ACB hw+

Smart. Safe. Simple.

:hager

A new era in cirucit protection.

As your electrical solutions partner, the safe supply of power will always be our top priority. Decades of experience, and an attentive ear for our customers, has made it possible for us to develop our new hw+ range of Air Circuit Breakers (ACB's).

Meeting all your requirements:
Maximum power with minimum volume and a completely unique user experience.

The safety requirements for electrical systems are becoming increasingly stringent due to more stricter standards and more intelligent installations.

Our new ACB range is designed to meet these evolving demands, offering maximum protection against events such as short circuits, ground faults or overloads. With enhanced connectivity and customisation through an extensive accessory range, Hager ACBs provide safer, smarter, and more efficient energy management for switchboards and electrical systems.

But that's not all: with the Hager Power setup software and the new Hager Power touch app - commissioning, operating and maintaining becomes easier than ever. These digital tools optimise workflows, providing complete visibility and control over your power distribution system.

Customised for you.

Whether you're an electrical consultant, maintenance electrician or switchboard builder, our hw+ ACB's offer all the features you need to improve system design, construction and operation, in every sector.

Hotel

Retail

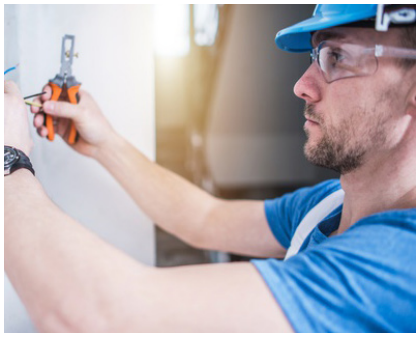
Electrical project requirements are versatile across the market. With the hw+ range, Hager combines everything you could want from an ACB: from simple planning, easy commissioning and smart operation to maximum scalability for your projects.

Office

Healthcare

Education

Benefits



Electrical contractors:

– Easy and fast access to technical documentation via the QR code on the device
– Commissioning report generated by Hager Power setup software
– Customer trust assured by the trip test command available with the sentinel Energy trip unit

Operators:

– User-friendly Hager Power touch app
– Electrical safety: monitor voltage, current, power, energy consumption, and fault events without touching the electrical distribution board
– Electrical safety: user-friendly display, easy to handle
– Easy and fast access to technical documentation via the QR code on the device

Facility managers:

– User-friendly Hager Power touch app
– Electrical safety: monitor the voltage, current, power and energy consumption and faults events without touching the electrical distribution board
– Electrical safety: restore power after a shutdown from a safer distance

Electrical consultants:

– Advanced protection & compliance
– Built-in safety
– Flexibible & scalable design
– Simplified commissioning & maintenance
– Energy efficiency & optimisation (supporting power quality monitoring and load optimisation)

Switchboard builders:

– Time saving thanks to pre-assembled circuit breaker
– Tool-free mounting of coils
– quickconnect terminal blocks
– Faster, simpler assembly & installation
- Unmatched flexibility & customisation
– Dedicated support

Overview to hw+.

HW1
400–1600 A

HW2
630–2500 A

Every electrical installation comes with its own requirements. To meet any challenge, the hw+ range offers you the appropriate product to master every demand.

Product types

- Air circuit breaker
- Switch-disconnector

Available versions

- Withdrawable
- Fixed

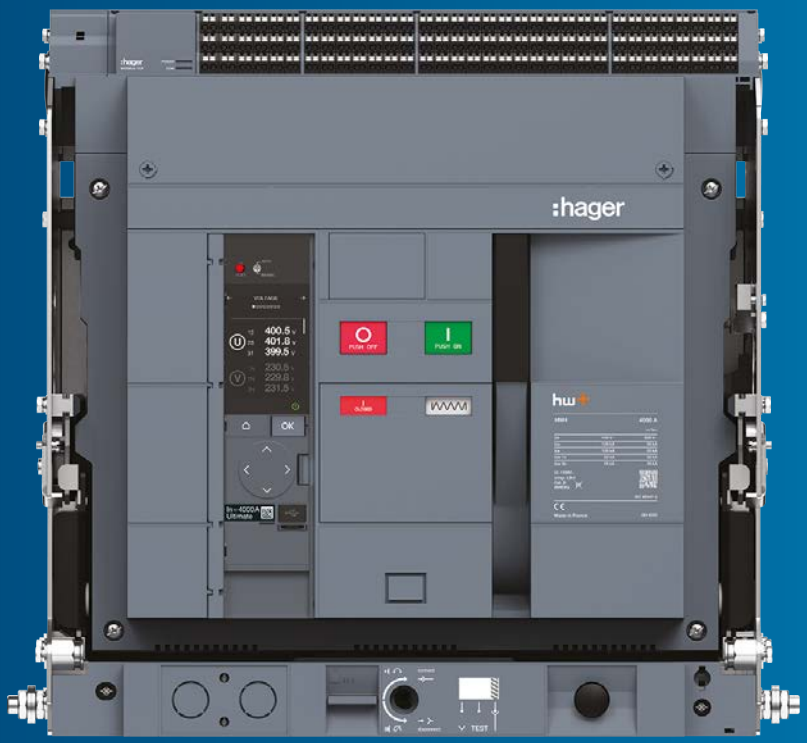
Full range of accessories

- Control & command
- Signalling
- Locking
- Interlocking
- Insulation
- Connection

Different Trip Units

- “sentinel” provides basic protection (LI, LSI, LSIG)
- sentinel Energy provides advanced protection (LSI, LSIG) and includes measurement and communication

HW4
1000–4000 A

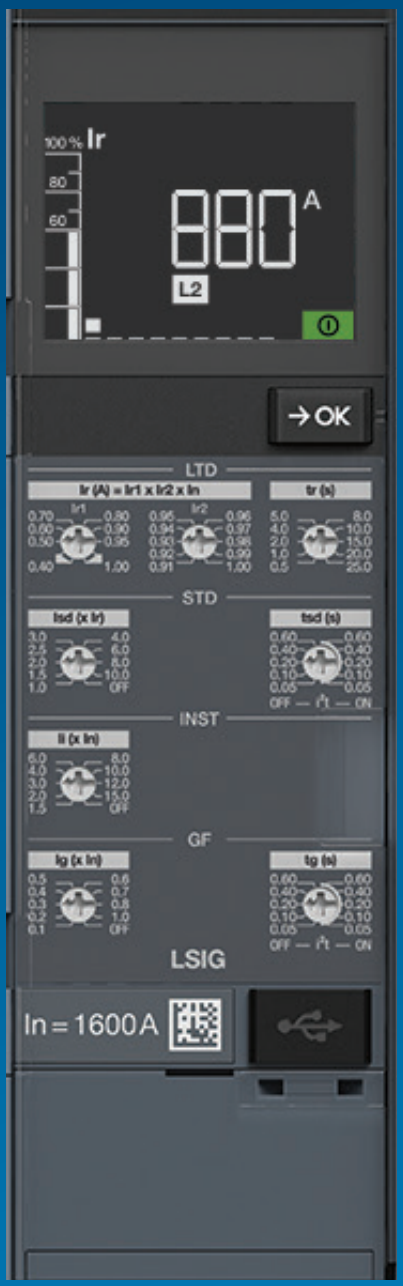


hw+ ACB overview

Rated current (In)	400 A	630 A	800 A	1000 A	1250 A	1600 A	2000 A	2500 A	3200 A	4000 A
HW1 N: 42 kA	Icu = Ics = Icw									
HW1 M: 55 kA	Icu = Ics = Icw									
HW1 E: 66 kA	Ics = Icw = 55 kA									
HW2 M: 55 kA				Icu = Ics = Icw						
HW2 E: 66 kA				Icu = Ics = Icw						
HW2 S: 100 kA				Ics = Icw = 85 kA						
HW4 E: 66 kA						Icu = Ics = Icw				
HW4 S: 85 kA						Icu = Ics = Icw				
HW4 P: 120 kA						Ics = 100 kA, Icw= 85 kA				

Two trip units.

