

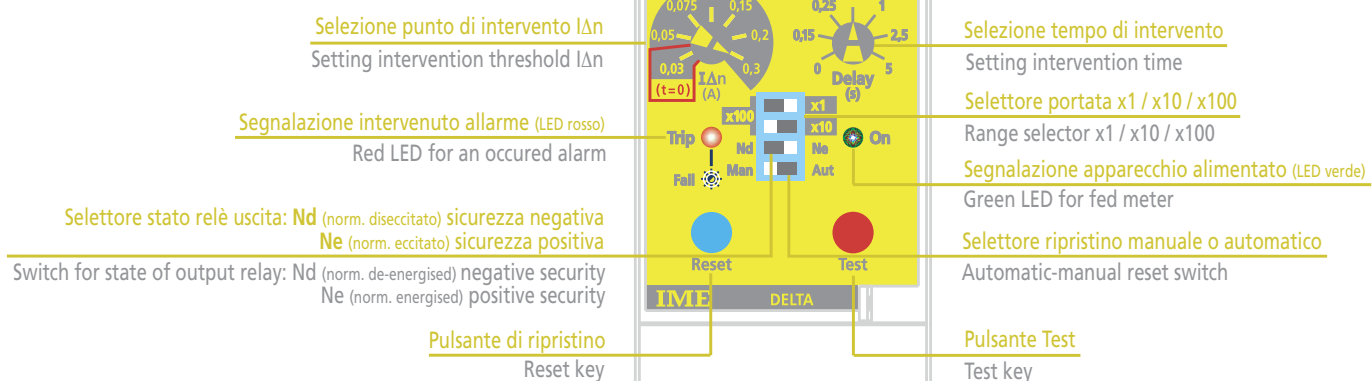
Relè differenziale 2 Moduli

Residual current device 2 Module

Delta D2-L

Versione salvavita, con blocco elettrico
($t = 0$) a $I_{\Delta n}$ 30mA
Punto di intervento selezionabile
30mA...30A (19 portate)
Sicurezza positiva o negativa
selezionabile in campo
Test automatico permanente
Ripristino manuale o automatico
(3 tentativi)

Instantaneous
($t = 0$) at $I_{\Delta n}$ 30mA
Selectable set point
30mA...30A (19 ranges)
Field-selectable negative or positive security
(fail safe)
Automatic permanent test
Manual or automatic reset
(3 restart attempts)



MODELLO MODEL		D2-L
CODICE CODE		RD1A...
NOTA TECNICA TECHNICAL NOTE		NT544
PORTATE RANGES	19: 0,03...30A	X
	18: 0,5...30A	
BLOCCO ELETTRICO INSTANTANEOUS	t=0s a/at I Δ n 30mA	X
FORMA D'ONDA WAVEFORM	Sinusoidale (tipo AC) Sinusoidal (AC type)	X
	Pulsante parzializzata con componente continua (tipo A) Chopped pulsating with superimposed dc (A type)	X
FILTRO COMPONENTI ARMONICHE FILTER FOR HARMONICS	Selezionabile Selectable Fisso Fixed	
NORMA DI RIFERIMENTO ACCORDING TO	EN60947-2 IEC60947-2	X
ALLARME ALARM	1 Uscita Relè 1 Relay Output	X
	2 Uscite Relè 2 Relays Output	
	1 Uscita + Preallarme 1 Output + Pre-alarm	
VISUALIZZAZIONE I Δ n DISPLAY	Barra LED LED Bargraph	
	Display	
USCITA RELE' RELAY OUTPUT	SPDT	X
	SPDT + SPST	
	2 SPDT	
SICUREZZA positiva / negativa SECURITY positive / negative	Selezionabile Selectable	X
TEST	Locale Local	X
	Remoto Remote	■
	Automatico Automatic	X
RIPRISTINO RESET	Locale Local	X
	Remoto Remote	X
	Automatico Automatic	X
ALIMENTAZIONE AUSILIARIA AUXILIARY SUPPLY	230Vca/ac	X
	24-48-115-240-400Vca/ac	X
	20...150Vcc/dc	X
	10...36Vcc/dc	
DIMENSIONI DIMENSIONS	2 Moduli 2 Module	X
	4 Moduli 4 Module	
	48 x 48 mm	
	72 x 72 mm	
	96 x 96 mm	

