

3VA molded case circuit breaker up to 1600A

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کاتالوگ کلید اتوماتیک 3VA زیمنس

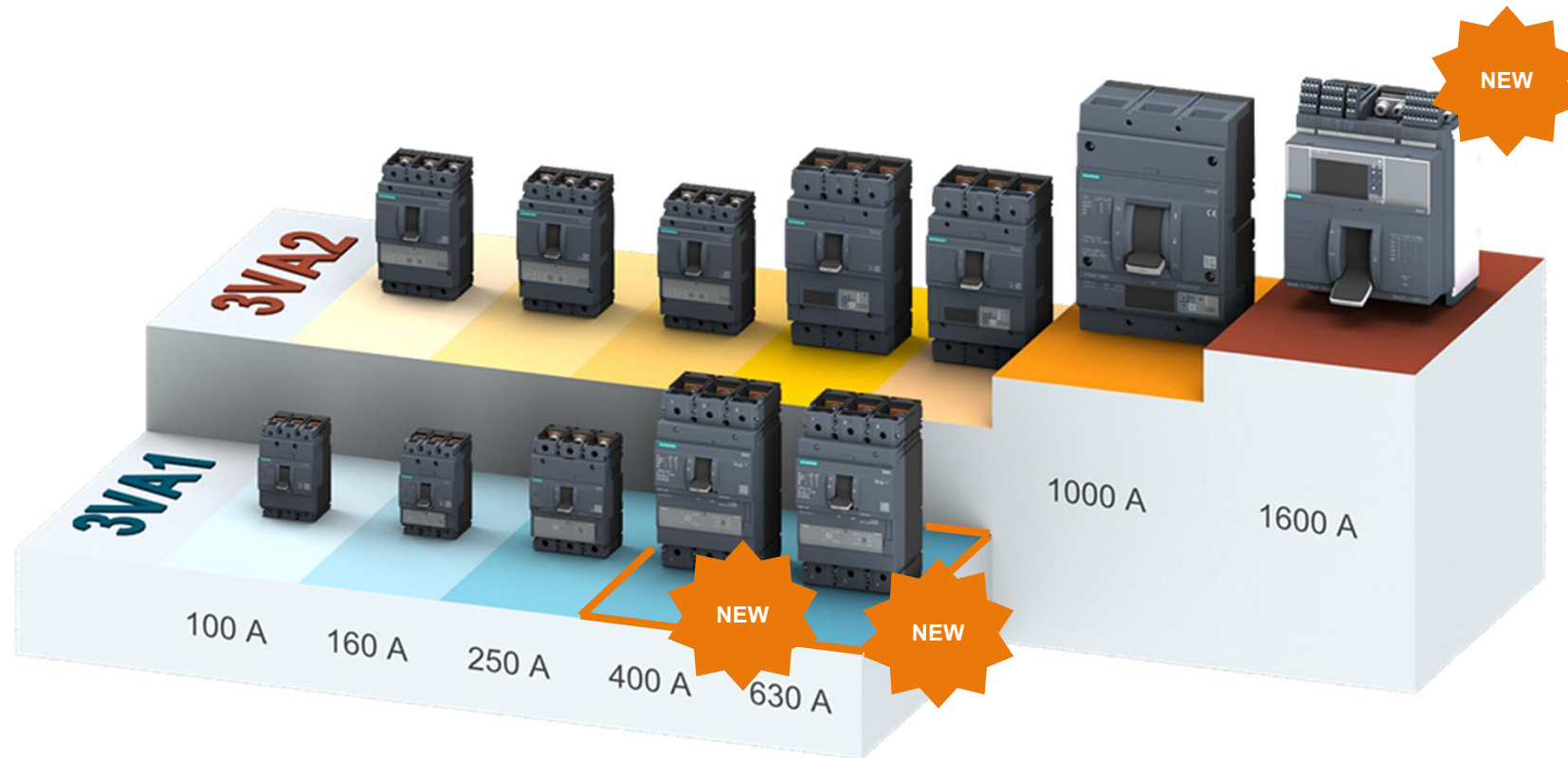


3VA molded case circuit breaker

New 3VA13/14 with TMTU (Thermal Magnetic Trip Unit)

New 3VA27 with ETU (Electronic Trip Unit)

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3VA1 molded case circuit breaker

Highlights

Line / generator / starter protection

- Compact design
(3VA1 frame size 160A → 48% smaller than 3VL160X)
- Rated currents from 16A up to 630A
- Breaking capacity classes from 16 kA to 70 kA
- Thermal-magnetic trip unit
- 1- to 4-pole breakers available
(1- and 2-pole in frame size 160 A)
- "Real" switch disconnecter up to 630A¹⁾ according to IEC 60947-3 also available in MCCB design
- Complete and uniform accessory platform across all 3VA molded case circuit breakers



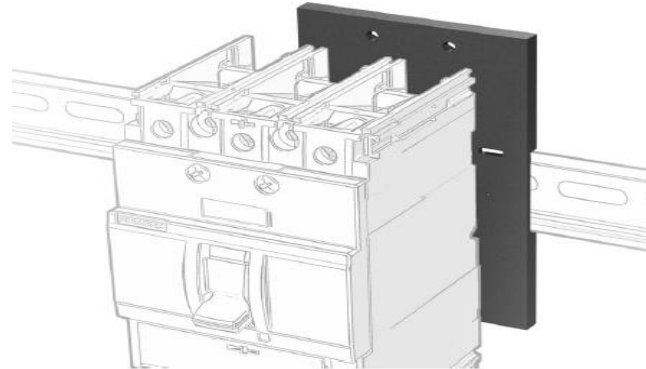
3VA1: Excellent match with the infrastructure market

Most compact design for 160Amp !