Hager ACB hw+ with sentinel:
available in LI, in LSI or in LSIG version.



The hw+ ACB range covers all your protection needs with two trip units.

While the sentinel trip unit provides all the features for conventional applications, the sentinel Energy trip unit offers advanced protection and control functions, making it the premium choice for particularly demanding requirements.

Traditional protections:
– Long-time overcurrent protection (L or ANSI 49)
– Short-time overcurrent protection (S or ANSI 50TD/51)
– Instantaneous overcurrent protection (I or ANSI 50)
– Ground fault protection (G or ANSI 50N/51N - LSIG trip unit)
– Neutral pole protection (4P ACBs)

Other functions:
– Optional OAC module
– ZSI protection available

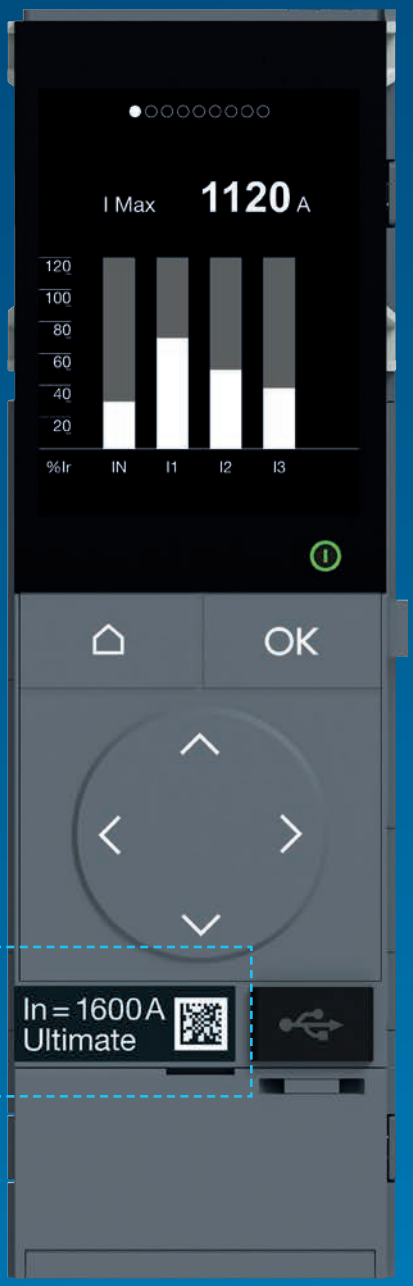
Hager ACB hw+ with sentinel Energy: available in LSI or in LSIG version.

Advanced protections:
– IDMTL overcurrent protection (IEC 60255-151) ● ● ● ● ●
– Undervoltage protection (ANSI 27) ● ●
– Overvoltage protection (ANSI 59) ● ●
– Underfrequency protection (ANSI 81L) ● ●
– Overfrequency protection (ANSI 81H) ● ●
– Reverse active power protection (ANSI 32R) ● ●
– Current unbalance protection (ANSI 46) ● ●
– Voltage unbalance protection (ANSI 47) ● ●

Advanced alarms:
– 12 custom alarms ● ● ● ● ●
– DIP and SWELL alarms ● ● ●
– Optional customisable OAC module

Metering functions:
– Current, voltage, frequency, phase sequence ● ● ● ● ●
– Power & energy (Accuracy class 1 according to EN 61557-12)
– Demand power & current ● ● ● ● ●
– Power Factor and cosϕ ● ● ● ● ●
– Total Harmonic Distorsion THD V, THD I, THD IN ● ● ● ●
– Multi-tariff energy counters (up to 8 tariff slots) ● ● ●
– Individual harmonics up to rank 40 ● ●

Communication:
Modbus-RTU or Modbus-TCP (optional module)
Control functions:
– Closing/opening command
– Dual protection management



Hager ACB hw+ with sentinel Energy gives you 5 different versions of rating plugs to achieve various functions.

- ● Standard
- ● Meter plus
- ● Harmonic
- ● Advanced
- ● Ultimate

Customise your rating plugs as required. Install calibration card of the rating plug in this slot.

The choice is yours.

hw+ sentinel: the flexible one

The trip unit sentinel manages to combine all the functions and tools you need in just one system thanks to its intelligent design. This gives you flexibility in reacting to changes in your distribution system at any time. The LCD-display and intuitive navigation views make its operation child's play. All protection settings can be easily carried out directly on the trip unit.

Compact size

Secure and easy-to-use trip units

Plug & Play Rating Plug

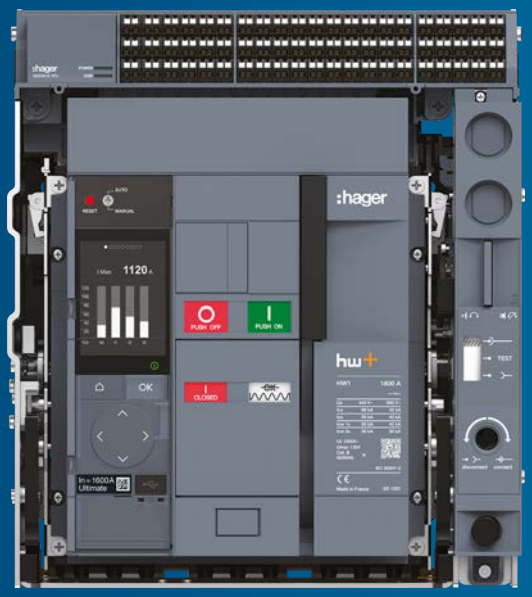
Output alarm contacts

Easy commissioning via software

Warnings and trip alarms

Easy and safe mounting of accessoires

Easy locking and interlocking



hw+ sentinel Energy: the smart one

The trip unit sentinel Energy is a high-performance powerhouse that brings your user experience to the next level. The trip unit and the powerful coloured TFT display offer you even more possibilities in the operations. In addition to all the features of the trip unit sentinel, the trip unit sentinel Energy also offers communication, advanced protections, alarms, metering and control functions, and is therefore suitable for particularly high demands.

