### **DATASHEET - N2-4-160-S15-DC**



Switch-disconnector 4p 160A 1500VDC

Part no. N2-4-160-S15-DC Catalog No. 167688
Alternate Catalog N2-4-160-S15-DC



Similar to illustration

Protection function  Disconnectors primate workches Protection function  Disconnectors primate function  EEC  Stand primate protection function  Stand protection violage  Disconnection related  Disconnection function  RECE MSSST-3  DOC Close Companyon Contribute  DOC Close Companyon  DOC C	Dolivory program			
Production function Product range  Contract range  College Contract range  College Col	Delivery program Product range			Switch-disconnectors
Product range  10 Cewitch-deconnectors  10 Cew				
Application field  Part no.  N. D.C  Standard Approved  REC  Part no.  N. D.C  REC  Application value of particular value	Trotective function			
Part no N_DC  Tendand/Approval  EEC  Tendand/Approval  EEC  IEC  IEC  IEC  IEC  IEC  IEC  IE	Product range			DC switch-disconnectors
Standard (Approval)  Standard	Application field			
Asterd a operational voltage  Institution type	Part no.			NDC
Installation type  Read Construction size  N2  N2  Description  Read Construction size  N2  Rescription  Read Construction size  N2  Rescription  Read Construction Seepalus Construction size  N3  Read Seepalus Seepalus Construction Seepalus Construction Seepalus S	Standard/Approval			IEC
Description    EUE   189847-3   EUCH 189847-3 and VDE 0666.	Rated operational voltage			1500
Description    Secription   Secreption   Secription   Secription   Secription   Secription   Secreption   Secription   Sec	Installation type			Fixed
CCC China Compulsory Certificate Main switch characteristics including positive drive to IEC/EN 80204 and VDE Isolating characteristics in IEC/EN 80204 and VDE Isolating characteristics in IEC/EN 80204 and VDE 6060.  N switch-Sciencentors can, in addition, be combined with NZML—XVL, nemote ope For Classwitching, all disonative into the connected in series. Refer to the Supplied as standards "Correct connection box terminal optional. When working with segrounding (e.g., IT), the installation must ensure a double ground fault will be impossible.  Switch can not be combined with plug-in/withdrawable units and/or connect rear.  Connection options  Number of poles  4-pole basic device, usable in a 1-pole or 2-pole configuration depending on t type of connection Screw connection  Screw connection  1, = 1, A 100  Remote operation with shunt releases / remote operator	Construction size			N2
Number of poles  4-pole basic device, usable in a 1-pole or 2-pole configuration depending on type of connection  Standard equipment Sortew connection Switch positions Remotely control/trip  A 180  Remotely control/trip  Remote operation with shunt releases / remote operator	Description			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
Number of poles  4-pole basic device, usable in a 1-pole or 2-pole configuration depending on type of connection  Standard equipment  Screw connection  Switch positions  Rated current = rated uninterrupted current  In = Iu A 160  Remotely control / trip  Remote operation with shunt releases / remote operator	Connection options			
type of connection  Standard equipment  Switch positions  Rated current = rated uninterrupted current  In = Iu A 160  Remotely control / trip  Remotely control / trip  type of connection  Screw connection  I, +, 0  Remote operation with shunt releases / remote operator				
Switch positions  Remotely control / trip  In = Iu  In =	Number of poles			4-pole basic device, usable in a 1-pole or 2-pole configuration depending on the type of connection
Rated current = rated uninterrupted current  I <sub>n</sub> = I <sub>u</sub> A 160 Remotely control / trip Remote operation with shunt releases / remote operator	Standard equipment			Screw connection
Remotely control / trip  Remote operation with shunt releases / remote operator	Switch positions			l, +, 0
	Rated current = rated uninterrupted current	$I_n = I_u$	Α	160
Rated operating frequency DC	Remotely control / trip			Remote operation with shunt releases / remote operator
	Rated operating frequency			DC

