

MTS & ATS from
63A to 1600A

Transfer switch solutions



:hager

A reliable solution for your application



In modern commercial buildings and industrial complexes continuous power supply is vital for critical loads such as essential lighting, computers and continuously operating industrial equipment. Our Automatic Transfer Switches (ATS) are designed to suit any application that requires transferring essential loads from one power source to another.

The design of our transfer switch guarantees the continuity of the power supply. Its stable positions allow energy consumption to be minimised whilst ensuring maximum immunity to electrical network disturbances, making this a truly robust and reliable solution.

Continuous supply under all circumstances

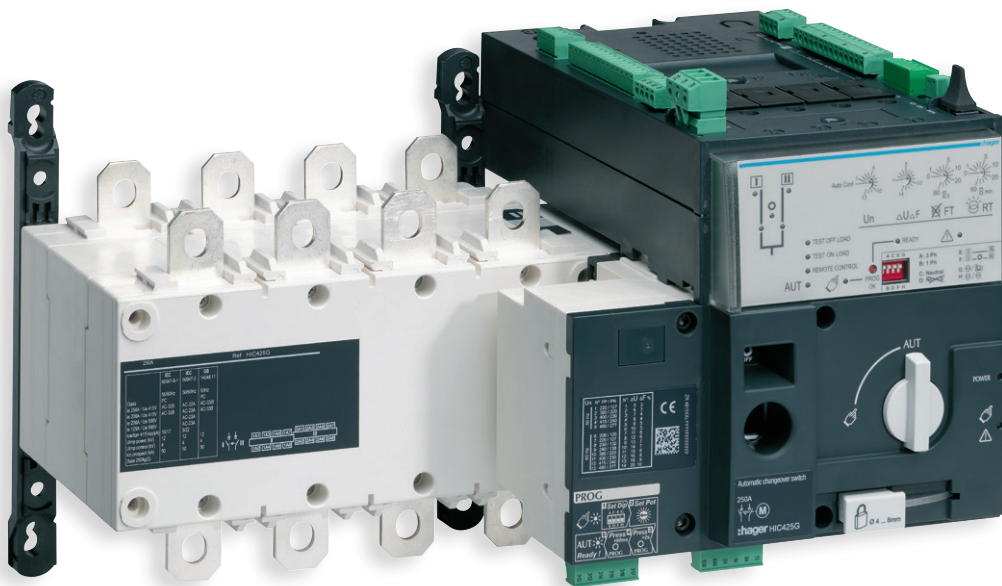
The functions and design of our ATS range all work towards one key objective: ensuring the supply of loads downstream, via rapid transfer from one source to another. These products have three operating modes, which increase the ability to select the most reliable source under all circumstances. The products only require a power supply when changing position, which increases their reliability and service life.

Simplicity ensures safety

Thanks to their on-load switching capacity, coupled with their Auto and Manual operating modes, the ATS are simple to use and 100% secure. The selection of the power supply source to the load can be achieved in three different ways:

- using the front operation handle (Manual mode),
- remotely, using the input for position control commands (Auto mode),
- automatically, depending on the availability of sources (Auto mode).

To ensure technical interventions downstream of the product are as secure as possible, ATS have a high-performance padlocking function which is an efficient addition to the breaking functions.



Motorised version (RTS) or automatic version (ATS)

The HIB4xxM (RTS) range requires an external controller to provide them with switching commands. However, the HIC4xxx (ATS) versions integrate an automatic controller. This means that the products themselves monitor the availability of sources, start the generators if necessary and automatically switch to the available source.

Our range

Your benefit

01

Plug and play solution

All automatic versions have an integrated auto-configuration function which enables the automatic setting of nominal voltages and frequencies for the network. Simply cable the product, which will then measure the values and record them.

02

Quick installation

All ATS products are factory assembled and require minimum cabling, thereby simplifying the installation and reducing the amount of time required to be operational. For HIC4xxG, configuration adjustment is achieved via potentiometers, requiring only a screwdriver and a few minutes.

03

Manual emergency control

In the event of an emergency, it can be controlled quickly, easily and safely using an emergency handle. This handle is very easy to fit and no motorised or automatic transfer can take place when the handle is in place.

04 Continuous information on product availability

Products in the ATS range are equipped with a Watchdog relay which constantly monitors your product, thereby securing your installation. This relay informs you of the capacity of your product to switch correctly following an electrical or automatic order.

06 Specific genset functions

HIC4xxG and HIC4xxE can be utilised for switching between transformer and generator power supply sources. They have a genset run command and integrate ON load and OFF load test functions. These functions ensure there is a good connection between the source transfer switch and the generator, and that these are both operating correctly. The HIC4xxE also allows scheduled starts to be programmed for these different tests.

05 Robust products

All ATS product versions are designed and tested in accordance with standard IEC 60947-6-1, the benchmark for transfer switches offering optimum design and operating features.

07 Motorised version (RTS) or automatic version (ATS)

The HIB4xxM (RTS) range requires an external controller to provide them with switching commands. However, the HIC4xxx (ATS) versions integrate an automatic controller. This means that the products themselves monitor the availability of sources, start the generators if necessary and automatically switch to the available source.

Description

Manual transfer switches allow manual switching, changeover switching or ON load power circuit permutation. For safety breaking.

- 4 pole
- Mounting on perforated plates or crossbars.
- Lockable in position: I, O or II

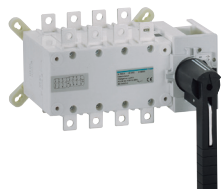
HI452, HI454 and HI456 can be mounted in quadro M distribution boards.