Bluetooth connected*

Metering functions*

Advanced protections*

Modbus communication*

Advanced alarms*

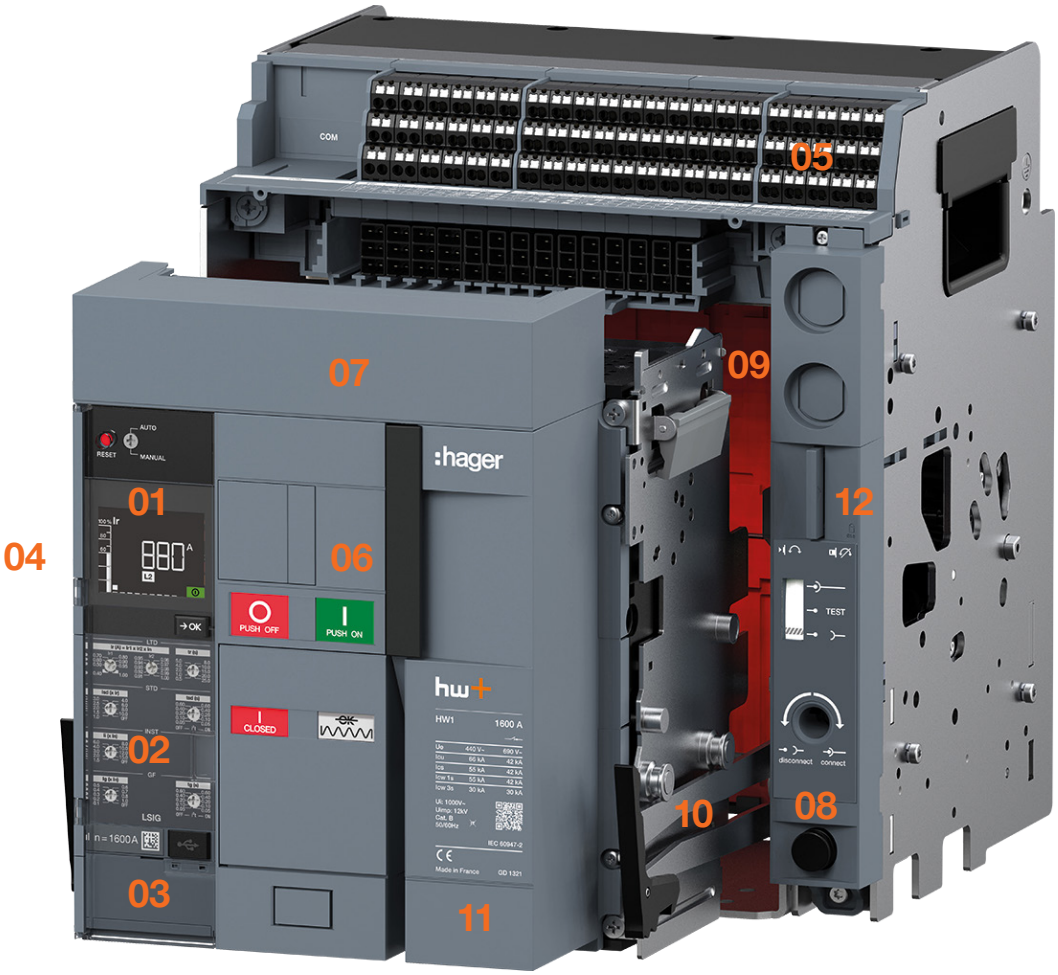
Control functions*

Easy maintenance

*only integrated in ACB sentinel Energy

hw+ sentinel: the flexible one.

The hw+ sentinel from Hager has a single goal: to maximise the reliability of your plant. It combines protection and user-friendly functions with flexible connection options and unbeatable product quality in a highly robust, yet uniquely compact design.

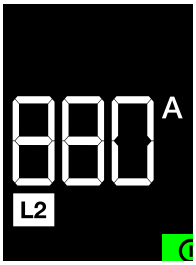


Common characteristics ACB hw+ with sentinel

Rated operational voltage	Ue	(V AC–50/60 Hz)	690
Rated insulation voltage	Ui	(V)	1000
Rated impulse-withstand voltage	Uimp	(kV)	12
Poles		3/4	
Versions		Fixed/Withdrawable	
Standards		AS/NZS / IEC 60947-2	

Icu (kA)	42/55/66					
In (A)	630	800	800	1000	1250	1600

12



01
LCD-display

The easy-to-read LCD display helps you to set the configuration of your the unit.

02
Trip unit sentinel

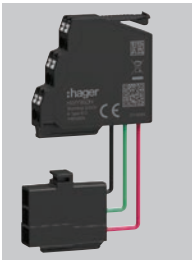
Safe adjustment of the sentinel trip unit with the combined dials and LCD display.

03
Rating plug

Makes it easier to adapt your system with a plug & play rating plug.

04
OAC-module

Up to five optional Output Alarm Contacts can be connected via terminal blocks to monitor the main tripping causes.



05
Terminal blocks

quickconnect

Easy extension by terminals for all the auxiliaries (motor, coils, switches, etc.) via quickconnect.

06
Interlock

This locking device enables the blocking of the PUSH ON push-button in order to prevent the closing of the ACB.

07
Push & lock coils

Safe and easy mounting. Coils are easily and safely mounted thanks to Push & lock system.

08
Racking handle

Perfectly and safely integrated into storage location

09
Safety shutter

Lockable safety shutters protect the main contacts as soon as the circuit breaker is removed from the chassis, using withdrawable technology.

10
Slide-in technology

Easy removal of the ACB from the slide-in frame thanks to laterally extendable guide rails.

11
QR code

Get all the information and technical documents of your product by scanning the QR code.

12
Release & lock catch

The position latch is not only used to release the chassis position during racking operation but also used to lock it, with up to 3 padlocks.

13

The trip unit sentinel

With the clear graphic TFT display, you will have all the important information in view and can make changes to settings directly on the device itself. This not only facilitates operation but also increases your response speed.

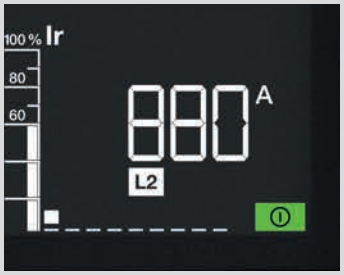
01
Display power on

Power the trip unit with a USB Power Bank.

02
Dial handle

Handle the dial to display the set value of parameter.

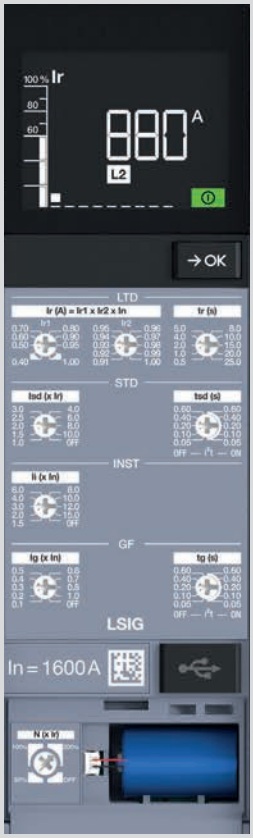
03
Protection settings

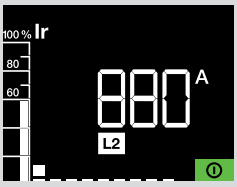


Each parameter is displayed in real-time, in amps or seconds. You can set all long time delay, short time delay, and instantaneous protection parameters, and depending on your product customisation, either the neutral protection or the ground fault protection.

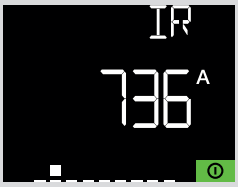
04
Settings overview

The OK button can be used at any time to overview the set parameters.





Current read on the most heavily loaded phase L1, L2 or L3 and as a percentage of the setting Ir.



Long time threshold setting.

Long time delay setting.

Short time exposure limit setting.

Short time delay setting.

