Manual Motor Starters, Controllers, and Protectors

Type GV2, GV3, and GV7

File 2520

Merlin Gerin
Modicon
Square D
Telemecanique

Schneider Electric Brands

CONTENTS

Schneider Electric

INTRODUCTION

Square D/Telemecanique offers a complete line of products for the manual control and protection of motors. This catalog covers those devices designed to meet IEC standards for protection and control. ♣

The GV2 and GV3 manual starter and protector provides manual isolation, manual motor control, and overcurrent protection in one compact unit. Square D offers four different products that make up the GV product family; GV2ME, GV2P, and GV3ME and GV7. These devices are UL Listed as Manual Motor Controllers.

The GV2ME controls motors with full load currents up to 32 A. The GV2P, high performance manual starter, offers a higher withstand rating and visible trip indication. The GV3ME controls larger motors with full load currents up to 63 A. The GV7 provides control and protection for motors with full load currents up to 220 A.

The GV2 and GV3 manual starters and protectors are also UL Listed for group installation applications. See page 6 for maximum fuse or circuit breaker ratings when used in group installations.

In many European applications, the GV devices are used as circuit breakers because they meet the requirements of IEC 60947-2 for circuit breakers. However, the GV starter does not meet North American circuit breaker standards such as UL, National Electrical Code, or CSA.

Standard Features

The GV family offers such standard features as:

- UL Listed, CSA Certified, and CE Marked
- UL Listed for Group Motor Applications (for more details see page 7)
- Overload relay
  - — Class 10, ambient compensated (GV2, GV3)
  - — Class 10, solid state (GV7)
- Single phase sensitivity
- Magnetic instantaneous short-circuit protection
- Test trip mechanism
- Provision for padlocking in the OFF position
  - — Standard for GV2, GV3
  - — Requires attachment of rotary handle for GV7
- Fingersafe terminals (meets IP20 standards)
- North American and European terminal markings

♣ Related catalogs cover products used in conjunction with manual motor protectors:
IEC Style Contactors and Starters, catalog number 8502CT9901R9/02.
Wiring, Communication and Busbar System, catalog number 8502CT0101.
For manual motor starters designed to meet NEMA standards refer to catalog number 2510CT9701.

Standard Features (continued)

	GV2ME	GV2P	GV3ME
	 0.1 to 32 A Up to 20 hp @ 460 V 10 kA short circuit current @ 480 V Push Button Operator	 0.1 to 30 A Up to 15 hp @ 460 V 50 kA short circuit current @ 480 V Rotary Handle Operator Visible Trip Indication	 1 to 63 A Up to 40 hp @ 460 V 50 kA short circuit current @ 480 V Push Button Operator
Type of protection	Thermal-magnetic (overloads are bimetallic - Class 10)		
Mounting	• Clip-on mounting on 35 mm DIN rail. Unclips without using a tool. • Panel mount with metal adapter plate.	• Clip-on mounting on 35 mm DIN rail. Unclips without using a tool. • Panel mount directly.	• Clip-on mounting on 35 mm DIN rail. Unclips without using a tool. • Panel mount directly.
Connection	Use a cross-head screwdriver; captive screws. Same screwdriver used for connections on GV2 starters and their add-on blocks.		
Marking	By marker holder supplied with each unit.		
Tripping test	By means of a fine-blade screwdriver on front face of product.		
Signalling on front face • By the manual control device • By mechanical flag indicator	• ON or OFF state	• ON or OFF state • Tripping by overload, short circuit, undervoltage or shunt trip. • Tripping by short circuit.	• ON or OFF state
Padlocking	In the OFF position, with padlock, using the system incorporated in the manual control device.		
Tamper-proof current dial	—	The thermal current setting dial is covered by a transparent cover which can be sealed.	—
Accessories	Mounted on the front of the product: - Either N.C. or N.O., N.O. + N.O. or N.O. + N.C. instantaneous contact blocks which do not increase the width of the product. Side-mounting, accessories snap onto the starters, without the use of tools. • On the left-hand side, contact blocks which provide the following: - N.O. + N.O. or N.O. + N.C. Start-Stop contacts, - N.O. or N.C. trip signalling contact, incorporating a mechanical flag indicator, and N.O. or N.C. Start-Stop contact, - C/O magnetic trip signalling contact, associated with a mechanical flag indicator, used for reset. • On the right-hand side: - Shunt trip or undervoltage trip.		
	- Combination block for use with K contactor. - Bus bars and connectors	- For GV2P, visible isolation block which mounts on the incoming terminals of the device - Door interlock mechanism.	
Selection	Page 9	Page 9	Page 9

	GV7RE / GV7RS
	 25 to 220 A Up to 150 hp @ 460 V 25 kA short circuit current @ 480 V Toggle Operator
Type of protection	Solid state overload - magnetic short circuit
Mounting	Panel mount directly, door mounting optional
Connection	Clip-on connectors (sold separately)
Marking	Continue existing cell from previous column.
Signaling on Front Face - By manual control - By mechanical flag	 On or Off state Tripping by overload or short circuit
Padlocking	When used with door mounted rotary handle or with separate locking device
Accessories	Front accessible, internally mounted - Auxiliary contacts - Trip indication contacts - Shunt trip - Undervoltage trip Rotary Handles
Selection	Page 9

GROUP INSTALLATION SHORT CIRCUIT CURRENT

The GV2/GV3/GV7 devices are UL 508 listed, Manual Motor Controllers for use in group installations. If each motor in the grouping is controlled by a GV2/GV3/GV7 device, only one branch circuit protective device (circuit breaker or fusing) is necessary for the entire group per **NEC 430-53c**, provided that:

- The controller is UL listed for group installation
- The overload device is UL listed for group installation

Refer to the table below to determine the maximum RMS short circuit current capacity for the GV2/GV3/GV7. The GV1L3 current limiter module may be used to increase the maximum RMS short circuit current values for the GV2M14-M32.

The maximum RMS short circuit current rating for the complete group installation is determined by the individual GV device with the lowest RMS short circuit current value.

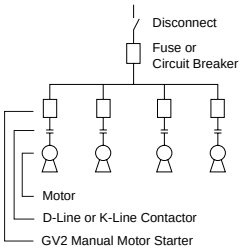
For example: a group installation uses a GV2M08, GV2M16 and GV2M22. The respective maximum RMS short circuit values @ 480 V, without the use of a GV1L3 current limiter module, are: 50 kA, 25 kA and 10 kA. Therefore, the group installation has a maximum RMS short circuit value of 10 kA.

UL Maximum RMS Short Circuit Current

Current Range (A)	GV2 ■	Max RMS, kA		GV2	Max RMS, kA		GV3	Max RMS, kA		GV7	Max RMS, kA		GV7	Max RMS, kA	
		480 V	600 V		480 V	600 V		480 V	600 V		240/480 V	600 V		240/480 V	600 V
0.1 - 0.16	**ME01**	50	30	**P01**	50	30	—	—	—	—	—	—	—	—	—
0.16 - 0.25	**ME02**	50	30	**P02**	50	30	—	—	—	—	—	—	—	—	—
0.25 - 0.40	**ME03**	50	30	**P03**	50	30	—	—	—	—	—	—	—	—	—
0.40 - 0.63	**ME04**	50	30	**P04**	50	30	—	—	—	—	—	—	—	—	—
0.63 - 1.0	**ME05**	50	30	**P05**	50	30	—	—	—	—	—	—	—	—	—
1.0 - 1.6	**ME06**	50	30	**P06**	50	30	**ME06**	50	23	—	—	—	—	—	—
1.6 - 2.5	**ME07**	50	30	**P07**	50	30	**ME07**	50	23	—	—	—	—	—	—
2.5 - 4.0	**ME08**	50	30	**P08**	50	30	**ME08**	50	23	—	—	—	—	—	—
4.0 - 6.3	**ME10**	50	30	**P10**	50	30	**ME10**	50	23	—	—	—	—	—	—
6 - 10	**ME14**	30	30	**P14**	50	30	**ME14**	50	23	—	—	—	—	—	—
9 - 14	**ME16**	25	10	**P16**	50	18	—	—	—	—	—	—	—	—	—
10 - 16	—	—	—	—	—	—	**ME20**	50	23	—	—	—	—	—	—
13 - 18	**ME20** ♦	25	10	**P20**	50	18	—	—	—	—	—	—	—	—	—
16 - 25	—	—	—	—	—	—	**ME25**	50	23	—	—	—	—	—	—
17 - 23	**ME21** ♦	10	10	**P21**	50	18	—	—	—	—	—	—	—	—	—
20 - 25	**ME22** ♦	10	10	**P22**	50	18	—	—	—	—	—	—	—	—	—
24 - 32	**ME32** ♦	10	10	**P32**	50	18	—	—	—	—	—	—	—	—	—
12 - 20	—	—	—	—	—	—	—	—	—	**RE20**	25	10	**RS20**	65	10
15 - 25	—	—	—	—	—	—	—	—	—	**RE25**	25	12	**RS25**	65	10
25 - 40	—	—	—	—	—	—	**ME40**	50	23	**RE40**	25	10	**RS40**	65	10
30 - 50	—	—	—	—	—	—	—	—	—	**RE50**	25	10	**RS50**	65	10
40 - 63	—	—	—	—	—	—	**ME63**	50	23	—	—	—	—	—	—
48 - 80	—	—	—	—	—	—	—	—	—	**RE80**	25	10	**RS80**	65	10
60 -100	—	—	—	—	—	—	—	—	—	**RE100**	25	10	**RS100**	65	10
90 - 150	—	—	—	—	—	—	—	—	—	**RE150**	25	10	**RS150**	65	10
132 - 220	—	—	—	—	—	—	—	—	—	**RE220**	25	10	**RS220**	65	10

♦ When used with GV1L3 Current Limiter Max kA RMS at 480 V is 50 kA and at 600 V 30 kA.
■ For Spring terminals add 3 to the catalog number. Example: GV2ME013.

FUSE AND CIRCUIT BREAKER SELECTION



Selecting the proper upstream short circuit protection for Group Motor installations can sometimes be a confusing process. Specific National Electric Code rules must be applied for Group Motor installations. The examples below illustrate the most common applications of GV manual starters with upstream short circuit protection in a Group Motor installation. Refer to **NEC Section 430-53 C and D** for proper conductor ampacity selection.

NOTE: Examples below show full load currents that may not be typical. Use actual motor nameplate date for determining actual values.

Example 1:

Eight motors with the sizes shown below are installed on a conveying system. Choose the correct GV manual starter and the proper size short circuit protection for this application. The user prefers time-delay fuses.

Motor Qty	HP	Voltage	FLA
1	5	460	7.6
2	3	460	4.8
5	2	460	3.4

One GV2M14, two GV2M10, and five GV2M08 manual starters would be selected for this group motor installation.

Per N.E.C. section 430-52 & -53 and N.E.C. table 430-152, the time-delay fuse must be sized as follows:

175% FLA for largest motor + sum of FLAs for all other motors
==> (1.75 x 7.6) + (2 x 4.8) + (5 x 3.4) = 39.9 A

N.E.C. 430-52 allows use of the next largest standard size fuse — which in this case is 40 A. If nuisance tripping is a problem with this fuse selection, N.E.C. does allow 225% of largest motor FLA to be used in lieu of 175% when calculating the size. In this case, the calculation would be as follows:

(2.25 x 7.6) + (2 x 4.8) + (5 x 3.4) = 43.7 A

The next largest standard size in this case is a 45 A fuse.

Example 2:

Ten motors with the sizes shown below are installed on a packaging machine. Choose the proper size circuit breaker for this application.

Motor Qty	HP	Voltage	FLA
2	10	460	14
1	5	460	7.6
2	3	460	4.8
5	2	460	3.4

Per N.E.C. section 430-52 & -53 and N.E.C. table 430-152, the circuit breaker must be sized as follows:

250% FLA for largest motor + sum of FLAs for all other motors
==> (2.5 x 14) + 14 +7.6 + (2 x 4.8) + (5 x 3.4) = 83.2 A

The next largest standard size circuit breaker is 90 A.

If nuisance tripping is a problem, N.E.C. allows for circuit breaker sizes that “shall in no case exceed 400% for full load currents of 100 amps or less, or 300% for full load current greater than 100 amps”.

In this case:

(4.0 x 14) + 14 +7.6 + (2 x 4.8) + (5 x 3.4) = 104.2 A

The next largest standard size in this case is a 110 A circuit breaker.

TYPE 2 COORDINATION

IEC Standard 60947-4-1 defines Type 2 Coordination as a level of protection which assures that a motor starter will be suitable for further use following a short circuit. The standard allows small tack welds that can be easily broken. Device should be replaced during regular maintenance. Proper combination of GV manual motor starters with LC1D contactors can yield a Type 2 Coordinated installation. Refer to the table below for selection.

Three Phase HP Rating			Manual Starter	Contactor	Max. Available Fault Current (kA) at 460 Vac (1)
200 V	230 V	460 V			
-	-	-	GV2P02	LC1D09	50
-	-	-	GV2P03	LC1D09	50
-	-	-	GV2P04	LC1D09	50
-	-	0.5	GV2P05	LC1D09	50
-	-	0.75	GV2P06	LC1D09	50
0.5	0.5	1	GV2P07	LC1D09	50
0.75	1	2	GV2P08	LC1D09	50
1.5	1.5	3	GV2P10	LC1D09	50
2	3	5	GV2P14	LC1D09	50
3	3	10	GV2P16	LC1D25	50
5	5	10	GV2P20	LC1D25	50
5	7.5	15	GV2P21	LC1D25	30
5	7.5	15	GV2P22	LC1D32	30
10	10	30	GV3ME40	LC1D40	8
20	20	40	GV3ME63	LC1D115	8

(1) Higher maximum fault currents can be applied at lower voltages.

GV2/GV3 SELECTION

GV2/GV3 Manual Motor Controller and Protector

Setting Range of Thermal Trips (A)	Maximum Horsepower Ratings						GV2ME ■ Pushbutton	GV2P Rotary Handle
	Single Phase		Three Phase					
	115 V HP	230 V HP	200 V HP	230 V HP	460 V HP	575 V HP	Catalog Number	Catalog Number
0.11 - 0.16	–	–	–	–	–	–	**GV2ME01**	**GV2P01**
0.016 - 0.25	–	–	–	–	–	–	**GV2ME02**	**GV2P02**
0.25 - 0.40	–	–	–	–	–	–	**GV2ME03**	**GV2P03**
0.40 - 0.63	–	–	–	–	–	–	**GV2ME04**	**GV2P04**
0.63 - 1	–	–	–	–	1/2	1/2	**GV2ME05**	**GV2P05**
1 - 1.6	–	1/10	–	–	3/4	1	**GV2ME06**	**GV2P06**
1.6 - 2.5	–	1/6	1/2	1/2	1	1-1/2	**GV2ME07**	**GV2P07**
2.5 - 4	1/8	1/3	3/4	1	2	3	**GV2ME08**	**GV2P08**
4 - 6.3	1/4	1/2	1-1/2	1-1/2	3	5	**GV2ME10**	**GV2P10**
6 - 10	1/2	1-1/2	2	3	5	7-1/2	**GV2ME14**	**GV2P14**
9 - 14	3/4	2	3	3	10	10	**GV2ME16**	**GV2P16**
13 - 18	1	3	5	5	10	15	**GV2ME20**	**GV2P20**
17 - 23	1-1/2	3	5	7-1/2	15	20	**GV2ME21**	**GV2P21**
20 - 25	2	3	5	7-1/2	15	20	**GV2ME22**	**GV2P22**
24 - 32	2	5	10	10	20	30	**GV2ME32**	**GV2P32**
1 - 1.6	–	1/10	–	–	3/4	1	**GV3ME06**	
1.6 - 2.5	–	1/16	1/2	1/2	1	1-1/2	**GV3ME07**	
2.5 - 4	1/8	1/3	3/4	1	2	3	**GV3ME08**	
4 - 6	1/4	1/2	1-1/2	1-1/2	3	-	**GV3ME10**	
6 - 10	1/2	1-1/2	2	3	5	7-1/2	**GV3ME14**	
10 - 16	1	2	3	5	10	10	**GV3ME20**	
16 - 25	2	3	5	7-1/2	15	20	**GV3ME25**	
25 - 40	3	5	10	10	30	30	**GV3ME40**	
40 - 63	5	10	20	20	40	60	**GV3ME63**	
56 - 80	5	15	20	25	50	60	**GV3ME80**	

■ For Spring terminals add 3 to the catalog number. Example: GV2ME013.
Weight: 0.260 kg (0.57 lbs).
Note: GV2ME32 is not available with spring terminals.

File E164864
CCN NLRV

File LR 81630
Class 3211 05

GV2ME

GV2ME••3

GV2P

GV3ME

Accessories and Enclosures GV2 . . . . . Page 10 through 15
Accessories and Enclosures GV3 . . . . . Page 16

GV7 SELECTION

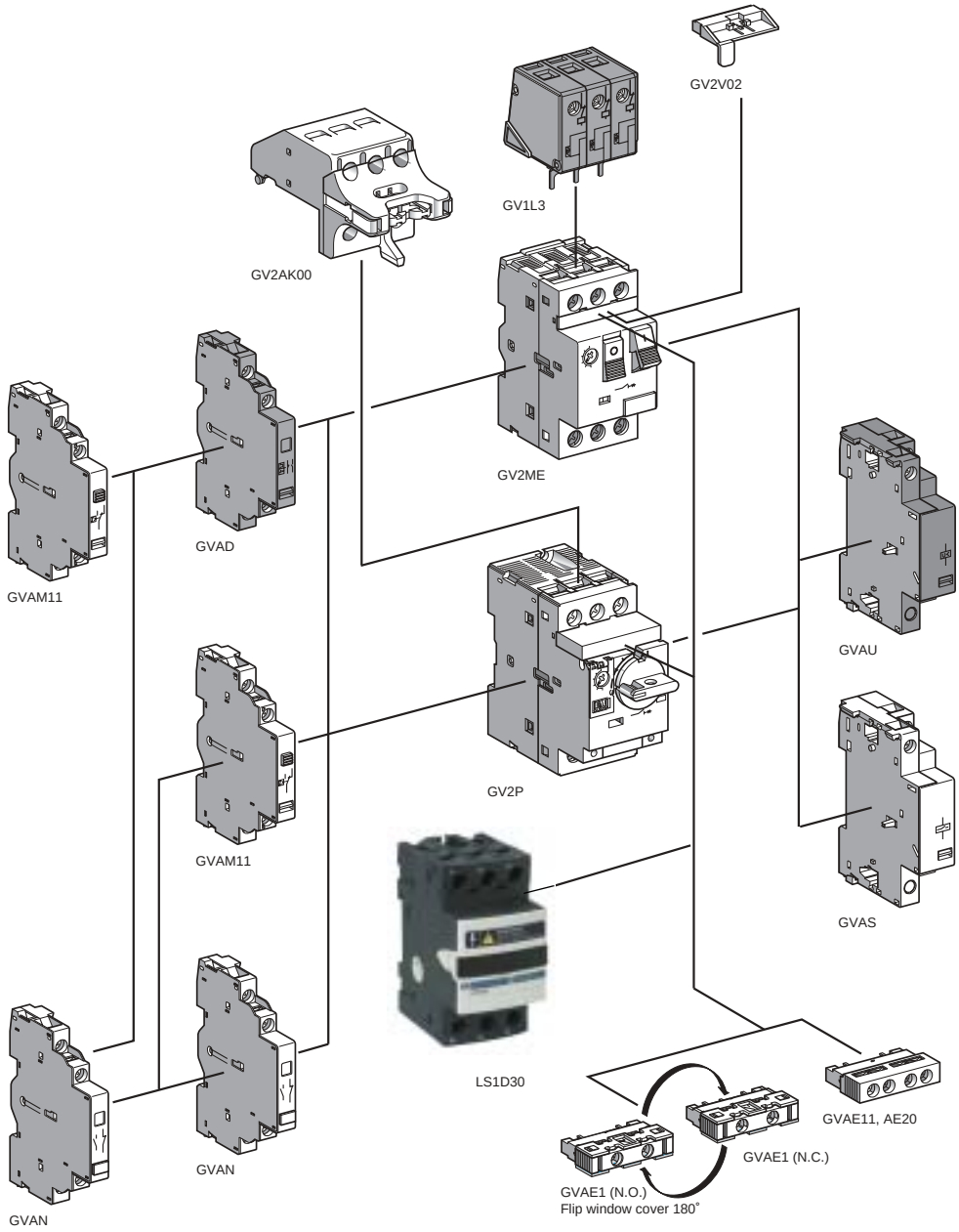
Standard manual controllers and protectors include terminal and device mounting hardware. Cable clamps and accessories are listed on page 17.

GV7R•••• Manual Motor Controller and Protector

Setting Range of Thermal Trips (A)	IEC Breaking Capacity at 415 V ■	Maximum Horsepower Ratings				Catalog Number	Weight / kg (lbs)
		3 PH					
		200 V HP	230 V HP	460 V HP	575 V HP		
12 – 20	25 kA		5	10	15	**GV7RE20**	2.010 (4.43)
15 – 25			7.5	15	20	**GV7RE25**	2.010 (4.43)
25 – 40			10	30	30	**GV7RE40**	2.010 (4.43)
30 – 50			15	30	40	**GV7RE50**	2.015 (4.44)
48 – 80			30	60	75	**GV7RE80**	2.040 (4.5)
60 – 100 A			30	75	100	**GV7RE100**	2.040 (4.5)
90 – 150 A	35 kA		50	100	150	**GV7RE150**	2.020 (4.45)
132 – 220 A			75	150	200	**GV7RE220**	2.350 (5.18)
12 – 20	65 kA		5	10	15	**GV7RS20**	2.010 (4.43)
15 – 25			7.5	15	20	**GV7RS25**	2.010 (4.43)
25 – 40 A			10	30	30	**GV7RS40**	2.010 (4.4)
30 – 50 A			15	30	40	**GV7RS50**	2.015 (4.44)
48 – 80 A			30	60	75	**GV7RS80**	2.040 (4.5)
60 – 100 A			30	75	100	**GV7RS100**	2.040 (4.5)
90 – 150 A			50	100	150	**GV7RS150**	2.020 (4.45)
132 – 220 A			75	150	200	**GV7RS220**	2.350 (5.18)

■ Refer to table on page 54 for ratings at other voltages.

