Hochfrequenzbaugruppen
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www.WinchChief.com

Installation and Operating Instructions for the Winch Chief radio remote controller

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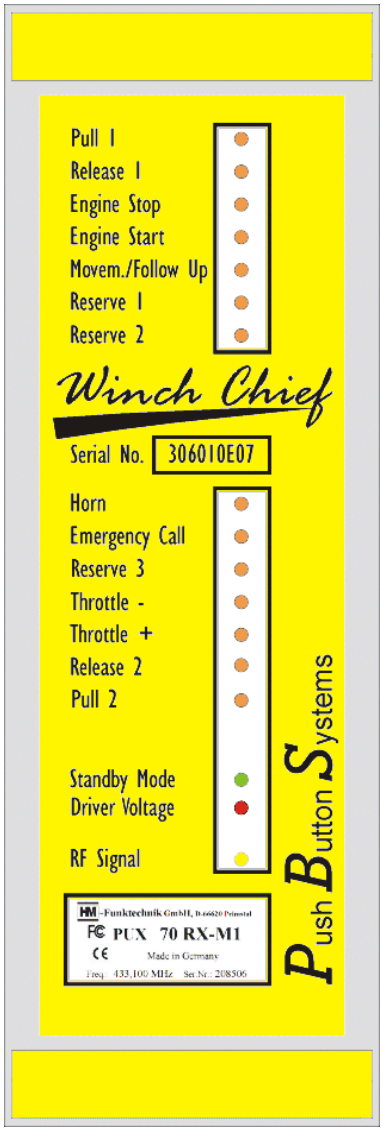


Please read carefully all instructions in this manual before putting the system into operation!

TABLE OF CONTENTS

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 diameter 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.

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! However we strictly recommend **that the wiring between the winch and the plug is checked, to ensure that it is correct.**

TURN-ON PROCEDURE

The receiver unit is switched on by pressing the momentary action push button on the upper side of the panel. The **green lamp** should illuminate, indicating that the unit is in the **stand-by state**. 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.

The following **combination of button presses** on the transmitter will switch the receiver unit from the stand by mode into the active mode and activates the driver voltage:

Press and hold **THROTTLE+** → press and release **STOP** → release **THROTTLE+**

The **red lamp** 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.

<u>Important hint:</u> No work is possible witout activated driver voltage!

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. If a load becomes jammed, and the operator goes forward to work on it, the receiver should be switched into the stand-by mode by pushing the STOP button on the hand-held transmitter.

The operation of the Winch Chief radio remote control system was designed to eliminate the adverse or dangerous effect of interference or malfunction. HM-Funktechnik GmbH, 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.

BUTTON FUNCTIONALITY OF THE TRANSMITTER UNIT

Green battery charge control lamp

Fast Flashing: discharge of the battery

Slow Flashing: charge of the battery

Winch 1 pulls in cable

Winch 2 pulls in cable

Brake 1 is released

Brake 2 is released

Controlled brake release 1 (stutter mode or dead-man`s button, see DIL switch pos. section 4.6)

Controlled brake release 2 (stutter mode or dead-man`s button, see DIL switch pos. section 4.6)

The accelerator actuator pushes out the compression pump lever

The accelerator actuator pulls in the compression pump lever

Sounds the vehicle horn

Switches to standby mode, when the receiver is in the active mode. The relay driver is disabled and the green light will light

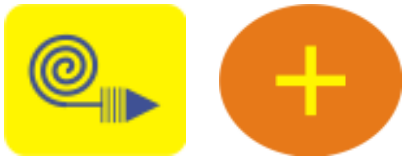
WARNING:

Please do not use the function „switch off the receiver completely“ by pushing − + STOP when the engine is still running. If there is a malfunction at the hydraulic you have no more possibility to act.

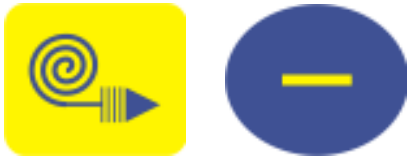
For **special functions** please use the following button combinations:

Switches the receiver unit from standby mode to active mode, enabling the control output voltage. The red lamp will illuminate.