### **Technical data**

#### **Switch-disconnectors**

Rated uninterrupted current with terminal jumpers         160           at 40°         160           at 65°         160           Utilization category         Values for rated uninterrupted current at 65°C include jumpers.           DC 22A         DC 22A           Dvervoltage category/pollution degree         III/2           Rated insulation voltage         Vy         500           Other technical data (sheet catalogue)         Vy         500           Ambient temperature         Ve         Vo           Ambient temperature, storage         °C         -40 - + 70           Operation         °C         -25 - +70           Rated short-time withstand current         Ital         Ka           t=1s         Iow         KA         36           Lifespan, mechanical           Mx. operating frequency         Ops/h         120	Switch-disconnectors			
1	Rated operational voltage, max.	Ue	V DC	1500
Part	Rated uninterrupted current with terminal jumpers			
Control   Cont	at 40°			160
District controls of create   Fig. 10   Fig.	at 65°			160
Rate of potential currents         I, a. A. B.				Values for rated uninterrupted current at 65 °C include jumpers.
Receit operational current         I, e. A. A. B. C.	Utilization category			DC-22A
CO C2 A         Is         40         100 </td <td></td> <td>ما</td> <td>Α</td> <td></td>		ما	Α	
December of Range (range (ra				100
Rated insulation veltage         Up         V         Significant comparation           Ambient temperature         4         1         Ambient temperature (Sprange)         4         1         4        7         1        7         1        7 <td></td> <td>ie</td> <td>А</td> <td></td>		ie	А	
Buth intertemperature         Weight Temperature         Very Effective power lass         Very Effective power lass         Weight Temperature         Periodic power lass         Periodic powe				
Ambient temperature, storage   Part	Rated insulation voltage	Ui	V	1500
Ambient tengerature, storage         40 - 70         40 - 70         40 - 70         25 - 700         400         400         25 - 700         40	Other technical data (sheet catalogue)			Temperature dependency, Derating
Rote of Strands         ***         25 - 270           Rate of Short-time withstand current         ***         X         3.5           Lifespan, mechanical         Operations         2000           Usespan, mechanical         Operations         2000           Usespan, mechanical         Operations         2000           Terminal capacity         Strandsd squipment         Serve connection           Boatserd squipment         Final Company         Serve connection           Bost norminal         Image: proper conductor         Image:	Ambient temperature			
Rated short-time withstand current  t= 1 s	Ambient temperature, storage		°C	- 40 - + 70
Table	Operation		°C	-25 - +70
Lifespan, mechanical         Upsal (page and prequency)         Q post of the page and prequency (page and page and	Rated short-time withstand current			
Max. operating frequency	t = 1 s	I <sub>cw</sub>	kA	3.6
Max. operating frequency	Lifespan, mechanical			
	Max. operating frequency		0ps/h	120
	Lifespan, mechanical	Operations		20000
Standard quipment q				
Standard equipment   Standar	Terminal capacity			
Round copper conductor         Box terminal         Ix [41-16]				Screw connection
Box terminal				
Solid   Stranded   S				
			2	1/4. 16)
Tunnel terminal	Solid		mm²	
Solid   Stranded   S	Stranded		mm <sup>2</sup>	1 x (25 - 185)
