

Retrofill / Retrofit

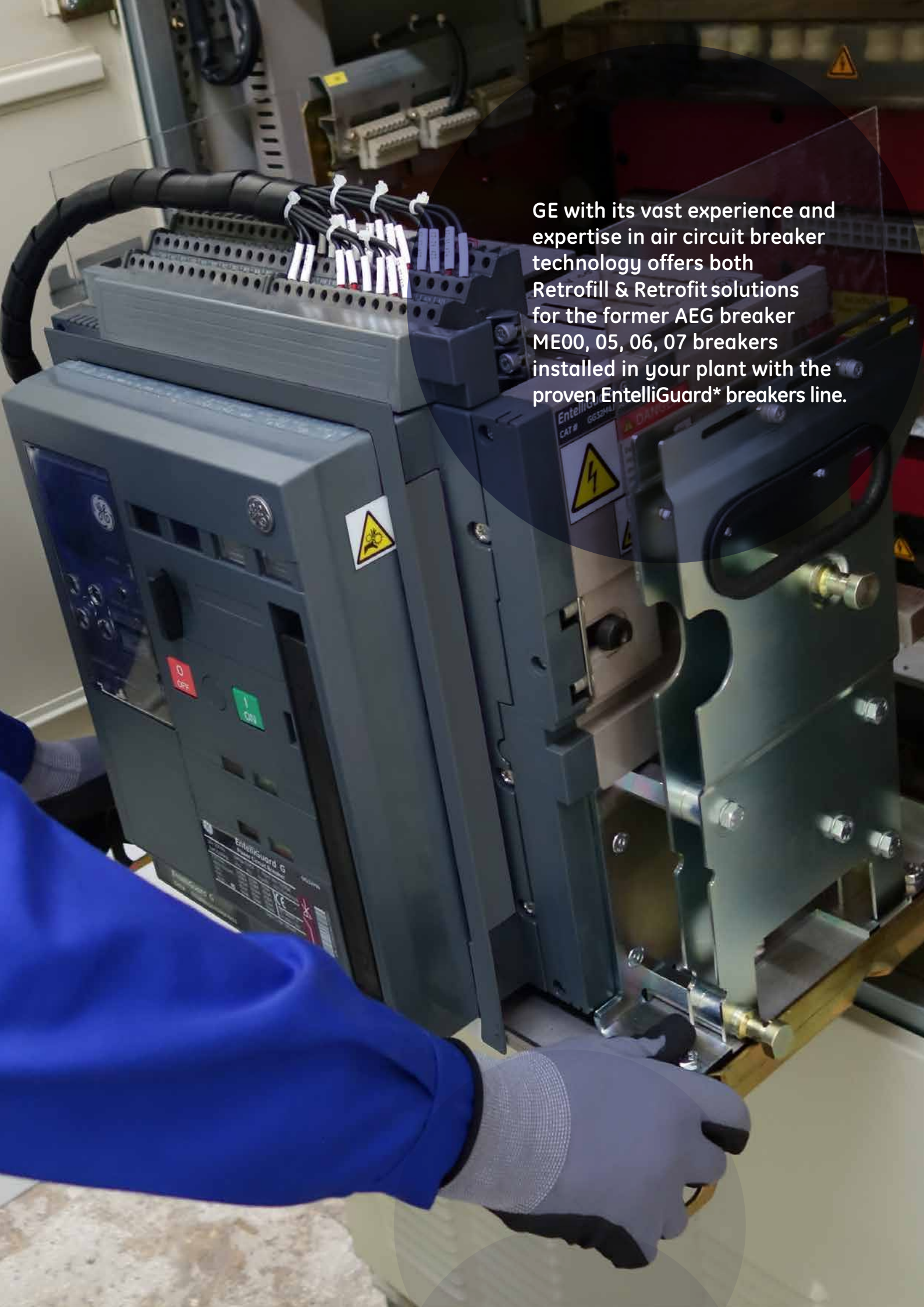
ME07 Breaker with EntelliGuard* R Breakers



Retrofill & Retrofit

In any electrical installation, aging equipment can often be a major cause of concern. Added to that the normal wear and tear on low-voltage circuit breakers that may lead to a loss of system protection and reliability. Many times the existing switchgear is intact, but the breakers are worn out and spares are becoming obsolete.





