

TeSys Deca - Frame 4

0.25 to 55 kW - 1/2 to 60 HP



Motor
circuit
breakers

TeSys Power

Deca - Frame 4 Motor circuit breakers

Introduction

Protection

TeSys Deca - Frame 4 motor circuit breakers covers motor protection from 0.25 to 55 kW at 415 V AC (from 0.8 to 115 A) in one frame and are available in 3 breaking capacities: 25, 50 and 100 kA at 415 V AC IEC (15, 35, 65 kA at 480 V UL).

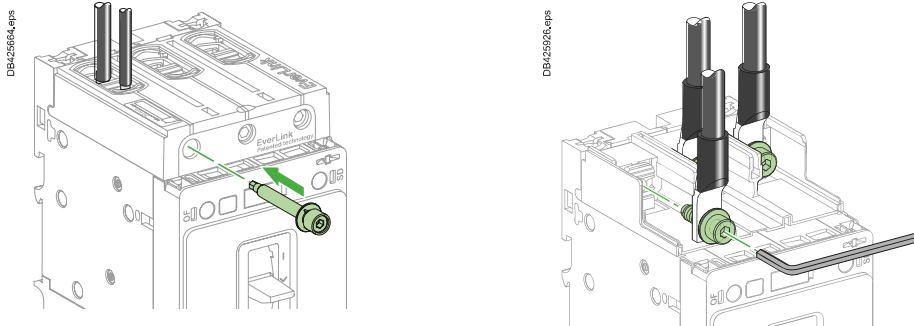
TeSys Deca - Frame 4 motor circuit breakers are available with 3 types of protection:

- Magnetic ref. GV4L: to be used with an overload relay or a drive
- Thermal magnetic ref. GV4P: electronic protection with wide range setting, dual class (10 & 20)
- Multifunction motor protection ref. GV4PEM: ref. GV4P with adjustable advanced protections and possibility to have a side module SDx for alarming and motor functional fault differentiation.

Power connection

TeSys Deca - Frame 4 motor circuit breaker come in standard with 2-holes EverLink™ power connectors with creep ⁽¹⁾ compensation for bare copper cables. This Schneider Electric patented technique makes it possible to achieve accurate and durable tightening torque in order to avoid cable creep.

Products may be delivered with connectors for bars or cables with compression lugs (except ref. GV4PB). Whatever, the connectors are field interchangeable and can be removed for the installation of one of both. And to tight at the right torque power connections particularly in the field, torque limiting breakaway bits may be used.



Mounting

TeSys Deca - Frame 4 motor circuit breaker can be mounted on a backplate or on a DIN rail (35 or 75 mm).

Handle

TeSys Deca - Frame 4 motor circuit breaker can be ordered with a toggle or a direct rotary handle (except for ref. GV4P Multifunction).

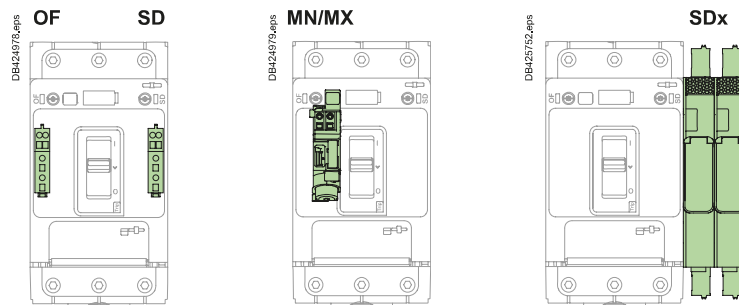
It is also possible to equip a toggle one with a direct rotaty handle, or a front extended one, or a side one.

Auxiliaries

TeSys Deca - Frame 4 circuit breakers can be equipped with an open/close (OF) contact and a trip indication (SD) contact. These contacts are common point changeover type, with a normally open (NO) and a normally closed (NC) contact. TeSys Deca - Frame 4 motor circuit breaker may be equipped too with an MN (undervoltage release) or MX (shunt trip) coil.

Ref. GV4P Multifunction circuit breakers can be equipped with 1 or 2 SDx module(s) in order to have alarming and motor functional fault differentiation (SDx - See page B6/44)

Auxiliaries have spring connections for cables up to 1,5 mm².



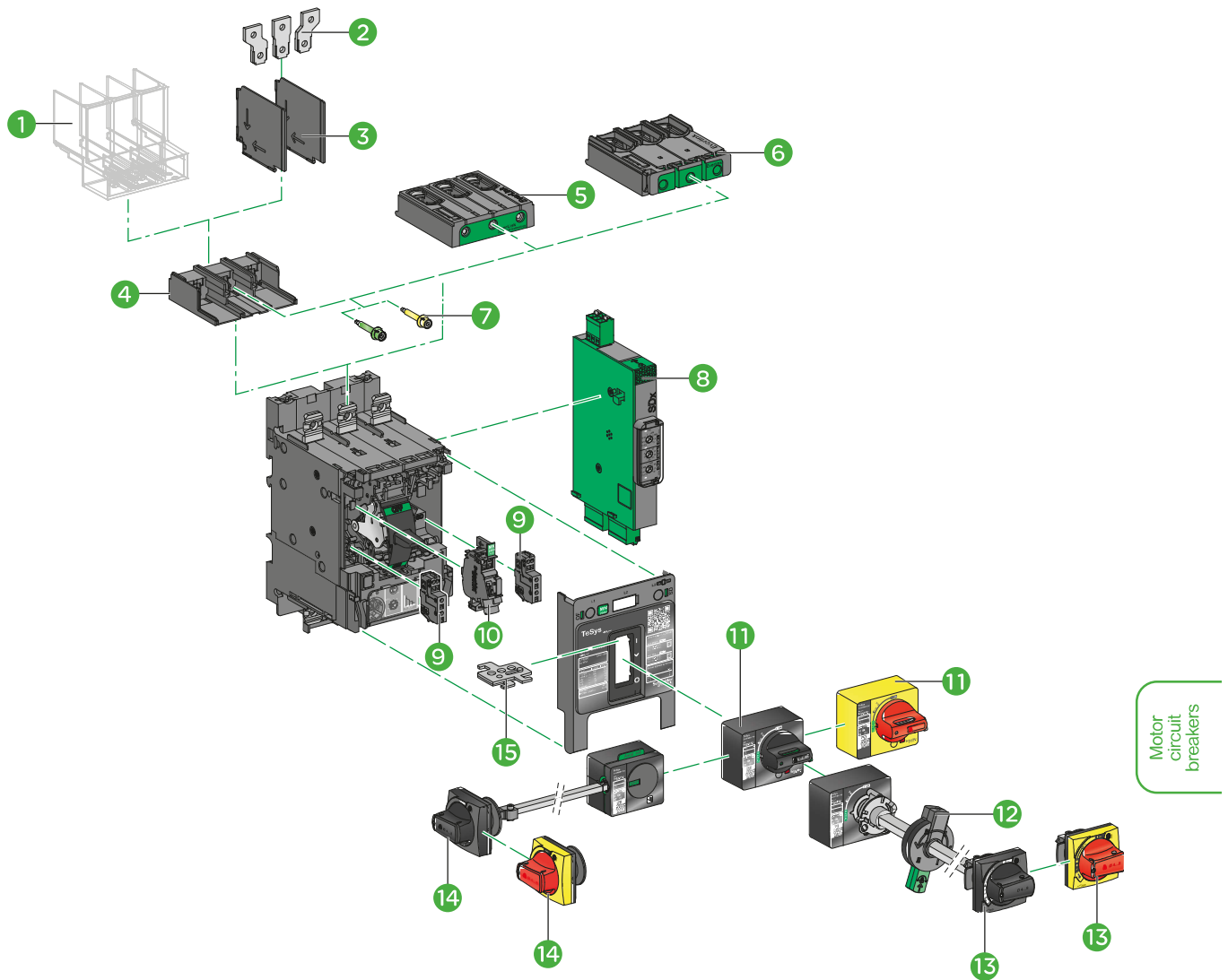
⁽¹⁾ Creep: normal crushing phenomenon of conductors, that is accentuated over time.

