E-Stop & Guard

Monitoring Modules

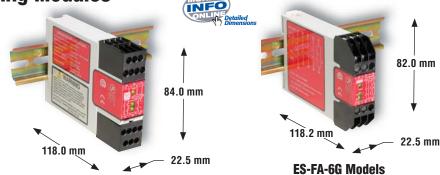
- Modules monitor external devices for contact failure or wiring faults.
- · Module goes into lockout mode if fault is detected
- Available voltages include 24V ac/dc; 24V dc; 115V ac or 12-24V dc; or 230V ac or 12-24V dc.
- Modules serve to monitor positive-opening E-stop and interlocking switches.
- Ratings are NEMA 1 and at least IEC IP20.

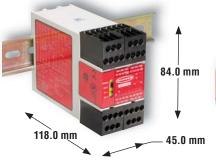
GM-FA-10J Specifications	Ģ	114
ES-FAAA Specifications		115
ESA-5A Specifications		116
ES-TN-1H Specifications		117
ES-TN-14H Specifications		118
ES-FA-6G Specifications		119



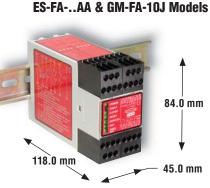
E-Stop & Guard Monitoring Modules

- Easy-to-see red and green LED status indicators
- Rugged polycarbonate housing
- Plug-in or fixed terminal blocks
- Standard 35 mm DIN rail track mounting





ES-..A-5A Models



ES-TN-1H.. Models



ES-TN-14H.. Models

AFETY MODULES PICO-GUARD CONTROLLERS E-STOP/GUARD MONITORING SARTYMAT MANITORING

E-Stop & Guard Monitoring Modules

INFO ONLINE Download

	E C						0.11		PE		
Model	Functional Stop Category	Supply Voltage	Inputs	Safety Outputs	Output Rating	Aux. Outputs	Output Response Time	Delay	Data Sheet		
GM-FA-10J	0	24V ac/dc	1 NC (single) or 1 NC & 1 NO (dual)	2 NO	6 amps	_	35 ms	_	60998		
ES-FA-9AA	- 0	24V ac/dc	1 NC (single) or 2 NC (dual)		- 6 amps	_	- 25 ms —		60606		
ES-FA-11AA	0	24 0 00/00		2 NO		1 NC					
ES-UA-5A			1 NC (single)	4 NO 6 amps	6 amns	1 NC &	25 ms	_	122365		
ES-VA-5A	Ü	230V ac & 12-24V dc	2 NC (dual)		o umpo	2 PNP					
ES-TN-1H5			24V dc 1 NC (single) or 2 NC (dual)	2 NO & 2 NO w/delay	& 4 amps	1 NC (delayed) & 1 NC (immediate)	50 ms	0 - 20 sec.	- 61061		
ES-TN-1H6		24V dc						0 - 200 sec.			
ES-TN-1H1								0.25 sec.			
ES-TN-1H2	-							0.5 sec.			
ES-TN-1H3	_							1.0 sec.			
ES-TN-1H4	0 & 1							2.0 sec.			
ES-TN-1H7								4.0 sec.			
ES-TN-1H8	-							6.0 sec.			
ES-TN-1H9	-							8.0 sec.			
ES-TN-1H10	-							10.0 sec.			
ES-TN-1H11	-							15.0 sec.			
ES-TN-1H12								20.0 sec.			
ES-TN-14H5	0.0.4	0 & 1	041/4-	041/ 45	1 NC (single)	4 NO &	A ampa	1 NC (delayed) &	50 ms	0 - 20 sec.	69426
ES-TN-14H6	υαι	24V dc	or 2 NC (dual)	4 NO w/delay	4 amps	1 NC (immediate)	30 1115	0 - 200 sec.	68436		
ES-FA-6G	0	24V ac/dc	1 NC (single)	3 NO	6 amps	1 NC	35 ms	_	55581		