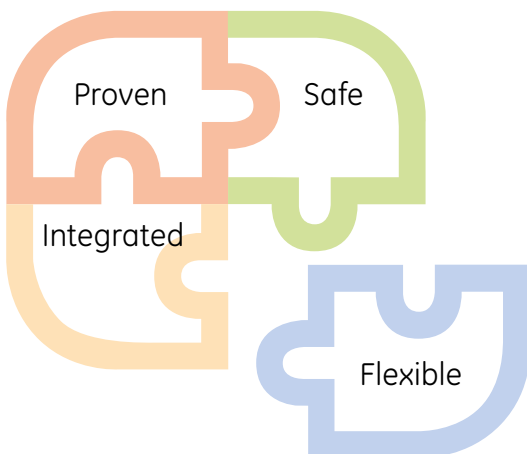
GE with its vast experience and expertise in air circuit breaker technology offers both Retrofill & Retrofit solutions for the former AEG breaker ME00, 05, 06, 07 breakers installed in your plant with the proven EntelliGuard* breakers line.

EntelliGuard* R are Retrofills, that is "roll-in" replacements for aging legacy breakers. With this product users can upgrade and update existing switchgear by only swapping the moving portion of a ME07 with a brand new EntelliGuard breaker leaving the existing cassette and cubicle virtually intact.

This convenient design ultimately minimizes both downtime and impact on the existing switchgear.

GE complements its Retrofill⁽¹⁾ range with **Retrofits**⁽²⁾ where "roll-in" replacements may not be possible. A Retrofit in comparison to a Retrofill, may require cubicle and busbar modifications.

These EntelliGuard* R breakers are supplied from the factory almost "Ready to Fit" into existing ME07 cassettes.



Benefits of EntelliGuard* R Retrofills

- ✓ No changes required to the Breaker Compartment, thereby reducing downtime & equipment impact ... no change in busbar or power cabling
- ✓ Minimum wiring changes at site; ME07 secondary control blocks provided with Retrofill for roll-in connection onto existing control circuitry
- ✓ Versatile design allows for compatibility for both GE and OEM equipment
- ✓ Option of choosing RELT feature which provides added safety to the installation
- ✓ EntelliGuard R Retrofill has been tested inside GE's own SEV/SEK equipment
- ✓ Renewal of breaker and plant life... Updating the installation ensures more uptime due to greater availability of spare parts and renewed endurance ratings.
- ✓ Clusterless design ensures solid and reliable connections

(1) The existing trip free mechanism, switchboard doors and in some cases also the carriage position requires modification

(2) Retrofit solutions upon request from our after sales and services department

EntelliGuard* range overview: the breaker inside the EntelliGuard* R solution



The EntelliGuard range of power circuit breakers encompasses a line of three and four pole air circuit breakers with nominal currents ranging from 400 to 6400A in four basic frames.

All power circuit breakers are designed to allow multiple interruptions of fault currents. here the tested and certified service breaking capacity value (Ics) is in all cases equal to the stated ultimate breaking capacity (Icu).

Frame T can be used in networks with voltage up to 690V and can be acquired with current ratings from 400A to 1600A at 50°C. This type is available in interruption ratings (Ics=Icu) of 50 and 65kA.

Frame 1 can be used in networks with voltages up to 1000V and can be acquired with current ratings from 400 to 2500A at 50°C. This type is available in interruption ratings (Ics=Icu) of 50, 65 and 85kA. A version suitable for DC applications is available.

