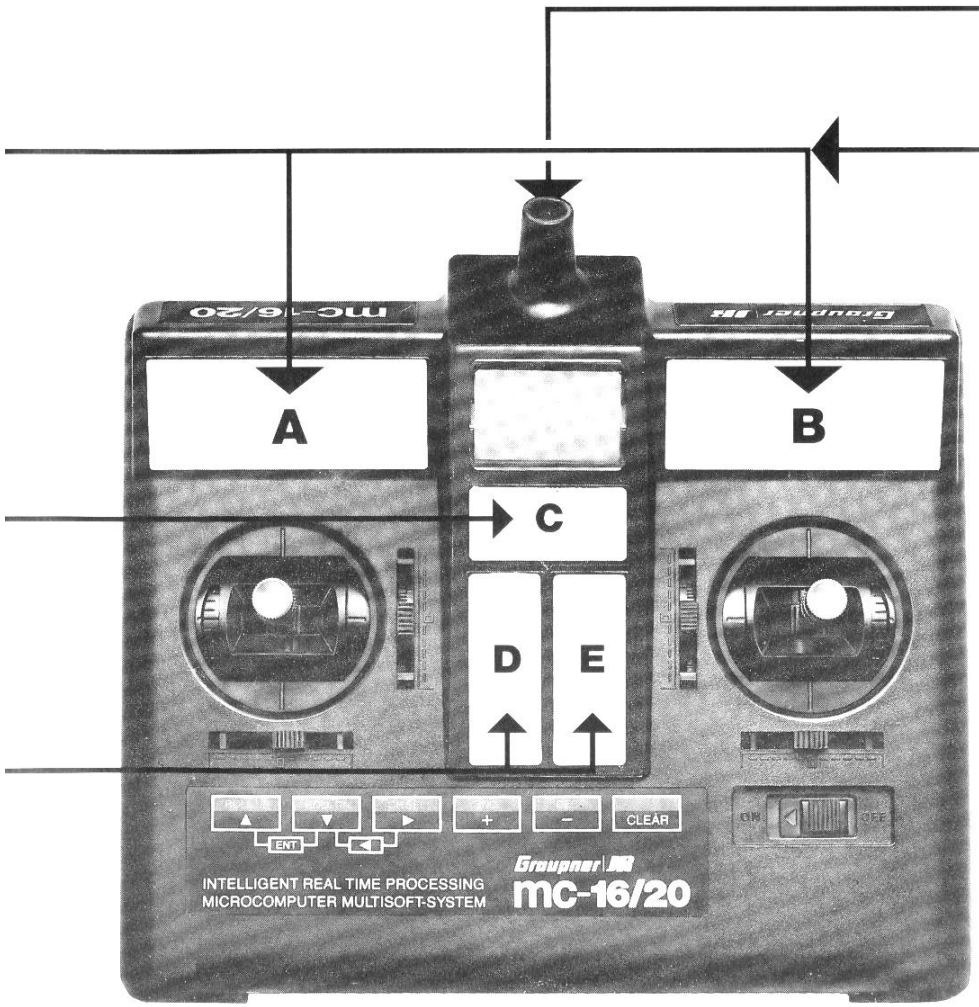
Switches, Controls

See page 91

Transmitter Modules



External Switch
with long arm
Part No. **4160** 1 way
with short arm
Part No. **4160.1** 1 way
Part No. **4160.2** 2 way
Part No. **4160.3** 3 way

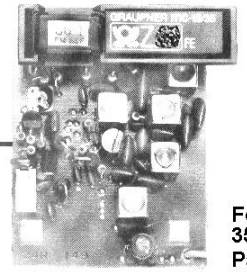
Momentary Switch
Part No. **4160.11**

Differential Switch
Part No. **4160.22**

2 way Momentary Switch
for Increment (INC) and
Decrement (DEC)
Part No. **4160.44**

External Safety Switch
Part No. **4147.1** 1 way
Part No. **4147.2** 2 way
Part No. **4147.3** 3 way

2 channel Proportional
Rotary Module
Part No. **4111**



For the
35MHz Band
Part No. **4824.35**

For the
40MHz Band
Part No. **4824.40**

Compatibility of Computer Systems mc-16/20

The mc-16/20 transmitter can be operated with all currently available Graupner FM PPM receivers, as well as other receivers with negative going pulses, from the 35 and 40 MHz frequency band. Slight reduction of servo travel can become countered by the transmitter up to a maximum of ±160%. Also the neutral position of servos attached receiver channels 1 to 8 can be adapted in ±125 steps, which is approximately ±70% of normal travel, for all 8 Servos.
In the mc-16/20 Transmitter an FM quartz crystal (black plastic cap) with corresponding channel number must be used.

Part No. **3864**, or
3264 for the 35 MHz band
Part No. **4064** for the 40 MHz band

Alternatively, the GRUNDIG receiver can be used, but it is to be made certain that these are equipped with a GRUNDIG FM quartz (green tab).

Basics

A protective plastic film is attached to the input keyboard of the transmitter, and can be taken off.

Only switch on transmitter with the aerial screwed in, otherwise it may malfunction and damage the HF module.

