covering protection features such as B, A, F and AC and a variety of residual current detection. Easy to install, simple, suitable for a variety of occasions.

Application areas: Urban lighting, smart home, smart power grid, etc.

Selection Guide

Certification	Part No.	Rated DC Residual Current (mA)	Rated AC Residual Current (mA)	Input Voltage (VAC)	Power Dissipation (W)
--	TLB30-D3	60	30	220(single-phase)/ 380(three-phase)	0.14
--	TLB100-D3	200	100		
--	TLB300-D3	600	300		

General Characteristics

Item	Symbol	Min	Typ	Max	Unit.
Input Voltage (single-phase/ three-phase)	U_c	187/ 323	220/ 380	242/ 418	V
Operating Temperature	T_A	-40	--	+85	℃
Storage Temperature	T_s	-55	--	+105	
Weight	m	12	15	17	g

EMC Characteristics

Item		Specification	
EMI (GB4343.1)	CE	CISPR32/EN55032 CLASS B	
	RE	CISPR32/EN55032 CLASS B	
EMS (GB_T18499)	ESD	Contact $\pm 6kV$	perf. Criteria A
	RS	3V/m	perf. Criteria A
	EFT	4kV, Tr/Th: 5/50ns, repetition frequency: 5kHz	perf. Criteria A
	Surge	Tr/Th: 1.2/50us, Line to line: 4kV/2 Ω	perf. Criteria A
	CS	3Vr.m.s.	perf. Criteria A
	Voltage dip, short interruption and voltage variation	Voltage dip: 15% of U_c to 100% of U_c , voltage variation: 30% of U_c to 50% of U_c , short interruption: 100% of U_c , the duration is greater than half a cycle to 1s.	perf. Criteria A

Performance Characteristic

Item		Min	Typ	Max	Unit.
Residual operating current @AC-50Hz $I_{\Delta N_{AC}}$	TLB30-D3	15	--	30	mA
	TLB100-D3	50	--	100	
	TLB300-D3	150	--	300	
Residual operating current @A0 $I_{\Delta N_{A0}}$	TLB30-D3	10.5	--	42	mA
	TLB100-D3	35	--	140	
	TLB300-D3	105	--	420	
Residual operating current @A90 $I_{\Delta N_{A90}}$	TLB30-D3	7.5	--	42	mA
	TLB100-D3	25	--	140	
	TLB300-D3	75	--	420	
Residual operating current @A135 $I_{\Delta N_{A135}}$	TLB30-D3	3.3	--	42	mA
	TLB100-D3	11	--	140	
	TLB300-D3	33	--	420	
Residual operating current @F $I_{\Delta N_F}$	TLB30-D3	15	--	42	mA
	TLB100-D3	50	--	150	
	TLB300-D3	150	--	420	
Residual operating current @AC+(0.4* $I_{\Delta N_{ACmax}}$)DC $I_{\Delta N_{AC+DC}}$	TLB30-D3	1	--	30	mA
	TLB100-D3	1	--	100	
	TLB300-D3	1	--	300	
Residual operating current @A0+(0.4* $I_{\Delta N_{ACmax}}$)DC $I_{\Delta N_{A0+DC}}$	TLB30-D3	1	--	42	mA
	TLB100-D3	1	--	140	
	TLB300-D3	1	--	420	
Residual operating current @AC-150 $I_{\Delta N_{AC150}}$	TLB30-D3	15	--	72	mA
	TLB100-D3	50	--	240	
	TLB300-D3	150	--	720	
Residual operating current @AC-400Hz $I_{\Delta N_{AC400}}$	TLB30-D3	15	--	180	mA
	TLB100-D3	50	--	600	
	TLB300-D3	150	--	1800	
Residual operating current @AC-1000Hz $I_{\Delta N_{AC1000}}$	TLB30-D3	30	--	420	mA
	TLB100-D3	100	--	1400	
	TLB300-D3	300	--	4200	
Residual operating current @DC $I_{\Delta N_{DC}}$	TLB30-D3	15	--	60	mA
	TLB100-D3	50	--	200	
	TLB300-D3	150	--	600	
Residual operating current @2PDC $I_{\Delta N_{2PDC}}$	TLB30-D3	15	--	60	mA
	TLB100-D3	50	--	200	
	TLB300-D3	150	--	600	
Residual operating current @3PDC $I_{\Delta N_{3PDC}}$	TLB30-D3	15	--	60	mA
	TLB100-D3	50	--	200	
	TLB300-D3	150	--	600	
Response time @AC-50Hz-(1* $I_{\Delta N_{ACmax}}$) $T_{\Delta N_{AC}}$	TLBxx-D3 series	1	--	300	ms
Response time @AC-50Hz-(2* $I_{\Delta N_{ACmax}}$) $T_{2\Delta N_{AC}}$	TLBxx-D3 series	1	--	150	ms