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3VA1 -4P with side mounted RCD



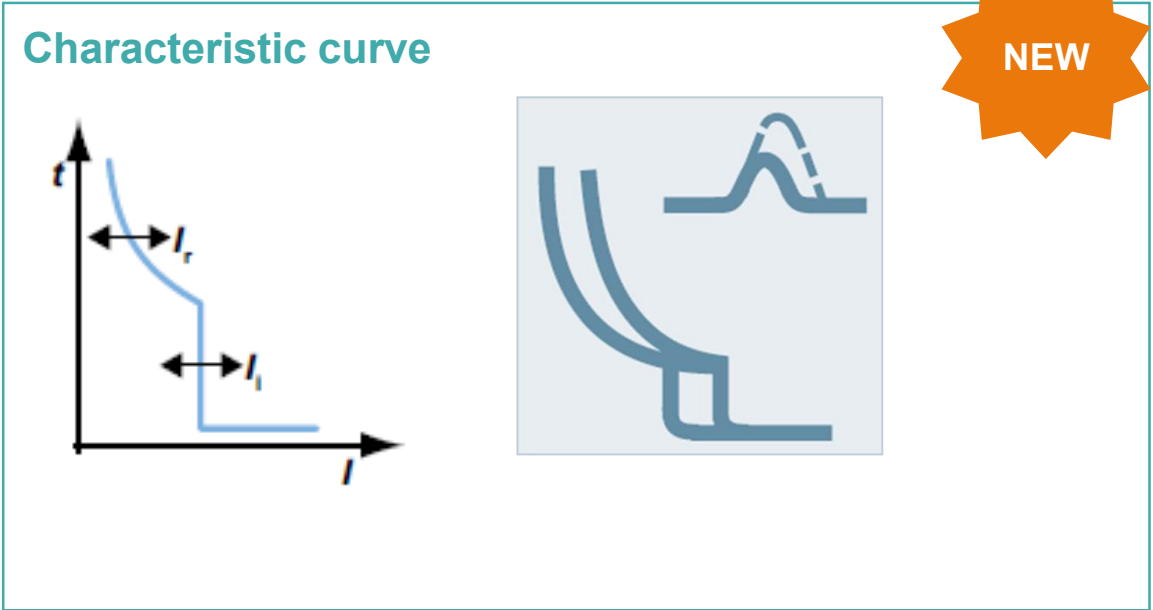
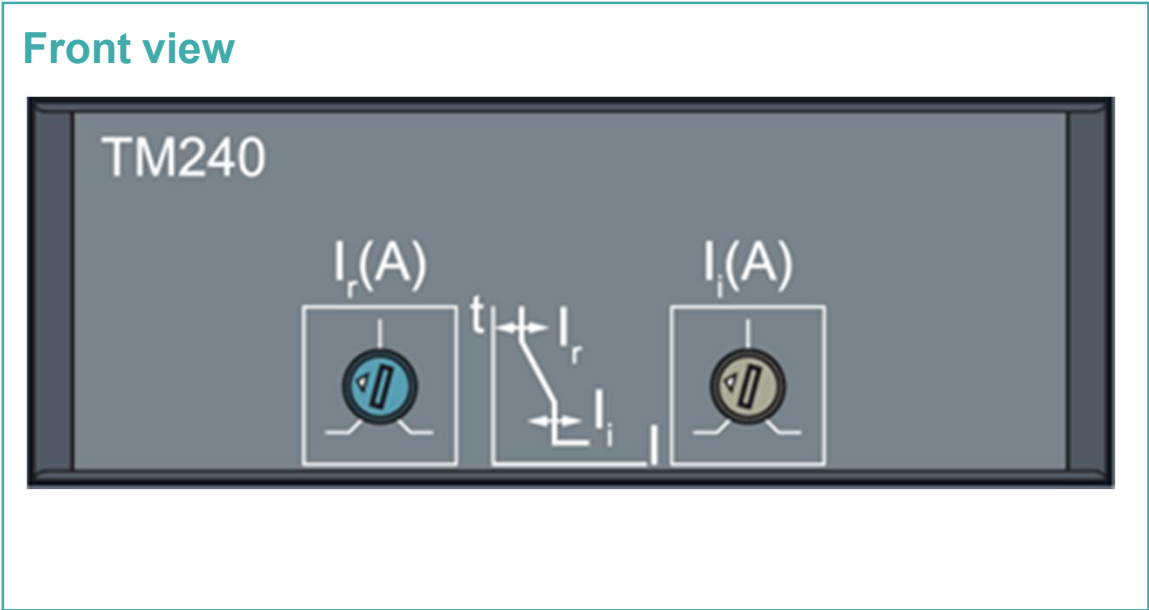
3VA1 -3P with din rail adapter

Type	Breedte (mm)	Modules (afgerond)
1P	24,4	1,5 mod
2P	50,8	3 mod
3P	76,2	5 mod
4P	101,6	6 mod
4P+DIFF	131,8	8 mod

3VA1 molded case circuit breaker

TM240 ATAM

IEC 60947	100 A	160 A	250 A	400A	630A
TU240 ATAM - Adjust Thermal - Adjust Magnetic	–	3/4 - pole	3/4 - pole	3/4 - pole	3/4 - pole
N-conductor, 4- pole available in form of:	–	- Without protection 50% protection 100% protection	- Without protection 50% protection 100% protection	- Without protection 50% protection 100% protection	- Without protection 50% protection 100% protection



3VA2 molded case circuit breaker



Power metering

Large ETU display

Very high breaking capacity up to 150 kA

Integrated voltage tab

Rotary double contact system

Optimized connectivity

Communication function

Rogowski coil

External function box

Comm. RCD

S0 interface

Excellent selectivity

Compact and packed with innovations:
Our 3VA2 molded case circuit breaker!

3VA2 molded case circuit breaker

Highlights



Line / generator / motor / starter protection

- Four breaking capacity classes
- Selective protection with a nominal current ratio of 1:2.5
- Electronic trip units (ETU 3-series, ETU 5-series, ETU 8-series)
- ETU 8-series with integrated metering function
- Communication via Ethernet (Modbus TCP), Modbus RTU, PROFIBUS, PROFINET
- Complete and uniform accessory platform across all 3VA molded case circuit breakers

3VA2 molded case circuit breaker

Electronic Trip Units

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ETU 300-series



- Rotary switch with absolute values in Amps

Line / generator protection:

- ETU320 LI
- ETU330 LIG
- ETU350 LSI

Line Protection

- ETU340 fuse characteristic (ELISA)

Motor protection:

- ETU350M LSI

Starter protection:

- ETU310M I

ETU 500-series



- Display with menu
- Optional communication available
- Optional external N-CT

Line / generator protection:

- ETU550 LSI
- ETU560 LSIG

Motor protection:

- —

Starter protection:

- —

ETU 800-series



- Display with menu
- Power metering
- Optional communication available
- Optional external N-CT

Line / generator protection:

- ETU850 LSI
- ETU860 LSIG

Motor protection

- ETU860M

Starter protection:

- —

3VA2 molded case circuit breaker

Electronic trip units 3-series

- LI, LIG and LSI functionality
- Maximum 5 rotary coding switches with color differentiation
 - Overload protection
 - Short-time delayed short-circuit protection
 - Neutral conductor protection
- Easily adjustable through absolute values
- Sealable transparent cover
- Adjustable N conductor protection in 4-pole molded case circuit breakers
- LEDs
 - ACT
 - AL1 ($I > 90 \% I_r$)
 - AL2 ($I > 105 \% I_r$)



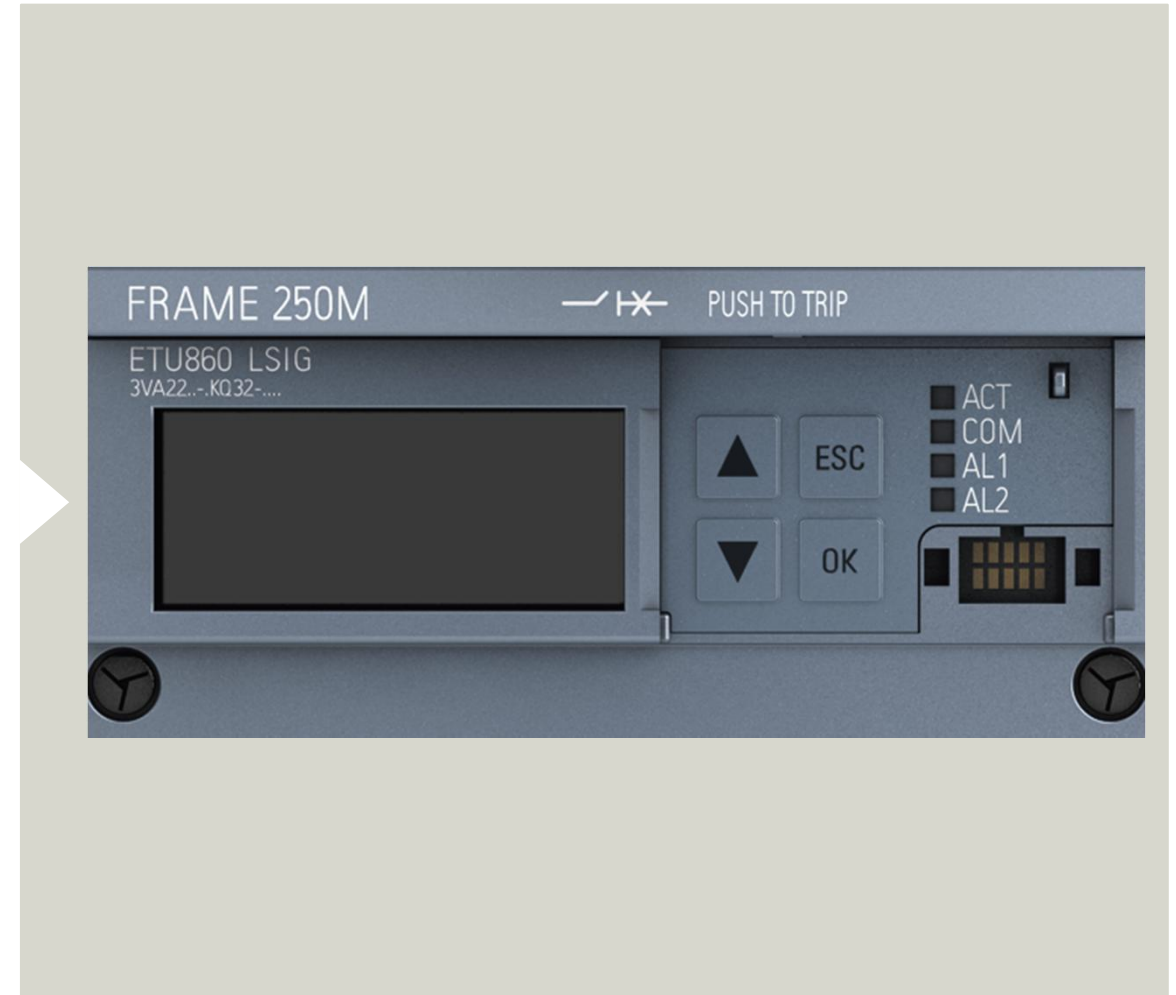
3VA2 molded case circuit breaker

Electronic trip units 5-series and 8-series

- With display
- Parameter settings via ETU buttons or PC
- Display of the currents I_{L1} to I_{L3} , I_N and I_g
- Display of voltage, frequency, power factor, active power, reactive power and energy for the 8-series ETUs with integrated measuring function
- Protection functions LSI and LSIG
- External N-CT can be connected
- Oversized neutral conductor protection (OSN) for 4-pole breakers with $I_n < I_{n, \max}$ of the frame size

Example: 160 A in FS 250 A

$$\begin{aligned} I_{r, L1 / L2 / L3} &= 32 \text{ A} \dots 160 \text{ A} \\ I_{r, N} &= 32 \text{ A} \dots 250 \text{ A} (1,6 \times I_n) \end{aligned}$$



3VA2 with metering device vs. 3VA2 with integrated metering function



SENTRON 3VA2 (160A - ETU320) with SENTRON PAC 3200



Nr.	Device	Order Nr.	List Price 2018
1	PAC 3200	7KM2112-0BA00-3AA0	358,02 €
1	3VA2 – 160A/3P	3VA2116-5HL36-0AA0	507,30 €
3	CT for PAC	4NC5122-2CE21	206,91 €
1	Auxiliary Switch	3VA9988-0AA12	16,04 €
1	Trip Signal Contact	3VA9988-0AB12	16,04 €
1	MCB 6A/4P	5SY4406-7	71,35 €
			1,175,66 €

Technical Features

- All metering data available via PAC3200
- No operating data available
- Significant cabling work

Conclusion: keen basic solution for low level system requirements

3VA2 with metering vs. 3VA2 with integrated metering function

SENTRON 3VA2 (160A - ETU850) with metering function and communication



Nr.	Device	Order Nr.	List Price 2018
1	3VA2 – 160A/3P	3VA2116-5KP36-0AA0	940,50 €
1	COM060	3VA9187-0TB10	231,00 €
1	Cable (3VA Line)	3VA9987-0TC10	15,38 €
1	COM800 (gateway for 8x3VA2)	3VA9987-0TA10	759,00 € (+8 = 94,87€)
			1.281,75 €

Technical Features

- Very high accuracy of the metering function
- Big number of operating data available via communication
- Negligible cabling work
- Only 9% more expensive on hardware