Complies with EN 60947-3

Connection with terminals

For replacement parts, please contact customer service on 1300 850 253

*Please check availability with your local Hager sales office at time of order



HI452

Manual transfer switches

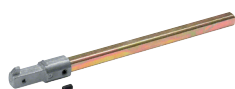
Description	In/A	Cat ref.
4 pole	160	HI452*
Non-modular design	250	HI454*
	400	HI456*
	630	HI458*
	800	HI460*
	1250	HI462*
	1600	HI464*



HZI002

Manual transfer switch accessories

Description	Characteristics	Cat ref.
Interlocked handle for use with extension shaft - 3 positions: 0-I-II - Locked with 3 padlocks NOTE: does not replace rotary handle	160 to 630A	HZI002*
	800 to 1600A	HZI003*
Extension Shaft - 320mm	160 to 630A	HZC102
	800 to 1600A	HZC106
Auxiliary contacts	125 to 1600A, 1 NO + 1 NC	HZ160*
Terminal shrouds	4P In/A: 125 to 200A	HZC202*
	4P In/A: 200 to 400A	HZC204*
	4P In/A: 400 to 630A	HZC206*
Terminal covers	for switches 250 to 400A	HZI202*
	for switches 630A	HZI203*
	for switches 800 to 1250A	HZI204*
	for switches 1600A	HZI205*
Busbars	for switches 250A	HZ157*
	for switches 400A	HZ158*
	for switches 630A	HZ159*
	for switches 800 to 1000A	HZ162*
	for switches 1250A	HZ163*
	for switches 1600A	HZ164*



HZC102



HZ160



HZC202

Automatic transfer switches

63A to 1600A

Selection guide



Type of transfer	HIC4xxA	HIB4xxM	HIC4xxG	HIC4xxE
Emergency manual transfer via handle	•	•	•	•
Remote controlled transfer using dry contact piloting (RTSE)		•		
Automatic transfer (ATSE)	•		•	•
Number of poles				
4P	•	•	•	•
Supply type				
230 VAC single power supply		•		
230 VAC dual power supply	•		•	•
Connection of remote control interface				
Remote display D10			•	
Remote control interface D20				•
Automatic controller configuration				
Configuration by potentiometers and dip switches	•		•	
Configuration by screen and keyboard				•
Auto-configuration of the voltage and frequency			•	•
Application				
Generator - Generator applications		• (1)		
Network - Generator application	•	• (1)	•	•
Network - Network application	•	• (1)	•	•
Specific functions for gensets				
On load test	•		•	•
Off load test			•	•
Inputs / outputs				
Fixed inputs / outputs	•	•	•	
Configurable inputs / outputs (e.g. watchdog, load shedding)				•
Automatic controller functionalities				
Contact for availability status	•	•	•	•
Control of voltages and frequency	•		•	•
Control of phase rotation			•	•
Phase unbalance control				•
LED display of source availability	•		•	•
LED display of positions			•	•
Display of meters & voltage/frequency measurements				•
Load shedding				•
Display & measure power & energy (with CT option)				•
Supervision (with optional module)				
Scheduling of generator start-up				•
RS485 communication				•
Ethernet communication (optional)				•
Webserver via Ethernet module (optional)				•
Data log				•

(1) using an external controller.

Automatic transfer switches

Automatic transfer switches allow automatic switching, changeover switching or ON load power circuit permutation.
For safety breaking. Can be mounted on perforated plates or DIN rail.

Terminal shrouds

IP2X protection against direct contact with terminals or connecting parts. Perforations allow remote thermographic inspection without removing the shrouds. (1) For complete shrouding at front, rear top and bottom, order qty x 4; if equipped with bridging bars order Qty x 3. (2) For top and bottom shrouding for the front only, order Qty x 2.

Terminal screens

Upstream and downstream protection against direct contact with terminals or connection parts.
For upstream and downstream protection order Qty x 1.

Bridging bars

For bridging power terminals on the upstream or downstream side of the switch. One reference required per ATS.

Voltage tapping and power supply kit

For power supply and voltage measurement. Routing of the conductors is controlled, which means that no specific protective device is necessary for the connections. The kit can be fitted on the top or bottom of the switch.

For replacement parts, please contact customer service on 1300 850 253



HIC416A

Automatic transfer switches

Description	In/A	Cat. ref. with energy mngmt.
4 pole	63	HIC406A*
- 3 positions: 0-I-II	80	HIC408A*
- Lockable in position: 0	100	HIC410A*
- Complies with EN 60947-3	125	HIC412A*
- Connection on copper conductors with collar terminals	160	HIC416A*



HZC218

Terminal shrouds

Description	Characteristics	Cat. ref.
top and bottom - 2 pieces per pack	for HIC4xxA switches	HZC218*



HZ1300

Auxiliary contacts

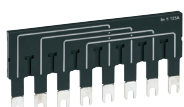
Description	Characteristics	Cat. ref.
1NO + 1NC	for HIC4xxA switches	HZ1300*



HZ1230

Single phase voltage sensing taps

Description	Characteristics	Cat. ref.
For switch control circuit supply	2 conductors per pole	HZ1230*



HZ1400

Bridging bars

Description	Characteristics	Cat. ref.
2 x 4P	for HIC4xxA 63A to 125A	HZ1400*
	for HIC416A	HZ1401*



HZ1210

Sealable cover

Description	Characteristics	Cat. ref.
Sealable cover	for HIC4xxA switches	HZ1210*

Automatic transfer switches

Automatic transfer switches allow automatic switching, changeover switching or ON load power circuit permutation.
For safety breaking. Can be mounted on plain or perforated plates.

