R&M Materials Handling, Inc.
4501 Gateway Boulevard
Springfield, Ohio 45502
P.: (937) 328-5100
FAX: (937) 325-5319

5 RECEIVER

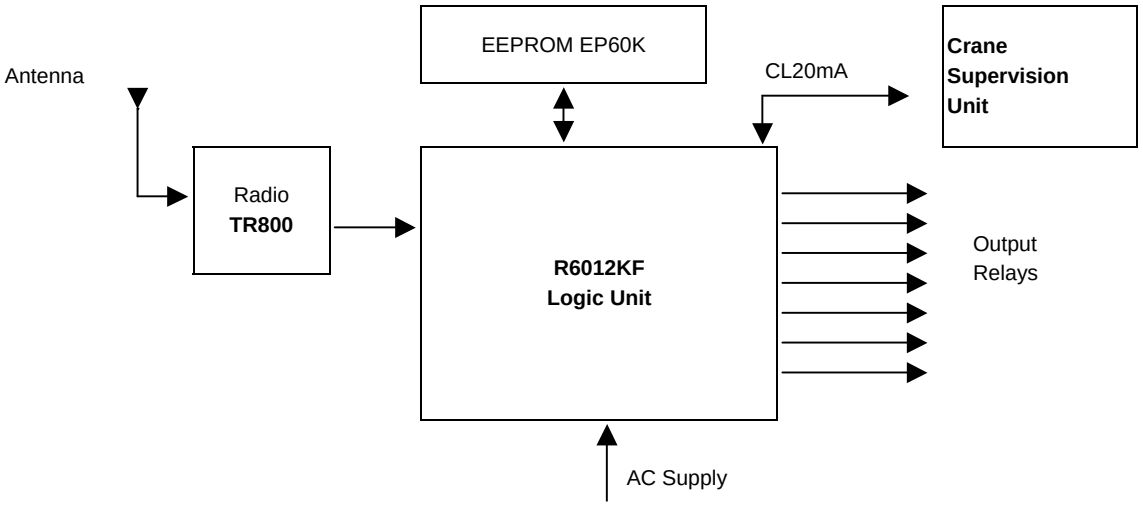
5.1 Receiver Summary

The receivers RAD-RS, RAD-RF and RAD-RH, are contained in a plastic material box, it includes:

- Synthesised radio transceiver TR800
- Antenna
- Microprocessor driven logic R6012KF, which in addition contains the power supply and the relays.
- Removable EEPROM memory module EP60K.

The supply, is alternating current with connections for 230, 115 and 48 VAC. RAD-RF also contains a bi-directional current loop serial port, which allows the communication with the external Crane Supervision Unit, not included in this manual.
It includes the relays:

- START relay
- HORN relay
- SAFETY relay
- Two STOP relays
- Nine operating relays
- Two Hoist selection relays (Only RADF13)