GV2 ACCESSORIES



Auxiliary Contact Blocks

Description	Mounting Location	Max. No. of Blocks	Contact Type	Sold in Lots Of	Catalog Number	Weight / kg (lbs)
Instantaneous auxiliary contacts	Front (3)	1	N.O. or N.C. (1)	1	**GVAE1**	0.015 (0.03)
			N.O. + N.C.	1	**GVAE11** ■	0.020 (0.04)
			N.O. + N.O.	1	**GVAE20** ■	0.020 (0.04)
	Left Hand Side	2	N.O. + N.C.	1	**GVAN11** ■	0.050 (0.11)
			N.O. + N.O.	1	**GVAN20** ■	0.050 (0.11)
Fault signalling contact + instantaneous auxiliary contact	Left Hand Side (2)	1	N.O. (fault) + N.O.	1	**GVAD1010**	0.055 (0.12)
			N.O. (fault) + N.C.	1	**GVAD1001**	0.055 (0.12)
			N.C. (fault) + N.O.	1	**GVAD0110**	0.055 (0.12)
			N.C. (fault) + N.C.	1	**GVAD0101**	0.055 (0.12)
Short circuit signalling contact	Left Hand Side	1	SPDT	1	**GV2AM11**	0.045 (0.10)

(1) Mounting of a **GVAE** contact block or a **GV2AK00** visible isolation block on **GV2P** and **GV2L**.
(2) Choice of N/C or N/O contact operation, depending on which way round the reversible block is mounted, flip window 180°.
(3) The **GVAD** is always mounted next to the circuit-protector.
■ For Spring terminals add 3 to the catalog number. Example: GV2ME013.

Electric Trips

Description	Voltage	Hz	Catalog Number	Weight lb (kg)
Undervoltage or shunt trips (1)				
Side (1 block on RH side of GV2)	24 V	50 Hz	**GVA●025**	0.23 (0.105)
		60 Hz	**GVA●026**	0.23 (0.105)
	48 V	50 Hz	**GVA●055**	0.23 (0.105)
		60 Hz	**GVA●056**	0.23 (0.105)
	100 V	50 Hz	**GVA●107**	0.23 (0.105)
	100…110 V	60 Hz	**GVA●107**	0.23 (0.105)
	110…115 V	50 Hz	**GVA●115**	0.23 (0.105)
		60 Hz	**GVA●116**	0.23 (0.105)
	120…127 V	50 Hz	**GVA●125**	0.23 (0.105)
	127 V	60 Hz	**GVA●115**	0.23 (0.105)
	200 V	50 Hz	**GVA●207**	0.23 (0.105)
	200 V…220 V	60 Hz	**GVA●207**	0.23 (0.105)
	220 V…240 V	50 Hz	**GVA●225**	0.23 (0.105)
		60 Hz	**GVA●226**	0.23 (0.105)
	380 V…400 V	50 Hz	**GVA●385**	0.23 (0.105)
		60 Hz	**GVA●386**	0.23 (0.105)
	415 V…440 V	50 Hz	**GVA●415**	0.23 (0.105)
	415 V	60 Hz	**GVA●416**	0.23 (0.105)
	440 V	60 Hz	**GVA●385**	0.23 (0.105)
	480 V	60 Hz	**GVA●415**	0.23 (0.105)
	500 V	50 Hz	**GVA●505**	0.23 (0.105)
	600 V	60 Hz	**GVA●505**	0.23 (0.105)
Undervoltage trip, INRS (can only be mounted on GV2-ME) **Safety device for dangerous machines,** conforming to INRS and VDE 0113				
Side (1 block on RH side of GV2)	110…115 V	50 Hz	**GVAX115**	0.24 (0.110)
		60 Hz	**GVAX116**	0.24 (0.110)
	127 V	60 Hz	**GVAX115**	0.24 (0.110)
	220…240 V	50 Hz	**GVAX225**	0.24 (0.110)
		60 Hz	**GVAX226**	0.24 (0.110)
	380…400 V	50 Hz	**GVAX385**	0.24 (0.110)
		60 Hz	**GVAX386**	0.24 (0.110)
	415…440 V	50 Hz	**GVAX415**	0.24 (0.110)
	440 V	60 Hz	**GVAX385**	0.24 (0.110)

Add-on contact blocks

Description	Mounting	Maximum number	Catalog Number	Weight lb (kg)
Visible isolation block (2)	Front (3)	1	**GV2AK00**	0.33 (0.150)
Limiters	At top (GV2ME and GV2P)	1	**GV1L3**	0.29 (0.130)
	Independent	1	**LA9LB920**	0.70 (0.320)

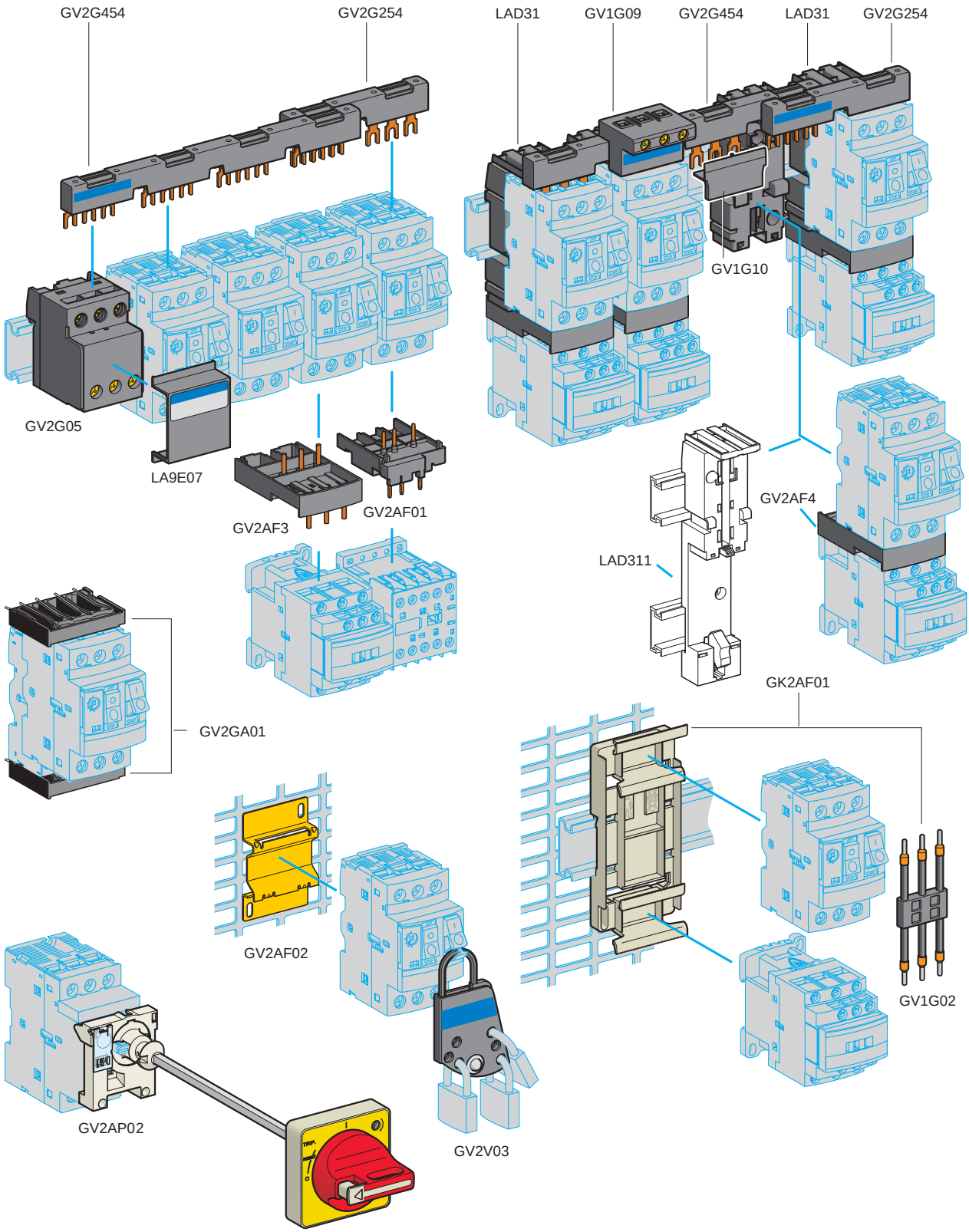
(1) To order an undervoltage trip: replace the dot (●) with a **U**, example: **GVAU025**. To order a shunt trip: replace the dot (●) with an **S**, example: **GVAS025**.

(2) Visible isolation of the 3 poles upstream of circuit-breaker **GV2P** and **GV2L**.

(3) Mounting of a **GVAE** contact block or a **GV2AK00** visible isolation block on **GV2P** and **GV2L**.

Fuse Holder, 30 amp maximum

Description	For Fuse Type	For Use In	Sold in Lots of	Catalog Number	Weight lb (kg)
Screw clamp terminals, 3-pole	CC, KTK-R 0.41 X 1.5 (10.3 X 38 mm)	US Markets	1	**LS1D30**	0.5 (0.23)
Spring Terminals, 3-pole	CC, KTK-R 0.41 X 1.5 (10.3 X 38 mm)	US Markets	1	**LS1D303**	0.5 (0.23)
Screw clamp terminals, 3-pole	aM, gG 0.39 X 1.5 (10 X 38 mm)	European Markets	1	**LS1D32**	0.5 (0.23)
Sprint terminals, 3-pole	aM, gG 0.39 X 1.5 (10 X 38 mm)	European Markets	1	**LS1D323**	0.5 (0.23)
Screw clamp terminals, 4-pole	aM, gG 0.39 X 1.5 (10 X 38 mm)	European Markets	1	**LS1DT32**	0.5 (0.23)



Mounting Accessories

GV2GH7

Description	Application	Sold in Lots Of	Catalog Number	Weight / kg (lbs)
Motor starter adaptor plate	With 3-pole connection for mounting of a GV2 and an LC1-D09 to D25 contactor	10	**GK2AF01**	0.120 (0.26)
Adaptor plate	For screw mounting of a GV2ME or LS1D30•	10	**GV2AF02**	0.021 (0.05)
	For mounting GV2ME or GV2P and LC1D09 through LC1D32 contactor with front faces aligned.	1	**LAD31**	0.040 (0.09)
Mounting bracket	For mounting GV2ME or GV2P and LC1D09 through LC1D38 on common base using 2 din rails.	1	**LAD311**	0.080 (0.18)
7.5 mm height compensation plate	To allow GV2ME and GV2P to be mounted on a common busbar	10	**GV1F03**	0.003 (0.01)
Combination block	Between GV2ME, LS1D30 and LC1K or LP1K contactor	10	**GV2AF01**	0.020 (0.04)
	Between GV2, LS1D30 and contactor LC1D09 to D38	10	**GV2AF3**	0.016 (0.03)
	Between GV2/LS1D30 mounted on LAD31 and contactor LC1D09 to D38	10	**GV2AF4**	0.016 (0.03)

LAD31

Wiring Accessories

Description	Number of GVs to be Mounted	Number of Side Mounted-Auxiliary Blocks on Each GV Starter	Busbar Pitch (mm)	Sold in Lots Of	Catalog Number	Weight / kg (lbs)
Sets of 3-pole, 63 A busbars	2	none	45	1	**GV2G245**	0.036 (0.08)
		1 GV2AN, AM, AD	54	1	**GV2G254**	0.038 (0.84)
		1 or 2 GV2AN, AM, AD; or 1 GV2AS, AU	72	1	**GV2G272**	0.042 (0.09)
	3	None	45	1	**GV2G345**	0.052 (0.12)
		1 GV2AN, AM, AD	54	1	**GV2G354**	0.060 (0.13)
	4	None	45	1	**GV2G445**	0.077 (0.17)
		1 GV2AN, AM, AD	54	1	**GV2G454**	0.085 (0.19)
		1 or 2 GV2AN, AM, AD; or 1 GV2AS, AU	72	1	**GV2G472**	0.094 (0.21)
	5	1 GV2AN, AM, AD	54	1	**GV2G554**	0.100 (0.22)

LAD311

Description	Application	Sold in Lots Of	Catalog Number	Weight / kg (lbs)
Protective end cover	For unused busbar outlets	5	**GV1G10**	0.005 (0.02)
Terminal blocks for supply to one or more GV2G• busbar sets	Connection from the top	1	**GV1G09**	0.040 (0.09)
	Connection from bottom can be fitted with a GV1L3 current limiter	1	**GV2G05**	0.115 (0.25)
Cover for terminal block	For mounting in modular panels	10	**LA9E07**	0.005 (0.01)
Flexible 3-pole connector	For connecting a GV2 / LS1D30 to an LC1D09 to D25 contactor (AC coil)	10	**GV1G02**	0.013 (0.03)
Clip-in marker holders (supplied with each motor starter)	For GV2P (0.31 x 0.87 in) (8 x 22 mm)	100	**LA9D92**	0.001 (0.02)
Incoming line insulator	For GV2P when in UL508 Type E applications	10	**GV2GH7**	0.020 (0.04)

Padlockable External Operator

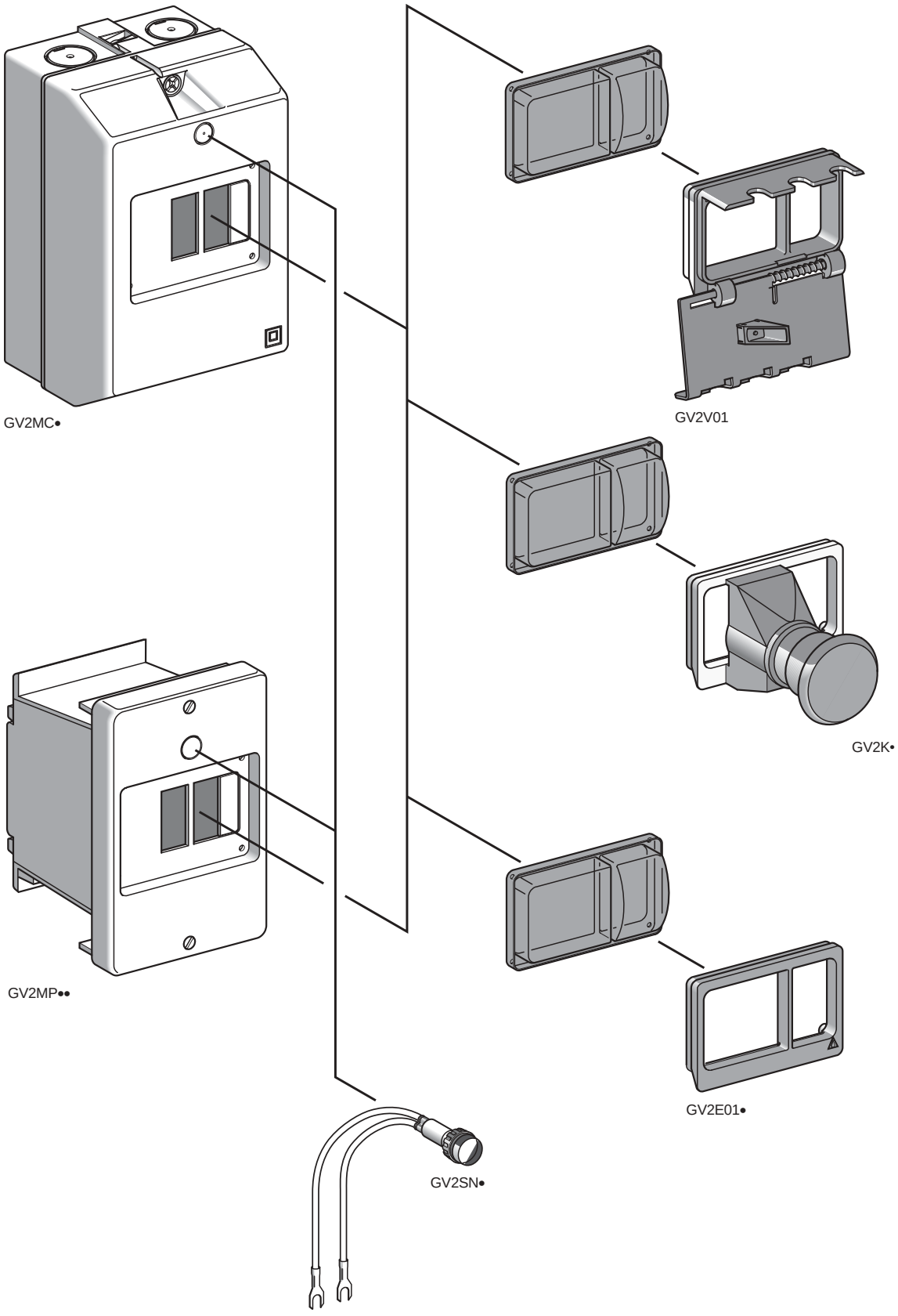
GV2AF3 / GV2AF4

Description		Catalog Number	Weight / kg (lbs)
For GV2P (6.0 to 11.4 in) (150 to 290 mm)	Black handle, blue legend plate	**GV2AP01**	0.200 (0.44)
	Red handle, yellow legend plate	**GV2AP02**	0.200 (0.44)

Padlocking Device

For all GV2 devices	6 padlocks, Ø 6 mm shank max. (padlock not supplied)	**GV2V03**	0.130 (0.29)

GV2 ENCLOSURES



GV2ME Enclosures

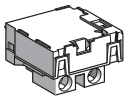
Application	Type	Degree of Protection of Enclosure	Catalog Number	Weight / kg (lbs)
For GV2ME manual starters and protectors with or without accessories (maximum of 1 accessory on right and left for GV2MC and GV2MP01 or MP02, 1 accessory only on right for GV2MP03 and GV2MP04)	Surface mounting, double insulated with protective (saleable) cover.	IP 41	**GV2MC01**	0.290 (0.64)
		IP 55	**GV2MC02**	0.300 (0.66)
		IP 55 for temperature < + 5 °C (41 °F)	**GV2MC03**	0.300 (0.66)
	Flush with protective cover.	IP 41 (full size) mounting	**GV2MP01**	0.115 (0.25)
		IP 41 (reduced size)	**GV2MP03**	0.115 (0.25)
		IP 55 (full size)	**GV2MP02**	0.130 (0.29)
		IP 55 (reduced size)	**GV2MP04**	0.130 (0.29)

Front Plate

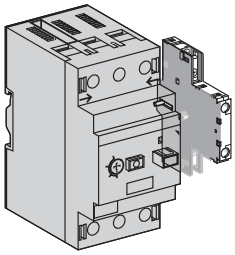
Application		Degree of Protection of Enclosure	Sold in Lots Of	Catalog Number	Weight / kg (lbs)
Padlocking device (1) for GV2M operator (padlocking is only possible in the “O” position)			1	**GV2V01**	0.075 (0.17)
Mushroom head “stop” pushbutton (1) Ø 40 mm, red	Spring return		1	**GV2K011**	0.052 (0.11)
	Latching	Key release (key #455)	1	**GV2K021**	0.100 (0.22)
		Turn to release	1	**GV2K031**	0.052 (0.11)
	Latching/Padlockable	Turn to release	1	**GV2K04**	0.120 (0.26)
Sealing kit	For enclosures and front plate	IP 55	10	**GV2E01**	0.120 (0.26)
		IP 55 for temperature < + 5 °C (41 °F)	10	**GV2E02**	0.120 (0.26)
Neutral link			10	**GV2N01**	0.030 (0.06)
Description	**Voltage**	**Color**	**Sold in Lots Of**	**Catalog Number**	**Weight / kg (lbs)**
Neon indicator light (2)	110 V	Green	10	**GV2SN13**	0.019 (0.06)
		Red	10	**GV2SN14**	0.019 (0.06)
		Orange	10	**GV2SN15**	0.019 (0.06)
		Clear	10	**GV2SN17**	0.019 (0.06)
	220/240 V	Green	10	**GV2SN23**	0.019 (0.06)
		Red	10	**GV2SN24**	0.019 (0.06)
		Orange	10	**GV2SN25**	0.019 (0.06)
		Clear	10	**GV2SN27**	0.019 (0.06)
	380/440 V	Green	10	**GV2SN33**	0.019 (0.06)
		Red	10	**GV2SN34**	0.019 (0.06)
		Orange	10	**GV2SN35**	0.019 (0.06)
		Clear	10	**GV2SN37**	0.019 (0.06)

(1) Supplied with IP 55 sealing kit.
(2) Leads are approximately 9.5" (260 mm).

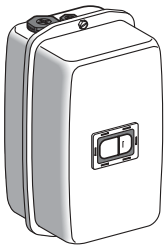
GV3 ACCESSORIES AND ENCLOSURES



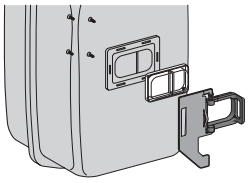
GV3B



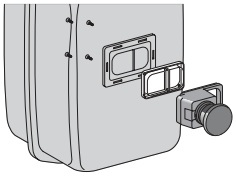
GV1A01



GV3CE01



GV3CE01



GV3CE01

Description	Characteristics	Voltage	Sold in Lots Of	Catalog Number	Weight / kg (lbs)
Voltage trips (1) (internal mount)	Under voltage trips	110, 120, 127 V 50 Hz 120, 127 V 60 Hz	1	**GV3B11**	0.070 (0.15)
		220, 240 V 50 Hz 240, 277 V 60 Hz	1	**GV3B22**	0.070 (0.15)
		380, 415 V 50 Hz 480 V 60 Hz	1	**GV3B38**	0.070 (0.15)
	Shunt trips	110, 120, 127 V 50 Hz 120, 127 V 60 Hz	1	**GV3D11**	0.070 (0.15)
		220, 240 V 50 Hz 240, 277 V 60 Hz	1	**GV3D22**	0.070 (0.15)
		380, 415 V 50 Hz 480 V 60 Hz	1	**GV3D38**	0.070 (0.15)
Instantaneous auxiliary contact blocks (1 per GV3) (side-mounted)	Normal early break type contacts N.C. + N.O.		1	**GV3A01**	0.060 (0.13)
	N.O. + N.O.		1	**GV3A02**	0.060 (0.13)
	N.C. + N.O. + N.O.		1	**GV3A03**	0.070 (0.15)
	N.O. + N.O. + N.O.		1	**GV3A05**	0.070 (0.15)
	N.O. + N.O. + 2 spare terminal blocks		1	**GV3A06**	0.070 (0.15)
	N.C. + N.O. + 2 spare terminal blocks		1	**GV3A07**	0.070 (0.15)
Fault signalling contacts (1)	N.C.		1	**GV3A08**	0.030 (0.70)
(internal mount)	N.O.		1	**GV3A09**	0.030 (0.70)
Padlocking device for Start button			5	**GV1V02**	0.010 (0.01)

(1) only 1 voltage trip OR 1 fault signalling contact may be added inside the GV3 device.