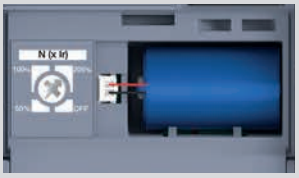
Instantaneous threshold setting.

Ground fault threshold setting.

Ground fault delay setting.

Neutral protection setting.

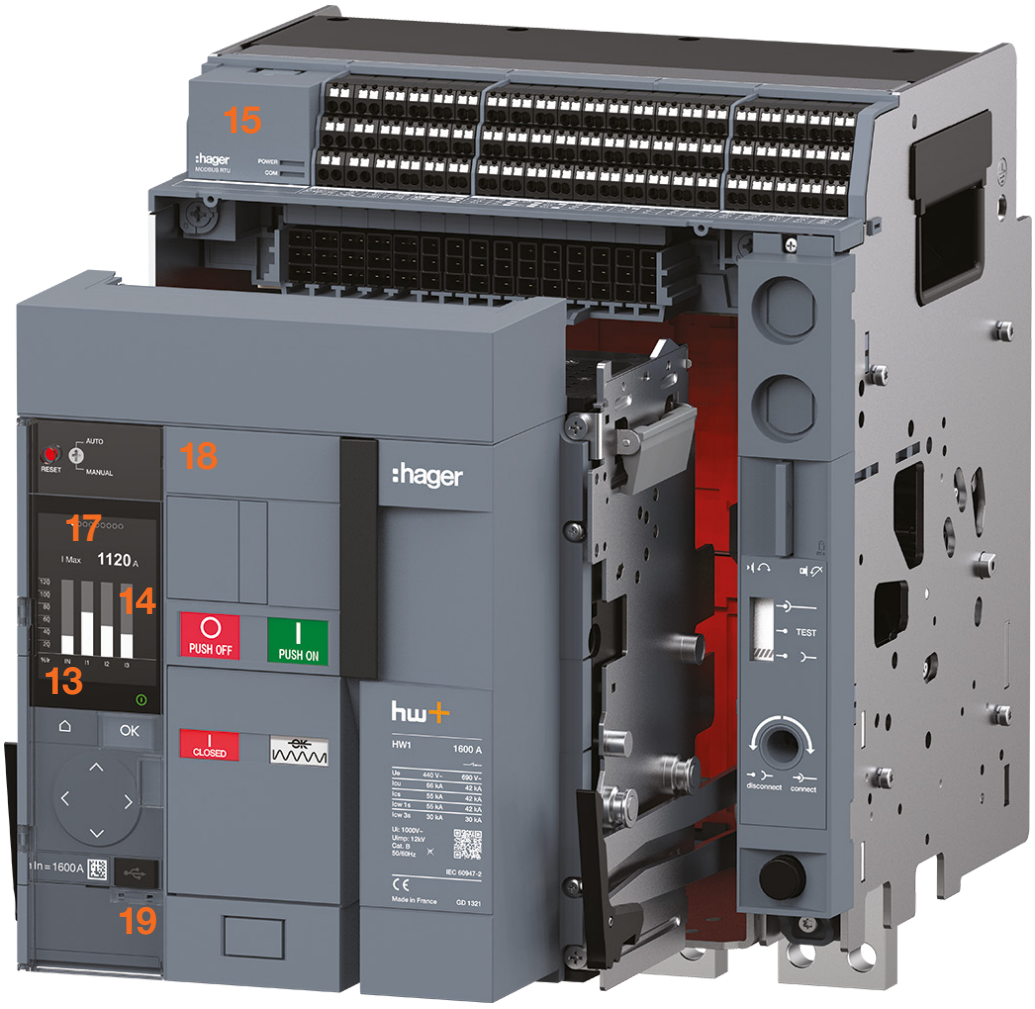
05
Neutral protection



Open the battery flap to access the neutral protection dial. Thanks to the battery, the tripping cause is displayed on the screen after a trip.

hw+ sentinel Energy: the smart one.

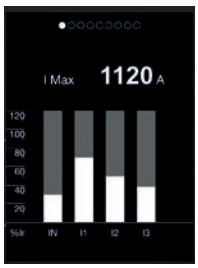
In combination with the sentinel energy trip unit, the hw+ offers even more comprehensive functions compared to the sentinel trip unit. With its advanced performance package, multifunction protection, integrated Bluetooth-function and connection to the Hager Power touch app, the hw+ sentinel energy makes even the most demanding task easy to handle.



Common characteristics ACB hw+ with sentinel Energy

Rated operational voltage	Ue	(V AC–50/60 Hz)	690
Rated insulation voltage	Ui	(V)	1000
Rated impulse-withstand voltage	Uimp	(kV)	12
Poles		3/4	
Versions		Fixed/Withdrawable	
Standards		AS/NZS / IEC 60947-2	

16



13
Trip unit sentinel Energy

The powerful graphical TFT-display shows predefined measurement and settings screens permanently scrolling.

14
Bluetooth connected

Monitor your ACB with the Hager Power touch app using the Bluetooth-ready sentinel Energy trip unit.

15
COM modules

Optional COM modules allow communication via Modbus-RTU or Modbus-TCP with the agardio. manager and the Stream software.

16
Panel display

Optional panel display can give display access to the ACB when it is mounted behind an opaque door or panel.

17
OAC module

Inform remotely on customisable predefined event with the optional OAC module which is driving up to 5 output contacts.

18
Communicating coils

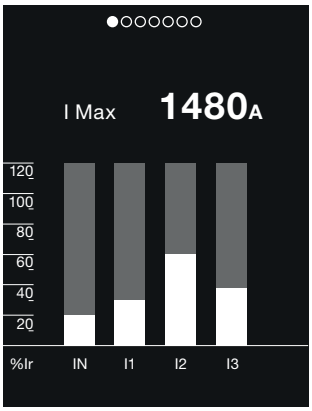
The SH and CC coils are ready to receive on/off control commands, allowing remote control via the Hager Power touch app, Hager Power setup software, or Modbus communication.

19
USB-C connection

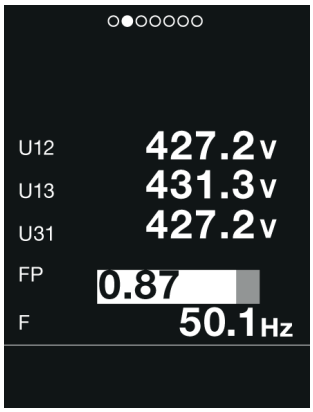
The integrated USB-C port allows operation even without a network power supply. Simply connect a laptop and use the Hager Power setup software for test and commission.

The trip unit sentinel Energy

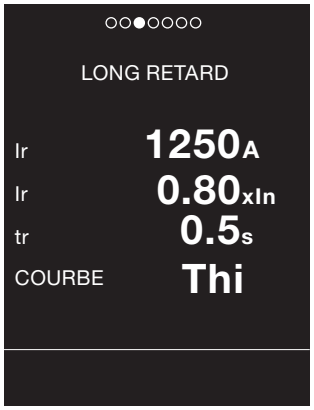
With the clear graphic TFT display, you will have all the important information in view and can make changes to settings directly on the device itself. This not only facilitates operation but also increases your response speed.



