MC-18/U

Graupner | *JR*
REMOTE CONTROL

COMPUTER-SYSTEM

REMOTE CONTROL SYSTEM

mc-18
PROFI-
ULTRA-
SOFT
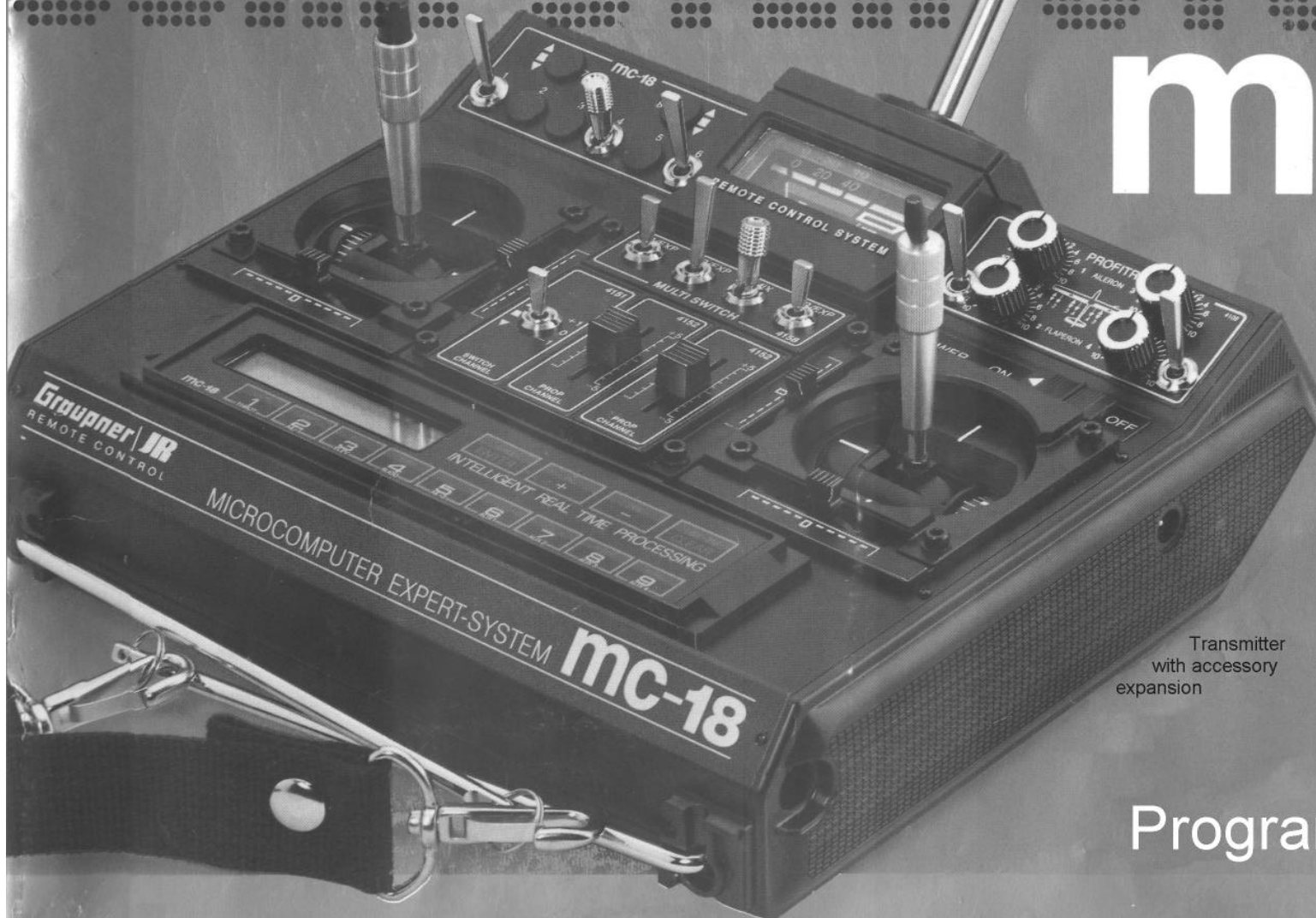
Transmitter
with accessory
expansion

Programming Manual

PROFI-ULTRASOFT-MODULE 256k

The Graupner PROFI-ULTRASOFT-Module 256k offers the modeller practically all currently imaginable functions for the operation of the most diverse types of sailplanes and powered models, including such complex ones as helicopters. The programs have been developed on the basis of practical experience, in close cooperation with renowned model flyers and, as a result leave barely anything to be desired even for, and in, hard contest environments. The clear, logical design of the various functions, however, enables even the less experienced model flyer to take advantage of these programs in everyday flying conditions and operation.

The complexity of the program and their extreme specialisation on specific model types require separating this programming manual into three sections: a general section which concerns all model types in like manner, another section for fixed-wing power models and sailplane models and a third one for helicopter models. Power models and sailplanes are named fixed-wing models here, to distinguish them from helicopter models.