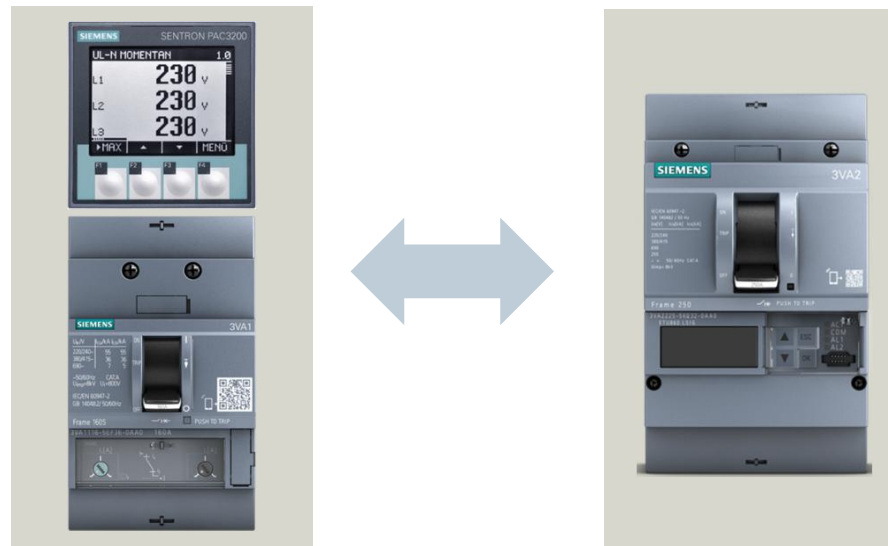
Conclusion: Ideal solution for high end industry applications.

Information	TMTU	ETU (Display)	EFB	powerconfig/Communication
Status MainContacts ON/OFF	HS	yes	no	yes
Trip Signal	HS	yes	no	yes
Trip cause L, S, I, N, G	no	yes	LSIG	yes
Trip cause overtemperature	no	yes	yes	yes
Trip cause residual current	no	yes	yes	yes
Trip cause blocking protection	no	yes	yes	yes
Trip cause phase loss protection	no	yes	yes	yes
Trip cause idle running protection	no	yes	yes	yes
Number of trips, Total	no	no	no	yes
Number of residual current trips	no	no	no	yes
Number of trips overtemperature	no	no	no	yes
Number of trips L	no	no	no	yes
Number of der trips S	no	no	no	yes
Number of trips I	no	no	no	yes
Number of trips N	no	no	no	yes
Number of trips G	no	no	no	yes
Number of trips blocking protection	no	no	no	yes
Number of trips phase loss	no	no	no	yes
Number of trips idle running protection	no	no	no	yes
mechanical operation cycles	no	no	no	yes
operating hours counter	no	no	no	yes
Alarm message pre trip signal overload	no	no	yes	yes
Alarm message AL1	no	yes	yes	yes
Alarm message AL2	no	yes	yes	yes
Alarm message ground fault protection	no	no	yes	yes
Alarm message overtemperature	no	no	yes	yes
Alarm message load shedding	no	no	yes	yes
Alarm message load restoring	no	no	yes	yes
Alarm message internal fault / ETU	no	no	yes	yes
Breaker position draw out	no	no	no	yes
measured values current	no	yes	no	yes
Measured values voltage	no	yes	no	yes
Measured values Power (S, Q, P, LF)	no	yes	no	yes
Measured values Energy	no	yes	no	yes
Measured values THD/current	no	no	no	yes
Measured values THD/voltage	no	no	no	yes
Measured values frequency	no	yes	no	yes
Message archive switching operations	no	no	no	yes
Message archive trip cause	no	no	no	yes
Message archive events	no	no	no	yes

WEBINAR POLL:

<< I would recommend a 3VA circuit-breaker with integrated energy metering and communication as a better and more economic solution to my customers >>

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ANSWER WEBINAR POLL QUESTION: YES / NO

3VA5 and 3VA6 molded case circuit breaker with UL certification

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Highlights

- Product range for global operating machine and equipment manufacturers
- Certification acc. UL489 und IEC60947-2
- Versions with thermal-magnetic and electronic trip units available
- Minimal planning effort thanks to comprehensive 3D data offerings
- Knowledge Manager: Technical information can be retrieved directly at the installed device
- Easy adaptation to individual requirements thanks to a comprehensive range of accessories



Internal accessories

Manifold functions and easy installation

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Leading changeover switch (LCS_HQ + LCS_HP)

High switching capacity and compact size
see contact sequence diagrams 3VA Manual

Universal release (UNI)

Undervoltage release (UVR)

Shunt trip (STL)

Left

Shunt trip (STF)

Flexible
(Flexible use for 3VA2 only)