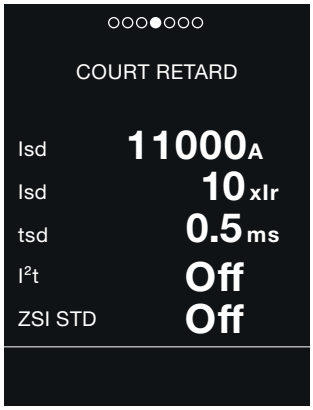
Ampmeter screen.



Multimeter screen.



Long time settings screen.



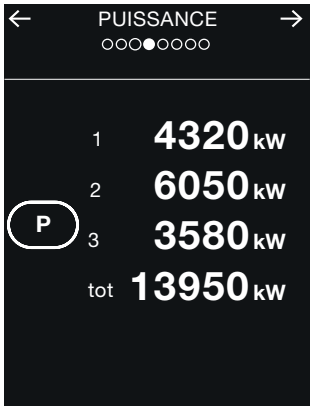
Short time settings screen.

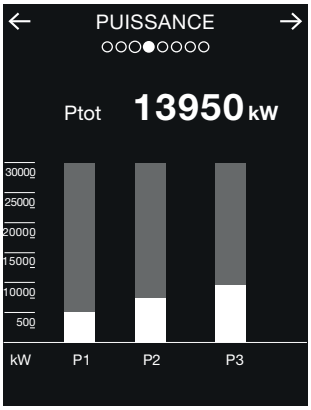
01
Live mode

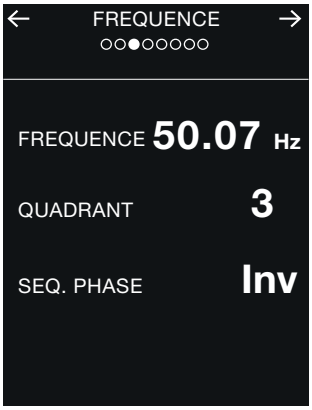
You can choose to scroll through your favourite settings or metering screens by activating Live mode. Up to 36 predefined screens are available.

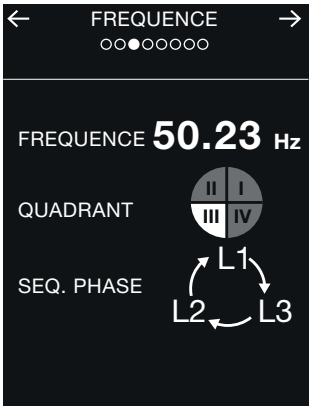
02
Measurement display

You can retrieve all parameters at any time by pressing the OK button.
Most measured values can be displayed both numerically and graphically.



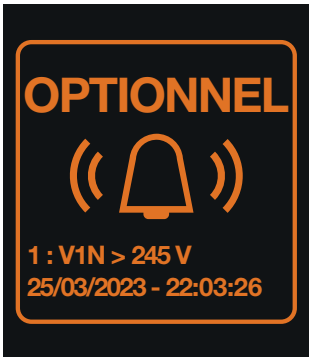






03
Trip and alarm pop-ups

You can obtain further information on malfunctions
and alarms by using the OK button.

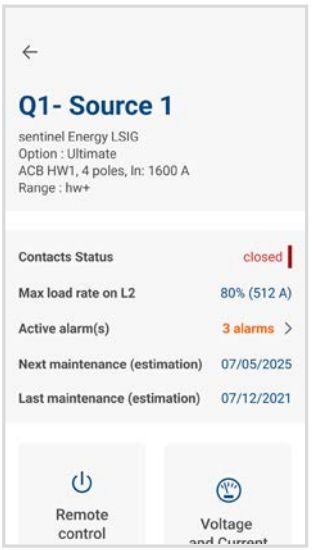


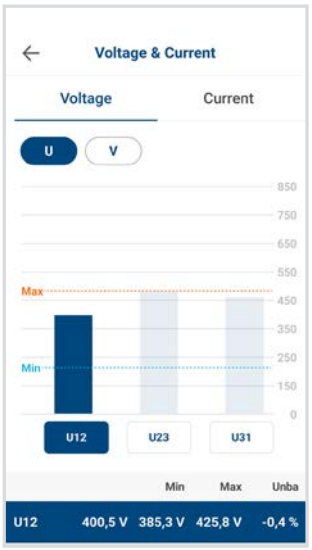
Custom alarm pop-up.

Trip pop-up.

Digital experience: Checking and operating.

In combination with the sentinel Energy trip unit, the Hager Power touch app provides you with a completely new digital user experience. Checking the operating status and maintenance information, as well as operation, become even easier. Additionionally, you can monitor the measured values at any time.



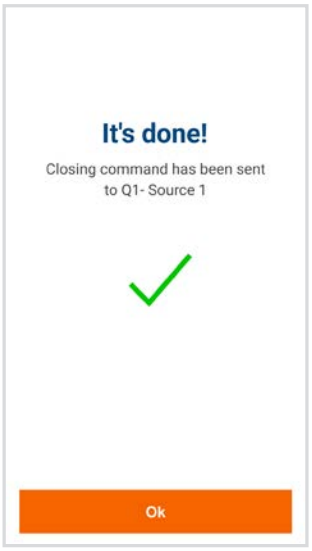


01
Check the operating condition

You can easily check the open/close state and the load rate, and be informed of any alarm occurrences. You can also quickly determine when the next maintenance should be performed.

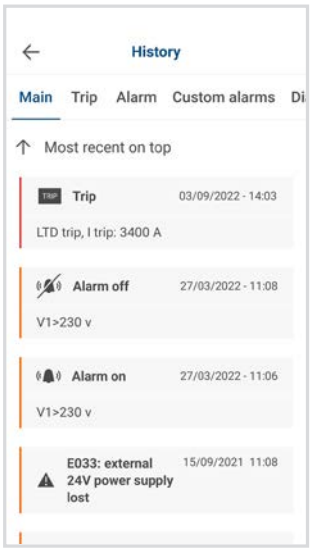
02
Monitor the metering values

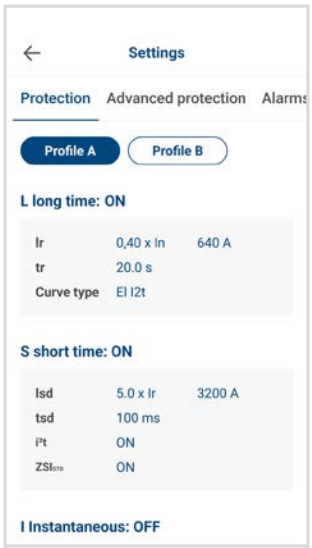
Thanks to graphical screens - you can monitor the voltage, current, frequency power and energy consumption and all the available measured values.



03
Perform a closing command

If the sentinel Energy ACB is equipped with the communicating SH and CC coils, you can perform a closing or opening command from a safe distance of up to 10 meters. These commands are protected by a password.





04
Check the fault events

In the history section, you can overview all the fault events directly on the device.

05
Set-up multiple profiles

In the protection section, you can set up different protection parameters to the same ACB device under multiple profiles.

Maximise the potential.

The hw+ ACB's come with a full package of accessories: commands, signals, protections, locking and interlocking systems. This allows you to configure your ACB according to your specific needs. All accessories are designed to be retrofitted at any time and are very easy to install.

With this type of conception, you always retain full control over the performance of your ACB and can always react flexibly to changing requirements in your installation.