NC = Normally Closed Relay, NO = Normally Open Relay

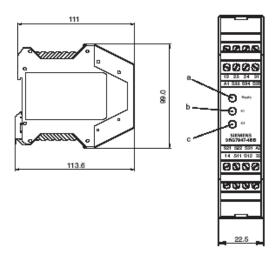
GM-FA-10J Guard Monitoring Module Specifications						
Supply Voltage and Current	24V ac/dc ± 20% Power consumption: approx. 3 VA / 3 W					
Supply Protection Circuitry	Protected against transient voltages and reverse polarity					
Output Configuration	Each normally open output channel is a series connection of contacts from two forced-guided (mechanically linked) relays, K1-K2. Contacts: AgNi, 5 µm gold-plated Low Current Rating: Caution: The 5 µm gold-plated contacts allow the switching of low current/low voltage. To preserve the gold plating on the contacts, do not exceed the following max. values at any time: Min. voltage: 1V ac/dc Min. current: 5 mA ac/dc Min. power: 5 mW (5 mVA) Max. power: 7 W (7 VA)					
	High Current Rating: If higher loads must be switched through one or more of the contacts, the minimum and maximum values of the contact(s) changes to: Min. voltage: 15V ac/dc Min. current: 30 mA ac/dc Min. power: 5 W (5 VA) Max. power: 200 W (1,500 VA) Mechanical life: 50,000,000 operations Electrical life: 150,000 cycles typical, @ 200 W (1,500 VA) switched power, resistive load Note: Transient suppression is recommended when switching inductive loads. Install suppressors across					
Output Response Time	load. Never install suppressors across output contacts. 35 milliseconds					
Input Requirements	Input switch must have a normally closed contact and a normally open contact capable of switching 5 to 50 mA @ 15 to 30 V dc. Reset switch must have one normally open contact capable of switching 5 to 50 mA @ 15 to 30V dc. Max. external resistance between terminals S11/S12, S11/S13, S21/S22 and S21/S23: 270 Ω each.					
Simultaneity Monitoring	2-Channel operation: 3 seconds 1-Channel operation: infinite					
Status Indicators	4 green LEDs: Power: power is supplied to Safety Module Fault Channel 1: inputs satisfied (guard closed) Channel 2: inputs satisfied (guard closed) Output: K1 and K2 energized, safety outputs closed					
Construction	Polycarbonate housing					
Environmental Rating	Rated NEMA 1; IEC IP40, Terminals IP20					
Mounting	Mounts to standard 35 mm DIN rail track. Safety Module must be installed inside an enclosure rated NEMA 3 (IEC IP54), or better.					
Vibration Resistance	10 to 55 Hz @ 0.35 mm displacement per IEC 68-2-6					
Operating Conditions	Temperature: 0° to +50° C Relative humidity: 90% @ +50° C (non-condensing)					
Safety Category	4 per ISO 13849-1 (EN954-1) (depending on application)					
Certifications	For a list of certifications see page 237.					
Wiring Diagrams	1-Channel Coded Magnet Switches: WD043 (p. 271) 2-Channel Positive Opening Switches: WD044 (p. 271) 1-Channel (Multiple Guards): WD045 (p. 272) 2-Channel (Multiple Guards): WD046 (p. 272) Guarded Machine: WD047 (p. 274)					

ES-FA-..AA Safety Module Specifications Supply Voltage and Current 24V ac/dc, +/- 10%; 50/60Hz Power consumption: approx. 2 W/2 VA **Supply Protection Circuitry** Protected against transient voltages and reverse polarity **Output Configuration** ES-FA-9AA: 3 normally open output channels ES-FA-11AA: 2 normally open output channels and 1 normally closed auxiliary output channel. Each normally open output channel is a series connection of contacts from two forced-guided (positiveguided) relays, K1-K2. The normally closed contact 31-32 is a parallel connection of contacts from K1-K2. Contacts: AgNi, 5 µm gold-plated **Low Current Rating:** Caution: The 5 µm gold-plated contacts allow the switching of low current/low voltage. To preserve the gold plating on the contacts, the following max. values should not be exceeded at any time: Min. voltage: 1V ac/dc Max. voltage: 60V Min. current: 5 mA ac/dc Max. current: 300 mA Min. power: 5 mW (5 mVA) Max. power: 7 W (7 VA) **High Current Rating:** If higher loads must be switched through one or more of the contacts, the minimum and maximum values of the contact(s) changes to: Min. voltage: 15V ac/dc Max. voltage: 250V ac/dc Min. current: 30 mA ac/dc Max. current: 6 A (ES-FA-9AA) and 7A (ES-FA-11AA) Min. power: 5 W (5 VA) Max. power: 200 W (1,500 VA) Mechanical life: 50,000,000 operations Electrical life: ES-FA-9AA: 150,000 operations (typical, @ 200 W (1,500 VA) switched power, resistive load) ES-FA-11AA: 130,000 operations (typical, @ 200 W (1,750 VA) switched power, resistive load) Note: Transient suppression is recommended when switching inductive loads. Install suppressors across load. Never install suppressors across output contacts. **Output Response Time** 25 milliseconds typical Input switch must have one or two normally closed contacts capable of switching 40 to 100 mA @ 13 to 27V ac/dc. Input Requirements Reset switch must have one normally open contact capable of switching 20 to 30 mA @ 13 to 27V ac/dc. Minimum OFF-State 250 milliseconds **Recovery Time Status Indicators** 3 green LED indicators: Power ON K1 energized K2 energized Construction Polycarbonate housing **Environmental Rating** Rated NEMA 1; IEC IP40, Terminals IP20 Mounting Mounts to standard 35 mm DIN rail track. Safety Module must be installed inside an enclosure rated NEMA 3 (IEC IP54), or better. **Vibration Resistance** 10 to 55Hz @ 0.35 mm displacement per IEC 68-2-6 **Operating Conditions** Temperature: 0° to +50° C Relative humidity: 90% @ +50° C (non-condensing) Certifications For a list of certifications see page 237. Wiring Diagrams 1-Channel: WD048 (p. 275) 2-Channel: WD049 (p. 276)

