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Installation- and Operation Instruction for the Remote Control System HM22XX

V32 0108

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<u>Before operation,</u> read carefully this installation and instruction manual!

This instruction describes the installation and the operation of the following HM-Funktechnik remote control systems:

HM2225

professional remote control system for single drum winches on forest skidders, including:

Release, pull, controlled brake release (deadman or intermittent function), gear switch-over of the winch (optionally), horn and accelerator, manual and automatic alarm

HM2226

professional remote control system for single drum winches on forest skidders, including:

Release, pull, controlled brake release (deadman or intermittent function), gear switch-over of the winch (optionally), horn and accelerator, manual and automatic alarm, engine start / stop

HM2235

professional remote control system for single and dual drum winches on forest skidders, including:

2x release, 2x pull, 2x controlled brake release (deadman or intermittent function), gear switch-over of the winch (optionally), horn and accelerator, manual and automatic alarm

HM2236

professional remote control system for single and dual drum winches on forest skidders, including:

2x release, 2x pull, 2x controlled brake release (deadman or intermittent function), gear switch-over of the winch (optionally), horn and accelerator, manual and automatic alarm, engine start / stop

Table of Contents

1 Installation

1.1 General information

All remote control receivers for forestry winches are equipped with a standard 7 pin or 13 pin plug.

	In general, if the make and model of the winch was specified with the order, the plug will be correctly configured for the customer. However we **strictly recommend** that the wiring between the winch and the plug is checked, to ensure that it is correct. On the last page of this manual you will find the configuration of the plug for your winch, please compare this against the wiring information in the winch user‘s manual.

Once the 7/13pin plug of the remote control receiver is connected to the corresponding socket on your winch, the unit is ready for operation !

After charging on the LG2 battery charger the transmitter is ready for use. (See section 5.1 for charging instructions)

1.2 Mounting of the receiver

There are 4 holes in the back of the receiver box for fixing the unit to the vehicle with 4 to 5 mm diammeter screws. The holes can be accessed simply by removing the plastic strips on the top of the receiver housing however, to fit screws into the holes, the lid of the housing will probably need to be removed. This is done by removing the plastic strips, and then unscrewing the screws that hold on the lid. After the lid has been removed, the receiver can then be fixed to the skidder with suitable screws.

If possible please use rubber vibration absorbers that reduces the mechanical stress for the complete unit (they are available at your service station). Due to the special case construction the receiver is resistant against splash water and dust.

	**Please do not screw the mounting screws directly through the top cover of the receiver. There will be big tensions that can cause a break! Do not install the receiver directly at the winch without adequate protection against mechanical and weather impact!**

In case you use the system on a detachable winch, mounted on the tractor using a standard three point attachment point, it is recommended that the receiver is also not permanently connected to the tractor. If the receiver is permanently connected, and the winch is detached from the tractor, without unplugging the control cable, it is very likely that the cable will be torn out of either the plug or the receiver. If the receiver is simply lying in the tractor, for example, it is less likely that damage will occur.

2 Operation

2.1 General information

The remote control series **HM22xx** conforms to the highest standards of safety (Details are available in section 4.1 of this manual). The unit performs a self test every time it is switched on and the internal status is permantly monitored. As a safety feature, if the unit detects an error, it turns itself off. See also the block diagram in the appendix.

LED Function

Green LED:	Indicates that the unit is in its standby mode
Red LED:	Indicates that the unit is in its active mode
Yellow LED:	Indicates the reception of a radio signal

Standby mode

The receiver unit is switched on by pressing the momentary action push button on the front panel. The green LED should illuminate, indicating that the unit is in the standby state (see also section 4.2).

N.B. The illumination of the Green LED indicates the standby mode.

The remote control of the receiver is still disabled until correct operation of the handheld unit is confirmed. This is done by pressing and releasing any button on the transmitter. If the transmitter is determined, by the receiver, to be operating correctly, the user can then proceed to switch the system into the active mode, as explained below. (This feature prevents unwanted and dangerous operation of the winch due to faulty parts or sticking push switches on the transmitter unit)

Active mode

The following combination of button pressed on the transmitter will switch the receiver unit from the standby mode into the active mode

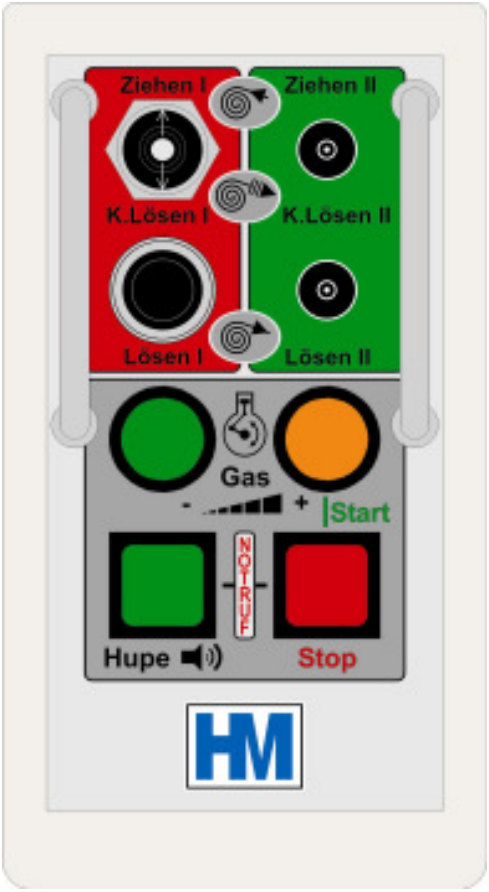
	**press and hold Gas+** **press and release Stop** **release Gas+**

The red LED on the receiver should now illuminate, indicating that the unit is in its active mode. This means that the remote control functions are now enabled, and the system can now control the winch (see also section 4.2).