Mechanical interlock (MI)

Interlock 2 or 3 ACB together for safety applications. Compatible for all circuit-breaker versions (3P & 4P, Fixed & Drawout).

OFF Locking Keylock (OLK)

Lock in OFF the ACB easily thanks to a Ronis keylock.

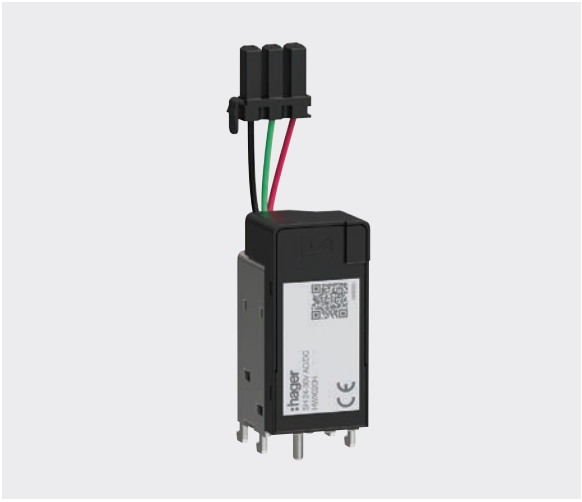
Push Button Cov

Prevent push button touching with padlocking systems. Can also be used to force and lock in OFF the ACB.

OAC module

Inform remotely on customisable predefined event with the optional OAC module which drives up to 5 output contacts.

Coils



The coils are used to remotely open or close the ACB.

3 coils in total can be mounted in the ACB:
– 1 Shunt trip coil (SH) or 2 if no UV required
– 1 Undervoltage release (UV) or 2 if no SH required
– 1 Closing coil (CC)
– Communicating coils option for sentinel Energy

Spring charging Motor (MO)

The spring charging motor is used to charge the spring mechanism when the ACB is closed.

– Safe and easy to mount
– Suitable with all common power supply voltages

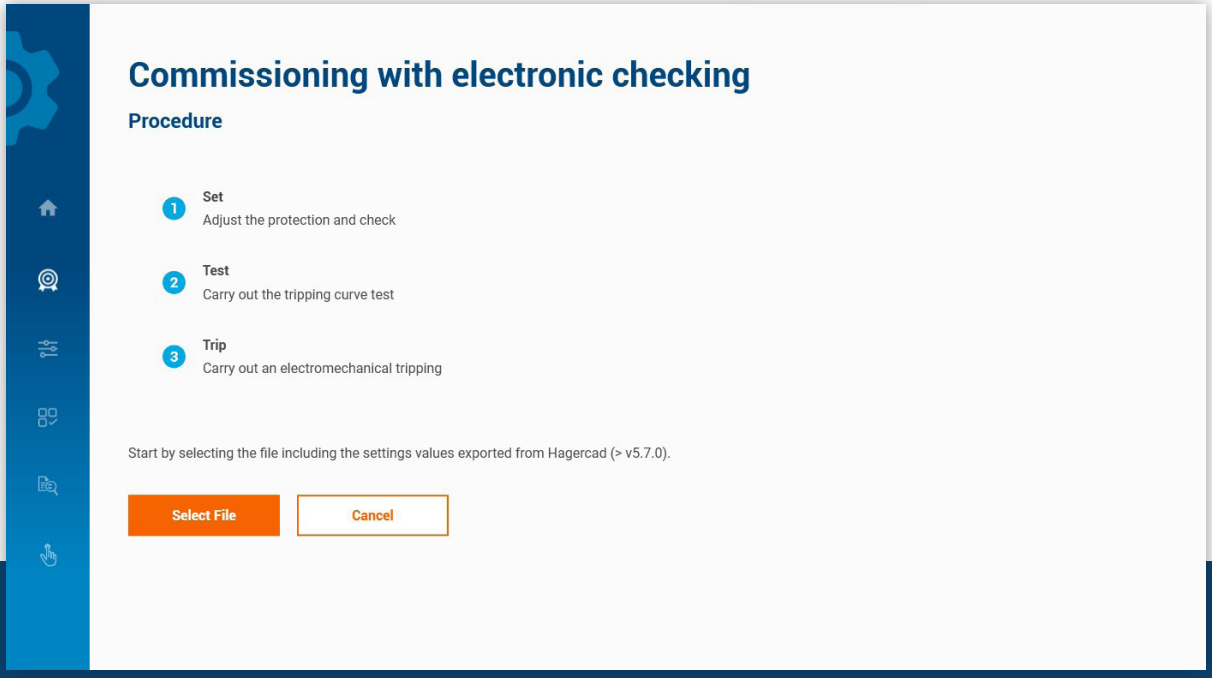
Auxiliary Switches (AX)

Auxiliary switches are used to signal remotely the ACB status (ON or OFF).

– 4 auxiliary switches (AX) are mounted as standard on ACB HW1 & HW2
– 6 auxiliary switches (AX) are mounted as standard on ACB HW4
– Ready to be connected

Simple & safe commissioning.

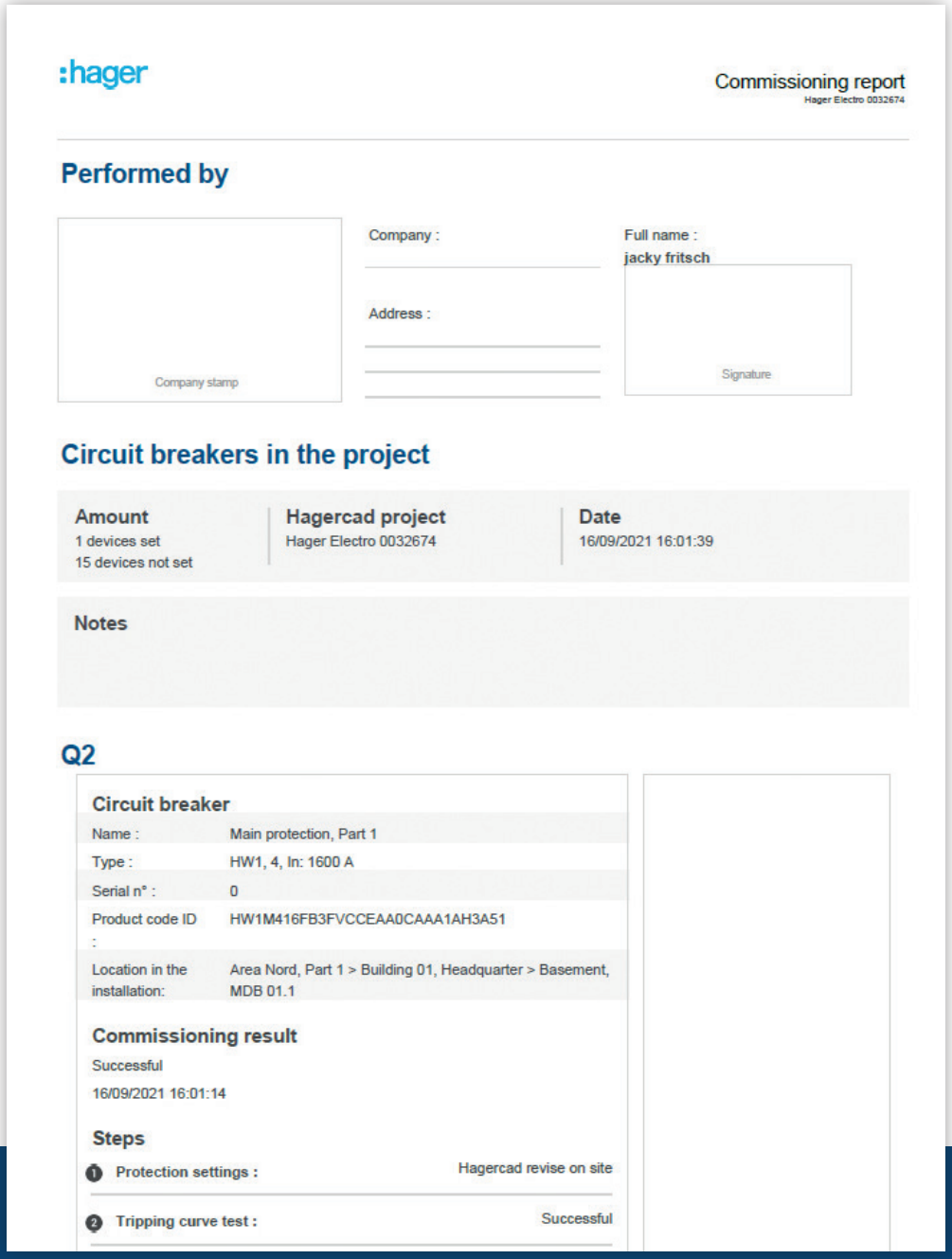
As different as requirements may be, two rules should always apply: commissioning must be performed according to protection settings calculated during design of the installation, and it must be kept to a minimum in terms of complexity and time intensity.



