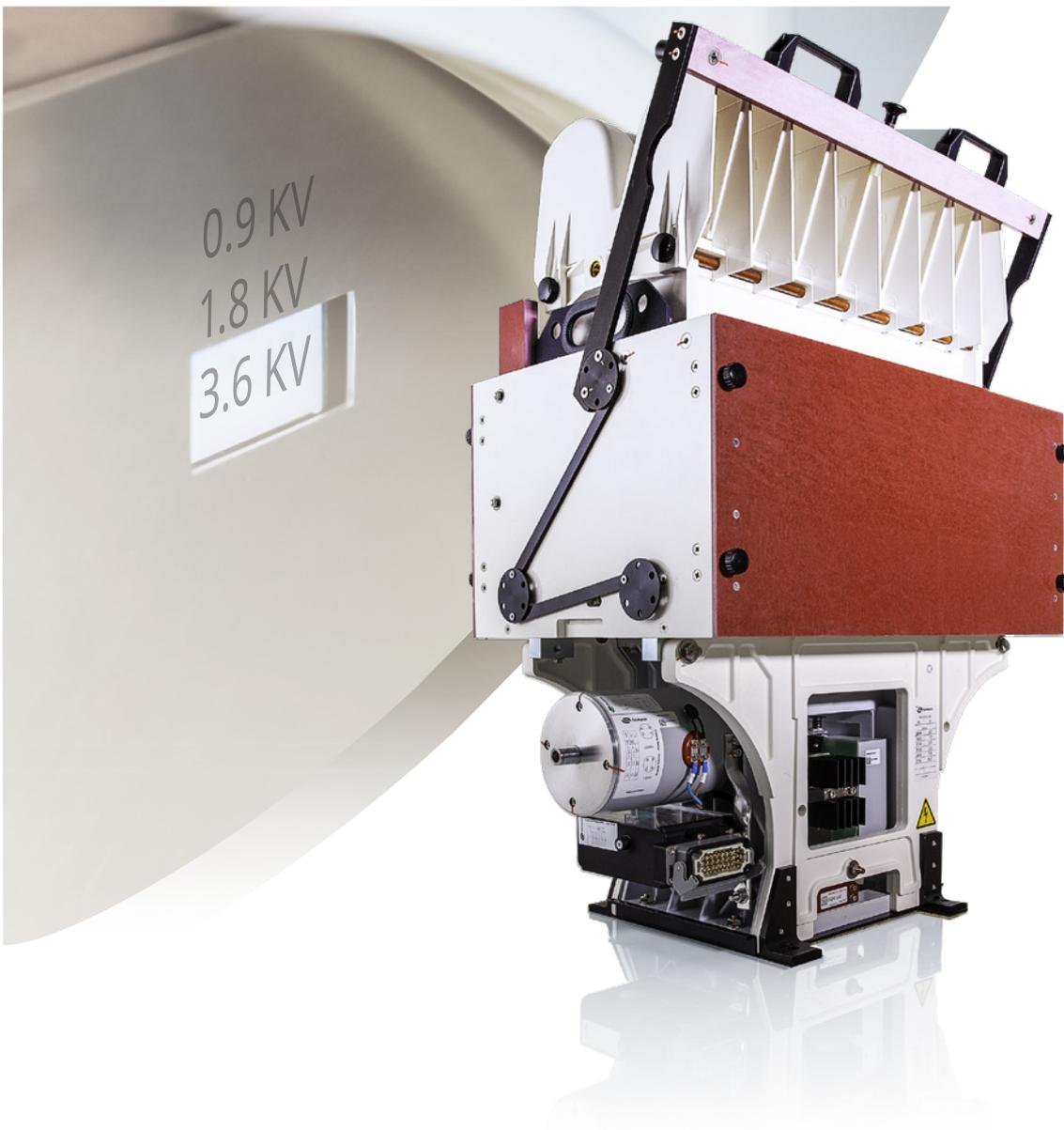


# HIGH-SPEED DC CIRCUIT BREAKERS

type **UR26**

RAIL VEHICLES



# GENERAL INFORMATION

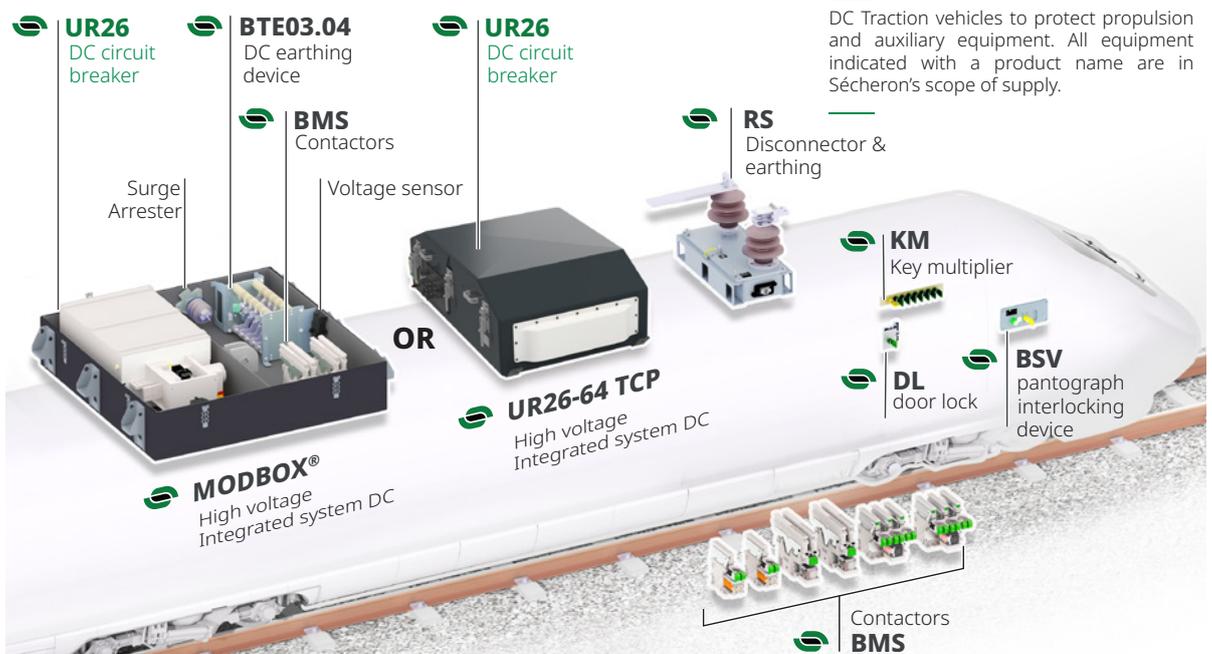
The **UR26** are DC high-speed, current-limiting, circuit breakers with natural cooling. They are trip free, single pole, bi-directional and equipped with electromagnetic blow-out, electric control circuits and direct over-current instantaneous release. With its simple design and high insulation level, the UR range offers a very high reliability as well as an exceptionally long lifetime.