N.B. The illumination of the red LED indicates the active mode.

2.2 Functionality

2.2.1 Button Functionality HM2225

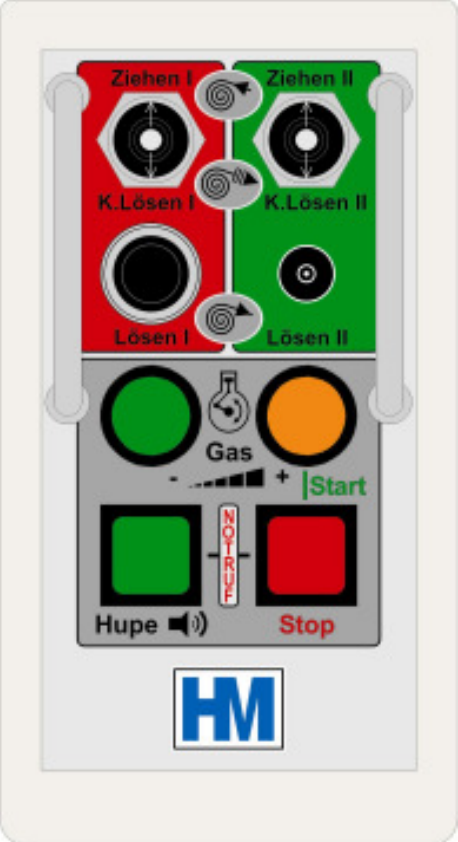


Button	Button Functionality
Ziehen I	The winch pulls in cable (only winch 1)
K.Lösen I	Controlled brake release winch 1 (see DIL switch pos. section 4.6)
Lösen I	Brake is released (only winch 1)
Gas+	The accelerator actuator pushes out the compression pump lever (see DIL switch pos. section 4.6)
Gas -	The accelerator actuator pulls in the compression pump lever
Hupe	Sounds the vehicle horn
Stop	When the receiver is in the active mode, switches to standby mode (see section 4.2) Red LED will extinguish, green LED will light.

2.2.2 Button Combinations HM 2225

Button Combination	Combination Functionality
Hold Gas+ and press Stop	Switches the receiver unit from standby mode to active mode, enabling the control output voltage. The red LED will illuminate
Hold Gas– and press Stop	Switches the receiver completely off (please use this function only if **the engine is switched off**)
Hold K.Lösen and press Gas+/-	Adjusts the brake release interval of **K.Lösen** (depends on DIL-Switch 6 - see section 4.6)
Hold Hupe and press Gas+/-	Adjusts the ON/OFF-times of the brake release interval of **K.Lösen** (depends on DIL-Switch 6 - see section 4.6)
Hold Hupe and press Stop	Initiates an emergency alarm (The external emergency call signal is triggered)
Hold Hupe and press Ziehen	Switch-over 1./2. gear of the winch in standby mode (release Ziehen before Hupe)
Hold Ziehen and press Hupe	Switch-over 1./2. gear of the winch during pulling (release Ziehen before Hupe)

2.2.3 Button Functionality HM2226

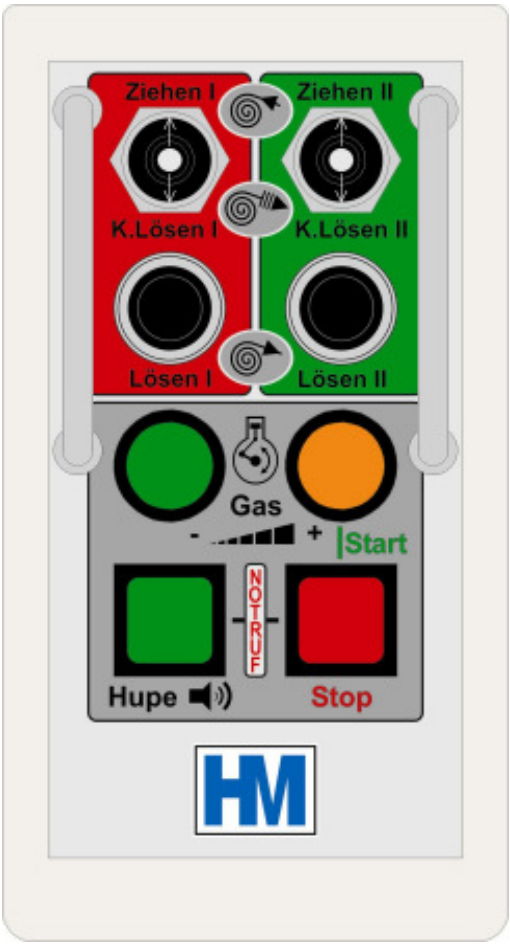


Button	Button Functionality
Ziehen I	The winch pulls in cable (only winch 1)
K.Lösen I	Controlled brake release winch 1 (see DIL switch pos. section 4.6)
Lösen I	Brake is released (only winch 1)
Gas+	The accelerator actuator pushes out the compression pump lever (see DIL switch pos. section 4.6)
Gas -	The accelerator actuator pulls in the compression pump lever
Hupe	Sounds the vehicle horn
Stop	When the receiver is in the active mode, switches to standby mode (see section 4.2) Red LED will extinguish, green LED will light.