E	SA-5A Safety Module Specifications			
Supply Voltage and Current	ES-UA-5A: 115V ac (A1-A2), 12-24V dc, ± 15%, 10% max. ripple (B1-B2) ES-VA-5A: 230V ac (A1-A2), 12-24V dc, ± 15%, 10% max. ripple (B1-B2) Power consumption: approx. 7 VA/4 W			
Supply Protection Circuitry	Protected against transient voltages and reverse polarity			
Output Configuration	Outputs (K1 & K2): four redundant (total of eight) safety relay (forced-guided) contacts – AgNi, 5 µm gold-plated, plus 1 normally closed auxiliary monitor output - AgNi, 5 µm gold-plated. Low Current Rating: Caution: The 5 µm gold-plated contacts allow the switching of low current/low voltage.			
	To preserve the gold plating on the contacts, the following max. values should not be exceeded at any time: Min. voltage: 1V ac/dc Max. voltage: 60V			
	Min. current: 5 mA ac/dc Max. current: 300 mA			
	Min. power: 5 mW (5 mVA) Max. power: 7 W (7 VA)			
	High Current Rating: If higher loads must be switched through one or more of the contacts, the minimum and maximum values of the contact(s) changes to:			
	Min. voltage: 15V ac/dc Max. voltage: 250V ac/dc			
	Min. current: 30 mA ac/dc			
	Mechanical life: 50,000,000 operations Electrical life: 150,000 operations (typical, @ 1,500 VA switched power, resistive load) 150,000 operations (typical, @ 200 W switched power, resistive load)			
	Note: Transient suppression is recommended when switching inductive loads. Install suppressors across load. Never install suppressors across output contacts. Solid-State Monitor Outputs: Two non-safety solid-state dc outputs Output at Y32 monitors state of outputs – conducts (output high) when both K1 and K2 are energized Output at Y35 conducts (output high) when internal power supply is OK Output circuits require application of +12-24V dc ±15% at terminal Y31; dc common at Y30 Maximum switching current: 100 mA at 12-24V dc Both outputs are protected against short circuits			
Output Response Time	25 milliseconds typical			
Input Requirements	Input switch must have normally closed contacts each capable of switching 20 to 50 mA @ 12 to 30V dc; and must be open ≥10 milliseconds for a valid stop command. Reset switch must have one normally open contact capable of switching 20 to 50 mA @ 12 to 30V ac/dc.			
ON-Time Delay	80 milliseconds; time from the E-stop contacts to close (Auto Reset) or the reset button to open (Manual Reset) and the safety outputs to close.			
Status Indicators	3 green LED indicators: Power ON Fault (internal power supply, ground fault, K1 energized K2 energized internal failures)			
Construction	Polycarbonate housing			
Environmental Rating	Rated NEMA 1; IEC IP20			
Mounting	Mounts to standard 35 mm DIN rail track. Safety Module must be installed inside an enclosure rated NEMA 3 (IEC IP54), or better.			
Vibration Resistance	10 to 55Hz @ 0.35 mm displacement per IEC 68-2-6			
Operating Conditions	Temperature: 0° to +50° C Relative humidity: 90% @ +50° C (non-condensing)			
Certifications	For a list of certifications see page 237.			
Wiring Diagrams	1-Channel: WD050 (p. 277) 2-Channel: WD051 (p. 278)			

ES-TN-1H.. Safety Module Specifications Supply Voltage and Current 24V dc, ±20% Power consumption: approx. 5 W **Supply Protection Circuitry** Protected against transient voltages and reverse polarity **Output Configuration** Outputs K1& K2: Two redundant (total of four) safety relay (forced-guided) contacts - AgNi, gold flashed one auxiliary normally closed contact - AgNi, gold flashed Outputs K3 &K4: Two redundant (total of four) delayed relay (forced-guided) contacts - AgNi, gold flashed one auxiliary normally closed contact - AgNi, gold flashed Contact ratings (all normally open and normally closed output contacts): Max. voltage: 250V ac or 250V dc Max. current: 4 A ac or dc Min. current: 30 mA @ 24V dc Max. power: 1000 VA, 100 W Mechanical life: 50.000.000 operations Electrical life: 100.000 at full resistive load NOTE: Transient suppression is recommended when switching inductive loads. Install suppressors across load. Never install suppressors across output contacts. **Output Response Time** K1 &K2: 50 milliseconds typical K3 &K4 (ES-TN-1H1): 0.25 second K3 &K4 (ES-TN-1H2): 0.5 second K3 &K4 (ES-TN-1H3): 1.0 second K3 &K4 (ES-TN-1H4): 2.0 seconds **K3 & K4 (ES-TN-1H5):** 0, 0.5, 1, 2, 4, 6, 8, 10, 15, 20 seconds K3 & K4 (ES-TN-1H6): 0, 5, 10, 20, 30, 50, 70, 100, 150, 200 seconds **K3 &K4 (ES-TN-1H7):** 4.0 seconds K3 &K4 (ES-TN-1H8): 6.0 seconds K3 &K4 (ES-TN-1H9): 8.0 seconds K3 &K4 (ES-TN-1H10): 10.0 seconds K3 &K4 (ES-TN-1H11): 15.0 seconds K3 &K4 (ES-TN-1H12): 20.0 seconds Delayed Output Timing Tolerance: Set time ±100 milliseconds or ±2%, whichever is greater **Input Requirements** Input switch must have a normally closed contact capable of switching 20 mA @ 24V dc. Reset switch must have one normally open contact capable of switching 20 mA @ 24V dc. NOTE: Inputs must be voltage-free, dry contacts. **ON-Time Delay** ≥ 100 milliseconds; time from the E-stop contacts to close (Auto Reset) or the Reset button to open (Manual Reset) and the safety outputs to close. 1 red LED indicator: **Status Indicators** 6 green LED indicators: Power Monitor Fault E-Stop Out (K1 &K2 ON/OFF) Reset Timed-Out (K3 & K4 ON/OFF) Construction Polycarbonate housing **Environmental Rating** Rated NEMA 1; IEC IP40, Terminals IP20, max. terminal torque 0.8 Nm Mounting Mounts to standard 35 mm DIN rail track. Safety Module must be installed inside an enclosure rated NEMA 3 (IEC IP54), or better. Vibration Resistance 10 to 55Hz @ 0.35 mm displacement per IEC 68-2-6 **Operating Conditions** Temperature: 0° to +50° C Relative humidity: 90% @ +50° C (non-condensing) Certifications For a list of certifications see page 237. Wiring Diagrams 2-Channel: WD052 (p. 279)