Short circuit alarm switch
(SAS_HQ, for 3VA1 only)
Compact size

Electrical alarm switch
(EAS_HQ, for 3VA2 only)
Compact size

Cylinder lock adapter

Electronic component (COM060)
Communication

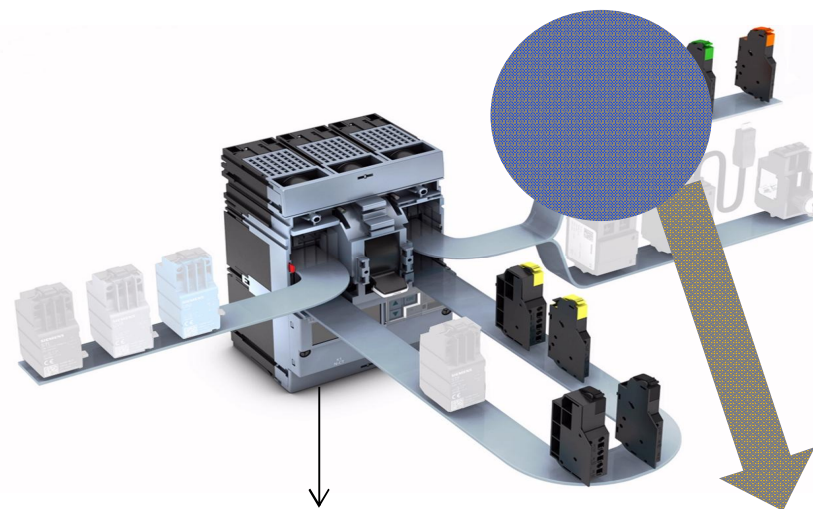
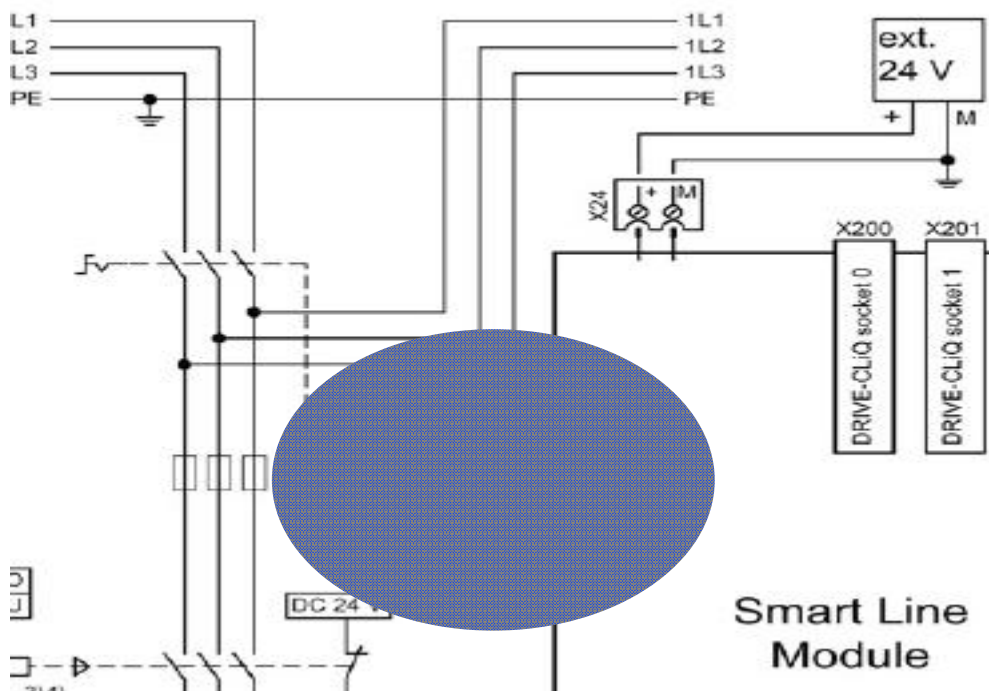
Electronic component (24 V module)
Power supply

Trip alarm switch (TAS_HQ + TAS_HP)
High switching capacity and compact size

Auxiliary switch (AUX_HQ + AUX_HP)
High switching capacity and compact size

Internal accessories: leading aux. contact for switching off frequency drives

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Leading aux. contact switches off the frequency drive 20ms earlier than the main contacts
(important for the lifespan of the frequency drive)