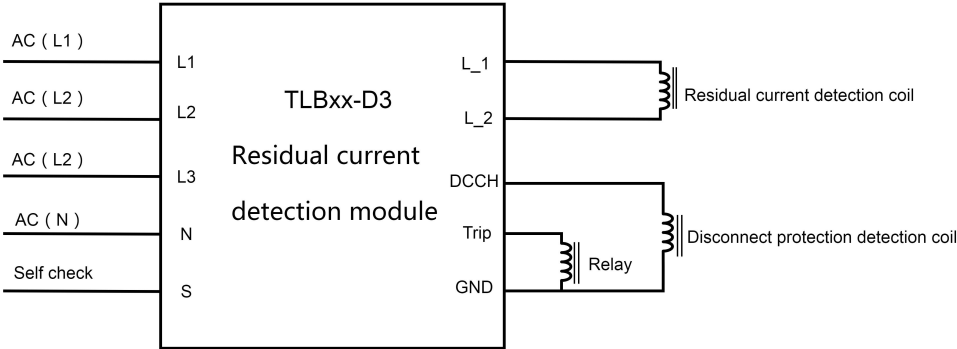
Performance Characteristic

Item		Min	Typ	Max	Unit.
Response time @AC-50Hz-(5*I _{ΔN_{ACmax}})	T5 _{ΔN_{AC}}	1	--	40	ms
Response time @A0-(1*I _{ΔN_{A0max}})	T1 _{ΔN_{A0}}	3	--	300	ms
	TLB30-D3	3	--	300	
	TLB100-D3	3	--	500	
Response time @A0-(2*I _{ΔN_{A0max}})	T2 _{ΔN_{A0}}	3	--	150	ms
	TLB30-D3	3	--	150	
	TLB100-D3	3	--	300	
Response time @A0-(350mA)	TΔN _{A0-350}	3	--	40	ms
Response time @A0-(700mA)	TΔN _{A0-700}	3	--	40	ms
Response time @A0-(2100mA)	TΔN _{A0-2100}	3	--	150	ms
Response time @AC-100Hz-(14*I _{ΔN_{ACmax}})	TΔN _{AC1000}	3	--	300	ms
Response time @F	IΔ7*N _F	3	--	40	ms
Response time @DC-(2*I _{ΔN_{DC}})	T2ΔN _{DC}	3	--	300	ms
Response time @DC-(4*I _{ΔN_{DC}})	T4ΔN _{DC}	3	--	150	ms
Response time @DC-(10*I _{ΔN_{DC}})	T10ΔN _{DC}	3	--	40	ms
Response time @2PDC-(2*I _{ΔN_{DC}})	T2ΔN _{2PDC}	3	--	300	ms
Response time @2PDC-(4*I _{ΔN_{DC}})	T4ΔN _{2PDC}	3	--	150	ms
Response time @2PDC-(10*I _{ΔN_{DC}})	T10ΔN _{2PDC}	3	--	40	ms
Response time @2PDC-(5000mA)	TΔN _{2PDC-5000}	3	--	40	ms
Response time @3PDC-(2*I _{ΔN_{DC}})	T2ΔN _{3PDC}	3	--	300	ms
Response time @2PDC-(4*I _{ΔN_{DC}})	T4ΔN _{2PDC}	3	--	150	ms
Response time @3PDC-(10*I _{ΔN_{DC}})	T10ΔN _{3PDC}	3	--	40	ms
Response time @3PDC-(5000mA)	TΔN _{3PDC-5000}	3	--	40	ms
Tenfold half waves	TLBxx-D3 series	--	No-Trip	--	--