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Deca - Frame 4 Motor circuit breakers

Introduction

DEA422020-01



- 1 Long terminal shield **LAD96590**
- 2 Terminal spreaders **LV426940**
- 3 Interphases barriers **LV426920**
- 4 Crimp lug connector **GV4LUG**
- 5 EverLink® connector **LAD96595**
- 6 Everlink® terminals and large spacing cover **GV4G66 + LAD96595**
- 7 Torque limiting breakaway bits **LV42699●**
- 8 SDx alarming/fault differentiation module **GV4ADM1111** (only with GV4PEM)
- 9 Auxiliary contact block for OF or SD function **GV4AE11**
- 10 - MN undervoltage release **GV4AU●●**
- MX shunt trip **GV4AS●●**
- 11 Direct mounting black or red on yellow bezel rotary handle **GV4ADN01/ GV4ADN02**
- 12 Open door shaft operator (for front extended rotary handle) **LV426937**
- 13 Front extended rotary handle kit with red handle on yellow bezel or black handle **GV4APN01/ GV4APN02 /GV4APN04**
- 14 Side rotary handle kit with red handle on yellow bezel or black handle **LV426935/LV426936**.
- 15 Toggle locking device **29370**

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Deca - Frame 4 Motor circuit breakers - Magnetic

Introduction



GV4L

Standard version

Protection

Setting is made using dial.

Trip class (class)

Ref. GV4L can be used with class 5, 10 or 20 relay.

Short circuit protection (li)

Protection with an adjustable pick-up **li = 6 to 14 In**. Settings are made in amperes.

Standards and certifications

IEC/EN 60947-1, IEC/EN 60947-2, CCC, EAC.



GV4LE

Ref.



Motor
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Deca - Frame 4 Motor circuit breakers - Magnetic

Product references

Magnetic motor circuit breakers from 0.25 to 55 kW													
Standard power ratings of 3-phase motors - 50 / 60 Hz									In	Magnetic setting range (ii)	Use in association with overload relay Class 10 or 20	Reference with EverLink terminals	
400/415 V			500 V			690 V						with toggle	with rotary handle
P kW	Icu kA	Ics ⁽¹⁾ %	P kW	Icu kA	Ics ⁽¹⁾ %	P kW	Icu kA	Ics ⁽¹⁾ %	A	A			
0.25... 0.75	25	100	0.37... 1.1	10	100	0.55... 1.5	-	-	2	12... 28	LRD05 (0.63... 1A) LRD06 (1... 1.6A) LRD07 (1.6... 2.5A)	-	-
	50	100		25	100		8	25				GV4LE02N	GV4L02N
	100	100		30	100		10	25				GV4LE02S	-
0.55... 1.5	25	100	0.75... 1.5	10	100	1.1... 2.2	-	-	3,5	21... 49	LRD07 (1.6... 2.5A) LRD08 (2.5... 4A)	-	-
	50	100		25	100		8	25				GV4LE03N	GV4L03N
	100	100		30	100		10	25				GV4LE03S	-
1.5... 3	25	100	2.2... 4	10	100	3... 7.5	-	-	7	42... 98	LRD08 (2.5... 4A) LRD10 (4... 6A)	-	-
	50	100		25	100		8	25				GV4LE07N	GV4L07N
	100	100		30	100		10	25				GV4LE07S	-
3... 5.5	25	100	3... 7.5	10	100	5.5... 11	-	-	12,5	75... 175	LRD12 (5.5... 8A) LRD14 (7... 10A) LRD313 (9... 13A)	-	-
	50	100		25	100		8	25				GV4LE12N	GV4L12N
	100	100		30	100		10	25				GV4LE12S	-
5.5... 11	25	100	7.5... 15	10	100	7.5... 18.5	-	-	25	150... 350	LRD318 (12... 18A) LRD325 (17... 25A)	GV4LE25B	GV4L25B
	50	100		25	100		8	25				GV4LE25N	GV4L25N
	100	100		30	100		10	25				GV4LE25S	-
11... 22	25	100	15... 30	10	100	18.5... 45	-	-	50	300... 700	LRD332 (23... 32A) LRD340 (30... 40A) LRD350 (37... 50A)	GV4LE50B	GV4L50B
	50	100		25	100		8	25				GV4LE50N	GV4L50N
	100	100		30	100		10	25				GV4LE50S	-
18.5... 37	25	100	22... 55	10	100	30... 55	-	-	80	480... 1120	LRD365 (48... 65A) LRD3363 (63... 80A)	GV4LE80B	GV4L80B
	50	100		25	100		8	25				GV4LE80N	GV4L80N
	100	100		30	100		10	25				GV4LE80S	GV4L80S
30... 55	25	100	30... 75	10	100	45... 90	-	-	115	690... 1610	LR9D5567 (60... 100A) LR9F5367 (60... 100A) LR9D5369 (90... 150A) LR9F5369 (90... 150A)	GV4LE115B	GV4L115B
	50	100		25	100		8	25				GV4LE115N	GV4L115N
	100	100		30	100		10	25				GV4LE115S	GV4L115S



Motor circuit breakers

Connection by lugs

To order circuit breakers with connection by lugs, add the digit **6** to the end of reference selected above. Example: ref. **GV4LE02N** becomes **GV4LE02N6**.

(1) As % of Icu.

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Deca - Frame 4 Motor circuit breakers - Thermal-magnetic

Introduction



GV4P



GV4PE

Ref.



Motor
circuit
breakers

Standard version

Protection

Settings are made using dials.

Overload or thermal protection (I_r)

Inverse-time thermal protection against overloads with adjustable pick-up I_r .
Wide range setting made in amperes.

The tripping curve for the thermal protection, which indicates the time delay t_r before tripping, is defined by the selected trip class.

Trip class (class)

The class is selected as a function of the normal motor starting time.

■ Class 10: starting time less than 10 s.

■ Class 20: starting time less than 20 s.

For a given class, it is necessary to check that all motor-feeder components are sized to carry the $7.2 I_r$ starting current without excessive temperature rise during the time corresponding to the class.

Short time delay protection (I_{sd})

Short time delay protection (around 100 ms) to let through motor starting currents, but to protect cables and motor starter devices and allow not to oversize them (particularly usefull for wide range settings circuit breakers).

