

# **Operating Instructions**

## **TC 200**

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# 1 General

The following are examples of equipment that can be remotely controlled by the remote control TC 200:

- Machines
- Crane installations
- Chain hoists
- Crane trolleys.

The operator is not restricted to a specific location and is able to take up position at a safe distance in order to freely move and control loads and moving installations in accordance with the particular circumstances.

## 1.1 Principle

Serial coded messages are transmitted by the transmitter to the receiver. These messages are decoded in the receiver and output in parallel. The signals are output via a relay interface, analog output, optocoupler output or field bus interface.

## 1.2 Addressing

Each installation has its own address and frequency. A unique address is assigned by the manufacturer to each installation. The transmitter and receiver are thus clearly assigned to each other.

### 1.2.1 Frequency

Each installation transmits on a set frequency. This can be changed as follows: The appropriate controls are used for setting a different frequency in the transmitter and in the receiver. It is essential to ensure that the transmitter frequency and the receiver frequency are identical. In the event of interference caused by other radio services, it is possible for the frequency to be changed.

## 1.3 Standard scope of supply

- Portable or stationary transmitter
- Stationary receiver
- Multiflex – or rod antenna with 8 m coaxial cable
- 2 rechargeable batteries
- 1 standard recharger
- 4 rubber-metal connections
- Standard documentation

## 1.4 Warranty

The warranty is applicable for the contractually agreed period. Warranty claims will be accepted only if:

- A fault attributable to the manufacturer means that the equipment is not fully suitable for use.

The warranty covers repair or replacement of defective parts.

The warranty shall lapse or be excluded if:

- the operator or third parties carry out any changes to the remote control
- prescribed checks and maintenance work are not carried out by suitably empowered or authorised personnel.

The warranty does not cover the following:

- Remedying faults attributable to incorrect manipulation
- Incorrect handling
- Non-designated use
- Faults due to normal wear-and-tear.

## 2 Safety

### 2.1 Fundamental safety information

Persons who are under the influence of

- drugs
- alcohol
- or medicine that influence reactions,

are not permitted to assemble, commission, operate, install, repair and dismantle the product.

All modifications and changes to an installation must comply with the appropriate safety regulations. Work on electrical equipment is permitted to be carried out only by specialist electricians in accordance with electrical regulations.

In the event of any functional problems, the product must be immediately shut down and switched off, and the corresponding main switch must be switched off.

#### **Important:**

Particular attention must be given to the valid statutory regulations and guidelines applicable for the use to which the equipment is put, for instance:

- Accident prevention regulations
- Guidelines and safety rules
- General statutory and other binding regulations for accident prevention and environmental protection as well as fundamental safety and health requirements.

The operator is responsible for ensuring that his staff is suitably informed.

The operating instructions must always be kept in an accessible position at the point at which the product is used.

Persons responsible for working with the product must have read the operating instructions and the safety instructions.

Where appropriate, the safety instructions must be extended by the operator to include instructions relating to work organisation, work procedures, personnel used, etc.

All activities on the product may be carried out only by suitably trained personnel.

The operator is responsible for ensuring that the product is only ever operated in a perfect condition and that all relevant safety requirements and regulations are followed.

The product must be shut down immediately if functioning errors or irregularities are detected.

Changes and modifications to the product which might affect safety must not be carried out without the approval of the manufacturer.

Only original spare parts of the manufacturer are permitted to be used.

Prescribed deadlines or deadlines specified in the operating instructions for regular checks/inspections must be observed.

## 2.2 Designated use

The product is permitted to be used only in a technically perfect condition by operating staff who have been suitably trained, and the product must be used only in accordance with the valid safety and accident prevention regulations. The product is equipment that is to be used at the rated voltage specified on the type plate. Designated use also includes the need to follow these operating instructions and the specifications and instructions described therein.

