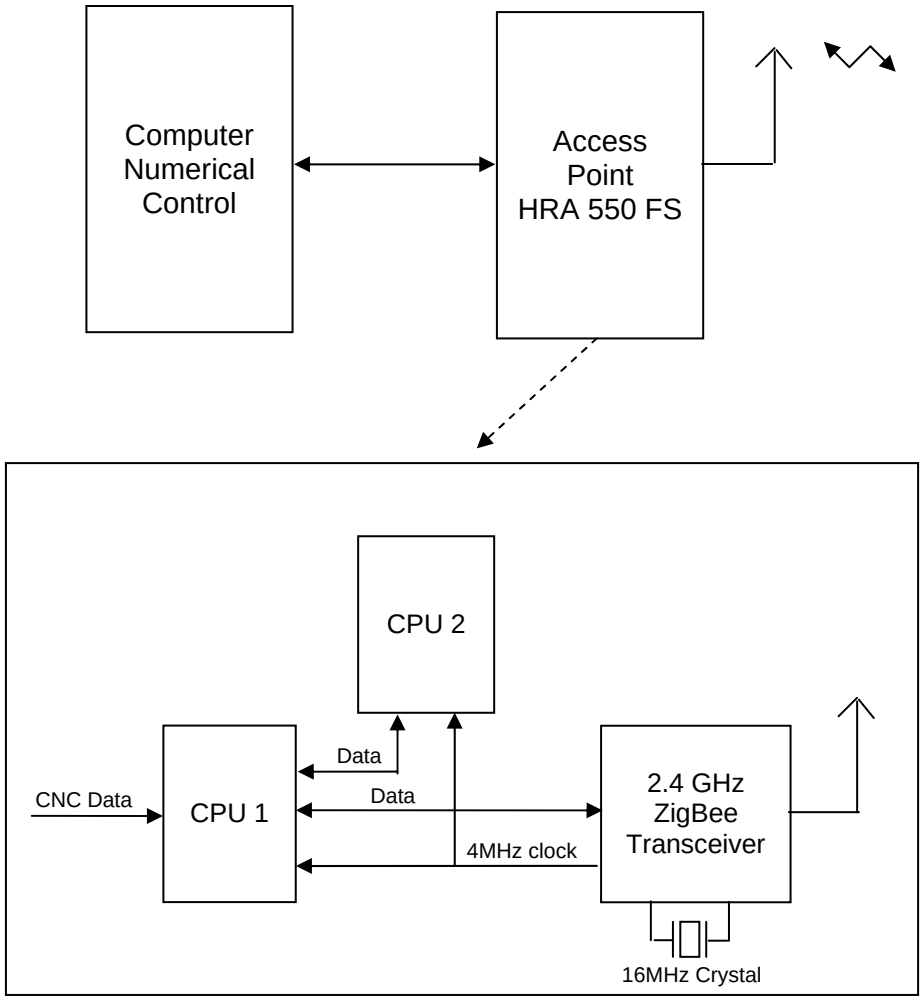
Wireless Handwheel (HRA 550 FS)
Block diagram



Note the protection mark for ISO 16016!