Metal Enclosure

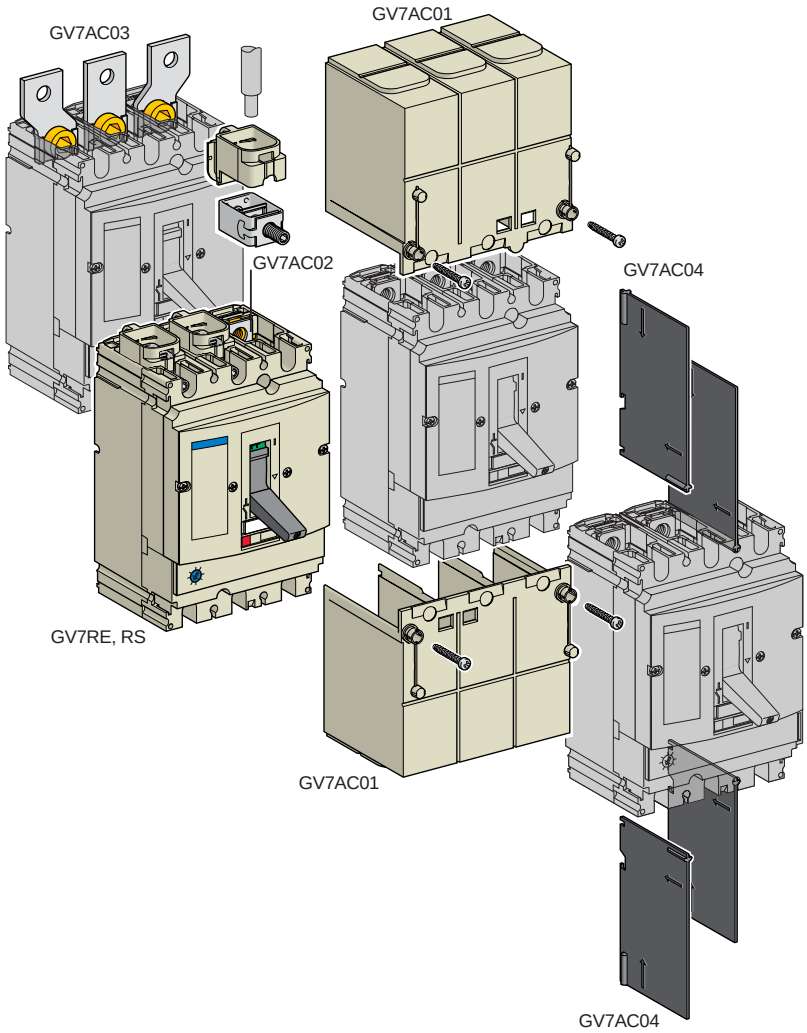
Application	Type	Degree of Protection of Enclosure	Catalog Number	Weight / kg (lbs)
For GV3 with or without accessories	Surface mounting	IP 55	**GV3CE01**	2.000 (4.41)

Enclosure Accessories (to be ordered separately)

Description	Reference	Characteristics	Sold in Lots Of	Catalog Number	Weight / kg (lbs)
Neutral terminal, 2-pole				**LA9D40959**	0.001 (0.01)
IP 55 padlocking device for operators (when padlocked, the motor circuit is automatically in the Open (OFF) position)				**GV1V01**	0.044 (0.10)
Mushroom head "stop" pushbutton (2) Ø 40 mm, red	Spring return		1	**GV1K01**	0.052 (0.11)
	Latching	Key release (key #455)	1	**GV1K02**	0.095 (0.21)
		Turn to release	1	**GV1K03**	0.052 (0.11)
Sealing screw for enclosure cover				**DE1DS4091**	0.001 (0.01)

(2) Supplied with IP 55 sealing kit.

GV7 ACCESSORIES

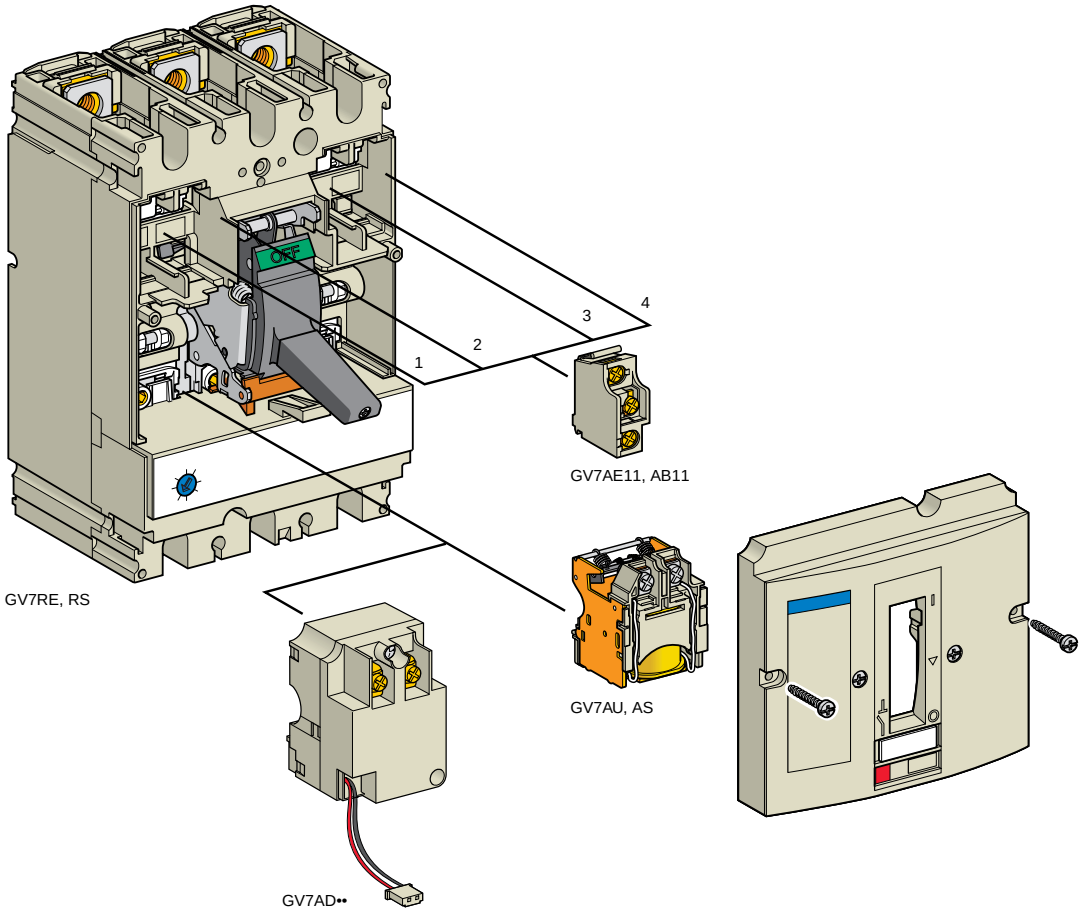


Standard manual controllers and protectors include terminal and device mounting hardware. Cable clamps and accessories should be selected from the table below.

Cabling Accessories

Description	Application	Sold in Lots Of	For Contactor	Catalog Number	Weight / kg (lbs)
Clip-On Connectors	For GV7R•40 through GV7R•150, 1.5–95 mm^2 (#14 to # 3/0 awg).	3	—	**GV7AC021**	0.300 (0.66)
	For GV7R•220 1.5–185 mm^2 (#14 to 350 mcm).	3	—	**GV7AC022**	0.350 (0.77)
Spreaders	To increase the center line distance between phase to 45 mm.	3	—	**GV7AC03**	0.180 (0.40)
Terminal Shields IP 405 ▲	Supplied with the sealing accessory.	1	—	**GV7AC01**	0.125 (0.28)
Phase Barriers ▲	Provides maximum phase separation at the power connection points.	2	—	**GV7AC04**	0.075 (0.17)
Insulating Screens	Provides insulation between the connections and the backplate.	2	—	**GV7AC05**	0.075 (0.17)
Kit for combination with contactor ▼	Providing a direct link between the starter and the contactor, the cover provides protection against direct finger contact.	1	LC1F115 to F185	**GV7AC06**	0.550 (1.21)
		1	LC1F225 and F265	**GV7AC07**	0.550 (1.21)
		1	LC1D115 and D150	**GV7AC08**	0.550 (1.21)

▲ Terminal shields cannot be used together with phase barriers.
▼ The kit comprises links, a protective shield and a depth adjustable metal bracket for the breaker.



Add-On Auxiliary Contacts

Add-on auxiliary contacts provide remote indication of the starter contact state. They can be used for signalling, electrical locking, or relaying. Two versions are available: standard and low level. The auxiliary contacts include a terminal block. A hole is provided for wiring exit.

An auxiliary contact can perform any of the following functions, depending on where it is located in the starter:

Location	Function	Application
1	N.O./N.C. contact	Indicates the position of the starter poles.
2	Trip indication	Indicates that the starter has tripped due to an overload, short-circuit, differential fault, operation of a voltage release (under voltage or shunt release), or by the “push to trip” button. It resets when the starter is reset.
3	Electrical fault indication	Indicates that the starter has tripped due to an overload, short-circuit, or differential fault. It resets when the starter is reset.
4	N.O./N.C. Contact	Indicates the position of the starter poles.

Type	Voltage	Catalog Number	Weight / kg (lbs)
Standard	–	**GV7AE11**	0.015 (0.03)
Low level	–	**GV7AB11**	0.015 (0.03)

Magnetic Fault Indication Device

The magnetic fault indication device either differentiates a thermal fault from a magnetic fault or opens the contactor only in the event of a thermal fault (see page 18).

Voltage	Catalog Number	Weight / kg (lbs)
24–48 VAC / 24–72 VDC	**GV7AD111**	0.100 (0.22)
110–240 VAC/DC	**GV7AD112**	0.100 (0.22)

Undervoltage Trip GV7AU

The undervoltage trip opens the motor starter when the control voltage drops below the tripping threshold of 0.35–0.7 times the rated voltage. For the starter contacts to be closed again, the control voltage must be above 0.85 times the rated voltage. The GV7AU undervoltage trip meets the requirements of IEC 60947-2. For location of the undervoltage trip unit, see page 18.

Shunt Trip GV7AS

The shunt trip opens the motor starter when the control voltage rises above 0.7 times the rated voltage. For location of the shunt trip unit, see page 18.

Operation (GV7AU or GV7AS)

When the motor starter has been tripped by a GV7AU or AS trip, it must be reset either locally or by remote control. (For remote control, please consult your Square D Regional Sales Office).

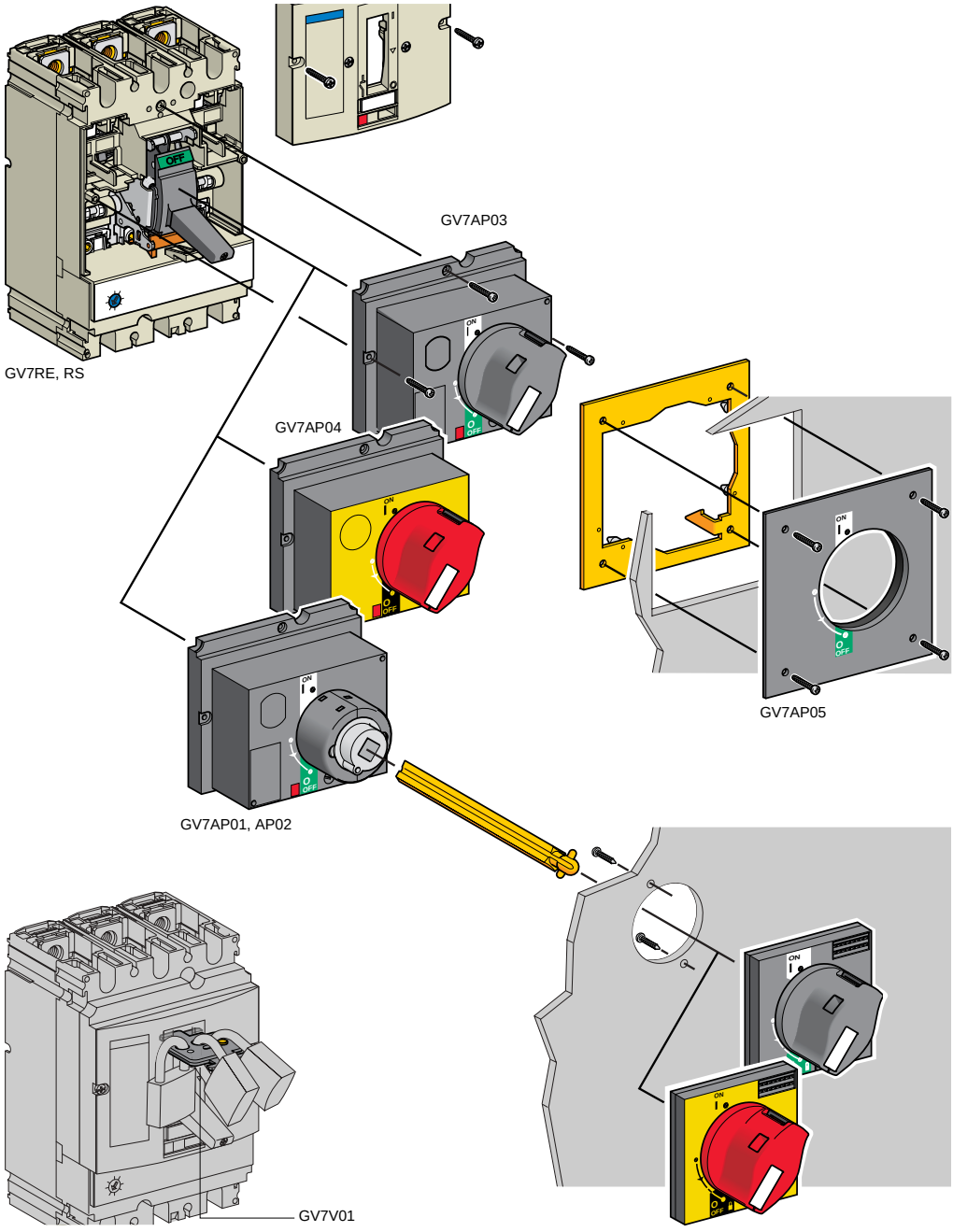
Tripping has priority over manual closing. If a tripping instruction is present, manual action does not result in the closing of the contacts even temporarily.

Both the undervoltage trip and shunt trip have a durability of 50% of the mechanical life of the motor starter.

Type	Voltage	Catalog Number	Weight / kg (lbs)
Undervoltage Trip	48V, 50 Hz	**GV7AU055**	0.105 (0.23)
	110–130 V, 50/60 Hz	**GV7AU107**	0.110 (0.24)
	200–240 V, 50/60 Hz	**GV7AU207**	0.110 (0.24)
	380–440 V, 50/60 Hz	**GV7AU387**	0.105 (0.23)
	525 V, 50 Hz	**GV7AU525**	0.100 (0.22)
Shunt Trip	48V, 50 Hz	**GV7AS055**	0.105 (0.23)
	110–130 V, 50/60 Hz	**GV7AS107**	0.110 (0.24)
	200–240 V, 50/60 Hz	**GV7AS207**	0.110 (0.24)
	380–440 V, 50/60 Hz	**GV7AS387**	0.105 (0.23)
	525 V, 50 Hz	**GV7AS525**	0.100 (0.22)

GV7R shown with the following options and accessories:

- Extended rotary handle (GV7AP01 or GV7AP02).
- Direct rotary handle (GV7AP03 or GV7AP04).
- Conversion accessory (GV7AP05).
- Locking device (GV7V01).



Direct Rotary Handle

The direct rotary handle replaces the starter front cover and is secured by screws (see the diagram on page 20). It includes a device for locking the starter in the O (Off) position by a padlock. As many as 3 padlocks with a shank diameter of 5 to 8 mm (0.2 to 0.3 in) can be used. The padlocks are not supplied. A conversion accessory allows the direct rotary handle to be mounted on an enclosure door. In this case, the door cannot be opened if the starter is in the “tripped” position. Starter closing is inhibited if the enclosure door is open. Refer to the diagram on page 20.

Description	Type	Catalog Number	Weight / kg (lbs)
Direct Rotary Handle	Black handle, black legend plate	**GV7AP03**	0.205 (0.45)
	Red handle, yellow legend plate	**GV7AP04**	0.205 (0.45)
Conversion Accessory ▲	For mounting direct rotary handle on enclosure door	**GV7AP05**	0.100 (0.22)

▲ This conversion accessory makes it impossible to open the door if the device is closed and prevents the device from being closed if the door is open.

Extended Rotary Handle

The extended rotary handle makes it possible to operate controllers installed in the back of an enclosure from the front of the enclosure. Refer to the diagram on page 20.

It consists of the following:

— a unit which screws onto the front cover of the starter

— an assembly (handle and front plate) to be fitted on the enclosure door

— an extension shaft which must be adjusted – distance between the mounting surface and the door: 185 mm (7.28 in) minimum, 600 mm (23.62 in) maximum

It includes a device for locking the starter in the O (Off) position by a padlock. As many as 3 padlocks with a shank diameter of 5 to 8 mm (0.2 to 0.3 in) can be used. The padlocks are not supplied. This prevents the enclosure door from being opened.

Description	Type	Catalog Number	Weight / kg (lbs)
Extended Rotary Handle	Black handle, black legend plate	**GV7AP01**	0.775 (1.71)
	Red handle, yellow legend plate	**GV7AP02**	0.775 (1.71)

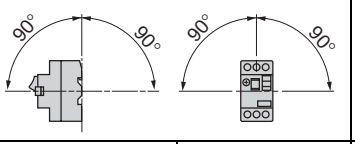
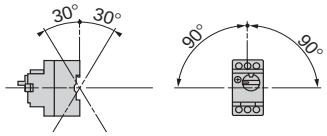
Locking Device

The locking device allows controllers without a rotary handle installed, to be locked in the O (Off) position by a padlock. As many as 3 padlocks with a shank diameter of 5 to 8 mm (0.2 to 0.3 in) can be used. The padlocks are not supplied. Refer to the diagram on page 20.

Description	Application	Catalog Number	Weight / kg (lbs)
Locking Device	For GV7 not fitted with a rotary handle	**GV7V01**	0.100 (0.22)

GV2 SPECIFICATIONS

Environment

Type	GV2ME		GV2P		LS1D30, LS1D303	LS1D32, LS1DT32, LS1D323
Conforming to standards	IEC 60947-1, 60947-2, 60947-4-1, EN 60204, BS 4752, BS 4941, UL 508, CSA C22.2 No. 14, NF C 63-650, NFC63-120, 79-130, VDE 0113, 0660.					
Product approvals	DEMKO, NEMKO, SEMKO, CSA. UL, BV, GL, LROS, DNV, PTB		CSA, UL, PTB		UL, CSA	BV
UL File Number	File E164864, CCN NLRV				–	–
CSA File Number	File LR 81630, Class 3211 05				–	–
Protective treatment	–		–		"TH"	"TH"
Degree of protection conforming to IEC 60529	In enclosure **GV2ME01**: IP 41 In enclosure **GV2ME02**: IP 55		–		–	–
Shock resistance conforming to IEC 60068-2-27	30 g		30 g		–	–
Vibration resistance conforming to IEC 60068-2-6	5 g (5 to 150 Hz)		5 g (5 to 150 Hz)		–	–
Ambient air temperature - storage	-40 to +176 °F (-40 to + 80 °C)				–	–
- operation	-4 to +140 °F (-20 to + 60 °C) Open -4 to 104 °F enclosed (-20 to 40 °C) Enclosed		-4 to +140 °F (-20 to + 60 °C)		-58 to +158 °F (-50 to +70 °C)	-58 to +158 °F (-50 to +70 °C)
Temperature compensation	-4 to +140 °F (-20 to + 60 °C) Open -4 to 104 °F enclosed (-20 to 40 °C) Enclosed		-4 to +140 °F (-20 to + 60 °C)		–	–
Flame resistance conforming to IEC 60695-2-1	1760 °F (960 °C)					
Maximum operating altitude	6562 ft (2000 m)		6562 ft (2000 m)		–	–
Operating positions in relation to normal vertical mounting position					± 23 °	–
Wiring Number of conductors and cross	Max	Min	Max	Min	Max	Min
sectional area (c.s.a.) Solid cable	2-#8 AWG (2-6 mm^2)	2-#16 AWG (2-1 mm^2)	2-#8 AWG (2-6 mm^2)	2-#16 AWG (2-1 mm^2)	2-#8 AWG (2-6 mm^2)	2-#16 AWG (2-1 mm^2)
Flexible cable without cable end	2-#8 AWG (2-6 mm^2)	2-#14 AWG (2-1 mm^2)	2-#8 AWG (2-6 mm^2)	2-#14 AWG (2-1 mm^2)	2-#8 AWG (2-6 mm^2)	2-#14 AWG (2-1 mm^2)
Flexible cable with cable end	2-#10 AWG (2-4 mm^2)	2-#16 AWG (2-1 mm^2)	2-#10 AWG (2-4 mm^2)	2-#16 AWG (2-1 mm^2)	2-#10 AWG (2-4 mm^2)	2-#16 AWG (2-1 mm^2)
Suitable for isolation conforming to IEC 60947-1 § 7-1-6	Yes		Yes		No	No
Tightening torque	15 lb-in (1.7 N•m)					
Resistance to mechanical impact	0.5 J		0.5 J			
Sensitivity to phase failure	Yes, conforming to IEC 60947-4-1, paragraph 7-2-1-5-2				No	No