2.2.4 Button Combinations HM 2226

Button Combination	Combination Functionality
Hold Gas+ and press Stop	Switches the receiver unit from standby mode to active mode, enabling the control output voltage. The red LED will illuminate
Hold Gas– and press Stop	Switches the receiver completely off (please use this function only if **the engine is switched off**)
Hold K.Lösen and press Gas+/-	Adjusts the brake release interval of **K.Lösen** (depends on DIL-Switch 6 - see section 4.6)
Hold Hupe and press Gas+/-	Adjusts the ON/OFF-times of the brake release interval of **K.Lösen** (depends on DIL-Switch 6 - see section 4.6)
Hold Hupe and press Stop	Initiates an emergency alarm (The external emergency call signal is triggered)
Hold Hupe and press K.Lösen I	Engine Start
Hold Hupe and press K.Lösen II	Engine Stop
Hold Hupe and press Ziehen	Switch-over 1./2. gear of the winch in standby mode (release Ziehen before Hupe)
Hold Ziehen and press Hupe	Switch-over 1./2. gear of the winch during pulling (release Ziehen before Hupe)

2.2.5 Button Functionality HM2235

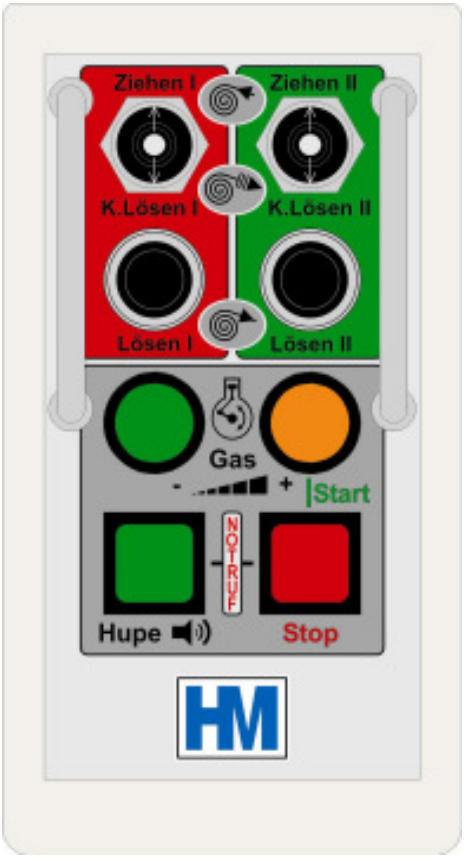


Button	Button Functionality
Ziehen I **Ziehen II**	Push lever up winch 1 or winch 2 pulls in cable
K.Lösen I **K.Lösen II**	Controlled brake release (see DIL switch pos. section 4.6)
Lösen I **Lösen II**	Pull lever down brake 1 or brake 2 is released
Gas+	The accelerator actuator pushes out the compression pump lever (see DIL switch pos. section 4.6)
Gas -	The accelerator actuator pulls in the compression pump lever
Hupe	Sounds the vehicle horn
Stop	switches to standby mode, when the receiver is in the active mode red LED will extinguish green LED will light

2.2.6 Button Combinations HM 2235

Button Combination	Combination Functionality
Hold Gas+ and press Stop	Switches the receiver unit from standby mode to active mode, enabling the control output voltage. The red LED will illuminate
Hold Gas– and press Stop	Switches the receiver completely off (please use this function only if **the engine is switched off**)
Hold K.Lösen and press Gas+/-	Adjusts the brake release interval of **K.Lösen** (depends on DIL-Switch 6 - see section 4.6)
Hold Hupe and press Gas+/-	Adjusts the ON/OFF-times of the brake release interval of **K.Lösen** (depends on DIL-Switch 6 - see section 4.6)
Hold Hupe and press Stop	Initiates an emergency alarm (The external emergency call signal is triggered)
Hold Hupe and press Ziehen	Switch-over 1./2. gear of the winch in standby mode (release Ziehen before Hupe)
Hold Ziehen and press Hupe	Switch-over 1./2. gear of the winch during pulling (release Ziehen before Hupe)

2.2.7 Button Functionality HM2236



Button	Button Functionality
Ziehen I **Ziehen II**	Push lever up, winch 1 or 2 pulls in cable
K.Lösen I **K.Lösen II**	Controlled brake release (see DIL switch pos. section 4.6)
Lösen I **Lösen II**	Pull lever down, brake 1 or brake 2 is released
Gas+	The accelerator actuator pushes out the compression pump lever (see DIL switch pos. section 4.6)
Gas -	The accelerator actuator pulls in the compression pump lever
Hupe	Sounds the vehicle horn
Stop	switches to standby mode, when the receiver is in the active mode red LED will extinguish green LED will light