01

Easy commissioning

ACB Protection parameters enables easy set up functionality via the Hager Power Setup Software.



:hager

Commissioning report
Hager Electro 0032674

Performed by

Company stamp

Company :

Address :

Full name :
jacky fritsch

Signature

Circuit breakers in the project

Amount	Hagercad project	Date
1 devices set 15 devices not set	Hager Electro 0032674	16/09/2021 16:01:39

Notes

Q2

Circuit breaker

Name :	Main protection, Part 1
Type :	HW1, 4, In: 1600 A
Serial n° :	0
Product code ID :	HW1M416FB3FVCCEAA0CAAA1AH3A51
Location in the installation:	Area Nord, Part 1 > Building 01, Headquarter > Basement, MDB 01.1

Commissioning result

Successful

16/09/2021 16:01:14

Steps

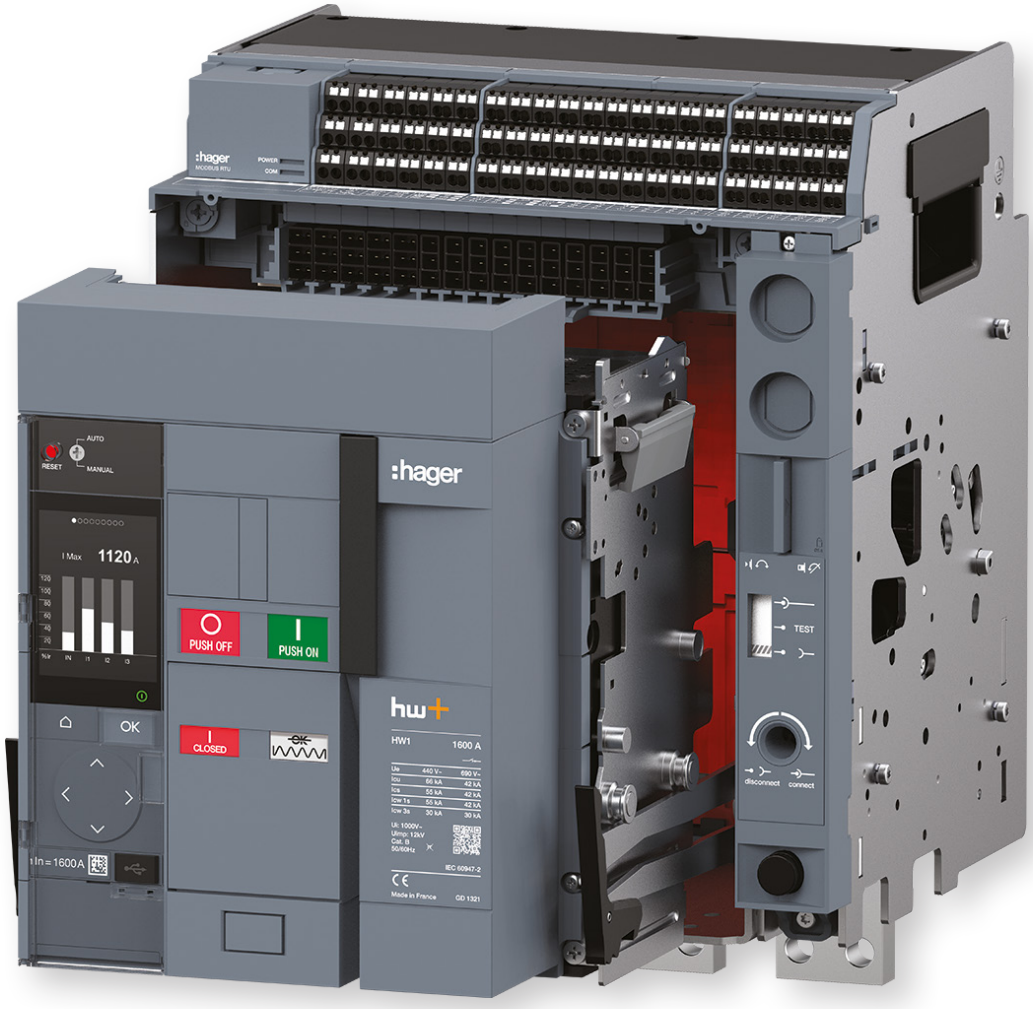
1 Protection settings : Hagercad revise on site

2 Tripping curve test : Successful

Furthermore, Hager Power setup is the software used to test and check the hw+ ACB's and the h3+ moulded case circuit breakers. It also allows you to check all the historical events stored in the trip units.