A1(L+) S11 S33 S34 S35 S31 S22 13 23 0 €. l 工 CH1 K1 3RG7847-4BB CH2 Ż ö o. K2 口 ż --0 Ø--Ø--Ø-Ø A2(L-) S21S12 14 24

SIEMENS

Siemens Aktiengesellschaft Automation and Drives Factory Automation Sensors Postfach 4848 D-90437 NURENBERG, GERMANY http://www.siemens.com/simatic-sensors

3RG7847-4BB Standard Evaluation Unit for Light Curtains in accordance with IEC-, EN 60204-1 Stop Category 0, depending on wiring up to cat. 4 (EN 954-1)

Connecting and Operating Instructions About these Connecting and Operating Instructions

These operating instructions contain information regarding proper equipment use, it is included in the scope of delivery. Safety precautions and warnings are designated by the symbol "A". Stemens AG is not liable for damage resulting from improper use of its equipment. Familiarity with these instructions constitutes part of the knowledge required for proper use.

1. System Overview and Range of Applications

- a = Supply voltage on (LED green)
- b = Relay K1 activated c = Relay K2 activated
- 1- or 2-channel Emergency-Stop wiring
- Cross circuit recognition

 Monitoring of external contactors (EDM) in the push-button circuit
- Monitored start button
- Automatic or manual start
- 2 release circuits, 1 normal closed contact as signal circuit
- LED displays for Power, K1 and K2 Operating voltage 24 V AC/DC
- Housing width 22.5 mm

Range of Applications

- Single-channel Emergency-Stop wiring, acc. EN 954-1 to Cat. 2
 Two-channel Emergency-Stop switching with cross circuit recognition (to Cat. 4, EN 954-1)
- Sequential circuitry for safety light barriers, Type 4, with relay or semi-conductor outputs

2. Safety Precautions 🛧

- Improper or inappropriate use can result in danger to the life and limbs of the ma-chine operator or in damage to property.

 The relevant regulations are valid for the use of 3RG7847-488 Emergency-Stop relays. The category of Emergency-Stop function must be determined under con-sideration of the risk evaluation of the machinery. The responsible local authori-ties are available to answer questions related to safety issues.
- 9RG7847-4BBF is suited only for uncontrolled shut-down (IEC 60204-1 Stop Ca-
- tegory 0).

 The mechanical and electrical installation is to be performed by trained specia-
- The voltage supply to the system must be switched off before and during installa-
- Contact mechanisms with positive guided contacts must be implemented for the contact multiplication of the release circuits.

Function Single-Channel Emergency-Stop Wiring with Manual Start (Connection diagram Fig. 3)

After the supply voltage is applied to A1 and A2, and if the Emergency-Stop button is not pressed, the relays K1 and K2 pick up and lock when the start button is pressed. The release circuits 13-14 and 23-24 close and the signal circuit 31-32 opens. When the Emergency-Stop button is pressed, K1 and K2 go dead and drop cut. The release circuits open, the signal circuit classs. With single-channel Emer-gency-Stop wiring, Category 2 in accordance with EN 954-1 is attained. Earth faults in the push-button circuit are detected.

Two-Channel Emergency-Stop Wiring with Manual Start (Connection diagram Fig. 4)

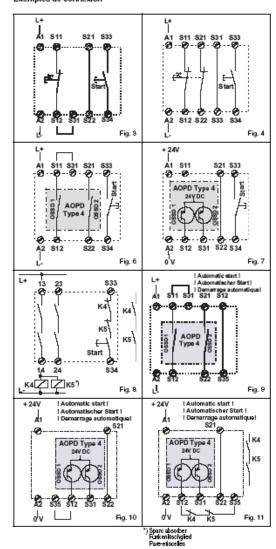
With two-channel Emergency-Stop wiring, to Category 4 in accordance with EN 954-1 is attained. Cross circuits between the push-button contacts and earth faults in the push-button circuit are detected.