2.2.8 Button Combinations HM 2236

Button Combination	Combination Functionality
Hold Gas+ and press Stop	Switches the receiver unit from standby mode to active mode, enabling the control output voltage. The red LED will illuminate
Hold Gas– and press Stop	Switches the receiver completely off (please use this function only if **the engine is switched off**)
Hold K.Lösen and press Gas+/-	Adjusts the brake release interval of **K.Lösen** (depends on DIL-Switch 6 - see section 4.6)
Hold Hupe and press Gas+/-	Adjusts the ON/OFF-times of the brake release interval of **K.Lösen** (depends on DIL-Switch 6 - see section 4.6)
Hold Hupe and press Stop	Initiates an emergency alarm (The external emergency call signal is triggered)
Hold Hupe and press K.Lösen I	Engine Start
Hold Hupe and press K.Lösen II	Engine Stop
Hold Hupe and press Ziehen	Switch-over 1./2. gear of the winch in standby mode (release Ziehen before Hupe)
Hold Ziehen and press Hupe	Switch-over 1./2. gear of the winch during pulling (release Ziehen before Hupe)

3 Safety instructions

The use of radio remote controllers lightens the load of daily work, while increasing the daily yield.

However, in contrast to when the operator is standing next to the skidder, operating the winches manually, the operator may be some distance away and may not be able to appreciate the tension or strain on a winch cable, or the pull on the skidder. This increases the chance of the system being overloaded, in which case the cable can snap or the skidder can turn over.

It is for this reason that the operator is urged to keep a good distance from the skidder and from loads pulled by the winches. He should keep at least half a cable length from the whole system!

If a load becomes jammed, and the operator goes forward to work on it, the receiver should be switched into the standby mode by pushing the Stop button on the hand-held transmitter (see section 4.2).

The operation of the HM22xx radio remote control systems was designed to eliminate the adverse of dangerous effect of interference or malfunction.

HM-Funktechnik, however, strictly recommends that if a user has any problems with a unit it should be taken out of operation. It should then be checked by a skilled and experienced electronic engineer, or sent to the service agent.

4 The receiver unit

4.1 Safety functions

4.1.1 Self test

The receiver has two main safety functions:The first is a continuous monitoring of the circuit operation. If at any time the system detects a malfunction, the receiver unit will be switched off automatically. The second safety feature is that the operator can isolate the control output voltage from the control relays at any time. This function disables all the control outputs, so that the remote control of equipment is disabled.

4.1.2 Control isolation

The output relay bus-bar voltage is available externally (units with a 13 pin plug only). This allows the connection of a status indicator, for example a lamp on the back of the vehicle, to show the operator the current status of the receiver unit. This would be a safety tool, as it indicates to the operator whether the system is in the standby mode or in the active mode.

The receiver is programmed to test these two safety functions periodically.

4.1.3 Manual alarm function

The HM22xx systems have a manual or passive alarm operation. To activate the manual alarm the operator must press the **Stop** button while holding down the **Hupe** button on the transmitter. This will switch the external alarm relay and can be used to trigger an emergency call system, such as the HM WECC2.

4.1.4 Automatic alarm function

This function will only be active if the DIL switch no. 3 is set to enable it (see section 4.6).

If the receiver is on, and the operator does not press a button on the transmitter for six minutes, the receiver switches into alarm mode and initiates a prealarm warning via the vehicle horn. If the operator does not respond to this by pressing either the **Gas+** button or a **Ziehen** button, after a further two minutes, the receiver will switch into an external alarm mode. An extern alarm trigger signal is given as an output from the receiver unit and, as described above, it can be used to trigger an emergency call system such as the HM WECC2.

4.2 Safety functions during operation

In case the operator has to work on a load, which is already connected to the skidder´s winch, he is reminded to use the standby safety function. He can switch the relay bus-bar voltage off, just by pressing the **Stop** button on the hand-held transmitter.

This function disables all the remote control functions so that, if the operator inadvertantly presses a button on the transmitter, the winch is not set into operation. This control driver voltage can be switched on again according to the procedure described in section 2.1.

4.3 Power supply requirements

The receiver unit is designed for operation on equipment with a 12 or 24V$_{DC}$ supply and there are no adjustments or modifications needed. The voltage supplied to the unit from the vehicle is switched through relays to give the control output signals, so that 12V$_{DC}$ is supplied, the outputs will be at 12V$_{DC}$, or if 24V$_{DC}$ is supplied the outputs will be at 24V$_{DC}$.

4.4 Control output protection

In the receiver each output relay is protected by a **6 A poly-switch fuse** installed in series with the output relay contacts. If a maximum current of 6 A is exceeded on an output, due to a short circuit or excessive load, the fuse will drop out and isolate that output. The fuse will then automatically reset after the short circuit or excessive load is removed from the output. These fuse elements are not permanently damaged by short circuits, and they protect the rest of the circuitry from being damaged, however, they may become hot if any output is constantly overloaded and this heat can damage the output relays.