CODICI DI ORDINAZIONE ORDERING CODE	AL. AUSILIARIA AUX. SUPPLY
RD1AF1HB	20...150V cc/dc - 40...60Vca/ac
RD1AF12B	115V ca/ac
RD1AF13B	230V ca/ac
RD1AF14B	240V ca/ac
RD1AF15B	400V ca/ac
RD1AF11B	24V ca/ac

INGRESSO

Inserzione: linea bassa tensione, con trasformatore serie TD

Forma d'onda IΔn: sinusoidale (tipo AC) o pulsante parzializzata con componente continua (tipo A) in accordo con IEC/EN60947-2 Annesso M

Frequenza nominale fn: 50Hz

Frequenza di funzionamento: 47...63Hz

INPUT

Connection: low voltage lines, with series TD transformer

Waveform IΔn: sinusoidal (type AC) or chopped pulsating with superimposed d.c. (type A) according to IEC/EN60947-2 Annex M

Rated frequency fn: 50Hz

Working frequency: 47...63Hz

PREDISPOSIZIONE

Punto di intervento IΔn: selezionabile con potenziometro a 7 posizioni, 3 gamme x1 - x10 - x100

Portate IΔn: vedi tabella

Corrente differenziale di non intervento: 0,5 IΔn

SET UP

Current set point IΔn: selectable by 7-position potentiometer, 3 ranges x1 - x10 - x100

Ranges IΔn: see table

Non-operating residual current: 0,5 IΔn

		0,03	0,05	0,075	0,1	0,15	0,2	0,3
IΔn	X1	30mA	50mA	75mA	100mA	150mA	200mA	300mA
	X10	300mA	500mA	750mA	1A	1,5A	2A	3A
	X100	3A	5A	7,5A	10A	15A	20A	30A

Tempo di intervento t: selezionabile con potenziometro a 7 posizioni

Campo regolazione t: 0 - 0,15 - 0,25 - 0,5 - 1 - 2,5 - 5 secondi

Selezionando la soglia di intervento nella posizione 0,03 viene automaticamente

Intervention time t: selectable by 7-position potentiometer

Adjustable range t: 0 - 0,15 - 0,25 - 0,5 - 1 - 2,5 - 5 seconds

Selecting the intervention threshold on position 0,03 the intervention delay is

Soglia intervento (IΔn) Set point (IΔn)	0,03A	0,05...30A					
Ritardo impostato t(s) Selected delay t(s)	0s	0,15s	0,25s	0,5s	1s	2,5s	5s
Tempo non intervento @ 2IΔn Non-operating time at @ 2IΔn		0,15s	0,25s	0,5s	1s	2,5s	5s
Max. ritardo @ 5IΔn Max. delay @ 5IΔn	0,03s	0,24s	0,35s	0,63s	1,20s	2,80s	5,50s

escluso il ritardo intervento, indipendentemente dalla posizione del moltiplicatore di portata (x1/10/100).

automatically excluded, independently of position of range selector (x1/10/100).

SEGNALAZIONE

Strumento alimentato: LED verde "ON"

Intervento allarme: LED rosso "TRIP" + commutazione relè

Interruzione collegamenti relè-toroide: lampeggio LED rosso "TRIP" + commutazione relè "TRIP"

SIGNALING

Power ON: green LED "ON"

Alarm intervention: red LED "TRIP" + relay switching

Ring current transformer-relay connection failure: red LED "TRIP" blinking + relay switching

CONTROLLO

Test manuale: verifica l'efficienza del relè differenziale

Locale: tramite pulsante frontale

Remoto: chiusura contatto esterno (Non realizzabile con aux cc e con Uaux 48Vca)

Test automatico permanente: verifica la continuità del collegamento relè differenziale - toroide

CONTROL

Manual test: it verifies the residual current relay perfect working

Local : front key

Remote: by external contact closing (Not available with dc supply and Uaux 48Vac)

Automatic continuous test: it verifies the integrity of the connection between relay and ring core

ALLARME

Memorizzazione intervento ¹: LED rosso "TRIP" + autoritenuta relè

¹ esclusa con reset automatico

Ripristino (reset): manuale o automatico, selezionabile tramite dip switch

Manuale locale: pulsante frontale

Manuale remoto: chiusura contatto esterno

Automatico: 3 tentativi di ripristino (1 ogni 60 secondi)