To guarantee a safe and optimized installation of its circuit breakers in different environments, Sécheron offers a large range of standard and customized solutions. The circuit breaker of the UR range can be delivered with an insulating housing for indoor installation, or for outdoor use, in DC MODBOX® or in a polyester protective enclosure.

DC MODBOX® is a modular platform where the DC circuit breaker is integrated alone or with other high and low voltage components (contactors, disconnectors, resistors, voltage and current sensors...) in a light and compact metal box. This way, rolling stock manufacturers can be supplied with a fully tested "Plug & Play" unit, easy to install and highly valuable for project management and logistics.

With its proven worldwide experience and acceptance, Sécheron's circuit breaker is the key product to guarantee the highest safety to rolling stock material and to the people operating or using it.

## APPLICATIONS



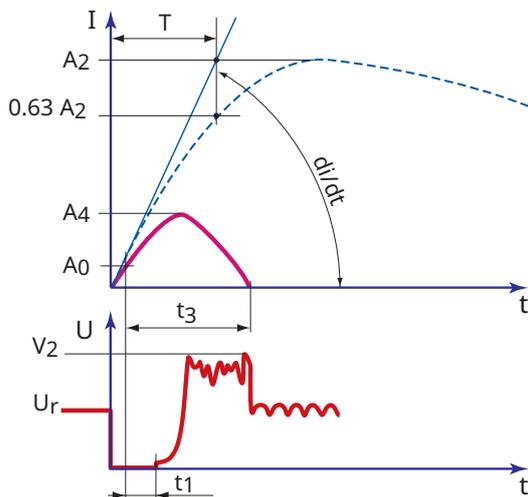
## MAIN BENEFITS

- ✓ High insulation voltage.
- ✓ High rated short-circuit making and breaking capacity.
- ✓ Limited maximum arc voltage.
- ✓ Heavy duty with operational frequency C3.
- ✓ A large number of different options to match various application requirements.
- ✓ Available also for dual voltage 1.8/3.6 kV<sub>DC</sub> applications (UR26-DV).
- ✓ Optional integrated control module, to manage closing and holding sequences.
- ✓ Very low maintenance requirements.
- ✓ Proven design with worldwide experience and acceptance.

## MAIN FEATURES

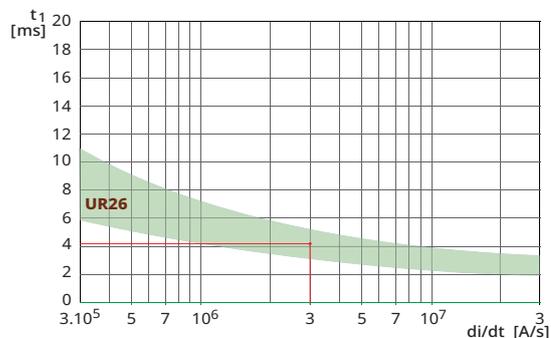
- Rated operational voltage 900 V<sub>DC</sub>; 1,800 V<sub>DC</sub>; 3,600 V<sub>DC</sub> and 1,800/3,600 V<sub>DC</sub> (dual voltage)
- Rated insulation voltage 3,000 V<sub>DC</sub> or 4,800 V<sub>DC</sub>
- Conventional free air thermal current: 2,300 A (UR26/UR26DV)
- Electro-magnetic closing with electric holding
- Five double contacts auxiliary switches
- Insulation material according to EN45545-2
- Reference standards: EN/IEC60077-3, IEC61373
- Certified according to Loc&Pas TSI for interoperability

## BREAKING CURRENT PARAMETERS



- $A_2$  = Peak of Short-circuit
- $A_0$  = Setting of maximum current release
- $A_4$  = Cut-off current
- $di/dt$  = Initial current rate of rise
- $T$  = Circuit time constant
- $U_r$  = Rated operational voltage
- $V_2$  = Peak of the arc voltage
- $t_1$  = Opening time
- $t_3$  = Total break time

### OPENING TIME $t_1$



Relationship between opening time  $t_1$  and the initial rate of rise of current  $di/dt$  for direct instantaneous over-current release.

Example for a  $di/dt$  of  $3 \times 10^6$  A/s:

- for UR26:  $t_1 \sim 4.3$  ms.

**Note:** for a shorter opening time on low  $di/dt$ , the "indirect release" (shunt trip) option can be used (refer to "Options" section page 7).