Switches the receiver **completely off**. **Don`t use this function while the engine is still running!**



Increase the brake release interval for the controlled release (only in stutter mode, DIL-switch 6 in position OFF)



Decrease the brake release interval for the controlled release (only in stutter mode, DIL-switch 6 in position OFF)

Increase the time interval between controlled brake release pulses (only in stutter mode, DIL-switch 6 in position OFF)

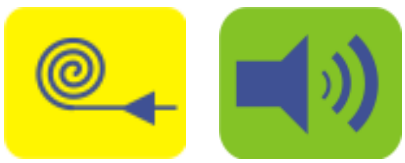
Decrease the time interval between controlled brake release pulses (only in stutter mode, DIL-switch 6 in position OFF)

Initiates an emergency alarm (Triggers the external emergency call signal)

Starts the engine

Stops the engine

Switch-over of the 1./2. gear of the winch **during stop mode** (the pull button must be released before the horn button)



Switch-over of the 1./2. gear of the winch **during pulling mode**

HANDLE OF THE TRANSMITTER

The case of the transmitter is specially made for the rough conditions in forestry. The great coloured buttons helps the user to handle the unit even with gloves.

There are two metal belt loops on back of the transmitter unit. These loops are also the charging contacts for the internal NiCD battery. These contacts are short circuit protected. There is a 4.8 V NiCD battery permanentely installed in the transmitter. The charging cycle of this battery is controlled by the battery charge management unit. When the transmitter is put on to charge the internal circuitry first discharges the battery completely. The battery is then charged from flat with low current. All these provisions maximizes the working life of the battery up to 1000 charging cycles and reduces the memory effect of the battery.

If the residual charge in the battery falls to about 10% of it's 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 ON/OFF button). This ten percent is sufficient for a further five to six hours normal work, but this warning informs the driver that the battery is almost flat and should soon be put on to charge.

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). The complete charge needs **minimum nine hours** and the temperature shouldn`t be below **0°C (32°F).** If you want to use the charging function during a working break please push together the buttons **Throttle- and Throttle+** after putting the transmitter on the charger. This charging is **limited to one hour**.

The green lamp on the transmitters informs about the progress in charging. It **flashes fast at discharging** and **flashes slow at charging**. Maybe the case heats slightly in discharge mode. After end of charging the lamp switch off. The charge cycle will be repeated immediately, if there is an AC power failure or the unit is connected again.

The transmitter is ready to use after charging and needs **no** separate power on switch, because of the fact, that the built in power saver reduces the power consumption within working breaks nearly to zero. A completely charged battery allows about **four days of operation**, depending on how much the transmitter unit is used. The battery capacity is enough for about **18 hours continous transmission** (pressing any button).

After switching on the receiver the first button switch of the transmitters will not be executed. This is necessary to check the right function of the transmitter buttons and prevents the system in the case of a faulty button from executing a winch function.

Because of the self discharging of the battery the transmitter should be charged one time a month. This is very important for the working live of the battery, especially if the systems is only used seasonally. Forgetting this can cause the batteries deep discharging. Charging the transmitter several times can bring the battery to normal function. If this don`t work, please ask our service for help. You maybe need a new battery.

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.

DESCRIPTION OF THE RECEIVER

The **Winch Chief** radio remote control systems uses 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 continously transmitted, it would repeat about every **30 years**. So it is guaranteed that an recorded code cannot been used to drive the machine.

The receiver has **two main safety functions**. The first is a continous 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.

The receiver unit is designed for operation on equipment with 12 to 24 volt 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 if 12V is supplied, the outputs will be at 12V, or if 24V is supplied the outputs will be at 24V.

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

The function of all relays is monitored by an **unique control system**. Every switching function is indicated by a lamp on the front of the receiver. Errors can be recognized by the colour of this indicator:

ORANGE Relayfunction is o.K.

GREEN Relay is driven by the processor, but no function is available at the output. Maybe the driver voltage is switched off (red lamp is off) or the correspondant relay is faulty. In this case please contact our service.

RED Back voltage from outside at the correspondant relay output or the relay is faulty. Please detach the winch plug of the receiver and check the correspondant output for short circuit. If the short circuit is in the receiver plug send the remote control to our service for repair. If not please check the cables at your machine.

If you use an equipment with a 12 Volt supply the lamps also indicates a too low supply voltage, because of the fact, that below 11 Volt the red lamps of the control system never works even with activated driver voltage. So you only get a feedback of the green lamp of the monitoring system, but the remote system is working normally. Please check battery and dynamo of your machine in this case.