## 2.3 Non-designated use

Certain operations and activities are prohibited in all dealings with the product, including the following:

- Manipulation of electrical equipment
- Mains connection not consistent with the voltage or frequency details on the type plate
- Work on live parts
- Incorrect operation
- Non-designated use of the product
- Prohibited removal of covers
- Inadequate maintenance
- Failure to observe the operating temperature range

Failure to observe the above requirements may endanger life and limb and the product may be permanently damaged.

## 2.4 Safety instructions for assembly and disassembly

Assembly and disassembly work may be carried out only by experts. The installation must be disconnected from the power supply, whereby due consideration must be given to electrical regulations.

User-specific regulations must be observed.

Only suitable, tested and calibrated tools may be used.

The assembly area must be cordoned off.

## 2.5 Safety instructions for initial commissioning after assembly

- Cordon off the work area
- Check whether the frequency and voltage on the type plate are identical to the frequency and voltage of the operator.

## 2.6 Safety instructions for operation

All the above measures and instructions relating to operational safety and points of general safety and accident prevention which have to be carried out or observed before, during and after commissioning must be strictly followed.

Safety equipment must not be disabled, and the purpose of the safety equipment must not be changed.

The product is only permitted to be operated when all protective equipment and safety-relevant facilities are present and are capable of functioning.

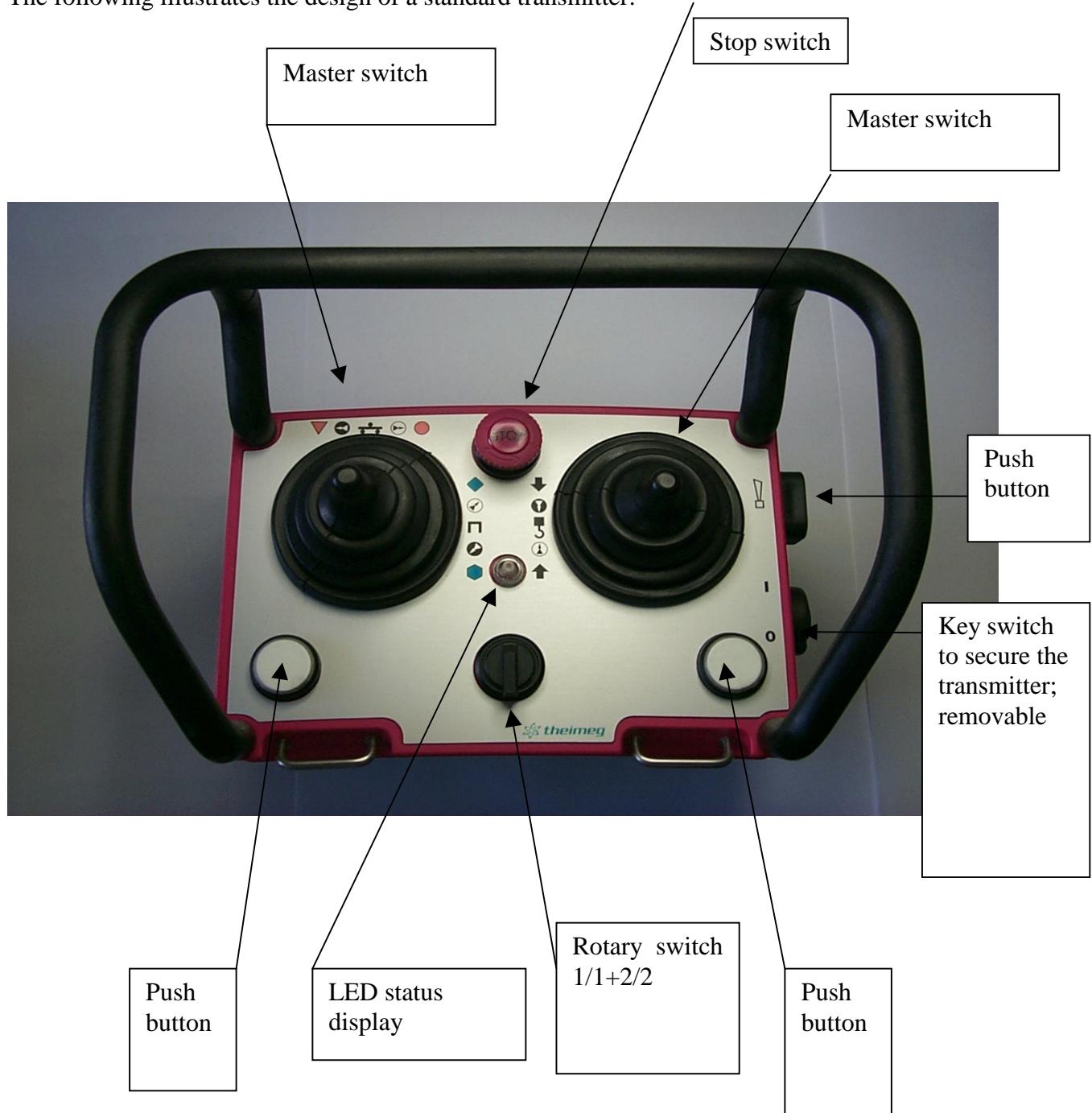
Before the product is switched on / started, it is essential to ensure that nobody can be endangered by operation of the product.

