Manual

RS1

SpeedController-Soundcombo

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Dear Customer,

We are very pleased that you have chosen one of our products. If you have any questions or suggestions, do not hesitate to send us an email to info@kraftwerk.shop or visit www.kraftwerk.shop, where you will always find the latest operating instructions, software and videos.

Have fun with your new product!

2. Safety Instructions

- • Read these instructions carefully and pay particular attention to the areas marked in red.
- • Only make changes to the cabling when the device is switched off.
- • Ensure that unexpected reactions during commissioning and/or configuration cannot cause any damage (drive wheels off the ground)

- • Always protect electronics from moisture and oil
- • Do not lay data-carrying lines (antenna, bus cable) near current-carrying lines (motor, battery, digital servos)
- • Replace obviously damaged components and cables
- • Only operate the components within the technical specifications
- • Disconnect the battery after the ride, this is particularly important with LiPo batteries.
- • Avoid short circuits and reverse polarity

3. Product Description

The RS1 combines speed controller, sound module and lighting system in one compact module. It connects to up to five channels of any receiver, but also supports SUMD, IBUS, making up to 32 channels available in the system.

Robust speed controller

The speed controller can be permanently loaded with 25A and, thanks to the 32kHz control, is also suitable for coreless motors. It offers a clutch function and traction help. Manual transmission support and cruise control will be activated later via an update.

Exceptional sound

When it comes to programmability, KraftwerK is once again setting standards. While the competitors can only use a few sound snippets for the engine sound, KraftwerK can use any number and this works as follows:

First, the speed range is defined, e.g. 500 rpm immediately after the start and 2300 rpm when the engine revs up. Sound snippets are stored for every rpm range and defined with basic rpm, minimum and maximum. At minimum, the sound is speed-adjusted, at "basic speed" it is played at full volume and speed-related 1:1 and up to maximum it is speed-adjusted again and finally faded out. The snippets can and should of course overlap and this can create an ultra-realistic soun. There are four audio tracks in total: 2x acceleration and 2x delay. The first audio track is the normal driving sound, the second audio track can either be mixed proportionally or switched as a load. The third audio track is the delay sound which is automatically faded in when the stick is released and the fourth is engine brake which can again either mixed proportionally or switched.

If this sounds too complicated, you will be happy to hear that 6 high-quality sounds are already supplied with the module. There will also be a sound library at www.kraftwerk.shop with premium sounds that can be purchased for a few euros and downloaded using the control panel and saved on your own module.
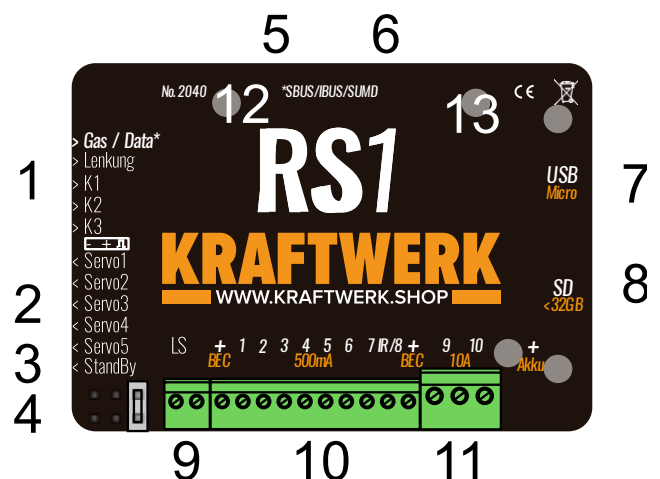
Unlimited expandability

The leading role of KraftwerK in the field of RC bus systems now comes into its own with the RS1. The RS1 can be expanded as required via the 6 EasyBus outputs. Lighting boards, switch extensions, servo controls and much more can be controlled via the EasyBus. However, the RS1 still has a special gimmick: on the upper side, four individual sockets are barely visible, through which another module can be plugged in. The first module in this series is the BL8A, an 8A brushless controller intended for hydraulic pumps.