Ripristino inibito con corrente differenziale persistente: > 50% IΔn

ALARM

TRIP state memorization ¹: red LED "TRIP" + relay self-retaining

¹ excluded with automatic reset

Reset: manual or automatic, selectable by dip switch

Local manual: front key

Remote manual: external contact closing

Automatic: 3 restart attempts (1 each 60 seconds)

Inhibited reset with persistent residual current: > 50% IΔn

USCITA

Relè: 1 contatto di scambio SPDT

Portata contatti: 5A 250Vca $\cos\varphi$ 1 - 3A 250Vca $\cos\varphi$ 0,4 - 5A 30Vcc

Sicurezza negativa/condizionata (relè normalmente diseccitato) oppure
positiva/incondizionata (relè normalmente eccitato): selezionabile tramite dip switch

ALIMENTAZIONE AUSILIARIA

Valore nominale U_{aux} : 24V - 48V - 115V - 230V - 240V - 400V

Variazione ammessa: 0,85...1,1 U_{aux} - 40...60V (U_{aux} 48V)

Frequenza nominale: 50Hz

Variazione ammessa: 47...63Hz

Autoconsumo: $\leq$ 2,5VA

Valore nominale U_{aux} : 20...150Vcc

Protezione contro l'inversione di polarità

Autoconsumo: $\leq$ 2,5W

Insensibilità ai buchi di tensione con durata fino a 300ms (U_{aux} nominale)

ISOLAMENTO

(IEC/EN 60947-1)

Categoria di installazione: III

Grado di inquinamento: 2

Tensione di riferimento per l'isolamento: 450V

Prova di tensione a impulso 5kV 1,2/50ms 0,5J

Circuiti considerati: ingresso, uscita relè, alimentazione ausiliaria

Prova a tensione alternata 2,5kV valore efficace 50Hz/1min

Circuiti considerati: ingresso, uscita relè, alimentazione ausiliaria

Prova a tensione alternata 4kV valore efficace 50Hz/1min

Circuiti considerati: tutti i circuiti e massa

PROVE DI COMPATIBILITA' ELETTROMAGNETICA

Prove di emissione in accordo con IEC/EN 60947-2

Prove di immunità in accordo con IEC/EN 60947-2

CONDIZIONI AMBIENTALI

Temperatura di impiego: -5...50°C

Temperatura limite di funzionamento: -10...55°C

Temperatura di magazzinaggio: -40...70°C

Umidità relativa (EN 60755): 50% (valore massimo a 40°C)

Adatto all'utilizzo in clima tropicale

Massima potenza dissipata¹: $\leq$ 2W

¹Per il dimensionamento termico dei quadri

CUSTODIA

Custodia: 2 moduli DIN 43880

Frontale: sigillabile per evitare manomissioni

Conessioni: morsetti fissaggio a vite per conduttore fino a 4 mm²

Montaggio: a incastro su profilato 35mm

Tipo profilato: a cappello TH35-15 (EN / IEC60715)

Materiale custodia: policarbonato autoestinguente

Grado di protezione (EN / IEC60529): IP50 frontale, IP20 morsetti

Peso: 200 grammi

OUTPUT

Relay: 1 SPDT contact

Contact range: 5A 250Vac $\cos\varphi$ 1 - 3A 250Vac $\cos\varphi$ 0,4 - 5A 30Vdc

Negative security (normally de-energised relay) or positive security fail safe
(normally energised relay): selectable by dip switch

AUXILIARY SUPPLY

Rated value U_{aux} : 24V - 48V - 115V - 230V - 240V - 400V

Tolerance: 0,85...1,1 U_{aux} - 40...60V (U_{aux} 48V)

Rated frequency: 50Hz

Tolerance: 47...63Hz

Rated burden: $\leq$ 2,5VA

Rated value U_{aux} : 20...150Vdc

Protected against incorrect polarity

Rated burden: $\leq$ 2,5W

Immunity to short interruption of supply voltage up to 300ms (Rated U_{aux})

INSULATION

(IEC/EN 60947-1)