Every time before the product is started, the operator must ensure that the product is in a proper and safe condition.

**Special local conditions or particular circumstances may result in situations which were not known at the point at which the operating instructions were drawn up. In such cases, the operator is responsible for introducing special measures designed to promote safety.**

### 3 Standard transmitter

The following illustrates the design of a standard transmitter:



-incl. transmitter PCB and high frequency part

## 3.1 Operation of the standard transmitter

### 3.1.1 To switch on the standard transmitter

- Insert charged battery (ensure that the contacts are inserted correctly)
- The stop button must be unlocked (must not be locked in position)
- Turn on/off switch to position –1-
- LED indicates that equipment is ready to transmit

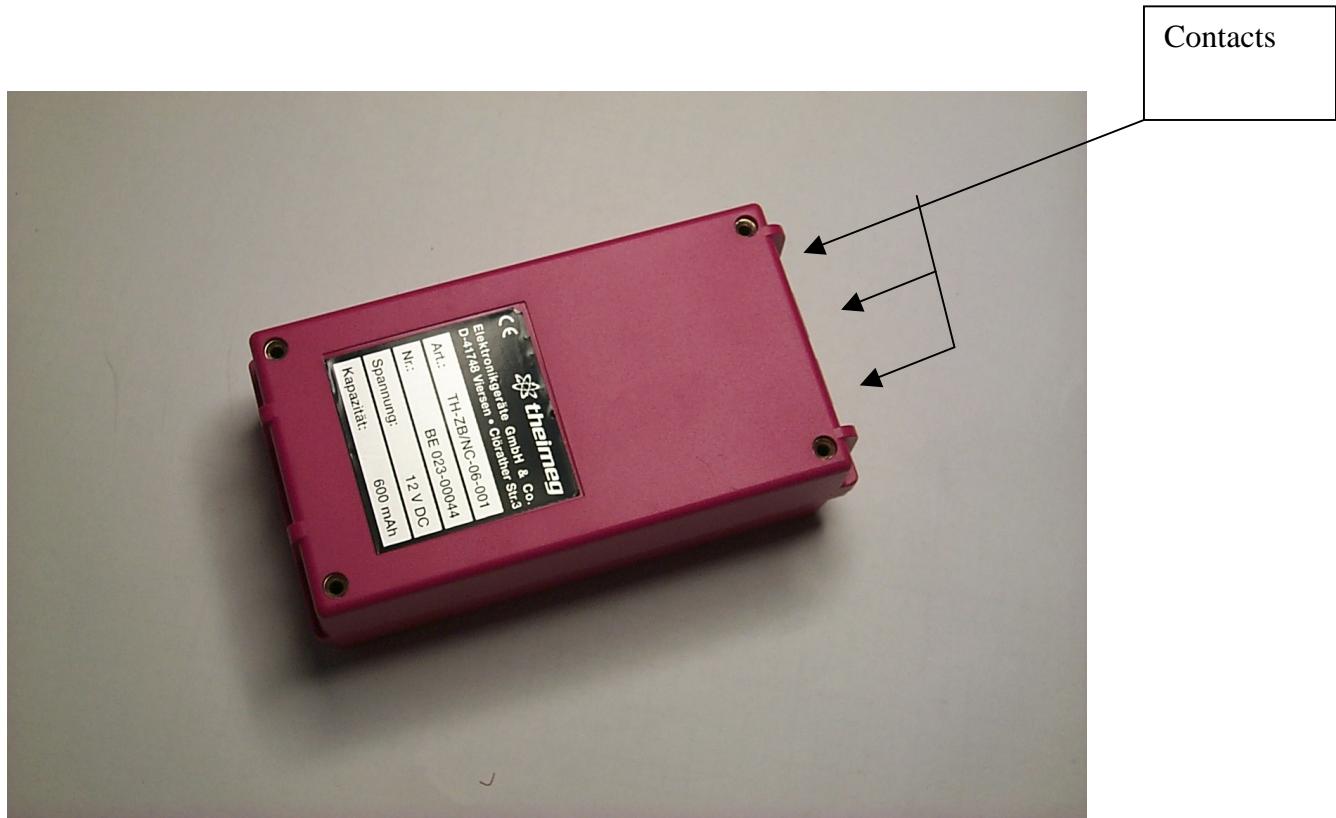
### 3.1.2 To switch off the standard transmitter