# DATA FOR PRODUCT SELECTION

Symbol	Unit	UR26					
		81	82	64	DV64		
<b>Arc chute type</b>							
<b>MAIN HIGH VOLTAGE CIRCUIT</b>							
Rated operational voltage	$U_r$	[V <sub>DC</sub> ]	900	1,800	3,600	1,800	3,600
Rated insulation voltage	$U_{Nm}$	[V <sub>DC</sub> ]	3,000		4,800		
Conventional free air thermal current <sup>(1)</sup>	$I_{th}$	[A]	2,300				
Rated operational current	$I_r$	[A]	2,300				
Operational frequency			C3				
Power-frequency test voltage (50 Hz/1min) <sup>(2)</sup>	$U_a$	[kV]	9.2		15		
Over-voltage category			OV3				
Rated impulse voltage (1.2/50 μs) <sup>(2)</sup>	$U_{Ni}$	[kV <sub>DC</sub> ]	20		30		
Rated short-circuit making & breaking capacity / Time constant <sup>(3)</sup>	$A_{2/T_1}$	[kA]/[ms]	100/0	80/0	40/0	100/0	70/0
	$A_{2/T_2}$	[kA]/[ms]	100/15	80/15	35/15	80/15	35/15
	$A_{2/T_3}$	[kA]/[ms]	50/50	75/40	35/30	75/40	35/30
	$A_{2/T_4}$	[kA]/[ms]	13/150	20/100	35/50	20/100	35/30
Direct over-current instantaneous release		[kA]	1.4 - 2.7				
		[kA]	2.0 - 5.0				
Maximum arc voltage		[kV]	≤ 2.5	≤ 4.0	≤ 8.0	≤ 6.0	≤ 8.0

<sup>(1)</sup> At Tamb = +40°C and tested with high voltage connections according to standard IEC/EN 60943.

<sup>(2)</sup> Values applicable for factory tests on serial products according to IEC60077-3:2019. <sup>(3)</sup> The values given refer for stand-alone circuit breaker (not in enclosure).

## LOW VOLTAGE CIRCUIT

### Control voltage

Nominal supply voltage	$U_n$	[V <sub>DC</sub> ]	24, 36, 48, 64, 72, 110 <sup>(4)</sup>				
Range of voltage			[0.7 - 1.25] Un				
Nominal closing power <sup>(5)</sup>	$P_o$	[W]/[s]	1,300/1				
Nominal holding power for electrical holding <sup>(5)</sup>		[W]	2.3				
Mechanical opening time <sup>(5)(6)</sup>	$t_o$	[ms]	15 - 30				
Mechanical closing time <sup>(5)(6)</sup>	$t_c$	[ms]	~ 150				
Mechanical switching power / time <sup>(5)(6)(7)</sup>	$P_c$	[W]/[s]	400/1 <sup>(6)</sup>				
Mechanical switching time (not included pulse time) <sup>(7)</sup>		[ms]					
- From 1,800 V <sub>DC</sub> to 3,600 V <sub>DC</sub>			≤100				
- From 3,600 V <sub>DC</sub> to 1,800 V <sub>DC</sub>			≤60				
Power frequency test voltage	$U_a$	[kV]	2				

<sup>(4)</sup> 24 V<sub>DC</sub> and 110 V<sub>DC</sub> available for dual voltage breakers UR26DV. For other voltages, please contact Sécheron. <sup>(5)</sup> At Un and Tamb = +20°C • <sup>(6)</sup> When signal is received by the coil. <sup>(7)</sup> Voltage selector switch for dual voltage breaker UR26DV.

### Auxiliary contacts

Type of contacts	DC circuit breaker		Potential free (PF)				
	Voltage selector switch		change-over (CO)				
Number of auxiliary contacts	DC circuit breaker		5a + 5b (Potential free (PF))				
	Voltage selector switch (Dual Voltage breaker)		2a + 2b (Change-over (CO))				
Rated voltage		[V <sub>DC</sub> ]	24 to 110				
Conventional thermal current	$I_{th}$	[A]	10				
Switching categories according to EN60947		[A]	DC-13 110 V <sub>DC</sub> 0.5 A				
Minimum let-through current at 24 V <sub>DC</sub> <sup>(7)</sup>		[mA]	≥ 10 (silver contacts) or 4 ≤ I < 10 (gold contacts)				

<sup>(7)</sup> For a dry and clean environment.

### Low voltage interface

Connector type <sup>(8)</sup>	Harting type Han® 32 EE or Han® 40 EE					
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<sup>(8)</sup> Refer to page 5 for mobile connector information.

## OPERATING CONDITIONS

Installation	Indoor /outdoor <sup>(9)</sup>					
Altitude <sup>(10)</sup>		[m]	≤ 2,000			
Working ambient temperature <sup>(11)</sup>	$T_{amb}$	[°C]	- 25 to + 70			
Relative Humidity	95 % at 40°C					
Pollution degree	PD3					
Minimum mechanical durability	N [Operations]		4x50,000			

<sup>(9)</sup> Outdoor with optional enclosure or DC MODBOX® (refer to page 9 to 11). <sup>(10)</sup> For altitude >2,000m, please contact Sécheron. <sup>(11)</sup> For -50°C ≤ Tamb < -25°C a special configuration of DC circuit breaker can be delivered by Sécheron on request.

# INFORMATION FOR PRODUCT INTEGRATION

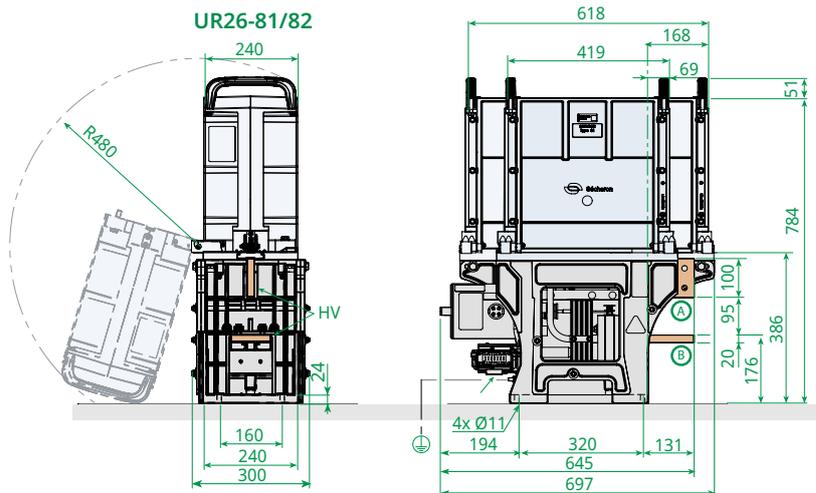
## MAIN FEATURES

	Weights <sup>(1)</sup> [Kg]	
	UR26	UR26-DV
arc chute 81	85	-
arc chute 82	95	-
arc chute 64	159	167

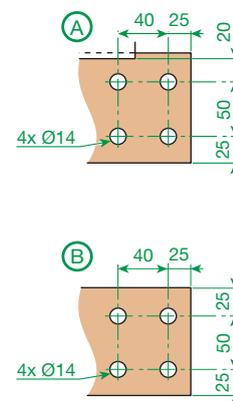
Dimensions without tolerances are indicative. All dimensions are in mm. The maximum allowed flatness deviation of the support frame is 0.5 mm.

