

Railway Energy Components

DC Switch disconnecter and switchgear



The MOS DC on load-switch-disconnectors, belonging to product of the RAILWAY ENERGY series, are designed and produced with electrical and mechanical characteristic, suitable to be installed in metal-clad cubicles or switchboards and equipped with special arc chute.

APPLICATIONS

The MOS DC on load-switch-disconnectors offer a wide range of possible applications in the railway traction system (trolley bus, tramway, underground) for a rated voltage like 750Vdc or 1500Vdc.

Installed downstream each High-Speed Circuit Breaker they allow, in case of failure, to isolate the circuit breaker granting the safety of the system.

Installed for by-pass or parallel disconnector or Load Break switch connecting two feeders or two sections of line and allowing to grant service continuity in case of failure of one circuit breaker thus increasing the safety of the full system and introducing a further isolating step

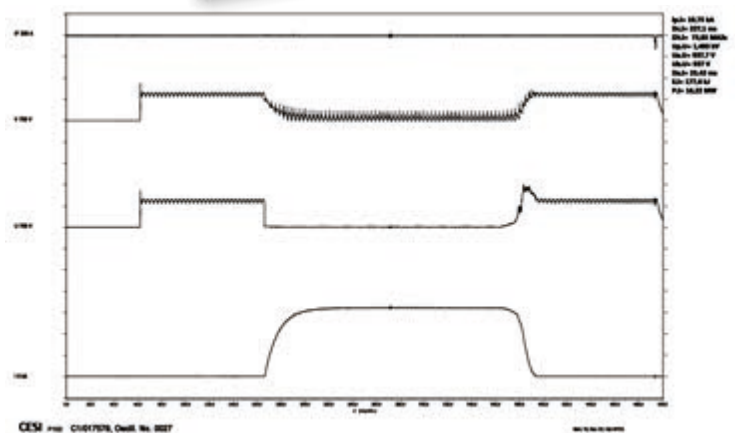
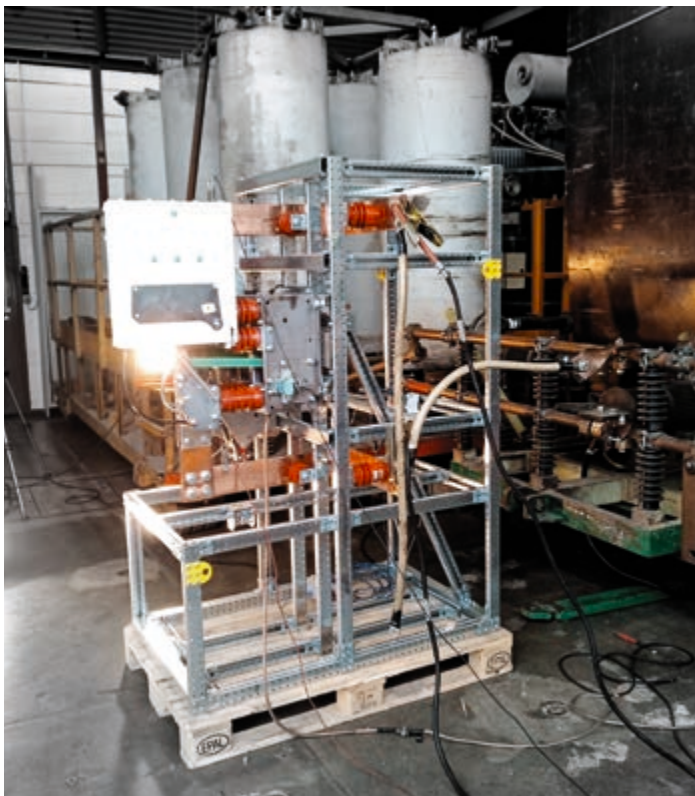
In particular, they can be used for the following applications:

- feeder switch disconnectors
- second line switch disconnectors
- current switch disconnectors
- D.C. feeding line disconnectors
- D.C. switch disconnectors for tunnel
- voltage switch disconnectors

DC on load-switch-disconnectors can be used for rearrange the grid's architecture during exercise without time-expensive power-off.

TYPE AND ACCEPTANCE TESTS

The MOS DC switch-disconnectors and the related cubicles, are tested in official laboratories with consequent certification according to applicable standards EN 50123-3 / IEC 61992-3 and EN 50123-6 / IEC 61992-6.



MOS-DC switch-disconnector.
Typical disconnection oscillogram.

SAFETY RELIABILITY MAINTAINABILITY

Engineering and manufacturing of the MOS DC switch-disconnectors and the related cubicles is in accordance with a specific RAMS plan processed according to EN 50126 standard, with the purpose to obtain the highest level of safety, reliability and maintainability.