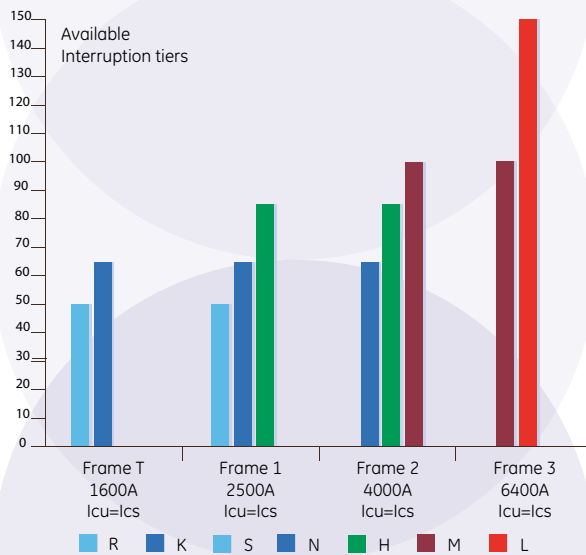
Frame 2 can be used in networks with voltages up to 1000V and can be acquired with current ratings from 400 to 4000A at 50°C. This type is available in interruption ratings (Ics=Icu) of 50, 65, 85 and 100kA.

Frame 3 can be used in networks with voltages up to 1000V and can be acquired with current ratings from 3200 to 6400A at 50°C. This type is available in interruption ratings (Ics=Icu) of 100 and 150kA. (Frame 3 is only available for Retrofit.)

Plug 'n Play

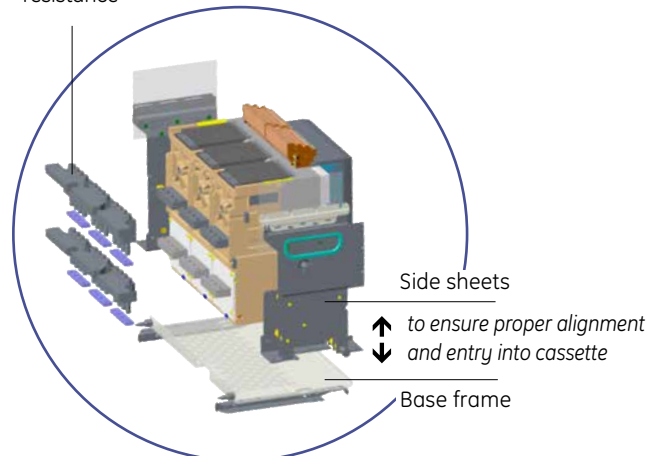
Electronic trip units are normally supplied factory fitted. However, spares are available that plug into the breaker, automatically read the main breaker data and adjust themselves automatically to the breaker type.

This option can be used to allow field replacement or upgrades of existing trip units.



EntelliGuard* R Retrofit

Spreaders which ensures proper contact and reduces contact resistance



Protection with state of the art electronic trip unit

Main adjustment options

LT-LTD protection

Each device has an overload setting or LT setting range of 0.2 to 1 times the breaker rating with a choice of more than 60 setting points. The overload protection comes with up to 90 time band settings in 5 distinct curve models allowing the user to configure this device for almost any perceivable application.

ST-STD protection

A time delayed short-circuit protection is installed with an adjustment range of 2 to 12 times the set LT current values. The short-circuit interruption time can be set, at one of 17 bands ranging from 90 milliseconds to 1 second.

I protection

A switchable instantaneous protection can be optionally installed. This device is adjustable from 2 to 15 or 30 times the rating of the breaker and is programmed to wait for downstream devices to trip before reacting.

Other protection features

A host of other protection devices as LT-B & LT-C, RELT, GF sum & GF source return, earthfault (UEF, REF & SEF), extensive protective relays options plus the optional use of energy curves are available (see section B of this catalogue).

Measurement, relaying and communication

The EntelliGuard trip unit has been envisaged to provide the user with more. Optionally, a full network measurement device can be installed on the device. Relays can be included to trip the breaker on voltage unbalance, current unbalance, power reversal, etc.

The device can be equipped with communication for use with the Modbus or Profibus protocol whilst events as overload, short-circuit and groundfaults can be tracked. Optionally, the user can portray a short-circuit event through the wave form capture option.

All EntelliGuard* power circuit breakers are equipped with a digital electronic trip unit, available in four basic versions: E, S, N and H.



Trip Unit Toolkit

This is a PC based software package designed to view, set and test the trip units present in the GE range of EntelliGuard, PremEon* and MET trip units.