Stranded         Mm²         1x (25 - 185)           Bolt terminals         1x (10 - 16)         1x (10 - 16)           Solid         1x (10 - 16)         1x (10 - 16)           Stranded         1x (10 - 16)         1x (25 - 185)           Al conductors, Cu cable         1x (25 - 185)         1x (25 - 185)           Tunnel terminal         1x (25 - 185)         1x (25 - 185)           Stranded         1x (25 - 185)         1x (25 - 185)           Stranded         1x (25 - 185)         1x (25 - 185)           Stranded         1x (25 - 185)         1x (25 - 185)           Bolt terminal and rear-side connection         1x (25 - 185)         1x (25 - 185)           Bolt terminal and rear-side connection         1x (25 - 185)         1x (25 - 185)           Box terminal         1x (25 - 185)         1x (25 - 185)           Cu strip (number of segments x width x segment thickness)         1x (25 - 185)         1x (25 - 185)           Box terminal         1x (25 - 185)         2x (2 x x 0.8)           Box terminal         1x (25 - 185)         1x (25 - 185)           Box terminal         1x (25 - 185)         1x (25 - 185)           Box terminal         1x (25 - 185)         1x (25 - 185)           1x (25 - 185)         2x (25 - 185)	Tunnel terminal			
Stranded           x   x   x   x   x   x   x   x   x   x	Solid		mm <sup>2</sup>	1 x 16
Stranded   March   M	Strandad			
Bolt terminals			2	1/05 105)
Direct on the switch	Sudilueu		mm <sup>2</sup>	T X (23 - 103)
Solid   Stranded   S	Bolt terminals			
	Direct on the switch			
	Solid		mm <sup>2</sup>	
Al conductors, Cu cable Tunnel terminal Solid Stranded Stranded Stranded Stranded  Stranded  Min. Flat copper strip, with holes  Box terminal  Box terminal  Min. Min. Min. Min. Min. Min. Min. Min	Stranded		$mm^2$	
Tunnel terminal Solid Stranded  Stranded  Stranded  Stranded  Bolt terminal and rear-side connection  Flat copper strip, with holes  Flat copper strip, with holes  Rox terminal  Box terminal  Box terminal  Box terminal  Tunnel terminal  Tunnel terminal  Tunnel terminal  Tunnel terminal  Tunel  T	Al conductors Cu coble			27/20 10/
Solid  Stranded  Stranded  Stranded  Mm² 1× (5 - 185)  Bolt terminal and rear-side connection  Flat copper strip, with holes  Cu strip (number of segments x width x segment thickness)  Box terminal  Min. mm 2×9 x 0.8  The copper strip with form and and rear-side connection  Min. mm 2×9 x 0.8  The copper strip with form and and rear-side connection  Min. mm 2×9 x 0.8  The copper strip with form and and rear-side connection  Min. mm 2×9 x 0.8  The copper strip with form and and rear-side connection  Min. mm 2×9 x 0.8  The copper strip with form and rear-side connection  Min. mm 2×9 x 0.8  The copper strip with form and rear-side connection  Min. mm 2×16 x 0.8  The copper strip with form and rear-side connection  Min. mm 2×16 x 0.8  The copper strip with form and rear-side connection  Min. mm 2×16 x 0.8  The copper strip with form and rear-side connection  Min. mm 2×16 x 0.8  The copper strip with form and rear-side connection  Min. mm 2×16 x 0.8  The copper strip with form and rear-side connection  Min. mm 2×16 x 0.8  The copper strip with form and rear-side connection  Min. mm 2×16 x 0.8  The copper strip with form and rear-side connection  Min. mm 2×16 x 0.8  The copper strip with form and rear-side connection  Min. mm 2×16 x 0.8  The copper strip with form and rear-side connection  Min. mm 2×16 x 0.8  The copper strip with form and rear-side connection  Min. mm 2×16 x 0.8  The copper strip with form and rear-side connection  Min. mm 2×16 x 0.8  The copper strip with form and rear-side connection  Min. mm 2×16 x 0.8  The copper strip with form and rear-side connection  Min. mm 2×16 x 0.8  The copper strip with form and rear-side connection  Min. mm 2×16 x 0.8  The copper strip with form and rear-side connection  Min. mm 2×16 x 0.8  The copper strip with form and rear-side connection  Min. mm 2×16 x 0.8  The copper strip with form and rear-side connection  Min. mm 2×16 x 0.8  The copper strip with form and rear-side connection  Min. mm 2×16 x 0.8  The copper strip with form and rear-side connection  Min. mm 2×16				