<sup>(1)</sup> Approximate weight for standard circuit breakers without option, including maintenance arc chute lifting mechanism.

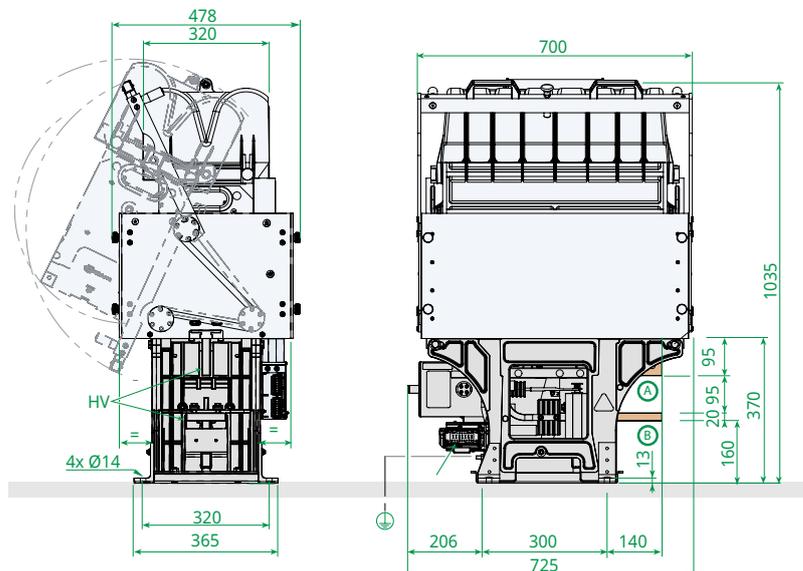
### UR26



### HV connectors

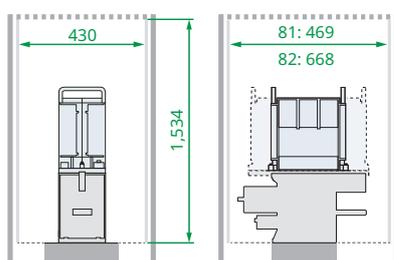


### UR26-64/-DV64

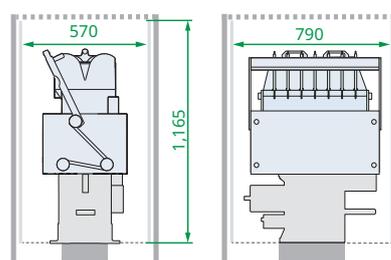


## INSULATION

### Arc chute 81/82



### Arc chute 64



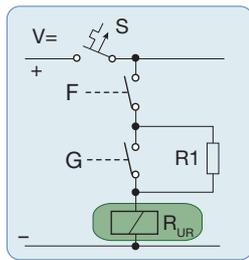
<sup>(1)</sup> At maximum short-circuit breaking capacity. For other installation conditions, contact Sécheron.

**Note:** For insulating distances to earth, contact Sécheron.

# LOW VOLTAGE CONTROL SCHEME

## ELECTRIC HOLDING E-Type

- The circuit breaker remains closed with a **reduced "holding" current**. To open the circuit breaker the holding current is cut off.
- With **E-type** closing device, the circuit breaker cannot remain closed if the low voltage supply is lost.



F, G : control contacts  
R1 : holding resistor  
S : automatic circuit breaker

Customer scope  
Sécheron scope

**Note:** The duration of the closing pulse as well as the opening pulse should be 0.5 - 1 s.

## TYPICAL VALUE FOR CLOSING COILS

Coil characteristics								
U <sub>n</sub>	Closing pulse 0.5 to 1s				Holding E-type			
	I <sub>nom</sub>	I <sub>min E</sub>	I <sub>min M</sub>	I <sub>max</sub>	R1 <sub>nom</sub>	I <sub>nom</sub>	I <sub>min</sub>	I <sub>max</sub>
[V <sub>DC</sub> ]	[A]	[A]	[A]	[A]	[Ω]	[A]	[A]	[A]
24	41.7	22.5	25	70.9	11.4	2.0	1.4	2.5
36	32.7	17.7	19.6	55.6	25	1.4	1.0	1.7
48	20.9	11.3	12.5	35.4	45.7	1.0	0.7	1.3
64	17.6	9.5	10.6	29.9	79.4	0.8	0.5	1.0
72	16.4	8.8	9.8	27.8	100	0.7	0.5	0.9
110	11.7	6.3	7.0	19.9	210	0.5	0.4	0.6

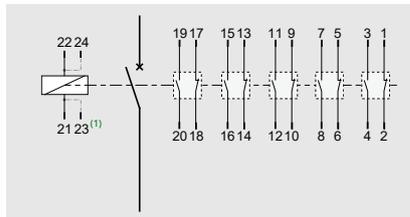
**Note:** for components selection, the following criteria shall apply:

$$\begin{aligned}
 U_{nom} &= R \cdot I_{nom} & \text{for } T_{amb} &= +20^{\circ}\text{C} \\
 U_{min} &= R \cdot I_{min} & \text{for } T_{amb} &= -5^{\circ}\text{C} \\
 U_{max} &= R \cdot I_{max} & \text{for } T_{amb} &= +40^{\circ}\text{C}
 \end{aligned}$$