Installation category: III

Pollution degree: 2

Insulation reference voltage: 450V

Impulse voltage test 5kV 1,2/50µs 0,5J

Considered circuits: input, relay output, auxiliary supply

A.C. voltage test 2,5kV r.m.s. 50Hz/1 min

Considered circuits: input, relay output, auxiliary supply

A.C. voltage test 4kV r.m.s. 50Hz/1 min

Considered circuits: all circuits and earth

TESTS FOR ELECTROMAGNETIC COMPATIBILITY

Emission tests according to IEC/EN 60947-2

Immunity tests according to IEC/EN 60947-2

ENVIRONMENTAL CONDITIONS

Nominal temperature range: -5...50°C

Limit temperature range: -10...55°C

Limit temperature range for storage: -40...70°C

Relative humidity (IEC 60755): 50% (highest value at 40°C)

Suitable for tropical climates

Max. power dissipation¹: $\leq$ 2W

¹For switchboard thermal calculation

HOUSING

Housing: 2 module DIN 43880

Front frame: sealable to avoid improper opening

Connections: screw terminals for cable up to 4 mm²

Mounting: snap-on 35mm rail

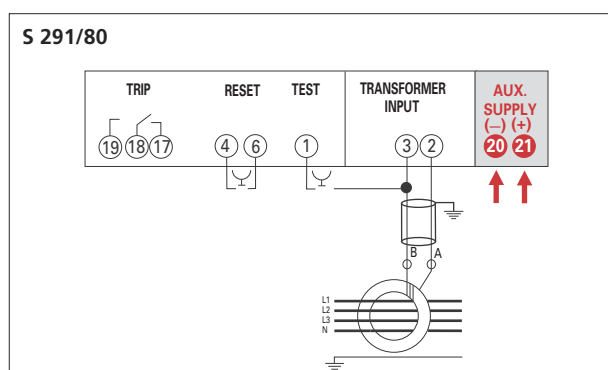
Rail type: top hat TH35-15 (EN / IEC 60715)

Housing material: self-extinguishing polycarbonate

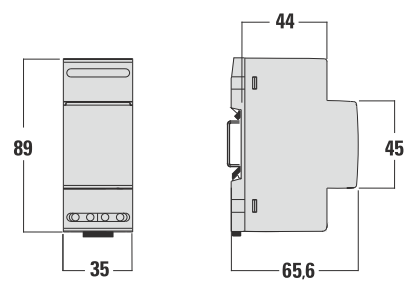
Protection degree (EN / IEC 60529): IP50 front frame, IP20 terminals

Weight: 200 grams

SCHEMA D'INSERZIONE WIRING DIAGRAM



DIMENSIONI DIMENSIONS



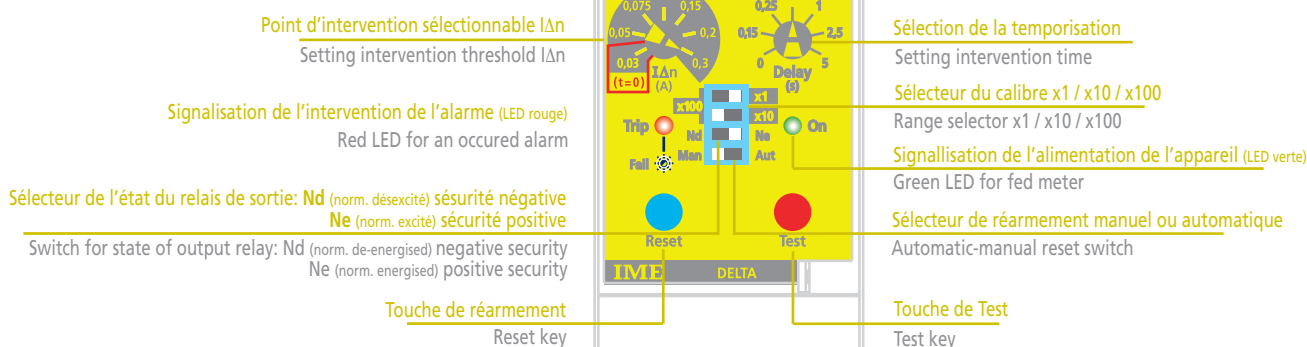
Relais différentiel 2 Modules

Déclenchement instantané
($t = 0$) à $I_{\Delta n}$ 30mA
Point d'intervention sélectionnable
30mA...30A (19 calibres)
Sécurité positive ou négative
sélectionnable par l'utilisateur
Test automatique permanent
Reset manuel ou automatique
(3 essais)