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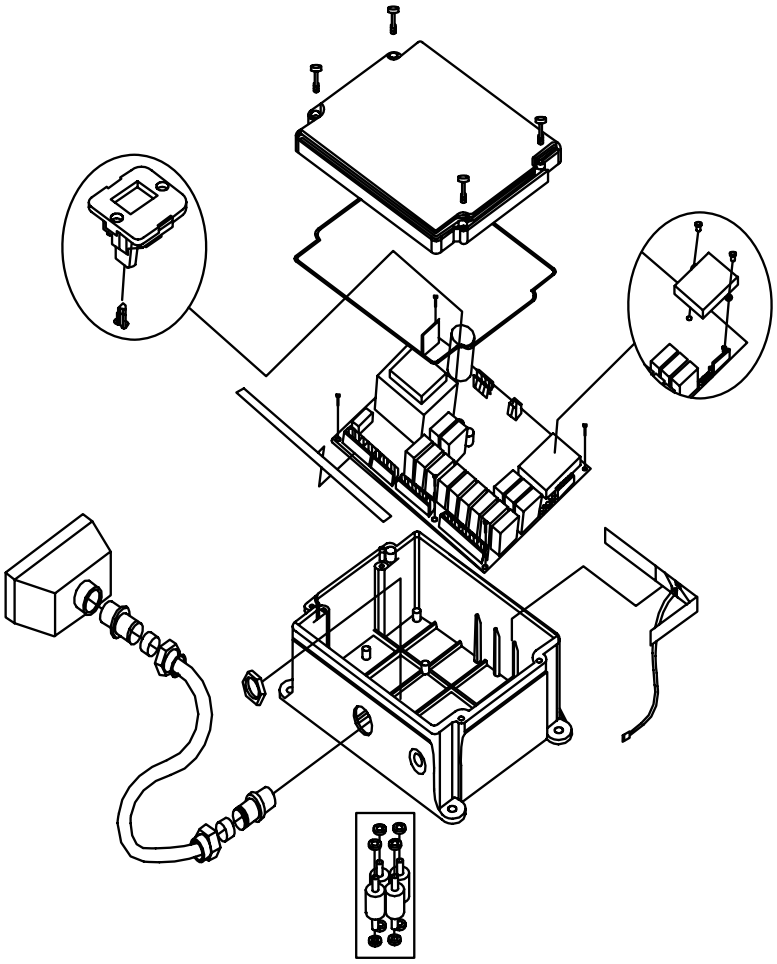
5.2 Exploded RAD-RS, RAD-RF and RAD-RH Receiver



5.3 The BC70K battery charger

Connect the charger to the power source using the power source and the cable supplied. The red LED, in the middle, should light up indicating power ON.

When installing the battery charger, bear in mind that the batteries must be charged at temperatures over 5ºC (41F) and that the power supply must be left on all night. Also remember that the charger must not be left in direct sunlight, as the batteries may not become fully charged at temperatures exceeding 35ºC (95F).

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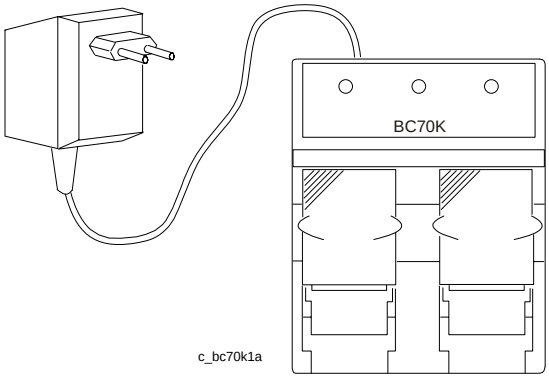

Place the batteries in the charger. There is green LED on top of each battery. Each LED should light up, indicating that recharging is in process. Complete recharging takes approximately 12 hours. After charging process is finished, the green LED is turned OFF. The batteries may remain in the charger for an unlimited period of time.

The capacity of the batteries decrease(s) with use. Their life span is estimated to be 500 recharging cycles, but this depends largely on the conditions of use, for which the following is recommended:

Do not recharge the battery until it is completely empty. The transmitter will indicate this when to recharge the batteries.

Always charge the batteries at temperatures between 5ºC (41F) and 35ºC (95F).

Avoid short-circuits between the battery contacts. Do not carry charged batteries in toolboxes or next to other metal objects (keys, coins, etc.).

Always keep contacts clean.

Never leave batteries in direct sunlight.