The Toolkit provides our customers with a free way to increase their productivity when interacting with these trip units platforms while decreasing the time in front of live equipment.

For more information or to download the software please visit: ex.geindustrial.com



Retrofit / Retrofit

Range	S1/N								
Frame size	10			20			30	40	
ME07 frame size	637	807	1007	1257	1607	2007	2507	3207	
Equivalent EntelliGuard type	GT07K	GT08K	GT10K	GT13K	GT16K	GG20H	GG25H	GG32M	
Equivalent EntelliGuard frame size	1	1	1	1	1	1	1	2	
Version	Fixed / Draw-out								
Number of poles	3, 4 ⁽¹⁾								
Rated insulation voltage Ui (V)	1000V								
Rated impulse withstand voltage Uimp (KV)	12								
Pollution degree	3								
Category of use	B								
Rated operational voltage Ue at 50°C (V)	690V								
Rated current Ie at 50°C (A)	630	800	1000	1250	1600	2000	2500	3200	
Current ratings at temperatures >50°C	50°C (A)	630	800	1000	1250	1600	2000	2500	3200
	55°C (A)	630	800	1000	1250	1600	2000	2500	3200
	60°C (A)	630	800	1000	1250	1600	2000	2500	3200
	65°C (A)	630	800	1000	1250	1600	2000	2500	3150
	70°C (A)	630	800	1000	1250	1600	2000	2500	3100
Ultimate breaking capacity Icu (KA)	400/440V (KA)	65	65	65	65	65	85	85	100
	500V (KA)	55	55	55	55	55	65	65	100
	690V (KA)	50	50	50	50	50	65	65	85
Service breaking capacity Ics (kA)	400/415V (KA)	50	50	50	50	50	85	85	100
	500V (KA)	50	50	50	50	50	65	65	100
	690V (KA)	42	42	42	42	42	65	65	85
Rated short time current Icw (KA)	1.0s (KA)	50	50	50	50	50	65	65	85
	3.0s (KA)	40	40	40	40	40	50	50	50
Short-circuit making current Icm 220-500V AC (kA Peak)	105	105	105	105	105	187	187	220	
Short-circuit making current Icm 690V AC (kA Peak)	88,2	88,2	88,2	88,2	88,2	143	187	187	
Mechanical endurance (CO operations)	With maintenance	20000	20000	20000	20000	20000	20000	20000	10000
	Without maintenance	12500	12500	12500	12500	12500	12500	12500	5000
Electrical endurance (CO operations at 440V AC) Without maintenance	10000	10000	10000	10000	10000	8000	8000	5000	

Electronic trip units

GT-E type with Ammeter	LT & ST, -GF
GT-S type with Ammeter, optional communication	LT,ST,I or HI - GF
GT-N type with measurement, optional communication	LT, ST, I or HI, RELT GF, ZSI
GT-H type with measurement & relaying, optional communication	LT or LT+ST,I OR HI, RELT,GFSUM or GFCT,ZSI

EN60947-3 Standard (isolator)

EntelliGuard frame size	G707	G708	G710	G713	G716	GJ20N	GJ25N	GJ32M	
Number of poles	3, 4 ⁽¹⁾								
Rated insulation voltage Ui	1000V								
Rated operational voltage Ue	690V								
Rated impulse withstand voltage Uimp	12								
Rated current In at 50°C	630	800	1000	1250	1600	2000	2500	3200	
Category of use	B								
Short-circuit making current Icm 220-500V AC	143	143	143	143	143	143	143	143	
Mechanical endurance (CO operations at 440V AC)	With maintenance	20000	20000	20000	20000	20000	20000	20000	20000
	Without maintenance	12500	12500	12500	12500	12500	12500	12500	10000
Electrical endurance (CO operations at 440V AC) Without maintenance	6000	6000	6000	6000	6000	8000	8000	5000	

(1) Retrofit frame size 40 available in 3 pole version only
Please consult with your GE representative for ratings not included in this table