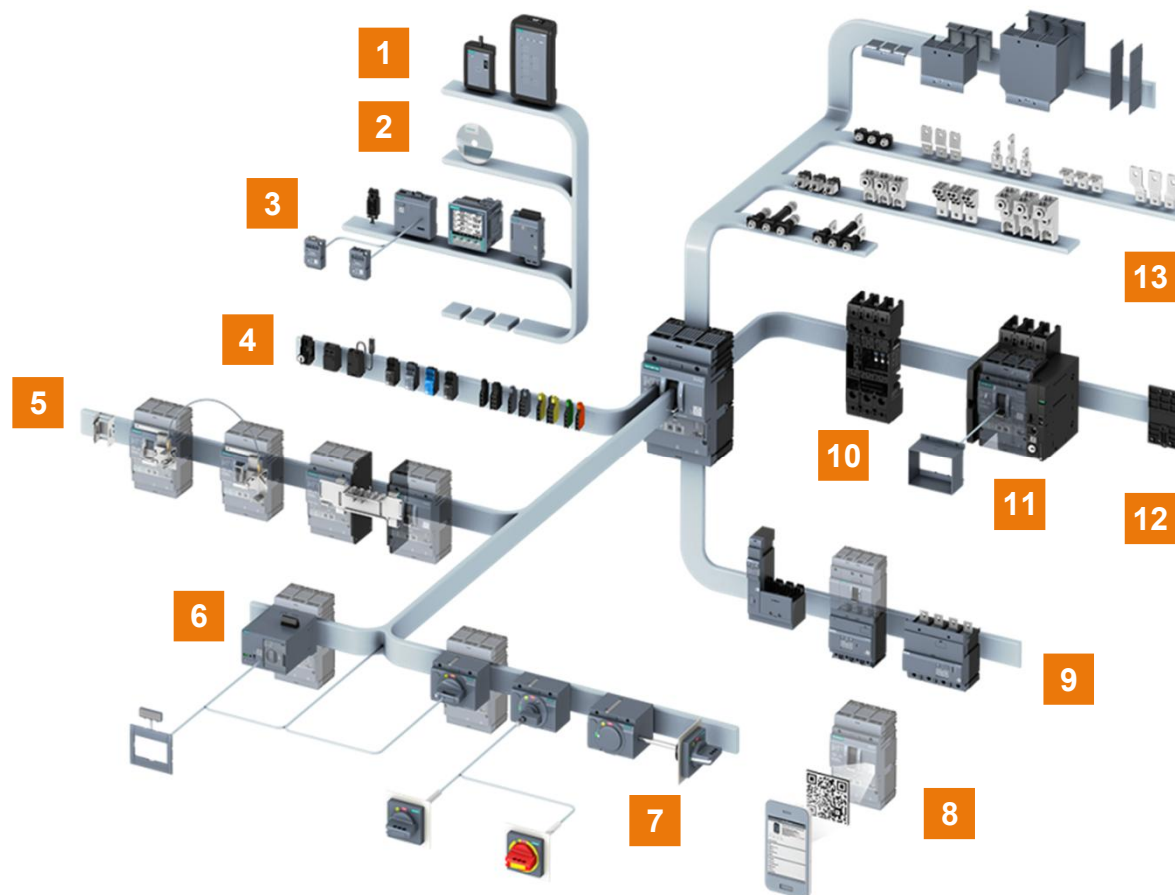


3VA molded case circuit breaker

Extensive and flexible accessories

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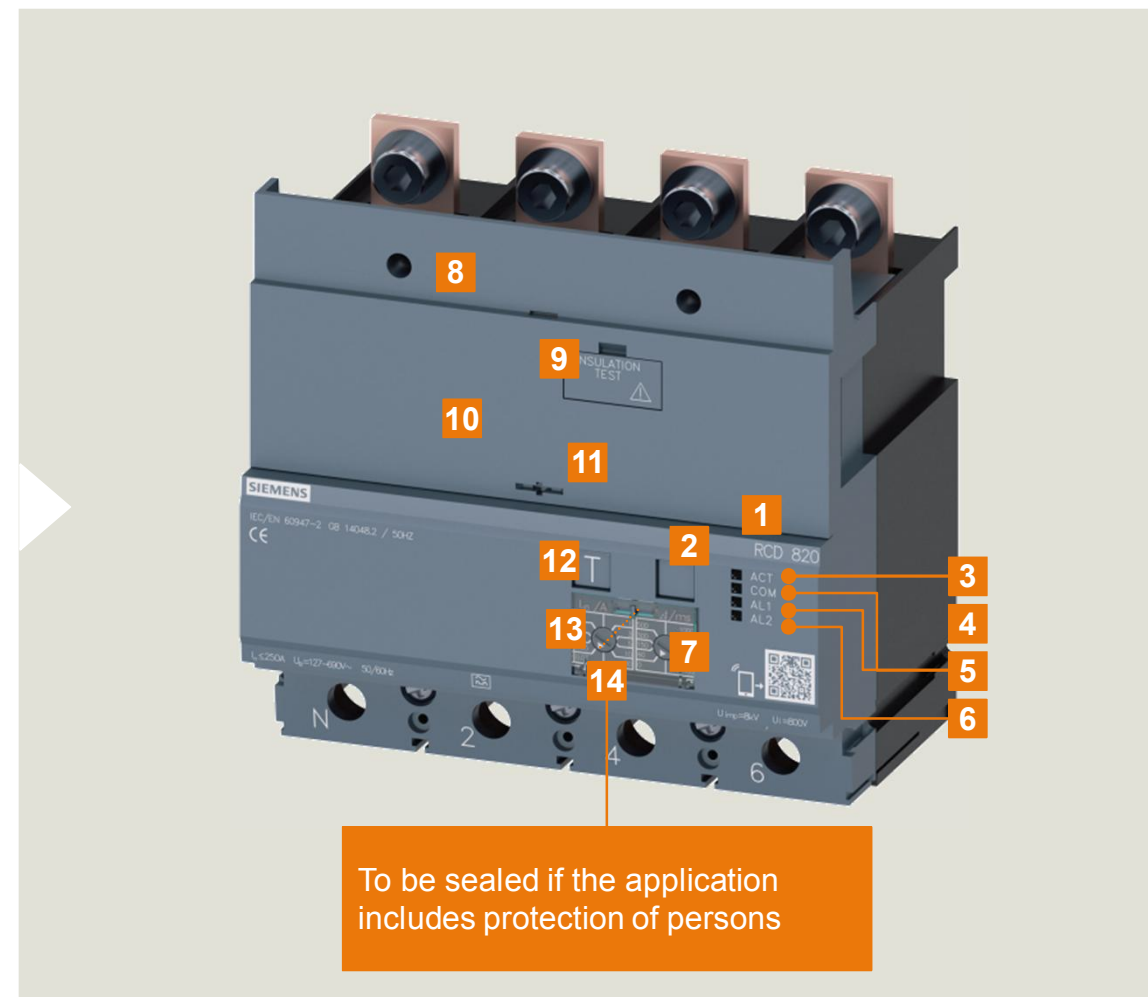
- 1 Test devices
- 2 powerconfig software
- 3 Communication
- 4 Internal accessories
- 5 Locking and interlocking
- 6 Motor operator
- 7 Manual operators
- 8 Knowledge Manager
- 9 Residual current devices
- 10 Plug-in
- 11 Draw-out
- 12 DIN rail adapter
- 13 Connection technology



Residual current devices

Advanced RCD820

- 1 Type designation
- 2 Tripped indicator
- 3 Active LED
- 4 Com LED
- 5 Alarm 1 LED
- 6 Alarm 2 LED
- 7 Delay time setting knob
- 8 Touch protection cover
- 9 Isolating arrester
(to be removed during insulation tests)
- 10 RCD-ETU cable
- 11 Terminals for auxiliary contacts
- 12 Test button (direction of arrow)
- 13 Residual operating current setting knob
- 14 Transparent protective cover over the settings (sealable)



Residual current devices: type A and B Portfolio

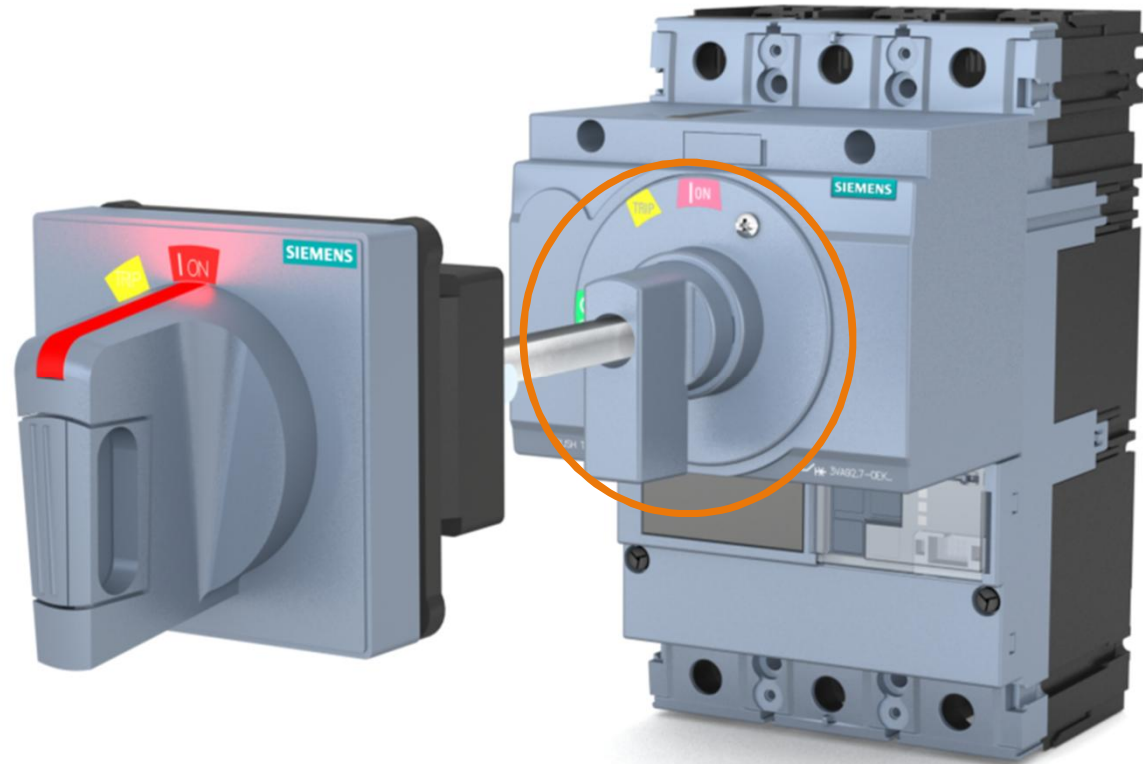
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Manual operators