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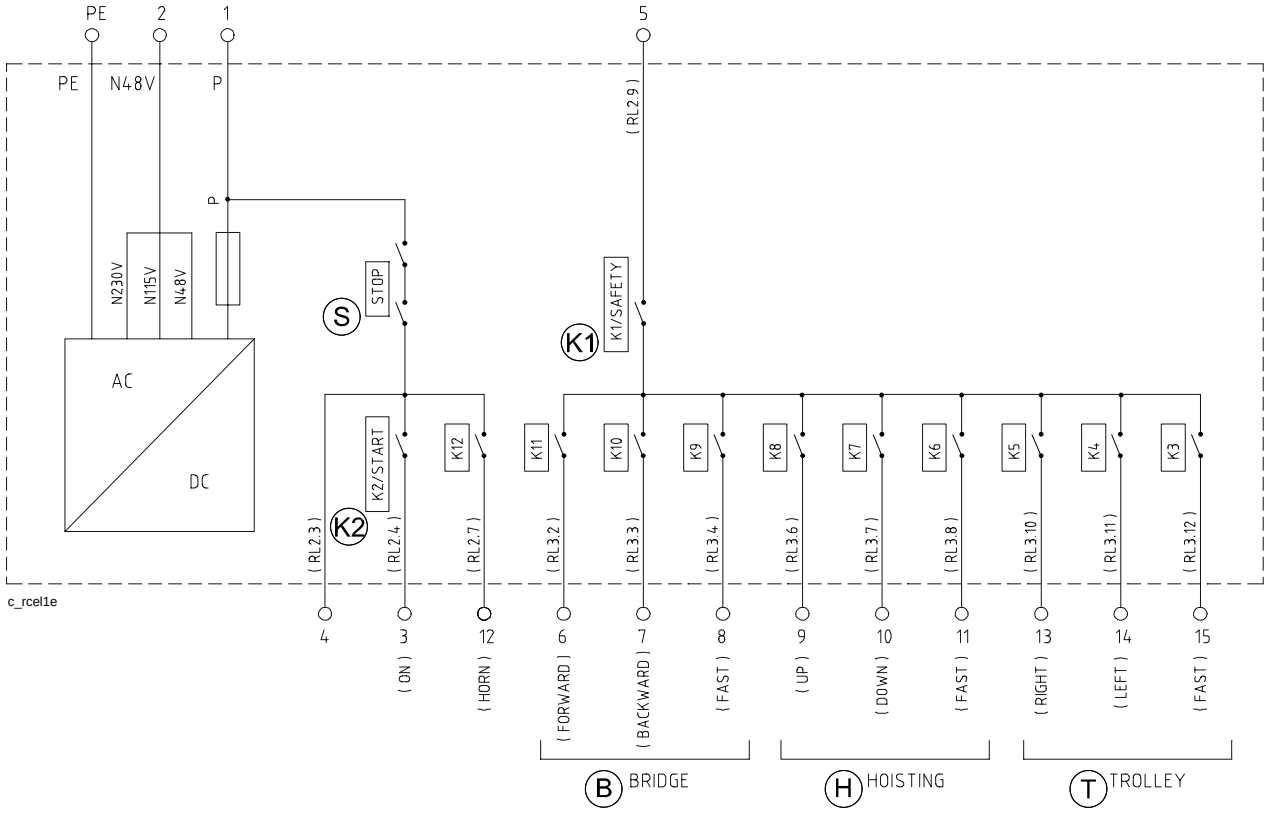
5.4 RADS11 Receiver Connections