Stranded  Stranded  Stranded  Bolt terminal and rear-side connection  Flat copper strip, with holes  Flat copper strip, with holes  Max. mm 2 x 16 x 0.8  Cu strip (number of segments x width x segment thickness)  Box terminal  min. mm 2 x 9 x 0.8  The copper strip, with holes  min. mm 2 x 9 x 0.8  The copper strip (number of segments x width x segment thickness)  Box terminal  min. mm 2 x 9 x 0.8  The copper strip (number of segments x width x segment thickness)  max. mm 10 x 16 x 0.8  (2 x) 8 x 15,5 x 0.8  The copper strip, with holes  min. mm 2 x 16 x 0.8				
Stranded  Bolt terminal and rear-side connection  Flat copper strip, with holes  Flat copper strip, with holes  Max.  Box terminal  Min.  Mm  2 x 16 x 0.8  10 x 24 x 0.8  Cu strip (number of segments x width x segment thickness)  Min.  A y x 9 x 0,8  (2 x) 8 x 15,5 x 0,8  (2 x) 8 x 15,5 x 0,8  Min.  Flat copper strip, with holes  Min.  Min.	Solid		$mm^2$	1 x 16
Bolt terminal and rear-side connection  Flat copper strip, with holes  Flat copper strip, with holes  max.  mm  10 x 24 x 0.8  Cu strip (number of segments x width x segment thickness)  Box terminal  min.  mm  2 x 9 x 0.8  The copper strip, with holes  max.  mm  10 x 16 x 0.8  (2 x) 8 x 15,5 x 0,8  Flat copper strip, with holes  min.  mm  2 x 16 x 0.8  3 x 10 x 16 x 0.8  4 x 10 x 16 x 0.8  4 x 10 x 16 x 0.8  5 x 10 x 16 x 0.8  6 x 10 x 16 x 0.8  7 x 10 x 16 x 0.8  7 x 10 x 16 x 0.8  7 x 10 x 16 x 0.8  8 x 15,5 x 0.8  Flat copper strip, with holes  min.  mm  2 x 16 x 0.8	Stranded			
Bolt terminal and rear-side connection  Flat copper strip, with holes  min.  mm  2 x 16 x 0.8  Flat copper strip, with holes  max.  mm  10 x 24 x 0.8  Cu strip (number of segments x width x segment thickness)  Box terminal  min.  mm  2 x 9 x 0.8  The copper strip, with holes  max.  mm  10 x 16 x 0.8  (2 x) 8 x 15,5 x 0.8  Flat copper strip, with holes  min.  mm  2 x 16 x 0.8  2 x 9 x 0.8  3 x 16 x 0.8  4 x 10 x 16 x 0.8  5 x 10 x 16 x 0.8  7 x 10 x 10 x 10 x 10  7 x 10 x 10 x 10 x 10  7 x 10 x 10 x 10	Stranded		mm <sup>2</sup>	1 x (25 - 185)
Flat copper strip, with holes  min.  mm 2x 16x 0.8  Flat copper strip, with holes  max.  mm 10x 24x 0.8  Cu strip (number of segments x width x segment thickness)  Box terminal  min.  mm 2x 9x 0.8  max.  mm 10x 16x 0.8  (2x) 8x 15,5x 0.8  Bolt terminal and rear-side connection  Flat copper strip, with holes  min.  mm 2x 9x 0.8  2x 9x 0.8  2x 9x 0.8  2x 9x 0.8  2x 15x 0.8	Bolt terminal and rear-side connection			
Flat copper strip, with holes  Cu strip (number of segments x width x segment thickness)  Box terminal  min.  mm 2x 9x 9x 0,8  That copper strip, with holes  max.  mm 10x 16x 0,8 (2x) 8x 15,5 x 0,8  Bolt terminal and rear-side connection  Flat copper strip, with holes  min.  mm 2x 16x 0.8		min	mm	2 v 16 v 0 8
Cu strip (number of segments x width x segment thickness)  Box terminal  min.  mm 2 x 9 x 0,8  That copper strip, with holes  min.  mm 2 x 9 x 0,8  2 x 9 x 0,8  max.  mm 10 x 16 x 0,8 (2 x) 8 x 15,5 x 0,8  2 x 16 x 0.8				
Box terminal         min.         mm         2 x 9 x 0,8           max.         mm         10 x 16 x 0,8 (2 x) 8 x 15,5 x 0,8           Bolt terminal and rear-side connection         min.         mm         2 x 16 x 0.8           Flat copper strip, with holes         min.         mm         2 x 16 x 0.8		max.	IIIM	IU X 24 X U.6
min. mm $2 \times 9 \times 0.8$ max. mm $10 \times 16 \times 0.8$ $(2 \times )8 \times 15,5 \times 0.8$ Bolt terminal and rear-side connection  Flat copper strip, with holes min. mm $2 \times 16 \times 0.8$				
max. mm 10 x 16 x 0,8 (2 x) 8 x 15,5 x 0,8  Bolt terminal and rear-side connection  Flat copper strip, with holes min. mm 2 x 16 x 0.8	Box terminal			
Bolt terminal and rear-side connection  Flat copper strip, with holes  min.  mm 2 x 16 x 0.8		min.	mm	2 x 9 x 0,8
Bolt terminal and rear-side connection  Flat copper strip, with holes min. mm 2 x 16 x 0.8		max.	mm	
Flat copper strip, with holes min. mm 2 x 16 x 0.8				(2 X) 8 X 15,5 X U,8
Flat copper strip, with holes $max$ . $mm$ $10 \times 24 \times 0.8$	Flat copper strip, with holes	min.	mm	2 x 16 x 0.8
	Flat copper strip, with holes	max.	mm	10 x 24 x 0.8

