## **DATASHEET - N4-4-1600-S15-DC**

No.



Switch-disconnector 4p 1600A 1500VDC

Part no. N4-4-1600-S15-DC Catalog No. 166417 Alternate Catalog N4-4-1600-S15-DC

Powering Business Worldwide\*

Similar to illustration

Delivery program			
Product range			Switch-disconnectors
Protective function			Disconnectors/main switches Photovoltaic applications
Product range			DC switch-disconnectors
Application field			Utility buildings Open areas
Part no.			NDC
Standard/Approval			IEC
Rated operational voltage			1500
Installation type			Fixed
Construction size			N4
Description			IEC/EN 60947-3 CCC China Compulsory Certificate Main switch characteristics including positive drive to IEC/EN 60204 and VDE 0113. Isolating characteristics to IEC/EN 60947-3 and VDE 0660. N switch-disconnectors can, in addition, be combined with NZMXU, NZMXA shunt releases and auxiliary contacts as well as with NZMXR remote operator. For DC switching, all 4 contacts must be connected in series. Refer to the information on jumper kit accessories. Supplied as standard: Screw connection; box terminal optional. When working with ungrounded systems (e.g., IT), the installation must ensure that a double ground fault will be impossible. Switch can not be combined with plug-in/withdrawable units and/or connection on rear.
Connection options			
Number of poles			4-pole basic device, usable in a 1-pole or 2-pole configuration depending on the type of connection
Number of poles Standard equipment			4-pole basic device, usable in a 1-pole or 2-pole configuration depending on the type of connection  Screw connection
			type of connection
Standard equipment	$I_n = I_u$	A	type of connection Screw connection
Standard equipment Switch positions	$I_n = I_u$	А	type of connection  Screw connection  I, +, 0

# Technical data Switch-disconnecto

Switch-disconnectors			
Rated operational voltage, max.	Ue	V DC	1500
Rated uninterrupted current with terminal jumpers			
at 40°			1600
at 65°			1500
			Values for rated uninterrupted current at 65 °C include jumpers.
Utilization category			DC-22A
Rated operational current	Ie	Α	
DC 22-A	le	Α	1600
Overvoltage category/pollution degree			III/3
Rated insulation voltage	Ui	V	1500
Ambient temperature			
Ambient temperature, storage		°C	- 40 - + 70
Operation		°C	-25 - +70
Rated short-time withstand current			
t = 0.1 s	I <sub>cw</sub>	kA	34
Lifespan, mechanical			
Max. operating frequency		0ps/h	60
Lifespan, mechanical	Operations		10000
			Lifespan, mechanical: of which max. 50 % trip by shunt/undervoltage release
Terminal capacity			
Standard equipment			Screw connection
Round copper conductor			
Tunnel terminal			
Stranded			
4-hole		$mm^2$	4 x (50 - 240)
Bolt terminals			
Direct on the switch			
Stranded		mm <sup>2</sup>	1 x (120 - 185) 4 x (50 - 185)
Module plate			4 x (50 - 165)
Single hole	min.	2	1 x (120 - 300)
	111111.	mm <sup>2</sup>	
Single hole	max.	mm <sup>2</sup>	2 x (95 - 300)
Module plate			
Double hole	min.	$\text{mm}^2$	2 x (95 - 185)
Double hole	max.	mm <sup>2</sup>	4 x (35 - 185)
Connection width extension		mm <sup>2</sup>	
Connection width extension		mm <sup>2</sup>	4 x 300
Al conductors Cu coble			6 x (95 - 240)
Al conductors, Cu cable			
Tunnel terminal			
Stranded		2	4/50. 240)
4-hole		mm <sup>2</sup>	4 x (50 - 240)
Bolt terminal and rear-side connection			
Flat copper strip, with holes	min.	mm	(2 x) 10 x 50 x 1.0
Flat copper strip, with holes	max.	mm	(2 x) 10 x 50 x 1.0
Connection width extension		mm	(2 x) 10 x 80 x 1,0
Cu strip (number of segments x width x segment thickness)			
Flat conductor terminal			
	min.	mm	6 x 16 x 0.8
	max.	mm	(2 x) 10 x 32 x 1.0
Module plate			
Single hole		mm	(2 x) 10 x 50 x 1,0
Bolt terminal and rear-side connection			