Terminal shrouds

IP2X protection against direct contact with terminals or connecting parts. Perforations allow remote thermographic inspection without removing the shrouds. (1) For complete shrouding at front, rear top and bottom, order qty x 4; if equipped with bridging bars order Qty x 3. (2) For top and bottom shrouding for the front only, order Qty x 2.

Terminal screens

Upstream and downstream protection against direct contact with terminals or connection parts.
For upstream and downstream protection order Qty x 1.

Bridging bars

For bridging power terminals on the upstream or downstream side of the switch. One reference required per ATS.

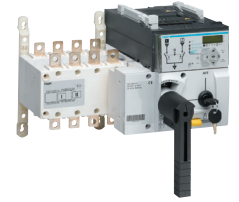
Voltage tapping and power supply kit

For power supply and voltage measurement. Routing of the conductors is controlled, which means that no specific protective device is necessary for the connections. The kit can be fitted on the top or bottom of the switch.

For replacement parts, please contact customer service on 1300 850 253

Automatic transfer switches

Description	In/A	Cat. ref. w/o autom. transf. relay	Cat. ref. with autom. transf. relay	Cat. ref. with energy mngmt.
4 pole - 3 positions: 0-I-II	125	HIB412M*	HIC412G*	HIC412E*
	160	HIB416M*	HIC416G*	HIC416E*
	200	HIB420M*	HIC420G*	HIC420E*
	250	HIB425M*	HIC425G*	HIC425E*
	400	HIB440M*	HIC440G*	HIC440E*
	630	HIB463M*	HIC463G*	HIC463E*
	800	HIB480M*	HIC480G*	HIC480E*
	1000	HIB490M*	HIC490G*	HIC490E*
	1250	HIB491M*	HIC491G*	HIC491E*
	1600	HIB492M*	HIC492G*	HIC492E*



HIC425E

Automatic transfer switch accessories

Description	Characteristics	Cat ref.
Terminal shrouds	4P In/A: 125 to 200A	HZC202*
	4P In/A: 200 to 400A	HZC204*
	4P In/A: 400 to 630A	HZC206*
Remote interfaces	changeover status display	HZI910*
	changeover status and control display	HZI911*
Terminal covers	for switches 125 to 200 A	HZI201*
	for switches 250 to 400A	HZI202*
	for switches 630A	HZI203*
	for switches 800 to 1250A	HZI204*
	for switches 1600A	HZI205*
Busbars	for switches 125 to 200A	HZ156*
	for switches 250A	HZ157*
	for switches 400A	HZ158*
	for switches 630A	HZ159*
	for switches 800 to 1000A	HZ162*
	for switches 1250A	HZ163*
	for switches 1600A	HZ164*



HZC002



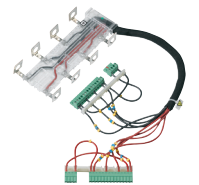
HZI911



HZI205

Voltage tapping and power supply kits

Description	Characteristics	Cat ref.
Voltage tapping and power supply kits	for switches 125 to 200A	HZI410*
	for switches 250A	HZI411*
	for switches 400A	HZI412*
	for switches 630A	HZI413*
	for switches 800/1000A	HZI414*
	for switches 1250A	HZI202*
	for switches 1600A	HZI203*



HZI411

Selection Auto/Manual Key

Description	Characteristics	Cat ref.
	for switches 125 to 200A	HZI010*

Auxiliary contacts

Pre-break and signalling of positions I and II: each reference provides 1 NO/ NC auxiliary contact for positions I and II. possibility to install up to 2 auxiliary contacts for each position.

Remote interfaces

To remotely display source availability and position indication typically used on the front of a panel when the product is enclosed. Interfaces are powered from the ATS transfer switch via the RJ45 connection cable. Max. cable length = 3m

Sealable cover

Prevents access to the configuration of HIB4xxM and HIC4xxG devices (seals supplied).

Control relays

Ensure the automatic control of remotely controlled transfer switches. Characteristics

- Inputs for auxiliary contact position information.
- 3U measurement on network 1 and 1U on network 2.
- 2 programmable inputs for the following functions: test on/off load,

manual retransfer, start/stop transfer cycle.

- Up to 2 programmable outputs for the following functions: source availability information and circuit breaker control.
- 1 relay output for genset control.
- HZI910 or HZI911 remote interfaces are available for transferring data or control to the front panel (only HZI811 version).

Advantages

- Modular products (6 modules, 105mm wide) which can be DIN-rail mounted.

- The products are used with Hager transfer switches, or those using identical technology. They are also compatible with contactor and circuit breaker technologies.