Fixed pick-up $I_{sd} = 13 I_r$.

Short-circuit protection (I_i)

Instantaneous protection with non-adjustable pick-up $I_i = 17 I_n$.

Phase unbalance or phase loss (I_{unbal} , I_{tunbal})

This function opens the circuit breaker if a phase unbalance occurs:

■ that is greater than the 30 % of I_{rms} (fixed pick-up): **I_{unbal}**

■ following the non-adjustable time delay (**I_{tunbal}**) equal to:

□ 0.7 s during starting

□ 4 s during normal operation.

Phase loss is an extreme case of phase unbalance and leads to tripping under the same conditions.

Ground-fault protection (I_g , t_g)

Residual type ground-fault protection:

■ fixed pick-up $I_g = I_n$

■ fixed time delay $t_g = 0.1$ s.

Indications

Front indications

■ Green "Ready" LED: flashes slowly when the circuit breaker is ready to trip in the event of an abnormal deviation in engine operating conditions.

■ Red alarm LED: goes ON when the thermal image of the motor is greater than 95 % of the permissible temperature rise.

Standards and certifications

IEC/EN 60947-1, IEC/EN 60947-2, IEC/EN 60947-4-1, UL 60497-4-1, CSA 22.2 n° 60497-4-1, CCC, EAC, CSA (cCSAus).

Thermal magnetic motor circuit breakers from 0.25 to 55 kW											
Standard power ratings of 3-phase motors - 50 / 60 Hz in category AC-3									Thermal setting range (I _r)	Reference with EverLink terminals	
400/415 V			500 V			690 V				A	with toggle
P kW	I _{cu} kA	I _{cs} (%) ⁽¹⁾	P kW	I _{cu} kA	I _{cs} (%) ⁽¹⁾	P kW	I _{cu} kA	I _{cs} (%) ⁽¹⁾			
0.25... 0.75	25	100	0.37... 1.1	10	100	0.55... 1.5	-	-	0.8... 2	-	-
	50	100		25	100		8	25		GV4PE02N	GV4P02N
	100	100		30	100		10	25		GV4PE02S	-
0.55... 1.5	25	100	0.75... 1.5	10	100	1.1... 2.2	-	-	1.4... 3.5	-	-
	50	100		25	100		8	25		GV4PE03N	GV4P03N
	100	100		30	100		10	25		GV4PE03S	-
1.5... 3	25	100	2.2... 4	10	100	3... 7.5	-	-	2.9... 7	-	-
	50	100		25	100		8	25		GV4PE07N	GV4P07N
	100	100		30	100		10	25		GV4PE07S	-
3... 5.5	25	100	3... 7.5	10	100	5.5... 11	-	-	5... 12.5	-	-
	50	100		25	100		8	25		GV4PE12N	GV4P12N
	100	100		30	100		10	25		GV4PE12S	-
5.5... 11	25	100	7.5... 15	10	100	7.5... 18.5	-	-	10... 25	GV4PE25B	GV4P25B
	50	100		25	100		8	25		GV4PE25N	GV4P25N
	100	100		30	100		10	25		GV4PE25S	-
11... 22	25	100	15... 30	10	100	18.5... 45	-	-	20... 50	GV4PE50B	GV4P50B
	50	100		25	100		8	25		GV4PE50N	GV4P50N
	100	100		30	100		10	25		GV4PE50S	-
22... 37	25	100	30... 55	10	100	37... 55	-	-	40... 80	GV4PE80B	GV4P80B
	50	100		25	100		8	25		GV4PE80N	GV4P80N
	100	100		30	100		10	25		GV4PE80S	GV4P80S
37... 55	25	100	45... 75	10	100	75... 90	-	-	65... 115	GV4PE115B	GV4P115B
	50	100		25	100		8	25		GV4PE115N	GV4P115N
	100	100		30	100		10	25		GV4PE115S	GV4P115S



Thermal magnetic motor circuit breakers from 3/4 to 75 HP / 480 V														
Single-Phase 120 V				3-Phase								Rating	Reference with EverLink terminals	
Power HP	FLA A	Power Hp	FLA A	208 V		240 V		480 V		600 V			with toggle	with rotary handle
				Power Hp	FLA A	Power Hp	FLA A	Power Hp	FLA A	Power Hp	FLA A			
-	-	1/10	1.5	-	-	-	-	3/4	1.6	1	1.7	2	-	-
													GV4PE02N	GV4P02N
													GV4PE02S	-
1/10	3	1/4	2.9	1/2	2.4	3/4	3.2	2	3.4	2	2.7	3.5	-	-
													GV4PE03N	GV4P03N
													GV4PE03S	-
1/4	5.8	3/4	6.9	1-1/2	6.6	2	6.8	3	4.8	5	6.1	7	-	-
													GV4PE07N	GV4P07N
													GV4PE07S	-
1/2	9.8	1-1/2	10	3	10.6	3	9.6	7-1/2	11	10	11	12.5	-	-
													GV4PE12N	GV4P12N
													GV4PE12S	-
1-1/2	20	3	17	5	16.7	7-1/2	22	15	21	20	22	25	GV4PE25B	GV4P25B
													GV4PE25N	GV4P25N
													GV4PE25S	-
3	34	7-1/2	40	10	30.8	15	42	30	40	40	41	50	GV4PE50B	GV4P50B
													GV4PE50N	GV4P50N
													GV4PE50S	-
7-1/2	80	15	68	25	74.8	30	80	60	77	75	77	80	GV4PE80B	GV4P80B
													GV4PE80N	GV4P80N
													GV4PE80S	GV4P80S
10	100	20	88	30	88	40	104	75	96	100	99	115	GV4PE115B	GV4P115B
													GV4PE115N	GV4P115N
													GV4PE115S	GV4P115S

Motor circuit breakers

Connection by lugs
 To order circuit breakers with connection by lugs, add the digit 6 to the end of reference selected above. Example: GV4PE02N becomes GV4PE02N6.

(1) As % of I_{cu}.



GV4PEM

Advanced version

Basic protection

Settings are made using dials.

Overloads or thermal protection (Ir)

Inverse-time thermal protection against overloads with adjustable pick-up I_r .

Wide range setting made in amperes.

The tripping curve for the thermal protection, which indicates the time delay t_r before tripping, is defined by the selected trip class.

Trip class (class)

The class is selected as a function of the normal motor starting time.

■ Class 10: starting time less than 10 s.

■ Class 20: starting time less than 20 s.

For a given class, it is necessary to check that all motor-feeder components are sized to carry the $7.2 I_r$ starting current without excessive temperature rise during the time corresponding to the class.

Short-circuit protection (Ii)

Instantaneous protection with non-adjustable pick-up $I_i = 17 I_n$.

Advanced protection

Settings are made with an Android smartphone with dedicated application and using wireless NFC (Near Field Communication), or a computer with EcoStruxure Power Commission software and the configuration/maintenance tool kit ("Maintenance case" TRV00910).

The LV434206 pocket battery allows the GV4PEM controller to be powered for adjustments and tests when no internal source is available.