Residual current device 2 Module

Instantaneous
($t = 0$) at $I_{\Delta n}$ 30mA
Selectable set point
30mA...30A (19 ranges)
Field-selectable negative or positive security
(fail safe)
Automatic permanent test
Manual or automatic reset
(3 restart attempts)

Delta RD1A



MODEL MODEL		RD1A
REFERENCE CODE		4021 20...
NOTICE TECHNIQUE		NT544
CALIBRES RANGES	19: 0,03...30A	X
	18: 0,5...30A	
DECLenchement INSTANTANE INSTANTANEOUS	t=0s à/at IΔn 30mA	X
FORME D'ONDE WAVEFORM	Sinusoïdale (type AC) <i>Sinusoidal (AC type)</i>	X
	Pulsante hachée avec composante continue (type A) <i>Chopped pulsating with superimposed dc (A type)</i>	X
FILTRE POUR LES HARMONIQUES FILTER FOR HARMONICS	Sélectionnable <i>Selectable</i>	
	Fixe <i>Fixed</i>	
NORME DE REFERENCE ACCORDING TO	EN60947-2 IEC60947-2	X
ALARME	1 sortie relais <i>1 relay output</i>	X
	2 sortie relais <i>2 relay output</i>	
	1 sortie + préalarme <i>1 relay + Pre-alarm</i>	
AFFICHAGE IΔn DISPLAY	Barre LED <i>LED Bargraph</i>	
	Affichage <i>Display</i>	
SORTIE RELAIS ¹ RELAY OUTPUT	SPDT	X
	SPDT + SPST	
	2 SPDT	
SECURITE positive / negative SECURITY	Sélectionnable <i>Selectable</i>	X
TEST	Local	X
	Déporté <i>Remote</i>	■
	Automatique <i>Automatic</i>	X
RESET	Local <i>Local</i>	X
	Déporté <i>Remote</i>	X
	Automatique <i>Automatic</i>	X
ALIMENTATION AUXILIAIRE AUXILIARY SUPPLY	230Vac	X
	24-48-115-240-400Vac	X
	20...150Vcc/dc	X
	10...36Vcc/dc	
DIMENSIONS AUXILIARY SUPPLY	2 Modules	X
	4 Modules	
	48 x 48mm	
	72 x 72mm	
	96 x 96mm	

■ Non réalisable avec alim. aux. 20...150Vcc-48Vca / *Not available with aux.supply 20...150Vcc-48Vca*

REFERENCE ORDERING CODE	ALIM.AUX. AUX. SUPPLY
4021 2026	20...150V dc- 40...60Vac
4021 2009	115V ac
4021 2020	230V ac
4021 2021	240V ac
4021 2025	400V ac
	24V ac

ENTREE

Raccordement: réseau basse tension, avec transformateur série DEL..N
Forme d'onde IΔn: sinusoïdale (type AC), ou pulsante hachée avec composante continues (type A) selon IEC/EN 60947-2 Annexe M
Fréquence nominale fn: 50Hz
Fréquence de fonctionnement: 47...63Hz

REGLAGES

Déclenchement IΔn: sélectionnable par dip-switch 7 positions, 3 gammes x1 - x10 - x100
Calibre IΔn: voir tableau
Courant différentiel de non fonctionnement : 0,5 IΔn

		0,03	0,05	0,075	0,1	0,15	0,2	0,3
IΔn	X1	30mA	50mA	75mA	100mA	150mA	200mA	300mA
	X10	300mA	500mA	750mA	1A	1,5A	2A	3A
	X100	3A	5A	7,5A	10A	15A	20A	30A

Temporisation t: sélectionnable par dip-switch 7 positions
Choix des temporisations t: 0 - 0,15 - 0,25 - 0,5 - 1 - 2,5 - 5 secondes
En sélectionnant le seuil d'intervention sur la position 0,03, le délai

INPUT

Connection: low voltage lines, with series TD transformer
Waveform IΔn: sinusoidal (type AC) or chopped pulsating with superimposed d.c. (type A) according to IEC/EN 60947-2 Annex M
Rated frequency fn: 50Hz
Working frequency: 47...63Hz