GV2 Specifications / Characteristics

Type		GV2ME	GV2P	LS1D30, LS1D303	LS1D32, LS1DT32, LS1D323 ▲
Utilization category conforming to IEC 60947-2		A	A	–	AC 20B#
conforming to IEC 60947-4-1		AC-3	AC-3		
Rated operational voltage (Ue) conforming to IEC 60947-2	V	690 (590: GV2ME••3)	690	690	690
Rated insulation voltage (Ui) conforming to IEC 60947-2	V	690 (590: GV2ME••3)	690	–	690
conforming to CSA C22.2 No. 14 and UL 508	V	600 (590: GV2ME••3)	600 (B600)		
Rated operational frequency conforming to IEC 60947-2	Hz	50/60	50/60	50/60	50/60
Rated impulse withstand voltage (U imp) conforming to IEC 60947-2	kV	6	6	–	–
Total power dissipated per pole	W	2.5	2.5	3.2	3.2
Mechanical life (ops: closing, opening)	ops	100 000	100 000	–	–
Electrical life for AC-3 duty	ops	100 000	100 000	–	–
Duty class (maximum operating rate)	ops/h	25	25	–	–
Rated duty conforming to IEC 60947-4-1		–	Continuous duty	–	–

▲ Conforming to IEC 60947-3

GV2 TRIP MODULE SPECIFICATIONS

Characteristics

Type		GV2AU		GV2AS
Rated insulation voltage (Ui) conforming to IEC 60947-1	V	690		690
Operational voltage conforming to IEC 60947-1	V	0.85-1.1 Ue		0.7-1.1 Ue
Drop-out voltage	V	0.35-0.7 Ue		0.2-0.75 Ue
Inrush consumption	VA	12		14
	W	8		10.5
Sealed consumption	VA	3.5		5
	W	1.1		1.6
Operating time conforming to IEC 60947-1	msec	From the moment the voltage reaches its operational value until opening of the GV2••10-15		
On-load factor		100%		
Wiring Number of conductors and cross		Min	Max	
sectional area (c.s.a.) Solid cable		1-#16 to #12 AWG (1-2.5 mm^2)	2-#16 to #12 AWG (1-2.5 mm^2)	
Flexible cable without cable end		1-#18 to #12 AWG (0.75-2.5 mm^2)	2-#18 to #12 AWG (0.75-2.5 mm^2)	
Flexible cable with cable end		1-#18 to #14 AWG (0.75-1.5 mm^2)	2-#18 to #14 AWG (0.75-1.5 mm^2)	
Tightening torque		12 lb-in (1.4 N•m) max		
Mechanical life (ops: closing-opening)	ops	100 000		

GV2 AUXILIARY CONTACT SPECIFICATIONS

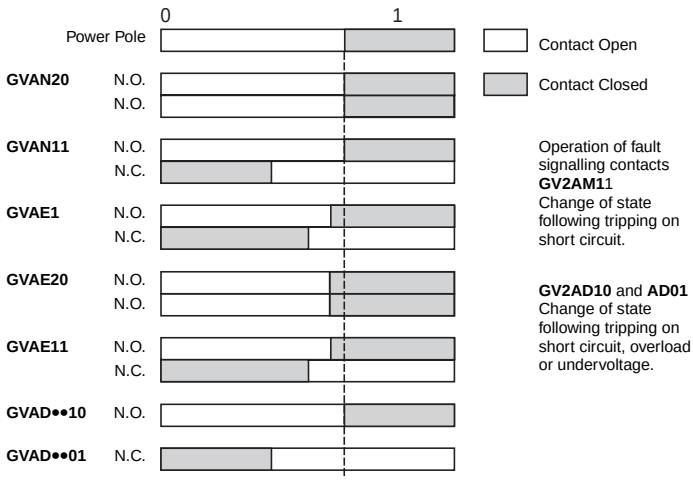
Type		**Instantaneous Auxiliary Contacts GVAN, GVAD**							**Fault Signalling Contacts GV2AD, GV2 AM11**			
Rated insulation voltage (Ui) (associated insulation coordination) conforming to IEC 60947-1	V	690							690			
to CSA C22.2 No. 14 and UL 508	V	600							300			
Conventional rated thermal current (Ith) conforming to IEC 60947-5-1	A	6							2.5			
to CSA C22.2 No. 14 and UL 508	A	5							1			
Mechanical life (ops: closing-opening)	ops	100 000							1000			
Operational power and current conforming to IEC 60947-5-1 a.c. operation		AC-15/100 000 ops							AC-14/1000 ops			
Rated operational voltage (Ue)	V	48	110 127	230 240	380 415	440	500	690	24	48	110 127	230 240
Operational power, normal conditions	VA	300	500	720	850	650	500	400	36	48	72	72
Occasional breaking and making capacities, abnormal conditions	VA	3000	7000	13 000	15 000	13 000	12 000	9000	220	300	450	450
Rated operational current (Ie)	A	6	4.5	3.3	2.2	1.5	1	0.6	1.5	1	0.5	0.3
Operational power and current conforming to IEC 60947-5-1 d.c. operation		DC-13/100 000 ops							DC-13/1000 ops			
Rated operational voltage (Ue)	V	24	48	60	110	240 (1)	–	–	24	48	60	–
Operational power, normal conditions	W	140	240	180	140	120	–	–	24	15	9	–
Occasional breaking and making capacities, abnormal conditions	W	240	360	240	210	180	–	–	100	50	50	–
Rated operational current (Ie)	A	6	5	3	1.3	0.5	–	–	1	0.3	0.15	–
Minimum operational conditions d.c. operation	V	17										
	mA	5										
Short circuit protection		By GB2CB•• circuit breaker (rating according to operational current for Ue = 415 V) or by gG fuse 10 A max (or equivalent).										
Wiring (screw clamp)		**Min**					**Max**					
Number of conductors and cross sectional area (c.s.a.) Solid cable		1-#16 to #12 AWG (1-2.5 mm^2)					2-#16 to #12 AWG (1-2.5 mm^2)					
Flexible cable without cable end		1-#18 to #12 AWG (0.75-2.5 mm^2)					2-#18 to #12 AWG (0.75-2.5 mm^2)					
Flexible cable with cable end		1-#18 to #14 AWG (0.75-1.5 mm^2)					2-#18 to #14 AWG (0.75-1.5 mm^2)					
Wiring (spring terminal)		**Min (GVAN only)**					**Max (GVAN only)**					
Flexible cable without cable end		1-#18 to #12 AWG (0.75-2.5 mm^2)					2-#18 to #12 AWG (0.75-2.5 mm^2)					
Tightening torque		12 lb-in (1.4 N•m) max										

(1) Add an RC circuit type LA4 D to the load terminals, see Square D Digest.

GV2 Auxiliary Contact Specifications (continued)

Type		Instantaneous Auxiliary Contacts GV2AE			
Rated insulation voltage (Ui) (associated insulation coordination) conforming to IEC 60947-1	V	250 (690 with respect to main circuit)			
to CSA C22.2 No. 14 and UL 508	V	300			
Conventional rated thermal current (Ith) conforming to IEC 60947-5-1	A	2.5			
to CSA C22.2 No. 14 and UL 508	A	1			
Mechanical life	ops	100 000			
Operational power and current to IEC 60947-5-1. a.c. operation		AC-15/100 000 ops (closing / opening)			
Rated operational voltage (Ue)	V	24	48	110 127	230 240
Operational power, normal conditions	VA	48	60	120	120
Occasional breaking and making capacities, abnormal conditions	VA	480	600	1270	2400
Rated operational current (Ie)	A	2	1.25	1	0.5
Operational power and current to IEC 60947-5-1. d.c. operation		DC-13/100 000 ops (closing / opening)			
Rated operational voltage (Ue)	V	24	48	60	–
Operational power, normal conditions	W	24	15	9	–
Occasional breaking and making capacities, abnormal conditions	W	100	50	50	–
Rated operational current (Ie)	A	1	0.3	0.15	–
Low level switching contact reliability		Number of faults for “n” million operating cycles (17 V-5 mA): = 10^{-6}			
Short circuit protection		By GB2CB06 circuit breaker or gG fuse, 10 A max			
Wiring (screw clamp)		**Min**		**Max**	
Number of conductors and cross sectional area (c.s.a.) Solid cable		1-#16 to #12 AWG (1-2.5 mm^2)		2-#16 to #12 AWG (1-2.5 mm^2)	
Flexible cable without cable end		1-#18 to #12 AWG (0.75-2.5 mm^2)		2-#18 to #12 AWG (0.75-2.5 mm^2)	
Flexible cable with cable end		1-#18 to #14 AWG (0.75-1.5 mm^2)		2-#18 to #14 AWG (0.75-1.5 mm^2)	
Wiring (spring terminal)		**Min (GVAN only)**		**Max**	
Flexible cable without cable end		1-#18 to #12 AWG (0.75-2.5 mm^2)		2-#18 to #12 AWG (0.75-2.5 mm^2)	
Tightening torque		12 lb-in (1.4 N•m) max			

Contact operation
instantaneous auxiliary contacts



GV2 ACCESSORY SPECIFICATIONS

3-Pole Busbars and GV2G•

Rated insulation voltage (Ui)	Conforming to IEC 60947-1	V	690
Conventional rated thermal current (Ith)	Conforming to IEC 60439-1	A	63
Permissible peak current (I peak)		kA	11
Permissible thermal limit (I^2t)		kA^2s	104
Degree of protection	Conforming to IEC 60529		IP 20

Terminal Blocks GV2G05 and GV1G09

Rated insulation voltage (Ui)	Conforming to IEC 60947-1	V	690
Conventional rated thermal current (Ith)	Conforming to IEC 60439-1	A	63
Degree of protection	Conforming to IEC 60529		IP 20
Wiring	Solid cable		1-#14 to #2 AWG (1.5 to 25 mm^2) conductor or 2-#14 to #6 AWG (1.5 to 10 mm^2) conductors
	Flexible cable without cable end		1-#14 to #2 AWG (1.5 to 25 mm^2) conductor or 2-#12 to #6 AWG (2.5 to 10 mm^2) conductors
	Flexible cable with cable end		1-#14 to #4 AWG (1.5 to 16 mm^2) conductor or 2-#14 to #10 AWG (1.5 to 4 mm^2) conductors
Tightening torque	Connector		20 lb-in (2.2 N•m)
	Screw clamp		15 lb-in (1.7 N•m)

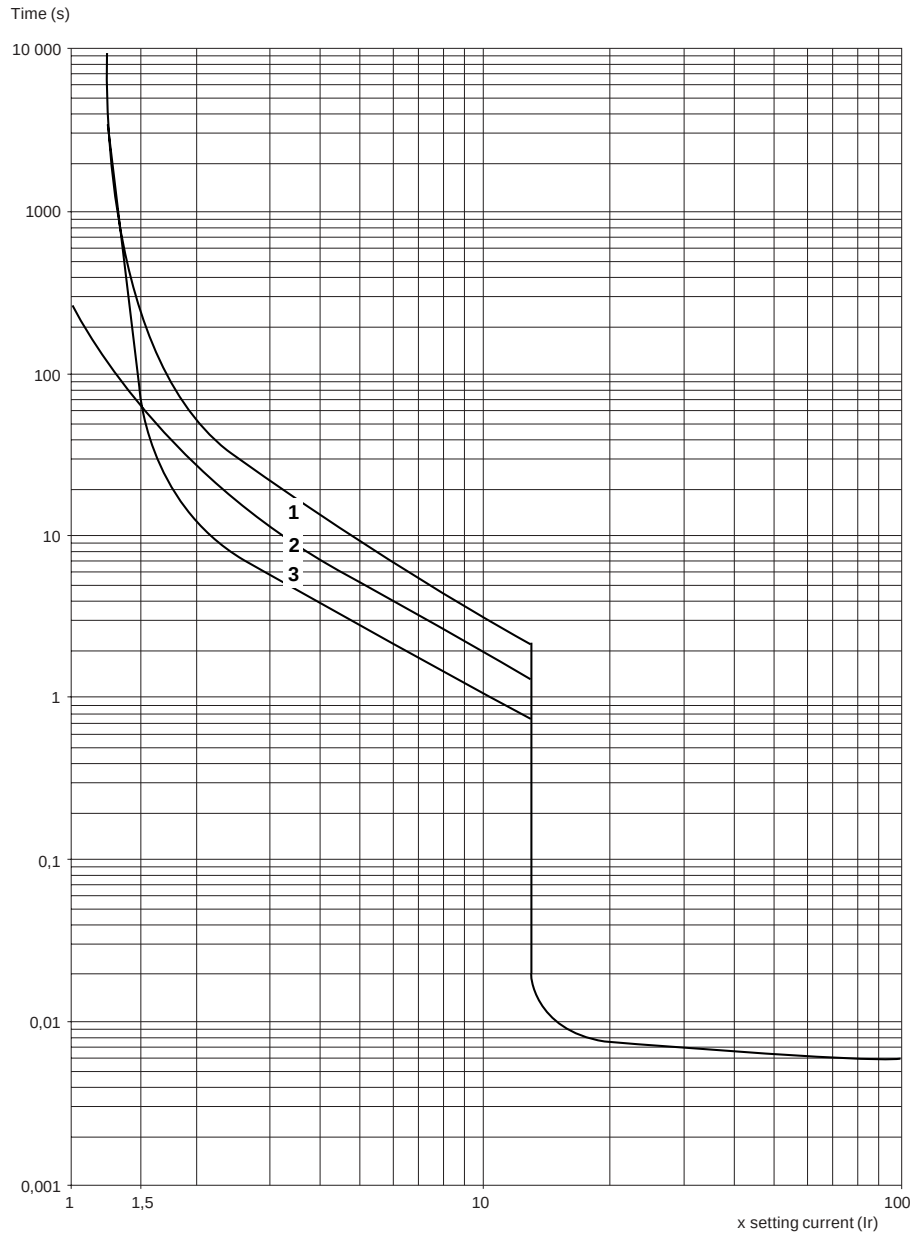
Current Limiter GV1L3 (European applications only)

Rated insulation voltage (Ui)	Conforming to IEC 60947-1	V	690
Conventional rated thermal current (Ith)	Conforming to IEC 60947-1	A	63
Operating threshold	rms current	A	1500 (non adjustable threshold)
Wiring	Solid cable		1-#14 to #2 AWG (1.5 to 25 mm^2) conductor or 2-#14 to #6 AWG (1.5 to 10 mm^2) conductors
	Flexible cable without cable end		1-#14 to #2 AWG (1.5 to 25 mm^2) conductor or 2-#12 to #6 AWG (2.5 to 10 mm^2) conductors
	Flexible cable with cable end		1-#14 to #4 AWG (1.5 to 16 mm^2) conductor or 2-#14 to #10 AWG (1.5 to 4 mm^2) conductors
Tightening torque			20 lb-in (2.2 N•m)

GV2 OPERATING CURVES

Thermal-Magnetic Tripping Curves for GV2ME and GV2P

Average operating time at 20° C according to multiples of the setting current



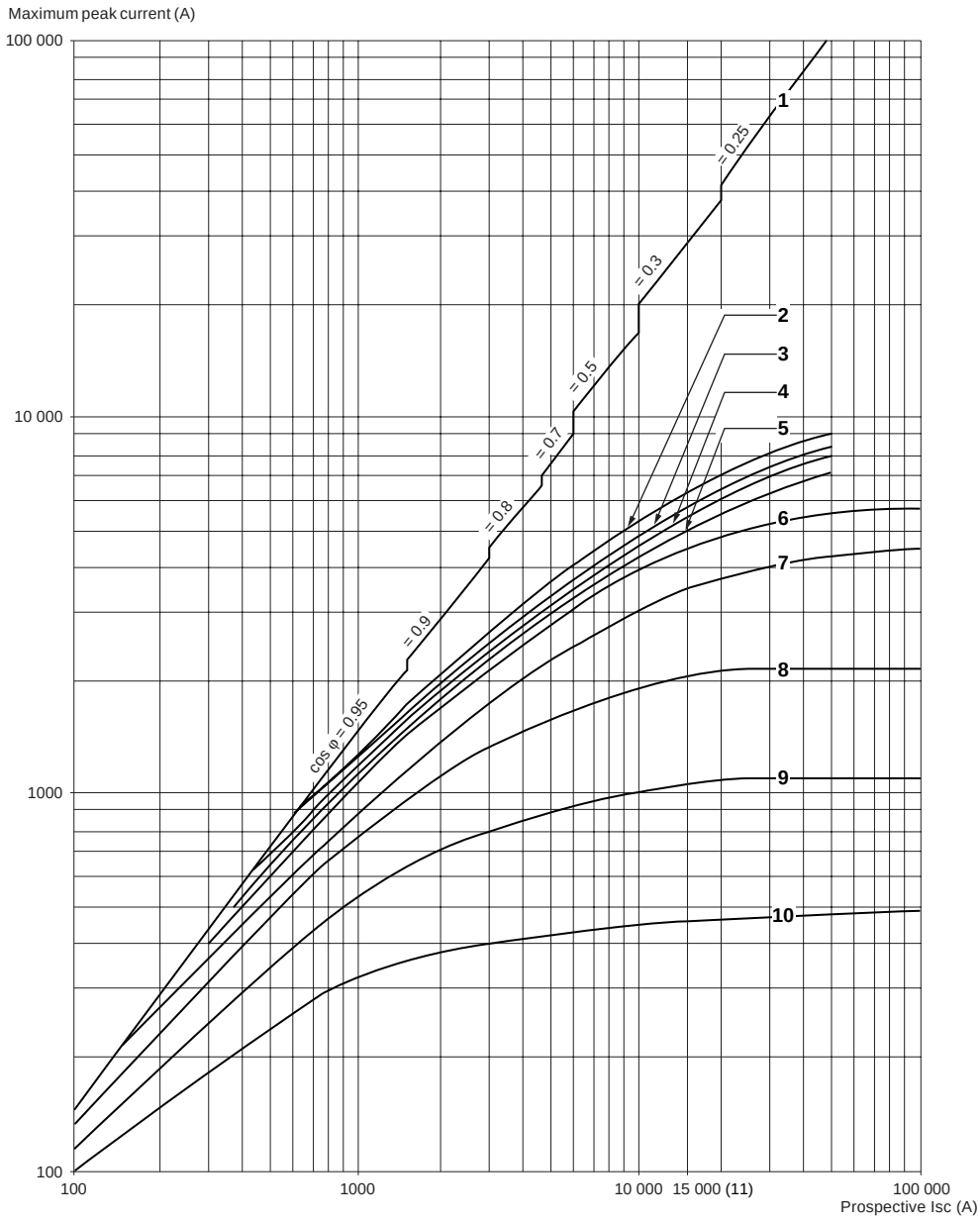
1 3 poles from cold state
2 2 poles from cold state
3 3 poles from hot state

GV2 OPERATING CURVES (CONTINUED)

Current Limitation on Short Circuit

For GV2M and GV2P
Three-phase 400/415 V

Dynamic stress
1 peak = f (prospective Isc) at 1.05 Ue = 435 V



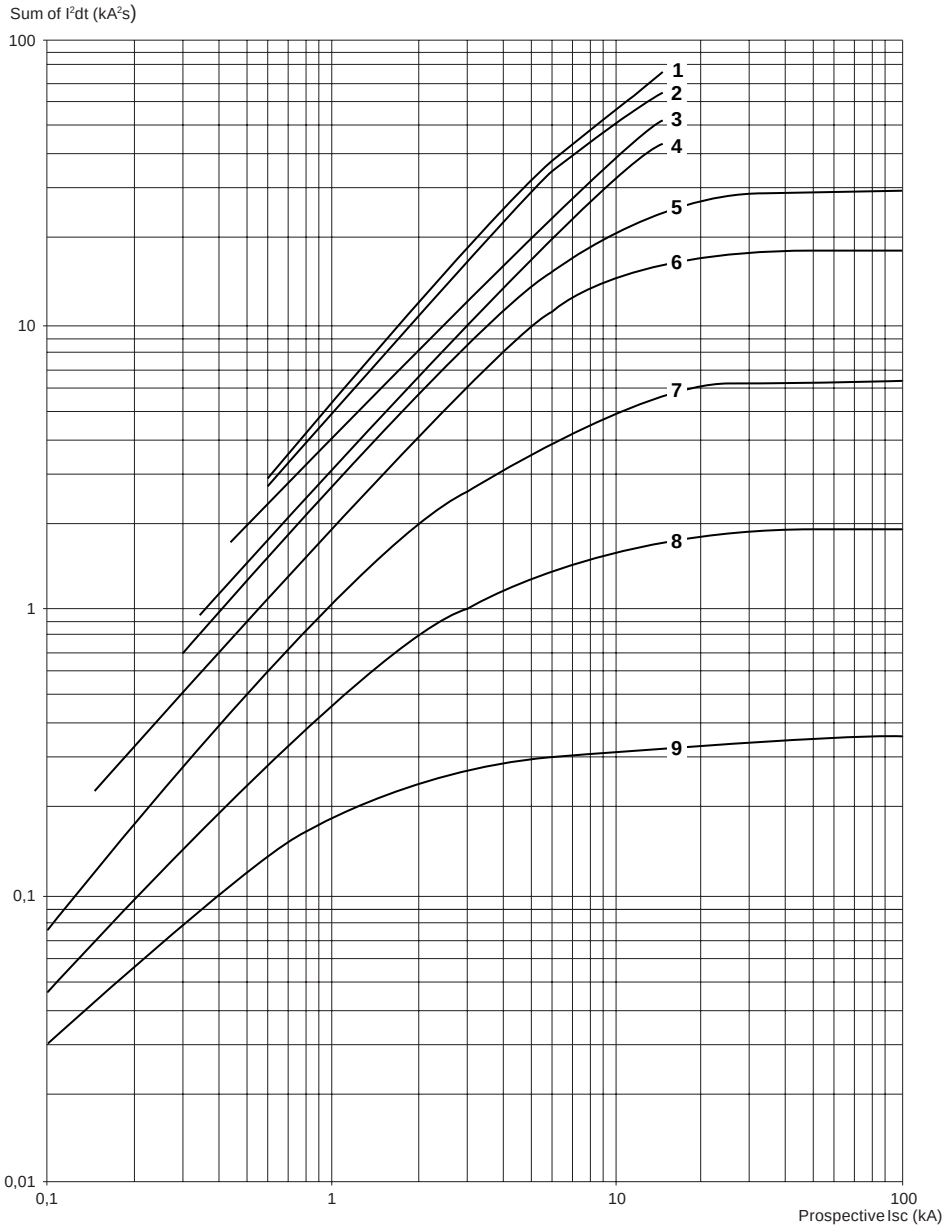
1	I peak max.
2	20-25 A
3	17-23 A
4	13-18 A
5	9-14 A
6	6-10 A
7	4-6.3 A
8	2.5-4 A
9	1.6-2.5 A
10	1-1.6 A
11	Limit of rated ultimate breaking capacity on short circuit of GV2M (14, 18, 23 and 25 Amp ratings)