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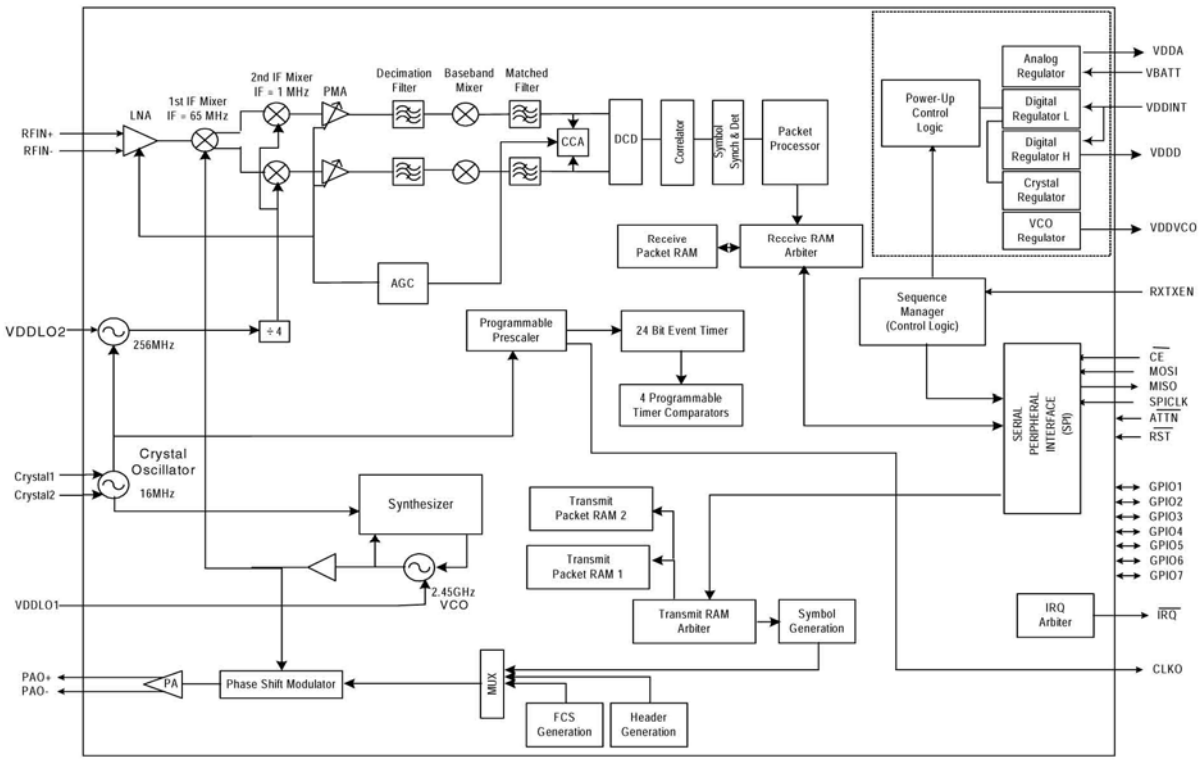
The 2.4 GHz ZigBee transceiver Block drawing, show a simplified diagram of the MC13192 which is an 802.15.4 standard compatible transceiver that provide the function required in the physical layer specifications.



Product Description

This document describes the product HR550 and HRA550, a portable unit connected with the fixed unit, lets the operator to make changes in settings and parameters and to operate manual controlled movements of a milling machine electronically controlled by a numerical control system, to which is connected through an interface unit.
The product shall comply with the requirements of the EN13849 Part-1 Performance Level D (only for the stop button and the enable buttons capabilities).

The product described is in the form of two units: a user operated mobile unit and a fixed interface unit.
Dimensions and shape of the mobile unit are ideal for a comfortable grip and an ergonomic use from the operator.
The two units are intercommunicating trough a radio connection with a maximum channel occupation of the 15%.
The fixed unit is also connected through another serial line to a numerical control system.
The fixed unit has functions of interface between the mobile unit and the numerical control system.
The fixed unit has some outputs relay that are used to unplug the power supply of the motors of the milling machine when an alarm occurs.
The mobile unit is operative through a battery that is recharged when the mobile unit comes connected to the fixed one.
On the mobile unit there are an lcd display, a keyboard, two potentiometer, an handwheel, two enable pushbutton and a big stop pushbutton that is placed in a position of evidence.
If the operator walks away with the mobile unit and the physical distance become too much for the radio connection, the communication stops and the relays on the fixed unit open. To resume the

connection the mobile unit must return near the fixed unit and the operator must follow a procedure on the keyboard of the numerical control.

The radio connection is only for a short range and allows the communication between the fixed unit and the mobile unit for a maximum of approximately 25 meters.
Every milling machine can be connected to maximum only one mobile unit.
The radio connection is codified and can use one of the 16 channels available only.

Block description of the mobile unit
Inside the mobile unit there are two different cpu which are intercommunicating. The first cpu manages all peripherals, keyboard, display, handwheel and two potentiometers, reads the enable buttons and one of the two contacts that are inside the stop button.
The second cpu also reads the enable buttons , the other contact of the stop button and manages the communication with the fixed unit via radio connection.

Block description of the fixed unit
The fixed unit can be connected to every type of numerical controls, and therefore provides traditional HW outputs (relays), which shall be used to ensure the safe state on the milling machine.
The unit contains two cpu which are intercommunicating.
The first cpu manages the communication with the mobile unit, the communication with the numerical control through serial line, and directly controls two output relays.
The second cpu F2 controls two additional relays.