4. Factory Settings

Erste Ebene / Servoausgang 1	Geschwindigkeit A -> B	Geschwindigkeit B -> A	Mittelstellung	Umkehren	Endausschlag A	Endausschlag B	Funktion	Funktionsgruppe Proportional	Proportionalfunktion
Servoausgang 1	100 %	100 %	0 %	☐	100 %	100 %	Proportionalfunktion Direkt	PropFunktionen	Lenkung

Erste Ebene / Servoausgang 2	Geschwindigkeit A -> B	Geschwindigkeit B -> A	Mittelstellung	Umkehren	Endausschlag A	Endausschlag B	Funktion	Servostellung Gang 1	Servostellung Gang 2	Servostellung Gang 3
Servoausgang 2	100 %	100 %	0 %	☐	100 %	100 %	Schaltgetriebe	-100 %	0 %	100 %

Erste Ebene / Servoausgang 3	Geschwindigkeit A -> B	Geschwindigkeit B -> A	Mittelstellung	Umkehren	Endausschlag A	Endausschlag B	Funktion
Servoausgang 3	100 %	100 %	0 %	☐	100 %	100 %	Sattelplatte

Erste Ebene / Servoausgang 4	Geschwindigkeit A -> B	Geschwindigkeit B -> A	Mittelstellung	Umkehren	Endausschlag A	Endausschlag B	Funktion
Servoausgang 4	100 %	100 %	0 %	☐	100 %	100 %	keine

Erste Ebene / Servoausgang 4	Geschwindigkeit A -> B	Geschwindigkeit B -> A	Mittelstellung	Umkehren	Endausschlag A	Endausschlag B	Funktion
Servoausgang 4	100 %	100 %	0 %	☐	100 %	100 %	keine

Erste Ebene / Schaltausgang	Einschalt-geschwindigkeit	Ausschalt-geschwindigkeit	Funktion	(Wert)	Extra
Schaltausgang 1 (500mA)	100 %	100 %	Standlicht	Standlicht 20 %	
Schaltausgang 2 (500mA)	100 %	100 %	Abblendlicht	Abblendlicht 50 %	Xenoneffekt ☐
Schaltausgang 3 (500mA)	100 %	100 %	Fernlicht	Fernlicht 100 %	Xenoneffekt ☑
Schaltausgang 4 (500mA)	100 %	100 %	Rundumlicht Ein/Aus		
Schaltausgang 5 (500mA)	100 %	100 %	Blinker links	Blinker 100 %	
Schaltausgang 6 (500mA)	100 %	100 %	Blinker rechts	Blinker 100 %	
Schaltausgang 7 (500mA)	100 %	100 %	Rücklicht & Bremslicht	Rücklicht 20 %	Bremslicht 100 %

5. Connections

1. 5 servo inputs, an IBUS/SBUS/SUMD signal can also be connected to Gas/Data. The detection is done automatically
2. 5 servo outputs adjustable, factory settings see above
3. Off/On/StandBy, StandBy
4. Configure jumpers for sound and control mode.
5. 6 EasyBus outputs
6. I2C expansion port
7. Micro USB port
8. SD card, max. 32GB FAT32 formatted
9. Speaker connector, 4Ohm or more
10. Switching outputs
11. 10A switching outputs
12. Status LED
13. 4 expansion pins for plug-on modules

6. Technical data

Speed controller properties

Operating voltage	6 - 20V
BEC	6V/3A
Switching Frequency	einstellbar bis 32kHZ
Clutch function	ja
Gearbox support	ja
Inntertial simulation	optional
Cruise control	optional
Protection functions	battery undervoltage, motor short circuit, overtemperature
Funktionen für Servoausgänge	Proportional function Proportional function direct Prop function switched Two positions Three positions saddle plate trailer supports motor Dump/tipper motor Ramp/Platform motor manual transmission

Sound properties

Number of sounds	umlimited
Simultaneously playable sounds	~ 10
Play modes	Touch, Loop, Once, Permanent, Random, Stoppoints
Verwendbare Formate	WAV, MP3
Verwendbare Abtastrate	Alle (automatische Konvertierung nach 44.100)
Volume control	Poti, Poti, via channel, via software
SD card	max 32Gb, larger cards can be formatted to 32Gb

7. Commissioning

The RS1 must be connected to five channels of the receiver.