Fixed-wing model and helicopter sections are arranged in two parts each: the detailed description of the options, which may be called under their specific code numbers, plus a compilation of programming examples which can be used as they are presented here or modified to suit one's own application requirements.

The numbering of the options has been chosen to suit in-house technical deliberation. Their description, however, follows the sequential order in which they'll normally be called when performing the setting-up process of a new model.

The high flexibility of adaptability to individual requirements or demands of the operator necessitate the provision of specific allocations before calling and setting up the options depending on them. Thus the possibility of free allocation of the FUAL RATE switches necessitates – for example – the determination of this allocation, before the DUAL RATE values can be adjusted. The same holds true, in similar manner, for other options, in particular those of the helicopter programs.

The beginner and less experienced model flyer will be advised to study and use the programming examples, as practically usable – adjustments can then be made in the shortest possible time, with the essential operational steps being learned at the same time. This applies to the helicopter gyro in particular, which is enabled to adjust a sensible selection of the extensive offering of the helicopter options, and to learn to use them in the process. However, the experienced R/C pilot will benefit as well in studying the programming examples thoroughly and practising the described adjustments, thereby getting familiar with the operation and handling of the transmitter.

In order to spare the user cross-referencing and the bothersome turning of pages from one section to another, both the fixed-wing and helicopter sections contain descriptions of ALL available options, irrespective of whether descriptions have been published previously. This part of the text may appear several times in this manual, as this will help simplify the use of the

MICRO COMPUTER EXPERT SYSTEM MC-18.

Note:
All functions of the PROFI-ULTRASOFT-MODUL are compatible with any of the MC-18 transmitters. With transmitters up to the '88 series only seven models can be stored without back-up copy, however, Conversion from 7 to 30 models storage capacity can be performed by the Graupner Service.

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General Information

Applicable to all Model Types

The installation of the module is performed as described in the MC-18 programming manual.

IMPORTANT
After installation of the module ALL model memories should be cleared. If this is not done, it is possible that fragments of previous programs left in the memory may cause malfunction in conjunction with the PROFI-ULTRASOFT-Module.
To this end, after selecting the model No via code 56 `ENTER`, entering the model number 1…7 (or 1…30[1]), the key `CLEAR` has to be pressed first instead of just pressing the `ENTER`, and `ENTER` is then used to clear the memories. This step should preferably be performed immediately after installation of the module for ALL model memories, one after another.

Therefore input as follows:

`ENTER` `5` `6` `ENTER` `1` `CLEAR` `ENTER`
`ENTER` `5` `6` `ENTER` `2` `CLEAR` `ENTER`
…
`ENTER` `5` `6` `ENTER` `7` `CLEAR` `ENTER`
(…
`ENTER` `5` `6` `ENTER` `3` `0` `CLEAR` `ENTER`)

This procedure needs only to be performed this one time.

List of Functions
The PROFI-ULTRASOFT-Module has nine different model types in all, which are selectable via code 58. For obvious reasons model selection must be the first step when programming a new model. This step determines which of the options will be available in the course of the programming process.

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[1]TX of series '89 (and later) are designed for 30 model memories.

Basic Programs including Automatic Manoeuvres
MULTISOFT for Aerobatic classes such as F3A and F3B

Code	Model Type
58/1	NORMAL
	Normal Model
/2	NORMAL/DIFF
	Normal models with 2 Aileron Servos
/3	DELTA/DIFF
	Delta and Flying Wing models
/4	UNIFLY/DIFF
	For sailplanes & power models equipped with plain flaps or spoilers actuated by a single servo.
/5	QUADRO-FLAP
	For sailplanes & power models equipped with separate servos for each aileron and each flap (4 wing mounted servos).
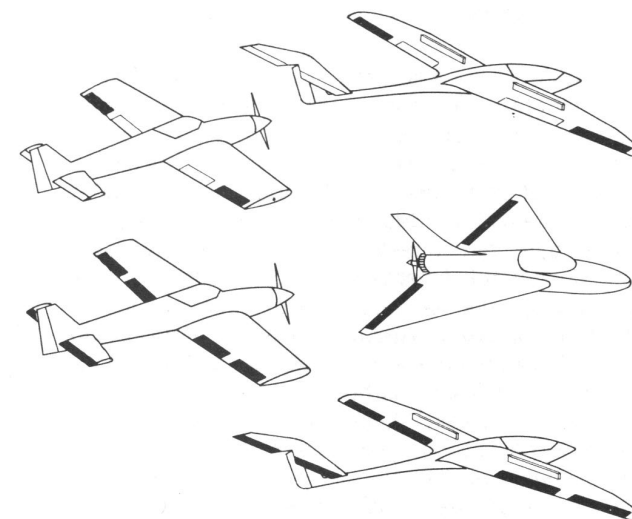
Universal Profi-Programs
For competition pilots in classes F3A, F3B, F3E & large soarers.

58/6 F3B (3 wing-sv)
Universal program for contest models equipped with 3 wing mounted servos.
(1 servo for flaps); undesired functions to be left unoccupied at the RX.

