Cable Monitoring Device
Type 853215 with predivider module for 1500 V DC

853215 ESN

Description

The cable monitoring device is suitable for monitoring cable systems for supplying the traction current to direct current railways with rated voltages of up to 1500 V (other voltages on request). The cable monitoring device is designed according to VDV papers 515, issue 4/93 and can be connected to all cables with concentric shield respectively conductor and insulating outer sheath.
Plus polarity at the contact line.

The cable monitoring device allows the default insulation monitoring of "Conductor-shield" (I) and "Shield-earth" (E) insulation sections.

A zero-potential contact is provided for the train power fault message (also power supply fault). This contact is operated on the quiescent current principle so that the contact opens in the event of a power fault. A zero-potential make-type contact is provided for the "Shield-earth" (E) message. Two separate zero-potential contacts that also allow the switching of separate voltages are provided for signalling and switching off in the event of a "Conductor-shield" (I) fault. LEDs indicate if the system falls below the limiting values. The cable monitoring device is installed in a plastic housing (type of protection IP 50) and set up for installation on carrying rails and for fastening with screws.

The device has two hidden test buttons for functional testing when in operation. The first one is for the "conductor-shield" insulation defect test. The second one is for the "Shield-earth" insulation defect test. The device has two hidden potentiometers to set the limiting values. The test buttons and potentiometers are accessible from the front.

The type 853215 (positive potential at the contact line)/ 853315 (negativ potential at contact line), Un DC 1500V, cable monitoring unit complies with all the requirements today concerning such units and thus takes into consideration in particular the many years of experience of our company in making cable monitoring units.

Function

The "Conductor-shield" and "Shield-earth" isolated section resistances that are to be monitored is switched in parallel to achieve the desired "low impedance state" (defined measuring voltage relationships, lack of sensitivity to charges and discharges and other forms of interference). However, these resistances have a sufficiently high impedance to limit the the measuring current passing through the shield to less than 1 mA (in operating mode "Monitoring for shield breaks) and the measuring voltage to approx. 40 V. The evaluation of the insulation states and their changes is done on the basis of the principle of voltage measurement against the earth (bridge principle). The voltage at the shield is taken as high impedance and passed on for evaluation by means of fibre optic light guides.
The evaluation itself is the classical evaluation that has been used for many years in the proven cable monitoring devices that our company has sold for many years now.

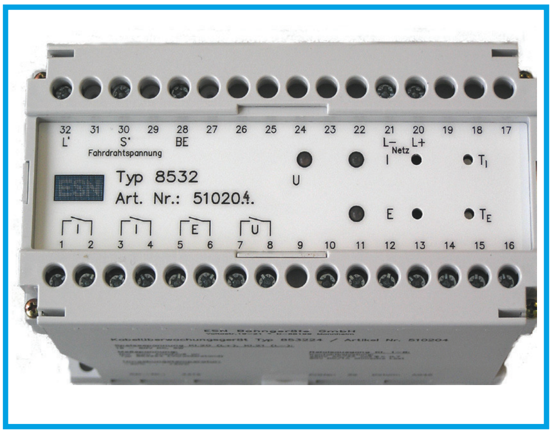
Notes

No dangerous contact voltages arise at the shield as a result of the actuation of the cable monitoring device at the shield. The contact voltages are within the setting ranges required for voltages and times within VDE 0141.
However, and regardless of this, note that in the event of a "conductor-shield" insulation defect that the power limiting action of the cable monitoring device can be bypassed under certain circumstances.
We therefore recommend using isolating terminals to protect the cable monitoring device against excessively high voltages when testing the cables. If the cable is switched off by the cable monitoring unit in the event of the latter actuating, any built-in section testing devices must be bridged.

More information is available in our brochure "Cable monitoring, technical bases and examples".
You will find it under "www.esn-online.de".

Ordering information

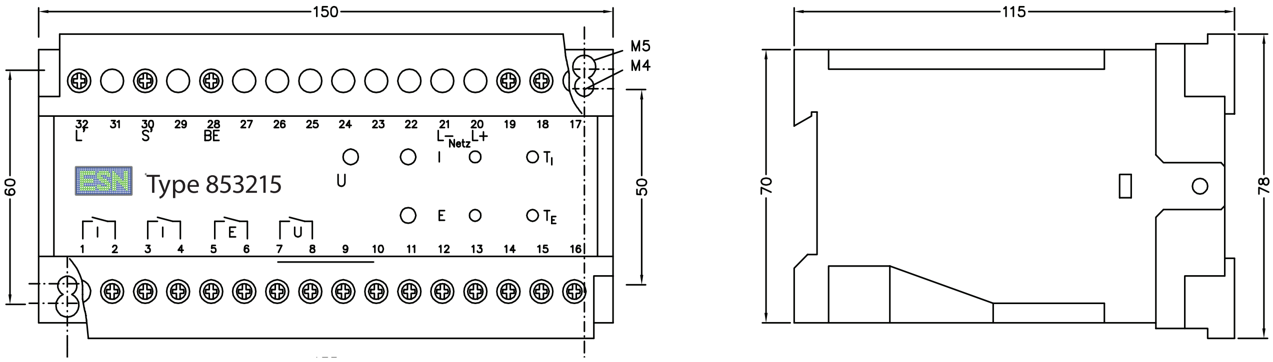
Type	Part No.
Cable monitoring basic device, type 853215	510203
Cable monitoring basic device, type 853315	510303
Predivider module type 853215-00	510521
Predivider module type 853215-10	510525
Predivider module type 853215-20	510522
Terminating resistor type 853215-MES	510517
Terminating resistor type 853215-MIS	510508