N/S1									H	
10			20			30	40		30	40
637	807	1007	1257	1607	2007	2507	3207	2507	3207	
GT07K	GT08K	GT10K	GT13K	GT16K	GG20H	GG25H	GG32M	GG25H	GG32M	
T	T	T	T	T	1	1	2			
Fixed / Draw-out									Fixed / Draw-out	
3, 4 ⁽¹⁾									3, 4 ⁽¹⁾	
1000V									1000V	
12									12	
3									3	
B									B	
690V									690V	
630	800	1000	1250	1600	2000	2500	3200	2500	3200	
630	800	1000	1250	1600	2000	2500	3200	2500	3200	
630	800	1000	1250	1600	2000	2500	3200	2500	3200	
630	800	1000	1250	1600	2000	2500	3200	2500	3200	
630	800	1000	1250	1600	2000	2500	3150	2500	3150	
630	800	1000	1250	1600	2000	2500	3100	2500	3100	
65	65	65	65	65	85	85	100	100	100	
55	55	55	55	55	65	65	100	90	100	
50	50	50	50	50	65	65	85	70	85	
50	50	50	50	50	85	85	100	100	100	
50	50	50	50	50	65	65	100	90	100	
42	42	42	42	42	65	65	85	70	85	
50	50	50	50	50	65	65	85	65	85	
40	40	40	40	40	50	50	50			
105	105	105	105	105	187	187	220	187	220	
88,2	88,2	88,2	88,2	88,2	143	187	187	187	187	
20000	20000	20000	20000	20000	20000	20000	10000	20000	20000	
12500	12500	12500	12500	12500	12500	12500	5000	12000	12000	
10000	10000	10000	10000	10000	8000	8000	5000	6000	5000	

LT & ST, -GF									
LT,ST,I or HI - GF									
LT, ST, I or HI, RELT GF, ZSI									
LT or LT+ST,I OR HI, RELT,GFSUM or GFCT,ZSI									

G707	G708	G710	G713	G716	GJ20N	GJ25N	GJ32M	GJ25N	GJ32M
3, 4 ⁽¹⁾									3, 4 ⁽¹⁾
1000V									1000V
690V									690V
12									12
630	800	1000	1250	1600	2000	2500	3200	2500	3200
B									B
143	143	143	143	143	143	143	143	143	143
20000	20000	20000	20000	20000	20000	20000	20000	20000	20000
12500	12500	12500	12500	12500	12500	12500	10000	12500	10000
6000	6000	6000	6000	6000	8000	8000	5000	8000	5000



EntelliGuard* R

Additional accessories



Description	Cat. No.	Ref. No.
Reduced energy let through switch kit (RELT)	GTURSK	408780 ⁽¹⁾
Testkit	GTUTK20	407999 ⁽²⁾
Conditioning Power supply		
1 Phase 220-230V ⁽³⁾	GMPU1	408790
1 Phase 380-400V ⁽³⁾	GMPU2	408791
1 Phase 240-250/277-290/415V ⁽³⁾	GMPU3	408792
Power supply		
Input 100-240V AC or 100-353V - Output ⁽¹⁾ 24V DC 0.6A	GAPU	408789

(1) 24V DC required for RELT function communications, earth fault, extended GF, date and time added to event log, and display turning ON below 20% load

(2) Should download free Trip Unit Toolkit Software from from: ex.geindustrial.com