GV2 OPERATING CURVES (CONTINUED)

Thermal Limit on Short Circuit for GV2ME

Thermal limit in kA^2s in the magnetic operating zone

Sum of L^2dt = f (prospective Isc) at 1.05 Ue = 435 V



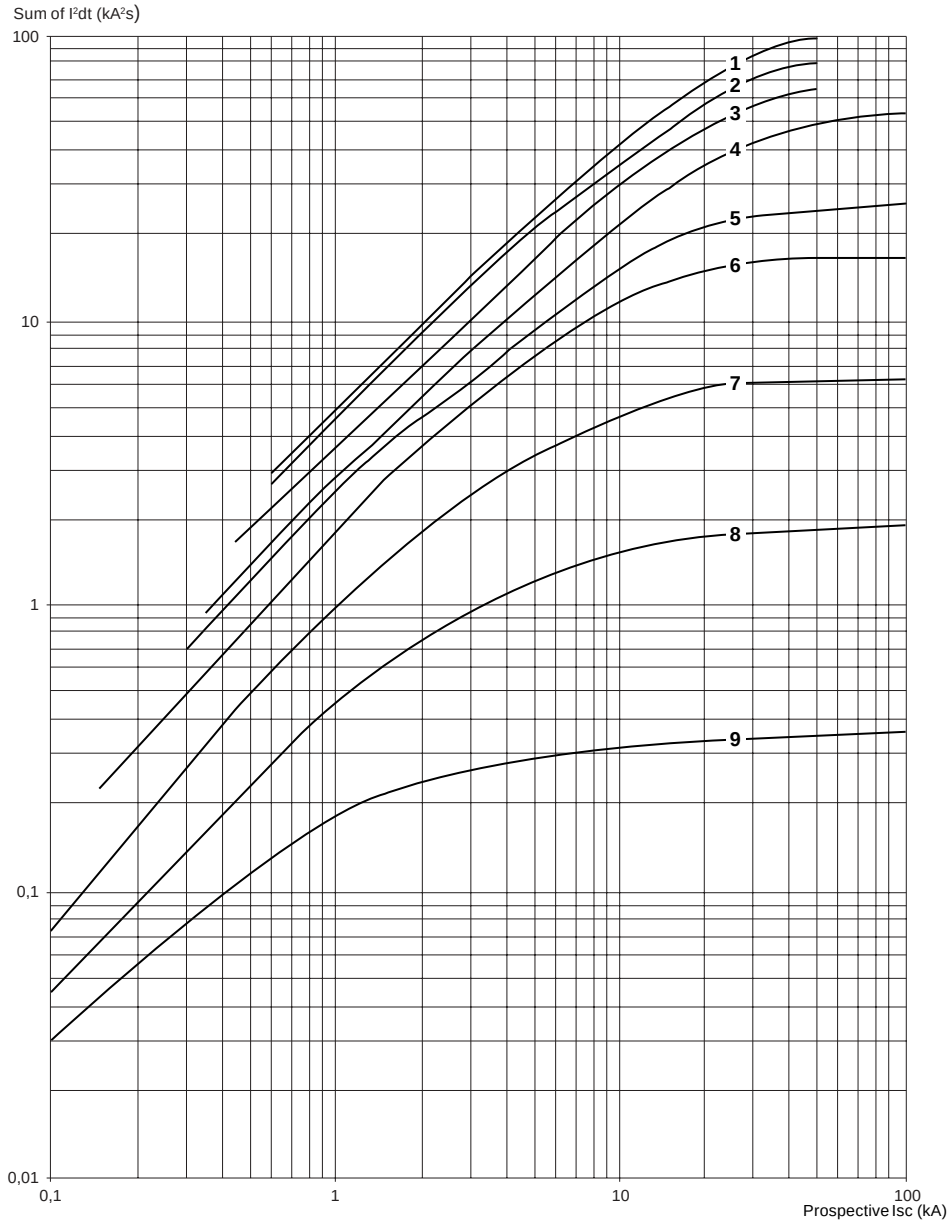
1	20-25 A	6	4-6.3 A
2	17-23 A	7	2.5-4 A
3	13-18 A	8	1.6-2.5 A
4	9-14 A	9	1-1.6 A
5	6-10 A		

GV2 OPERATING CURVES (CONTINUED)

Thermal Limit on Short Circuit for GV2P

Thermal limit in kA^2s in the magnetic operating zone

Sum of I^2dt = f (prospective Iso) at 1.05 Ue = 435 V



1	20-25 A	6	4-6.3 A
2	17-23 A	7	2.5-4 A
3	13-18 A	8	1.6-2.5 A
4	9-14 A	9	1-1.6 A
5	6-10 A		

GV2 BREAKING CAPACITY FOR EUROPEAN APPLICATIONS

Type				GV2									GV2								
				ME01 to ME06	**ME07**	**ME08**	**ME10**	**ME14**	**ME16**	**ME20**	**ME21**	**ME22**	**P01 to P06**	**P07**	**P08**	**P10**	**P14**	**P16**	**P20**	**P21 & P22**	**P32**
Rating			A	0.1 to 1.6	2.5	4	6.3	10	14	18	23	25	0.1 to 1.6	2.5	4	6.3	10	14	18	23 & 25	32
Breaking capacity conforms to IEC 60947-2	230/ 240 V	Icu	kA	♦	♦	♦	♦	♦	♦	♦	50	50	♦	♦	♦	♦	♦	♦	♦	♦	♦
		Ics % (1)		♦	♦	♦	♦	♦	♦	♦	100	100	♦	♦	♦	♦	♦	♦	♦	♦	♦
	400/ 415 V	Icu	kA	♦	♦	♦	♦	♦	15	15	15	15	♦	♦	♦	♦	♦	♦	50	50	50
		Ics % (1)		♦	♦	♦	♦	♦	50	50	40	40	♦	♦	♦	♦	♦	♦	50	50	50
	440 V	Icu	kA	♦	♦	♦	50	15	8	8	6	6	♦	♦	♦	♦	♦	50	20	20	20
		Ics % (1)		♦	♦	♦	100	100	50	50	50	50	♦	♦	♦	♦	♦	75	75	75	75
	500 V	Icu	kA	♦	♦	♦	50	10	6	6	4	4	♦	♦	♦	♦	50	42	10	10	10
		Ics % (1)		♦	♦	♦	100	100	75	75	75	75	♦	♦	♦	♦	100	75	75	75	75
	690 V	Icu	kA	♦	3	3	3	3	3	3	3	3	♦	8	8	6	6	6	4	4	4
		Ics % (1)		♦	75	75	75	75	75	75	75	75	♦	100	100	100	100	100	100	100	100
Associated fuses (if required) if Isc > breaking capacity Icu conforms to IEC 60947-2	230/ 240 V	aM	A	♦	♦	♦	♦	♦	♦	♦	80	80	♦	♦	♦	♦	♦	♦	♦	♦	♦
		gl	A	♦	♦	♦	♦	♦	♦	♦	100	100	♦	♦	♦	♦	♦	♦	♦	♦	♦
	400/ 415 V	aM	A	♦	♦	♦	♦	♦	63	63	80	80	♦	♦	♦	♦	♦	♦	100	100	100
		gl	A	♦	♦	♦	♦	♦	80	80	100	100	♦	♦	♦	♦	♦	♦	125	125	125
	440 V	aM	A	♦	♦	♦	50	50	50	50	63	63	♦	♦	♦	♦	♦	50	63	80	80
		gl	A	♦	♦	♦	63	63	63	63	80	80	♦	♦	♦	♦	♦	63	80	100	100
	500 V	aM	A	♦	♦	♦	50	50	50	50	50	50	♦	♦	♦	♦	50	50	50	50	50
		gl	A	♦	♦	♦	63	63	63	63	63	63	♦	♦	♦	♦	63	63	63	63	63
	690 V	aM	A	♦	16	25	32	32	40	40	40	40	♦	20	25	40	40	50	50	50	50
		gl	A	♦	20	32	40	40	50	50	50	50	♦	25	32	50	50	63	63	63	63

♦ > 100 kA.
(1) As% of Icu.

GV2 BREAKING CAPACITY FOR EUROPEAN APPLICATIONS (CONTINUED)

Used in Association with Current Limiter GV1L3

Type				GV2								
				ME01 to ME06	ME07	ME08	ME10	ME14	ME16	ME20	ME21	ME22
Rating			A	0.1 to 1.6	2.5	4	6.3	10	14	18	23	25
Breaking capacity conforms to IEC 60947-2	230/240 V	Icu	kA	♦	♦	♦	♦	♦	♦	♦	♦	♦
		Ics % (1)		♦	♦	♦	♦	♦	♦	♦	♦	♦
	400/415 V	Icu	kA	♦	♦	♦	♦	♦	100	100	100	100
		Ics % (1)		♦	♦	♦	♦	♦	50	50	40	40
	440 V	Icu	kA	♦	♦	♦	♦	♦	50	20	20	20
		Ics % (1)		♦	♦	♦	♦	♦	75	75	75	75
	500 V	Icu	kA	♦	♦	♦	♦	50	42	10	10	10
		Ics % (1)		♦	♦	♦	♦	100	100	75	75	75

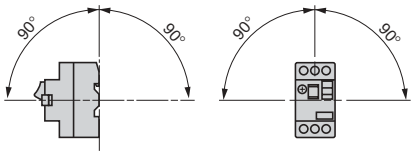
Type				GV2								
				P01 to P06	P07	P08	P10	P14	P16	P20	P21 & P25	P32
Rating			A	0.1 to 1.6	2.5	4	6.3	10	14	18	21 & 23	32
Breaking capacity conforms to IEC 60947-2	230/240 V	Icu	kA	♦	♦	♦	♦	♦	♦	♦	♦	♦
		Ics % (1)		♦	♦	♦	♦	♦	♦	♦	♦	♦
	400/415 V	Icu	kA	♦	♦	♦	♦	♦	♦	♦	♦	♦
		Ics % (1)		♦	♦	♦	♦	♦	♦	♦	♦	♦
	440 V	Icu	kA	♦	♦	♦	♦	♦	100	100	100	100
		Ics % (1)		♦	♦	♦	♦	♦	50	50	50	50
	500 V	Icu	kA	♦	♦	♦	♦	100	100	100	100	100
		Ics % (1)		♦	♦	♦	♦	50	50	50	50	50

Type			GV2								
			ME01 to ME06	ME07	ME08	ME10	ME14	ME16	ME20	ME21	ME22
Rating		A	0.1 to 1.6	2.5	4	6.3	10	14	18	23	25
Cable protection against thermal stress in the event of short circuit (PVC insulated copper cables) Minimum cross sectional area	0.04 in^2 / 1 mm^2		(3)	(3)	(3)	10kA	6 kA	(2)	(2)	(2)	(2)
(c.s.a.) protected to 40 °C at	0.06 in^2 / 1.5 mm^2		(3)	(3)	(3)	20kA	10 kA	(2)	(2)	(2)	(2)
Isc max	0.10-0.24 in / 2.5-6 mm		(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)	(3)

♦ > 100 kA. (1) As% of Icu. (2) Cable c.s.a. not protected (3) cable c.s.a. protected.

GV3 SPECIFICATIONS

Environment

Conforming to standards	IEC, NF C, BS, IEC, VDE			
Approvals	ASE, CSA, UL, LROS, ÖVE			
UL File Number	File E164864, CCN NLRV			
CSA File Number	File LR 81630, Class 3211 05			
Protective treatment	"TC"			
Degree of protection / Conforming to IEC 60529	**GV3ME** open-mounted: IP 20			
	GV3ME in enclosure **GV3CE01**: IP 55			
Shock resistance / Conforming to IEC 68-2-27	22 g for 20 ms duration			
Vibration resistance / Conforming to IEC 68-2-6	2.5 g (0-25 Hz)			
Ambient air temperature	Storage	-40 to +176 °F (-40 to + 80 °C)		
	Operation	Open Enclosed	-4 to +140 °F (-20 to + 60 °C) -4 to +104 °F (-20 to + 40 °C)	
Temperature compensation	Conforming to IEC 60157-1	Open Enclosed	-4 to +140 °F (-20 to + 60 °C) -4 to +104 °F (-20 to + 40 °C)	
Flame resistance	Conforming to IEC 60695-2-1			Conforms for 1760 °F (960 °C)
Maximum operating altitude	Without derating			9843 ft. (3000 m)
Operating position				

Type	**GV3ME06 through ME20**		**GV3ME25 through ME63**	
Wiring Number of conductors and cross sectional area (c.s.a.) Solid cable	Min	Max	Min	Max
	1-#16 to #8 AWG (1-6 mm^2)	2-#16 to #8 AWG (1-6 mm^2)	1-#12 to #1 AWG (2.5-35 mm^2)	
Flexible cable without cable end	1-#16 to #8 AWG (1-6 mm^2)	2-#16 to #8 AWG (1-6 mm^2)	1-#12 to #2 AWG (2.5-25 mm^2)	2-#12 to #4 AWG (2.5-16 mm^2)
Flexible cable with cable end	1-#16 to #10 AWG (1-4 mm^2)	2-#16 to #10 AWG (1-4 mm^2)	1-#12 to #2 AWG (2.5-25 mm^2)	2-#12 to #4 AWG (2.5-16 mm^2)
Tightening Torque	15 lb-in (1.7 N•m)		44 lb-in (5 N•m)	

Technical Characteristics

Type			**GV3ME06 through ME25**	**GV3ME40 through ME63**
Rated insulation voltage (UI)	Conforming to IEC 60158-1	V	690	
	Conforming to CSA C 22.2 No. 14 and UL 508	V	600 (B600)	
Maximum conventional rated thermal current (Ith)	Conforming to IEC 60157-1	A	63	
Mechanical life		ops	100 000	50 000
Electrical life ops: Closing-opening	AC-3 duty	ops	100 000	50 000
Maximum operating rate		ops/h	25	
Sensitivity to phase failure	Conforms to IEC 60947-4-1 Sec 7-2-1-5-2			

GV3 SPECIFICATIONS (CONTINUED)

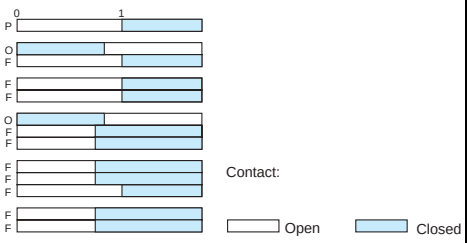
Voltage Trip Characteristics

Rated insulation voltage (Ui)	Conforming to IEC 60158-1	V	690
	Conforming to CSA C22.2 No. 14 and UL 508	V	600 (B600)
Pick-up voltage			0.8-1.1 Un
Drop-out voltage			0.7-0.35 Un
Inrush consumption			12 VA (7 W)
Sealed consumption			7 VA (2.5 W)
Operating time (1)		ms	**GV3B**: 10. **GV3D**: 15
On-load factor			100%
Wiring Number of conductors and cross sectional (c.s.a.) Solid cable	Min	Max	
	1-#16 to #12 AWG (1-2.5 mm^2)	2-#16 to #12 AWG (1-2.5 mm^2)	
Flexible cable without cable end	1-#18 to #12 AWG (0.75-2.5 mm^2)	2-#18 to #12 AWG (0.75-2.5 mm^2)	
Flexible cable with cable end	1-#18 to #12 AWG (0.75-2.5 mm^2)	2-#18 to #14 AWG (0.75-1.5 mm^2)	

(1) From the disappearance of Ue at the trip terminals to opening of the GV3.

GV3 AUXILIARY CONTACT SPECIFICATIONS

Auxiliary and Fault Signalling Contact Characteristics

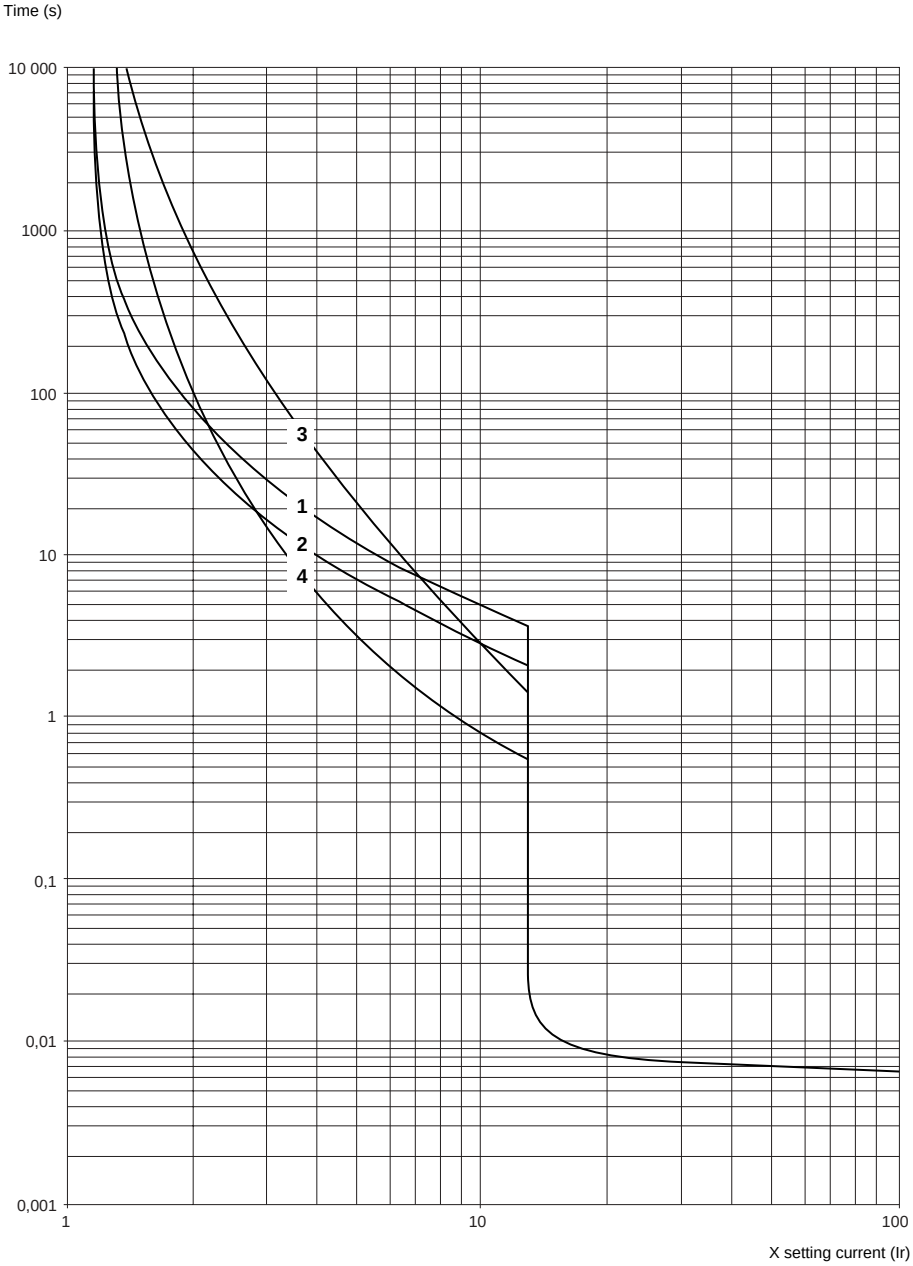
Type		**Instantaneous Auxiliary Contacts GV3A01 to A07**							**Fault Signalling Contacts GV3A08 and A09**						
Rated insulation voltage (Ui) conforming to IEC 60158-1	V	690							690						
conforming to CSA C22.2 No. 14 and UL 508	V	600 (B600)							600 (B600)						
Conventional rated thermal current (Ith) conforming to IEC 60337-1	A	6							6						
conforming to CSA C22.2 No.14 and UL 508	A	5 (B600)							5 (B600)						
Mechanical life	ops	100 000							1000						
Operational power and current conforms to	V	48	110 127	220 240	380 415	440	500	690	48	110 127	220 240	380 415	440	500	690
IEC 60337-1 a.c operation		AC-11/100 000 ops (Closing-opening)							AC-11/1000 ops (Closing-opening)						
Operational power	VA	350	500	800	850	700	700	400	240	460	800	850	450	450	200
Occasional breaking and making capacities	VA	4000	12 000	20 000	20 000	15 000	15 000	10 000	2400	8000	12 000	15 000	12 000	12 000	8000
Operational current (Ie)	A	6	4.5	3.5	2.2	1.5	1.5	0.6	5	3.6	3.5	2.2	1	1	0.3
Operational power and current conforming to IEC 60337-1 d.c. operation	V	24	48	60	110	220			24	48	60	110	220		
		DC-11/100 000 ops (Closing-opening)							DC-11/1000 ops (Closing-opening)						
Operational power	W	180	240	180	140	120			120	120	90	70	60		
Occasional breaking and making capacities	W	240	360	240	210	180			180	180	135	105	90		
Operational current (Ie)	A	6	5	3	1.3	0.5			5	2.5	1.5	0.7	0.3		
Short circuit protection conforming to IEC 60337-1		By **GB2CB08** circuit breaker for control circuits or g l fuse, 6 A max (or equivalent)							By **GB2CB08** circuit breaker for control circuits or g l fuse, 6 A max (or equivalent)						
Contact operation O = N.C. F = N.O.	Power poles: GV3AC1, A07 GV3A02 GV3A03 GV3A05 GV3A06								**GV3A08** and **A09** change state following an overload or short circuit fault						

Type	**Instantaneous Auxiliary Contacts GV3A01 to A07**		**Fault Signalling Contacts GV3A08 and A09**	
Wiring Number of conductors and cross sectional area (c.s.a.) - solid cable	Min	Max	Min	Max
	1-#16 to #12 AWG (1-2.5 mm^2)	2-#16 to #12 AWG (1-2.5 mm^2)	1-#16 to #12 AWG (1-2.5 mm^2)	2-#16 to #12 AWG (1-2.5 mm^2)
flexible cable without cable end	1-#18 to #12 AWG (.75-2.5 mm^2)	2-#18 to #12 AWG (.75-2.5 mm^2)	1-#18 to #12 AWG (.75-2.5 mm^2)	2-#18 to #12 AWG (.75-2.5 mm^2)
flexible cable with cable end	1-#18 to #12 AWG (.75-2.5 mm^2)	2-#18 to #14 AWG (.75-1.5 mm^2)	1-#18 to #12 AWG (.75-2.5 mm^2)	2-#18 to #14 AWG (.75-1.5 mm^2)

GV3 OPERATING CURVES

Thermal-Magnetic Tripping Curves for GV3ME

Average operating time at 68° F (20 °C) according to multiples of the setting current.