4.5 Relay functionality

Relay	Relay functionality
1	For future use
2	**Self test relay**: On start up this relay is latched by pressing the button on the front panel of the receiver unit. If the self test routine of the microprocessor detects a malfunction at any time this relay will be reset, completely isolating the unit from the vehicle power supply. The normal start up procedure can be used to restart.
3	It can be used either to drive a warning light, whenever the winches pull in cable, or to control an hydraulic pump whenever the hydraulic system is used. The function of this relay is controlled by DIL switch no.5 (see section 4.6 for details)
4	This relay is in series with the self test relay and switches the control relay bus voltage. R4 can be latched on start up, after the self test funcion is complete, by pressing the **Stop** button while holding the **Gas+** button pressed (the normal methode of switching into active mode) R4 is alo used to switch between standby and active mode: The **Stop** button is used to enter Standby mode, isolating the control relays, and the same sequence as above to enter the active mode. The output of this relay is also available externally on the 13pin plug.
5	This relay switches if the **Hupe** and **K. Lösen I** buttons are both pressed on the hand-held transmitter. This relay can be used to drive an **engine start** mechanism.
6	This relay can be used to initiate an external **emergency call**. The function is controlled by DIL switch no. 3 (see section 4.6 for details)
7	This relay switches if the **Hupe** and **K. Lösen II** buttons are both pressed on the hand-held transmitter. This relay can be used to drive an **engine stop** mechanism.
8	This relay switches when the **Hupe** button on the hand-held transmitter is pressed. The output is normally open circuit and switches to the supply voltage of the vehicle (12 or 24 V_{DC}). It is recommended that an external relay is installed to **drive the horn**, as the horn may draw a large current. This would cause the polyswitch fuse to drop out, and as described above this can eventually damage the output relay.
9	This relay is controlled by the **Ziehen I** button on the hand-held transmitter. It is used to drive the **clutch on winch no.1**.
10	This relay drives an actuator to control the skidder´s accelerator mechanism in the funktion **Gas-**. Its function is controlled by DIL switch no. 2 (see section 4.6 for details)
11	This relay is controlled by the **Ziehen II** button on the hand-held transmitter. It is used to drive the **clutch on winch no.2**.
12	This relay drives an actuator to control the skidder´s accelerator mechanism in the funktion **Gas+**.Its function is controlled by DIL switch no. 2 (see section 4.6 for details)
13	This relay is controlled by the **Lösen I** button on the hand-held transmitter. It **releases the brake on winch No.1**. It is controlled by DIL no. 4 (see section 4.6 for details).
14	This relay is controlled by the **Lösen II** button on the hand-held transmitter.It **releases the brake on winch No.2**. It is controlled by DIL no. 4 (see section 4.6 for details).
15	For future use
16	Switch-over 1./2. gear of the winch (optional)

4.6 DIL switch functions

<table>
<tr><th>DIL-switch</th><th>Functionality</th></tr>
<tr><td>1</td><td>Adjusts in combination with DIL 7 and 8 the functionality of the release locking function
<table>
<tr><th>DIL 7</th><th>DIL 8</th><th>DIL 1 = ON</th><th>DIL 1 = OFF</th></tr>
<tr><td>OFF</td><td>OFF</td><td>Function doesn´t lock</td><td>Function is locked after 0,5 sec permanently</td></tr>
<tr><td>OFF</td><td>ON</td><td>Function is locked after 1,0 sec for 5 Minutes</td><td>Function is locked after 1,0 sec permanently</td></tr>
<tr><td>ON</td><td>OFF</td><td>Function is locked after 2,0 sec for 5 Minutes</td><td>Function is locked after 2,0 sec permanently</td></tr>
<tr><td>ON</td><td>ON</td><td>Function is locked after 3,0 sec for 5 Minutes</td><td>Function is locked after 3,0 sec permanently</td></tr>
</table>
The release locking function can be reset by pressing the Lösen button shortly (shorter than the selected locking time).</td></tr>
<tr><td>2</td><td>ON: fixed accelerator mode
If you press the Gas+ button on the hand-held transmitter for at least 2 sec. the Gas+ function is latched. This mode is selected if you use a solenoid or air cylinder to set a fixed accelerator position. The function can be reset by pressing the Gas+ button shorter than 2 seconds.
OFF: linear accelerator mode
In this mode you can continuously adjust the engine speed with an actuator. The adjustment is done by the Gas+ and Gas- buttons.</td></tr>
<tr><td>3</td><td>ON: Automatic alarm function enabled
Functionality described in section 4.1.4.
OFF: Automatic alarm function disabled</td></tr>
<tr><td>4</td><td>ON: Pressing the Ziehen button automatically activates the pull- and release-function
OFF: Pressing the Ziehen button only activates the pull-function</td></tr>
<tr><td>5</td><td>ON: R3 is activated if you either press the Ziehen or Lösen button (Follow-up mode). You select this mode for example if you have to drive an external hydraulic pump whenever the hydraulic system needs pressure.
OFF: R3 is activated by pressing the Ziehen button (Movement-mode). You select this mode for example to drive a warning light whenever the winch is pulling.</td></tr>
<tr><td>6</td><td>ON: Pressing the K.Lösen button activates the release function only as long as you press the button.
OFF: Pressing the K.Lösen button pulses the release function in adjustable intervals</td></tr>
<tr><td>7 - 8</td><td>See settings of DIL 1 for details</td></tr>
</table>

5 The transmitter unit

In the hand-held remote control unit, apart from the radio transmitter module, there is an encoder, which formats the control data for transmission, and a battery charge management unit, which permanently monitors the state of the internal battery.

