TV Progress Traction Equipment for Trolleybus Solaris Trollino 12DC

The TV Progress transistorized equipment with pulse regulation based on IGBT transistors is characterized by maintenance free operation made possible by no contactors that operate under load, and by using environmentally-friendly materials. Running comfort is provided by the adjusted ramp of shifting currents, except for applying maximal braking efforts where the shortening of stopping distance is of overriding consideration.

IGBT transistors are used for the control of currents. Due to the application of diode input bridge, in the braking mode electrical energy can be recuperated to the static converter, not to the grid.
The traction equipment serves for feeding a trolley bus serial traction motor in the running as well as in braking mode.

When the motor characteristics are reached after starting the control transistor is permanently switched on which minimalizes losses. Starting continues by smooth de-excitation to the required value. In the braking mode the serial motor is directly controlled which makes the start of brake and the entire braking fully independent of the overhead trolley condition.

The traction equipment is connected to the supply voltage through collectors (trolleys), automatic switch and contactor which are in each pole. The traction converter is placed in the container providing all operating functions.
It controls running direction, armature current of the serial motor and excitation current of the motor up to the permitted value of de-excitation. It provides minimal excitation current and consequently maximal speed following the characteristics of de-excited motors.

Stand-by brake ensures the network voltage limitation for the operation of traction converter in the running mode. Further it provides resistant braking and limitation of short-circuit current from the network. The traction converter and stand-by brake are controlled by compact microprocessor

regulator TRS-DC providing system diagnostics (single processor system is used with the ADSP signal processor) and full high dynamic control ensuring maximal stability even at fault conditions.
The device is installed in the container with power electronics.
Running and braking modes are set by pedal controller.

TV Progress equipment enables the running in both voltage polarities.
The main components of the traction drive are the drive container, the filter choke and the brake resistor.
The container has a self-supporting welded frame made of stainless steel that is divided into three separate spaces.

Powder paint of optional shade is used for the finishing. The container is placed in the closed space at the back end of the trolley bus. Converters, regulator and other components are accessible from the left side of the trolley bus when the ventilation grill is removed. Brake resistor is placed in the back part of the roof. The container and brake resistor can be installed as one unit.

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Basic parameters

Type		CDC 050
Number of units in vehicle:		1
Supply voltage:	rated	600 V DC (750 V DC)
	operating range	0V to 900 V
	operating voltage limiting	400V to 900V
Hourly operating current:		200 Aef
Starting current (max):		330 A DC
Braking current (max):		220 A DC
Motor armature voltage:		825 V DC
Control circuits supplying:	rated	24 V DC
	operating range	16,8 V to 30 V
Enclosure:	ventilated space	IP20 by IEC 529
	non-ventilated space	IP54 by IEC 529
Cooling:		forced air-cooling
Quantity of air:		ca 0,34 $m^3 . s^{-1}$
Ambient temperature:		-30°C to +40°C
Dimensions and weight:		220 kg
	width	880mm
	length	1010 mm
	height	403 mm

The TV Progress electrical equipment meets CSN 33 2000-4.41, CSN 33 2000-5.54 and EN 50 121-3-1 standards requirements.

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