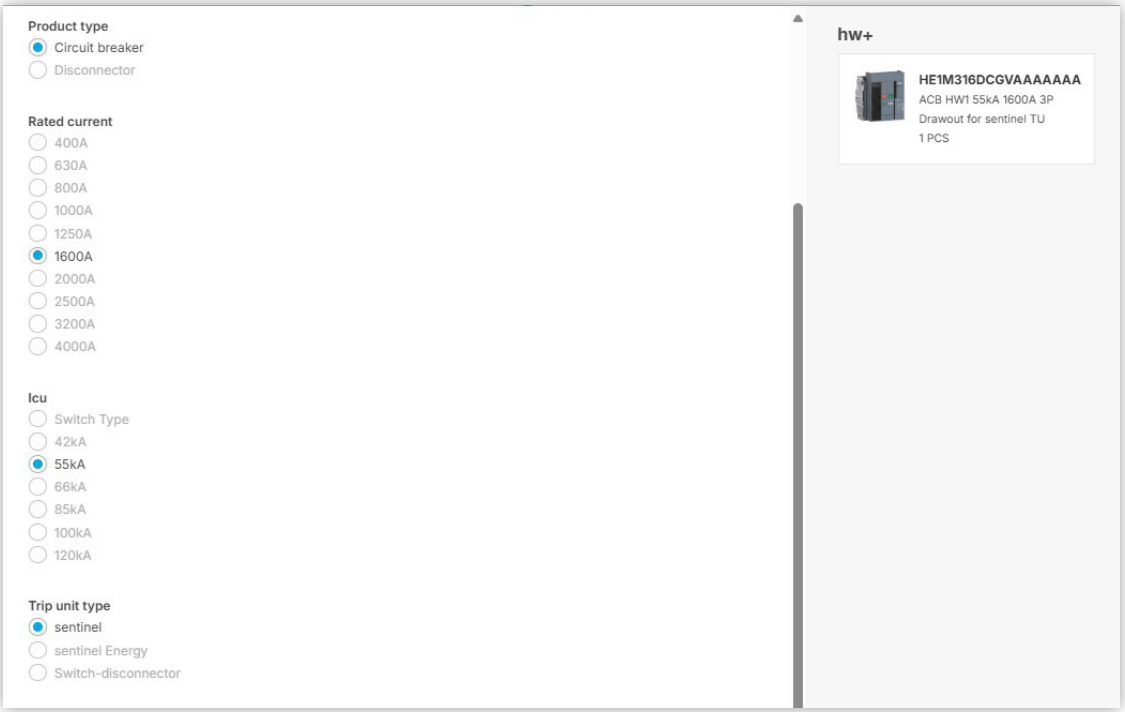
Easy planning and customisation.

As specialists in simple and safe electrical installation, not only do we understand a great deal about low-voltage distribution system planning and tenders, we also know exactly how to make configurating your ACB as easy as possible for you.



Customise your ACB with hw+ web configurator:

The web configurator can customise your ACB according to your needs. For the configuration, you'll have free choice over the type, trip unit, command and signaling accessories, locking and interlocking devices as well as over mechanical protections.



Interface and configuration rules:

Thanks to its ergonomic and intuitive interface, the selection of all components and accessories is done quickly. Association rules save time on the selection and validity of the final configuration. It's possible to create or edit a new configuration in different ways:

– by following the steps of the form
– by reusing a saved configuration

Start your configuration now. Scan below:

For you, with you.

Customer proximity is one of our core values. Our solutions are always one step ahead because we know that our clients need tomorrow's solutions today. You can rely on Hager to be by your side with help and advice, whatever the project.

With Hager, it's that easy to do business!

Customise your ACB.

As your partner, our top priority is to always provide you with perfect products tailored to your preferences and application needs, which are customised locally in-house at our adaption centre. The ACBs can be adapted to fit various components.

To give you a little guidance, we have pre-configured 4 systems as examples to show you how you can assemble your ACB as a 3 pole or 4 pole solution.

ACB sentinel and ACB sentinel Energy are configured as following:

5 catalogue numbers minimum for fixed versions:
– The air circuit breaker
– The sentinel or sentinel Energy trip unit
– The Rating Plug
– The top connection
– The bottom connection

6 catalogue numbers for withdrawable versions:
– The air circuit breaker
– The sentinel or sentinel Energy trip unit
– The Rating Plug
– The top connection
– The bottom connection
– The chassis

The other accessories and auxiliaries are optional and can be added to complete the requested configuration.
For every configuration done in Hagercad software or web configurator, a product code is automatically generated.
You can enter the product code in the web configurator to generate the configuration and obtain complete details of the bill of materials.

01 **Example 1** **Product code :** HE1M316FCGVAAAAAAA

HW1 3 poles 55kA, In max = 1600A, Fixed type, with Trip Unit sentinel Energy LSI, Horizontal connections on top & bottom

HW1M316FB	HW1, 3 poles, Fixed type, 55kA, In max = 1600A
HWW451H	Trip Unit sentinel Energy LSI
HWW469H	Rating plug 1600A
HWY048H	Horizontal connection for top
HWY048H	Horizontal connection for bottom

02

Example 2 **Product code :** HE1M312DCFVAAAAAAA

HW1 3 poles 55kA, In max = 1250A, Withdrawable type, with Trip Unit sentinel LSI, Horizontal connections for top & bottom

HW1M312DB	HW1, 4 poles, Drawout type, 55kA, In max = 1250A
HWW451H	Trip Unit sentinel LSI
HWW468H	Rating plug 1250A
HWY048H	Horizontal connection for top
HWY048H	Horizontal connection for bottom
HW1C3EH	Chassis HW1, 3 poles, In 1600A

03

Example 3 **Product code :** HE2E420FCHVAAAAAAA

HW2 4 poles 66kA, In max = 2000A, Fixed type, with sentinel LSI Trip Unit and Rating plug In = 2000A, Horizontal connections on top & bottom

HW2E420FB	HW2, 4 poles, Fixed type, 66kA, In max = 2000A
HWW451H	Trip Unit sentinel LSI
HWW470H	Rating plug 2000A
HWY161H	Horizontal connection for top
HWY161H	Horizontal connection for bottom

04

Example 4 **Product code :** HE2E325FEIVAAAAAAA

HW2 3 poles 66kA, In max = 2500A, Fixed type, with sentinel Energy LSI Trip Unit, Horizontal connections on top & bottom

HW2E325FE	HW1, 4 poles, Withdrawable type, 55kA, In max = 1000A
HWW453H	Trip Unit sentinel Energy LSI
HWW471H	Rating plug 2500A
HWY160H	Horizontal connection for top
HWY160H	Horizontal connection for bottom

Protection on board.

No matter the application, every environment requires a reliable supply of electrical power.

All Air Circuit Breakers (ACB's) of the hw+ range can easily be integrated into the quadro evo power distribution switch board. This way, the core of your power supply is exactly where it belongs – at the heart of your switchgear.

This not only provides reliable protection against overload, short circuits and other factors, but also ensures integrated monitoring and energy transparency throughout the entire system, with the appropriate module extensions. This allows you to tap into the potential of your electrical system and make optimisations at any time in order to get the most from your ACB.

quadro evo at a glance.

The switchgear assemblies made with the quadro evo system, in accordance with Hager recommendations, meet the requirements of AS/NZS 61439-1 and -2.

Depending on safety levels required, available partitions and the flexibility of combinations and equipment - quadro evo will offer you the right solution for your projects, whatever their size.

01
Tested and approved

A system that complies with our standards (AS/NZS 61439), validated by tests carried out in an independent, accredited European laboratory, Taranis.

This includes component resistance, IP protection, mechanical operation and thermal limits.

02
More robust

The robust mechanical structure and new internal equipment system enable high performance to be achieved (Icw 50 kA up to 1600 A) to suit as many projects as possible.

03
More safety levels

Choice of partitions - 1, 2b, 3b, 4aih - for continuity of service during servicing, maintenance and upgrades to the switchboard, in complete safety.

04
More ease

All the components are designed for quick and easy assembly, with pre-attachment functions on the kits, optimised screwing operations and standardised screw types.

05
More flexibility

The new busbar support system uses a reduced number of components to produce the configurations tested, using 10 mm thick profiled aluminium busbars or 5 or 10 mm thick copper busbars.

Hager Australia
Unit 17/2-8 South Street
Rydalmere NSW 2116

hager.com/au

DISCLAIMER: Whilst every effort has been made to ensure the reliability of the information is correct at time of publication, Hager cannot guarantee the accuracy of all of the information contained herein. Changes/updates brought to the attention of Hager, once verified, will be corrected in future editions.

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