SET UP

Current set point IΔn: selectable by 7-position potentiometer, 3 ranges x1 - x10 - x100
Ranges IΔn: see table
Non-operating residual current: 0,5 IΔn

Intervention time t: selectable by 7-position potentiometer
Adjustable range t: 0 - 0,15 - 0,25 - 0,5 - 1 - 2,5 - 5 seconds
Selecting the intervention threshold on position 0,03 the intervention delay is

Seuil d'intervention (IΔn) Set point (IΔn)	0,03A	0,05...30A					
Choix des temporisations t(s) Selected delay t(s)	0s	0,15s	0,25s	0,5s	1s	2,5s	5s
Durée de déclenchement @ 2IΔn Non-operating time at @ 2IΔn		0,15s	0,25s	0,5s	1s	2,5s	5s
Durée de dédencement maxi @ 5IΔn Max. delay @ 5IΔn	0,03s	0,24s	0,35s	0,63s	1,20s	2,80s	5,50s

d'intervention est automatiquement exclu, indépendemment de la position du sélecteur de calibre (x1/10/100).

automatically excluded, independently of position of range selector (x1/10/100).

SIGNALISATION

Instrument alimenté: LED verte "ON"
Déclenchement de l'alarme: LED rouge "TRIP" + commutation relais
Interruption raccordement relais- tore: LED rouge "TRIP" + commutation relais

SIGNALING

Power ON: green LED "ON"
Alarm intervention: red LED "TRIP" + relay switching
Ring current transformer-relay connection failure: red LED "TRIP" blinking + relay switching

CONTROLE

Test manuel: permet de vérifier le bon fonctionnement du dispositif différentiel, Local : touche en face avant
Déporté: par contact fermé extérieur (non dispo. avec alim.dc et Uaux 48Vac)
Test automatique permanent: permet de vérifier l'efficacité du dispositif (relais différentiel-tore)

CONTROL

Manual test: it verifies the residual current relay perfect working
Local : front key
Remote: by external contact closing (Not available with dc supply and Uaux 48Vac)
Automatic continuous test: it verifies the integrity of the connection between relay and ring core

ALARME

Mémorisation du déclenchement: LED rouge "TRIP" et automaitien du relais * sauf avec le réarmement automatique
Réarmement (reset): manuel ou automatique, sélectionnable par dip switch
Réarmement manuel local: touche en face avant
Réarmement manuel déporté : par contact fermé externe
Réarmement automatique : 3 essais (1 toutes les 60 secondes)
Inhibition du réarmement en cas de défaut persistant: > 50% IΔn

ALARM

TRIP state memorization ': red LED "TRIP" + relay self-retaining ' excluded with automatic reset
Reset: manual or automatic, selectable by dip switch
Local manual: front key
Remote manual: external contact closing
Automatic: 3 restart attempts (1 each 60 seconds)
Inhibited reset with persistent residual current: > 50% IΔn

SORTIE

Relais: 1 contact inverseur SPDT
Pouvoir de coupure: 5A 250Vac cosφ 1 - 3A 250Vac cosφ 0,4 - 5A 30Vdc
Sécurité négative (relais normalement désexcité) ou positive (relais normalement excité): sélectionnable par dip-switch

ALIMENTATION AUXILIAIRE

Valeur nominale Uaux : 24V - 48V - 115V - 230V - 240V - 400V
Variation admissible: 0,85...1,1 Uaux - 40...60V (Uaux 48V)
Fréquence nominale: 50Hz
Variation admissible: 47...63Hz
Autoconsommation: ≤ 2,5VA
Valeur nominale Uaux : 20...150Vdc
Protection contre l'inversion de polarité
Autoconsommation: ≤ 2,5W
Insensibilité aux micro-coupures d'alim. de tension jusqu'à 300ms (Uaux nominale)

ISOLEMENT (EN 60947-1)

Catégorie de l'installation: III
Degré de pollution: 2
Tension nominale d'isolement: 450V
Tension d'essai 5kV impulsion normalisée 1,2/50µs 0,5J
Circuits concernés: entrée, sortie relais, alimentation auxiliaire
Tension d'essai 2,5kV valeur efficace 50Hz/1 min
Circuits concernés: entrée, sortie relais, alimentation auxiliaire
Tension d'essai 4kV valeur efficace 50Hz/1 min
Circuits concernés: tous les circuits et la masse