- Press stop button or
- turn on/off switch to position – 0 -

### 3.1.3 LED flashing sequences

Meaning	LED display
Transmitter OK	Slow flashing
Undervoltage	Rapid flashing

### 3.1.4 Transmitter battery



Standard: 600mAh

Optional :1600 mAh, required for long operating times without subsequent recharging

### 3.1.5 Battery replacement



- Replace battery when LED indicates undervoltage
- Turn the on/off switch to setting – 0 –
- Remove battery (remove battery sideways out of locking position and pull downwards)
- Insert new recharged battery

### 3.1.6 Standard recharger



### 3.1.7 Recharging process

- Important: Only recharge fully discharged batteries
- Standard power supply: 230 VAC/50 Hz
- Insert battery in the compartment
- Automatic recharging process commences. Red LED=ON

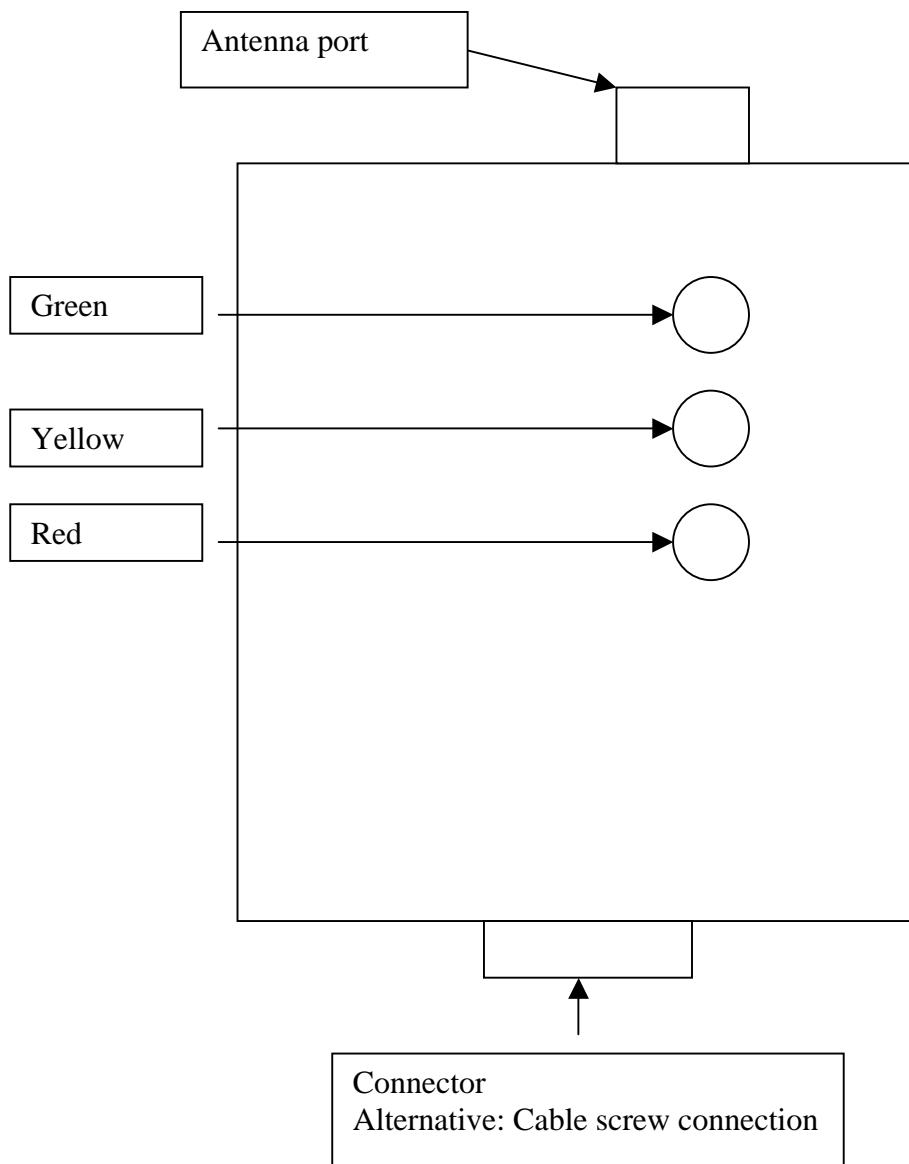
Time: Approx. 3.5 hours, the unit then switches over to trickle charge

-Red LED=OFF

**-Note: The service life of the battery will be shortened if the recharging process is frequently interrupted and started.**