Copper busbar (width x thickness)	mm		
Bolt terminal and rear-side connection			
Screw connection			M8
Direct on the switch			
	min.	mm	16 x 5
	max.	mm	24 x 8

# Design verification as per IEC/EN 61439

1			
Technical data for design verification			
Rated operational current for specified heat dissipation	In	Α	160
Equipment heat dissipation, current-dependent	P <sub>vid</sub>	W	27
Operating ambient temperature min.		°C	-25
Operating ambient temperature max.		°C	70
IEC/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.
10.2.3.3Verification of resistanceofinsulatingmaterialstoabnormalheatandfireduetointernalelectriceffects			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. $\label{eq:continuous}$

#### **Technical data ETIM 7.0**

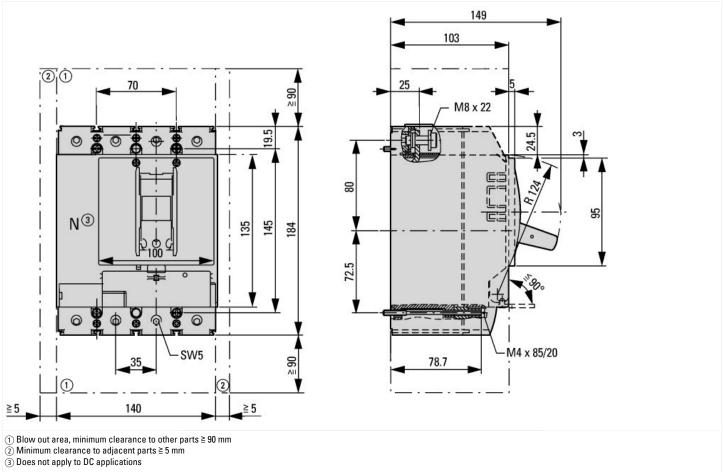
Low-voltage industrial components (EG000017) / Switch disconnector (EC000216)