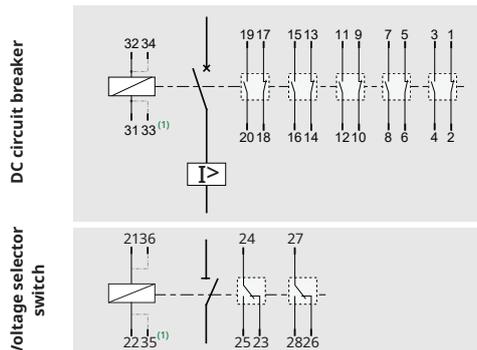
(R = Resistance)

## LOW VOLTAGE WIRING DIAGRAMS HARTING TYPE HAN® 32 EE OR HARTING TYPE HAN® 40 EE

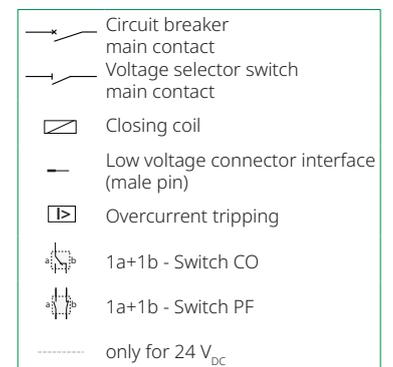
**UR26  
ARC CHUTE  
81, 82 OR 64**



**UR26  
ARC CHUTE DV64**



### Legend of the schemes :



**Note:** Low voltage connectors are delivered with all pins mounted. The voltage selector switch is represented in 3.6 kV position.

<sup>(1)</sup> Double cable only for 24 V<sub>DC</sub> control voltage.

# OPTIONS (SUBJECT TO ADDITIONAL COST AND LONGER DELIVERY TIME)

## ECO-DRIVE INTEGRATED CONTROL MODULE



ECO-Drive is a compact control module integrated with UR circuit breakers, to manage closing-holding sequences. ECO-Drive is installed on the UR breaker's closing device.

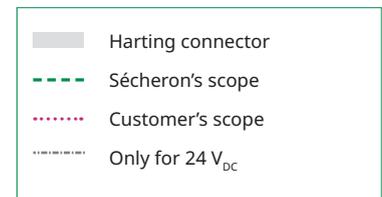
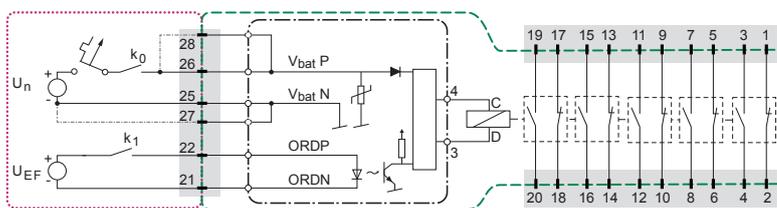
## MAIN BENEFITS

- ✓ No more additional hardware to manage the closing-holding sequences.
- ✓ Reduction of the overall space necessary to operate the circuit breaker.
- ✓ Reduction of overall installation costs of the DC circuit breakers.
- ✓ Reduction of holding power consumption and operational costs.
- ✓ Reduction of the risks of damaging the closing coil during commissioning and service.

### LOW VOLTAGE WIRING DIAGRAM

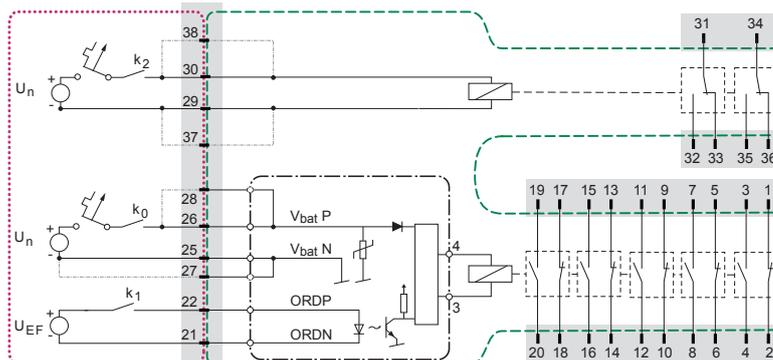
The UR breaker together with the ECO-Drive is fully compliant for electromagnetic compatibility with EN 50121-3-2 and with EN 50155: § 5.1.1.2 short (10 ms) interruptions class S2 and § 5.1.3: voltage dips / variation (at 0.6  $U_n$  during 100 ms) class C1.

UR26



UR26DV

DC circuit breaker Selector switch



## CONTROL CIRCUIT TECHNICAL DATA

Control circuit		
Nominal supply voltage <sup>(1)</sup>	$U_n$ [V <sub>DC</sub> ]	24; 48, 64, 72; 110
Nominal control voltage <sup>(1)</sup>	$U_{EF}$ [V <sub>DC</sub> ]	[24 - 110]
Range of voltage	$U_n$	[ 0.7 - 1.25 ]
Idle (standby) power	[W]	< 3
Nominal closing power <sup>(2)</sup>	$P_c$ [W]/ [s]	1,300/0.5
Nominal holding power <sup>(2)</sup>	[W]	< 8
Nominal opening power <sup>(2)</sup>	[W]	< 3
Mechanical opening time on opening order <sup>(3)</sup>	[ms]	15-30
Mechanical closing time on closing order <sup>(2)(3)</sup>	$T_o$ [ms]	~150

<sup>(1)</sup> Control voltage  $U_{EF}$  and supply voltage  $U_n$  can be different.

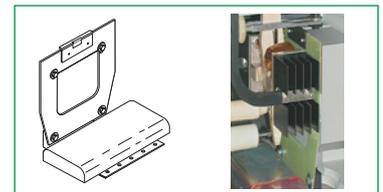
<sup>(2)</sup> At  $U_n$  and  $T_{amb} = +20^\circ\text{C}$ .

<sup>(3)</sup> Starting when the signal is received by the coil.

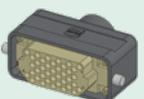
## INDIRECT RELEASE BI24

The indirect release enables to shorten the breaker's opening time  $t_1$  down to about 4 ms, independent of the di/dt conditions (see graph page 2), when required by specific applications.