(3) Obligatory when a fully functioning measurement unit is required

Request for quotation form

Retrofit / Retrofit of ME07 with EntelliGuard* R Breaker

Section 1 - Breaker

Serial number of breaker						
Frame type	<input type="checkbox"/> N (Up to 415V)	<input type="checkbox"/> S1/S	<input type="checkbox"/> H			
Sub frame size	<input type="checkbox"/> 10	<input type="checkbox"/> 20	<input type="checkbox"/> 30	<input type="checkbox"/> 40	<input type="checkbox"/> 50	<input type="checkbox"/> 60
Frequency (Hz)	<input type="checkbox"/> 50	<input type="checkbox"/> 60				
Current rating (A)	<input type="checkbox"/> 250	<input type="checkbox"/> 400	<input type="checkbox"/> 630	<input type="checkbox"/> 800	<input type="checkbox"/> 1000	<input type="checkbox"/> 1250
	<input type="checkbox"/> 1600	<input type="checkbox"/> 2000	<input type="checkbox"/> 2500	<input type="checkbox"/> 3200	<input type="checkbox"/> 4000	<input type="checkbox"/> 5000
	<input type="checkbox"/> 6400					
Number of poles	<input type="checkbox"/> 3 Pole			<input type="checkbox"/> 4 Pole		
Ultimate short circuit rating Icu/Ics (kA)	<input type="checkbox"/> 30	<input type="checkbox"/> 35	<input type="checkbox"/> 40	<input type="checkbox"/> 50	<input type="checkbox"/> 55	<input type="checkbox"/> 65
Short time withstand Icw (kA)	<input type="checkbox"/> 30	<input type="checkbox"/> 35	<input type="checkbox"/> 40	<input type="checkbox"/> 50	<input type="checkbox"/> 55	<input type="checkbox"/> 65
Neutral	<input type="checkbox"/> Left		<input type="checkbox"/> Right			
Neutral rating in %	<input type="checkbox"/> 50			<input type="checkbox"/> 63		<input type="checkbox"/> 100
Device type	<input type="checkbox"/> Circuit breaker			<input type="checkbox"/> Disconnecting switch		
Voltage rating (V)	<input type="checkbox"/> Circuit breaker			<input type="checkbox"/> up to 500V		<input type="checkbox"/> up to 690V
	<input type="checkbox"/> Disconnecting switch			<input type="checkbox"/> up to 500V		<input type="checkbox"/> up to 690V
Trip unit type	<input type="checkbox"/> bse 3-1 RMS		<input type="checkbox"/> bse 3-2 RMS		<input type="checkbox"/> bse 3-3 RMS	
	<input type="checkbox"/> bse 3-4 RMS		<input type="checkbox"/> bse 3-5 RMS		<input type="checkbox"/> bse 3-6 RMS	
	<input type="checkbox"/> bse 4-1 RMS		<input type="checkbox"/> bse 4-2 RMS		<input type="checkbox"/> bse 4-3 RMS	
	<input type="checkbox"/> bse 4-4 RMS		<input type="checkbox"/> bse 4-5 RMS		<input type="checkbox"/> bse 4-6 RMS	
	<input type="checkbox"/> bse 3-3.1 RMS		<input type="checkbox"/> bse 4-3.1 RMS		<input type="checkbox"/> bse 3-7	
	<input type="checkbox"/> bse 4-7					
Settings on trip unit at site	<input type="checkbox"/> LT Class		<input type="checkbox"/> LT Current		<input type="checkbox"/> ST pickup	
	<input type="checkbox"/> ST delay	<input type="checkbox"/> INST pick-up	<input type="checkbox"/> GF pick up			
	<input type="checkbox"/> GFDelay		<input type="checkbox"/> ZSI-			
Field bus interface	<input type="checkbox"/> Modnet			<input type="checkbox"/> Profibus		
Auxiliary power	<input type="checkbox"/> 60-230V AC			<input type="checkbox"/> 24V DC		
Operation	<input type="checkbox"/> Manual			<input type="checkbox"/> Electrical		