Flat copper strip, with holes	min.	mm	(2 x) 10 x 50 x 1.0
Flat copper strip, with holes	max.	mm	(2 x) 10 x 50 x 1.0
Connection width extension		mm	(2 x) 10 x 80 x 1,0
Copper busbar (width x thickness)	mm		
Bolt terminal and rear-side connection			
Screw connection			M10
Direct on the switch			
	min.	mm	25 x 5
	max.	mm	2 x (50 x 10) 2 x (80 x 10)
Module plate			
Single hole	min.	mm	25 x 5
Single hole	max.	mm	2 x (50 x 10)
Module plate			
Double hole		mm	2 x (50 x 10)
Connection width extension		mm	
Connection width extension	min.	mm	60 x 10
Connection width extension	max.	mm	2 x (10 x 80)

## Design verification as per IEC/EN 61439

echnical data for design verification			
Rated operational current for specified heat dissipation	In	Α	1600
Equipment heat dissipation, current-dependent	P <sub>vid</sub>	W	379
Operating ambient temperature min.		°C	-25
Operating ambient temperature max.		°C	70
EC/EN 61439 design verification			
10.2 Strength of materials and parts			
10.2.2 Corrosion resistance			Meets the product standard's requirements.
10.2.3.1 Verification of thermal stability of enclosures			Meets the product standard's requirements.
10.2.3.2 Verification of resistance of insulating materials to normal heat			Meets the product standard's requirements.
10.2.3.3 Verification of resistance of insulating materials to abnormal heat and fire due to internal electric effects			Meets the product standard's requirements.
10.2.4 Resistance to ultra-violet (UV) radiation			Meets the product standard's requirements.
10.2.5 Lifting			Does not apply, since the entire switchgear needs to be evaluated.
10.2.6 Mechanical impact			Does not apply, since the entire switchgear needs to be evaluated.
10.2.7 Inscriptions			Meets the product standard's requirements.
10.3 Degree of protection of ASSEMBLIES			Does not apply, since the entire switchgear needs to be evaluated.
10.4 Clearances and creepage distances			Meets the product standard's requirements.
10.5 Protection against electric shock			Does not apply, since the entire switchgear needs to be evaluated.
10.6 Incorporation of switching devices and components			Does not apply, since the entire switchgear needs to be evaluated.
10.7 Internal electrical circuits and connections			Is the panel builder's responsibility.
10.8 Connections for external conductors			Is the panel builder's responsibility.
10.9 Insulation properties			
10.9.2 Power-frequency electric strength			Is the panel builder's responsibility.
10.9.3 Impulse withstand voltage			Is the panel builder's responsibility.
10.9.4 Testing of enclosures made of insulating material			Is the panel builder's responsibility.
10.10 Temperature rise			The panel builder is responsible for the temperature rise calculation. Eaton will provide heat dissipation data for the devices.
10.11 Short-circuit rating			Is the panel builder's responsibility. The specifications for the switch gear must be observed. $\label{eq:constraint}$
10.12 Electromagnetic compatibility			Is the panel builder's responsibility. The specifications for the switch gear must be observed. $\label{eq:constraint}$
10.13 Mechanical function			The device meets the requirements, provided the information in the instruction leaflet (IL) is observed.

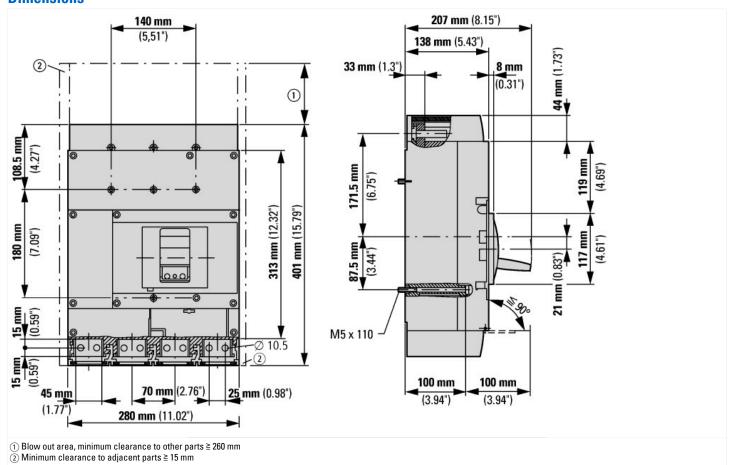
## **Technical data ETIM 7.0**

Low-voltage industrial components (EG000017) / Switch disconnector (EC000216)