Short time delay protection (I_{sd})

Short time delay protection (around 100 ms) to let through motor starting currents, but to protect cables and motor starter devices and allow not to oversize them (particularly useful for wide range settings circuit breakers).

Adjustable pick-up $I_{sd} = 5...13 I_r$ (13 by default).

Phase unbalance or phase loss (I_{unbal}, I_{tunbal})

This function opens the circuit breaker if a phase unbalance occurs:

■ that is greater than the 10...40 % of I_{rms} (30% by default): **I_{unbal}**

■ following a time delay (**I_{tunbal}**) equal to:

□ 0.7 s during starting (non adjustable)

□ 1...10 s during normal operation (4 s by default).

Phase loss is an extreme case of phase unbalance and leads to tripping under the same conditions.

Ground-fault protection (I_g, t_g)

Residual type ground-fault protection, with OFF position:

■ adjustable pick-up **I_g**:

□ 0.7...1 In for products with nominal current from 2 to 50 A

□ 0.4...1 In for products with nominal current from 80 to 115 A

■ adjustable time delay **t_g** 0.1...0.4 s.

Jam (I_{jam}, t_{jam})

This function detects locking of the motor shaft caused by the load, with OFF position (OFF by default). During motor starting the function is disabled.

During normal operation, it causes tripping:

■ above the **I_{jam}** pick-up that can be fine-adjusted from 1.5 to 8 Ir

■ in conjunction with the **t_{jam}** time delay that can be adjusted from 1 to 30 s.

Long start (I_{long}, t_{long})

This protection supplements thermal protection (class). It is used to optimize the protection according to the starting parameters, with OFF position (OFF by default).

It detects abnormal motor starting i.e. when the starting current remains too high or too low with respect to a pick-up value and a time delay.

It causes tripping:

■ in relation with a **I_{long}** pick-up that can be fine-adjusted from 1.5 to 8 Ir

■ in conjunction with the **t_{long}** time delay that can be adjusted from 1 to 200 s.

Indications

Front indications

■ Green "Ready" LED: flashes slowly when the circuit breaker is ready to trip in the event of an abnormal deviation in engine operating conditions.

■ Red alarm LED: goes ON when the thermal image of the motor is greater than 95 % of the permissible temperature rise.

Remote indications via SDx module

See description on page B6/44.

Standards and certifications

IEC/EN 60947-1, IEC/EN 60947-2, IEC/EN 60947-4-1, UL 60497-4-1, CSA 22.2 n° 60497-4-1, CCC, EAC, CSA (cCSAus).

Advanced thermal magnetic motor circuit breakers from 0.25 to 55 kW										
Standard power ratings of 3-phase motors - 50 / 60 Hz in category AC-3									Thermal setting range (I _r)	"Reference with EverLink terminals" with toggle
400/415 V			500 V			690 V				
P kW	I _{cu} kA	I _{cs} ⁽¹⁾ %	P kW	I _{cu} kA	I _{cs} ⁽¹⁾ %	P kW	I _{cu} kA	I _{cs} ⁽¹⁾ %	A	
0.25... 0.75	25	100	0.37... 1.1	10	100	0.55... 1.5	-	-	0.8... 2	-
	50	100		25	100		8	25		GV4PEM02N
	100	100		30	100		10	25		GV4PEM02S
0.55... 1.5	25	100	0.75... 1.5	10	100	1.1... 2.2	-	-	1.4... 3.5	-
	50	100		25	100		8	25		GV4PEM03N
	100	100		30	100		10	25		GV4PEM03S
1.5... 3	25	100	2.2... 4	10	100	3... 7.5	-	-	2.9... 7	-
	50	100		25	100		8	25		GV4PEM07N
	100	100		30	100		10	25		GV4PEM07S
3... 5.5	25	100	3... 7.5	10	100	5.5... 11	-	-	5... 12.5	-
	50	100		25	100		8	25		GV4PEM12N
	100	100		30	100		10	25		GV4PEM12S
5.5... 11	25	100	7.5... 15	10	100	7.5... 18.5	-	-	10... 25	GV4PEM25B
	50	100		25	100		8	25		GV4PEM25N
	100	100		30	100		10	25		GV4PEM25S
11... 22	25	100	15... 30	10	100	18.5... 45	-	-	20... 50	GV4PEM50B
	50	100		25	100		8	25		GV4PEM50N
	100	100		30	100		10	25		GV4PEM50S
22... 37	25	100	30... 55	10	100	37... 55	-	-	40... 80	GV4PEM80B
	50	100		25	100		8	25		GV4PEM80N
	100	100		30	100		10	25		GV4PEM80S
37... 55	25	100	45... 75	10	100	75... 90	-	-	65... 115	GV4PEM115B
	50	100		25	100		8	25		GV4PEM115N
	100	100		30	100		10	25		GV4PEM115S



Motor circuit breakers

Connection by lugs

To order circuit breakers with connection by lugs, add the digit 6 to the end of reference selected above. Example: GV4PE02N becomes **GV4PE02N6**.

(1) As % of I_{cu}.



GV4PB

Advanced version

Ref. GV4PB is based on GV4PEM with specific tripping curve to follow UL489 SH supplement. It is designed with a large space connector in order to increase creepage and clearance distance.

Basic protection

Settings are made using dials.

Overloads or thermal protection (Ir)

Inverse-time thermal protection against overloads with adjustable pick-up Ir. Wide range setting made in amperes.

The tripping curve for the thermal protection, which indicates the time delay tr before tripping, is defined by the selected trip class.

Trip class (class)

The class is selected as a function of the normal motor starting time. It corresponds to the value of the tripping time delay for a current of 600 % of the rated tripping current according to UL489, SH supplement.

The rated tripping current is selected as 125 % of the dial value.

■ Class 10: starting time less than 10 s.

■ Class 20: starting time less than 20 s.

For a given class, it is necessary to check that all motor-feeder components are sized to withstand the 7,5 Ir starting current without excessive temperature rise during the time corresponding to the class.

Short-circuit protection (Ii)

Instantaneous protection with non-adjustable pick-up $I_i=17 I_n$.

Advanced protection (same as ref. GV4PEM)

Settings are made with:

■ Android smartphone using wireless NFC (Near Field Communication), or EcoStruxure Power Device App. computer + EcoStruxure Power Commission software and configuration/maintenance tool kit TRV00910

■ LV434206 pocket battery, allows the GV4PB controller to be powered for adjustment and test. LV434206 pocket battery needs to be connected to the GV4PB controller to set the advanced protection.

Short time delay protection (I_{sd})

Short time delay protection (around 100 ms) to let through motor starting currents, but to protect cables and motor starter devices and allow not to oversize them (particularly usefull for wide range settings circuit breakers).

Adjustable pick-up $I_{sd} = 5...13 I_r$ (13 by default).

Phase unbalance or phase loss (I_{unbal}, I_{tunbal})

This function opens the circuit breaker if a phase unbalance occurs:

■ that is greater than the 10...40 % of Irms (30 % by default): **I_{unbal}**

■ following a time delay (**I_{tunbal}**) equal to:

□ 0.7 s during starting (non adjustable)

□ 1...10 s during normal operation (4 s by default).