5.1 Charging the hand held transmitter unit

There is a 4.8V NiMH battery permanently installed in the transmitter. The charging cycle of this battery is controlled by the battery charge management unit.

There are two metal belt loops on back of the transmitter unit. These loops are also the charging contacts for the internal NiMH battery. These contacts are short circuit protected!

The battery can be charged by slotting the transmitter onto the LG2 battery charger, or any 12V$_{DC}$ source can be used to charge the battery by connecting it accross the two belt loops (the polarity does not matter).

5.2 Battery charging cycle

When the transmitter is put on to charge the internal circuitry first discharges the battery completely, to prevent damage to the battery and to maximise its working life of about 1000 charging cycles. The battery is then charged from flat. The discharging can take up to sixty minutes, and the charging can take up to eight hours.

N.B. The complete charge needs **minimum nine hours** and the temperature shouldn`t be below **0°C (32°F).**

If the battery is discharged to 30% (for example) of its capacity during the day's work, when it is put on to charge, the internal charging circuitry will first discharge the battery completely, then begin to charge it. This means that putting the unit on to charge for a short time when the battery is not completely flat may, in fact, decrease the residual charge in the battery.

Important: 	Charge the transmitter over-night by leaving it on the LG2 charger or connecting it to any 12V$_{DC}$ voltage (polarity does not matter). If you want to use the charging function during a working break please push together the buttons **Gas- and Gas+** after putting the transmitter on the charger. This charging is **limited to one hour**.

5.3 Low battery warning

If the residual charge in the battery decreases to about 10% of its maximum capacity, while in operation, the operator will be warned via the vehicle horn: It will sound for about 1 sec each time any button on the transmitter is pressed (except the **Stop** button). This ten percent is sufficient for a further four to five hours normal work, but this warning informs the driver that the battery is almost flat and should soon be put on to charge.

A completely charged battery allows a couple of days of operation, depending on how much the transmitter unit is used: The battery capacity is enough for about 18 hours continuous transmission (pressing any button permanently).

5.4 Data format

The HM22XX radio remote control systems use an highly sophisticated data protocol between TX and RX. Apart from the control functions, a 16 bit system address and incremental code element is transmitted, which gives the code a unique format. If the code were transmitted continuously, it would repeat about every 30 years.

5.5 Radio licence

The HM22XX series remote controllers use HM-Funktechnik GmbH radio modules 70TXRX-M1 for the data link.

The used radio modules 70TX-M1 and 70RX-M1of HM-Funktechnik GmbH are approved by the **FCC** under the code **PUX** and also fulfil the European **R&TTE** directive.

6 Trouble shooting

If the remote control system doesn`t work, please check first the wiring on the skidder. Is the plug inserted correctly? Are the contacts of the plug clean, dry and not oxidized? Is the cable ok and without damages?

Did you charge the battery?

Does the the receiving signal lamp at the receiver lightens when you push a button on the transmitter?

Do you hear the clicking of the relays when you push a button on the transmitter. If yes, please check if the driver voltage is activated and the red LED lightens?

Is there maybe a short-circuit in the cable to the winch due to wrong modifications?

If nothing helps please contact our service. They will help you in either case. If it is necessary to send in the remote control system for service please don`t forget to add a short failure description. It is often very hard to find a failure that is not obvious or not constant.

For further information please contact our service department or your dealer. The HM-Funktechnik **service department** is available via phone no. **+49 (0)6875 9105 17**

If you send units for repair to HM-Funktechnik, please send it to the following address:

HM-Funktechnik GmbH
Zum Handenberg 3
D-66620 Primstal

Please send the units with return postage payed. These expenses are refundable in case of guarantee.

It is recommended that you inform HM-Funktechnik by phone to discuss the arrival of units for repair. It is also helpful if you include detailed information about the problems experienced with the unit.

7 Marking of individual units

The radio remote controllers from the **HM22xx** series are labelled as follows:

e.g. Serial no.: 801011234/36

8	Year of production, 2005
01	Week of production
01	Counting number
1234	internal 16-bit HEX-Code
/36	Exact model of the unit, e.g. HM2236

and Frequency: 434,075 MHz

informs you about the exact channel of the unit.