Electric engineering, automation, process control engineering / Low-voltage switch technology / Off-load switch, circuit breaker, control switch / Switch disconnector (ecl@ss10.0.1-27-37-14-03 [AKF060013])

Version as aminatewasher services which version as aminatewasher-services which version as aminatewasher-services which version as aminatewasher-services which version as aminatewasher-services which version as anieth search services which we have a services which version as a version and a version voltage Ura AC 24.00 Version and a ver	[AKF060013])		
Version as safety switch         %         %           Version as emergency stop installation         %         Yes           Vorsion as reversing switch         %         No           Max. rated operation voltage Ue AC         %         1           Max rated operation voltage Ue AC         %         100-1500           Rated operation voltage Ue AC         %         0           Rated operation voltage Ue AC         %         0           Rated permanent current and AC-23, 400 V         A         0           Rated operation power at AC-23, 400 V         W         0           Switching power at 400 V         W         0           Switching power at 400 V         W         0           Conditioned rated short-circuit current low         W         0           Number of poles         W         0           Number of auxiliary cortacts as normally open contact         W         0           Number of auxiliary cortacts as change-over cortact	Version as main switch		Yes
Version as emergency stop installation         Pa         No           Version as reversing switch         0         10           Number of switches         V         0           Rated operation voltage UeAC         V         1500-1500           Rated permanent current at LO         A         1500-1500           Rated permanent current at AC-23,400 V         A         0           Rated operation power at AC-3,400 V         A         0           Conditioned rated short-circuit current lq         A         A         0           Number of auxiliary contacts as normally closed contact         A         0         0           Number of auxiliary contacts as change-over contact         A         Y         0           Motor drive integrated         A         Y         Y           Suitable for from mounting Acetale         A	Version as maintenance-/service switch		Yes
Version as reversing switch         Image: Control of Switches         Image: Control of Switches <t< td=""><td>Version as safety switch</td><td></td><td>No</td></t<>	Version as safety switch		No
Number of switches         I	Version as emergency stop installation		Yes
Max. rated operation voltage Ue AC         V         V         1500 - 1500           Rated operating voltage         V         1500 - 1500           Rated permanent current ue         A         1600           Rated permanent current at AC-21,400 V         A         0           Rated operation power at AC-3,400 V         KW         0           Rated operation power at AC-3,400 V         KW         3           Rated short-time withstand current low         KW         0           Rated short-time withstand current low         KW         0           Rated short-time withstand current low         KW         0           Route operation power at AC-23, 400 V         KW         0           Switching power at 400 V         KW         0           Conditioned rated short-circuit current lq         KW         0           Number of auxiliary contacts as normally closed contact         KW         0           Number of auxiliary contacts as change-over contact         KW         0           Number of auxiliary contacts as change-over contact         KW         0           Motor drive integrated         KW         Ye           Number of auxiliary contacts as change-over contact         KW         Ye           Suitable for from mounting 4-tole         Ye	Version as reversing switch		No
Rated operating voltage         V         1500-1500           Rated permanent current Iu         A         1600           Rated permanent current at AC-23,400 V         A         0           Rated permanent current at AC-23,400 V         A         0           Rated permanent current at AC-23,400 V         A         0           Rated short-ine withstand current Ew         A         34           Rated short-ine withstand current Ew         B         AW         0           Rated short-ine withstand current Ew         B         AW         0           Conditioned rated short-circuit current Iq         BW         0         0           Number of polos         B         A         0         0           Number of auxiliary contacts as normally open contact         B         Yes         0           Motor drive entities integrated         B         Yes         0           Device construction         B         Yes         0	Number of switches		1