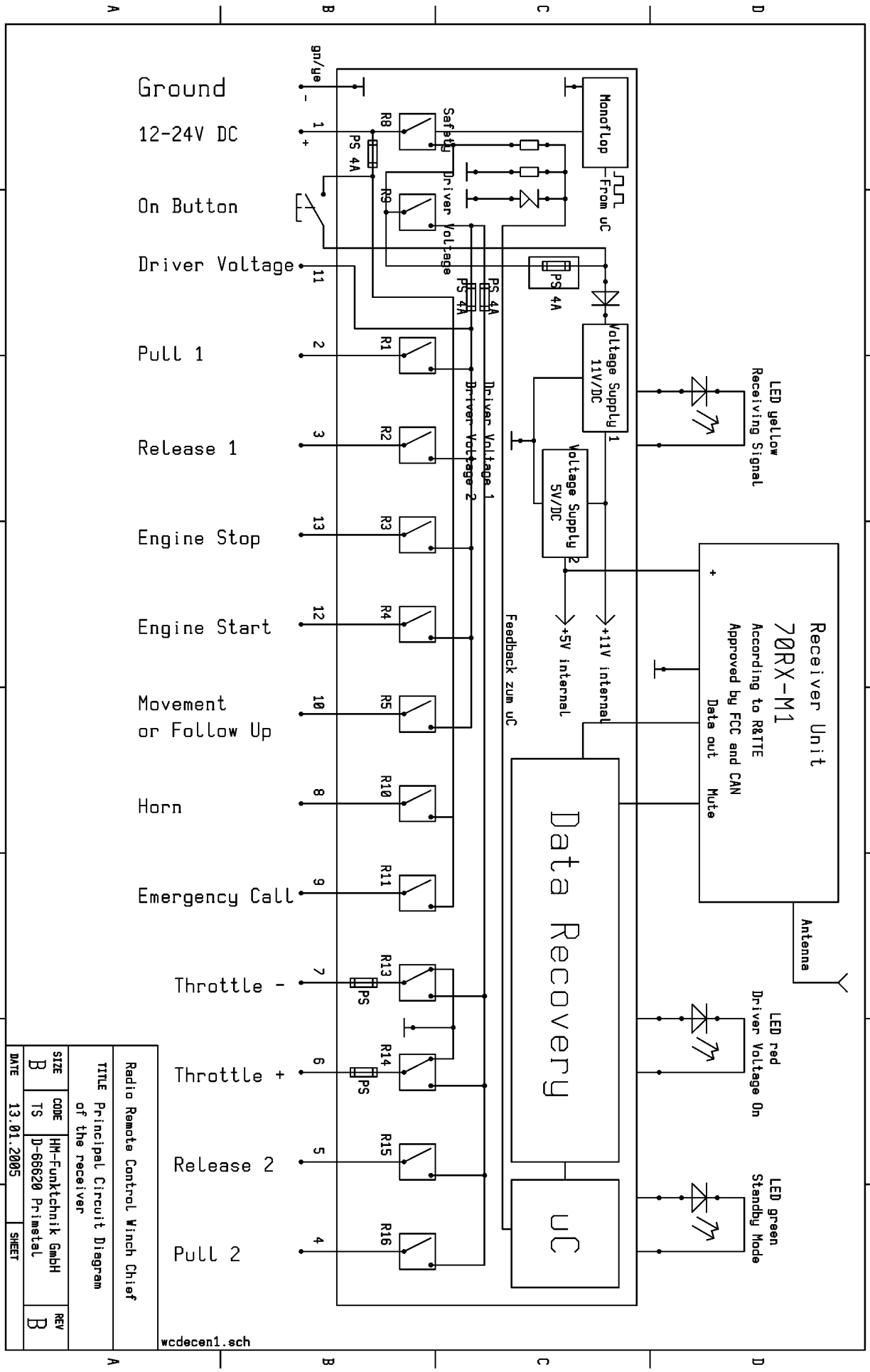
RELAY FUNCTIONALITY

Relay	Relay Functionality
R1	This is controlled by the **Pull I** button on the hand held transmitter. R1 is used to drive the **clutch on winch No.1.**
R2	This is controlled by the **Release I** button on the hand-held transmitter. It releases the **brake on winch No. 1.** The function of R2 is controlled by DIL switch No 4.
R3	This relay switches when the Horn and Controlled Release II (yellow) buttons are both pressed on the hand-held transmitter. R3 can be used to drive the **engine stop** mechanism.
R4	This relay switches when the Horn and Controlled Release I (blue) buttons are both pressed on the hand-held transmitter. R4 can be used to drive the **engine start** function.
R5	R5 can be used either to drive a warning light, whenever the winches pull in cable, or to control an hydraulic pump whenever the hydraulic sytem is used. The function of this relay is controlled by DIL switch No 5.
R6	1./2. gear switch-over of the winch (optional)
R7	For future use only
R8	R8 is the **SELF TEST** relay. On start up this relay is latched by pressing the button on the front panel of the receiver unit. If the microprocessor‘s self test routine detects a malfunction at any time this relay will be reset, completely isolating the unit from the vehicle power supply. The normal startup procedure can be used to restart.
R9	This relay is in series with the SELF TEST relay and switches the control relay **driver voltage**. R9 can be latched on start up, after the self test function is complete, by pressing and releasing the STOP button, while holding the Throttle + button down (the normal method of switching into active mode). R9 is also 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 R9 is also available externally on the 13pin plug.
R10	This relay switches when the **Horn** button on the hand-held transmitter is pressed. 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 poly-switch fuse to drop out, and as described above can eventually damage the output relay
R11	R11 can be used to initiate an **external emergency call**, for example if you are using our emergency call system WECC-2. The function of R11 is controlled by DIL switch No 3.
R12	For future use only
R13	R13 and R14 drive an **actuator** to control the skidder‘s accelerator mechanism. Their function is controlled by DIL switch No 2.
R14	R13 and R14 drive an **actuator** to control the skidder’s accelerator mechanism. Their function is controlled by DIL switch No 2.
R15	This is controlled by the **Release II** button on the hand-held transmitter. R15 releases the **brake on winch No 2**. The function of R15 is controlled by DIL switch No 4.
R16	This is controlled by the **Pull II** button on the hand held transmitter. It is used to drive the **clutch on winch No 2**.