Supplementary handle for door mounted rotary operator

- For comfortable operation when cabinet door is open
- Operation only after "intentional act" (pushing-in of the handle)
- In gray or red (EMERGENCY-STOP version)



Manual operators Illumination kit

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- Illumination of the handle for clearer view of the switch position even in poor visual conditions (color coding analogous to switch position indicator)
- Can be used for front, door coupling and side wall mounted rotary operator
- 24 V DC voltage

New 3VA27 => 1600A

Available in two contact systems: ACB / MCCB



ACB



MCCB



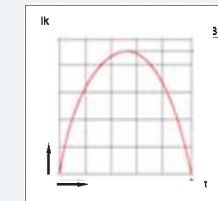
One Platform!

Selective → ACB

$I_{cu} = 66\text{kA}$

$I_{cw}(1\text{s}) = 50\text{kA}$

- + Higher I_{cw} for selective applications

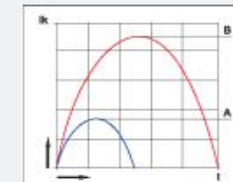


Current limiting → MCCB

$I_{cu} = 110\text{kA}$

$I_{cw}(1\text{s}) = 20\text{kA}$

- + Optimized for energy and dynamic selectivity
- + Limiting let through current



External Function Box EFB300

Overview functionalities



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Signalling

Output of

- Trip cause LSING
- Overload warning AL1 (95%) und AL2 (105%) to local signalling devices



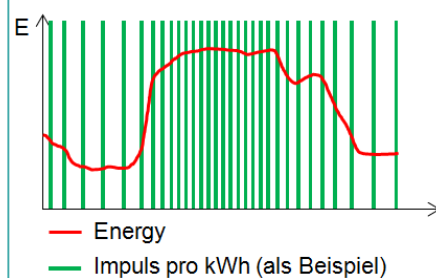
Controlling

With the load shedding and load restoring function it is possible to switch off consumers (pumps, compressors, HVAC) → easy way of powermanagement



Counting

With the function of the S0 interface an impulse can be distributed per energy contents (e.g. kWh). Simple energy management possible.



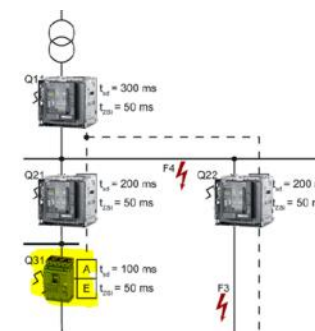
Warning

Frequency converters can be warned of an overload trip triggering for 200 ms.



Protection

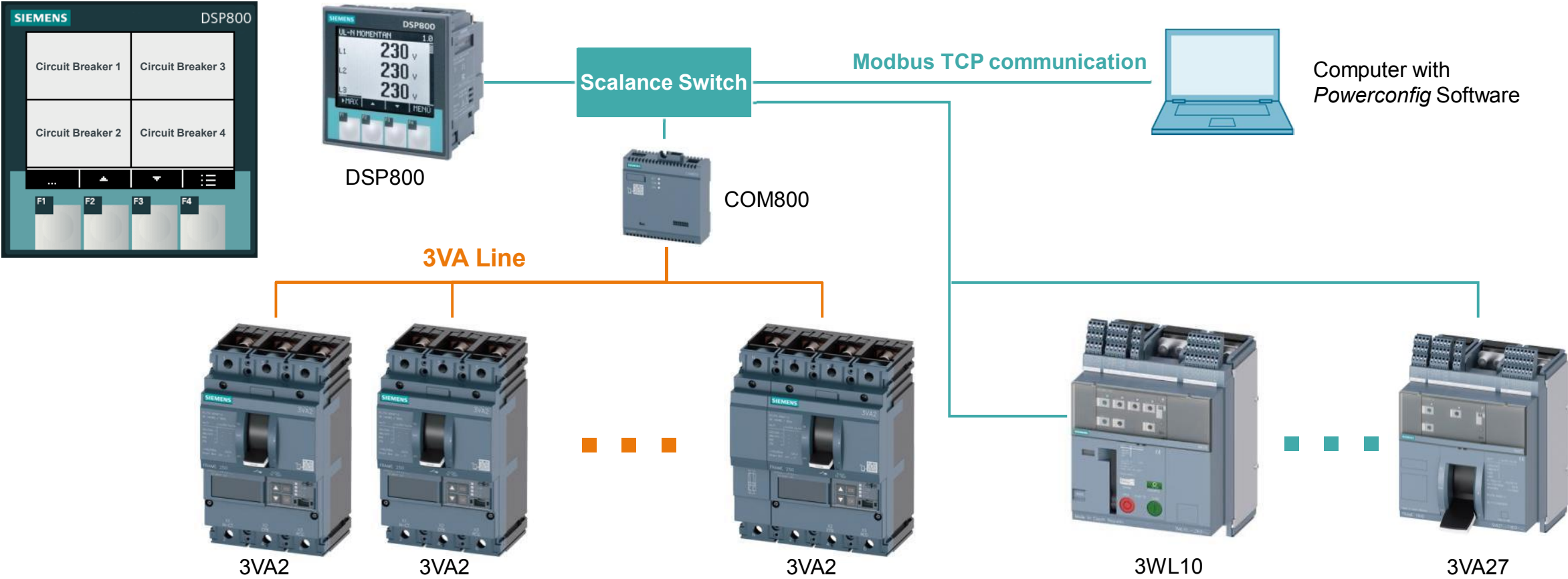
With a ZSI function it is possible to reduce the tripping times of the S and G protection to 50 ms. In the fault case there is a considerably lower system load/stress.



High transparency regarding usage data and system states



Communication via Modbus TCP IP, Modbus RTU, Profinet, Profibus

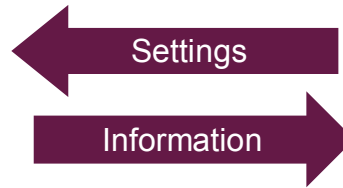


One configuration software for all SENTRON products

Parameter, on-line statuscheck, commissioning..