Rated permanent current lu         A         1600           Rated permanent current at AC-23, 400 V         A         0           Rated permanent current at AC-23, 400 V         A         0           Rated permanent current at AC-23, 400 V         A         0           Rated operation power at AC-23, 400 V         A         3           Rated operation power at AC-23, 400 V         W         0           Switching power at 400 V         W         0           Conditioned rated short-circuit current Iq         KA         0           Number of poles         A         4           Number of auxiliary contacts as normally closed contact         A         0           Number of auxiliary contacts as normally copen contact         B         A         0           Number of auxiliary contacts as change-over contact         B         B         B         B           Number of auxiliary contacts as change-over contact         B </td <td>Max. rated operation voltage Ue AC</td> <td>V</td> <td>0</td>	Max. rated operation voltage Ue AC	V	0
Rated permanent current at AC-21, 400 V         A         0           Rated permanent current at AC-21, 400 V         A         0           Rated operation power at AC-3, 400 V         W         0           Rated short-line withstand current lew         A         34           Rated peration power at AC-23, 400 V         W         0           Switching power at 400 V         W         0           Conditioned rated short-circuit current lq         A         0           Number of poles         B         4         4           Number of auxiliary contacts as normally closed contact         B         0         0           Number of auxiliary contacts as normally open contact         B         0         0           Number of auxiliary contacts as change-over contact         B         6         9         9           Motor drive optional         B         7         9         9           Motor drive integrated         B         9	Rated operating voltage	V	1500 - 1500
Rated permanent current at AC-21, 400 V         A         0           Rated operation power at AC-3, 400 V         WW         0           Rated short-time withstand current low         KA         34           Rated operation power at AC-23, 400 V         WW         0           Switching power at 400 V         WW         0           Conditioned rated short-circuit current Iq         KW         0           Number of poles         4         0           Number of auxiliary contacts as normally closed contact         W         0           Number of auxiliary contacts as change-over contact         W         0           Motor drive optional         Wes         0           Motor drive integrated         Yes         No           Motor drive integrated         Yes         No           Voltage release optional         Yes         No           Device construction         Yes         Wes           Suitable for front mounting 4-hole         No         No           Suitable for front mounting centre         Yes         No           Suitable for intermediate mounting         Yes         No           Suitable for intermediate mounting         Yes         No           Suitable for intermediate mounting         Yes	Rated permanent current lu	Α	1600
Rated operation power at AC-3, 400 V         kW         0           Rated short-time withstand current lcw         kA         34           Rated operation power at AC-23, 400 V         kW         0           Switching power at 400 V         kW         0           Conditioned rated short-circuit current lq         kA         0           Number of poles         KA         0           Number of auxiliary contacts as normally closed contact         KA         0           Number of auxiliary contacts as normally open contact         0         0           Number of auxiliary contacts as change-over contact         0         0           Motor drive optional         Yes         Ves           Motor drive integrated         Yes         Built-in device fixed built-in technique           Voltage release optional         Yes         Built-in device fixed built-in technique           Suitable for ground mounting         Yes         No           Suitable for front mounting 4-hole         No         No           Suitable for front mounting entre         Yes         Yes           Suitable for front mounting centre         Yes         Yes           Suitable for intermediate mounting         Yes         Yes           Colour control element         Yes	Rated permanent current at AC-23, 400 V	Α	0
Rated short-time withstand current low         kA         34           Rated operation power at AG-23, 400 V         kW         0           Switching power at 400 V         kW         0           Conditioned rated short-circuit current lq         kA         0           Number of poles         kA         0           Number of auxiliary contacts as normally closed contact         CO         0           Number of auxiliary contacts as normally open contact         CO         0           Mumber of auxiliary contacts as change-over contact         CO         0           Motor drive integrated         Yes         Volume of auxiliary contacts as change-over contact         Yes           Voltage release optional         Yes         Volume of auxiliary contacts as change-over contact         Yes           Suitable for ground mounting         Yes         Yes           Suitable for ground mounting         Yes         No           Suitable for from mounting centre         No         Yes           Suitable for from thounting centre         Yes         Yes           Suitable for intermediate mounting         Yes         Yes           Suitable for intermediate mounting         Yes         Yes           Colour control element         Yes         Yes	Rated permanent current at AC-21, 400 V	Α	0