Phase loss is an extreme case of phase unbalance and leads to tripping under the same conditions.

Ground-fault protection (I_g, t_g)

Residual type ground-fault protection, with OFF position:

■ adjustable pick-up **I_g**:

□ 0.7...1 In for products with nominal current from 2 to 50 A

□ 0.4...1 In for products with nominal current from 80 to 115 A

■ adjustable time delay **t_g** 0.1...0.4 s.

Jam (I_{jam}, t_{jam})

This function detects locking of the motor shaft caused by the load, with OFF position (OFF by default). During motor starting the function is disabled.

During normal operation, it causes tripping:

■ above the **I_{jam}** pick-up that can be fine-adjusted from 1.5 to 8 Ir

■ in conjunction with the **t_{jam}** time delay that can be adjusted from 1 to 30 s.

Long start (I_{long}, t_{long})

This protection supplements thermal protection (class). It is used to optimize the protection according to the starting parameters, with OFF position (OFF by default). It detects abnormal motor starting i.e. when the starting current remains too high or too low with respect to a pick-up value and a time delay.

It causes tripping:

■ in relation with a **I_{long}** pick-up that can be fine-adjusted from 1.5 to 8 Ir

■ in conjunction with the **t_{long}** time delay that can be adjusted from 1 to 200 s.

Indications

Front indications

■ Green "Ready" LED: flashes slowly when the circuit breaker is ready to trip in the event of an abnormal deviation in engine operating conditions.

■ Red alarm LED: goes ON when the thermal image of the motor is greater than 95 % of the permissible temperature rise

Remote indications via SDx module

See description on page B6/44.

Conforming to standards:

IEC/EN 60947-2, IEC/EN 60947-4-1

Product certifications:

UL 489, CSA C22.2 n°5.

TeSys Power

Deca - Frame 4 Motor circuit breakers - Thermal-magnetic

Product references - UL applications

GV4PB - selection according to Short Circuit Current Rating (SCCR)			
240 V AC SCCR kA	480Y/277 V AC SCCR kA	600Y/347 V AC SCCR kA	Reference
35	18	14	GV4PB●●●B ⁽¹⁾
65	35	18	GV4PB●●●N
100	65	25	GV4PB●●●S

(1) Example: GV4PB07S, GV4PB115S.

GV4PB thermal magnetic motor circuit breakers - selection according to FLA							
3P 200 V FLA A	3P 230 V FLA A	3P 460 V FLA A	Rated %	Dial range A	Reference		
-	-	1.6	100	0.8 to 2		GV4PB02N	GV4PB02S
2.5	2.2	3	100	1.4 to 3.5		GV4PB03N	GV4PB03S
4.8	4.2	4.8	100	2.9 to 7		GV4PB07N	GV4PB07S
7.8	9.6	7.6	100	5 to 12.5		GV4PB12N	GV4PB12S
17.5	22	21	100	10 to 25	GV4PB25B	GV4PB25N	GV4PB25S
48	42	40	100	20 to 50	GV4PB50B	GV4PB50N	GV4PB50S
62	54	52	80	40 to 80	GV4PB80B	GV4PB80N	GV4PB80S
92	80	77	80	65 to 115	GV4PB115B	GV4PB115N	GV4PB115S

Connection by lugs

Please order GV4LUG accessory and LV426920 interphase barriers or LAD96590 terminal shield.



Motor
circuit
breakers

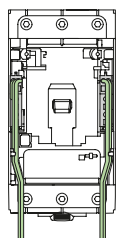
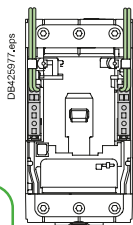
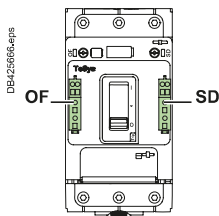
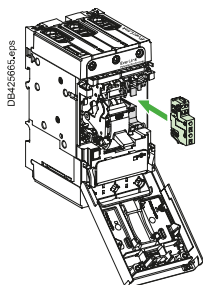
TeSys Power

Deca - Frame 4 Motor circuit breakers - Auxiliary contact block

Product references

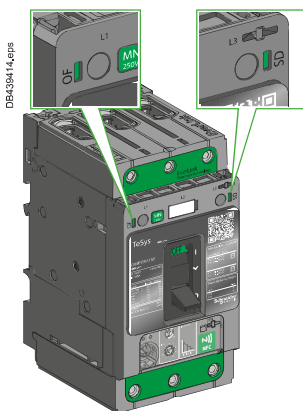


GV4AE11 auxiliary contact block



Motor circuit breakers

Pluggable auxiliary contact - OF or SD is dependent on cavity. Multiple internal wiring possibilities, even with long terminal shields



Visible presence of auxiliary contact block in OF or SD cavity

Auxiliary contact blocks

Auxiliary contacts give an indication of the circuit breaker status. They can be used for remote visual signaling, alarming, electrical locking, relay activation, etc...

An auxiliary contact block provides one changeover contact with common point for OF or SD function, depending on the breaker cavity where it is inserted.

Auxiliary contact - Open/Close OF function

Indicates Open/Closed position of the circuit breaker contacts.

Auxiliary contact - Trip alarm SD function

■ Indicates that the circuit breaker has tripped due to:

- Electrical fault (overload, short circuit, ...)
- shunt trip
- undervoltage release
- "push-to-trip" button.

■ Resets when circuit breaker is reset.

Electrical characteristic

Characteristics						
Rated thermal current (A)	5					
Minimum load	2 mA at 17 V DC					
Utilization cat. (IEC 60947-5-1)	AC12	AC15	DC12	DC13	DC14	
Operational current (A)	24 V AC/DC	5	5	5	2.5	1
	48 V AC/DC	5	5	2.5	1.2	0.2
	110...127 V AC / 110 V DC	5	4	0.6	0.35	0.05
	220/240 V AC	5	3	-	-	-
	250 V DC	-	-	0.3	0.05	0.03
	380/440 V AC	5	2.5	-	-	-
	660/690 V AC	5	0.11	-	-	-

Pilot duty B600 according UL508 and CSA 22.2 n°14.

Installation and connection

■ Auxiliary contact blocks snap into left (for OF function) and right (for SD function) cavities behind the front accessory cover of the circuit breaker and their presence is visible on the front face through green flags.

■ One model serves for all indication functions depending on where it is fitted in the circuit breaker.

■ Each NO and NC spring terminal may be connected by one 0.5...1.5 mm² flexible copper wire and by two for the common point.

■ Wires can be exited out of any of the four corners of the breaker under the accessory cover.