## 4 Receiver

### 4.1 Structure of the receiver

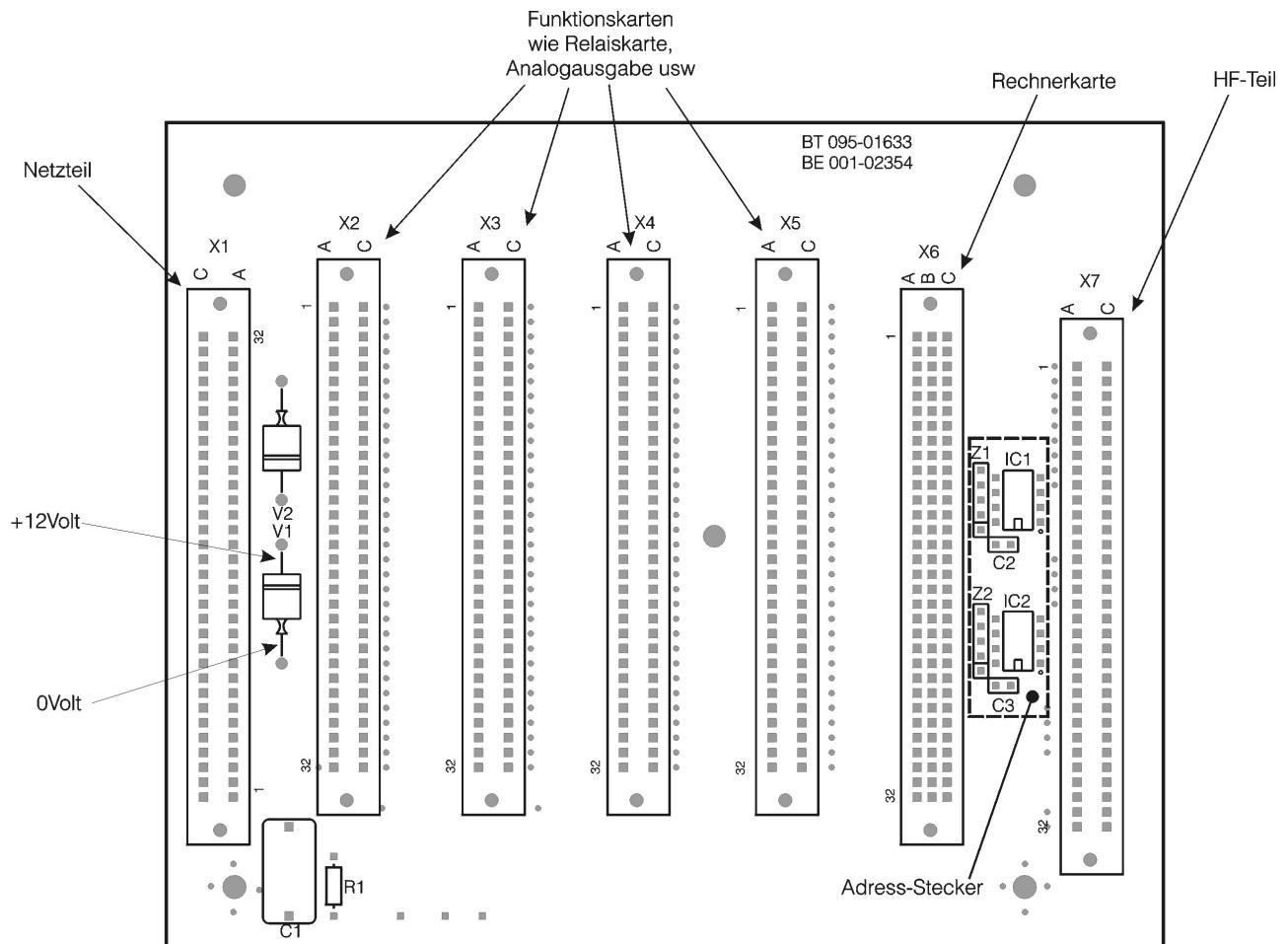


Green: System OK

Yellow: System passive after reset or radio interruption

Red: Fault. Notify maintenance personnel!

## 4.2 Hardware structure of the receiver



Legend:

Function cards such as relay card, analog output, etc.