Rated operation power at AC-23, 400 V  Switching power at 400 V  Conditioned rated short-circuit current lq  Number of poles  Number of poles  Number of auxiliary contacts as normally closed contact  Number of auxiliary contacts as normally closed contact  Number of auxiliary contacts as normally open contact  Number of auxiliary contacts as normally open contact  Number of auxiliary contacts as change-over contact  Motor drive optional  Motor drive integrated  Motor drive integrated  No  Voltage release optional  Device construction  Suitable for ground mounting  Suitable for front mounting 4-hole  Suitable for front mounting 4-hole  Suitable for front mounting entre  Suitable for intermediate mounting  Suitable for intermediate mounting  Colour control element  Type of control element  Type of control element  Type of electrical connection of main circuit  Degree of protection (IP), front side	Rated operation power at AC-3, 400 V	kW	0
Switching power at 400 V Conditioned rated short-circuit current Iq Number of poles Number of poles Number of auxiliary contacts as normally closed contact Number of auxiliary contacts as normally open contact Number of auxiliary contacts as change-over contact Number of auxiliary contacts as normally open contact Number of auxiliary contacts as normally open contact Number of auxiliary contacts as normally closed contact Number of auxiliary contacts as normally open contact Number of auxiliary contacts Number of auxiliary contacts as normally open c	Rated short-time withstand current lcw	kA	34
Conditioned rated short-circuit current Iq  Number of poles  Number of auxiliary contacts as normally closed contact  Number of auxiliary contacts as normally open contact  Number of auxiliary contacts as change-over contact  Number of auxiliary contacts as change-over contact  Number of auxiliary contacts as change-over contact  Motor drive optional  Motor drive integrated  Voltage release optional  Device construction  Suitable for ground mounting  Suitable for front mounting 4-hole  Suitable for front mounting 4-hole  Suitable for distribution board installation  Suitable for intermediate mounting  Colour control element  Type of control element  Interlockable  Type of electrical connection of main circuit  Degree of protection (IP), front side  A   O  O  Va  4  4  0  0  0  Ves  No  Yes  Suitable for intermediate mounting  Yes  Socrew connection  Pege of protection (IP), front side	Rated operation power at AC-23, 400 V	kW	0
Number of poles Number of auxiliary contacts as normally closed contact Number of auxiliary contacts as normally open contact Number of auxiliary contacts as change-over contact Number of auxiliary contacts as normally open contacts Number of auxiliary contacts as normally open contacts Number of auxiliary contacts as normally open	Switching power at 400 V	kW	0
Number of auxiliary contacts as normally closed contact  Number of auxiliary contacts as normally open contact  Number of auxiliary contacts as change-over contact  Number of auxiliary contacts as change-over contact  Number of auxiliary contacts as change-over contact  No  Motor drive optional  Motor drive integrated  No  Voltage release optional  Device construction  Suitable for ground mounting  Suitable for front mounting 4-hole  Suitable for front mounting centre  Suitable for first mounting centre  Suitable for distribution board installation  Suitable for intermediate mounting  Colour control element  Type of control element  Interlockable  Type of electrical connection of main circuit  Degree of protection (IP), front side   0  0  0  0  0  0  0  0  0  0  0  0	Conditioned rated short-circuit current Iq	kA	0
Number of auxiliary contacts as normally open contact  Number of auxiliary contacts as change-over contact  Number of auxiliary contacts as change-over contact  Notor drive optional  Motor drive integrated  No  Voltage release optional  Pevice construction  Suitable for ground mounting  Suitable for front mounting 4-hole  Suitable for front mounting centre  No  Suitable for front mounting centre  No  Suitable for intermediate mounting  Colour control element  Type of control element  No  Rocker lever  Type of electrical connection of main circuit  Degree of protection (IP), front side  Number of auxiliary contacts as normally open contact  O  O  O  O  O  O  O  O  O  O  O  O  O	Number of poles		4
Number of auxiliary contacts as change-over contact  Motor drive optional  Motor drive integrated  No  Voltage release optional  Device construction  Suitable for ground mounting  Suitable for front mounting 4-hole  Suitable for front mounting centre  No  Suitable for front mounting centre  No  Suitable for intermediate mounting  Yes  Colour control element  Type of control element  No  Rocker lever  Type of electrical connection of main circuit  Degree of protection (IP), front side	Number of auxiliary contacts as normally closed contact		0
Motor drive optional Motor drive integrated No Voltage release optional Ves Device construction Built-in device fixed built-in technique Suitable for ground mounting Yes Suitable for front mounting 4-hole No Suitable for front mounting centre No Suitable for distribution board installation Yes Suitable for intermediate mounting Ves Colour control element Type of control element Interlockable Type of electrical connection of main circuit Degree of protection (IP), front side  No  No Screw connection Pegree of protection (IP), front side	Number of auxiliary contacts as normally open contact		0