Description	Maximum number	Mounting	Type of contacts	Sold in lots of	Reference
Auxiliary contact block for OF or SD indication	2 (1 OF + 1 SD)	Internal plug-in	NO + NC	1	GV4AE11

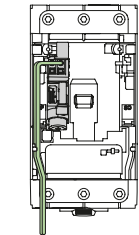
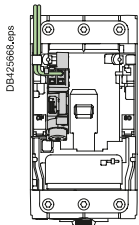
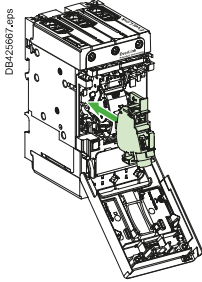
TeSys Power

Deca - Frame 4 Motor circuit breakers - MX and MN trips

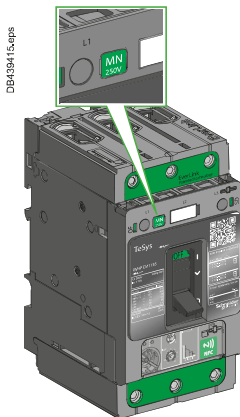
Product references



GV4AS137 shunt trip



MN or MX plugged into cavity. Multiple internal wiring possibilities, even with long terminal shields



Visible presence of MN undervoltage release in circuit breaker cavity, visible rated voltage through the window.

MX shunt trip, MN undervoltage release

MX and MN trip the circuit breaker on a control signal. They are mainly used for remote and emergency-off commands.

It is advised to test the system every six months.

MX shunt trip

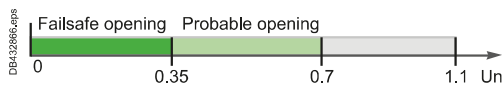
- Trips the circuit breaker when the control voltage rises above 70 % of its rated voltage (U_n).
- Impulse type ≥ 20 ms or maintained control signals.
- Shunt trip 110...130 V AC is suitable for ground-fault protection when combined with a Class I ground-fault sensing element.
- Continuous duty rated coil ⁽¹⁾.



Opening conditions of the MX release.

MN undervoltage release

- Trips the circuit breaker when the control voltage drops below 35 % of its rated voltage.
- Between 35 % and 70 % of the rated voltage opening is only probable.
- Above 70 % of the rated voltage, opening does not take place.
- Continuous duty rated coil.
- Circuit breaker closing is possible only if the voltage exceeds 85 % of the rated voltage. If an undervoltage condition exists, operation of the closing mechanism of the circuit breaker will not permit the main contacts to touch, even momentarily. This is commonly called "Kiss Free".



Opening conditions of the MN release.



Closing conditions of the MN release.

Installation, connection

Accessories snap into cavities under the circuit breaker front accessory cover. Spring-type terminals in order to insure a fast and reliable connection to 0.5...1.5 mm² flexible copper wire (one per terminal).

Operation

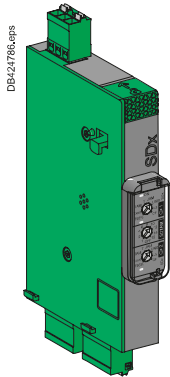
Circuit breaker must be locally reset after trip by shunt trip (MX) or undervoltage release (MN). Tripping by MX or MN has priority over manual closing; in the presence of a standing trip order such an action does not result in main contacts closing, even temporarily.

Description	Maximum number	Mounting	Voltage	Reference
MX Shunt trip	1	Internal, plug-in	24 V~ 50/60 Hz, 24 V-:	GV4AS027
			48 V~ 50/60 Hz, 48 V-:	GV4AS057
			110-130 V~ 50/60 Hz 125 V-:	GV4AS137
			220-240 V~ 50 Hz, 208-240 V~ 60 Hz, 277 V 60 Hz	GV4AS287
			380-415 V~ 50 Hz, 440-480 V~ 60 Hz	GV4AS487
MN undervoltage release	1	Internal, plug-in	24 V~ 50/60 Hz, 24 V-:	GV4AU027
			48 V~ 50/60 Hz, 48 V-:	GV4AU057
			110-130 V~ 50/60 Hz 125 V-:	GV4AU137
			220-240 V~ 50 Hz, 208-240 V~ 60 Hz	GV4AU247
			277 V~ 60 hZ	GV4AU286
			380-415 V~ 50 Hz	GV4AU415
			440-480 V~ 60 Hz	GV4AU486

(1) Except for MX 24 V AC/DC (in case of continuous activation, may generate some minor perturbation in sensitive environment).



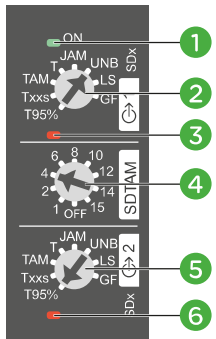
Motor circuit breakers



GV4ADM1111 SDx contact module



Motor circuit breakers



- 1 Green led lighted when the module is powered.
- 2 Output 1: SD status assignment.
- 3 Red led lighted when output 1 is activated.
- 4 Cooling time setting before automatic restart (OFF – 1...15 min).
- 5 Output 2: SD status assignment.
- 6 Red led lighted when output 2 is activated.

SDx contact module for GV4PEM, GV4PB (Multifunction)

The SDx provides alarming and functional fault differentiation for GV4PEM, GV4PB (Multifunction) circuit breaker. This module has 2 NO/NC outputs dry contacts which can be assigned with one of the 8 following SD status:

- **SdT95%** overload alarm: thermal image of the motor is greater than 95 % of the permissible temperature rise.
- **SdTxxs** overload alarm: circuit breaker will trip in xx seconds with the same load. xx is adjustable between 10 to 40 seconds (default 20 seconds) on the circuit breaker itself through NFC or a computer with EcoStruxure Power Commission software and an interface module (TRV00911).
- **SdTAM** overload alarm just before tripping: in the event of a phase unbalance, overload, or on a jam fault, this output is activated to open the contactor and avoid circuit breaker tripping. In that case, contact can be manually or automatically reseted after an adjustable cooling time from 1 to 15 minutes. If after a 400 ms delay the motor is not stopped, the circuit breaker will trip.
- **SdT** overload trip indication: circuit breaker has tripped due to an overload fault
- **SDJAM** jam trip indication: circuit breaker has tripped due to a jam fault
- **SDUNB** phase unbalance trip indication: circuit breaker has tripped due to an unbalance fault
- **SDLS** long start trip indication: circuit breaker has tripped due to a long start fault
- **SDGF** ground-fault trip indication: circuit breaker has tripped due to a ground-fault.

Outputs are automatically reseted either when alarm disappears or when the circuit breaker is restarted.

Output characteristics

- 2 NO/NC dry contacts
- 24...250 V AC/DC
- Minimum load: 2 mA under 24 V DC
- Max load: 5 A
- AC15 (230 V max - 400 VA)
- DC13 (24 V - 50 W)

Power characteristics

- 24...240 V AC/DC

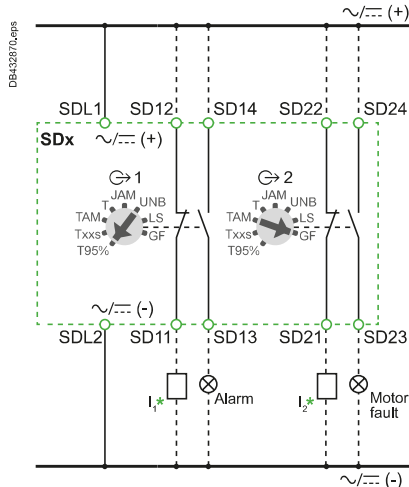
Contact rating (per UL/CSA B300 & R300)

Standard	Rated Voltage U_e	Operational Current I_e A	Make	Break	I_{the}
			VA	VA	A
B300	120 V AC	3	3600	360	5
	240 V AC	1.5			
R300	125 V DC	0.22	28	28	1
	250 V DC	0.1			

The rated operational current I_e (A), the rated operational voltage U_e (V) and the break apparent power B (V.A) are correlated by the formula $B = U_e \cdot I_e$; with $I_e \leq I_{th}$.