TEST DE COMPATIBILITE ELECTROMAGNETIQUE

Essai d'émission selon la norme IEC/EN 60947-2
Essai d'immunité selon la norme IEC/EN 60947-2

CONDITION D'UTILISATION

Température de référence: -5...50°C
Température limite de fonctionnement: -10...55°C
Température de stockage: -40...70°C
Humidité relative (EN 60755): 50% (valeur maximum à 40°C)
Adapté pour l'utilisation en climat tropical
Puissance maximum dissipée¹: ≤ 2W
¹ Pour le dimensionnement thermique du coffret

BOITIER

Boîtier: 2 modules DIN 43880
Face avant: plombable pour éviter une modification non autorisée
Raccordement: par vis capacité maxi. fil rigide 4 mm ²
Fixation: rail 35mm
Type de profil : TH35-15 (EN / IEC 60715)
Matériaux du boîtier: makrolon autoextinguible
Degré de protection (EN/IEC 60529): IP50 face avant, IP20 bornes
Poids: 200 grammes

OUTPUT

Relay: 1 SPDT contact
Contact range: 5A 250Vac cosφ 1 - 3A 250Vac cosφ 0,4 - 5A 30Vdc
Negative security (normally de-energised relay) or positive security fail safe (normally energised relay): selectable by dip switch

AUXILIARY SUPPLY

Rated value Uaux: 24V - 48 - 115V - 230V - 240V - 400V
Tolerance: 0,85...1,1Uaux - 40...60V (Uaux 48V)
Rated frequency: 50Hz
Tolerance: 47...63Hz
Rated burden: ≤ 2,5VA
Rated value Uaux: 20...150Vdc
Protected against incorrect polarity
Rated burden: ≤ 2,5W
Immunity to short interruption of supply voltage up to 300ms (Rated Uaux)

INSULATION (IEC 60947-1)

Installation category: III
Pollution degree: 2
Insulation reference voltage: 450V
Impulse voltage test 5kV 1,2/50µs 0,5J
Considered circuits: input, relay output, auxiliary supply
A.C. voltage test 2,5kV r.m.s. 50Hz/1 min
Considered circuits: input, relay output, auxiliary supply
A.C. voltage test 4kV r.m.s. 50Hz/1 min
Considered circuits: all circuits and earth

TESTS FOR ELECTROMAGNETIC COMPATIBILITY

Emission tests according to IEC/EN 60947-2
Immunity tests according to IEC/EN 60947-2

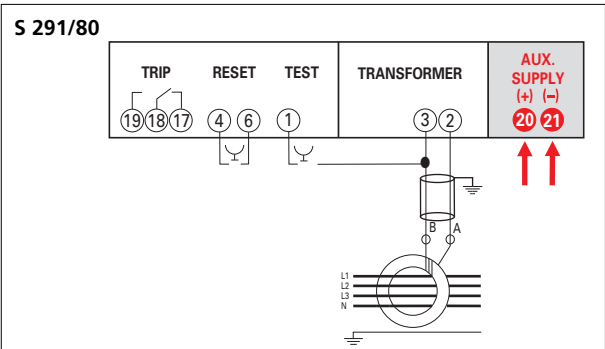
ENVIRONMENTAL CONDITIONS

Nominal temperature range: -5...50°C
Limit temperature range: -10...55°C
Limit temperature range for storage: -40...70°C
Relative humidity (IEC 60755): 50% (highest value at 40°C)
Suitable for tropical climates
Max. power dissipation¹: ≤ 2W
¹ For switchboard thermal calculation

HOUSING

Housing: 2 module DIN 43880
Front frame: sealable to avoid improper opening
Connections: screw terminals for cable up to 4 mm ²
Mounting: snap-on 35mm rail
Rail type: top hat TH35-15 (EN / IEC 60715)
Housing material: self-extinguishing makrolon
Protection degree (EN /IEC 60529): IP50 front frame, IP20 terminals
Weight: 200 grams

SCHEMA DE RACCORDEMENT WIRING DIAGRAM



DIMENSIONS DIMENSIONS