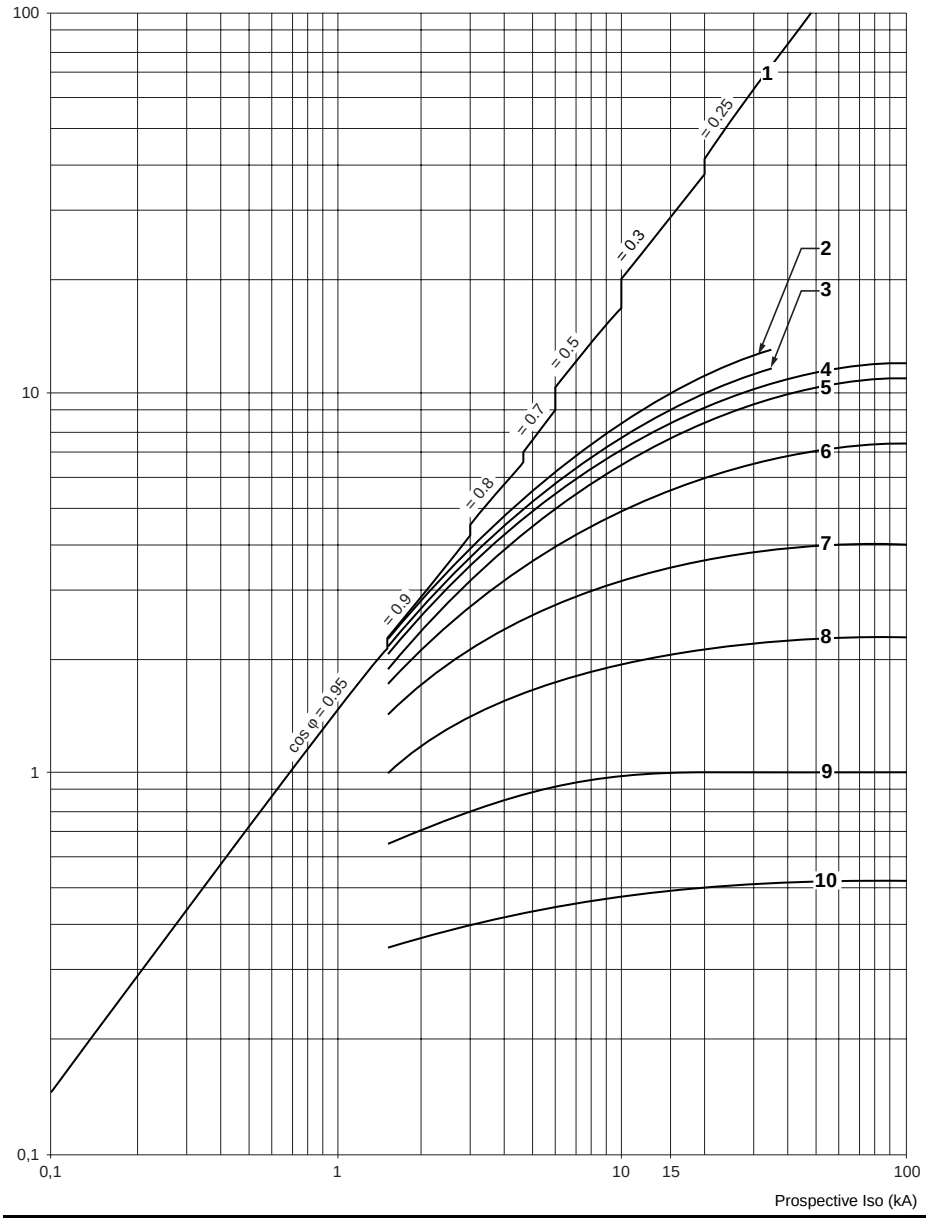
1 3 poles from cold state, rating 1.6 - 10 A
2 3 poles from hot state, rating 1.6 - 10 A
3 3 poles from cold state, rating 16 - 63 A
4 3 poles from hot state, rating 16 - 63 A

GV3 OPERATING CURVES (CONTINUED)

Current Limitation on Short Circuit for GV3ME

3-phase 400/415 V
Dynamic stress
I peak = f (prospective Isc) at 1.05 Ue = 435 V

Maximum peak current (kA)

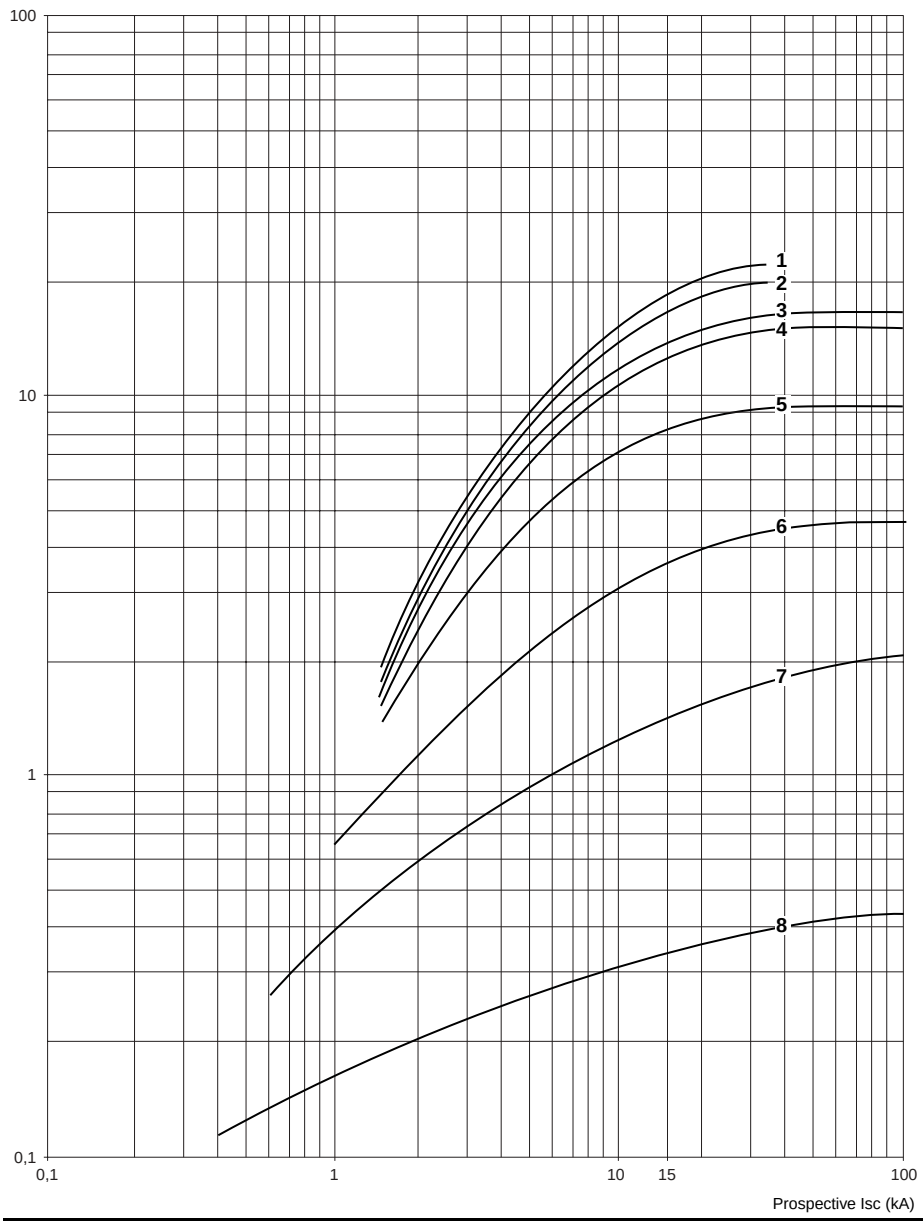


1	I peak max	6	6-10 A
2	40-63 A	7	4-6 A
3	25-40 A	8	2.5-4 A
4	16-25 A	9	1.6-2.5 A
5	10-16 A	10	1-1.6 A

GV3 OPERATING CURVES (CONTINUED)

Thermal Limit on Short Circuit for GV3ME

Thermal limit in kA^2s in the magnetic operating zone
Sum of I^2dt = f (prospective Isc) at 1.05 Ue = 435 V



1	40-63 A	5	6-10 A
2	25-40 A	6	4-6 A
3	16-25 A	7	2.5-4 A
4	10-16 A	8	1.6-2.5 A

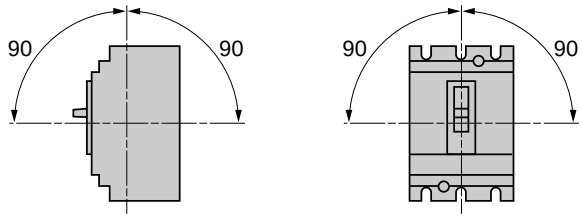
GV3 BREAKING CAPACITY FOR EUROPEAN APPLICATIONS

Type				GV3							
				ME06 and ME07	ME08	ME10	ME14	ME20	ME25	ME40	ME63
Breaking capacity (Icn) conforms to IEC 60157-1 (P1)	230 V		kA	100	100	100	100	100	100	100	100
	400/415 V		kA	100	100	100	100	100	100	35	35
	440 V		kA	100	100	100	25	25	25	25	25
	500 V		kA	100	100	100	8	8	8	8	8
	690 V		kA	100	4	4	4	4	4	4	4
Associated fuses (if required) if Isc > breaking capacity Icn	230 V	aM	A	♦	♦	♦	♦	♦	♦	♦	♦
		gl	A	♦	♦	♦	♦	♦	♦	♦	♦
	400/415 V	aM	A	♦	♦	♦	♦	♦	♦	250	315
		gl	A	♦	♦	♦	♦	♦	♦	315	400
	440 V	aM	A	♦	♦	♦	125	160	200	250	315
		gl	A	♦	♦	♦	160	200	250	315	400
	500 V	aM	A	♦	♦	♦	80	100	125	160	200
		gl	A	♦	♦	♦	100	125	160	200	250
	690 V	aM	A	♦	40	50	80	100	125	160	200
		gl	A	♦	50	63	100	125	160	200	250

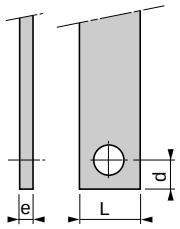
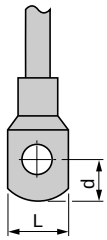
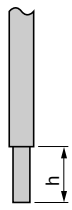
♦ Fuse not required: breaking capacity Icn > Isc.

GV7 SPECIFICATIONS

Environment

Conforming to Standards		IEC 60947-1, 60947-2, 60947-4-1, EN 60947-1, 60947-2, 60947-4-1, NF C 63-650, 63-120, 79-130, VDE 0113, UL 508, CSA C22.2 No.14
Approvals		UL File E 164864 CCN NLRV CSA File LR 81630 Class 3211 05
Protective Treatment		"TC"
Degree of Protection conforming to IEC 60529		IP 405 with terminal shields
Ambient Air Temperature	Storage	-55 °C to +95 °C (-68 °F to +203 °F)
	Operation	-25 °C to +70 °C (-13 °F to +158 °F)
Temperature Compensation		-25 °C to +55 °C (-13 °F to +130 °F) For use up to 70 °C (+158 °F), please consult your Regional Sales Office
Maximum Operating Altitude		2000 m (6562 ft.)
Operating Position		
Suitability for Isolation Conforming to IEC 60947-1 7-1-6		Yes
Vibration Resistance		2.5 g_n at 25 Hz
Phase Loss Sensitivity		Yes, conforming to IEC 60947-4-1, 7-2-1-5-2

Cabling Characteristics

		Connection to Bars, and Cables with Lugs or Bare Cables		
Type		**GV7R •40 – GV7R •100** 	**GV7R •150** 	**GV7R •220** 
Pitch	without spreaders	35 mm (1.4 in)	35 mm (1.4 in)	35 mm (1.4 in)
	with spreaders	45 mm (1.8 in)	45 mm (1.8 in)	45 mm (1.8 in)
Bars or Cables with Lugs	e	≤6 (0.24 in)	≤6 mm (0.24 in)	≤6 mm (0.24 in)
	L	≤25 (1 in)	≤25 mm (1 in)	≤25 mm (1 in)
	d	≤10 (0.39 in)	≤10 mm (0.39 in)	≤10 mm (0.39 in)
Screws	size	M6	M8	M8
	tightening torque	10 N•m (7.5 lb.-ft.)	15 N•m (11.3 lb.-ft.)	15 N•m (11.3 lb.-ft.)
Bare Cables (Copper or Aluminum) with Connectors	height	20 mm (0.78 in)	20 mm (0.78 in)	20 mm (0.78 in)
	cross-sectional area	1.5 mm^2 (#16 AWG)	1.5–95 mm^2 (#16-#3/0 AWG)	1.5–185 mm^2 (#16-350 mcm AWG)
	tightening torque	15 N•m (11.3 lb.-ft.)	15 N•m (11.3 lb.-ft.)	15 N•m (11.3 lb.-ft.))

Technical Characteristics

Type			GV7					
			RE20–RE100	RS40–RS100	RE150	RS150	RE220	RS220
Utilization Category	Conforming to IEC 60947-2		A		A		A	
	Conforming to IEC 60947-4-1		AC-3		AC-3		AC-3	
Rated Operational Voltage (Ue) Conforming to IEC 60947-2			690 V		690 V		690 V	
Rated Insulation Voltage (Ui) Conforming to IEC 60947-2			750 V		750 V		750 V	
Rated Operational Frequency ▲ Conforming to IEC 60947-2			50/60 Hz		50/60 Hz		50/60 Hz	
Rated Impulse Withstand Voltage (U imp) Conforming to IEC 60947-2			8 kV		8 kV		8 kV	
Total Power Dissipated Per Pole			5 W		8.7 W		14.5 W	
Mechanical Durability (C.O. – Close, Open)			50,000 C.O.		40,000 C.O.		20,000 C.O.	
Electrical Durability	440 V	In/2	50,000 C.O.		40,000 C.O.		20,000 C.O.	
	440 V	In	30,000 C.O.		20,000 C.O.		10,000 C.O.	
Rated Duty Conforming to IEC 60947-4-1			Continuous duty		Continuous duty		Continuous duty	

Type			GV7					
			RE40–RE100	RS40–RS100	RE150	RS150	RE220	RS220
Rating			25–40 A to 60–100 A		90–150 A	90–150 A	132–220 A	132–220 A
Breaking Capacity Conforming to IEC 60947-2	230/240 V	Icu ◆	85 kA	100 kA	85 kA	100 kA	85 kA	100 kA
		Ics% ■	100%	100%	100%	100%	100%	100%
	400/415 V	Icu ◆	25 kA	70 kA	35 kA	70 kA	35 kA	70 kA
		Ics% ■	100%	100%	100%	100%	100%	100%
	440 V	Icu ◆	25 kA	65 kA	35 kA	65 kA	35 kA	65 kA
		Ics% ■	100%	100%	100%	100%	100%	100%
	500 V	Icu ◆	18 kA	50 kA	30 kA	50 kA	30 kA	50 kA
		Ics% ■	100%	100%	100%	100%	100%	100%
	690 V	Icu ◆	8 kA	10 kA	8 kA	10 kA	8 kA	10 kA
		Ics% ■	100%	100%	100%	100%	100%	100%

▲ GV7R motor controllers and protectors are not recommended for use with variable speed controllers or soft start units for applications under 40 Hz.
◆ Icu - interrupting capacity at full voltage.
■ Ics - short-circuit interrupting capacity as a percentage of Icu.

UL Maximum RMS Short-Circuit Current (ka)

Type	Range	240 V ●	480 V ●	600 V ●
GV7 - RE40	25 to 40 A	25	25	10
GV7 - RE50	30 to 50 A	25	25	10
GV7 - RE80	48 to 80 A	25	25	10
GV7 - RE100	60 to 100 A	25	25	10
GV7 - RE150	90 to 150 A	25	25	10
GV7 - RE220	132 to 220 A	25	25	10
GV7 - RS40	25 to 40 A	65	65	10
GV7 - RS50	30 to 50 A	65	65	10
GV7 - RS80	48 to 80 A	65	65	10
GV7 - RS100	60 to 100 A	65	65	10
GV7 - RS150	90 to 150 A	65	65	10
GV7 - RS220	132 to 220 A	65	65	10
Group Installation: Maximum NTD fuse size: 1200 A / Maximum circuit breaker rating: 1200 A. Suitable for use on a circuit with an available short circuit current level no greater than the short circuit current rating of the manual motor controller, or circuit breaker, whichever is less.				

● Nominal system voltage.

GV7 AUXILIARY CONTACT SPECIFICATIONS

Auxiliary Contact Characteristics

Type			GV7AE11							GV7AB11						
Rated Insulation Voltage (Ui) (associated insulation co-ordination)			690							690						
Conforming to IEC 60947-1 from CSA C22.2 No. 14 & UL 508			600							300						
Conventional Thermal Current (Ith)			6 A							6 A						
Conforming to IEC 60947-5-1 from CSA C22.2 No. 14 & UL 508			5 A							1 A						
Mechanical Durability (C.O.: Close-Open)			50,000 C.O.							50,000 C.O.						
Operational Current Conforming to IEC 60947-5-1																
AC Operation			AC-12 or AC-15, 50,000 C.O.							AC-12 or AC-15, 50,000 C.O.						
Rated Operational Voltage (Ue)		V	24	48	110	230/240	380/415	440	690	24	48	110	230/240	380/415	440	690
Rated Operational Current (le)	AC-12	A	6	6	6	6	6	6	6	5	5	5	5	5	5	5
	AC-15	A	6	6	5	4	3	3	0.1	5	5	4	3	2.5	2.5	0.1
Operational Current Conforming to IEC 60947-5-1																
DC Operation			DC-12 or DC-14, 50,000 C.O.							DC-12 or DC-14, 50,000 C.O.						
Rated Operational Voltage (Ue)		V	24	48	110	250				24	48	110	250			
Rated Operational Current (le)	DC-12	A	2.5	2.5	0.8	0.3				2	2	0.5	–			
	DC-14	A	1	0.2	0.5	0.03				0.5	0.1	0.25	–			
Minimum operating conditions			17 V							12 V						
DC Operation			5 mA							5 mA						
Short-circuit Protection			By **GB2CB●●** circuit breaker (rated according to operational current for Ue ≤ 415 V) or by gl fuse, 10 A max.													
Cabling Solid Cable			1 x 1.5 mm^2 (1 x #16 AWG)							1 x 1.5 mm^2 (1 x #16 AWG)						
Flexible Cable without Cable End			1 x 1.5 mm^2 (1 x #16 AWG)							1 x 1.5 mm^2 (1 x #16 AWG)						
Flexible Cable with Cable End			1 x 1.5 mm^2 (1 x #16 AWG)							1 x 1.5 mm^2 (1 x #16 AWG)						

Characteristics of Electric Releases

Type	GV7AU	GV7AS
Rated Insulation Voltage (Ui) Conforming to IEC 60947-1	690 V	690 V
Operational Voltage Conforming to IEC 60947-1	0.85–1.1 Ue (V)	0.7–1.1 Ue (V)
Drop-Out Voltage	0.35–0.7 Ue (V)	0.2–0.75 Ue (V)
Inrush Consumption	<10 VA	<10 VA
	<5 W	<5 W
Sealed Consumption	<5 VA	<5 VA
	<5 W	<5 W
Operating Time Conforming to IEC 60947-1	<50 ms	<50 ms
On-load Factor	100%	100%
Cabling Solid or Flexible Cable	2 x 1.5 mm^2 (max.) (2 x #16 AWG)	2 x 1.5 mm^2 (max.) (2 x #16 AWG)

GV7 OPERATING CURVES

The current limiting capacity of the motor starter and protector is expressed by two curves which give, as a function of the prospective short-circuit current (the current which would flow if no protection devices were installed):

- The actual peak current (limited),
- The thermal stress (in A^2s), i.e. the energy dissipated by the short-circuit in a conductor with a resistance of 1 Ω.

Example: The real value of a 70 kA prospective short-circuit current limited by a GV7RS220 is 20kA peak, see page 46.