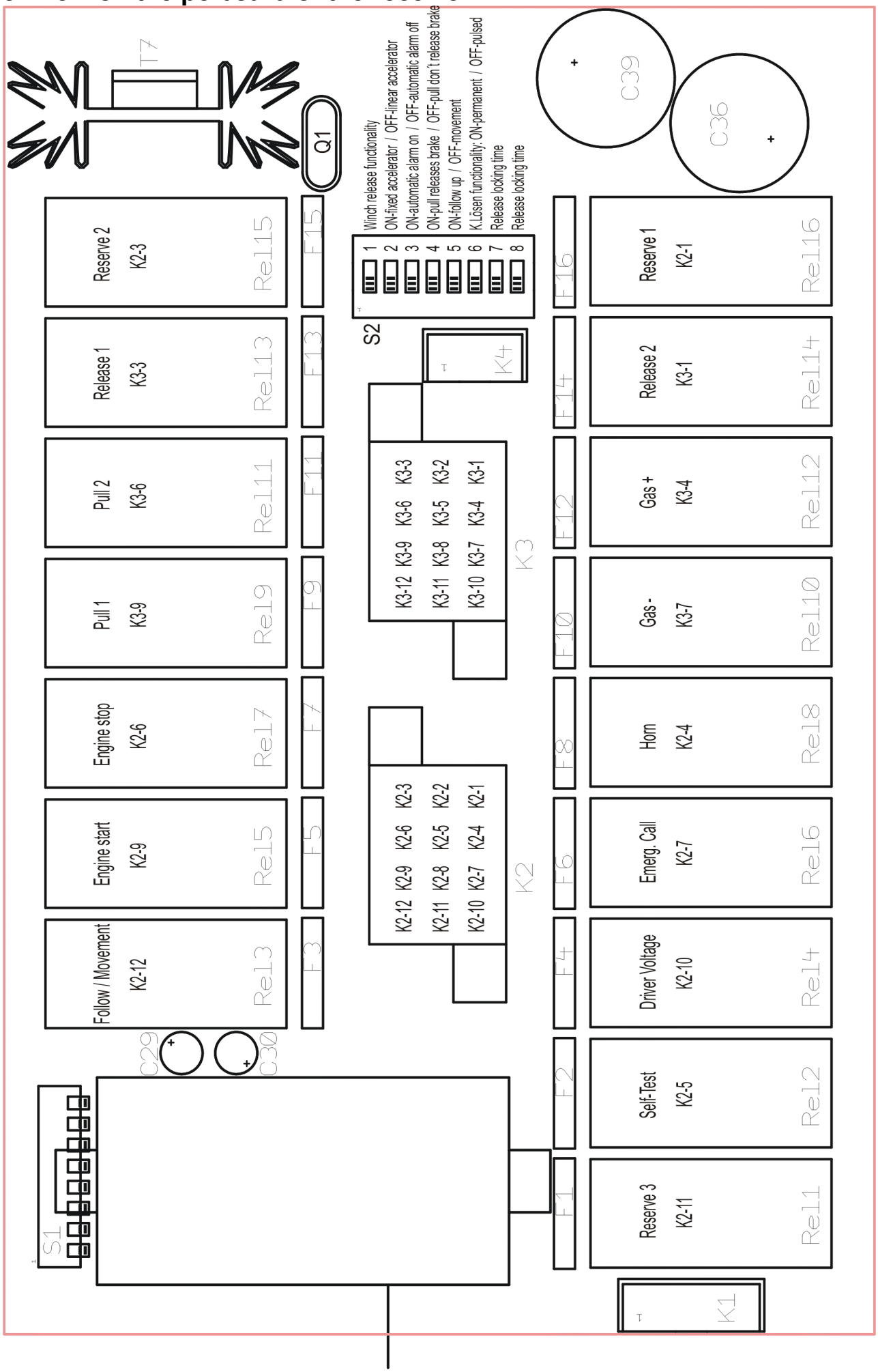
This manual is valid for **HM22xx** radio remote controllers from serial no. 801..... !