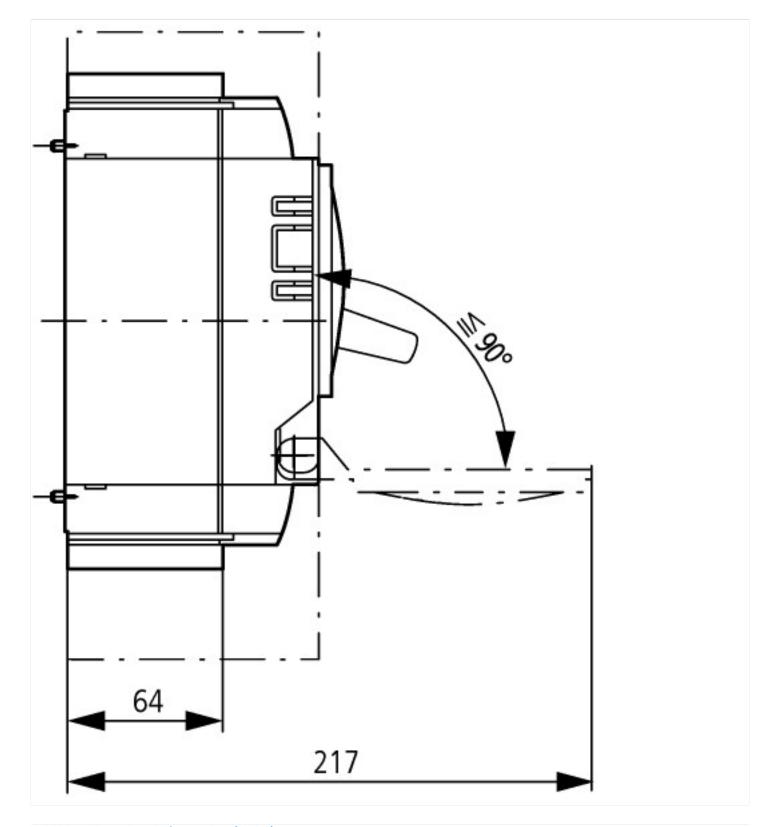
Electric engineering, automation, process control engineering / Low-voltage switch technology / Off-load switch, circuit breaker, control switch / Switch disconnector (ecl@ss10.0.1-27-37-14-03 [AKF060013])

[AKF060013])		
Version as main switch		Yes
Version as maintenance-/service switch		Yes
Version as safety switch		No
Version as emergency stop installation		Yes
Version as reversing switch		No
Number of switches		1
Max. rated operation voltage Ue AC	V	0
Rated operating voltage	V	1500 - 1500
Rated permanent current lu	А	160
Rated permanent current at AC-23, 400 V	А	0

Rated permanent current at AC-21, 400 V	Α	0
Rated operation power at AC-3, 400 V	kW	0
Rated short-time withstand current lcw	kA	3.6
Rated operation power at AC-23, 400 V	kW	0
Switching power at 400 V	kW	0
Conditioned rated short-circuit current Iq	kA	0
Number of poles		4
Number of auxiliary contacts as normally closed contact		0
Number of auxiliary contacts as normally open contact		0
Number of auxiliary contacts as change-over contact		0
Motor drive optional		Yes
Motor drive integrated		No
Voltage release optional		Yes
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		Yes
Colour control element		Black
Type of control element		Rocker lever
Interlockable		Yes
Type of electrical connection of main circuit		Screw connection
Degree of protection (IP), front side		IP20
Degree of protection (NEMA)		

### **Dimensions**





# Additional product information (links)

Weight	http://ecat.moeller.net/flip-cat/?edition=HPLEN&startpage=17.171
Temperature dependency, Derating	http://ecat.moeller.net/flip-cat/?edition=HPLEN&startpage=17.172
Effective power loss	http://ecat.moeller.net/flip-cat/?edition=HPLEN&startpage=17.174
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