The indirect release BI24 is triggered by the control unit type CID-3 (not included with the circuit breaker - to be ordered separately - refer to CID3 brochure SG101783B...).



## MOBILE CONNECTOR

Auxiliary switches			Control voltage	Fixed connector type	Mobile connector (without cable)				
					Number of pin (delivered with connector)		Cable gland	Sécheron's number	Connector
Device	Number	Type	Size 2.5 mm <sup>2</sup>	Size 1.5 mm <sup>2</sup>					
UR26 (without ECO-Drive)	5a+5b	PF	24,36, 48, 64, 72, 110 V <sub>DC</sub>	Harting HAN® 32 EE	4	28	M32	SG104063R40400	
UR26 (with ECO-Drive)	5a+5b	PF	24, 64, 72, 110 V <sub>DC</sub>	Harting HAN® 32 EE	4	28	M32	SG104063R40400	
UR26-DV (without ECO-Drive)	5a+5b	PF	24 V <sub>DC</sub>	Harting HAN® 40 EE	4	36	M32	SG104063R40500	
	2a+2b	CO							
UR26-DV (without ECO-Drive)	5a+5b	PF	110 V <sub>DC</sub>	Harting HAN® 32 EE	4	28	M32	SG104063R40400	
	2a+2b	CO							
UR26-DV (with ECO-Drive)	5a+5b	PF	24, 110 V <sub>DC</sub>	Harting HAN® 40 EE	4	36	M32	SG104063R40500	
	2a+2b	CO							

## CONCEPTS FOR INTEGRATION ON VEHICLES

Sécheron proposes 3 different concepts to integrate the UR26/40 circuit breakers in vehicles:

- **Complete Plug & Play roof or underframe-mounted polyester enclosure**, in which the DC circuit breaker is installed, and that offers an IP54 protection index. It is intended for metros, DC EMUs and trains.
- **Insulation housing with protection index IP00**, delivered as an option separately from the breaker. It enables the car builder to build its own metal enclosure and/or container with reduced dimensions, in which the DC circuit breaker with its insulation housing will be installed. This type is mostly used for locomotives and trains.
- **Complete Plug & Play metal enclosure** (DC MODBOX® program), in which the DC circuit breaker is installed with other functions, such as current & voltage measurements, line and charging contactors, charging resistors, disconnect and/or earthing switch. DC MODBOX® offers an IP56 protection index for outdoor roof or underframe mounting. This type is mostly used for trains and high-speed trains, as well as for applications with severe operational environments (cold and icy, dusty or sandy environments).

### PLUG & PLAY ROOF-MOUNTED POLYESTER ENCLOSURE

#### UR26-82TCP

##### Roof mounting (IP54)



Valid for	UR26-82
Rated voltage	1,800 V <sub>DC</sub>
Free air thermal current	2,300 A
Enclosure material	Insulation material
Enclosure colour	Blue grey RAL 7031
Enclosure thickness	6 mm
Protection index IP	IP54
Opening of the box cover	On low voltage connector side
Maximum breaking capacity	100 kA (T1)
Insulation distance around the enclosure	Not needed
High voltage cable interface	1 cable plate with 4 cable glands M32x1.5
Low voltage cable interface	Harting HAN® 32EE connector on enclosure
Smoke and fire tests	According to EN45545-2, HL2

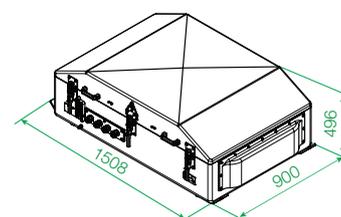
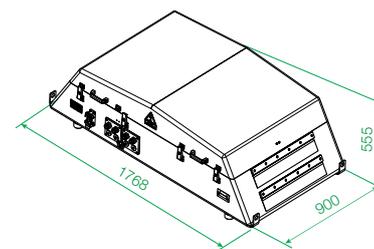
#### UR26-64TCP

##### Roof mounting (IP54)



Valid for	UR26-64 / UR26-DV64
Rated voltage	3,600 V <sub>DC</sub> / 1,800 V <sub>DC</sub> & 3,600 V <sub>DC</sub>
Free air thermal current	2,300 A
Enclosure material	Insulation material
Enclosure colour	Blue grey RAL 7031
Enclosure thickness	6 mm
Protection index IP	IP54
Opening of the box cover	On low voltage connector side
Maximum breaking capacity	50 kA (T1) / available on request.
Insulation distance around the enclosure	Not needed
High voltage cable interface	1 cable plate with 4 cable glands M32x1.5
Low voltage cable interface	Harting HAN® 32EE connector on enclosure
Smoke and fire tests	According to EN45545-2, HL2

These enclosures can be directly mounted on the vehicle's roof.

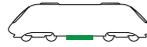


## PLUG & PLAY UNDERFRAME-MOUNTED POLYESTER ENCLOSURE

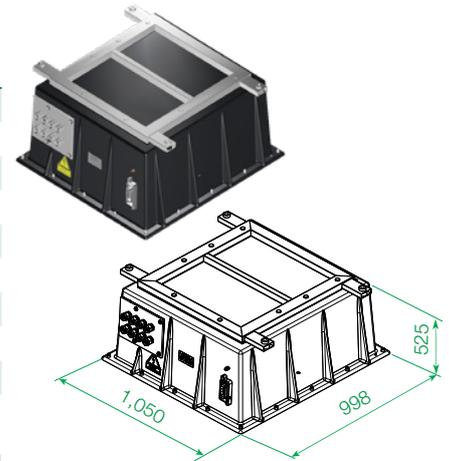
### FOR SUSPENDED MOUNTING

#### UR26-80TCS

##### Underframe mounting (IP54)

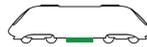


Valid for	UR26-80 (shorter version of arc chute 81)
Rated voltage	900 V <sub>DC</sub>
Free air thermal current	2,150 A
Enclosure material	Insulation material
Enclosure colour	Graphite grey RAL7024
Enclosure thickness	6 mm
Protection index IP	IP54
Opening of the box cover	From below the box
Maximum breaking capacity	50 kA (T1)
Insulation distance around the enclosure	Not needed
High voltage cable interface	1 cable plate with 8 cable glands M32x1.5
Low voltage cable interface	Harting HAN® 32 EE connector on enclosure