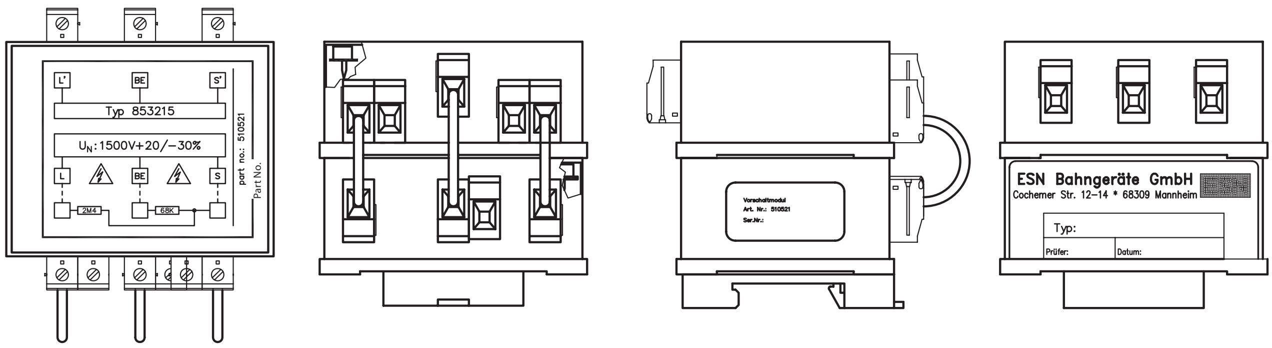
Technical data

Dimensions	WxHxD 145/70/112 mm
Connections	2 x 2.5 mm² solid according to DIN 46288 or 2 x 1.5 mm² with sleeve
Type of protection	Housing: IP 50 / terminals: IP 10
Material	Housing: ABS / terminals: polycarbonate
Attachment	2 M4 or M5 screws or standard carrying rail as per DIN EN 50022
Ambient temperature	-20°C to +60°C
Auxiliary power	DC 18 - 110 V (via internal mains switching section)
Power consumption	approx. 5 W
Fusing	0.5 A semi time lag (external)
Nominal voltage Un	Pos./Neg. potential at the contact line (DC 1050-1800 V at the predivider module)
Power consumption	approx. 1 W
Fusing	approx. 35 mA semi time lag (external)
Shield voltage	approx. 40 V (at DC 1500 V)
Switching points	settable insulation defect
Conductor-shield	800 - 3000 kΩ (I)
Shield-earth	20 - 800 kΩ
Switch-on delay	Auxiliary power approx. 10 s
	Traction voltage approx. 2 s
Trigger delay	"I-fault" approx. 2 s, "E-fault" approx. 15 s
Test buttons	separate for "I-fault" and "E-fault"
Outputs	per 1 zero-potential make-type contact Operation = quiescent current operation earth fault = working current operation 2 isolated zero-potential make-type contacts Internal fault = working current operation
Switching	AC 11 in accordance with VDE 660 T 2
Voltage	max. DC 120 V / AC 250 V
Current	max. 5 A at AC 230 V
Power	max. 120 W / 1250 VA
Configuration	without shield interuption displayed
Displays (built in)	by means of LEDs "Operation" = yellow, "I and E fault" = red
Dimensions (external display)	WxHxD 97x97x6 + 60 mm (installation in front panel, cabinet door, etc.; cutout 92 x 92 mm)
Connections	7-core cable (auxiliary power potential, galvanically isolated from the train power)

Basic device of type 853215 / 853315



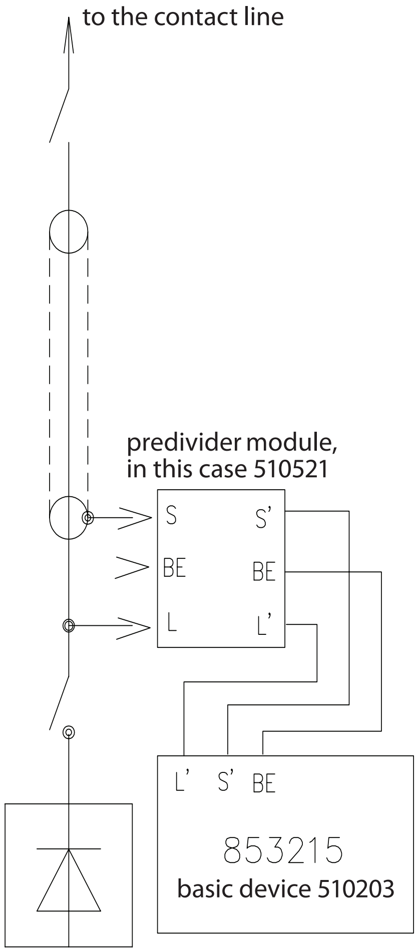
Predivider module e.g. type 853215-00, part no. 510521



Clamp attachment for TS 35

853215

Cable monitoring
without monitoring of interruption of the cable shield



Insulation resistance - shield voltage graph