Safety Sequential Circuits for Type 4 Optoelectronic Protective Devices (for example light curtains/ light grids 3RG7842)

It is possible to connect safely light barriers, Type 4, with either relay outputs (Connection diagram Fig. 6 manual reset, Fig. 9 automatic reset) or falsate semiconductor outputs and integrated cross circuit monitoring (Connection diagram Fig. 7 manual reset, Fig. 10 automatic reset). When calculating the safety distance, the 3RG7847-4BB's regression delay of 20 ms must also be taken into consideration.

Copyright @ Siemens AG 2007 All rights reserved

Connection Examples / Anschlussbeispiele / Exemples de connexion



Suitable spark suppression required Geeignete Funkeniöschung vorsehen Prévoir pare-étingelles adapté

SIEMENS

Simultaneity monitoring

For the advation of the function, the first signal must be supplied to terminal S12-S35 and the second to S22. The maximum permissible time displacement is 50 ms. If the switching off of the signals takes place in reversed order, simultaneity monitoring will be descrivated. Simultaneity monitoring is only active with connec-tion for automatic start.

Cross Circuit Monitoring

In case of a cross circuit in the inputs S12 and S22 or a grounded short circuit in the input S12, the output relays K1 and K2 are switched off by means of an electronic fuse. The 3RG7847-4B8 can resume operation approx. 2 s after the cause of the problem has been eliminated.

Start Button Monitoring During Manual Start (see, for example, Fig. 3, Fig. 4, Fig. 6, Fig. 7) In order to detect static errors or the blocking of the start button, the button function is monitored for signal changes. The release occurs when the button is let go (1/0 signal change). This function is deactivated during automatic start (see, for example Fig. 9.10).

External Contactor Monitoring (EDM) During Manual Start

So that the function of the external relays can be monitored, the normally-closed contacts of these relays are connected into the start circuit \$33-\$34 in series.

External Contactor Monitoring (EDM) During Automatic Start (see Fig. 11)

So that the function of the external relays can be monitored, the normally-closed contacts of these relays are connected between \$12-\$35 in series.

4. Electrical Installation Installation Requirements ▲

- The general safety precautions in Chapter 2 must be observed.
 Enclosure ratings: housing IP 40, terminals IP 20 → must be built into an IP 54 housing!
- The power supply and the connections 13; 14; 23; 24; 31; 32 must have a safe galvanic isolation from mains voltage.

 Finger-safe in accordance with DIN VDE 0108, Section 100
- In order to prevent the culput contacts from welding together, an external fuse of max. 5 A quick-action or 3.15 A delay-action must be interposed.