Permissible Thermal Stresses for Cables (A^2s)

S (mm^2)		1.5	2.5	4	6	10	16	25	35	50
AWG		#16	#14	#12	#10	#8	#6	#4	#2	#1
PVC Insulation	Cu	2.97×10^4	8.26×10^4	2.12×10^5	4.76×10^5	1.32×10^6	3.4×10^6	8.26×10^6	1.62×10^7	3.31×10^7
	Al	–	–	5.41×10^5	1.39×10^6	3.38×10^6	6.64×10^6	1.35×10^7	–	–
PRC	Cu	4.10×10^4	1.39×10^5	2.92×10^5	6.56×10^5	1.82×10^6	4.69×10^6	1.39×10^7	2.23×10^7	4.56×10^7
	Al	–	–	7.52×10^5	1.93×10^6	4.70×10^6	9.23×10^6	1.88×10^7	–	–

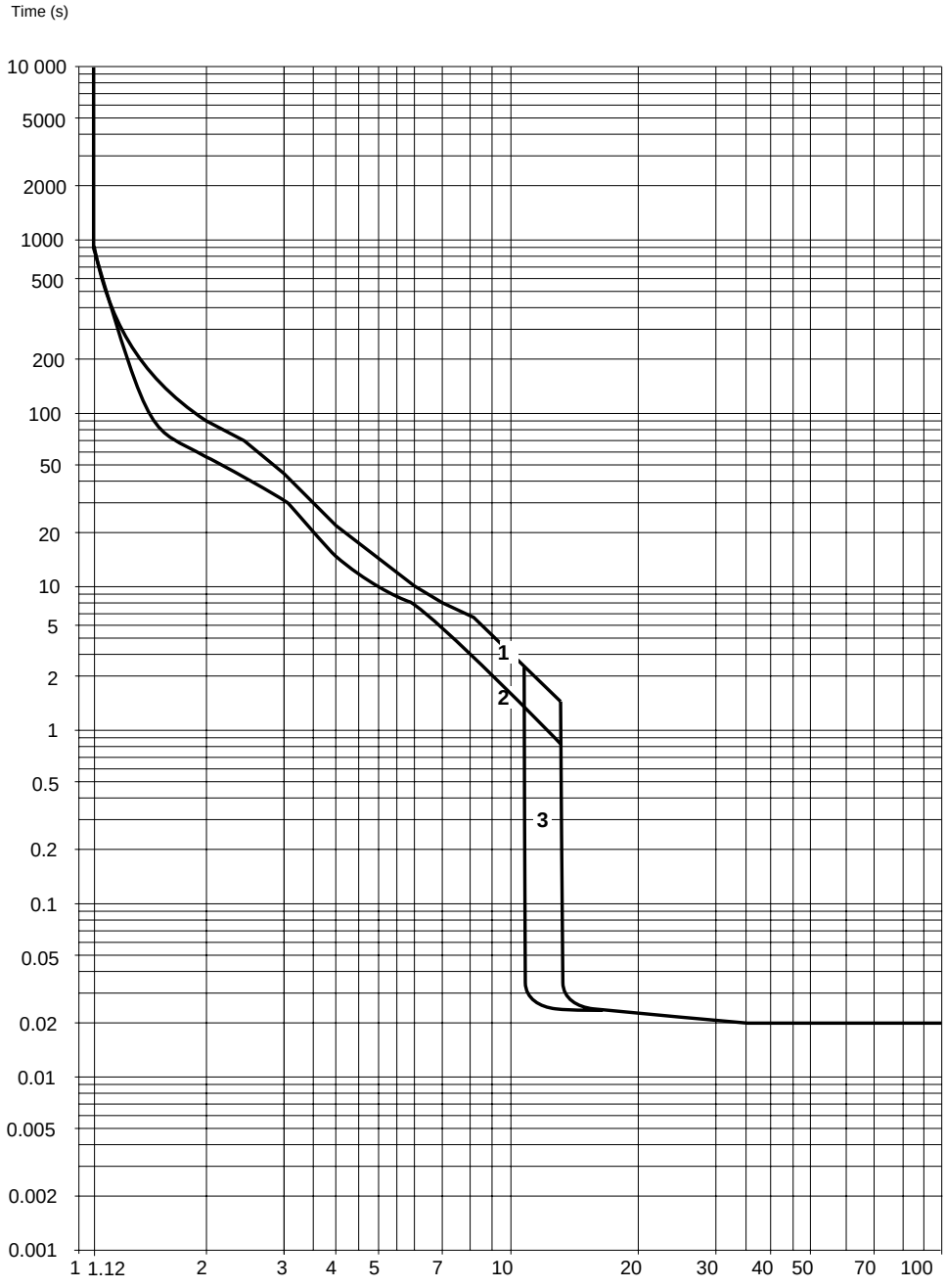
PRC = Cross-linked polyethylene

Example 1: For a **GV7RS220**, the peak value is limited to 20 kA for a prospective Isc of 40 kA.

Example 2: For a **GV7RS220**, and with a prospective Isc of 40 kA, an I^2t of 7.5×10^5 A^2s is obtained, which requires the use of a PVC insulated copper cable with a cross-sectional area of 10 mm^2 (# 8 AWG).

Thermal-Magnetic Tripping Curves for GV7R

Average operating time at 20 °C according to multiples of the setting current

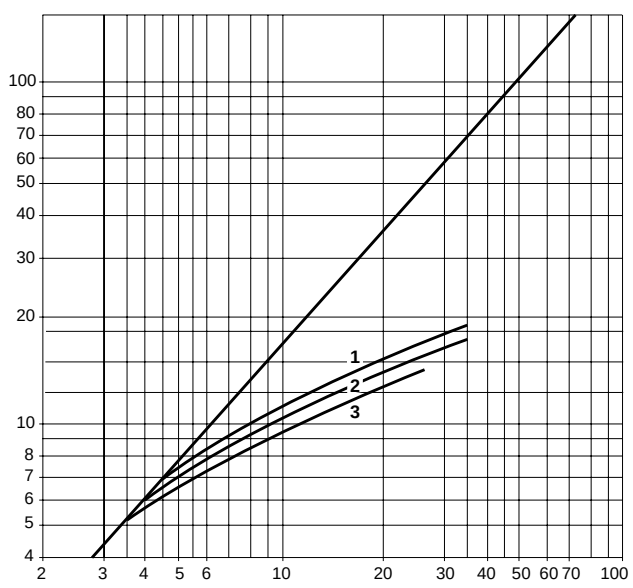


1 Curve from cold state
2 Curve from hot state
3 12 - 14 Ir
In the event of total phase failure, tripping occurs after 4 s ± 20%

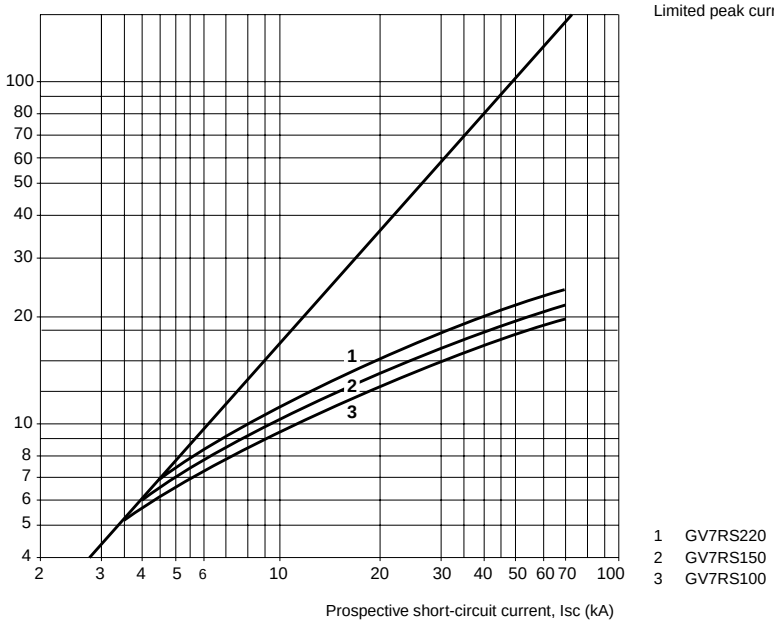
Current Limitation on Short-Circuit for GV7R

3-phase 400/415 V

Dynamic stress
1 peak = f (Prospective Isc)
For GV7RE only



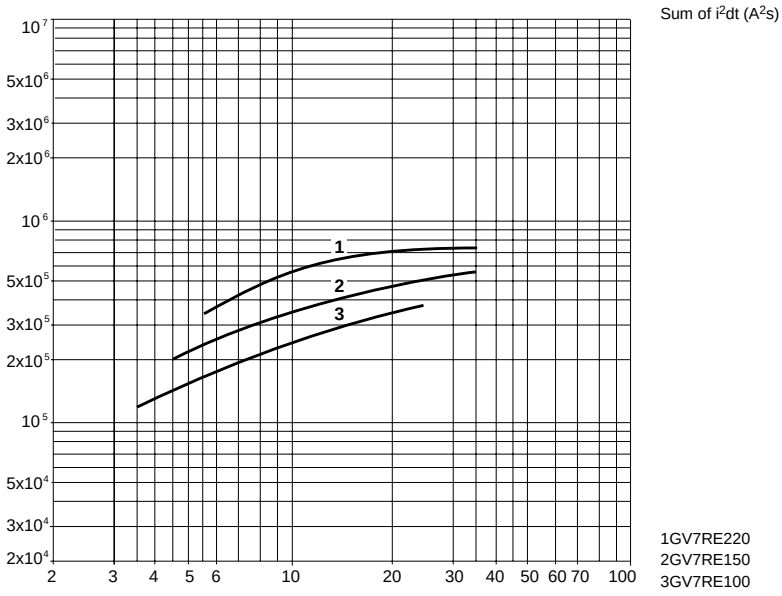
For GV7RS only



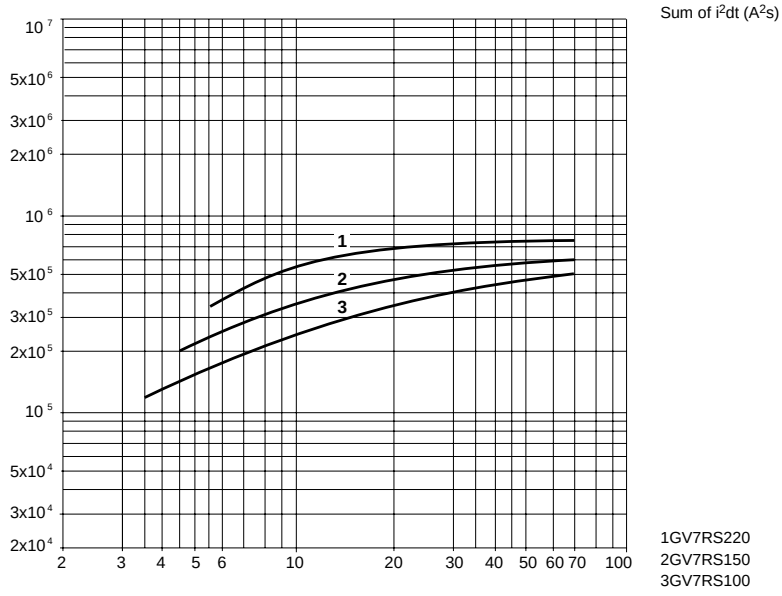
Thermal Limit on Short-Circuit for GV7R

3-phase 400/415 V

Thermal limit
I^2dt = f (Prospective Isc)
For GV7RE only



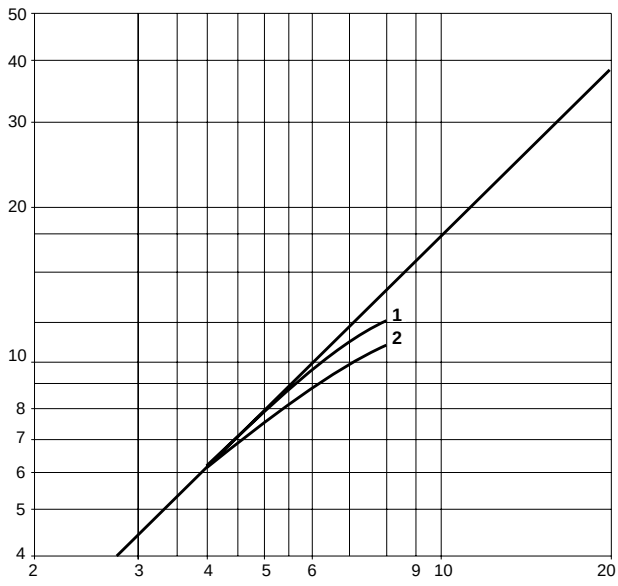
For GV7RS only



Current Limitation on Short-Circuit for GV7R

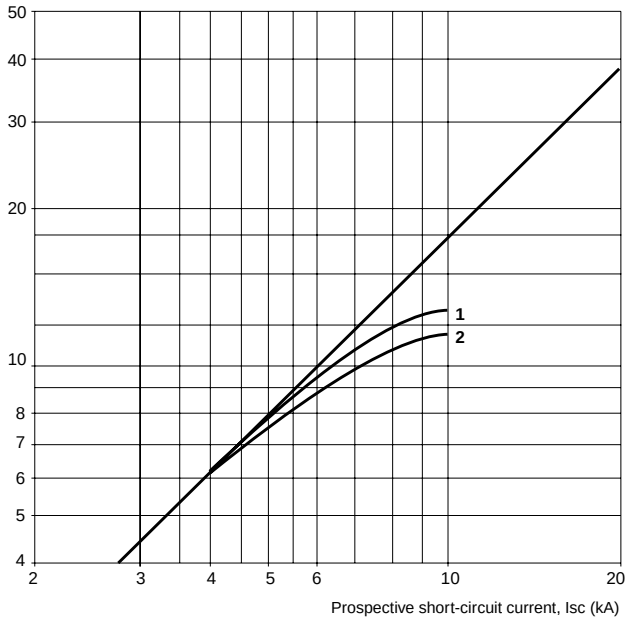
3-phase 690 V

Dynamic stress
1 peak = f (Prospective Isc)
For GV7RE only



1GV7RE220
2GV7RE150 and GV7RE100

For GV7RS only

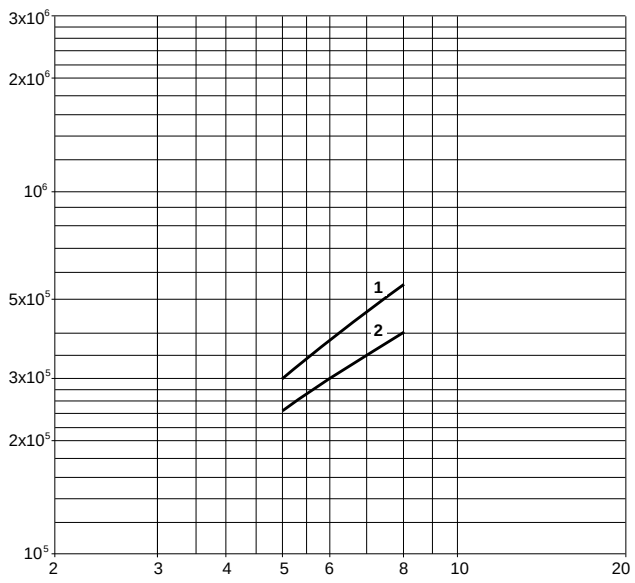


1GV7RS220
2GV7RS150 and GV7RS100

Thermal Limit on Short-Circuit for GV7R

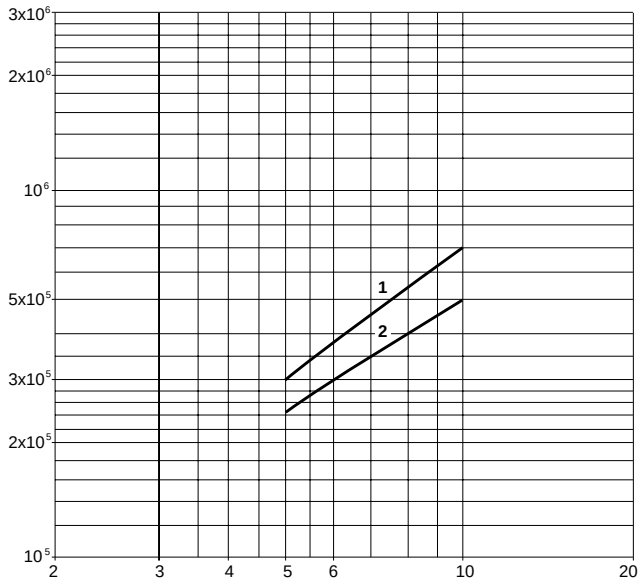
3-phase 690 V

Thermal limit
I^2dt = f (Prospective Isc)
For GV7RE only



1 GV7RE220
2 GV7RE150 and GV7RE100

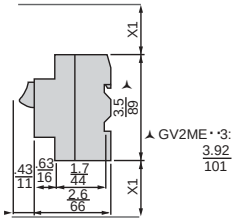
For GV7RS only



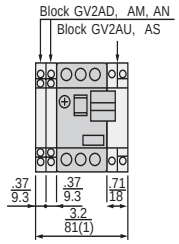
1 GV7RE220
2 GV7RE150 and GV7RE100

GV2 MOUNTING DIMENSIONS

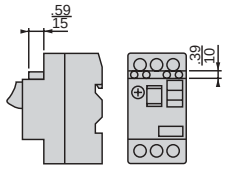
GV2ME



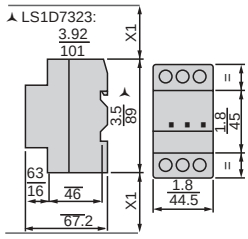
GV2AD, AM AN, AU, AS, AX



GV2AE

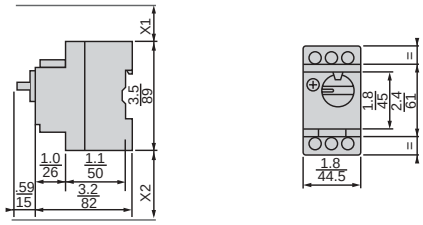


LS1D30

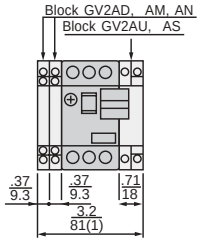


X1 Electrical clearance = 1.8" (40 mm) for Ue ≤ 690 V

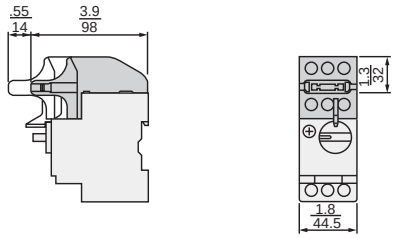
GV2P



GV2AD, AM, AN, AU, AS



GV2AK00

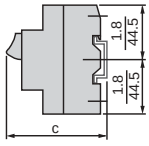


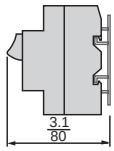
X2 = 1.8" (40 mm)
X1 Electrical clearance = 1.8" (40 mm) for Ue ≤ 415 V, or 3.2" (80 mm) for Ue = 440 V, or 4.7" (120 mm) for Ue = 500 and 690 V

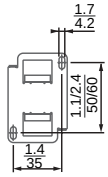
Mounting of GV2M **On Panel with Adaptor Plate GV2AF02**
On 1.4" (35 mm) rail
C = 78.5 on AM1DP200 (35 x 7.5)
C = 86 on AM1DE200, ED200 (35 x 15)

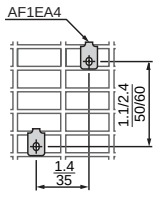
On Pre-slotted Mounting Plate AM1PA

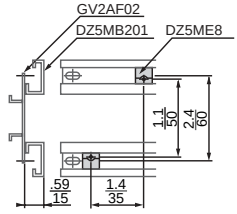
On Mounting Rail DZ5MB201







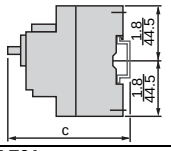


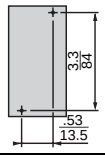


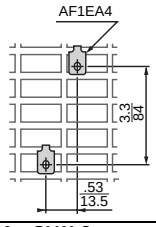
Mounting of GV2P **On Panel**
On 1.4" (35 mm) rail
C = 98.5 on AM1DP200 (35 x 7.5)
C = 106 on AM1DE200, ED200 (35 x 15)

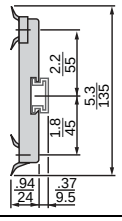
On Pre-slotted Mounting Plate AM1PA

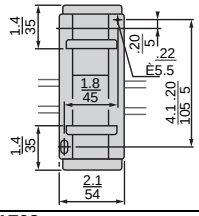
Adaptor Plate GK2AF01







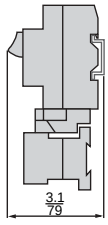


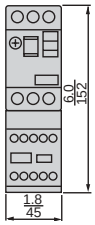


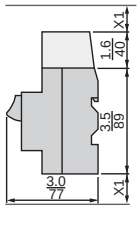
GV2AF01
GV2M + K contactor combination

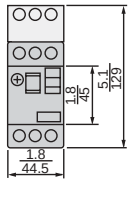
GV2M + GV1L3
(current limiter)

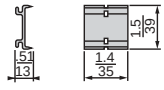
GV1F03
7.5 mm height compensation plate









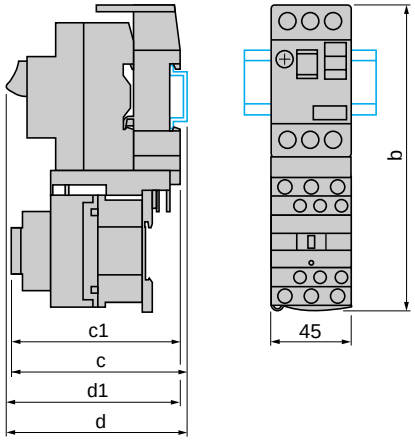


Dual Dimensions inches / mm

X1 = 0.40" / 10 mm for Ue = 230 V or 1.2 " / 30 mm for 230 V < Ue ≤ 690 V

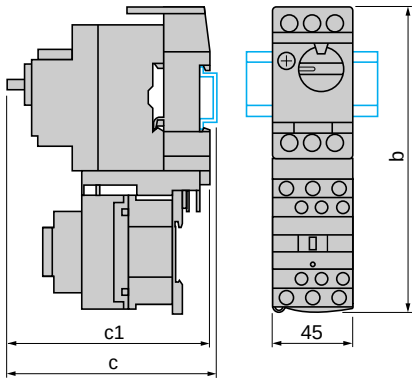
GV2 MOUNTING DIMENSIONS (CONTINUED)

GV2-AF4 + LAD-31
Combination **GV2-ME** + D range contactor



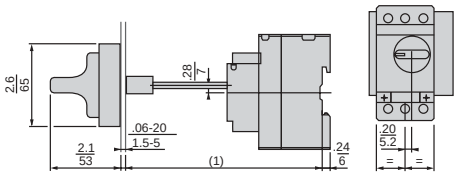
GV2-ME +	LC2-D09 to D18	LC2-D25 and D32
b	7.4 (188.6)	7.8 (199)
c1	3.6 (92.7)	3.9 (99)
c	3.9 (98.2)	4.11 (104.5)
d1	3.9 (98.3)	3.9 (98.3)
d	4.1 (103.8)	1.4 (103.8)

Combination **GV2-P** + D range contactor

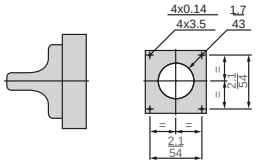


GV2-P +	LC2-D09 to D18	LC2-D25 and D32
b	6.61 (169.1)	7.9 (199.5)
c1	4.6 (116.8)	4.6 (116.8)
c	4.8 (122.3)	4.8 (122.3)

Mounting of External Operator GV2AP01 or GV2AP02

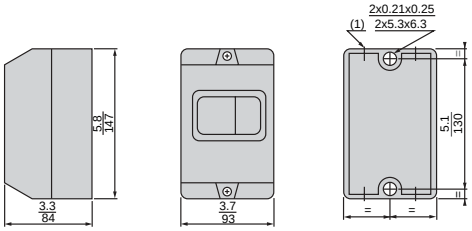


Door Cut-out

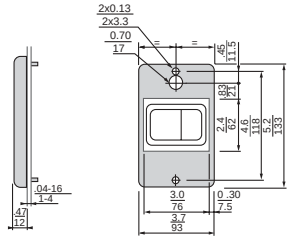


(1) 135 mm min., 284 mm max. with operating rod uncut, 88 with operating rod cut.