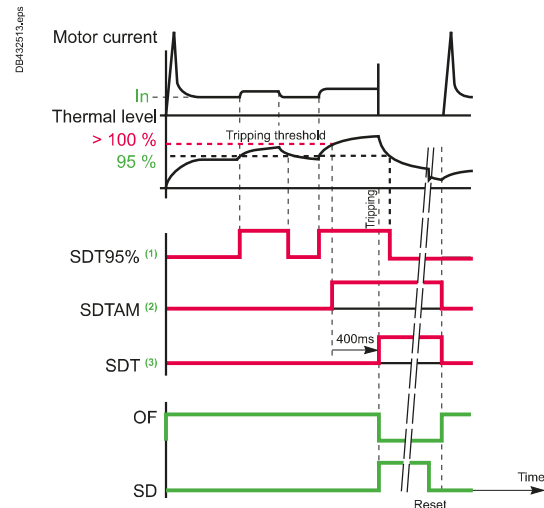
Installation, connection, settings and indication

The SDx module is clipped on the right side of the circuit breaker. Each removable spring terminal can be connected by one 0.5... 1.5 mm² copper wire. Settings and indications are available on the front face.



* I1, I2: PLC digital inputs - used as alarm inputs, as an example.

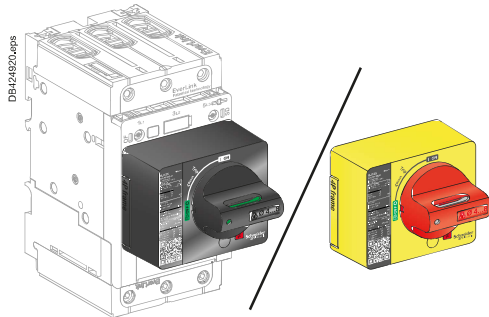
SDx wiring diagram



- GV4PEM curves
- SDx modules curves
- Aux. contacts curves

- (1) SDT95% (= 95% overload)
- (2) SDTAM (overload tripping pre alarm) here not connected to any contactor coil
- (3) SDT (= tripping on thermal fault)

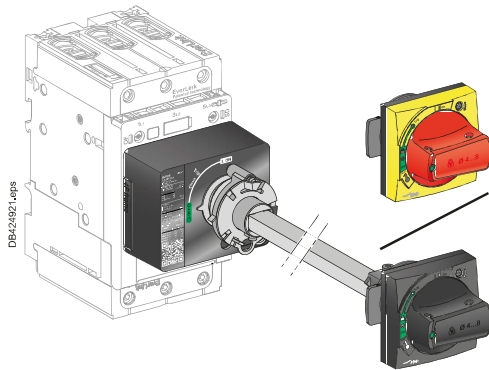
Description	Mounting	Maximum number	Type of contacts	Unit reference
SDx: alarming / fault differentiation module	Side	2	N/O / N/C	GV4ADM1111



Direct mounting rotary handle



GV4ADN02 direct mounting rotary handle



Front extended rotary handle (door-mounting)



GV4APN01 front extended rotary handle kit



GVAPL01 laser tool

Direct mounting rotary handles

Installation

The direct mounting rotary handle has to be mounted by 3 screws on the front accessory cover.

Operation

The direct mounting rotary handle maintains:

- suitability for isolation
- indication of the three positions OFF (O), ON (I) and tripped (Trip)
- access to the "push-to-trip" button
- visibility and access to the trip unit.

Device padlocking

The circuit breaker may be locked in the OFF position by using one to three padlocks (not supplied) or in ON position after customer modification of the rotary handle before installation, padlock shackle Ø4-8 mm. Locking in the ON position does not prevent the circuit breaker from tripping if a circuit or motor malfunction occurs. In this case, the handle remains in the ON position after the circuit breaker trips. Unlocking is required for the handle to go to the tripped then the OFF position.

Variations: door locking

Door locking built-in functionality can be activated by the customer to prevent opening the door when the circuit breaker is ON or in trip position. For exceptional situations, door locking can be temporarily disabled with a tool by qualified personnel to open the door when the circuit breaker is closed.

Description	Type	Degree of protection	Reference
Direct mounting rotary handle	Black handle	IP40	GV4ADN01
	Red handle on yellow bezel (VDE standard, for machine control)	IP40	GV4ADN02

Front extended rotary handles

Installation

The door-mounted (extended) rotary handle is made up of:

- a unit that has to be screwed on the front accessory cover of the circuit breaker
- an assembly (handle mechanism and front plate) on the door that is always secured in the same position, whether the circuit breaker is installed vertically or horizontally
- an adjustable extension shaft.

The handle mechanism is fixed with a nut (Ø22 mm) to make assembly easier. The Laser Square tool (GVAPL01) can be used to accurately align the hole on the door with the circuit breaker.

Operation when door is closed

The door mounted handle makes it possible to operate a circuit breaker installed in an enclosure from the front. The door mounted operating handle maintains:

- suitability for isolation
- indication of the three positions OFF (O), ON (I) and tripped (Trip)
- visibility and access to trip unit when the door is open
- degree of protection of the handle on the door: IP54 or IP65 as per IEC 60529.

Mechanical door locking when device closed

A standard feature of the extended rotary handle is a locking function, built into the shaft, that disables door opening when the circuit breaker is in the ON or tripped positions.

Door locking can be temporarily disabled with a tool by qualified personnel to open the door without opening the circuit breaker. This operation is not possible if the handle is locked by a padlock.

Device and door padlocking

Padlocking locks the circuit breaker handle and disables door opening:

- standard situation, in the OFF position, using 1 to 3 padlocks, shackle Ø4-8 mm, padlocks are not supplied
- for the black handle, with a voluntary modification of the door handle (to be done by the customer during installation), in the ON and OFF positions. Locking in the ON position does not prevent the circuit breaker from tripping if a circuit or motor malfunction occurs. In this case, the handle remains in the ON position after the circuit breaker trips. Unlocking is required for the handle to go to the tripped then the OFF position.

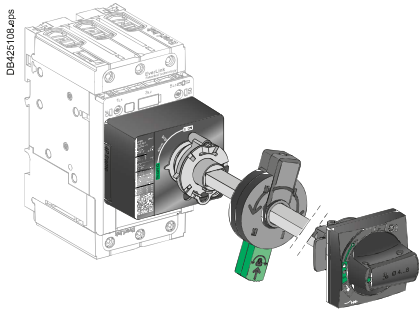
Shaft length

The shaft length is the distance between the back of the circuit breaker and the door:

- minimum shaft length is 214 mm
- maximum shaft length is 627 mm
- shaft length must be adjusted.