The allocation of the receiver outlets depends on the type of model selected, and is described on pages 28, 34, 42, 52 and 62.

In order to avoid uncontrolled movements of the servos attached to receiver outlets, first switch the transmitter on, then switch on the receiver. After the relevant operations switch off the receiver, then the transmitter.

Range Check
With a new model a range test on the ground, with the transmitter antenna screwed in but not extended, should be completed before the first flight. The model should be tested with the engine running and if available check the fail-safe operation.

Adjustment of the transmitter aerial
In the direction of the extension of the transmitter antenna, only a small field strength is formed. It is therefore wrong to point the antenna directly at the model.

Multi Data Terminal

Multi Data Information Display
The clear LCD MULTIDATA display with a static driver, was developed for the mc-16/20 Computer System. It offers a improved safety during operation, since all important functions are displayed. Even in bright sunlight, all the parameters on the display are represented in high contrast.

Possible screen-displays of the "Basic Transmitter Information":

- Normal operation

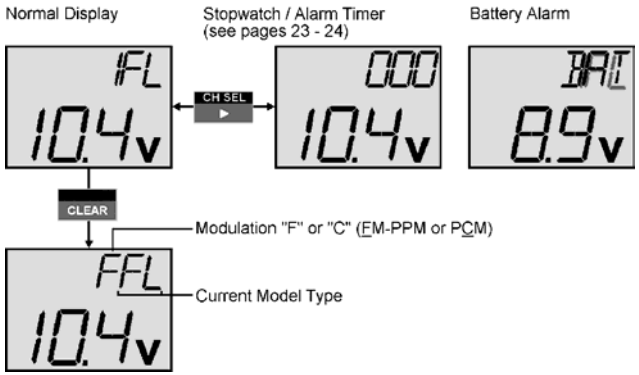
Three figure model name (or model number and type) and battery condition (under load) in volts. On pressing of the CLEAR key the current modulation mode is briefly displayed in place of the model name, as "F" (FM-PPM) or "C" (PCM) in conjunction with the type of model "FL, UN, Fb, AC or HE".

- Stop watch / alarm timer (see pages 23 - 24)

The upper display line changes, as soon as CH SEL is pressed.

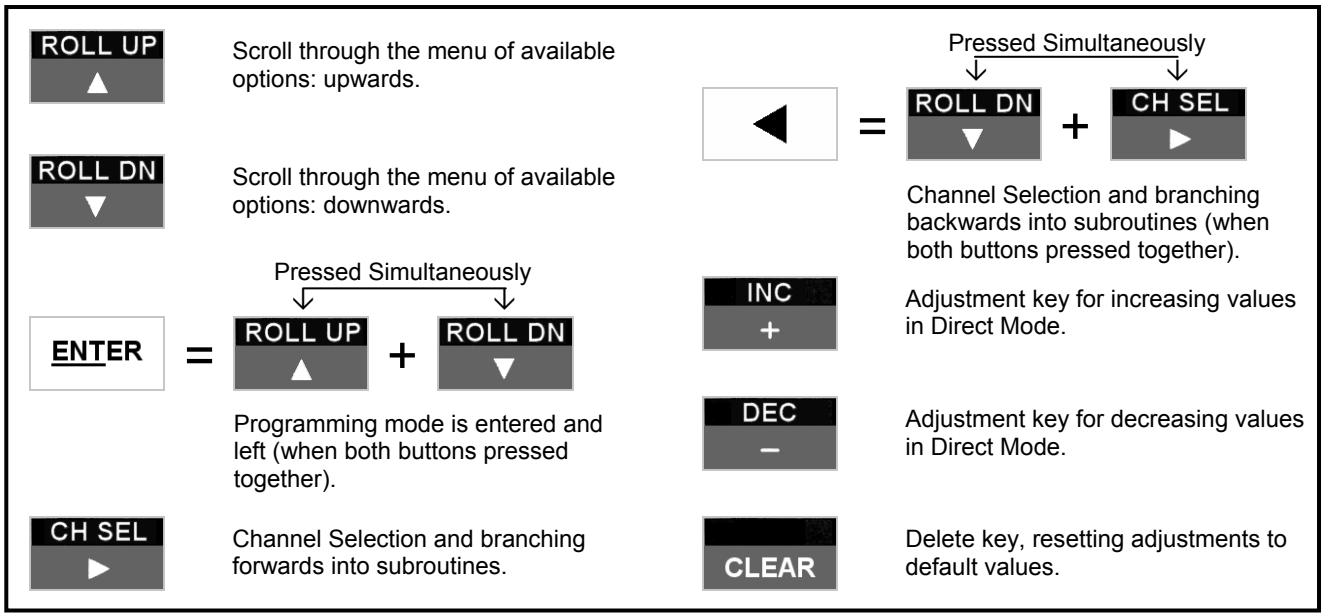
- Battery alarm

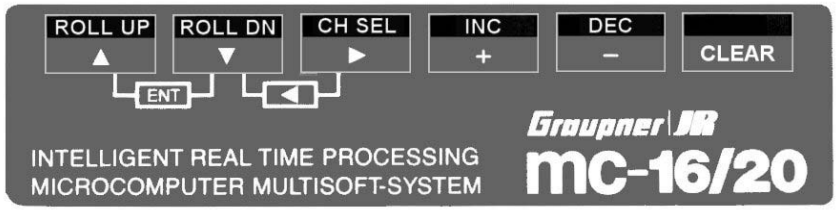
When the battery voltage drops under 9.0v the display alternating between the normal data and “BAT” caption. An audible warning signal sounds in parallel to it seven times consecutively. Landing of a model aircraft must made immediately after the "BAT" alarm display is reached, to allow recharging of transmitter battery.