**/7** F3B (4 wing-sv)
Universal program for contest models equipped with 4 wing mounted servos.
(2 servos for flaps); undesired functions to be left unoccupied at the RX.
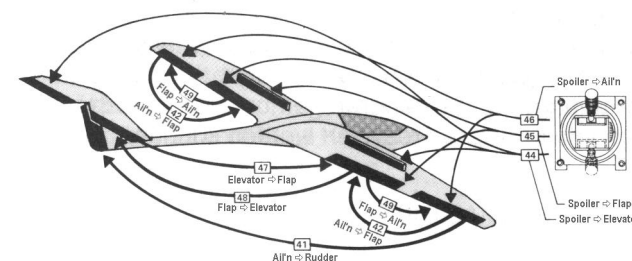
Universal Helicopter Programs
For contestflyers in class F3C

58/8 HELI
Universal program for contest models including those equipped with rpm and gyro control.

/9 HELI (sp.ctl)
Special program for contest models equipped with gyro and rpm control.
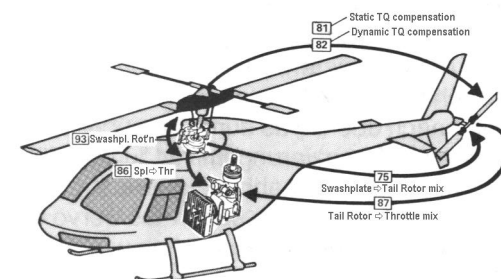
Selection of Model Type

Type 1: NORMAL

The majority of model aircraft belong in this category. It comprises all power and sailplane models with elevator, rudder, ailerons and throttle (or in the case of gliders; the spoilers), which are actuated by one servo for each of the controls. The situation remains unchanged even if additional control channels are used to actuate supplementary functions, such as retracts, glider tug release couplings, mixture adjust or flaps (such as plain flaps) of sailplane models. Any options available, and sensible, in conjunction with this configuration are provided here. In the case of a model equipped with a V-Tail (replacing the conventional type of tailplane), a special mixer may be used, which combines the control functions of elevator and rudder in such a manner as to provide each of the control surfaces, each controlled by a separate servo, with elevator plus rudder functions. For more complex applications, such as automatic compensation of elevator trim on actuation of flaps, no less than nine freely programmable mixers are available, permitting such functions to be tailored to prevailing conditions.

Type 2: NORMAL/DIFF

This type of model differs from type 1 (NORMAL) only by the provision of two separate servos for the actuation of the ailerons instead of a common servo. In this manner differential control of ailerons is provided, permitting the downward deflection of an aileron to be adjusted independently of the upward displacement.. This is achieved using code 22. The independent operation of the two ailerons by one servo each

provides additional options, such as deflection of these control surfaces in the same direction, using them as plain flaps or flaperons. This option, too, is available to suit the modeller's requirements, thanks to the availability of nine freely programmable mixers.

Type 3: DELTA/DIFF

Type 3 corresponds to type 2, differing from the latter in that in deltas and flying wing models the elevator and aileron functions are performed by common control surfaces located at the trailing edges of the right and left wing panels and moving either in the same direction or in the opposite one. Each control surface being controlled by an independent servo, and with the correct mixture of aileron and elevator control provided for already. All other options are available with restrictions, including the nine freely programmable mixers.

Type 4: UNIFLY/DIFF

This type of model is a variant of type 2. It is meant for power models and sailplanes, where the plain flaps are actuated by a single servo, or the full-span ailerons are to operate as a combination of flaps and ailerons (flaperons). For this application the freely programmable mixers 1…5 have already been occupied by certain special functions, just as if one had adjusted type 2 to perform the mixer allocations oneself via code 51. This mixer allocation, which functions the combi-mix aileron-rudder, flaperon mix, elevator compensation on actuation of spoilers, elevator compensation on actuation of flaps and throttle pre-selection are realised, is

not a compulsory one; it may be modified to suit the modeller's intentions, expanded by the additional four freely programmable mixers or cancelled entirely (re-creating type 2 again).

Type 5: QUADRO-FLAP

Type 5 is also a variant of type 2, just like type 4. It is meant mainly for large sailplane models, each wing panel of which is equipped with one servo for each aileron and flap, giving a total of 4 servos. Here, too, the special functions are realised by pre-adjusting of freely programmable mixers 1…5 for combi-mix aileron-rudder, flaperon mix, elevator compensation on actuation of spoilers, elevator compensation on actuation of flaps and mixing aileron function into the flap function. Here again mixer allocation can be modified, expanded or cancelled at any time.

Type 6: F3B (3 wing servos)

Type 6 is for F3B contest sailplane models, each aileron of which is actuated by a separate servo, while the plain flaps are operated by one common servo. The universal Profi program can also be used for models have two wing mounted servos. In this case the functions not required are left unoccupied in the receiver.

Options specifically meant for power models are missing here. However, there are available all kinds of imaginable mixing and coupling functions between aileron, elevator, rudder, spoilers and plain flaps, which are realised by special mixers. For the different tasks, duration, distance, speed and start, pertinent elevator trim data and flap settings can be stored and called