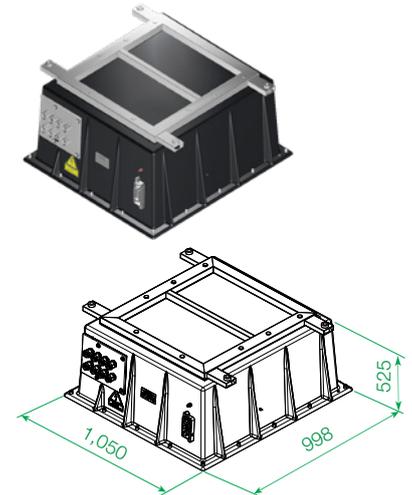


#### UR26-82LTCS

##### Underframe mounting (IP54)



Valid for	UR26-82L (shorter version of arc chute 82)
Rated voltage	1,800 V <sub>DC</sub>
Free air thermal current	2,150 A
Enclosure material	Insulation material
Enclosure colour	Graphite grey RAL7024
Enclosure thickness	6 mm
Protection index IP	IP54
Opening of the box cover	From below the box
Maximum breaking capacity	50 kA (T1)
Insulation distance around the enclosure	Not needed
High voltage cable interface	1 cable plate with 8 cable glands M32x1.5
Low voltage cable interface	Harting HAN® 32 EE connector on enclosure

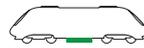


The insulation housings have to be ordered additionally to the DC circuit breaker (see page 12).

### FOR HORIZONTAL UNDERFRAME MOUNTING

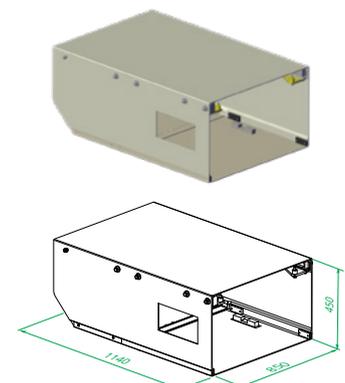
#### UR26/26DV-64TCS

##### Underframe mounting (IP00)



Valid for	UR26-64 / UR26-DV64
Rated voltage	3,600 V <sub>DC</sub> / 1,800 V <sub>DC</sub> & 3,600 V <sub>DC</sub>
Rated insulation voltage	4,800 V <sub>DC</sub>
Protection index IP	IP00
Opening of the box cover	Knurled knobs
Maximum breaking capacity	Available on request
Insulation distance around the enclosure	Available on request
High voltage cable interface	Enclosure opening for cable connection to the circuit breaker
Low voltage cable interface	Direct connection on circuit breaker's connector

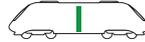
This housing is designed to minimize the necessary insulation clearance distances against earth, when the circuit breaker is integrated in the car builder's own metal enclosure.



## PLUG & PLAY INDOOR MOUNTING POLYESTER ENCLOSURE

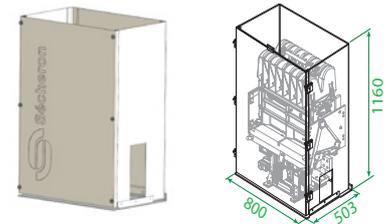
### FOR VERTICAL INDOOR MOUNTING UR26/26DV-64TDP

Indoor mounting (IP00)



Valid for	UR26-64 / UR26-DV64
Rated voltage	3,600 V <sub>DC</sub> / 1,800 V <sub>DC</sub> & 3,600 V <sub>DC</sub>
Free air thermal current	2,300 A
Enclosure material	Insulation material
Enclosure colour	Beige RAL 7016
Enclosure thickness	4 mm
Protection index IP	IP00
Opening of the box	Knurled knobs
Maximum breaking capacity	Available on request
Insulation distance around the enclosure	Available on request
Interface for high voltage cable	Enclosure opening for cable connection on circuit breaker
Interface for low voltage cable	Direct connection on circuit breaker's connect
Smoke and fire tests	According to EN45545-2, HL2

The purpose of this housing is to minimize the necessary insulation clearance distances against earth, when the circuit breaker is integrated in the car builder's own metal enclosure/container.

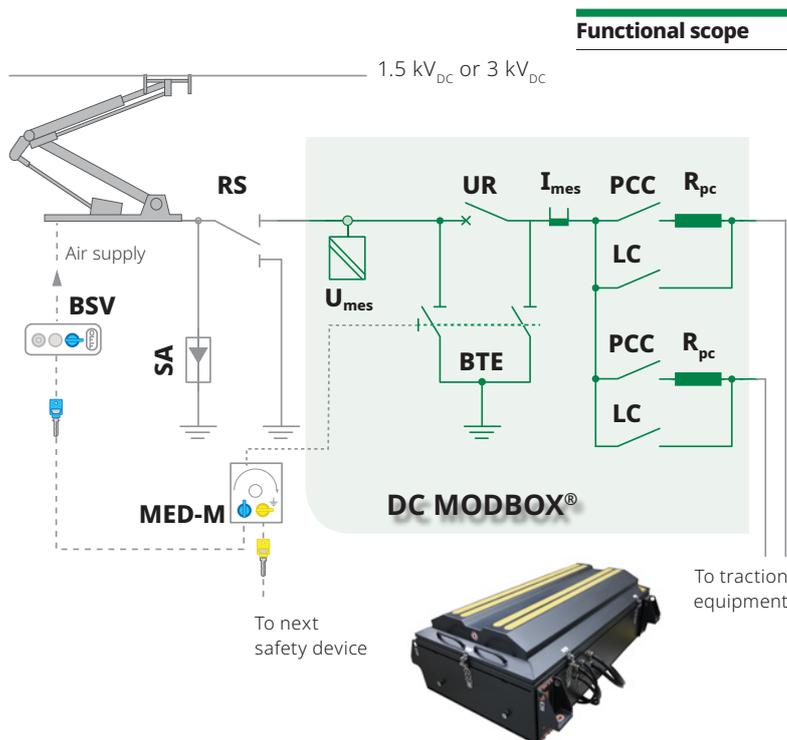


## PLUG & PLAY INTEGRATED WITHIN METALLIC DC MODBOX®

DC MODBOX® is a compact metal clad, "plug and play", project-based solution, featuring several high voltage DC components located around the DC circuit breaker. Built on a standard platform of rolling-stock-dedicated aluminium enclosure and standard proven high voltage DC components, DC MODBOX®