Motor drive integratedNoVoltage release optionalYesDevice constructionBuilt-in device fixed built-in techniqueSuitable for ground mountingYesSuitable for front mounting 4-holeNoSuitable for front mounting centreNoSuitable for distribution board installationYesSuitable for intermediate mountingYesColour control elementBlackType of control elementRocker leverInterlockableYesType of electrical connection of main circuitScrew connectionDegree of protection (IP), front sideIP20	Number of auxiliary contacts as change-over contact		0
Voltage release optional  Device construction  Suitable for ground mounting  Suitable for front mounting 4-hole  Suitable for front mounting centre  Suitable for distribution board installation  Suitable for intermediate mounting  Colour control element  Type of control element  Interlockable  Type of electrical connection of main circuit  Degree of protection (IP), front side  Yes  Built-in device fixed built-in technique  No  No  No  Ves  No  Yes  Suitable for intermediate mounting  Yes  Rocker lever  Yes  Screw connection  IP20	Motor drive optional		Yes
Device construction  Built-in device fixed built-in technique  Yes  Suitable for ground mounting  Suitable for front mounting 4-hole  No  Suitable for front mounting centre  Suitable for distribution board installation  Yes  Suitable for intermediate mounting  Yes  Colour control element  Type of control element  Interlockable  Type of electrical connection of main circuit  Degree of protection (IP), front side  Built-in device fixed built-in technique  No  Rocker lever  Serew connection  Built-in device fixed built-in technique  No  No  Suitable for front mounting +hole  No  Serew connection  Black  Type of electrical connection of main circuit  Serew connection  IP20	Motor drive integrated		No
Suitable for ground mounting Suitable for front mounting 4-hole No Suitable for front mounting centre No Suitable for distribution board installation Suitable for intermediate mounting Yes Colour control element Black Type of control element Rocker lever Interlockable Type of electrical connection of main circuit Degree of protection (IP), front side  Yes Interlockable Pes Screw connection IP20	Voltage release optional		Yes
Suitable for front mounting 4-hole  Suitable for front mounting centre  No  Suitable for distribution board installation  Yes  Suitable for intermediate mounting  Yes  Colour control element  Type of control element  Interlockable  Type of electrical connection of main circuit  Degree of protection (IP), front side  No  No  No  Yes  Yes  Yes  Yes  Screw connection  IP20	Device construction		Built-in device fixed built-in technique
Suitable for front mounting centre  Suitable for distribution board installation  Yes  Suitable for intermediate mounting  Colour control element  Type of control element  Interlockable  Type of electrical connection of main circuit  Degree of protection (IP), front side  No  Yes  No  Yes  Yes  Recker lever  Rocker lever  Yes  Screw connection  IP20	Suitable for ground mounting		Yes
Suitable for distribution board installation  Yes  Suitable for intermediate mounting  Yes  Colour control element  Type of control element  Interlockable  Type of electrical connection of main circuit  Degree of protection (IP), front side  Yes  Yes  IP20	Suitable for front mounting 4-hole		No
Suitable for intermediate mounting  Yes  Colour control element  Type of control element  Interlockable  Type of electrical connection of main circuit  Degree of protection (IP), front side  Yes  IP20	Suitable for front mounting centre		No
Colour control element Black Type of control element Rocker lever Interlockable Type of electrical connection of main circuit Screw connection Degree of protection (IP), front side Black Rocker lever Yes Interlockable IP20	Suitable for distribution board installation		Yes
Type of control element Interlockable Type of electrical connection of main circuit Degree of protection (IP), front side Rocker lever Yes Screw connection IP20	Suitable for intermediate mounting		Yes
Interlockable Yes Type of electrical connection of main circuit Screw connection Degree of protection (IP), front side IP20	Colour control element		Black
Type of electrical connection of main circuit  Degree of protection (IP), front side  Screw connection  IP20	Type of control element		Rocker lever
Degree of protection (IP), front side	Interlockable		Yes
	Type of electrical connection of main circuit		Screw connection
Degree of protection (NEMA)	Degree of protection (IP), front side		IP20
	Degree of protection (NEMA)		

## **Dimensions**



### Additional product information (links)

Additional product information (inits)	
CurveSelect characteristics program	http://www.eaton.eu/DE/Europe/Electrical/CustomerSupport/ConfigurationTools/CharacteristicsProgram/index.htm
Eaton configurator	http://www.eaton.eu/DE/Europe/Electrical/CustomerSupport/ConfigurationTools/ConfiguratorCircuitBreaker/index.htm
Additional technical data: Photovoltaics catalog (starting on page 35)	http://www.moeller.net/binary/pdf_kat/br01601001z_en.pdf