Section 2 - Accessories

Motor operator	<input type="checkbox"/> 24V DC	<input type="checkbox"/> 48VDC	<input type="checkbox"/> 60VDC	<input type="checkbox"/> 110VDC	<input type="checkbox"/> 125VDC	<input type="checkbox"/> 220VDC
	<input type="checkbox"/> 42VAC	<input type="checkbox"/> 110VAC	<input type="checkbox"/> 220VAC	<input type="checkbox"/> 240VAC	<input type="checkbox"/> NA	
Closing coil	<input type="checkbox"/> 24V DC	<input type="checkbox"/> 48VDC	<input type="checkbox"/> 60VDC	<input type="checkbox"/> 110VDC	<input type="checkbox"/> 125VDC	<input type="checkbox"/> 220VDC
	<input type="checkbox"/> 42VAC	<input type="checkbox"/> 110VAC	<input type="checkbox"/> 220VAC	<input type="checkbox"/> 240VAC	<input type="checkbox"/> NA	
Shunt trip	<input type="checkbox"/> 24V DC	<input type="checkbox"/> 48VDC	<input type="checkbox"/> 60VDC	<input type="checkbox"/> 110VDC	<input type="checkbox"/> 125VDC	<input type="checkbox"/> 220VDC
	<input type="checkbox"/> 42VAC	<input type="checkbox"/> 110VAC	<input type="checkbox"/> 220VAC	<input type="checkbox"/> 240VAC	<input type="checkbox"/> NA	
Second shunt trip	<input type="checkbox"/> 24V DC	<input type="checkbox"/> 48VDC	<input type="checkbox"/> 60VDC	<input type="checkbox"/> 110VDC	<input type="checkbox"/> 125VDC	<input type="checkbox"/> 220VDC
	<input type="checkbox"/> 42VAC	<input type="checkbox"/> 110VAC	<input type="checkbox"/> 220VAC	<input type="checkbox"/> 240VAC	<input type="checkbox"/> NA	
UV device	<input type="checkbox"/> 24V DC	<input type="checkbox"/> 48VDC	<input type="checkbox"/> 60VDC	<input type="checkbox"/> 110VDC	<input type="checkbox"/> 125VDC	<input type="checkbox"/> 220VDC
	<input type="checkbox"/> 42VAC	<input type="checkbox"/> 110VAC	<input type="checkbox"/> 220VAC	<input type="checkbox"/> 240VAC	<input type="checkbox"/> NA	
Number of auxiliary contacts	<input type="checkbox"/> NO -			<input type="checkbox"/> NC -		
Drive type	<input type="checkbox"/> fv1	<input type="checkbox"/> fv2	<input type="checkbox"/> fv3.1	<input type="checkbox"/> fv3.2	<input type="checkbox"/> fv4	<input type="checkbox"/> fv6
	<input type="checkbox"/> fv7.1					
Spring charge indication ⁽¹⁾	<input type="checkbox"/> yes		<input type="checkbox"/> no			
Bell alarm contact ⁽¹⁾	<input type="checkbox"/> yes		<input type="checkbox"/> no			
Breaker position indicator	<input type="checkbox"/> yes		<input type="checkbox"/> no			
Locks provided ⁽¹⁾	<input type="checkbox"/> Ronis		<input type="checkbox"/> Castell		<input type="checkbox"/> Door interlock	
	(Please provide, quantity, part number and interlocking Logic)					
Ready to close indication ⁽¹⁾	<input type="checkbox"/> yes		<input type="checkbox"/> no			
Any other accessories ⁽¹⁾	<input type="checkbox"/> Door Escutcheon IP54					

Section 3 - Installation details

Type of termination	<input type="checkbox"/> Top horizontal & bottom horizontal		<input type="checkbox"/> Top horizontal & bottom vertical			
	<input type="checkbox"/> Top vertical & bottom horizontal		<input type="checkbox"/> Top vertical & bottom vertical			
Size of incoming busbar	<input type="checkbox"/> Copper bus bar of size mm ² (Please specify number of runs)					
Sizing of outgoing busbar	<input type="checkbox"/> Copper bus bar of size mm ² (Please specify number of runs)					
Neutral bus position / size	<input type="checkbox"/> Copper bus bar of size mm ² (Please specify number of runs)					
Details of separation sheet provided	<input type="checkbox"/> Please attach sketch with detailed dimensions of the isolation sheet & mounting arrangement with photograph					
Front door	<input type="checkbox"/> Please attach sketch of front door with detailed dim / paint colour info & mounting arrangement with photograph					

Any other specific requirements (Not captured above please specify)
 Note: For Retrofit: Fill in all details in section -1 & 2, for Retrofit: Fill in all 3 sections
 (1) indicates that these accessories cannot be supplied as factory fitted



GE Industrial Solutions is a first class global supplier of low and medium voltage products including wiring devices, residential and industrial electrical distribution components, automation products, enclosures and switchboards. Demand for the company's products comes from wholesalers, installers, panelboard builders, contractors, OEMs and utilities worldwide.

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