For replacement parts, please contact customer service on 1300 850 253

Auxiliary contacts

Description		Cat ref.
Auxiliary contacts	for switches 125 to 630A	1599 0502*



HZI911

Remote interfaces

Description	Characteristics	Cat ref.
Displays source availability and position indication on the front panel of an enclosure. IP21	For HIB4xxM and HIC4xxG Changeover status display	HZI910*
In addition to the functions of the HZI910, displays measurements and enables control and configuration from the front of a panel. IP21	For HIC4xxE Changeover status and control display	HZI911*



HZI210

Sealable cover

Description	Characteristics	Cat ref.
Sealable cover	For HIB4xxM and HIC4xxG	HZI210*



HZI810

Control relays

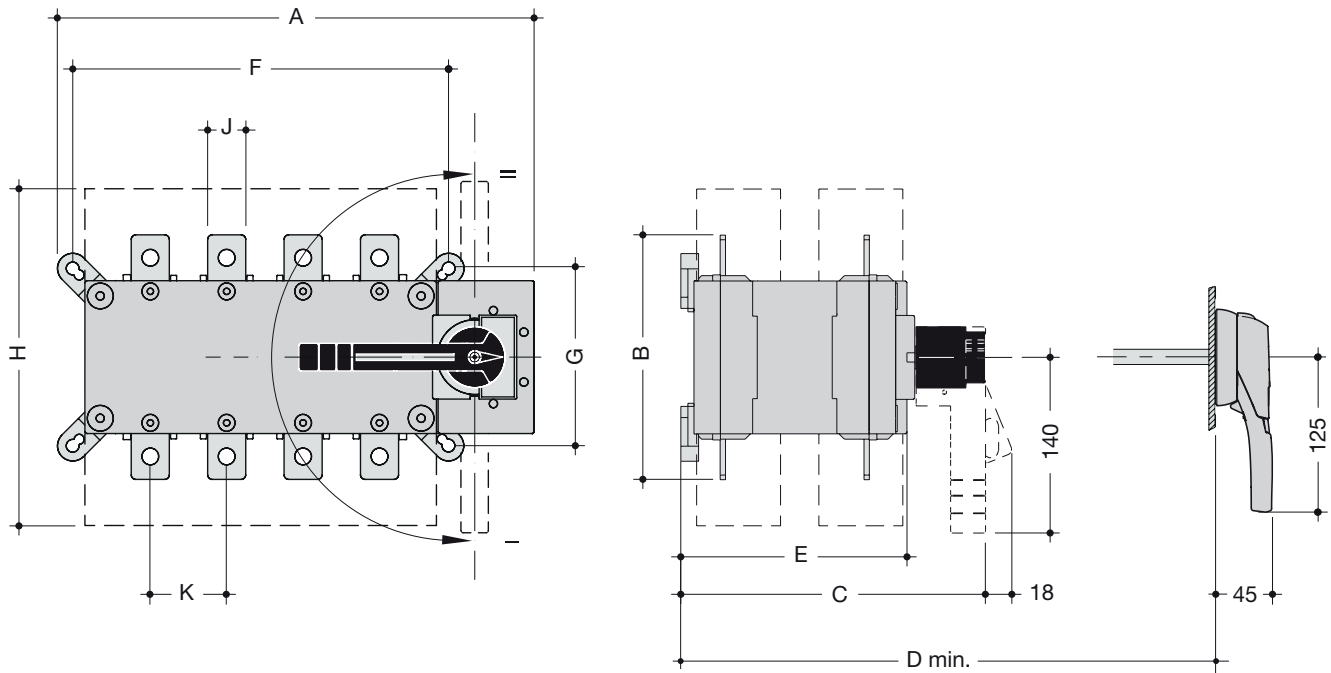
Description	Characteristics	Cat ref.
Supplied from measurement circuit		HZI810*
	can be used with HZI910 or HZI911	HZI811*