ELECTRICAL FEATURES

Nominal Voltage (Un)	750 - 1500 Vdc
Rated Voltage (UNe)	900 -1800 Vdc
Raret insulation voltage(UNm)	Up to 3 kV
Power-frequency voltage withstand level (Ua)	
to earth and between phases	9,2 kV
across an isolating distance	11 kV
Rated impulse withstand voltage (UNi)	
to earth and between phases	20 kV
across an isolating distance	24 kV
Rated service current (INe)	2000 – 4000 - 6000 A
Breaking capacity	19,5kA
Category	IV or VI
Rated short-time withstand current (INcw)	Up to 80 kA
Short-circuit current (Iss)	Up to 80 kA
Peak of the short-circuit current (Íss)	Up to 120 kA
Circuit time constant (tc)	≥10ms
Rated Voltage auxiliari circuits	48-110-132-on request- Vdc/Vac



CONTROL UNIT FEATURES

The motorized and manual drive control unit, with safety lock keys, is made in the following versions to accommodate any installation requirement.

Closing and opening operation can be done on the front of the disconnecter or from remote control.

CLOSING OPERATIONS

CH-R Version

The disconnecter is in standby with the operating springs **not loaded**.

With a closing command, springs charge and the disconnecter switch closes when springs reach full loading

closing command time = 7 sec

CH-F Version

The disconnecter is in standby with the operating springs **loaded**.

With a closing command, closing trip coil is energized, switch closes immediately

closing command time = 5ms

OPENING OPERATIONS

AP-1 Version

The disconnecter is in standby, close position, with the operating springs **loaded**.

With opening command, opening coil is **de-energized**, switch opens immediately

opening command time = 5 ms

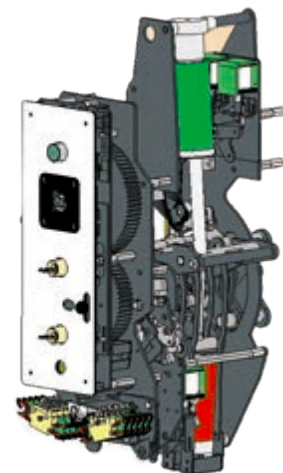
AP-2 Version

The disconnecter is in standby, close position, with the operating springs **loaded**.

With opening command, opening trip coil is **energized**, switch opens immediately

opening command time = 5 ms

After the closing operation, with the main contact in close position, the disconnectin switch is already set for opening operation



DISCONNECTOR SWITCHGEAR

Mont-Ele takes advantage of the experience carried out in the operation and maintenance of traction system for tramway and underground, to develop a modular line of Disconnecting switchboards which offers a very versatile and cost efficient solution for different requirements.

Main features:

- Modular, highly configurable design
- Segregated compartment for each Disconnector and or Load Break Switch and for each cable entry/exit.
- Fixed or Withdrawable execution
- Segregated Low voltage compartment
- Main contact position visibility
- Electrical and mechanical interlocks
- Key interlock mechanism for safe operation
- Low maintenance in safety condition

Accessories:

The disconnecting switchboards can be equipped with different auxiliary equipment as:

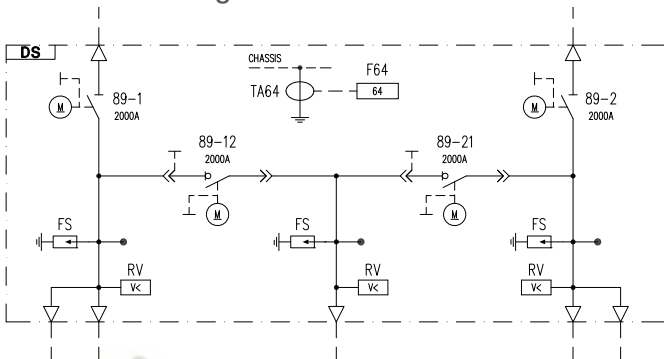
- Mont-Ele METRO series, voltage and current transducers
- Mont-Ele MVR, Voltage presence relay
- Mont-Ele MPS series, Protection Relay
- Surge arresters
- PLC for functional logic and control
- Other auxiliary equipment according to client request

VERSIONS

Our Disconnecting switchboards cover all disconnector cubicles supply needs and are available for indoor and outdoor installations.

Indoor version:

- Metal clad cubicle, modular frame system protected against corrosion with painted or galvanised steel.
- Available Internal arc proof version
- Protection degree: IP31 / IK10



Indoor version – by pass switchboard configuration

Outdoor version:

- Stainless steel cubicle, made entirely of AISI 304L stainless steel available with a single blind door or with a transparent door.
- Available Internal arc proof version
- Fiber glass reinforced polyester cubicle, made of highly corrosion resistant composite material.
- Protection degree up to IP65 / IK10



Outdoor version – fiber glass version – load break switch version

This document contains general description of the technical options which may not be present in individual cases. Therefore, the required performance characteristics must be defined in individual cases during conclusion of the contract. In view of the constant evolution in standards and design, and due to continuous developments, the characteristics of the elements contained in this catalogue are subject to changes without prior notification. These characteristics, as well as the availability of components, are subject to confirmation by the MONT-ELE Technical Sales Department. No contractual value. All right reserved. No part of this publication may be reproduced without the permission of MONT-ELE S.r.l. Mont-Ele is a registered trademark. **Cod. DCSD-001**

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