Motor circuit breakers



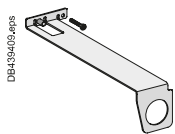
Open door shaft operator mounted on front extended rotary handle assembly



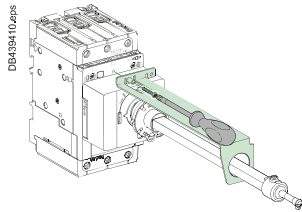
GV4APN01
Front extended rotary handle kit



LV426937
Open door shaft operator



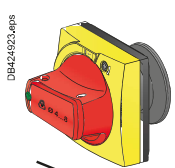
LV426938
Support arm for extended rotary handle



Motor circuit breakers



GVAPL01 - Laser tool



Side extended rotary handle (cover mounting)



LV426936 - Side rotary handle kit



LV426998, LV426997 - Universal handles

Front extended rotary handles (cont.)

Operation when door is opened

An open door shaft operator can be used to operate the circuit breaker when door is opened. This accessory complies with UL508 A. The indication of the three positions OFF (O), ON (I) and tripped (Trip) is visible on the circuit breaker.

The circuit breaker itself may be locked in OFF position when the door is opened by 1 padlock / lockout hasp, shackle Ø4-8 mm.

Description	Type	Degree of protection	Reference
Front extended rotary handle kit	Black handle	IP54	GV4APN01
	Red handle on yellow bezel	IP54	GV4APN02
		IP65	GV4APN04
Open door shaft operator			LV426937
Support arm for extended rotary handle			LV426938
Laser tool			GVAPL01
Spare part: GV4 universal handle (for replacement of front. ext. or side rotary handle)	Black handle	IP54	LV426997
	Red handle on yellow bezel	IP54	LV426998
		IP65	LV426999

Side rotary handles (left or right)

Installation

The side-mounted rotary handle is made up of:

- a unit that has to be screwed on the front accessory cover of the circuit breaker
 - an assembly (handle and front plate) on the side (left or right) of the enclosure
 - an adjustable extension shaft
- The handle mechanism is fixed with a nut (Ø22 mm) to make assembly easier.

Operation

The side mounted rotary handle makes it possible to operate circuit breakers installed in enclosure from the side. The side mounted rotary handle maintains:

- suitability for isolation
- indication of the three positions OFF (O), ON (I) and tripped (Trip). Moreover, the position is visible on the circuit breaker itself
- visibility and access to trip unit when the door is open
- degree of protection of the handle on the side: IP54 or IP65 as per IEC 529.

Device padlocking

The circuit breaker may be locked in the OFF position, or, for the black rotary handle only, in ON position after voluntary modification of the side handle (to be done by the customer during installation), by using one to three padlocks, padlock shackle Ø4-8 mm ; padlocks are not supplied.

Locking in the ON position does not prevent free circuit breaker from tripping if a circuit or motor malfunction occurs. In this case, the handle remains in the ON position after the circuit breaker tripping. Unlocking is required to go to the tripped then the OFF position.

Shaft length

The shaft length is the distance between the side of the circuit breaker and the side of the enclosure:

- minimum shaft length is 45 mm
- maximum shaft length is 480 mm
- shaft length must be adjusted.

Description	Type	Degree of protection	Reference
Side rotary handle kit	Black handle	IP54	LV426935
	Red handle on yellow bezel (VDE standard, for machine control)	IP54 ⁽¹⁾	LV426936
		IP65	
Spare part: GV4 universal handle (for replacement of front. ext. or side rotary handle)	Black handle	IP54	LV426997
	Red handle on yellow bezel	IP54	LV426998
		IP65	LV426999

⁽¹⁾ IP65 possible with LV426935 kit (Black handle not used) + LV426999 Red handle on yellow bezel universal handle.

Product references

Handle padlocking devices

Padlocking systems can receive up to three padlocks with diameters of 5-8 mm (4-8 mm for rotary handles); padlocks not supplied. Locking in the OFF position guarantees isolation as per IEC 60947-2.

Direct rotary handle padlocking

By padlock – No accessory required.

- Lock in OFF position.
- Lock in ON position with simple mechanism modification.

Front Extended /Side rotary handle padlocking

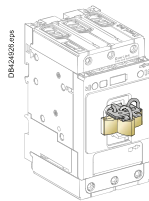
By padlock – No accessory required.

- Lock in OFF position.
- Lock in ON position with simple mechanism modification (black handle only).
 Door opening prevented.

Toggle handle padlocking

By padlock – removable toggle locking device required **29370**.

- Lock in OFF position.



3 padlocks mounted on 29370 toggle locking device



29370 removable toggle locking device

Description	Reference
Removable toggle locking device for 1 to 3 padlocks	29370

Sealing devices

- | | | |
|--------------|--|--|
| Control type | <ul style="list-style-type: none"> ■ Front removal. ■ Access to auxiliaries. | <ul style="list-style-type: none"> ■ Access to settings and test connector. |
|--------------|--|--|

Toggle		
Rotary handle		

Description	Reference
Bag of 6 leads + 6 sealing accessories	LV429375



LV429375 leads + sealing accessories

Motor circuit breakers

TeSys Power

Deca - Frame 4 Motor circuit breakers - Accessories

Product references

PB121333,eps



LAD96595
EverLink connector

PB121334,eps



GV4LUG
crimped lug connector

PB121335,eps



LAD96590
transparent terminal shield

PB121343,eps



LV426920
interphase barriers

PB121344,eps



LV426940
spreader 3-pole

PB121342,eps



LV426990
9 N.m green throwaway bits

PB121341,eps



LV426992
5 N.m yellow throwaway bits

PB121336,eps



LV434206
pocket battery

PB121337,eps



TRV00910
maintenance case

PB121338,eps



TRV00911
Spare USB maintenance interface

PB121340,eps



TRV00915
spare power supply
110-240 V AC

PB121339,eps



TRV00917
spare GV4PEM cord for
USB maintenance interface

EverLink power connection

Description	Reference
EverLink connector	LAD96595

Crimp lug/busbar connection

Description	Sold in lots of	Reference
Crimped lug connector + screws	1	GV4LUG
Transparent terminal shield for crimped lug connector	1	LAD96590
Interphase barriers	6	LV426920
Spreader 3-pole	To increase the pitch to 35 mm 1	LV426940

Limited torque throwaway bits

Description	Sold in lots of	Reference
Green - 9 N.m	6	LV426990
Yellow - 5 N.m	6	LV426992

Note: torque limiting breakaway bits may be used, particularly in the field, to tighten at the right torque EverLink™ or compression lug power connections.

Test tool, software, demo for GV4PEM

Test tool

Pocket battery Allows the ref. GV4PEM or GV4PB controller to be powered for adjustments and tests when no internal source is available.	LV434206
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Maintenance case Comprising:	TRV00910
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- USB maintenance interface
- Power supply
- GV4PEM cord
- USB cord
- RJ45/RJ45 male cord

Spare USB maintenance interface	TRV00911
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USB interface spare power supply, 110-240 V AC, with 4 different socket adapters	TRV00915
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Spare cord for connecting GV4PEM to USB maintenance interface	TRV00917
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Software

Configuration and setting software EcoStruxure Power Commission	Free download
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Motor
circuit
breakers