The use of a light and sound control pad can be configured using jumpers.

7.1. Upper jumper set, pad on K3

The engine brake is active if K2 is pressed up, provided the model sound supports this.

If K2 is pulled down and then tapped to the right, the horn is switched to horn and fanfare, provided the model sound supports this.

Throttle

Volume **Load**

Brake / Reverse

Engine brake (JakeBrake)

Steering

Clutch
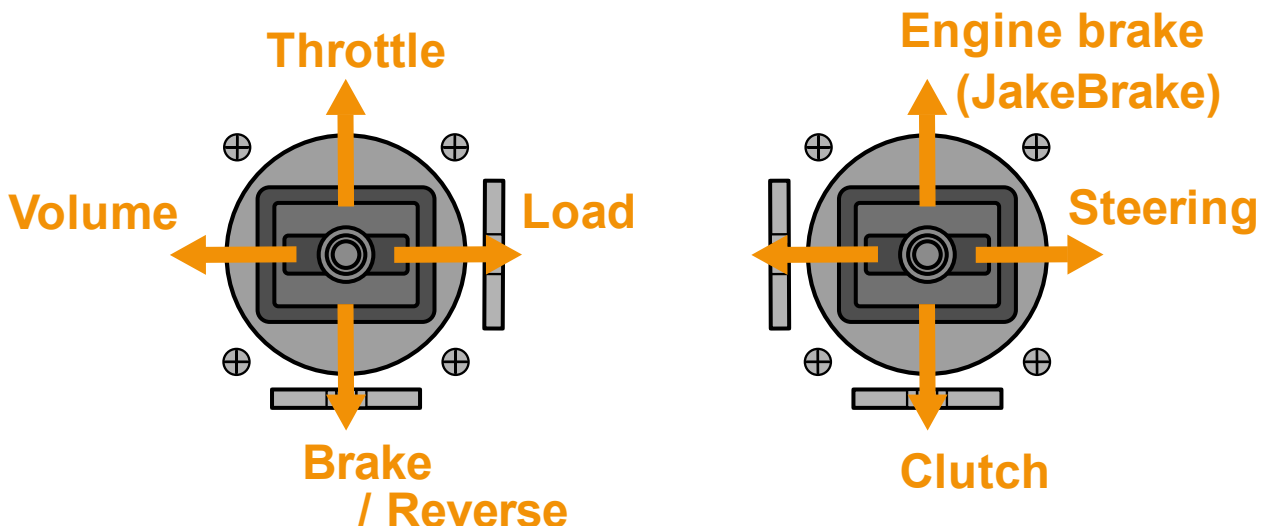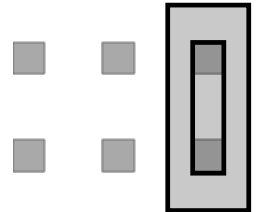
7.2. Upper jumper not set, control via button on K3
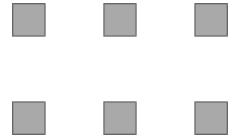
If the pad is not used, the occupancy of the channels is of course more dense.

Throttle, steering, volume and load are the same as when using the pad.

The motor brake is designed here as a memory function, a short tap activates the motor brake, tapping again deactivates it. Long press up starts/stops the motor. Half-tapping activates the horn.

If K2 is pulled down and then tapped to the right, the horn is switched to horn and fanfare, provided the model sound supports this.