Processor card

HF part

Power supply unit

Address connector

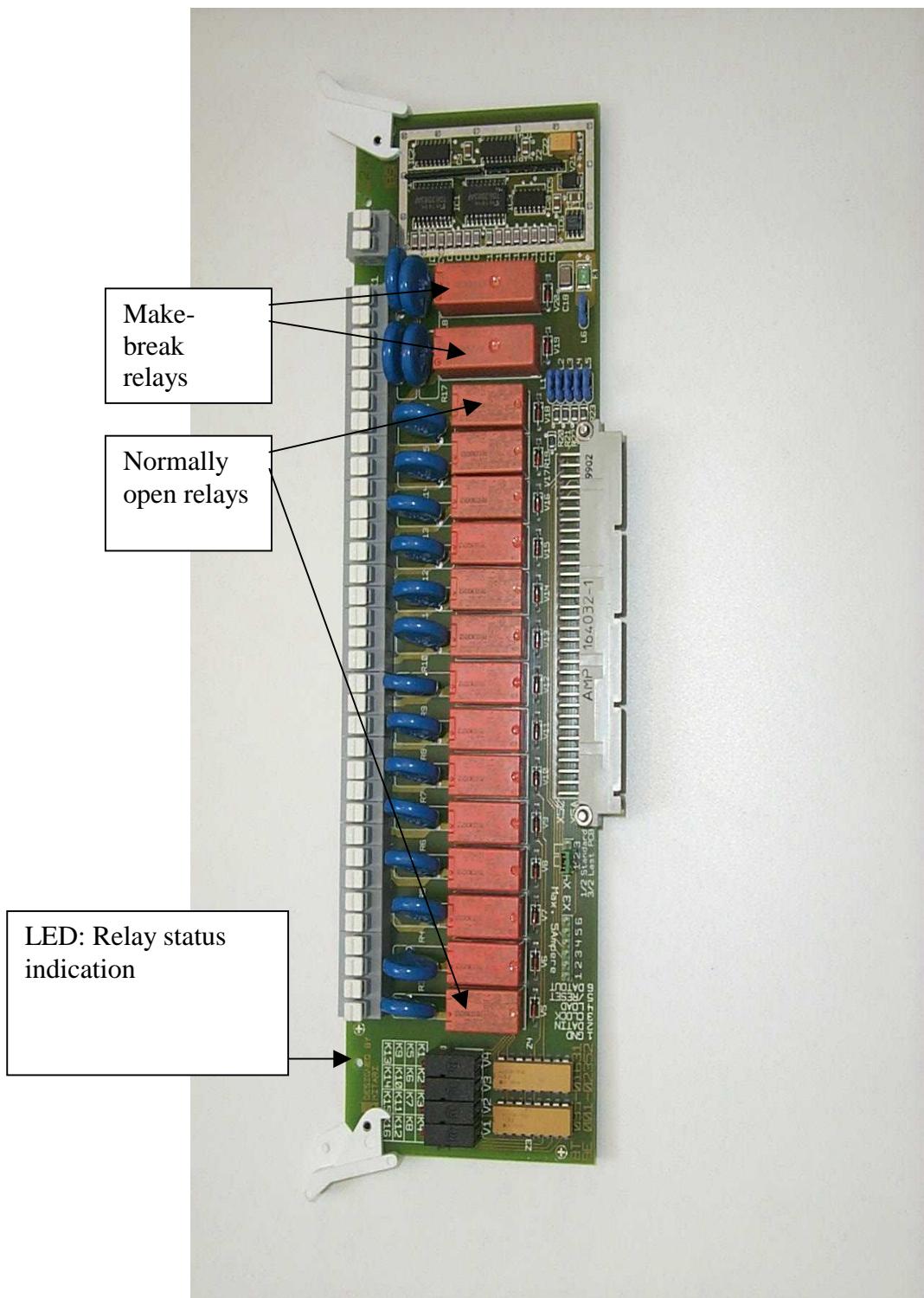
### 4.3 Messages/LEDs on the processor card

Meaning	Text	Colour	Master	Slave	Comment
CRC OK	CRC	Green	X	X	1 pulse: 25ms
Address OK	AD	Green	X	X	1 pulse: 25ms
Sub-address: Only for address switch over	SAD	Green	X	X	1 pulse: 25ms
System active	ACT	Green	X	-	Static
Ko active					
Command output	OUT	Green	X	-	1 pulse: 25ms
System passive	PA	Yellow	X	-	Flashing
Radio interruption or stop button pressed					
System passive After cold start (reset)	PAF	Yellow	X	-	Flashing
General error	ERR	Red	X	X	LED on for 5 seconds  Error code then flashed

