RAIL ELECTRONICS CZ s.r.o.
U Nemocnice 1428, 363 01 Ostrov, CZ

Slow charging station

NSP 31

Document title:	T53902 Technical Specifications NSP31		
Prepared by: S. Koutski	Approved by: B. Hrivnak	Date: 19 May 2021	Number of pages: 6
		Location:	

Contents:

1 Introduction

The **NSP 31** charging station is a device used to charge traction batteries on buses or to regulate the temperature of the batteries when the ambient temperature drops.

The unit is used solely to supply electrical power to the vehicle. The actual regulation of battery cell charging and temperature control is provided by the bus's control circuits. Simultaneous charging and temperature control are not possible, as the bus's charging systems are switched off.

The input voltage is from a three-phase **3× 400 VAC** mains supply. The maximum charging current is **63 A**; in temperature control mode, the charging unit supplies a maximum of **16 A**. The charging unit is equipped with its own electricity meter, which can be used to monitor the electricity consumption of the bus being charged.

2

2.1 General description of the

The column is designed so that, in its normal operating position, it provides optimal access to the controls and covers. During transport, the column can be laid on its back. To protect it from damage, there are feet at the top. The castors at the bottom are designed for moving the unit over short distances. The entire housing is made of aluminium sheet metal.

The column is powered via a cable passing through a grommet located on the side. Access to the fuses and circuit breaker is provided under the top cover; behind the bottom cover is the output cable, terminating in a special connector designed for charging the bus. The connector is equipped not only with the five contacts for the 3×400Vac mains supply, but also with two signal contacts, CP (control) and PP (communication).

The control and operating elements are located on a removable panel. The electrical equipment also includes a circuit breaker (30mA), which means that this device may not be part of the wiring.

At sub-zero ambient temperatures, the interior of the column is heated. The temperature is controlled by thermostat A4.

In accordance with standard ČSN EN 61851-1 Rev. 2, when charging with a current higher than 32A, the charging device must be permanently connected to the mains supply, without the possibility of disconnection via any connector.

2.2. Description of control elements, description of functions

White indicator light: DEVICE SWITCHED ON

Lights up after the unit is connected to the mains. Lights up regardless of the status of the control elements on the unit.
The circuit breaker and single-phase fuses must be switched on.

Red indicator light: FAULT

It lights up if at least one of the charging or temperature control fuses has blown.
If the unit is connected to the mains and neither **the FAULT** nor **the UNIT ON** indicator lights are on, the circuit breaker must be checked.

LED ring

The ring is located around the 'Device ON' indicator light. The colours of the LEDs in the ring indicate the charging status of the bus in accordance with the device label.

Green indicator light: GROUNDING CHECK OK

Lights up if the earth check is OK. This check is carried out by the **KSU10** unit, which is an integral part of the **NSP31** column and must also be part of the bus. The **CHARGING** switch must be switched on.

Switch: CHARGING

When switched to position '1', the earth connection is first checked and then the charging contactor is activated.
When the contactor is switched on, the blue indicator light on the switch will illuminate.
Returning the switch to position "0" disconnects the power supply to the bus.

Switch: TEMPERING

When switched to position "1", the tempering contactor will engage and the blue indicator light on the switch will illuminate.
It does not start immediately; if **CHARGING** is active, it will start once charging has finished.
Charging may be switched on during tempering. Tempering will switch off, the bus will charge, and then the tempering process will switch on again.

During charging or tempering, it is prohibited to disconnect the charging connector from the bus socket. On some buses, the charging socket has a mechanical locking mechanism; attempting to remove the connector during charging or tempering risks damaging the charging socket.

Switch: CENTRAL STOP

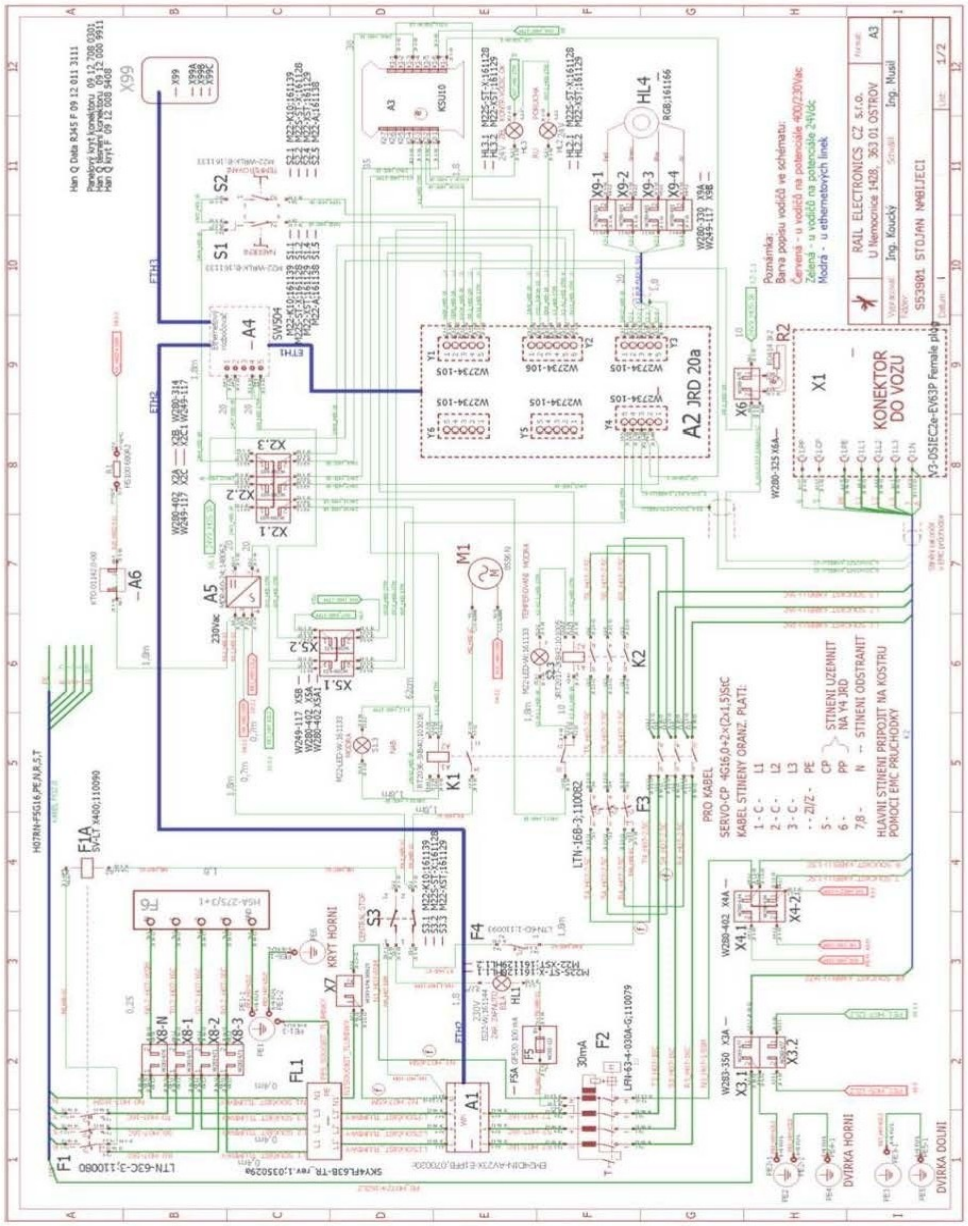
Pressing the **CENTRAL STOP** button will interrupt the **CHARGING** or **TEMPERING** process, or prevent these processes from starting.