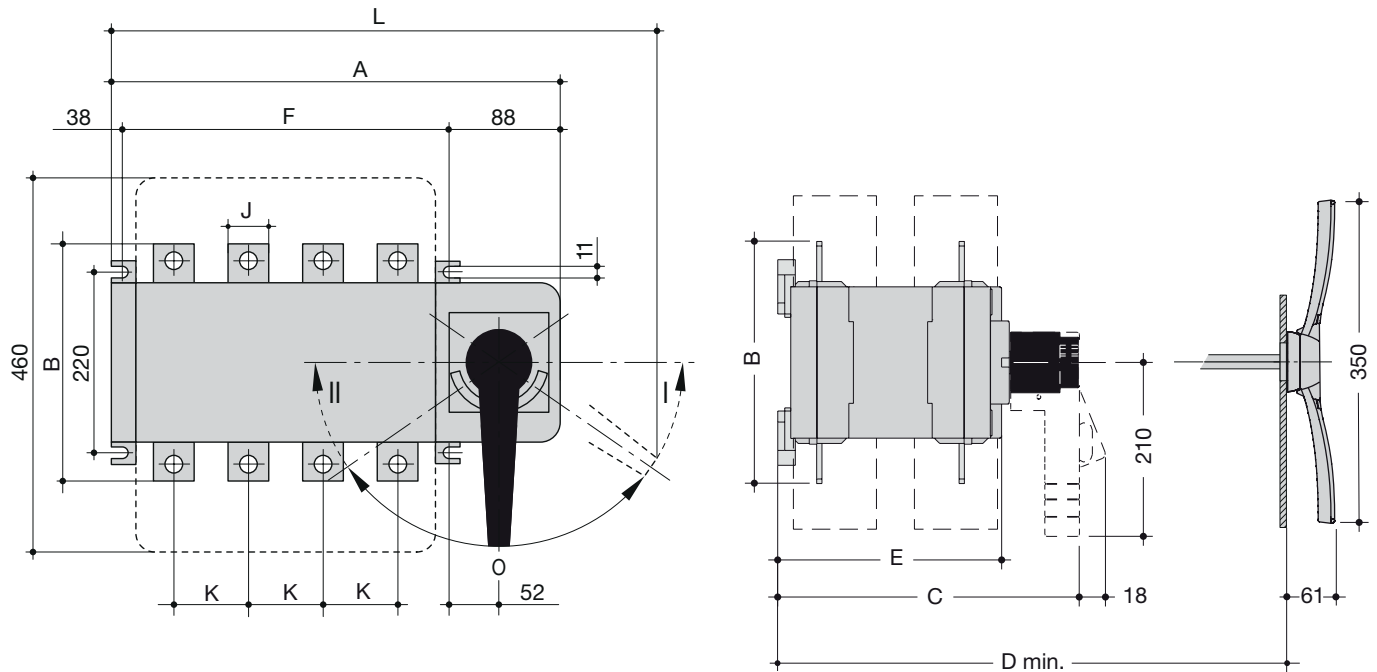
HZI811

Manual transfer switches

HI452, HI454, HI456, HI458



HI460, HI462, HI464



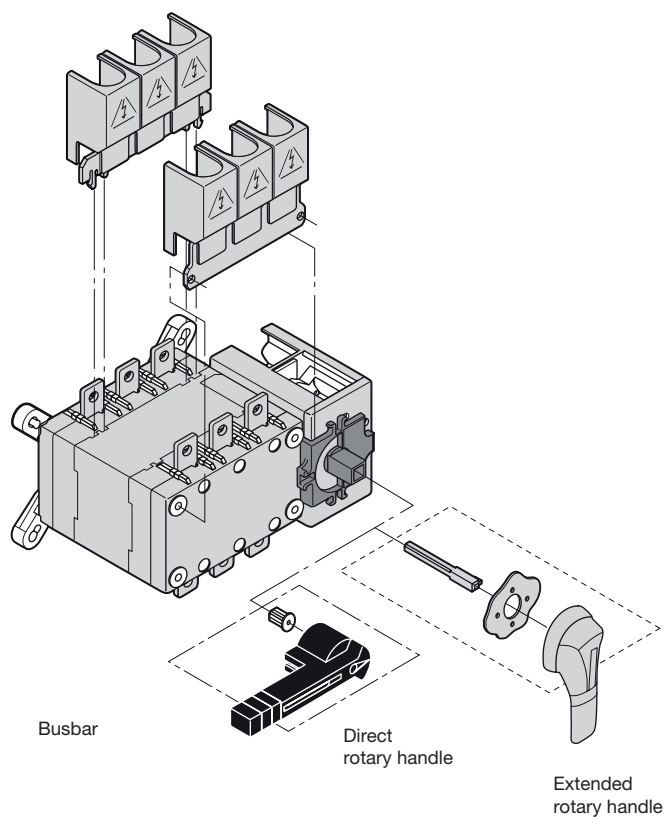
Dimensions (in mm)

	A	B	C	D min.	E	F	G	H	J	K	L
HI452	251	135	218	208	148	186	101	235	20	36	-
HI454	312	160	218	208	148	246	116	280	25	50	-
HI456	312	170	218	208	148	246	116	280	35	50	-
HI458	379	260	295	285	225	306	176	400	45	65	-
HI460	460	320	374	390	302	335	220	460	50	80	609
HI462	592	330	374	390	302	467	220	460	60	120	741
HI464	592	360	374	390	302	467	220	460	90	120	741

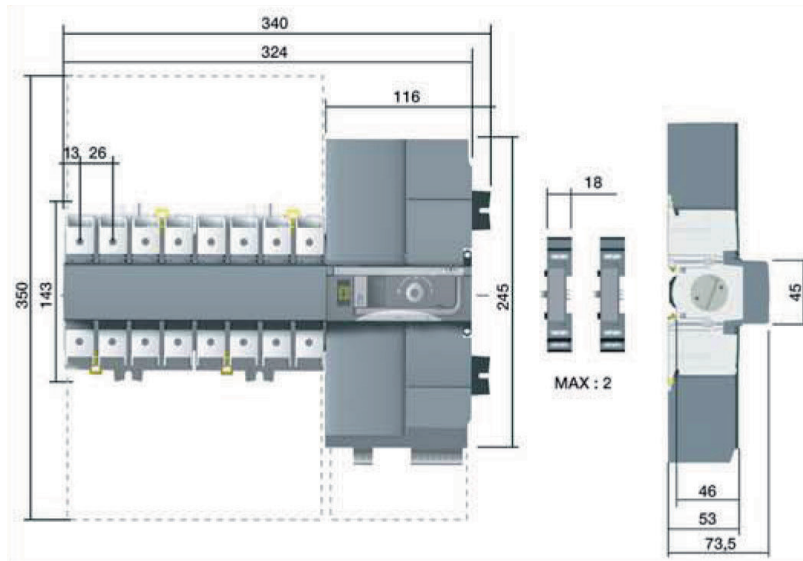
Technical characteristics

	HI452	HI454	HI456	HI458	HI460	HI462	HI464
In	160A	250A	400A	630A	800A	1250A	1600A
Insulation voltage U_i	(V) 800	800	800	1000	1000	1000	1000
Impulse withstand voltage U_{imp}	(kV) 8	12	8	12	12	12	12
Ie AC22, 400V	(A) 160	250	400	630	800	1250	1600
Ie AC23, 400V	(A) 160	250	400	630	800	1250	1600
Operational power AC23A @ 400VM	(kW) 80	132	220	280	450	710	710
Short circuit current with gG DIN fuses	(kA) 100	50	18	70	50	100	100
Associated fuse rated	(A) 160	250	400	630	800	1250	2 x 800
Rated short circuit making capacity I _{cm}	(A peak) 12	17	15.3	30	48	75	86
Rated short circuit withstand current I _{cw}	(kA/1s) 7	9	9	13	26	50	50
Mechanical endurance	(cycles) 10,000	10,000	10,000	5,000	3,000	4,000	4,000
Connection for lugs	(mm ²) 95	150	240	2 x 300	2 x 300	4 x 185	6 x 185