S. Stop
K1. Safety
K2. Start
B. Bridge
H. Hoisting
T. Trolley

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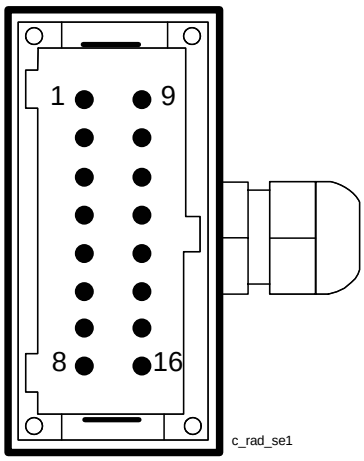
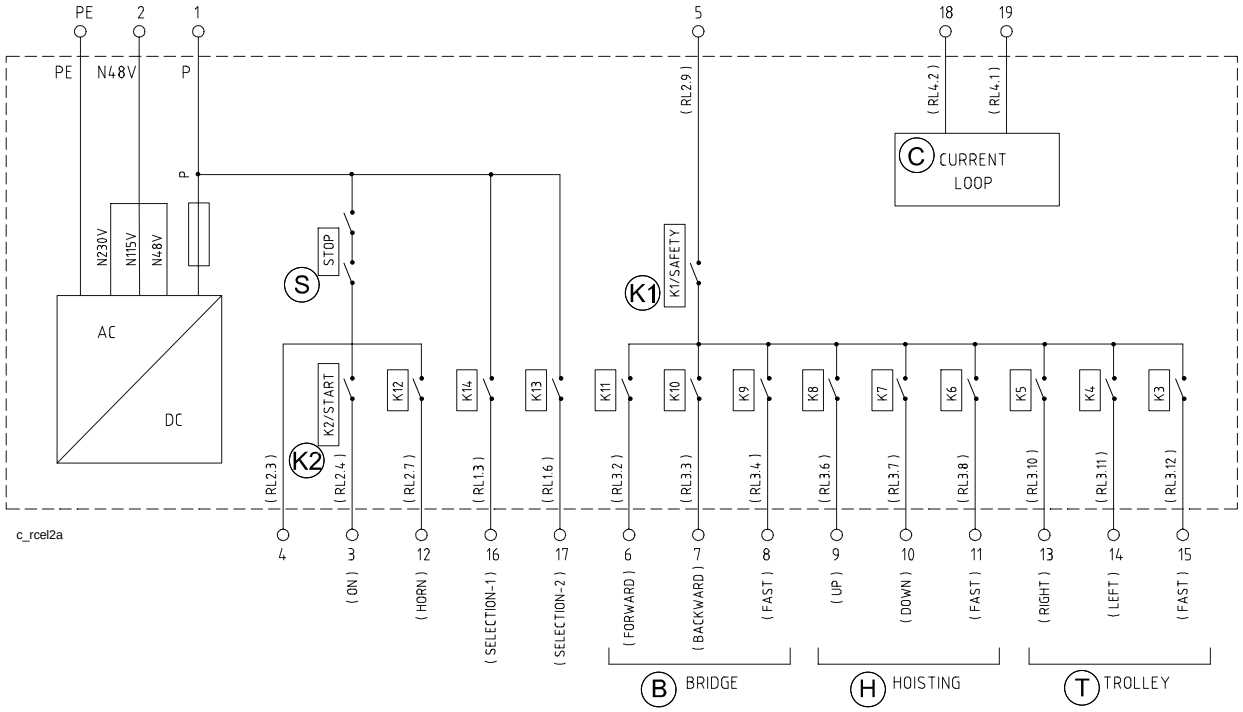
Function	PCB Relay	PCB Terminal	Wire	Pin connector
Phase	-	RL0.1	1	1
Protective earth	-	RL0.2	PE	PE
Neutral 48VAC 115VAC 230VAC	-	RL0.3 RL0.4 RL0.5	2	2
COM Start-horn	-	RL2.3	4	4
Start	K2	RL2.4	3	3
Horn	K12	RL2.7	12	12
Safety	K1	RL2.9	5	5
Bridge forward	K11	RL3.2	6	6
Bridge backward	K10	RL3.3	7	7
Bridge fast	K9	RL3.4	8	8
Hoisting up	K8	RL3.6	9	9
Hoisting down	K7	RL3.7	10	10
Hoisting fast	K6	RL3.8	11	11
Trolley right	K5	RL3.10	13	13
Trolley left	K4	RL3.11	14	14
Trolley fast	K3	RL3.12	15	15