Throttle

Volume **Load**

Brake / Reverse

Full long: Start/Stop
Full short: Motorbremse
Half: Horn

Steering

Clutch
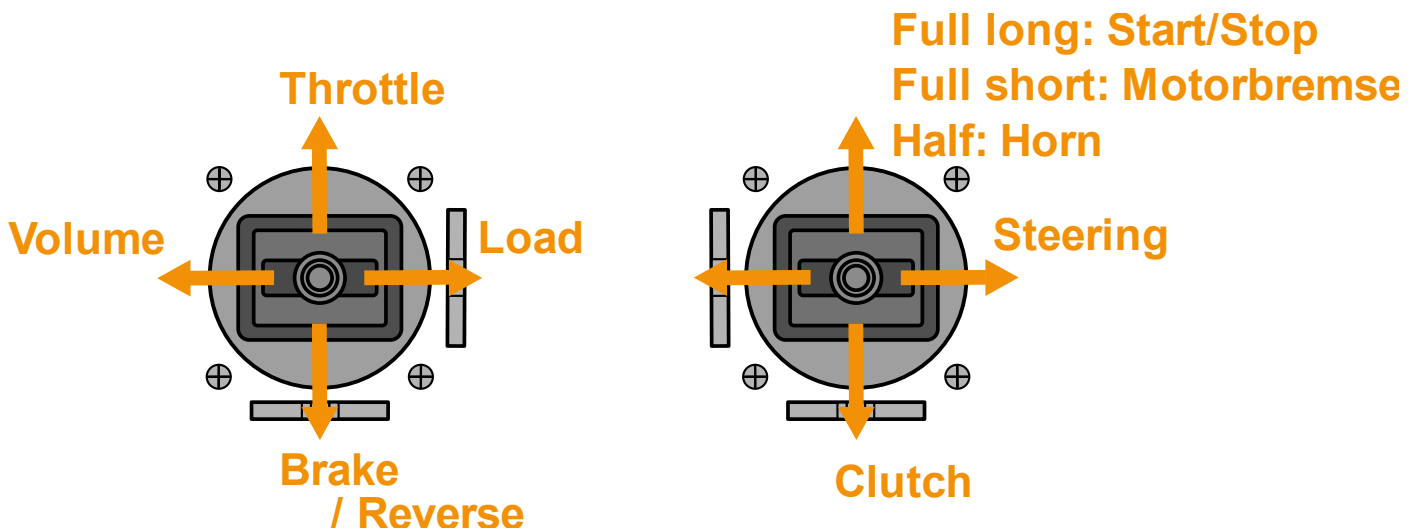
If a button is used for K3, only the full-way functions can be switched. If necessary, half the functions can also be implemented using the appropriate mixer on the remote control.

K3
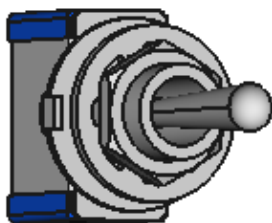
Full short: left turn signal
Full long: hazard lights
Half short: fifth wheel
Half long: PartyMode

Full short: right turn signal
Full long: Light+
Half short: all-round light
Half long: lights off

7.3. Connecting the receiver

Before you connect the RS1 to the receiver, you should check the channel assignments of your receiver. To do this, take a servo and check each output for correct function and note the assignment.

Caution: it is advisable to jack up the model to prevent the model from moving off unintentionally. Then connect all servo cables to the corresponding outputs of the receiver.

7.4. Calibrating the channels

Calibrating the channels is the most important step for proper operation of the KraftwerK EasyBus systems! After every change in the settings of your remote control system (deflections, directions of rotation, center positions), the channels must be re-calibrated. Servos and motors that are controlled by KraftwerK systems must be configured via the ControlPanel. Do not use the menu of your remote control system!

- ➢ Switch on the remote control and if the drive motor has already been connected, jack up the model so that none of the drive wheels touches the ground.
- ➢ Bring the gas and steering channel to an end deflection and then switch on the model. The red LED lights up, confirming the teach-in mode.
- ➢ Then bring the sticks back to the middle position.

    LED flashes once briefly

- ➢ *Throttle stick*: Full throttle, then full brake

    LED flashes twice briefly

- ➢ *Steering stick*: Full deflection left steering, then full deflection right steering

    LED flashes 3 times briefly

- ➢ **Channel K1:** Full deflection left, then full deflection right

    LED flashes 4 times briefly

- ➢ **Channel K2:** Full deflection up, then full deflection down

    LED flashes 5 times briefly

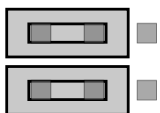- ➢ **Channel K3:** Full deflection up, then full deflection down
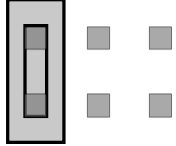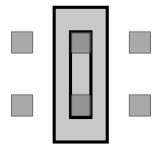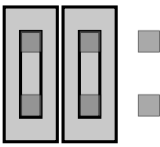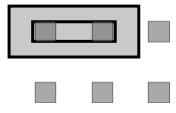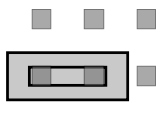
When all sticks are in the middle position again, the **LED lights up red** for a second **and signals the end of the calibrating process**. The system restarts automatically and the LED flashes green twice to indicate that it is ready for operation.