Installation of Sentron components



User friendly

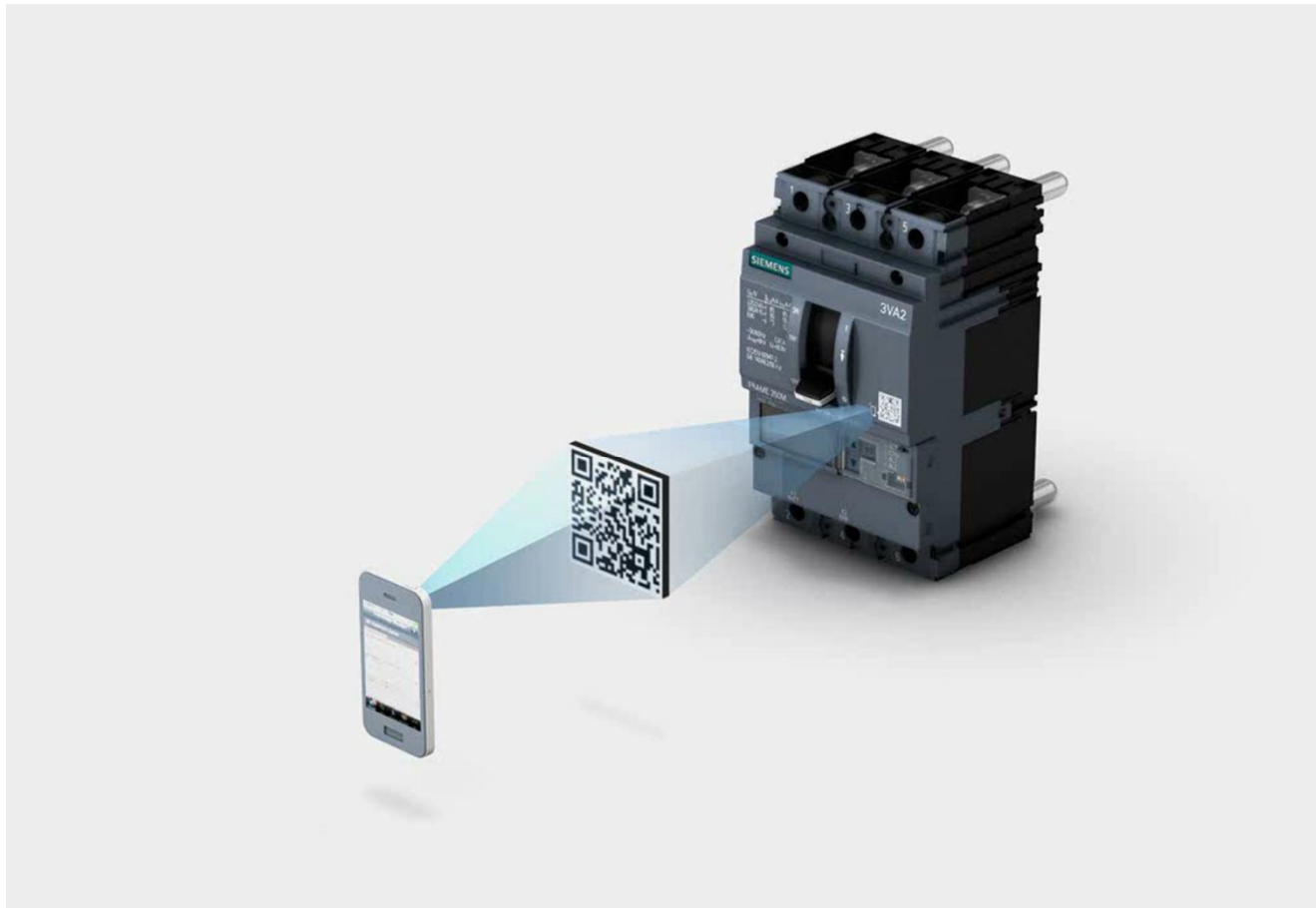


Print-out



- **Simaris Powerconfig v3.11 (release 10-02-2018)**
- 3VA Molded Case Circuit Breakers (incl. DSP800 display, COM800 data server)
- 3WL Air Circuit Breakers
- Energy Counters 7KT, PAC
- Automatic Transfer Switches
- **Free download (Updates incl.):**
- <http://support.automation.siemens.com/WW/view/en/63452759>
- <http://www.siemens.com/sentron>

Knowledge Manager



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Knowledge Manager

NEW

- Scanning of the QR code provides MLFB-based technical information of the 3VA molded case circuit breaker
- Direct connection to the Service & Support Portal
- Siemens Industry Support App
- QR-Reader i-nigma

Patent pending

Digitalization in Panel Building



Data-based Engineering

BIM Building Information Modeling (BIM)



Electrical dimensioning



SIMARIS design

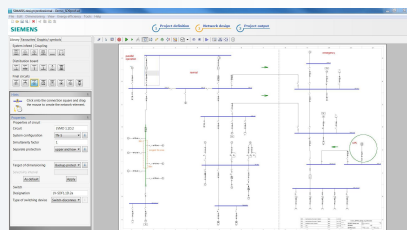


SIMARIS project

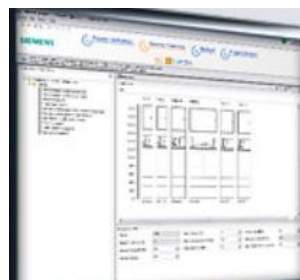
- Network planning

- Space requirement
- Cost estimate

1-pole overall network plan



- Simaris Curves APP

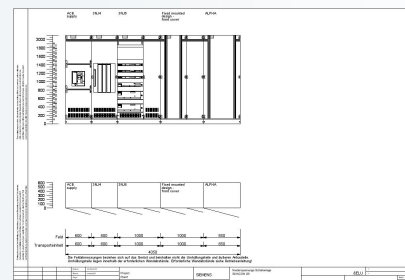


Mechanical dimensioning



SIMARIS configuration

- Dimensioning of the plant

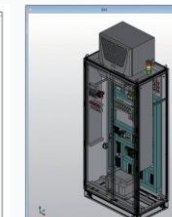
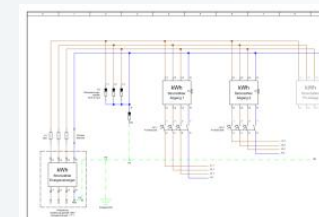


- Simaris Therm software: dimensioning of the heat dissipation IEC61439-2

Electrotechnical planning



3-pole wiring diagram



Consistent support in the engineering process – from planning to commissioning

- Saves time
- Reduces effort
- Reduces costs



Thank you for your attention!

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