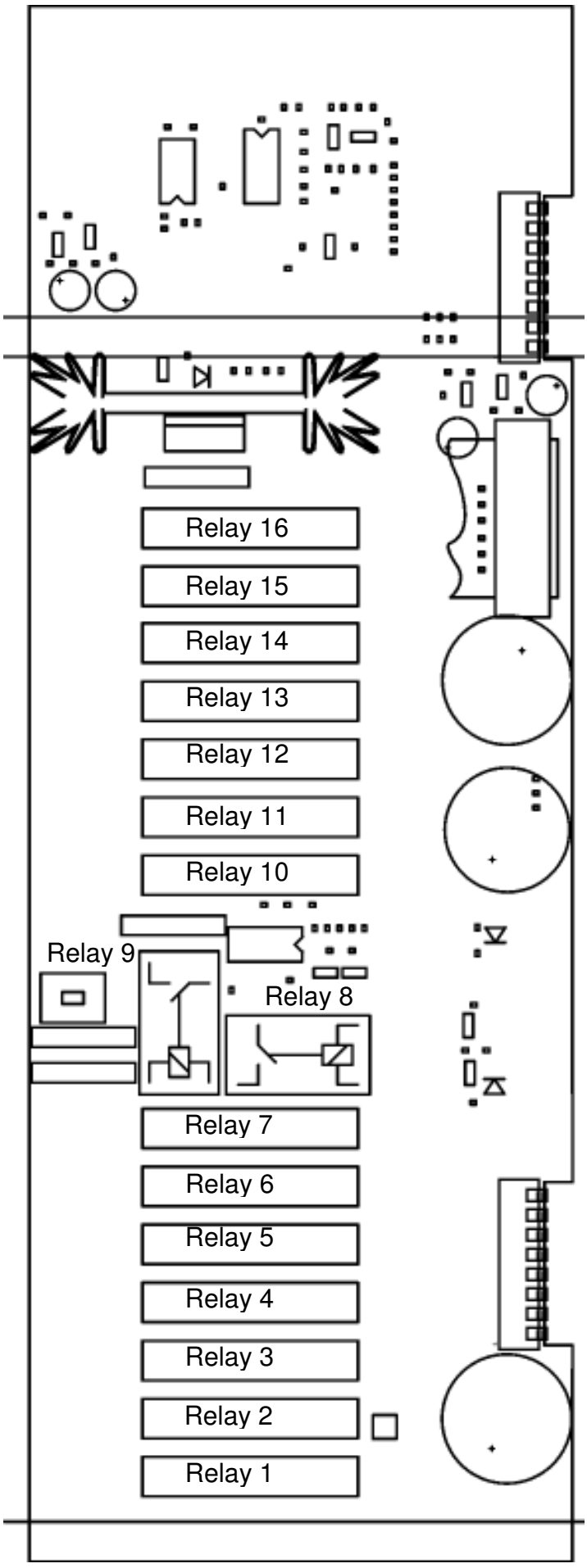
DIL SWITCH FUNCTIONS

<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 Release button shortly (shorter than the selected locking time).</td></tr>
<tr><td>2</td><td>ON: fixed accelerator mode
If you press the Throttle+ button on the hand-held transmitter for at least 2 sec. the Throttle+ 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 Throttle+ button shorter than 2 seconds.
OFF: linear accelerator mode
This mode allows continuously adjustment of the engine speed with an actuator. The adjustment is done by the Throttle + and - 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 Pull button automatically activates the pull- and release-function
OFF: Pressing the Pull button only activates the pull-function</td></tr>
<tr><td>5</td><td>ON: R3 is activated if you either press the Pull or Release 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 Pull 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 Controlled Brake Release button activates the release function only as long as you press the button (dead-man`s button).
OFF: Pressing the Controlled Brake Release button pulses the release function in adjustable intervals (stutter mode).</td></tr>
<tr><td>7 - 8</td><td>See settings of DIL 1 for details</td></tr>
</table>

BLOCK DIAGRAM OF THE RECEIVER



VIEW ON THE PC BOARD OF THE RECEIVER



DIL-switch for receiver frequency control (optional):

8 ON + 1.6MHz
7 ON + 800KHz
6 ON + 400KHz
5 ON + 200KHz
4 ON + 100KHz
3 ON + 50KHz
2 ON + 25KHz
1 ON + 12.5KHz

Relay 16: Pull 2
Relay 15: Release 2
Relay 14: Throttle+
Relay 13: Throttle -
Relay 12: Reserve
Relay 11: Emergency call
Relay 10: Horn
Relay 9: Driver voltage
Relay 8: Self test
Relay 7: Reserve
Relay 6: Switch-over 1./2. gear
Relay 5: Movement / Follow Up
Relay 4: Engine start
Relay 3: Engine stop
Relay 2: Release 1
Relay 1: Pull 1

DIL-switch for winch adjustment
OFF / **ON**:

8 release lock time 0s / +2s