8 Cable numbers and functions

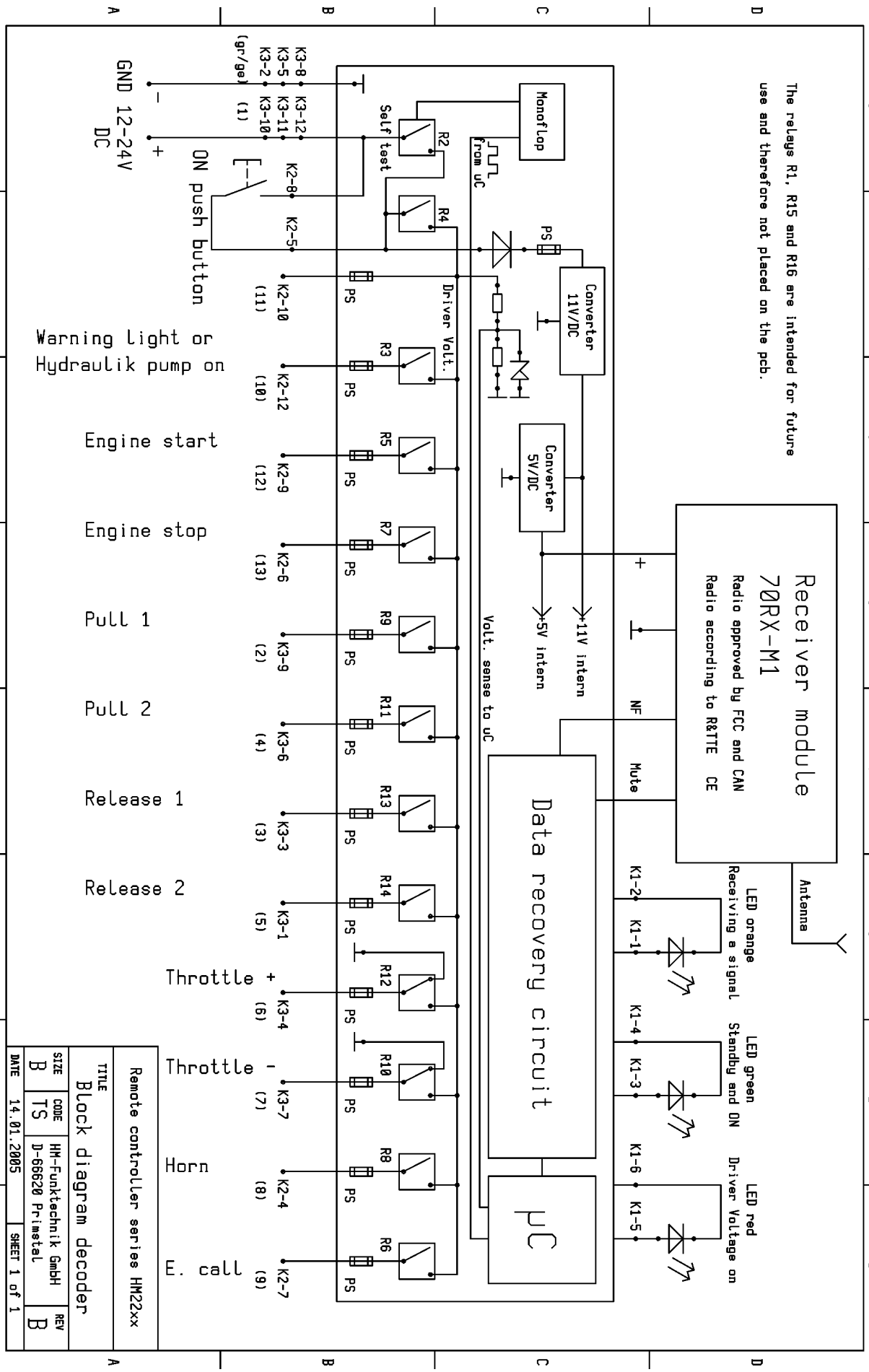
Cable No.	Funktion
1	Power supply voltage 12 - 24 V_{DC}
2	Pull 1
3	Release 1
4	Pull 2
5	Release 2
6	Gas+
7	Gas -
8	Horn (switch high)
9	Emergency call initiation (switch high)
10	Movement or follow up relay
11	Driver voltage
12	Engine Start
13	Engine Stop
green/yellow	Earth and ground for the radio

Units with only 7-pin plug can´t use all of these functions.

9 View on the pc board of the receiver



10 Block diagram of the receiver



Connector assignment and DIL-switch settings for winch type: _____

Connecting lead – type of plug: _____

Contact		Function		Cable-No.
	-		-	
	-		-	
	-		-	
	-		-	
	-		-	
	-		-	
	-		-	
	-		-	
	-		-	
	-		-	
	-		-	
	-		-	

Add. connecting lead – type of plug: _____

Contact		Function		Cable-No.
	-		-	
	-		-	
	-		-	
	-		-	
	-		-	
	-		-	
	-		-	

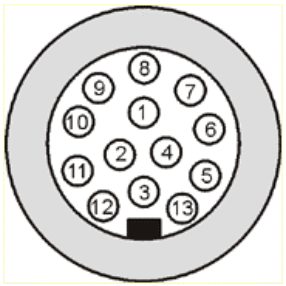
DIL-switch settings

	on = yes off = no	on	off
1	Release locking mode		
2	Fixed accelerator		
3	Automatic alarm enabled		
4	Pull releases brake autom.		
5	Follow up / movement		
6	K.Lösen permanent / pulsed		
7	Release lock time + 1,0 sec.		
8	Release lock time + 2,0 sec.		

Add. connecting lead – type of plug: _____

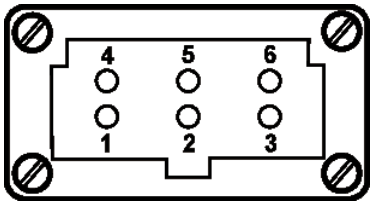
Contact		Function		Cable-No.
	-		-	
	-		-	
	-		-	
	-		-	

Mating face view

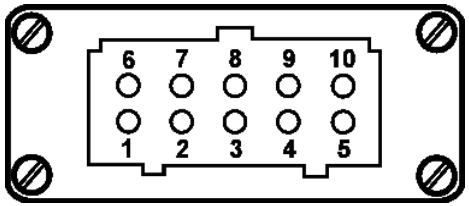


(A) 13 - pin plug

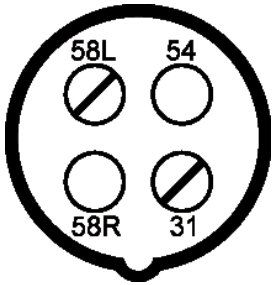
(B) 7 - pin plug



(C) 6 - pin Harting- plug



(D) 10 - pin Harting- plug



(E) 4-pin plug