Mounting



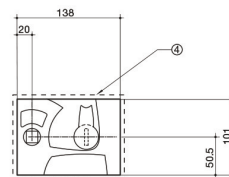
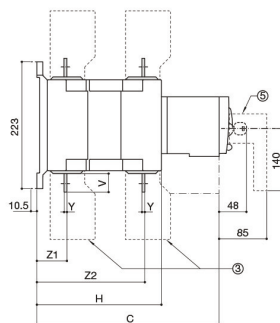
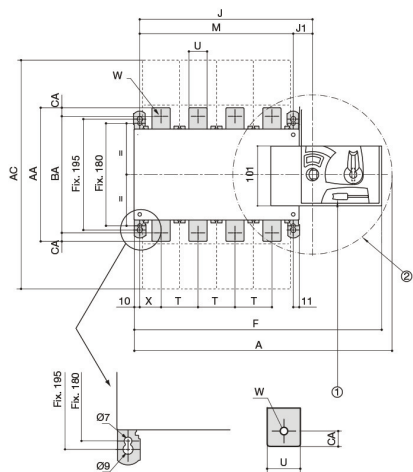
Modular automatic transfer switches



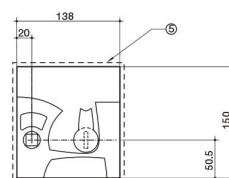
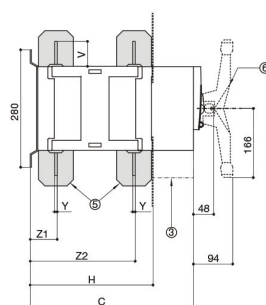
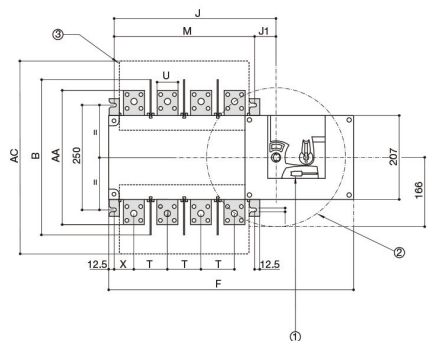
Technical characteristics		HIC406A	HIC408A	HIC410A	HIC412A	HIC416A
Thermal current I _{th} at 40°C		63 A	80 A	100 A	125 A	160 A
Frequencies		50/60Hz	50/60Hz	50/60Hz	50/60Hz	50/60Hz
Thermal current I _{th} at 50°C		63	80	100	110*	125
Thermal current I _{th} at 60°C		50	63	80	100*	125
Thermal current I _{th} at 70°C		40	50	63	80	100
Insulation voltage U _i (V) (power circuit)		800	800	800	800	800
Impulse withstand voltage U _{imp} (kV) (power circuit)		6	6	6	6	6
Insulation voltage U _i (V) (control circuit)		300	300	300	300	300
Impulse withstand voltage U _{imp} (kV) (control circuit)		2.5	2.5	2.5	2.5	2.5
Rated operational currents I_e (A) according to IEC 60947-3						
Rated voltage	Utilisation category	A/B ⁽¹⁾	A/B ⁽¹⁾	A/B ⁽¹⁾	A/B ⁽¹⁾	A/B ⁽¹⁾
415 VAC	AC-21 A / AC-21 B	63/63	80/80	100/100	125/125	160/160
415 VAC	AC-22 A / AC-22 B	63/63	80/80	100/100	125/125	160/160
415 VAC	AC-23 A / AC-23 B	63/63	80/80	100/100	125/125	125/160
690 VAC	AC-21 A / AC-21 B	63/63	80/80	100/100	125/125	160/160
690 VAC	AC-22 A / AC-22 B	63/63	80/80	80/80	100/125	100/125
690 VAC	AC-23 A / AC-23 B	63/63	63/63	80/80	80/80	80/80
Rated operational currents I_e (A) according to IEC 60947-6-1						
415 VAC	AC-31 B	63/63	80/80	100/100	100/125	100/160
415 VAC	AC-32 B	63/63	80/80	100/100	100/125	100/160
415 VAC	AC-33 B	-/63	-/80	-/100	-/125	-/125
Fuse protected short-circuit withstand as per IEC 60947-3						
Prospective short-circuit current (kA rms)		50	50	50	50	40
Associated fuse rating (A)		63	80	100	125	160
Circuit breaker protected short-circuit withstand with any circuit breaker that ensures tripping in less than 0.3s						
Rated short-time withstand current 0.3s I _{cw} (kA rms)		7	7	7	7	7
Rated short-circuit withstand without protection						
Rated short-time withstand current 60ms I _{cw} (kA rms) as per IEC 60947-6-1 at 415 VAC		4	4	4	4	4
Rated peak withstand current (kA peak) as per IEC 60947-3 at 690 VAC		17	17	17	17	17
Connection						
Maximum Cu cable cross-section (mm ²)		10	10	10	10	10
Maximum Cu cable cross-section (mm ²)		70	70	70	70	70
Tightening torque mini / maxi (Nm)		5	5	5	5	5
Switching time (Standard setting)						
I-0 or 0-II (s)		1.2	1.2	1.2	1.2	1.2
Operating Transfer time I - II or II - I (ms)		1.4	1.4	1.4	1.4	1.4
Duration of "electrical blackout" I - II (ms)		150	150	150	150	150
Power supply						
min / max (VAC)		176/288	176/288	176/288	176/288	176/288
Control supply power demand						
Nominal power (VA)		6	6	6	6	6
Max current under 230VAC (A)		30	30	30	30	30
Mechanical characteristics						
Durability (number of operating cycles)		10,000	10,000	10,000	10,000	10,000
Weight - without packaging (kg)		3.5	3.5	3.5	3.5	3.5
Weight - with packaging (kg)		4.2	4.2	4.2	4.2	4.2