Alternatively, the channels can also be calibrated with the ControlPanel software
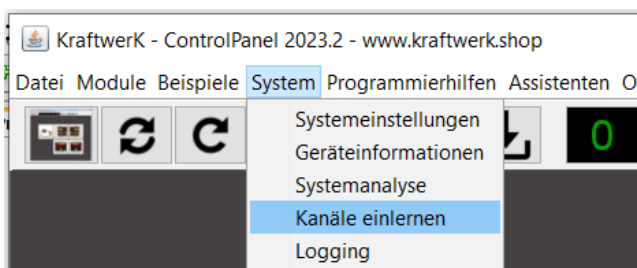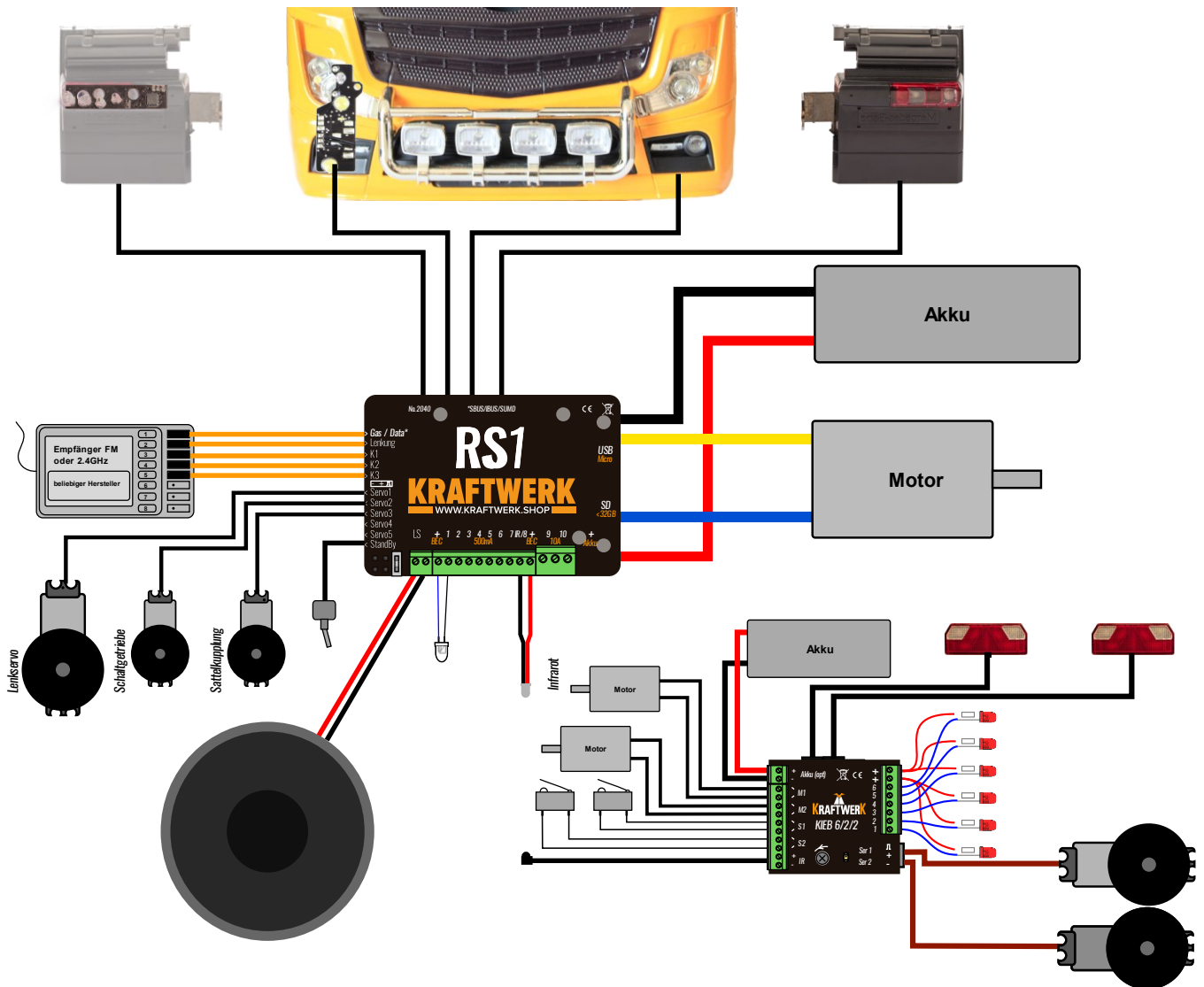
8. Modellsounds