 Maximum stripped length of the connecting cables: 8 mm

5. Technical Data 3RG7847-4BB

Safety category Stop category Stop or targety Stop or the control of the cont	5. Technical Data 3hG/84/-4Bi	•
Opening voltage Up Residual ripple [DD] Prequency (AC) 2.4 VSST50 - 60 Pb Power consumption 2.1 W (AC) 1.7 W (DC) Esternal fluse protection for supply circuit 1.4 Adap-action Output contacts Ag6n22 goil-coated, 1 normally-closed contact Ag6n22 goil-coated, 1 normally-closed contact Ag6n22 goil-coated, 1 normally-closed contact Ag6n22 goil-coated	Safety category	
Pesit air rigide DCJ Trequency AC 2.4 Wis 750 - 80 Hz	Stop category	Stop 0 in accordance with IEC 60204-1
Power consumption 2.1 W (AC) 1.7 W (DC)		
Estemal fuse protection for supply circuit Output contacts Agency operations. 2 normally-operationated. 1 normally-closed contact Agency operations. 2 normally-operationated. 3 normally-operationated. 4 normally-operationated. 4 normally-operationated. 4 normally-operationated. 4 normally-operationated. 4 normally-operationated. 5 normally-operationated. 4 normally-operationated. 4 normally-operationated. 4 normally-operationated. 5 n	Residual ripple (DC) / frequency (AC)	
Output contacts Agrino gall-yogen contacts, 1 normally-closed contact Agrino gall-contact making and/or breaking capacity in accordance with Child 24/1/34*** Eth 80947-51 Was permanent current path 5 A quick-existions Has permanent current per current path 5 A quick-existion or 2.15 A delay-action path Was operations per nour 1 10° operations Has operations per hour 1 3800 operations Has operations per hour 1 10° operations Pick-up delay manual start 10° operations Pick-up delay manual start 10° operations Pick-up delay manual start 10° operations Pick-up delay loutom start) 10° operations Pick-up delay bustom start) 10° 290 ms Regression delay, response time 20 ms Minimum start-up firm 934, 935 90 ms Has test pulse acceptance 2 ms Time window for simultaneity monitoring 50 ms Electrical Lax enachasteouvery time 2 s /2 s Control voltage fourment at 151; 252; 251 Adviscible injury time recistance 70° to -50° C Operating temperature 0° to -50° C Operating temperature 0° to -50° C Operating temperature 1 1 to 10° operations 1 P 20	Power consumption	2.1W (AC) / 1.7 W (DC)
Contacts making and/or breaking capacity in soordance with PN 60647-5-1 EN 60647-5-1 Max permanent outrent per current path Sa processions SA processions SA processions SA path Sa permanent outrent per current path SA quick-bodion or \$1.5 A delay-action per outrent path SA quick-bodion or \$1.5 A delay-action per outrent path SA quick-bodion or \$1.5 A delay-action per outrent path SA quick-bodion or \$1.5 A delay-action per outrent path SA quick-bodion or \$1.5 A delay-action per outrent path SA quick-bodion or \$1.5 A delay-action per outrent path SA quick-bodion or \$1.5 A delay-action per outrent path SA quick-bodion or \$1.5 A delay-action per outrent path SA quick-bodion or \$1.5 A delay-action per outrent path SA quick-bodion or \$1.5 A delay-action per outrent per outrent path SA quick-bodion or \$1.5 A delay-action per outrent per o	External fuse protection for supply circuit	
EN 80947-5-1 **1 10° operations.** **1 10° operations.** **1 10° operations.** **1 10° operations.** **3 x 10° operations.** **3 x 10° operations.** **3 x 20° operations.** **3 x 20° operations.** **1 20° operations.** **2 20° operations.** **1 20° operations.** **2 20° operations.** **3 20° operations.** **4 20° operations.** **5 20° operations.**	Output contacts	
External contact fuse protection per current post Max operations per hour 3000 operations his Max operations per hour 3000 operations his Max operations per hour 3000 operations his Max operations per hour 10° operations 70° ms 10° operations 70° ms 10° operations 70° ms 10° operations 10°	capacity in accordance with EN 60947-5-1	") 10° operations, "") 5 x 10° operations
port Max operations per hour Max operations per hour Mechanical He time 10° operations 10° opera		
Hechanical He fine	path	' '
Pick-up delay - manual start 70 ms Pick-up delay (subm. start) 10 29 ms Pick-up delay (subm. start) 10 29 ms Regression delay, response time 20 ms Hiniman start-up firm 934, 935 90 ms Haz test pulse acceptance 2 ms Time window for simultaneitymentoring 50 ms Electrical Class readiness/recovery time 2 s 12 s Tournal visiting - fourneit at 151, 252, 531 Haz incoming current 320 mA + 7.75 ms Admissible injury the recisitance 70 20 mA Admissible injury the recisitance 70 20 mA Queen visiting temperature 0° to +50° C Opening temperature 250 ms 20 m		
Pick-up delay (autom start) Regression delay, response time Whitmum start-up time \$34, \$35 Wax test pulse acceptance Time window to standurshymentoring Electricic buse readmeastreowery time 2 of 2 s Contrid voltage fourment at \$12, \$22, \$31 Wax incoming current Admissible input five resistance Contrid voltage fourment at \$12, \$22, \$31 Wax incoming current Admissible input five resistance Contrid voltage fourment at \$12, \$22, \$31 White incoming current Admissible input five resistance Contrid voltage fourment at \$12, \$22, \$31 White incoming current 2		