Once pressed, the button remains locked in place; it must be released by **pulling it out**.

Connector: ETHERNET

Enables a DATA connection to the charging point. This allows all information to be obtained regarding the instantaneous and total energy supplied to the bus from the charging point.

3 Schemea


RAIL ELECTRONICS CZ s.r.o.
U Nemocnice 1428, 363 01 OSTROV
S53901 STOJAN NAMESTI
KONEKTOR DO VOZU
A2 JRD 20a
HL4
A1
K1
K2
F1
F2
F3
F4
F5
F6
S1
S2
S3
M1
DVIRKA DOLNI
DVIRKA HORNI
KRYT HORNI

4 Technical specifications

Parameters		Conditions, remarks
AC input/output current: - Rated - Operating range	 3× 400 Vac 50Hz 3× 360–440 VAC	
Max. input/output voltage: - charging	 3× 63 Aac 3× 16 Aac	
Control voltage: input output	 100–240 VAC, 0.55 A, 50/60 Hz 21.6–26.4 Vdc	24 Vdc 1A power supply
Connector – input voltage	Device designed for permanent connection to the mains	
Connector – input cable to the bus	3×400 V AC/63 A + N + PE 1× CP contact - control wire 1× PP contact - communication	V3-DSIEC2e-EV63P Female plug, IEC 62196 Type 2 30V 2A max. 30V 2A max.
Ethernet connection	RJ45	
Power:	43 kW	
Cooling:	Built-in fan	
Noise:	The unit produces minimal noise during operation	
Operating conditions: - Operating temperature range - Storage and transport - Altitude	 -40°C to +40°C -40°C to +55°C 1200 m	
Protection rating:	IP 54	
External dimensions:	460 × 425 × 1010 mm	W × D × H
Weight:	27 kg	+ 9 kg power cable

5 Support

The following types of maintenance are carried out on the column: inspection, cleaning and overhaul.

5.1 maintenance intervals

Maintenance	Interval
Inspection	Before each use
Cleaning	as required
Inspection	In accordance with the standard for inspections and checks of electrical appliances during their operation in the country where the unit is in use. In the Czech Republic, this is standard **ČSN 33 1600** (Inspections and checks of electrical appliances during their operation), with a frequency of once every 6 months. An inspection is also carried out following repairs to the charging station.

5.2 Inspection

The inspection consists of a visual inspection and a functional test.

5.2.1 Inspection

Inspect the external condition of the column.

Covers, handles, control elements, etc. must not be damaged in such a way as to reduce protection against electric shock.

The flexible cables must not have damaged, rotten or excessively hardened insulation. At the appliance inlet, the inlet cable must have a protective connector and must be secured against being pulled out. The plug, connector and flexible connector must not be damaged.

The permanently attached electrical cable must be permanently attached to the plug.

Registration or other markings allowing unambiguous identification of the appliance must not be missing or damaged.

In the event of damage, the unit must be switched off and clearly marked. The user must be informed of this. It may only be put back into service after repair with a documented safety inspection.

5.2.2 -run test

The fuel dispenser is connected to the nominal voltage. It must be checked whether the safety devices perform their function reliably (i.e. their operation is not burdened by excessively high mechanical resistance).

It is determined whether the device operates in accordance with the functions described above.

5.3 Cleaning

Clean the exterior of the appliance using a dry cotton cloth, without opening the doors, whilst the appliance is disconnected from the mains.

5.4 Inspection

Inspection of the device is carried out in accordance with the standard for the inspection and testing of electrical equipment during operation, valid in the country where the unit is used. In the Czech Republic, this is standard **ČSN 33 1600** (Inspection and testing of electrical equipment during operation).