Automatic transfer switches

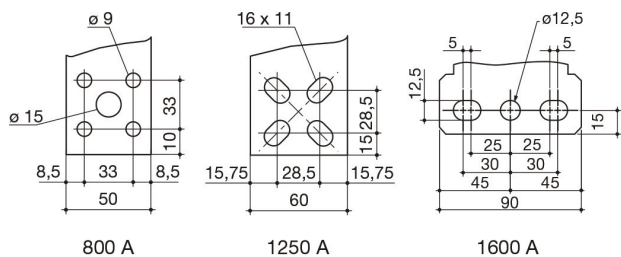
125 to 630 A



800 to 1600 A



Dimensions of connecting lugs



Dimensions (in mm)

Ref.	In (A)	A	B	C	AC	F	H	J	J1	M	T	U	V	W	X	Y	Z1	Z2	AA	BA	CA
Hlx412	125	322.5	-	244	235	322.5	151	184	34	150	36	20	25	9	22	3.5	38	134	135	115	10
Hlx416	160	322.5	-	244	235	322.5	151	184	34	150	36	20	25	9	22	3.5	38	134	135	115	10
Hlx425	250	378	-	244.5	280	378	153	245	35	210	50	25	30	11	33	3.5	39.5	134.5	160	130	15
Hlx440	400	378	-	244.5	280	378	153	245	35	210	50	25	35	11	33	3.5	39.5	134.5	170	140	15
Hlx463	630	437	-	320.5	400	437	221	304	34	270	65	45	50	13	37.5	5	53	190	260	220	20
Hlx480	800	584	370	391.5	461	584	293	386.5	51.5	335	80	50	60.5	-	60	7	66.5	253.5	321	-	-
Hlx490	1000	584	370	391.5	461	584	293	386.5	51.5	335	80	60	65	-	60	7	66.5	253.5	330	-	-
Hlx491	1250	584	370	391.5	461	584	293	386.5	51.5	335	80	60	65	-	60	7	66.5	253.5	330	-	-
Hlx492	1600	716	380	391.5	481	716	293	518.5	51.5	467	120	90	144	-	66	8	67.5	253.5	288	-	-

Technical characteristics	HIB412M	HIB416M	HIB420M	HIB425M	HIB440M	HIB463M	HIB480M	HIB490M	HIB491M	HIB492M
	HIC412G	HIC416G	HIC420G	HIC425G	HIC440G	HIC463G	HIC480G	HIC490G	HIC491G	HIC492G
	HIC412E	HIC416E	HIC420E	HIC425E	HIC440E	HIC463E	HIC480E	HIC490E	HIC491E	HIC492E
Thermal current I _{th} at 40°C	125A	160A	200A	250A	400A	630A	800A	1000A	1250A	1600A
Insulation voltage U _i (V)	800	800	800	1000	1000	1000	1000	1000	1000	1000
Impulse withstand voltage U _{imp} (kV)	8	8	8	12	12	12	12	12	12	12