Operation of the Multi Data Input Terminal
The program of the Transmitter is organised and uses only six keys for simple and clear programming. If a key remain pressed continuously, the instruction and setting codes automatically change with increased rate until the key is released.

Note:
The function of the INC and DEC keys can undertaken by a 2 way momentary switch, Part. No. 4160.44, which is connected to the sockets on the circuit board in the Transmitter intended for this function.





System Menu

Using the system for the first time and programming the basic transmitter data

Software Structure
The software is divided into two menus, which are activated in different ways.

1. System Menu
   Adjusting the basic transmitter functions.

2. Set-Up Menu
   Selecting, activating and programming the model specific data.

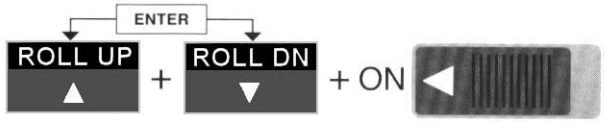
In each of these menus, the individual codes can be called up in rotation by the ROLL UP (upwards) or ROLL DN (Roll Down, downwards) buttons. When you reach the bottom code, the ROTART SELECT system returns you to the start of the list again, until you either leave the System or Set-Up Menu by pressing ENTER (ROLL UP and ROLL DN keys simultaneously), or by switching off the transmitter and thereby resetting it to normal operation.

To prevent accidental reprogramming, the System Menu can only be activated if the transmitter is switched off first. This makes it impossible for you to accidentally alter programmed these functions, e.g. switching model memory or changing modulation mode (FM-PPM/PCM), while you are using the system to control a model. Since the transmitter is not producing a modulated signal in this mode, it is impossible to transmit a signal to the receiver during this basic programming.

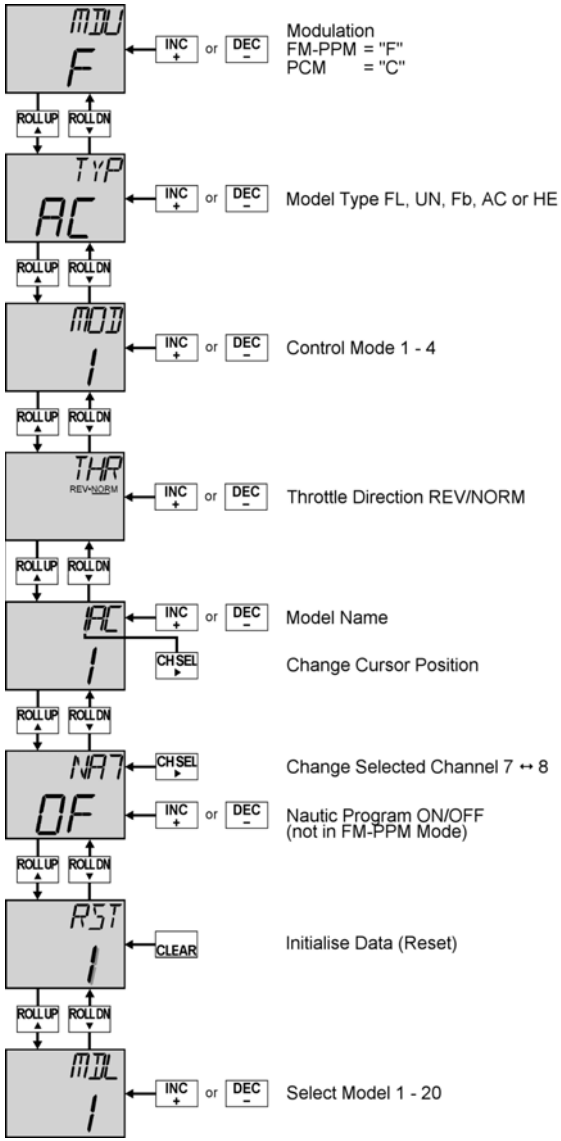
Basic method of using the System Menu

First you need to select the code you wish to alter by pressing the ROLL UP or ROLL DN button. Within this code, you select the function you require using the INC or DEC buttons.

Entering the System Menu
Simultaneously press the ROLL UP and ROLL DN buttons (= ENTER) whilst turning the transmitter on. An acoustic signal sounds. The program is now in the System Menu. The accompanying flow chart shows the programs of the primary system, whose functions are shown in the transmitter display. By repeat pressing of ENTER the software leaves the basic programming and automatically returns to normal transmitter operation.



Block diagram of the System Menu



Leave the Menu at any place with ENTER.