Negresion delay, response time 20 ms Minimum start-up time \$34, \$35 90 ms Haz test pulse acceptance Time window for simultanelly monitoring 50 ms Electricin Cust readiness/security for 2 or 2 s 2 or 2 s Control voltage / current at \$12, \$22, \$31 24 V DC / 20 mA Haz incoming current 320 mA = 7.7 ms Admissible importance 70 fc c Open ling temperature 9° to 450° C Storage temperature -25' to +70° C Contamination level 1 If or a ming voltage \$30 V V C (10 part 1) Contamination level 2 If the storage of		
Minimum start-up fire S34, S35 90 ms Max test pulse acceptance 2 ms Time window for standuning windows Electric Late readiness/recovery fire 2 s 12 s Control voltage fourment at S12, S25, S31 24V DCI 20 mA Max incoming current 320 mA, T = 7,5 ms Admisoble input five recisione 70 s 2 s 2 s 30 c Constanting current 320 mA, T = 7,5 ms Admisoble input five recisione 70 s 2 s 30 c Constanting current 70 s 2 s 30 c Literference emission 1 s 4 s 30 c Literference emission 2 s 4 s 30 c Literference emission 1 s 4 s 30 c Literf		
Haz test pulse acceptance If me window for carriadinarity monitoring Electronic Lise reachines/recovery time Corried voltage / current at S12, S22, S32	Regression delay, response time	20 ms
Time window for simultaneity monitoring 50 ms Electratic base readness/receivery time 2 o f 2 s Control voltage fourent at S12, S22, S31 24V DC / 20 mA Haz, incoming current 320 mA, т = 75 ms Admissable input five resistance 70 ° 12 Copening temperature 0° to +50° C Storage temperature -25° to +70° C -25°	Minimum start-up time S34, S35	80 ms
Electric is but readiness/recovery time 2 of 2 s	Max. test pulse acceptance	
Control voltage / current at S12, S22, S31 **Max. incoming current **Max. incoming current **Standard Standard **Open Standard Standard **Open		
Haz incoming outent 320 mA x = 7.5 ms Admissible input the resistance Copenting temperature ↑ 0 to 4.50° C Copenting temperature ↑ 25° to 4.70° C Comparing temperature ↑ 25° to 4.70° C Contamination level Interference emission EH 50(811-, 2 Interference emission EH 50(811-, 2 Enclosure rating Connecting cable cross sections 1 x 0.2 to 2.5 mm² fine wired or 1 x 0.2 to 2.5 mm² fine wired with twin multi-core cable ends 2 x 0.5 to 1.5 mm² fine wired with twin multi-core cable ends 2 x 0.5 to 1.5 mm² fine wired with multi-core cable ends 2 x 0.2 to 2.5 mm² single wired or 2 x 0.25 to 1.5 mm² fine wired with multi-core cable ends 2 x 0.2 to 1.5 mm² fine wired with multi-core cable ends 2 x 0.2 to 1.5 mm² fine wired with multi-core cable ends 2 x 0.2 to 1.5 mm² fine wired with multi-core cable ends 2 x 0.2 to 1.5 mm² fine wired with multi-core cable ends 2 x 0.2 to 1.5 mm² fine wired with multi-core cable ends 2 x 0.2 to 1.5 mm² fine wired without in the cable ends 2 x 0.2 to 1.5 mm² fine wired without in the cable ends 2 x 0.2 to 1.5 mm² fine wired without in the cable ends 2 x 0.2 to 1.5 mm² fine wired without in the cable ends 2 x 0.2 to 1.5 mm² fine wired without in the cable ends 2 x 0.2 to 1.5 mm² fine wired without in the cable ends 2 x 0.2 to 1.0 mm² fine wired without in the cable ends 2 x 0.2 to 1.0 mm² fine wired without in the cable ends 2 x 0.2 to 1.0 mm² fine wired without in the cable ends 2 x 0.2 to 1.0 mm² fine wired without in the cable ends 2 x 0.2 to 1.0 mm² fine wired without in the cable ends 2 x 0.2 to 1.0 mm² fine wired without in the cable ends 2 x 0.2 to 1.0 mm² fine wired without in the cable ends 2 x 0.2 to 1.0 mm² fine wired without in the cable ends 2 x 0.2 to 1.0 mm² fine wired without in the cable ends 2 x 0.2 to 1.0 mm² fine wired without in the cable ends 2 x 0.2 to 1.0 mm² fine wired without in the cable ends 2 x 0.2 to 1.0 mm² fine wired without in the cable ends 2 x 0.2 to 1.0 mm² fine wired without in the cable ends	Electronic fuse readiness/recovery time	2s/2s
Admissible input the resistance Opening temperature OP to 450° C Opening temperature -25° to 470° C Other input the resistance OP to 450° C Other input the resistance OP to 450° C Other input the resistance OP to 450° C If for ming vallage 900VAC according to VDE 0110 part 1 EN 50081-1, 2 Interference immunity EN 50082-2 Enclosure rating Housing IP 40, Terminals IP 20 Connecting cable cross sections 1 x 0.25 to 2.5 mm² fine wired on 1 x 0.25 to 2.5 mm² fine wired on 1 x 0.25 to 2.5 mm² fine wired with this multi-core cable ends 2 x 0.55 to 1.5 mm² single wired on 2 x 0.25 to 1.5 mm² fine wired on 1 x 0.25 to 2.5 mm² single wired on 2 x 0.25 to 1.0 mm² fine wired with this multi-core cable ends 2 x 0.25 to 1.0 mm² fine wired on 1 x 0.25 to 1 x 0.25 to 1.0 mm² fine wired on 1 x 0.25 to 1.0 mm² fine wired on 1 x 0.25 to 1.0 mm² fine wired on 1 x 0.25 to 1.0 mm² fine wired on 1 x 0.25 to 1.0 mm² fine wired on 1 x 0.25 to 1.0 mm² fine wired on 1 x 0.25 to 1.0 mm² fine wired on 1 x 0.25 to 1.0 mm²	Control voltage / current at S12, S22, S31	24V DC / 20 mA