Rated operational currents I_e (A) according to IEC 60947-3

Rated voltage	Utilisation category	A/B ⁽¹⁾	A/B ⁽¹⁾	A/B ⁽¹⁾	A/B ⁽¹⁾	A/B ⁽¹⁾	A/B ⁽¹⁾	A/B ⁽¹⁾	A/B ⁽¹⁾	A/B ⁽¹⁾	A/B ⁽¹⁾
415 VAC	AC-20 A / AC-20 B	125/125	160/160	200/200	250/250	400/400	630/630	800/800	1000/1000	1250/1250	1600/1600
415 VAC	AC-21 A / AC-21 B	125/125	160/160	200/200	250/250	400/400	630/630	800/800	1000/1000	1250/1250	1600/1600
415 VAC	AC-22 A / AC-22 B	125/125	160/160	200/200	250/250	400/400	630/630	800/800	1000/1000	1250/1250	1600/1600
415 VAC	AC-23 A / AC-23 B	125/125	160/160	200/200	200/200	400/400	630/630	800/800	1000/1000	1250/1250	1250/1250
500 VAC	AC-20 A / AC-20 B	125/125	160/160	200/200	250/250	400/400	630/630	800/800	1000/1000	1250/1250	1600/1600
500 VAC	AC-21 A / AC-21 B	125/125	160/160	200/200	250/250	400/400	630/630	800/800	1000/1000	1250/1250	1600/1600
500 VAC	AC-22 A / AC-22 B	125/125	160/160	200/200	200/200	200/400	500/500	630/630	800/800	1000/1000	1600/1600
500 VAC	AC-23 A / AC-23 B	80/80	80/80	80/80	200/200	200/200	400/400	400/400	630/630	800/800	1000/1000
690 VAC	AC-20 A / AC-20 B	125/125	160/160	200/200	250/250	400/400	630/630	800/800	1000/1000	1250/1250	1600/1600
690 VAC	AC-21 A / AC-21 B	125/125	160/160	200/200	200/200	200/200	500/500	800/800	1000/1000	1250/1250	1600/1600
690 VAC	AC-22 A / AC-22 B	125/125	125/125	125/125	160/160	160/160	400/400	630/630	800/800	1000/1000	1000/1000
690 VAC	AC-23 A / AC-23 B	63/80	63/80	63/80	125/125	125/125	400/400	400/400	630/630	800/800	800/800
220 VDC ⁽²⁾	DC-20 A / DC-20 B	125/125	160/160	200/200	250/250	400/400	630/630	800/800	1000/1000	1250/1250	1600/1600
220 VDC ⁽²⁾	DC-21 A / DC-21 B	125/125	160/160	200/200	250/250	250/250	630/630	800/800	1000/1000	1250/1250	1250/1250
220 VDC ⁽²⁾	DC-22 A / DC-22 B	125/125	160/160	200/200	250/250	250/250	630/630	800/800	1000/1000	1250/1250	1250/1250
220 VDC ⁽²⁾	DC-23 A / DC-23 B	125/125	125/125	125/125	200/200	200/200	630/630	800/800	1000/1000	1250/1250	1250/1250
440 VDC ⁽²⁾	DC-20 A / DC-20 B	125/125	160/160	200/200	250/250	400/400	630/630	800/800	1000/1000	1250/1250	1600/1600
440 VDC ⁽²⁾	DC-21 A / DC-21 B	125/125	125/125	125/125	200/200	200/200	630/630	800/800	1000/1000	1250/1250	1250/1250
440 VDC ⁽²⁾	DC-22 A / DC-22 B	125/125	125/125	125/125	200/200	200/200	630/630	800/800	1000/1000	1250/1250	1250/1250
440 VDC ⁽²⁾	DC-23 A / DC-23 B	125/125	125/125	125/125	200/200	200/200	630/630	800/800	1000/1000	1250/1250	1250/1250

Rated operational currents I_e (A) according to IEC 60947-6-1

415 VAC	AC-31 B	125	160	200	250	400	630	800	1000	1250	1600
415 VAC	AC-32 B				200	400	500	800	1000	1250	1600
415 VAC	AC-33 B				200	200	400	800	800	800	1000

Fuse protected short-circuit withstand as per IEC 60947-3

Prospective short-circuit current (kA rms)	100	100	50	50	50	50	50	100	100	100
Associated fuse rating (A)	125	160	200	250	400	630	800	1000	1250	2x800

Circuit breaker protected short-circuit withstand with any circuit breaker that ensures tripping in less than 0.3s

Rated short-time withstand current 0.3s I _{cw} (kA rms)	12	12	12	15	15	17	47	64	64	78
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Rated short-circuit withstand without protection

Rated short-time withstand current 60ms I _{cw} (kA rms) as per IEC 60947-6-1 at 415 VAC				10 ⁽³⁾	10 ⁽³⁾	12.6	16	20	25	32
Rated short-time withstand current 1ms I _{cw} (kA rms) as per IEC 60947-3 at 415 VAC	7	7	7							
Rated short-time withstand current 1ms I _{cw} (kA rms) as per IEC 60947-3 at 690 VAC				8	8	10	26	35	35	50
Rated peak withstand current (kA peak) as per IEC 60947-3 at 690 VAC	20	20	20	30	30	45	55	55	80	110

Connection

Maximum Cu cable cross-section (mm ²)	35	50	70	95	185	2 x 150	2 x 185	2 x 240		
Minimum Cu busbar cross-section (mm ²)						2 x 30 x 5	2 x 50 x 5	2 x 50 x 5	2 x 60 x 5	2 x 80 x 5
Maximum Cu cable cross-section (mm ²)	50	95	120	150	240	2 x 300	2 x 300	4 x 185	4 x 185	6 x 185
Maximum Cu busbar width (mm)	25	25	25	32	32	50	63	63	63	100
Tightening torque mini / maxi (Nm)	9/13	9/13	9/13	20/26	20/26	20/26	20/26	20/26	20/26	40/45

Switching time (Standard setting)

I - II or II - I (s)	0.75	0.75	0.75	1.3	1.3	1.3	2.6	2.6	2.6	2.6
I-0 or 0-II (s)	0.45	0.45	0.45	0.85	0.85	0.85	1.6	1.6	1.6	1.6
Duration of "electrical blackout" I - II (s)	0.3	0.3	0.3	0.6	0.6	0.6	1.5	1.5	1.5	1.6

Power supply

min / max (VAC)	166/332	166/332	166/332	166/332	166/332	166/332	166/332	166/332	166/332	166/332
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Control supply power demand

Power supply 230 VAC inrush / nominal (VA) - ATyS	184/92	184/92	184/92	275/115	275/115	276/150	460/184	460/184	460/184	460/230
Power supply 230 VAC inrush / nominal (VA) - ATyS d, t, g, p	206/114	206/114	206/114	298/137	298/137	298/172	482/206	482/206	482/206	482/252

Mechanical characteristics

Durability (no. of operating cycles)	10,000	10,000	10,000	8,000	8,000	5,000	4,000	4,000	4,000	3,000
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(1) Category with index A = frequent operation - Category with index B = infrequent operation.

(2) 3-pole device with 2 pole in series for the "+" and 1 pole for the "-". 4-pole device with 2 poles in series by polarity.

(3) At 30ms.



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