7 release lock time 0s / +1s
6 winch release pulsed / permanent
5 movement / follow up
4 aut. release of the brake Off / On
3 automatic alarm Off / On
2 accelerator mode linear / fixed
1 winch release functionality
(see DIL switch pos. section 4.6)

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.

TYPE IDENTIFICATION

The remote control system **Winch Chief** is marked with the following Code:

z.B. Serial No.: 801011234

8	Production year, 2008
01	Production week
01	serial number
1234	Code of the 16 Bit system address

and Frequency: 434,075 MHz

shows the operating frequency of the system.

This operation manual refers to all remote control systems **Winch Chief** with serial number 801..... and later!

CABLE NUMBERS AND FUNCTIONS

Cable No.	Cable Function
1	Power supply voltage 12-24V
2	Pull 1
3	Release 1
4	Pull 2
5	Release 2
6	Throttle +
7	Throttle -
8	Horn
9	Emergency call initiation
10	Movement or Follow up
11	Driver voltage (optinally switch-over gearbox)
12	Engine Start
13	Engine Stop
Yellow/Green	Earth and ground for the radio

If you ordered your remote control with 7 pin plug you are not able to use all of the described functions !

CONNECTION DIAGRAM OF THE FINISHED MANUFACTURED PLUG

Connector assignment and DIL-Switch setting for the winch type: _____

connecting lead - type of plug:_____

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

add. 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 doesn`t lock		
2	fixed accelerator		
3	automatic alarm on		
4	pull release brake		
5	follow up / movement		
6	release lock time +0,5s		
7	release lock time +1,0s		
8	release lock time +2,0s		

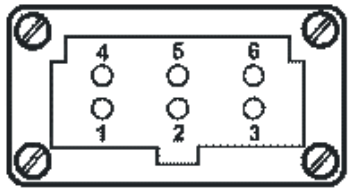
add. connecting lead – type of plug:___

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

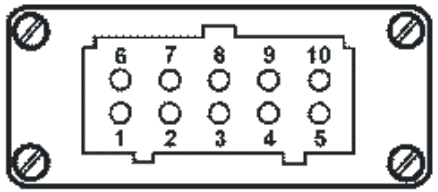
Mating Face View

(A) 13 - pin connector

(B) 7 - pin connector



(C) 6 - pin Harting connector



(D) 10 - pin Harting connector

(E) 4-pin connector