Opening temperature Office SP C Storage temperature Office SP C Storage temperature Over Notice of the product of the pr	Max. incoming current	320 mA, τ= 7,5 ms
Storage temperature -25" to +70" C New rollage category	Admissible input line resistance	< 70 Ω
Contamination level It for niting vallage 300VAC according to VEE 0110 part 1 Ell 50081-1, -2 Enforce mission Ell 50081-1, -2 Enforce rating Housing IP-40, Terminate IP-20 Connecting cable cross sections 1 x 0.25 to 2.5 mm² fine wired with multi-core cable ends 2 x 0.55 to 1.5 mm² fine wired with multi-core cable ends 2 x 0.55 to 1.5 mm² fine wired with multi-core cable ends 2 x 0.25 to 1.5 mm² fine wired with multi-core cable ends 2 x 0.25 to 1.5 mm² fine wired with this multi-core cable ends 2 x 0.25 to 1.5 mm² fine wired with multi-core cable ends 2 x 0.25 to 1.5 mm² fine wired with multi-core cable ends 2 x 0.25 to 1.5 mm² fine wired with multi-core cable ends 2 x 0.25 to 1.5 mm² fine wired with multi-core cable ends 2 x 0.25 to 1.5 mm² fine wired without fine ends 2 x 0.25 to 1.5 mm² fine wired wi	Operating temperature	
Contamination level 2 Ell 50/82-2 Interference emission Ell 50/82-2 Endouver rating Ell 50/82-2 Endouver rating Housing IP-40, Terminate IP-20 Connecting cable cross sections 1 x 0.21 to 2.5 mm² fine wired on 1 x 0.25 to 2.5 mm² fine wired with matificore cable ends 2 x 0.5 to 1.5 mm² fine wired with this matificore cable ends 1 x 0.21 to 2.5 mm² single wired or 2 x 0.25 to 1.5 mm² fine wired with this matificore cable ends 2 x 0.25 to 1.0 mm² fine wired or 2 x 0.25 to 1.0 mm² fine wired or 2 x 0.25 to 1.0 mm² fine wired without fine cable ends 2 x 0.22 to 1.0 mm² single wired Dimensions (height x width x depth) 99 x 2.25 x 111.5 mm Weight 200 g	Storage temperature	
Interference emission Ell 50081-1, 2 Interference immunity Ell 50082-2 Enclosure rating Housing IP 40, Terminals IP 20 Londestria good of the state of 1 x 0.2 to 2.5 mm² fine wired with multi-core cable ends 2 x 0.5 to 1.5 mm² fine wired with multi-core cable ends 2 x 0.5 to 1.5 mm² fine wired with twin multi-core cable ends 1 x 0.2 to 2.5 mm² single wired or 2 x 0.2 to 1.5 mm² in ewired with multi-core cable ends 2 x 0.2 to 1.5 mm² in ewired with multi-core cable ends 2 x 0.2 to 1.5 mm² in ewired with multi-core cable ends 2 x 0.2 to 1.5 mm² in ewired with multi-core cable ends 2 x 0.2 to 1.5 mm² in ewired Weight Weight Weight 200 g		II for rating voltage 300VAC according to VDE 0110 part 1
Interference immunity Elf 50,092-2 Enclosure rating Vocating IP 40, Terminals IP 20 Connecting cable cross sections 1 x 02 to 2,5 mm² fine wired or 1 x 0.25 to 2,5 mm² fine wired with multi-core cable ends 2 x 0.5 to 1,5 mm² fine wired with twin multi-core cable ends 1 x 02 to 2,5 mm² single wired or 2 x 0.25 to 1,0 mm² fine wired withmulti-core cable ends 2 x 0.2 to 1,0 mm² fine wired withmulti-core cable ends 2 x 0.2 to 1,0 mm² fine wired Dimensions (height x width x depth) 99 x 22.5 x 11.5 mm Weight 200 g		EN SOCO1.1 -2
Enclosure rating Housing IP 40, Terminals IP 20 Connecting cable cross sections 1 x QE to 25 mm² fine wired or 1 x QE to 25 mm² fine wired with multi-core cable ends 2 x QE to 1.5 mm² fine wired with multi-core cable ends 1 x QE to 25 mm² single wired or 2 x QE to 1.0 mm² fine wired with multi-core cable ends 2 x QE to 1.0 mm² fine wired withmulti-core cable ends 2 x QE to 1.0 mm² single wired Dimensions (height x width x depth) 99 x ZE x 111.5 mm Weight 200 g		
$ \begin{array}{c} \text{Connecting cable cross sections} & 1 \times 0.2 \text{ is } 2.5 \text{ mm}^2 \text{ fine wired or} \\ 1 \times 0.2 \text{ is } 2.5 \text{ mm}^2 \text{ in widowith multi-core cable ends} \\ 2 \times 0.5 \text{ is } 1.5 \text{ mm}^2 \text{ in ewidowith multi-core cable} \\ \text{ends} \\ 1 \times 0.2 \text{ is } 2.5 \text{ mm}^2 \text{ single wired or} \\ 2 \times 0.25 \text{ is } 1.0 \text{ mm}^2 \text{ in ewidowith multi-core cable ends} \\ 2 \times 0.2 \text{ is } 1.5 \text{ mm}^2 \text{ in ewidowith multi-core cable ends} \\ 2 \times 0.2 \text{ is } 1.0 \text{ mm}^2 \text{ single wired} \\ 2 \times 0.2 \text{ is } 1.0 \text{ mm}^2 \text{ single wired} \\ \end{aligned} $ $ \begin{array}{c} \text{Dimensions (height x width x depth)} & 99 \times 2.5 \times 11.5 \text{ mm} \\ \text{Weight} \\ \text{200 g} \end{array} $		
1 x 0.25 to 2.5 mm² line wired with multi-core cable ends 2 x 0.5 to 1.5 mm² line wired with twin multi-core cable ends 1 x 0.2 to 2.5 mm² gingle wired or 2 x 0.25 to 1.0 mm² line wired withmulti-core cable ends 2 x 0.25 to 1.0 mm² line wired withmulti-core cable ends 2 x 0.22 to 1.5 mm² line wired 2 x 0.22 to 1.5 mm² line wired Dimensions (height x width x depth) 99 x 2.2 x 11.5 mm Weight 200 g		
Weight 200 g		1 x 0.25 to 2.5 mm² fine wind with multi-core cable ends 2 x 0.5 to 1.5 mm² fine wired with twin multi-core cable 1 x 0.2 to 2.5 mm² single wired or 2 x 0.25 to 1.0 mm² fine wired with multi-core cable ends 2 x 0.25 to 1.5 mm² fine wired 2 x 0.25 to 1.5 mm² single wired
Order Number 3RG7847-48B		
	Order Number	3RG7847-48B