Sound	Jumperstellung	Last verfügbar	Motorbremse verfügbar
Scania 770S		🚫	🚫
Volvo FH16		🚫	🙂
Mercedes Actros		🙂	🙂
Unimog		🚫	🚫
Mack		🙂	🙂
Kenworth		🙂	🙂
Benutzerdefiniert		🙂	🙂

9. Connection plans

The channels may vary depending on the remote control system.
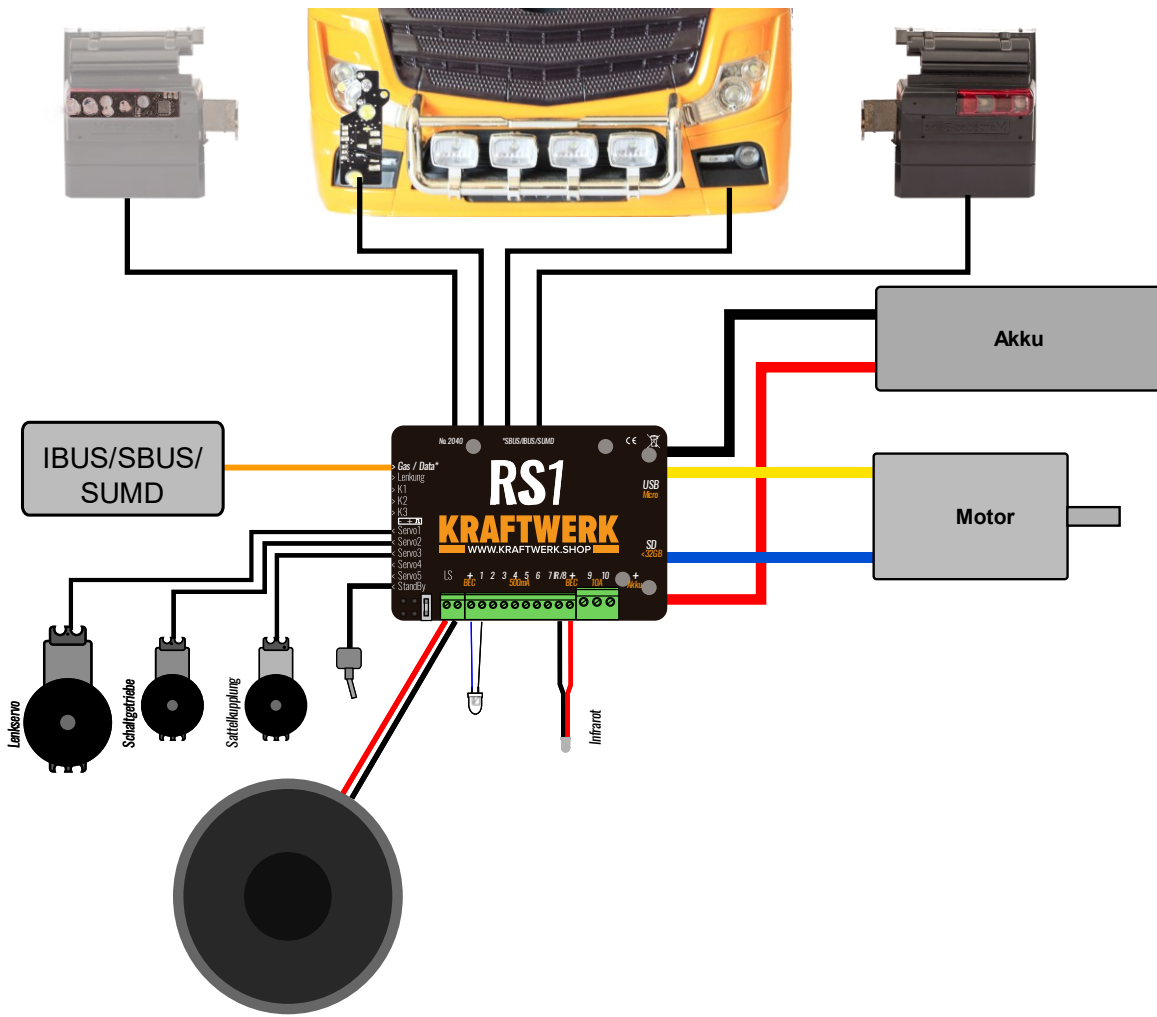
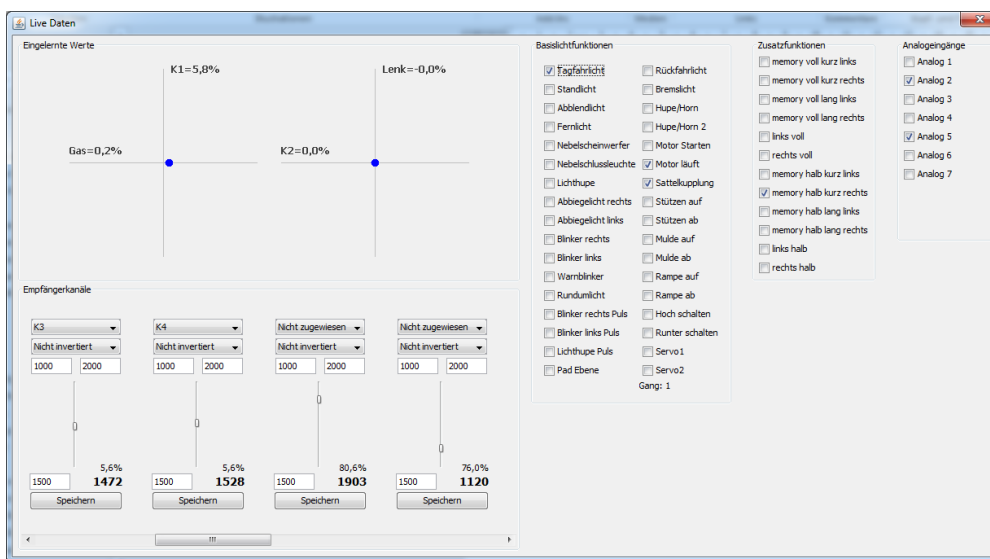With the help of the live data view of the control panel, the assignment and the calibrating process can be checked.

If an IBUS/SBUS/SUMD receiver is used, the assignment can also be changed using the live data view. The RS1 automatically switches to the protocol used.

10. Appendix

10.1. Naming convention

Kraftwerk	Typ	Master/Busnode	Inputs/Outputs	Additional information
K	L	M	4/16	
Kraftwerk	Licht	Master	4 Servo inputs/ 16 Switching outputs	
K	L	M	4/12	500
Kraftwerk	Licht	Master	4 Servo inputs/ 12 Switching outputs	500mA per output
K	L	B	8	500
Kraftwerk	Licht	Busnode		500mA per output
K	S	B	2	
Kraftwerk	Servo	Busnode	2 Servooutputs	
K	M	B	1	10A
Kraftwerk	Motor	Busnode	1 Motor output	10 Ampere

Types: **L**ight, **S**ervo, **M**otor

Master/Busnode: The master contols the system, the busnodes have specialized tasks.

10.2. Terms

ControlPanel

The system can be configured with the free PC software ControlPanel.

Pad

Our control pads are mounted on the remote control transmitter and allow convenient control of the system.

Parameter

Changeable value, setting.