Surface Mounting Enclosure GV2MC0•



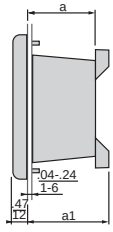
Front Plate GV2CP21



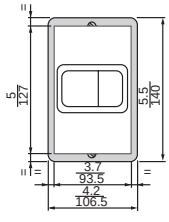
(1) 4 knock-outs for 0.63 " / 16 mm plastic cable glands or n ° 16 conduit

Flush Mounting Enclosure GV2MP0• (bracket cut-out dimensions)

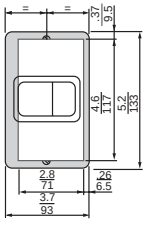
GV2MP0•



GV2MP01, MP02



GV2MP03

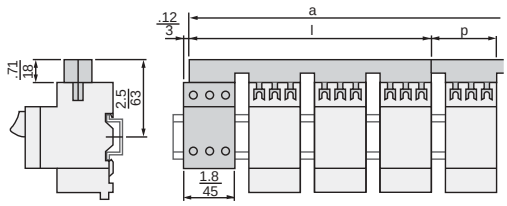


GV2	a	a1
MP01, MP02	2.8 " (71 mm)	–
MP03, MP04	2.8 " (71 mm)	3.4 " (86 mm)

Dual Dimensions inches / mm

GV2 MOUNTING DIMENSIONS (CONTINUED)

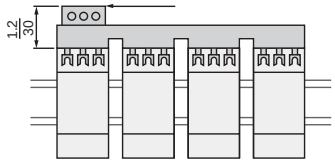
Sets of Busbars GV2G445, GV2G454, GV2G472 with Terminal Block GV2G05



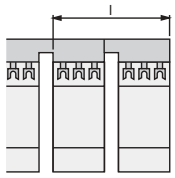
	l	p
GV2G454 (0.16 x 2.1 in/4 x 54 mm)	8.1 in (206 mm)	2.1 in (54 mm)
GV2G445 (0.16 x 1.8 in/4 x 45 mm)	7.0 in (179 mm)	1.8 in (45 mm)
GV2G472 (0.16 x 2.8 in/4 x 72 mm)	10.2 in (260 mm)	2.8 in (72 mm)

	a			
No. of Taps	**5**	**6**	**7**	**8**
GV2G454	10.2 in (260 mm)	12.4 in (314 mm)	14.5 in (368 mm)	16.6 in (422 mm)
GV2G445	8.8 in (224 mm)	10.6 in (269 mm)	12.4 in (314 mm)	14.1 in (359 mm)
GV2G472	13.1 in (332 mm)	15.9 in (404 mm)	18.7 in (476 mm)	21.6 in (548 mm)

Sets of Busbars with Terminal Block GV1G09

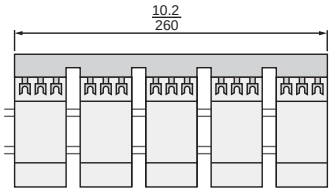


Sets of Busbars GV2G245, GV2G254, GV2G272

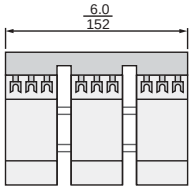


	l
GV2G254 (0.08 x 2.1 in/2 x 54 mm)	3.9 in (98 mm)
GV2G245 (0.08 x 1.8 in/2 x 45 mm)	3.5 in (89 mm)
GV2G272 (0.08 x 2.8 in/2 x 72 mm)	4.6 in (116 mm)

Set of Busbars GV2G554



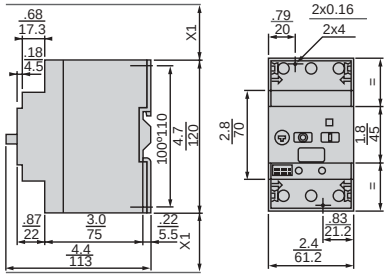
Set of Busbars GV2G354



Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

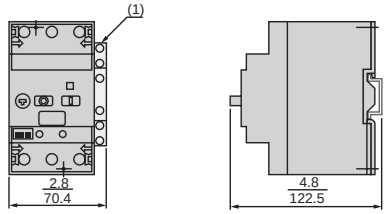
GV3 MOUNTING DIMENSIONS

GV3M



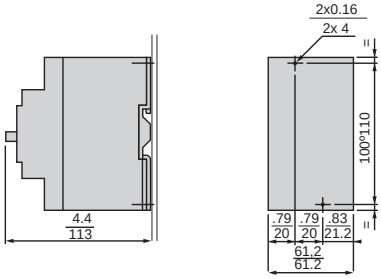
X1 = Electrical clearance (breaking at Isc max.)
1.6 " / 40 mm for Ue < 500 V
2.0 " / 50 mm for Ue = 690 V

Mounting on Rail AM1DE200 or AM1ED201

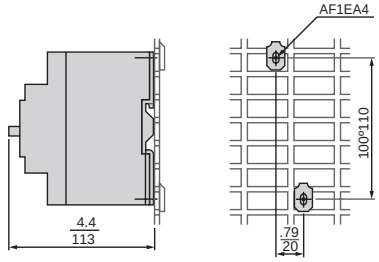


(1) Auxiliary contact blocks GV1A01 to A07

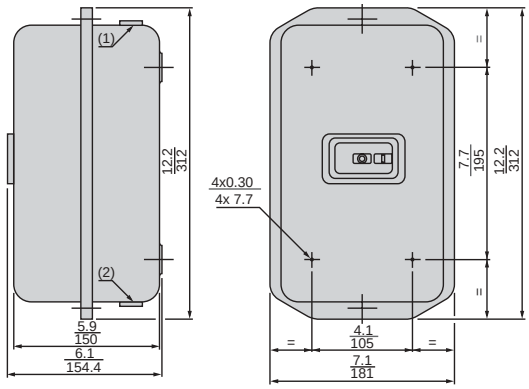
Mounting on Panel



Mounting on Pre-slotted Mounting Plate AM1PA



Surface Mounting Enclosure GV3CE01



(1) 0.04 x 0.83 " / 1 x 21 mm and 0.04 x 1.5 " / 1 x 37.5 mm blanking plugs for cable entries
(2) 0.04 x 0.83 " / 1 x 21 mm and 0.08 x 1.5 " / 1 x 37.5 mm blanking plugs for cable entries

Dual Dimensions inches / mm

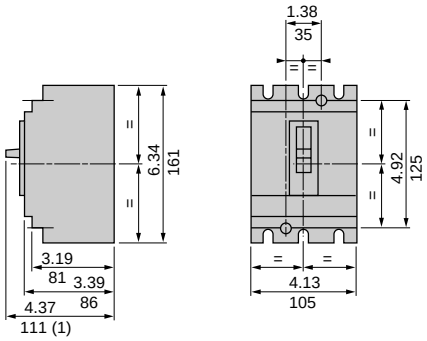
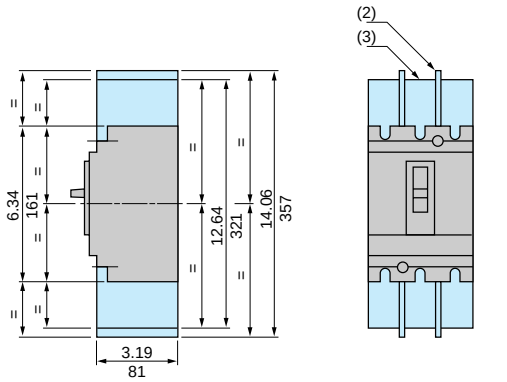
GV7 DIMENSIONS

The following table lists the maximum horsepower ratings for the GV7 manual controllers depending on the supply voltage.

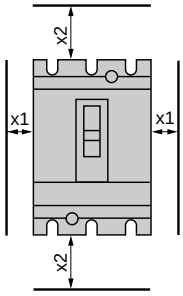
Maximum Horsepower Ratings

	220-240 Vac	440-480 Vac	550-600 Vac
Maximum horsepower rating	75 Hp (FLC=192 A)	150 Hp (FLC=180 A)	200 Hp (FLC=192 A)

FLC = Full load current. The values listed are for three-phase AC induction motors.

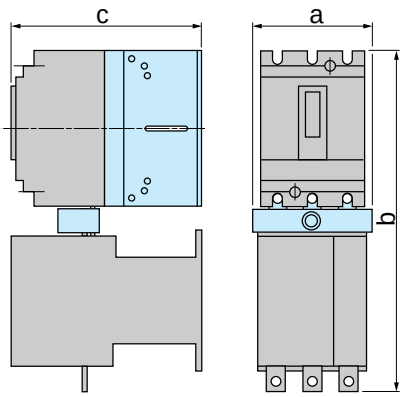
Motor Controllers GV7R	Motor Controllers with Terminal Shields and Phase Barriers GV7R + GV7AC01 + GV7AC04
	
(1) 126 for GV7R• 220	(2) Phase barriers – GV7AC04 (3) Terminal shields – GV7AC01

Safety Clearance



		x1	x2
		Inches (mm)	Inches (mm)
Painted or insulated metal plate, insulation or insulated bar		0 (0)	1.18 (30)
Bare metal plate	U ≤ 440 V	0.20 (5)	1.38 (35)
	440 V < U < 600 V	0.39 (10)	1.38 (35)
	U Š 600 V	0.79 (20)	1.38 (35)
Minimum distance between 2 circuit breakers mounted side by side = 0.			

Combination of GV7 and LC1F with Kit GV7AC0



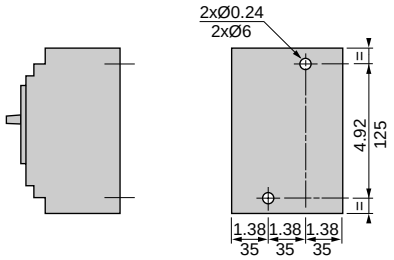
	a	b	c
	Inch (mm)		
GV7R + LC1F115 or F150 + GV7AC06	4.69 (119)	13.15 (334)	7.13 (181)
GV7R + LC1F185 + GV7AC06	4.69 (119)	13.31 (338)	7.40 (188)
GV7R + LC1F225 + GV7AC07	5.16 (131)	14.09 (358)	7.40 (188)
GV7R + LC1F265 + GV7AC07	5.12 (130)	14.33 (364)	8.46 (215)

LC1D hardware available soon.

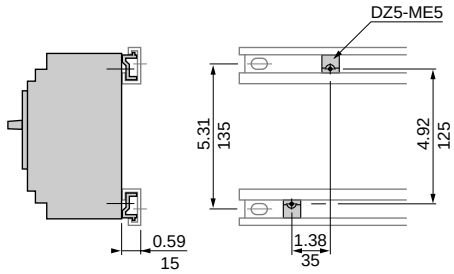
Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

GV7 DIMENSIONS (CONTINUED)

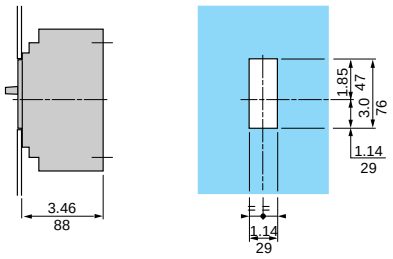
On Panel



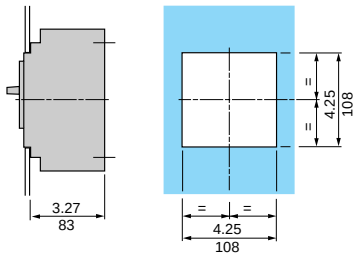
On Two DZ5-MB201 Mounting Rails



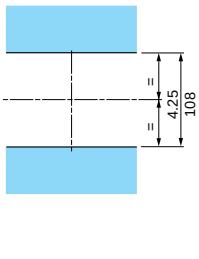
Flush Mounting



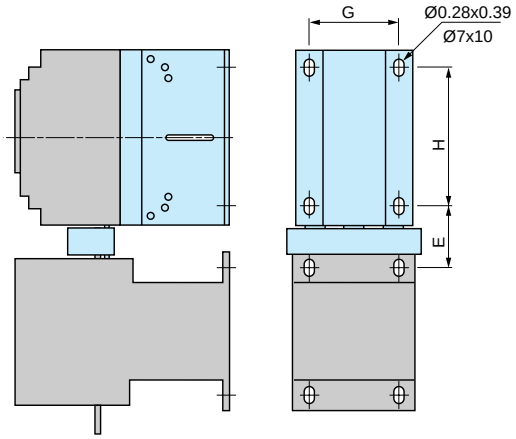
1 Starter GV7R



n Controllers GV7R Side by Side



Combination of GV7R and LC1F with Kit GV7AC0•



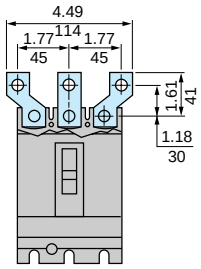
	E	G	H
	Inch (mm)		
GV7R + LC1F115 + GV7AC06	1.73 (44)	3.35 (85)	4.72 (120)
GV7R + LC1F150 + GV7AC06	1.81 (46)	3.35 (85)	4.72 (120)
GV7R + LC1F165 + GV7AC06	1.89 (48)	3.35 (85)	4.72 (120)
GV7R + LC1F225 + GV7AC07	2.24 (57)	3.35 (85)	4.72 (120)
GV7R + LC1F265 + GV7AC07	2.36 (60)	3.35 (85)	4.72 (120)

LC1D hardware available soon.

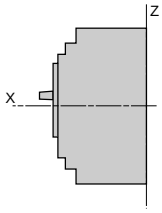
Dual Dimensions $\frac{\text{inches}}{\text{mm}}$

GV7 DIMENSIONS (CONTINUED)

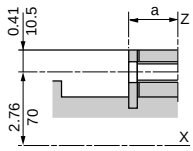
Spreaders GV7AC03



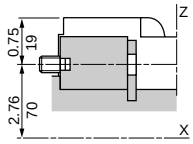
Cabling



Smooth Terminals

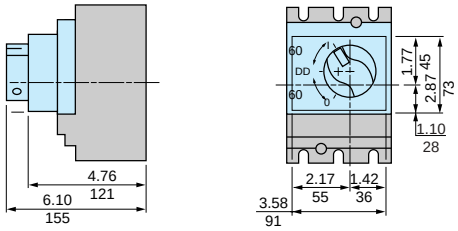


Connectors

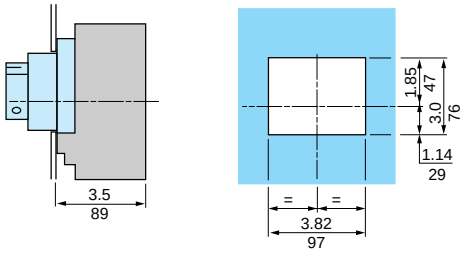


	a (in/mm)
GV7R•	0.77/19.5
GV7R• 220	0.85/21.5

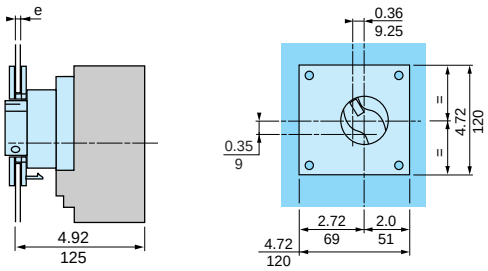
Direct Rotary Handle GV7AP03, GV7A04



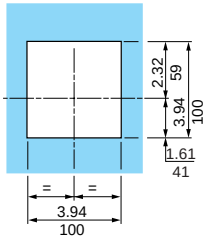
Flush Mounting



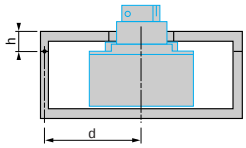
Direct Rotary Handle GV7AP03 or GV7AP04 GV7AP05



Front Fuse Center

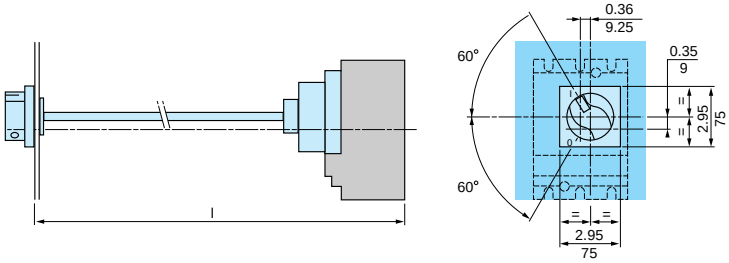


Enclosure Viewed from Top



Door cutouts require a minimum distance between the center of the circuit breaker and the door hinge point d ≥ 3.94 in (100 mm) + (h x 5)

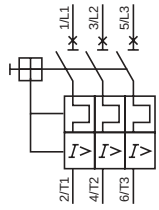
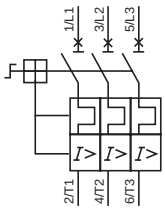
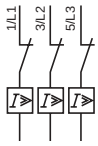
Extended Rotary Handle GV7AP01, GV7AP02



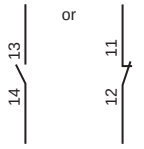
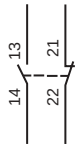
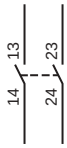
l: 7.28 in (185 mm) minimum, 23.62 in (600 mm) maximum.
The shaft of the extended rotary handle GV7AP01 or GV7AP02 must be cut to length: l - 4.96 in (126 mm)

Dual Dimensions inches / mm

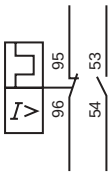
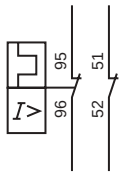
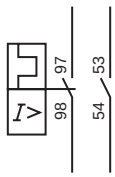
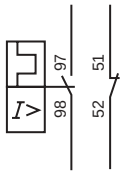
GV2 WIRING DIAGRAMS

GV2ME	GV2P	Current Limiter GV1L3
		

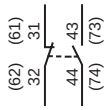
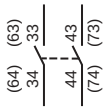
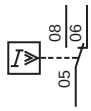
Front Mounting Add-on Contact Blocks
Instantaneous Auxiliary Contacts

GVAE1	GVAE11	GVAE20
		

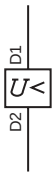
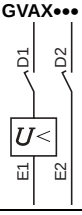
Side Mounting Add-on Contact Blocks
Instantaneous Auxiliary Contact and Fault Signalling Contacts

GVAD0110	GVAD0101	GVAD1010	GVAD1001
			

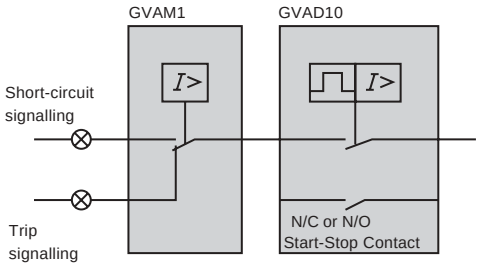
Instantaneous Auxiliary Contacts

GVAN11	GVAN20	GVAM11
		

Voltage Trips

GVAU	GVAS	GVAX•••
		

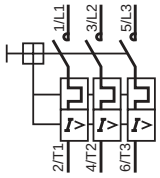
Use of Fault Signalling Contact and Short-circuit Signalling Contact



GV3 WIRING DIAGRAMS

Motor Circuit Breakers

GV3M

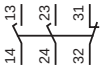


Auxiliary Contact Blocks

GV3A01

GV3A02

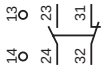
GV3A03



GV3A05

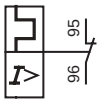
GV3A06

GV3A07

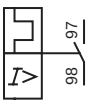


Fault Signalling Contacts

GV3A08



GV3A09



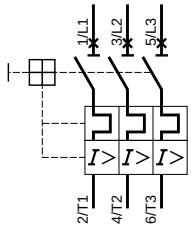
Voltage Trips

GV3B••

GV3D••

GV7 WIRING DIAGRAMS

Motor controllers GV7R



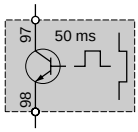
Add-on auxiliary Contacts GV7AE11, GV7AB11

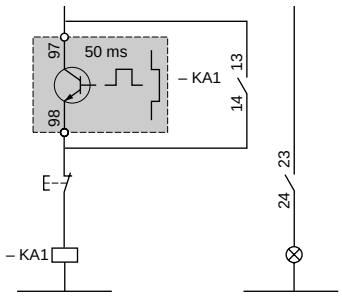
A self-adhesive label, supplied with the contact, can be affixed to the front face of the starter to allow personalized marking according to the function of the contact or contacts.

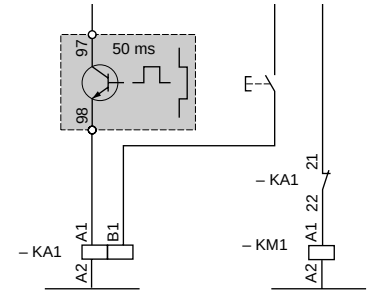
Electric Trips GV7AU•••

GV7AS•••

GV7AD111, AD112







Square D Company
8001 Highway 64 East
Knightdale, NC 27545
1-888-SquareD
(1-888-778-2733)
www.SquareD.com

Schneider Canada Inc.
19 Waterman Avenue,
M4B 1 Y2
Toronto, Ontario
1-800-565-6699
www.schneider-electric.ca

Catalog No. 2520CT0001R9/02 October 2002
Replaces 2520CT0001 dated 05/01.