Pin Description

Pin	Mark	Description
1	L1	Live wire input
2	L2	Live wire input
3	L3	Live wire input
4	N	Naught wire input
5	S	Self-check function pin
6	GND	Common terminal
7	Trip	Terminal of relay
8	DCCH	Terminal of disconnect protection detection coil (customization)
9	L_1	Terminal of residual current detection coil
10	L_2	Terminal of residual current detection coil

Design Reference



Note:

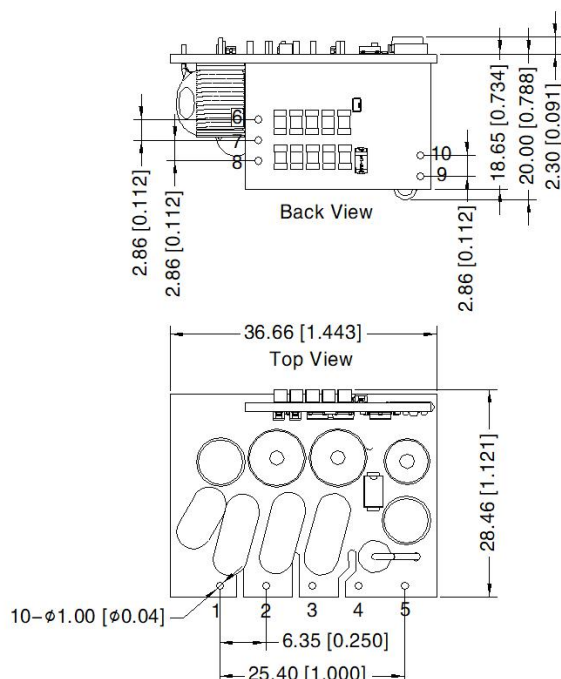
- 1. Connect L1, L2, and L3 to the live wire of the power supply voltage input terminal, and connect N to the neutral wire.
- 2. L_1 and L_2 are terminals of residual current detection coil, and Trip and GND are connected to relay.
- 3. DCCH is an extension pin for disconnect protection, customizable if needed.
- 4. Hot plug is unavailable.
- 5. The driving current of this recommended relay is 2.5mA.
- 6. The size of amorphous magnetic ring and the number of coils are recommended in the table:

Part No.	Inner Diameter	Outer Diameter	height	Coil Turns
TLB30-D3	16.5mm	24mm	5.5mm	25T
TLB100-D3				25T
TLB300-D3				50T

- 7. We can provide customized products according to the demand of relay driving current, and the customized coil for matching the actual demand size.

Dimensions and Recommended

THIRD ANGLE PROJECTION 



Pin-Out	
Pin	Mark
1	L1
2	L2
3	L3
4	N
5	S
6	GND
7	Trip
8	DCCH
9	L_1
10	L_2

Note:
Unit: mm[inch]
Welding holes diameter tolerances: $\pm 0.10 [\pm 0.004]$
General tolerances: $\pm 0.80 [\pm 0.031]$
The layout of the device is for reference only, please refer to the actual product

Notes:

1. For additional information on Product Packaging please refer to www.mornsun-power.com. Packaging bag number: 58070011;
2. All index testing methods in this datasheet are based on company corporate standards;
3. Unless otherwise specified, parameters in this datasheet were measured under the conditions of $T_a=25^{\circ}\text{C}$, humidity<75%RH with nominal input voltage;
4. We can provide product customization service, please contact our technicians directly for specific information;
5. This products is used in electronic equipment, please follow the operation and instructions of the manual, and use it in a standard and safe environment;
6. Please do not install the product in a dangerous area; beware of the risk of electric shock during operating, some modules may generate dangerous voltages (such as primary wires, power supply wires);
7. This products is a build-in device, After installation, the conductive part must not be touched completely. A protective box or shield can be used;
8. It is strictly forbidden to disassemble and assemble the products privately to prevent equipment without failure or malfunction;
9. Our products shall be classified according to ISO14001 and related environmental laws and regulations, and shall be handled by qualified units.

MORNSUN Guangzhou Science & Technology Co., Ltd.

Address: No. 8 Nanyun 4th Road, Huangpu District, Guangzhou, China

Tel: 86-20-38601850

Fax: 86-20-38601272

E-mail: info@mornsun.cn

www.mornsun-power.com