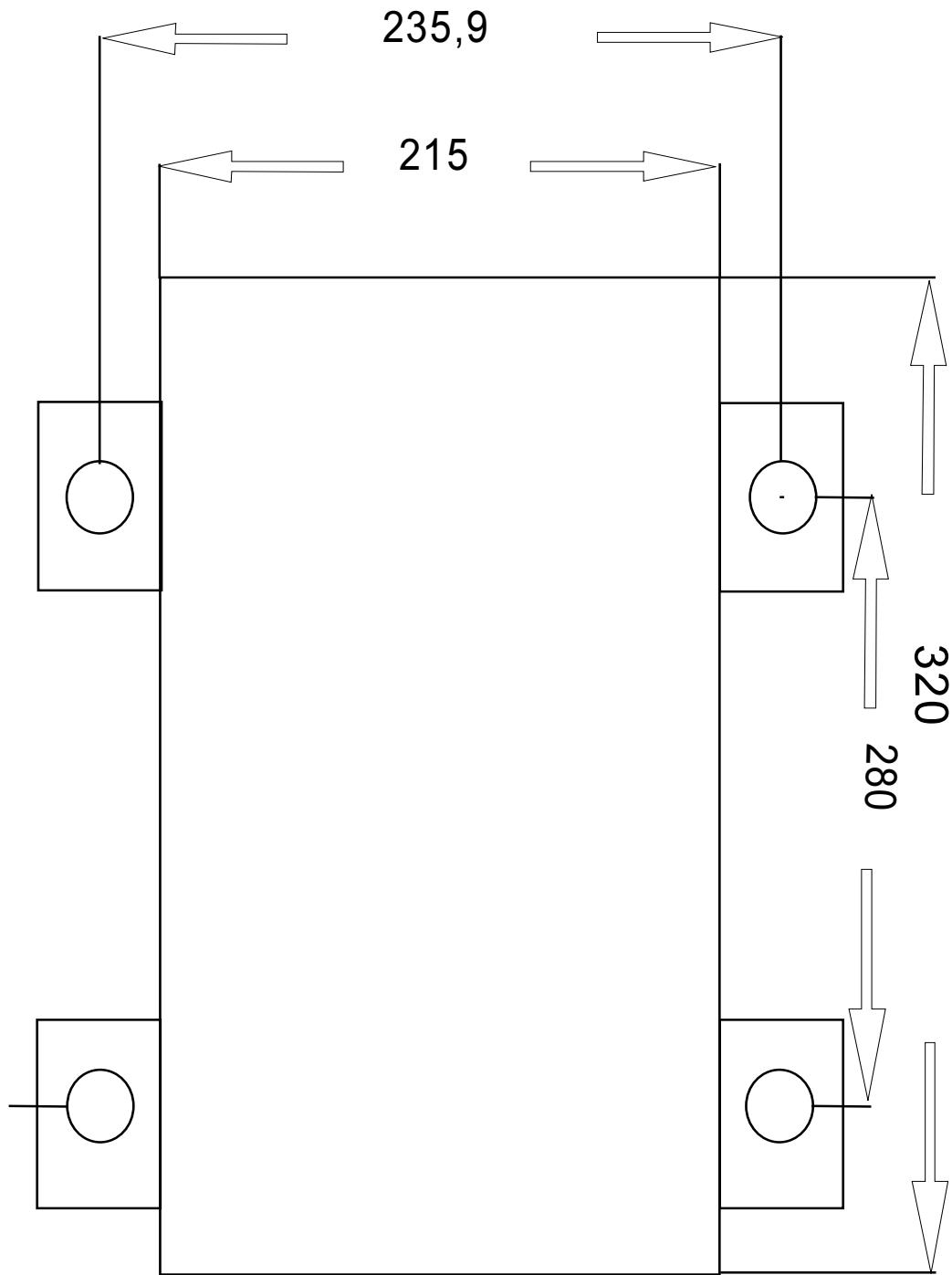
## 4.4 Processor card: LED indication

<b>Master indication</b>
CRC
AD
SAD
OUT
ACT
PA
PAF
ERR
<b>Slave indication</b>
CRC
AD
SAD
ERR

## 4.5 Relay card



## 4.6 Assembly dimensions of receiver



## 5 Installation configuration

Sender layout, receiver interface and receiver wiring as detailed in annex.