5.5 RADF13 Receiver Connections



C. Current Loop
S. Stop
K1. Safety
K2. Start
B. Bridge
H. Hoisting
T. Trolley

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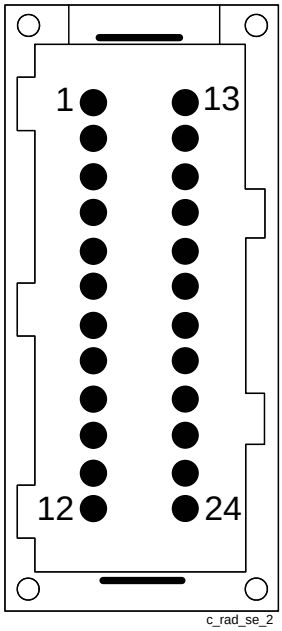
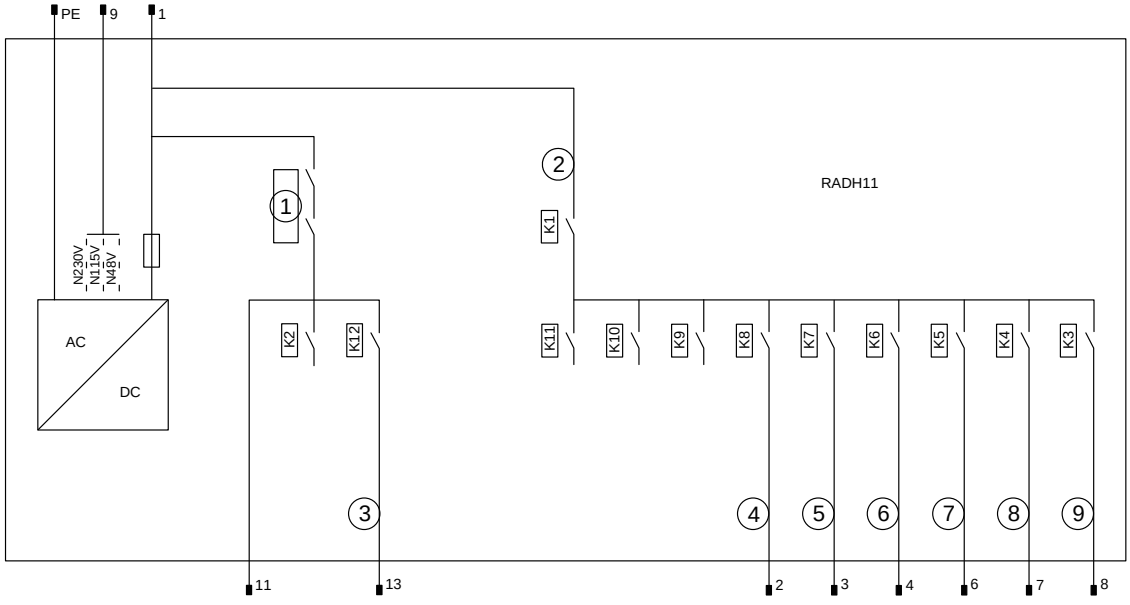
Function		PCB Relay	PCB Terminal	Wire	Pin connector
Phase		-	RL0.1	1	1
Protective earth		-	RL0.2	PE	PE
Neutral	48VAC	-	RL0.3	2	2
	115VAC		RL0.4		
	230VAC		RL0.5		
Selection-1		K14	RL1.13	16	16
Selection-2		K13	RL1.16	17	17
COM. Start-horn		-	RL2.3	4	4
Start		K2	RL2.4	3	3
Horn		K12	RL2.7	12	12
Safety		K1	RL2.9	5	5
Bridge forward		K11	RL3.2	6	6
Bridge backward		K10	RL3.3	7	7
Bridge fast		K9	RL3.4	8	8
Hoisting up		K8	RL3.6	9	9
Hoisting down		K7	RL3.7	10	10
Hoisting fast		K6	RL3.8	11	11
Trolley right		K5	RL3.10	13	13
Trolley left		K4	RL3.11	14	14
Trolley fast		K3	RL3.12	15	15
Current loop		-	RL4.2	18	18
Current loop		-	RL4.3	19	19



5.6 RADH11 Receiver Connections



1.Stop
2.Control voltage
3.Start horn
4.Up
5.Down
6.Fast speed
7.Right
8.Left
9.Fast speed