can be, to a certain extent, adapted to the application requirements. Typically electric schemes, integrated components, as well as both high- and low-voltage interfaces can be customized. With its limited height (535 mm) and a shape designed to match aerodynamic constraints, DC MODBOX® brings efficient

solutions to solve constraints related to roof space, insulation and speed. Moreover it allows the high voltage DC components to operate protected from the most severe environmental conditions. DC MODBOX® simplifies project management, logistics, and installation tasks for the car builder.



To evaluate DC MODBOX® solution that best suits your project, please contact Sécheron. (refer to brochure SG580044BEN for more details).

- BSV** : Pantograph interlocking box
- SA** : Surge arrester
- RS** : Disconnector & Earthing
- U<sub>mes</sub>** : Voltage measurement
- I<sub>mes</sub>** : Current measurement
- UR** : High speed DC circuit breaker
- BTE** : Earthing switch
- MED-M** : Manual earthing device
- PCC** : Precharging contactor
- LC** : Line contactor BMS
- R<sub>pc</sub>** : Precharging resistor

Let us analyse your traction scheme and prepare a proposal for a **MODBOX®** adapted to your application and to a safe operation of the integrated components.

# DESIGNATION CODE FOR ORDERING

- Be sure to establish the designation code from our latest version of the brochure by downloading it from our website "www.secheron.com".
- Be careful to write down the complete alphanumeric designation code with 17 characters when placing your order.
- The customer shall write down the setting of maximum current release value (Id) in its order form.
- For technical reasons some variants and options indicated in the designation code might not be combined.
- The bold part of this designation code defines the device type, and the complete designation defines the identification number of the product, as displayed on the identification plate attached to the product.

<b>Example of customer's choice:</b>	<b>UR</b>	<b>26</b>	<b>64</b>	<b>T</b>	D	Ø	E	Ø	B	Ø	A	C	Ø	A
Line:	10	11	12	13	14	15	16	17	18	19	20	21	22	23

## DESIGNATION CODE\*

<sup>(\*)</sup> Options are subject to additional costs

Line	Description	Designation	standard	Options	Customer's choice
10	Product type	UR	<b>UR</b>		<b>UR</b>
11	Conventional free air thermal current	2,300 A	<b>26</b>		
12	Rated operational voltage	900 V <sub>DC</sub>	<b>81</b>		
		1,800 V <sub>DC</sub>	<b>82</b>		
		3,600 V <sub>DC</sub>	<b>64</b>		
		1,800 V <sub>DC</sub> /3,600 V <sub>DC</sub>	<b>DV64</b>		
13	Application	Rolling stock	<b>T</b>		<b>T</b>
14	Mounting position	Vertical	D		
		Horizontal		C	
15	Breaker execution	Vertical indoor mounting <sup>(1)</sup>	Ø		
		Horizontal roof mounting with polyester enclosure		P	
		Horizontal underframe mounting <sup>(2)</sup>		S	
16	Nominal supply voltage	24 V <sub>DC</sub> * <sup>(3)</sup>	A		
		36 V <sub>DC</sub>	B		
		48 V <sub>DC</sub>	C		
		64 V <sub>DC</sub>		G	
		72 V <sub>DC</sub>	D		
17	Varistor in coil <sup>(3)</sup>	No	Ø		
		Yes (battery voltage)		1	
18	Direct over-current release (bi-directional)	UR26	1.4 - 2.7 kA		A
		UR26	2.0 - 5.0 kA	B	
19	Indirect release	No	Ø		
		BI24		1	
20	Auxiliary contacts <sup>(4)</sup>	5a + 5b (switch PF) / 2a + 2b (switch CO)-Silver type	A		
		5a + 5b (switch PF) / 2a + 2b (switch CO)-Gold type		C	
21	LV connector type on circuit breaker (ref. p. 8)	Harting type HAN® 32 EE	C		
		Harting type HAN® 40 EE		F	
22	ECO-Drive control module	No	Ø		
		Yes <sup>(5)</sup>		4	
23	Digit for Sécheron internal purpose		A		A

<sup>(1)</sup> For execution ordered with additional insulation housing, the housing must be ordered separately (section below) • <sup>(2)</sup> The insulation housing for the breaker's execution UR26-64TCS must be ordered separately (section below) • <sup>(3)</sup> In case control type "ECO-Drive" is selected (line 22), select "No" for varistor on coil (line 17) • <sup>(4)</sup> Based on the selected breaker's configuration, the number of available auxiliary switches might be reduced • <sup>(5)</sup> For Nominal supply voltage 24, 64, 72 and 110 V<sub>DC</sub> • \* Available for DV64

Value of the setting of maximum current release value (A<sub>0</sub>): .....[A]

### Material to be ordered separately:

- Insulation housing (refer to page 10): Insulation housing for vertical indoor mounting:  SG104420R00002
- Insulation housing for UR26-64TCS:  HSBT031031R00007
- Low voltage mobile connector (refer to page 8):  None  SG104063R40400
- SG104063R40500



**Sécheron SA**  
Rue du Pré-Bouvier 25  
1242 Satigny - Geneva  
CH-Switzerland

**www.secheron.com**  
Tel: +41 22 739 41 11  
Fax: +41 22 739 48 11  
ess@secheron.com

Signature:

Name:

Place and date: