

PROFI CAR 403 and 707



Operating instructions



Before operating the transmitter, please select the language (see 9.4, page 42)!

MULTIPLEX[®]

Dear customer,
dear fellow modeller,

we are delighted that you have decided to purchase a MULTIPLEX radio control system.

The „PROFI CAR“ is the first „pistol-grip“ transmitter designed and developed by MULTIPLEX. Ergonomic efficiency and user-friendliness were our top priority during the development process.

That's not to say that we have neglected performance: the new system includes many innovative and practical features, offering you facilities which until now have not been available in systems of this class. They include:

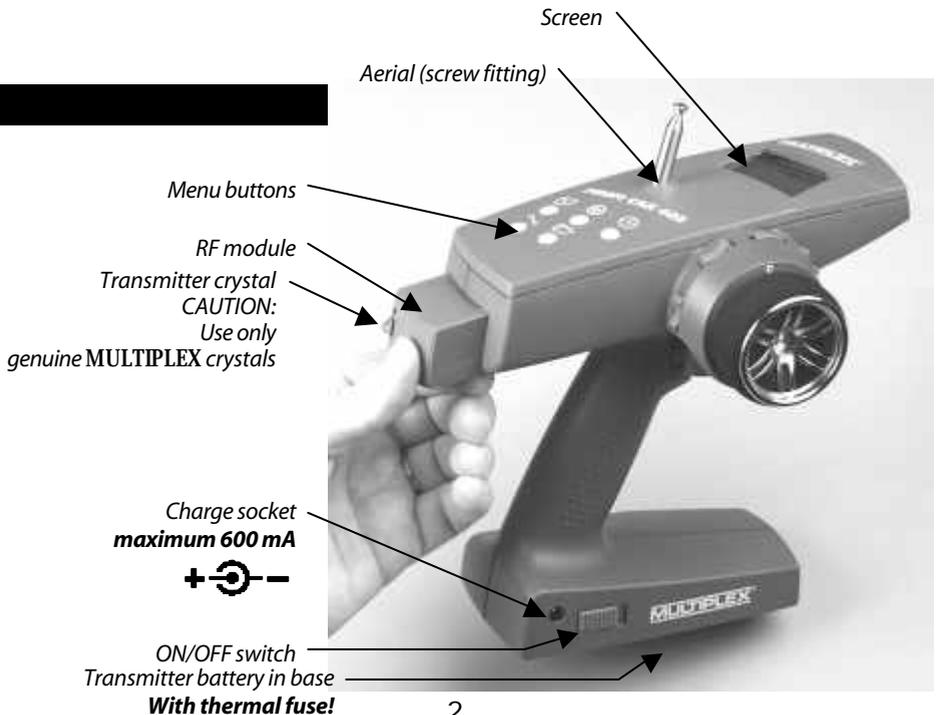
- ❖ Interchangeable RF module, switchable to suit AM and FM receivers
- ❖ Up to 7 channels (steering, throttle/brake + 5 auxiliary channels)
- ❖ 2 steering servos **and** 2 brake servos (PROFI CAR 707 only)
- ❖ Separate throttle servo (PROFI CAR 707 only)

Of course, you don't need to use these features; you can still operate the PROFI CAR as a „completely normal“ set, i.e. with one steering servo and a second servo for throttle/brake.

We are confident that you will have many hours of pleasure with your PROFI CAR.

Yours the **MULTIPLEX** team

A quick look at the transmitter



Contents

A quick look at the transmitter	2
Contents	3
Safety	5
System facilities	6
The transmitter controls in detail	7
The „instrument panel“ (screen)	8
The principle	9
Switching on for the first time	11
1.1. Charging the transmitter battery (maximum charge current 1 A)	11
1.2. Charging the receiver battery	11
1.3. Fitting the transmitter crystal	11
1.4. Adjusting the trigger loop	11
1.5. Testing the transmitter	12
2. Short and to the point	12
2.1. Selecting the vehicle TYPE	13
2.2. Setting the servo norm, direction of rotation, travels and centre	14
2.3. Adjusting STEERING ☺	15
2.4. Adjusting THROTTLE ☹	15
2.5. Adjusting BRAKE ☹	16
3. More about steering ☺	17
3.1. Adjusting the steering servo („↶“ menu)	17
3.2. Adjusting the steering trim („↷“ menu)	19
3.3. Adjusting the steering CENTRE, accepting the trim setting	19
3.4. Setting the minimum steering TRAVEL	20
3.5. SLOW	21
3.6. EXPO	21
3.7. Auto Dual Rates for steering	21
3.7.1. Reduced Travel RT at full throttle	22
3.7.2. Auto Dual Rate delay	22
3.8. The second steering servo (PROFI CAR 707 only)	22
4. More about THROTTLE ☹	23
4.1. 2-point throttle curve with EXPO	23
4.2. 5-point throttle curve	24
4.3. Automatic Start	25
4.3.1. Setting the „addition“ for Initial Throttle „IT+“	25
4.3.2. Initiating the automatic start function using the trigger	26
4.3.3. Initiating the start function with the handle button <u>or</u> trigger	26
4.3.4. Terminating the automatic start phase	26
4.4. TC = traction control (nur PROFICAR 707)	27
5. More about BRAKE	28
5.1. Two-point brake curve with EXPO	28
5.2. Trimming the Lock Point LP using rocker D	29
5.3. ABS = Advanced Braking System (PROFI CAR 707 only)	30
5.4. Braking with more than one servo (PROFI CAR 707 only)	31

6.	Timers and lap counters 🕒 📏	33
6.1.	Timer mode	33
6.2.	Lap time memory	34
6.3.	Setting the nominal time T-NOM	35
6.4.	Setting the race duration (timer mode 3 only)	35
6.4.1.	Race duration by laps	35
6.4.2.	Race duration by time	35
6.5.	Checking the transmitter's operating time	36
6.6.	Erasing the timer ERASE	36
7.	Model memories 📁	37
7.1.	Switching to a different model memory	37
7.2.	Copying	37
7.3.	Entering the model name	38
7.4.	Erasing	38
7.5.	Reverting to the PREVIOUS state	38
8.	Driving trucks	39
8.1.	Selecting the model type 2+5 CH (truck)	40
8.2.	Setting the control mode for the auxiliary channels	40
8.3.	Adjusting travel and centre of the auxiliary channels	41
8.4.	Truck steering and throttle/brake	41
9.	The "toolbox" 🧰	41
9.1.	Adjusting the trigger deadband (,,🌀 " menu, DEADB)	41
9.2.	Switching between AM and FM (,,🌀 " menu, AM-FM)	42
9.3.	Entering the owner's name (,,🌀 " menu, NAME)	42
9.4.	Selecting the display language (,,🌀 " menu, TEXT)	42
9.5.	Setting the battery alarm threshold (,,🌀 " menu, ALARM)	42
10.	Tips on installing the receiving system in the model	43
11.	The system in use	44
11.1.	Post Office Regulations for the U.K.	44
11.2.	Range testing	44
11.3.	Care of the transmitter	45
11.4.	Maintenance	45
	Specification, system characteristics	46
	Menu summary for the PROFI CAR 403 and 707	47

Radio-controlled models are not toys!

You can make a major contribution to safety when operating your models by acting responsibly and handling your radio control system and model with due care.

- ❖ Check the electrical and mechanical connections in the model at regular intervals.
- ❖ Check all moving parts regularly: they must be free to move, and must not exhibit undue lost motion.
- ❖ Carry out regular range checks (see „Range testing“).
- ❖ When other drivers are present at the track, find out which channels are already in use before you switch on.
- ❖ Before every run: extend the transmitter aerial to full length, and check that it is in good condition and firmly seated.
- ❖ Check that you have selected the model memory corresponding to the model you are running.
- ❖ Check **all the working systems** in your model before you start:
Do the servos rotate in the correct direction?
Are the travels correct?
- ❖ Are the transmitter and receiver battery adequately charged, and in well maintained and roadworthy condition?
- ❖ Use only **genuine MULTIPLEX crystals, batteries and accessories**.
- ❖ If your receiving system includes components which are not covered by these operating instructions, be sure to read the instructions supplied with those items.

If you are in doubt on any point - don't operate your model! Take your time, carefully check the system again, and eliminate the fault. If you cannot solve the problem, your local model shop or the MULTIPLEX customer service department will be pleased to help you with advice and practical help.



Read and observe the notes in Chapter 11 on using the system!

System facilities

	403	707
Model memories	6	12
Copy, reset, erase, enter model name		
Steering		
SLOW, separate for entering and exiting turns	✓	✓
EXPOnential steering curve (progressive / degressive)	✓	✓
Variable CENTRE and TRAVEL	✓	✓
Variable steering trim increment	✓	✓
Second steering servo	-	✓
Throttle		
Automatic start system	✓	✓
EXPOnential throttle curve (progressive / degressive)	✓	✓
Separate THROTTLE / BRAKE servos	-	✓
5-point throttle curve	✓	✓
Traction-Control TC	-	✓
Brake		
Variable engage point and lock point	✓	✓
EXPOnential brake curve (progressive / degressive)	✓	✓
ABS (Advanced Braking System)	-	✓
Second brake servo (front / rear)	-	✓
Timer and lap counter		
Operating time	✓	✓
Race duration by time / lap	✓	✓
Lap counter	✓	✓
Lap time memory	5	50
Mechanical features		
Programmable trigger deadband		
High-grip steering wheel lining		
Ergonomic controls mounted on the handle		
Angled screen for optimum legibility		
Light weight		
Signal transmission		
FM or AM transmission, selectable for each model memory		
Plug-in RF module (40/41 MHz and 72 MHz)		
Externally accessible plug-in transmitter crystal		
Power supply		
600 mAh / 6-cell battery, approx. 3 hours operating time		
Charge socket in transmitter base		

The transmitter controls in detail

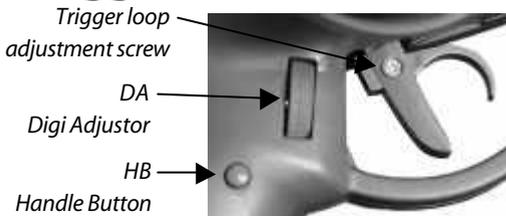
The three pictures below illustrate the essential controls.

The menu buttons



**The „key“
to the menus**

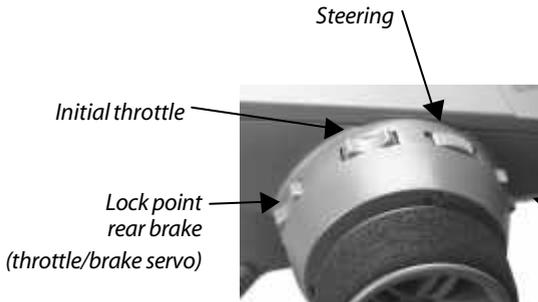
The trigger duster



Everything to hand



The trim rockers



**The
„tuning centre“**

Switched channel or
lock point front brake
(2nd brake servo)

Repeat function

All trim rockers have an automatic repeat function when held pressed for longer than about 1 second.

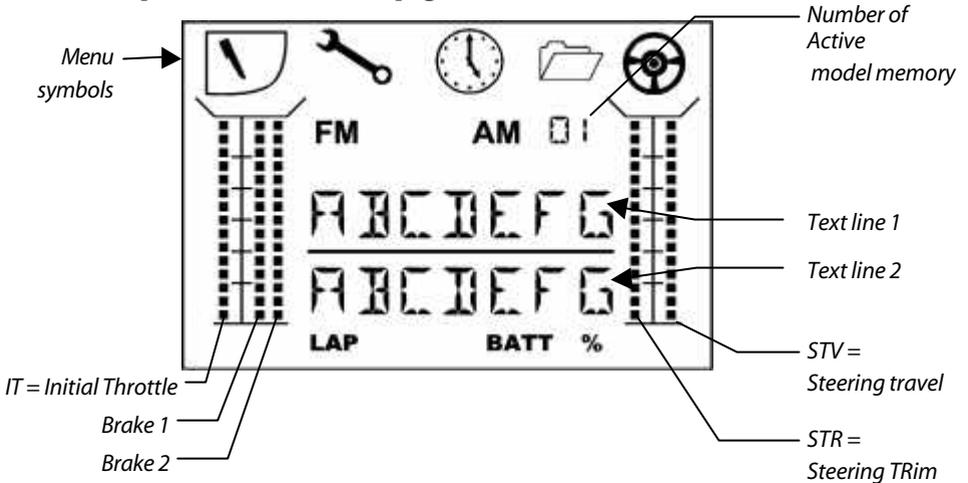
Special case – TRUCK:

If you wish to control a truck with your Profi Car, you have 5 auxiliary channels available (see 8: Driving trucks). In this mode only the steering trim (rocker A) is active; all the other rockers are used to control the auxiliary channels.

The „instrument panel“ (screen)

The picture below shows everything which the screen can display. What you actually see at any one time depends on what you are doing: whether timers are active, whether you are currently programming the transmitter, which type of vehicle you have selected, etc.

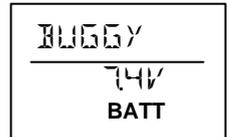
A few examples are shown on this page.



Operating display

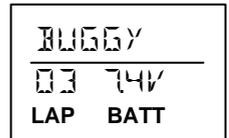
Timer mode: OFF

If no timer function is active, the first text line displays the model name you have entered. Text line 2 shows the transmitter battery voltage.



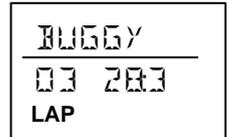
Timer Mode: LAP

The second text line shows the number of the lap on the left-hand side. To record the start and end of each lap you press the handle button .



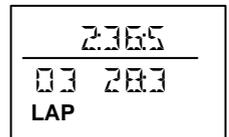
Timer-Mode: L+T (Laps + Time memory)

In this mode the second text line shows the number of the lap on the left (in our example 03) and the time for the current lap on the right (in our example 28.3 sec).



Timer-Mode: L+T+E (Laps + Time memory + Race duration)

The first text line displays the total duration of the race (in our example 2 min. 36.5 sec). The second text line shows the number of laps and the time of the current lap, as in the previous example.

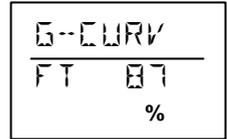


Special case: battery alarm with timer active

If one of the timer modes is active and the battery voltage falls to the alarm threshold, the screen displays the current lap time and the battery voltage and BATT warning, alternating at 2-second intervals.

When you are changing settings

When you are changing the transmitter settings, the first text line shows the selected menu point (in our example: the throttle curve). On the left of the second text line you see the parameter which you have selected with the help of the handle button (in our example full throttle). At bottom right the screen shows the current value (in our example 87%) above the % symbol



The principle

The five menu buttons on the PROFI CAR transmitter are the key to all set-up processes. The button symbols tell you which menu points you can access with each button.

Menu button	Menu function
	TRIGGER Adjust everything which is concerned with the throttle, brake and automatic start function; on the PROFI CAR 707 it also includes TC (Traction Control) and ABS
	STERING Adjust the steering to suit the track / vehicle / driver Centre, travel, Dual Rates, Slow
	TIMER Select the timer mode (T-mode), set nominal time / lap data Check and erase times
	TOOLS Select the vehicle type Basic settings for servos, transmitter
	MEMORY Switch, copy, assign name, erase

When you have found the menu point you want, you can continue by using the digit-adjustor and the handle button.

	HANDLE BUTTON (HB) Select curve points Confirm erasure, ...
	DIGI-ADJUSTOR (DA) Set values (travels, times, ...) Select sub-menu points (if there is nothing to adjust)

Press any menu button (except the one you last used) to return to the operating display.

When the operating display is on the screen (i.e. you have finished making adjustments), the functions of the handle button and digit-adjustor are as follows:

	HANDLE BUTTON (HB) Operate timer functions Lock brake (PROFI CAR 707 only)
	DIGI-ADJUSTOR Adjust steering travel



Switching on for the first time

1.1. *Charging the transmitter battery (maximum charge current 1 A)*

First connect the charge lead (Order No. 12 5023) to the battery charger, then connect the charge lead to the transmitter.

Charging the battery – important:

- **Automatic battery fuse**

The battery of your PROFI CAR features an integral thermal fuse which protects the battery from excessive currents if a short-circuit should occur.

This transmitter must be used with a genuine MULTIPLEX battery fitted with this type of fuse!

 If a short-circuit occurs and the fuse trips, the fuse element will reset itself about 1 minute after the fault is corrected, and the unit will then work again normally.

- **Charging the battery - note:**

If you charge at the **standard** (slow) rate, no restrictions apply.

If you **fast-charge** the battery using a charger with automatic termination, the charge current must not exceed 600 mA. Exceeding this rate may cause the thermal fuse to trip, and the charge process will be interrupted prematurely.

1.2. *Charging the receiver battery*

Observe the manufacturer's notes on charging, as printed on the battery. Do not exceed the stated charge currents!

1.3. *Fitting the transmitter crystal*

Transmitter crystals have a blue sleeve and bear the code letter „S“ before the channel number. Ensure that the transmitter and receiver crystals are on the same channel.

Plug the transmitter crystal into the RF module (see picture on page 2).

Please be very careful when handling crystals:

- ❖ Don't drop them
- ❖ Don't force a crystal into its socket
- ❖ Protect them from vibration in use and in storage

1.4. *Adjusting the trigger loop*

You can adjust the trigger loop to suit your finger size by loosening the screw in the trigger.

CAUTION: don't over-tighten the screw after making the adjustment, as this could loosen the nut pressed into the other side!

1.5. *Testing the transmitter*

Now you can switch on the transmitter and a receiving system and generally try things out. All you need is a receiver, two servos connected to channels 1 and 2, and a battery. If you prefer to use an existing model car, make sure that the steering servo is connected to channel 1 and the throttle/brake servo to channel 2.

Now you can continue with Section 2.

2. **Short and to the point**

In this section you will discover the five simple steps required to get your first model car „up to speed“. This is the procedure in brief:

- | | | |
|-----|--|--|
| 2.1 | Select the vehicle type | |
| | Adjust the transmitter to suit the model (number of channels, ...) | |
| 2.2 | Set the servo norm, centre and travels | |
| | Adjust the servos to suit the mechanical system in your model | |
| | (the „S-NORM“ menu point includes direction of rotation) | |
| 2.3 | Adjust the steering | } set up to suit your
} personal preferences
} and the track characteristics |
| 2.4 | Adjust the throttle | |
| 2.5 | Adjust the brake | |

2.1. Selecting the vehicle TYPE

Selecting the vehicle TYPE determines the channels which are to be used to control your model.

The **PROFI CAR 403** offers the following options.

TYPE	Steering	Throttle + Brake	Special features
STAND e.g. electric car	Servo 1	Servo 2	EXPO on THROTTLE Switched channel for servo 3
2+1 CH GP car			5-point curve for THROTTLE Switched channel for servo 3
2+5 CH Truck			Switched channels for servo 3 to 7 EXPO on THROTTLE

The **PROFI CAR 707** also includes:

- ❖ **ABS** Advanced Braking System
- ❖ **TC** Traction Control
- ❖ and two new vehicle types:

TYPE	Steering	Throttle/brake	2nd brake	Special features
4 CH	Servo 1 + 4	Servo 2	Servo 3	2 nd brake servo on channel 3 5-point curve on THROTTLE no auxiliary channel

TYPE	Steering	Throttle	Brake	Special features
5 CH Profi	Servo 1 + 5	Servo 2	Servo 3 + 4	2 steering and 2 brake servos 5-point curve on THROTTLE no auxiliary channel

For your first attempts we recommend that you select the vehicle type **STAND** (standard) or **2+1 CH**.

This is the procedure:

	TYPE	Search for menu point	
		Select type	STAND 2+1CH 4CH 5CH 2+5CH
		Confirm and terminate	 Confirm. Beep

2.2. Setting the servo norm, direction of rotation, travels and centre

If you select STAND or 2+1 CH as the vehicle type, all you need to do is set up the servos: servo 1 „STEERING“ and servo 2 „THROTTLE/BRAKE“.

	S--NORM	Search for menu point	
		Select servo	<u>S--NORM</u> Z MR
		Select norm / direction, check by moving trigger or steering wheel	UN UNI normal UR UNI reverse MN MPX normal MR MPX reverse
	S--TRAV	Search for menu point	
		Select servo Example: Servo 2, centre -12%	<u>S--TRAV</u> Z <input type="checkbox"/> -- 12 %
	  	Right, centre, left select by turning steering wheel (for servo 2 use trigger) then set using digi-adjustor	<input type="checkbox"/> right 0 - 100 % <input type="checkbox"/> centre +/- 25 % <input type="checkbox"/> left 0 - 100 %

- Press any button (except ) to return to the operating display.

2.3. Adjusting **STEERING**

Steering settings:

CENTR	Servo centre (straight ahead)	- 50% to + 50%
TRAV	Minimum steering travel, if set using digi-adjustor	30% to 100%
DUAL	Auto Dual Rates DE = delay 0 to 5 RT = reduced travel	Switch off with „DE = 0“ 50% to 100%
SLOW	Retards steering movements Enter/exit turn separately	0.0 sec to 1.0 sec
EXPO	Exponential steering curve	+100% = soft -100% = hard

- Use the  button to search for the menu point **SLOW**, **EXPO**, **CENTR** or **TRAV**
- Set the value you want using the digi-adjustor
- Press any button (except ) to return to the operating display.

2.4. Adjusting **THROTTLE**

You must set either a 2-point or 5-point throttle curve, depending on the vehicle type you have selected.

For the STANDARD and TRUCK vehicle types:

2 point throttle curve with EXPO

LL	Idle	0% to 100%
IT	Initial throttle = initial throttle value when trigger leaves deadband	0% to 100%
FT	Full Throttle	0% to 100%
EXP	Exponential throttle curve	+100% = soft start -100% = hard start

For the vehicle types „2+1 CH“, „4 CH“ and „5 CH“

5-point throttle curve

		Range	Default setting
1I	Idle	0% to 50 %	15%
1T	Initial throttle = initial throttle value when trigger leaves deadband	0% to 100%	30%
2T	Points on the throttle curve	0% to 100%	45%
3T			60%
4T			75%
FT	Full throttle	0% to 100%	100%

This is the procedure for setting the separate points on the throttle curve:

- Search for the menu point T-CURV (throttle curve) using the  button
- Search for the point to be adjusted using the handle button 
- Set the value using the digi-adjustor
- Press any button (except ) to return to the operating display

2.5. **Adjusting BRAKE**

The settings for the brake are the same for all vehicle types. EXPO is also available in all vehicle types.

Point to be adjusted		Range
EP	Engage Point = Brake setting when trigger leaves deadband	0% to 100%
LP	Lock point	0% to 100%
EXP	Exponential brake curve	±100%

If you set EXPO to +100% the brake is applied „gently“; at -100% the brake is applied hard. Setting EXPO to 0% switches exponential off.

- Search for the menu point **ITEMS 1** (brake curve for the throttle/brake servo) using the  button.
- Search for the point to be adjusted (EP/LP/EXP) using the handle button .
- Set the value you want using the digi-adjustor
- Press any button (except ) to return to the operating display



That's all you need to do. It should now be possible to run your car and control it properly.

3. More about steering

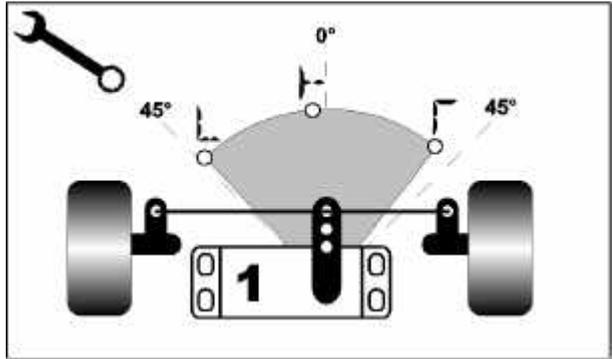
The PROFICAR provides the following facilities for adjusting the steering:

- **Servo centre and servo travel {3.1}** ( menu, menu point „S-TRAV“, servo 1)
These facilities allow you to adjust the servo to suit the mechanical set-up in your model, and at the same time set the maximum steering travel and centre setting for accurate straight running.
- **Steering CENTRE {3.3}** ( menu, menu point „CENTRE“)
In this part of the menu you can correct the car's straight running. The steering trim also affects this value, and you can „automatically“ accept the trim value as the centre in this menu point.
- **Steering TRAVEL {3.4}** ( menu, menu point „TRAVEL“)
At this point you can enter a value for the minimum steering travel which you can set using the digi-adjustor when the car is running. This avoids the danger of inadvertently setting such a low value that you suddenly run out of steering travel when you most need it. 30% is the minimum value.
- **SLOW {3.5}** ( menu, menu point „SLOW“)
You can adjust the transit speed of the steering servo separately for entering turns „□□“ and for exiting turns „□□“.
- **EXPO {3.6}** ( menu, menu point „EXPO“)
You may like to adjust the steering so that response to the wheel is more or less sensitive than normal around the centre setting. This is achieved by setting a value for EXPOnential.
- **Auto Dual Rates** ( menu, menu point „DUAL“)
Dual Rates means reduced servo travel, and Auto Dual Rates means that the travel of the steering servo is reduced automatically when the throttle setting is increased. At full throttle steering travel is small, at idle steering travel is large. At the DUAL menu point you can
 1. set the value at which reduced steering travel (RT) takes effect
 2. set the delay (DE) which applies to the automatic travel reduction
- **Increment size for steering travel and trim setting {3.2}**
( menu, menu point „STEP“)
Each movement of trim rocker A (steering centre) and of the digi-adjustor (steering travel) produces one increment of change; the step size can be set to any value between fine (1% increments) and coarse (10% increments).

3.1. Adjusting the steering servo („“ menu)

You must adjust the servo to suit the mechanical set-up in your model before you alter the steering settings in the  menu. In more detail this means: setting the direction of rotation / and pulse width (norm) of the servo, and setting appropriate values for left (), straight () and right.

The diagram on the right shows an example of the settings you can change in the „S-TRAV“ menu. The stated angles (0° / 45°) show the servo’s maximum physical travel. The adjustment points „L“ and „R“ indicate the **maximum** travel of the steering servo which the user has set. To adjust either of these points you have to turn the steering wheel in the corresponding direction.



When the servo is at the „□“ point you can adjust the servo setting for „straight“.

In the „S-NORM“ menu point

you can also set the direction of rotation for the servo, and choose between the MULTIPLEX and UNIVERSAL signal formats. MULTIPLEX norm means that the signal length (pulse width) for the centre setting is 1.6 ms, and the signal range is +/- 0.55 ms. The UNIVERSAL norm means that the servos operate on 1.5 ms +/-0.5 ms.

This is the procedure:

	S--NORM	Search for menu point	
		Select servo 1	<u>S--NORM</u> ↑ MR
		Select norm and direction of rotation	UN UNI normal UR UNI reverse MN MPX normal MR MPX reverse
	S--TRAV	Search for menu Point	
		Select servo 1	<u>S--TRAV</u> ↑ □ -- ▢ ↑ %
	 	Select right, centre, left by rotating steering wheel, then set using digi-adjustor	↑ right 0 - 100 % □ centre +/- 25 % ↓ left 0 - 100 %

3.2. Adjusting the steering trim (,,🔧“ menu)

The steering is trimmed using the trim rocker A. You can easily find this rocker „blind“ because its shape and fluted surface differentiate it from the other rockers



You can use the steering trim to adjust the centre of the steering servo by 7 increments in each direction. Each step offsets the centre by at least 1% (fine) and at most 10% (coarse). You can select the size of the trim increments in the menu point STEP of the „*“ menu. The default setting is 2%.

The screen shows the current trim settings in the form of a vertical bar.

	STEP	Serrate for menu point	
		Search for parameter STR =Steering TRim	$\frac{\text{STEP}}{\text{STR } 2\%}$
		Set size of trim increment	1 - 10%

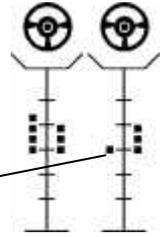
3.3. Adjusting the steering CENTRE, accepting the trim setting

In this menu point you can do two things:

- ❖ Set the steering servo centre within the range -50% and +50%, and
- ❖ accept the trim setting

	CENTRE	Search for menu point	
		Set the centre (e.g.: -8%)	$\frac{\text{CENTRE}}{- 8\%}$
 > 3 sec		Accept the trim setting as centre	The current trim value is added to the centre, and then reset to zero.

Accepting the trim is a practical and useful facility. For example, if you suffer a „slight crash“ which knocks the basic setting out, you can quickly and simply regain the full trim range.



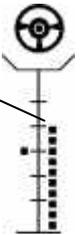
The diagram on the right shows the screen display before and after accepting the trim setting. On the left the centre is offset by 3 steps, while on the right the setting has been accepted, and the trim display is back to centre. If you have selected, say, 3% as the trim increment when trimming the steering centre SC, this means that „CENTRE“ is offset by 9% (3 increments of 3%).

3.4. Setting the minimum steering TRAVEL

During a race you can alter the steering travel with the digi-adjustor, so that it is always accurately matched to the track you are using.

Please note: this only works if the screen shows the operating display!

The actual steering travel you have set is shown by the bar on the far right of the screen. In our example 2/3 of the maximum possible range is available between minimum and maximum.



To avoid the possibility of reducing steering travel to zero, you can at this point set a value for the extent to which steering travel can be reduced using the digi-adjustor, i.e. you can fix the **minimum** steering travel. The adjustment range is 30% to 100%.

	TRAVEL	Search for menu point	<u>TRAVEL</u> 72 %
		Set travel (e.g.: 72%)	Range: 30% to 100% Increment: 1% to 10%% Default setting: 44% travel 2% increment

TIP !

Set the **maximum steering travel** by adjusting the basic mechanical set-up of the steering servo (see 3.1).

Make adjustments in the „“ menu, menu point „S-TRAVEL“, servo 1.

TIP !

The rate at which the digi-adjustor affects the steering travel is determined by the increment size.

Make adjustments in the „“ menu, menu point „STEP“, „STV“

3.5. SLOW

SLOW retards the movement of the steering servo, and reduces the tendency for the steering system to oscillate when the load on the wheels is light, and the steering movements are rapid. The delay time is variable separately for „entering the turn“ and „exiting the turn“ (returning to straight running), in both cases within the range 0.1 to 1.0 sec.

If you select the vehicle TYPE „5 CH“, with two steering servos, SLOW affects both servos simultaneously, as you would expect.

	SLOW	Search for menu point e.g.: 0,7 sec for “exit curve”	<u>SLOW</u> □□ □7
		Search for parameter	□□ enter curve □□ exit curve
		Set time	Range: 0,0 to 1,0 sec Increment: 0,1 sec Default setting: 0,0 sec

3.6. EXPO

EXPO affects the steering response of your model car. If you set a positive value (e.g. +50%), the steering travel around the centre is reduced, making it easier to steer the model on straight stretches at high speeds.

A negative EXPO value produces the opposite effect, making the steering response more direct around centre.

	EXPO	Search for menu point e.g.: +70%	<u>EXPO</u> 70 %
		Adjust EXPO	Range: -100% to 100% Increment: 5% Default setting: 0%

3.7. Auto Dual Rates for steering

The effect of Auto Dual Rates is to produce an automatic reduction in steering travel when you open the throttle (see 2.7.1.).

It is also possible to program a delay in the speed with which the automatic travel reduction is applied, to ensure that short bursts of throttle don't produce an unwanted reduction in steering response (see 2.7.2.).

This function can be **disabled** by setting the delay value DE to „0“.

3.7.1. *Reduced Travel RT at full throttle*

- Search for the menu point „DUAL“ using the  button
- Search for RT with the handle button 
- Use the digi-adjustor to set the value you want within the range 50% to 100% (example: 57%).

DUAL	
RT	57
	%

Finally you must set the delay DE (see next section) to a value within the range 1 to 5.

3.7.2. *Auto Dual Rate delay*

The delay can be set to any of 5 values. Set DE = 0 to switch the function off.

- Search for the menu point „DUAL“ with the  button
- Search for DE using the handle button 
- The value can now be set within the range 0 and 5 using the digi-adjustor (example: 2).

DUAL	
DE	2



TIP !

Before you go onto the track, check the effect of your Auto Dual Rates settings with the model in the pits (set the steering to full travel, then open the throttle).

3.8. *The second steering servo (PROFI CAR 707 only)*

At present two steering servos are generally used in models where one servo alone cannot produce the power required. The two servos are mechanically connected, and must be synchronised perfectly to avoid them counteracting each other.

You can use two steering servos (on channels 1 and 5) if you select the vehicle type „5 CH“ on the PROF CAR 707 transmitter.



IMPORTANT: all settings in the „“ menu apply to both servos !

The two servos should be adjusted to suit the model's mechanical set-up; this is done in the menu points „S-NORM“ and „S-TRAV“ of the „“ menu. You can compensate for any differences between the two servos by making adjustments in the menu point „S-TRAV“.



TIP !

If you wish to alter the servo norm or travel, disconnect the mechanical link between the two servos first to avoid the danger of placing an unnecessary strain on the servos.

4. More about THROTTLE

The PROFI CAR also has plenty of interesting facilities to offer for throttle:

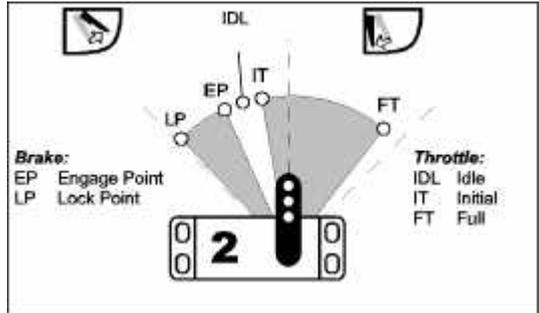
- ❖ 2-point throttle curve with EXPO, or 5-point throttle curve
- ❖ Automatic Start
- ❖ TC (traction control) **PROFI CAR 707 only!**
- ❖ Separate throttle servo **PROFI CAR 707 only!**

To help you understand:

The diagram on the right shows which servo settings are assigned to the individual points on the throttle-brake curve.

Between the points Initial Throttle IT and Full Throttle FT the setting of the throttle servo is proportional to the position of the trigger.

At the idle setting (ID) the servo does not move, provided that the trigger stays within the deadband {variable: see 9.1}. As soon as the throttle trigger moves into the working range, the throttle servo jumps to the Initial Throttle position IT.



4.1. 2-point throttle curve with EXPO

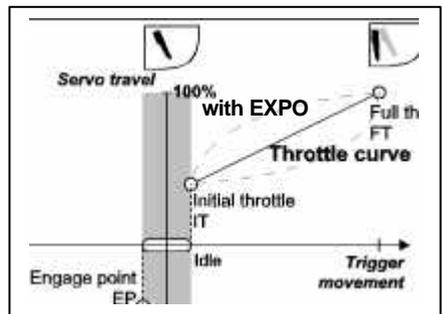
The two-point throttle curve is generally adequate for electric-powered model cars. With the help of the EXPO facility you can easily set up a throttle response curve which gives you just the feeling of control you prefer.

Use the menu button  to locate the throttle curve, and the handle button  to select the individual points on the curve. The advantage of this system is that you don't actually have to apply full throttle in order to adjust the full throttle point.

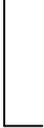
The diagram on the right shows the correlation between the trigger movement and the servo travel in graphic form.

The area with the grey background is the deadband. As long as the trigger stays within this range, the throttle/brake servo stays at the idle setting IDL.

Between the two points Initial Throttle IT and Full Throttle FT the throttle curve is linear - assuming that you have set EXPO to 0%. The dotted lines show how EXPO affects the throttle curve



This is the procedure:

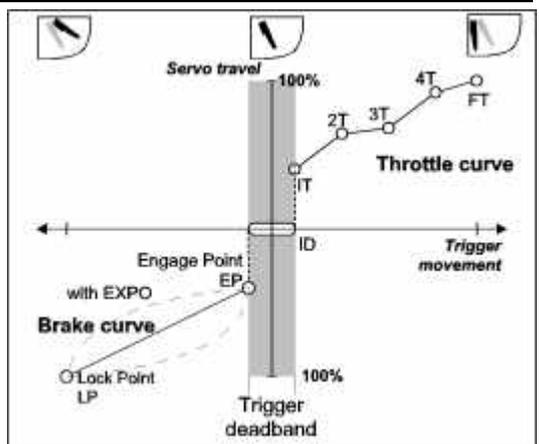
	G-CURV	Search for menu point	
 		Search for point on throttle curve e.g.: Initial Throttle 35%	<u>G-CURV</u> IT 35 %
		Set the value	II Idle IT Initial Throttle FT Full Throttle EXP EXPO

4.2. 5-point throttle curve

The main advantage of the 5-point throttle curve is to set up a response curve which compensates for the characteristics of the carburettor of an internal combustion engine. Between the two points Initial Throttle IT and Full Throttle FT there are three further points which you can set to the values you find best.

The settings are adjusted using the same procedure as described for the 2-point throttle curve in the preceding section 4.1.

The brake curve is the same for all vehicle types.



4.3. Automatic Start

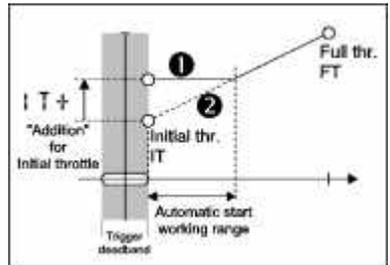
The automatic start facility triggers a series of special functions once only at the start of the race. The automatic start function must first be activated in the * menu. It can be initiated (triggered) in two ways, depending on the vehicle TYPE you have selected: either by the action of opening the throttle for the first time, or by pressing the handle button at the same time.

When you **activate the automatic start function**, the following happens:

- All vehicle types: the timer and lap counter are set to starting values.

- **Vehicle type STAND (standard) and 2+5 CH:**

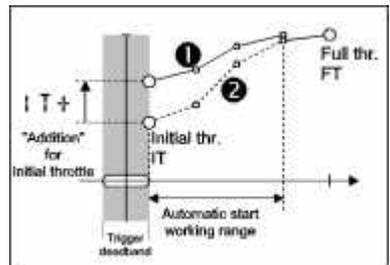
The throttle curve is altered for the start phase. You will find the start value as „IT+“ in the menu point „T-CURV“. The value which you set here increases (or decreases if you prefer) the „normal“ initial throttle setting. However, this change only applies until the initial start phase is finished (see below). When the automatic start function is triggered, the throttle response follows curve ①.



①. If you stay within the working range of the automatic start function, with your finger on the trigger, the throttle moves to a fixed setting. This setting can be fine-tuned to suit your vehicle exactly. When you move the trigger into the deadband, or above the Initial Throttle setting as increased using the „IT+“ value, the throttle response reverts to curve ②.

- **Vehicle type 2+1 CH, 4 CH and 5 CH:**

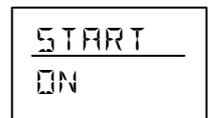
In the vehicle types which feature a 5-point throttle curve the „addition to Initial Throttle“ is effective over the first four points of the throttle curve, as shown in curve ①. On this curve the automatic start function continues in effect until the throttle trigger exceeds point 4 on the throttle curve (i.e. in the direction of full throttle), or if the trigger is moved into the deadband. From this moment the throttle response reverts to curve ②.



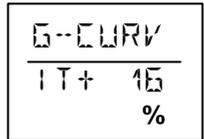
4.3.1. Setting the „addition“ for Initial Throttle „IT+“

TIP ! The setting for „IT+“ can only be changed when the automatic start function is active.

- Search for the menu point „START“ using the button.
- Switch the function „ON“ using the digi-adjustor. You will now see the TRIGGER symbol flashing at the top left of the screen.



- Proceed to „T-CURV“ using the  button.
- Search for the „IT+“ value using the handle button .
- Set the value you want using the digi-adjustor.
In the example shown on the right the set value is 16%.



If you move back to the operating display by pressing any menu button (except ) , the top line of the screen will alternate between the model name and „START“.

TIP !

The automatic start function can only be triggered when the operating display is on the screen

4.3.2. *Initiating the automatic start function using the trigger*

This works with all vehicle types. When the trigger is moved from the deadband in the direction of full throttle for the first time, the following things happen:

- The timer and lap counter start running, and are shown on the screen (varies according to the selected timer mode).
- The set „addition“ for initial throttle comes into force (see 4.3.1).

Once the automatic start is initiated, only the model name appears on the screen.

4.3.3. *Initiating the automatic start function with the handle button or trigger*

If your model is equipped with separate servos for throttle and brake (vehicle types „3+1 CH“ and „5 CH“), there are two methods of starting:

- Lock the brake by pressing the handle button . Now you can blip the throttle, and the car will not roll away.
- When you **release the handle button**  the car will start - provided that the trigger is **not** in the deadband.
- If the trigger is in the deadband (idle) you can release the brake (handle button). You can then start the car by squeezing the trigger, as described below.

4.3.4. *Terminating the automatic start phase*

When the start phase ends, the program switches off the addition to the initial throttle setting „IT+“, and the throttle response reverse to the „normal“ curve (2 or 5 points)..

- If a 2-point throttle curve is in use, the start phase ends when you move the trigger to the deadband (idle), or when the throttle trigger exceeds the value determined by Initial Throttle and IT+.
- If you have set a 5-point throttle curve, the start phase ends when you move the trigger into the deadband, or when the throttle trigger exceeds the fourth point on the throttle curve „4T“.

The correlation between these values is illustrated in the diagrams in Section 4.3, termed the „automatic start function working range“.

4.4. **TC = traction control (PROFI CAR 707 only)**

Traction Control is a variant of the SLOW function applied to THROTTLE, in this case only working when you **open the throttle**. When you close the throttle, the servo (or speed controller) responds normally, i.e. without any delay.

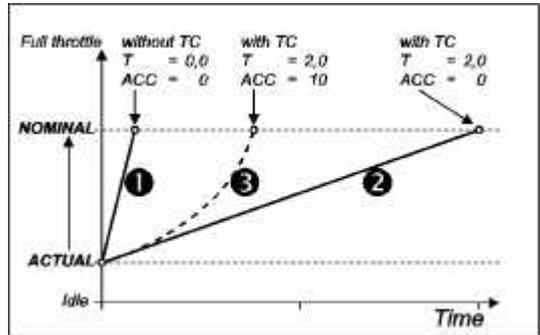
Traction Control prevents the wheels spinning during acceleration on a smooth track. In the case of electric cars TC reduces current drain, because the motor is controlled more „gently“.

There are two parameters to be set for Traction Control:

1. **T** = Time, between 0 and 2.0 sec
Time factor for retarding the throttle servo
2. **ACC** = Acceleration, between 0 and 10
works in a similar way to EXPO

The diagram on the right shows how you can imagine the effect of the TC function.

We will assume that you want the throttle to move from the **ACTUAL** position to the **NOMINAL** position (see labels on graph), because you have moved the trigger slightly in the direction of full throttle. Without TC this change takes place at a rate determined by the servo's transit speed (see curve 1).



If you set the parameter T (= time) for Traction Control to the maximum value 2.0, the movement of the servo is retarded, but the line of the graph remains linear (curve 2).

If we now add a little ACC to the mix, we obtain the desired line as shown by curve 3. Initially the throttle opens slowly (thereby preventing the wheels spinning), but the rate of opening then increases steadily. This set-up shortens the total duration of the servo's movement, but without losing the advantage of the „gently“ start-up.

This is the procedure:

- Search for the menu point TC using the  button.
- Select T or ACC using the handle button .
- Set the value you want using the digi-adjustor.

Press any menu button (except ) to return to the operating display.

5. More about BRAKE

The PROFICAR offers the following brake functions:

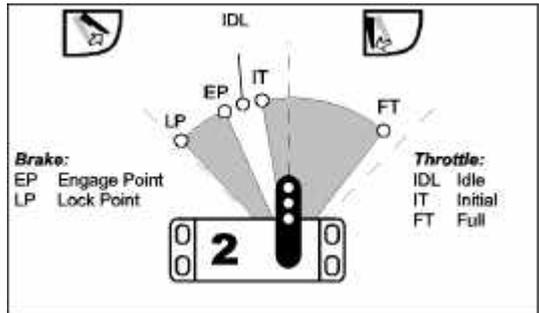
- ❖ 2-point brake curve with EXPO {see 5.1}
- ❖ ABS **A**dvanced **B**raking **S**ystem (*PROFICAR 707 only*)
- ❖ Second brake servo (*PROFICAR 707 only*)

To help you understand:

The diagram on the right shows the servo positions which correspond to the individual points on the throttle-brake curve.

Between the engage point EP and the locking point LP the servo responds proportionally to the movement of the trigger.

At the idle position IDL the servo does not move, as long as the trigger stays within the deadband {variable: see 9.1}. As soon as the trigger is moved into the „brake“ working range, the servo jumps to the Engage Point EP.



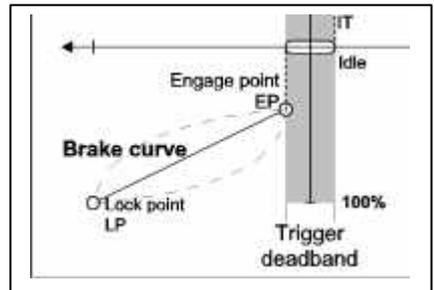
5.1. Two-point brake curve with EXPO

Use the menu button  to locate the brake curve. The individual points on the curve are selected using the handle button

The diagram on the right illustrates the correlation between the trigger movement and the servo travel in graphic form.

The area with the grey background is the deadband. If the trigger stays within this range, the throttle/brake servo stays at the idle position IDL.

Between the engage point EP and the locking point LP the brake curve is linear - assuming that you have set EXPO to 0%. The dotted lines show how EXPO alters the brake curve.



This is the procedure:

	BRAKE 1	Search for menu point	
 		Search for point on brake curve <i>Example: Engage point 27%</i>	<u>BRAKE 1</u> EP 27 %
		Set value	IDL Idle -50% to +50% EP Engage point OFF or 1 - 100% LP Lock Pint 0 - 100% EXP EXPO ± 100%

 If you are using a combined throttle/brake servo (all vehicle types except „5 CH“), the idle point „IDL“ exists on the throttle curve as well as the brake curve

5.2. **Trimming the Lock Point LP using rocker D**

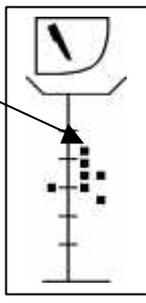
The lock point of the brake normally changes during a race, so it is helpful to be able to compensate for that change. This is done by means of trim rocker D. Rocker D affects the lock point of the THROTTLE/BRAKE servo (servo 2) or servo 3 (first brake servo) of the vehicle types 3+1 CH and 5 CH.



The brake trim allows you to adjust the lock point by 7 increments in each direction. Each increment offsets the lock point by at least 1% (fine) and at most 10% (coarse). You can select the size of the trim increments in the menu point „STEP“ of the „“ menu. The default setting is 2%.

The current trim setting is indicated on the screen by a vertical bar. In the example on the right the lock point of the first brake servo has been offset in the direction of „stronger braking effect“ by 3 trim increments.

	STEP	Search for menu point	
		Select parameter LP = Lock Point	$\frac{STEP}{LP \quad 70\%}$
		Set size of trim increment	1 - 10%



 **TIP !**

If you have a second brake servo (vehicle type „5 CH“), the increment size you select applies to both trim rockers (B and D).

5.3. **ABS = Advanced Braking System (PROFI CAR 707 only)**

In the model car racing field ABS corresponds to an intermittent brake: instead of being applied constantly, the brake is applied then released again continually at short intervals. This method of braking keeps the vehicle on line better, making it easier to steer under heavy braking.

In the PROFI CAR the ABS function is activated automatically when the steering deflection exceeds a variable threshold (TH = threshold point).

 **TIP !**

If you set the threshold point to 0%, ABS is effective all the time. This allows you to try out its effect on a straight stretch of track.

	ABS	Search for menu point	$\frac{ABS}{AB \quad 3\%}$
		Select parameter	TH threshold point 0 - 50% EF Effect 0 - 4
		Set value	Effect 0 OFF 1 soft ... 4 hard

5.4. Braking with more than one servo (PROFI CAR 707 only)

If you have chosen the „4 CH“ or „5 CH“ vehicle type, you can use two brake servos; this allows you to control the brakes for the front and rear axles separately.

In vehicle type „4 CH“ you have:

- ❖ servo 2 for throttle/brake (rear wheels)
- ❖ servo 3 for the second brake (front wheels)

In vehicle type „5 CH“ you have:

- ❖ servo 2 for throttle alone
- ❖ servo 3 for the first brake (rear wheels)
- ❖ servo 4 for the second brake (front wheels)

When you select one of these vehicle types, you can adjust the brakes using the „“ menu, where you will find the menu points „BRAKE1“ and „BRAKE2“, both of which feature the same parameters (idle ID, engage point EP, lock point LP and EXPO).

Setting of the brake servos when you open the throttle:

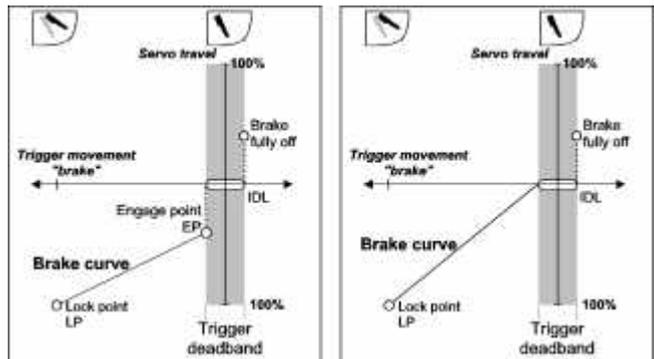
If a combined throttle/brake servo is connected to channel 2, the servo responds to the throttle and brake commands, but if there is a separate brake servo (servo 3 or 4), it only moves when the trigger is moved into the brake range. As soon as you open the throttle, these servos jump to a fixed position which we can term „brake fully off“.

The servo position for „brake fully off“ can be set for servos 3 and 4 in the menu point „S-TRAV“ within the „“ menu. To be able to change this value you must hold the trigger in the throttle range. You will see the symbol „“ on the screen.

TIP !

Brake engaged when the trigger is in the deadband (finger relaxed):

If you want the brakes in your model car to operate in this way, you must set the engage point to 0. Instead of the 0 you will then see „OFF“ on the screen. If the brake servo is programmed in this way it will behave as shown in the diagram at far right. The servo no longer jumps to the engage point when the trigger is moved out of the deadband.



The lock points for the two brake servos can be trimmed using the rockers **B** and **D** (see picture). We have selected these particular rockers so that you can easily remember the assignment:

- front rocker → front brake
- rear rocker → rear brake



This is the procedure:

	BRAKE 1 BRAKE 2	Search for menu point	
		Select the brake curve <i>Example:</i> <i>Lock point 82%</i>	<u>BRAKE 2</u> LF RZ %
	Set value		IIL Idle -50% to +50% EP Engage Point 0 (OFF) to 100% LP Lock Point 0 to 100% EXP EXPO ± 100%

Press any menu button (except ) to return to the operating display.



6. Timers and lap counters

The PROFI CAR (403 and 707) offers the following facilities for timing and lap counting:

- ❖ **Operating time**
This timer can be reset to zero in the „“ menu. It is used to record the operating time of the transmitter battery or the transmitter itself. This timer always runs when the transmitter is switched on.
- ❖ **Nominal lap time**
For practising you can set a „nominal time“ (target time) for a single lap. The transmitter gives an audible signal to let you know whether you were faster or slower than the set time.
- ❖ **Race duration**
You can enter the race duration in the form of a number of laps or a set time. The transmitter alerts you to the start of the last lap with an audible signal.
- ❖ **Memory for 50 lap times**
Once you have selected the appropriate operating mode (timer mode), you can „stop“ lap times with the handle button . The transmitter's memory can store up to 50 lap times, and the times are retained even when you switch off the transmitter or replace the battery.
- ❖ **Total race time**
A special memory (on-screen symbol „-“) is available as a stopwatch for the entire race.

You can select the following menu points using the  button:

T--MODE	Timer mode	6.1
OPTIME	Check transmitter operating time	6.5
ERASE	Erase lap counter, time memory, nominal time, race duration (time and lap count) and operating time	6.6
TIMES	Check lap time memory	6.2
T--NOM	Enter the nominal time for a lap	6.3
DURA	Enter the race duration as a time or No. of laps	6.4

6.1. *Timer mode*

There are three different modes of operation for the timer. The fourth possible mode is to switch off the timer functions entirely (T-MODE: OFF).

Mode	Effect
OFF	All timer functions switched off
LAPS	Lap counter active
L+T	Lap counter + lap time memory active
L+T+D	Lap counter + lap times + race duration

The timer mode can be set differently for each model memory.

This is the procedure:

- Search for the menu point T-MODE using ⌚
- Select the mode using the digi-adjustor

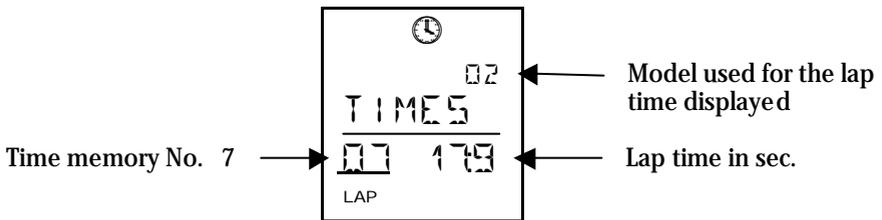
Press any menu button (except ⌚) to return to the operating display.

6.2. Lap time memory

The transmitter can store up to 50 lap times and call them up again. When a new lap is completed, all the lap times already recorded are shifted back by one place. When the lap memory is full, the oldest value is always erased to make room for the new one.

- The time memory „-“ contains the **overall time** of the last race.
- The time memory □ 1 contains the **last recorded lap time**.

This memory stores all lap times, regardless of the model you are using for that race. This could mean that you lose track of different races when leafing through the times, so the screen always shows the number of the model memory associated with the recorded time.



End of lap = start of new lap:

A short press on the handle button triggers four functions:

- the lap counter LAP is increased by 1,
- the timing of the current lap halts,
- the measured lap time is stored in the transmitter's memory, and
- the timing of the next lap starts.

End of race:

If you hold the handle button Ⓚ pressed in for longer than 2 seconds, a long beep sounds to signal that the transmitter has stopped timing and counting laps.

Calling up recorded lap times:

- Search for the menu point TIMES using the ⌚ button.
- Leaf through the timer memory 01 to 50 using the digi-adjustor. „-“ is the fifty-first memory containing the total race time.

Press any menu button (except ⌚) to return to the operating display.

6.3. *Setting the nominal time T-NOM*

You can enter a nominal time FNOM for a lap, so that you can check your practice times against the set value. The maximum variable time is 1 min. 59.9 sec.

When you finish a lap (short press on the handle button ) , an audible signal informs you of the result:

- ◀ 1 short beep = lap time equal to or lower than nominal lap
- ◀ ◀ ◀ 3 short beeps = lap time longer than nominal lap

This is the procedure for setting the nominal time:

- Search for the menu point T-NOM using the  button
- Alter the flashing number with the digi-adjustor
- Press the handle button  to move to the next digit

Press any menu button (except ) to return to the operating display.

6.4. *Setting the race duration (timer mode 3 only)*

For practice purposes you can set a race duration, determined either by a particular number of laps or by a particular time.

6.4.1. *Race duration by laps*

You can enter the number of laps to be run (max. 99) in the menu point DURA, LAP. In the example on the right the set number of laps is 17.



The start of the race is initiated by the automatic start function, or by pressing the handle button. At the end of each lap you have to press the handle button, to signal to the transmitter that a lap is finished, that lap timing should begin again, and that the lap time should be stored.

The transmitter produces the following audible signals:

- ◀ ◀ ◀ 3 short beeps at the start of the last lap
- ◀ 1 longer beep at the end of the race

6.4.2. *Race duration by time*

You can enter the race duration (max. 1 hour 59 min.) in the menu point DURA, T. In the example on the right the set time is 12 minutes.



The start of the race is initiated by the automatic start function or by pressing the handle button. At the end of each lap you have to press the handle button to signal to the transmitter that a lap is finished, that lap timing should begin again, and that the lap time should be stored.

The transmitter produces the following audible signals:

- ◀ ◀ ◀ 3 short beeps at the start of the last round

The transmitter can only produce this signal if your car has completed at least six laps. The transmitter computes the average time for the last six laps, then calculates whether a further full lap can be completed in the time remaining to the end of the race. If not, the 3-beep signal is given. When you next press the handle button the transmitter stops the timing process.

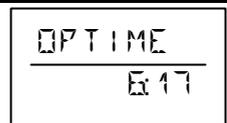
This is the procedure:

- Search for the menu point DURA using the  button
- Select T (time) or LAP (laps) with the handle button 
- Alter the value using the digi-adjustor

Press any menu button (except ) to return to the operating display.

6.5. *Checking the transmitter's operating time*

This menu point can only be used to check the operating time. To erase the data you must proceed to the ERASE menu point.



- Select the menu point OPER using the  button
- The time is displayed in hours and minutes.

Press any menu button (except ) to return to the operating display.

6.6. *Erasing the timer ERASE*

This menu point can be used to erase the following times (or settings):

Item	this value is erased (reset to 0):
L+T	The lap counter and all time memories
NOM	Set nominal lap time
DURA	Time and lap count for the race duration
OPTIME	Operating time

This is the procedure:

- Search for the menu point ERASE using the  button
- M Use the digi-adjustor to select the item you wish to erase
- Hold the handle button  pressed in for longer than 3 sec to erase the data

Press any menu button (except ) to return to the operating display.



7. Model memories

The model memories are used to store all the settings which you have entered for a particular vehicle. These settings include:

- ❖ Modulation (FM/AM)
- ❖ Servo direction, signal format, centre, travels
- ❖ Settings for throttle, brake and steering
- ❖ Timer settings
- ❖ Trim settings

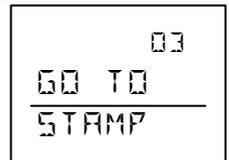
The information in the active model memory is updated when you switch off the transmitter or switch to a different memory.

- ❖ PROFICAR 403 6 model memories
- ❖ PROFICAR 707 12 model memories

The memory space available is generous, and the spare memories can be exploited to experiment with copying model data, or trying out different settings for a particular race track.

7.1. Switching to a different model memory

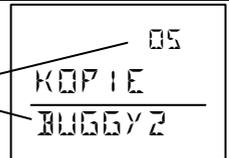
- Search for the menu point GO TO using the  button
- Select the target memory with the digi-adjustor
The screen shows the name, memory number and trim settings.
- Hold the handle button  pressed in for longer than 3 sec to effect the switch.



A long beep confirms the switch, and the screen reverts to the operating display.

7.2. Copying

- Search for the menu point COPY using the  button
- Select the target memory with the digi-adjustor
Number
Name
- Hold the handle button  pressed in for longer than 3 sec to confirm the copy.



The copy process is carried out, and the operating display re-appears. At the same time the transmitter switches to the memory which you selected as destination for the copy. The copy process copies the name as well as all the settings (but not the trims). The previous contents of the target memory are overwritten by the new data.

7.3. Entering the model name

Six letters, numbers or symbols, are available for the model name. The following characters can be used:

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z -- 0 1 2 3 4 5 6 7 8 9

- Search for the menu point NAME using the  button
- The first character flashes, and can be changed using the digi-adjustor.
- Press the handle button  to move on to the next character, and from the last back to the first again.



Press any menu button (except ) to return to the operating display.

7.4. Erasing

There are two methods of erasing the contents of a model memory.

1. VALUES (just erases the variable values)

In this case erasing means: the values are reset to the default settings corresponding to the selected vehicle type.

The vehicle type, model name, servo norm, direction, travels, and AM/FM selection are **not erased**

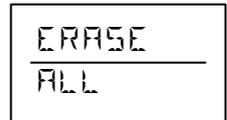


2. ALL (erases all data)

This option resets the model memory completely to the default settings. These include:

The vehicle type STAND (standard) Servo travels 100%

- Search for the menu point ERASE using the  button
- Select the VALUE or ALL option using the digi-adjustor
- Hold the handle button  pressed in for longer than 3 seconds to confirm.



Press any menu button (except ) to return to the operating display.

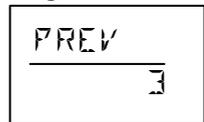
7.5. Reverting to the PREVIOUS state

Any changes which you make to the settings for a particular model are not stored permanently until you switch off the transmitter or switch to a different model. As a result it is possible to switch back to the previous settings, and this is the menu point you use. You can reverse any changes which you have carried out

- ❖ since you last switched memory, and/or
- ❖ since you last switched on the transmitter

This is a very useful option, as it makes it safe and easy to „try something out“.

- Search for the menu point „PREV“ using the  button
- Hold the handle button  pressed in for longer than 3 seconds to confirm the function.



Press any menu button (except ) to return to the operating display.

8. Driving trucks

An outstanding feature of the PROFI CAR is that you can use it to control complex trucks which feature auxiliary functions. The vehicle type „2+5 CH“ makes available a further 5 auxiliary channels in addition to the two primary channels of steering and throttle/brake. The additional channels are controlled by means of the trim rockers (except for A - steering trim), the digi-adjustor and the handle button.

The picture on the right shows the assignment of the rockers to the auxiliary channels **3, 4 and 5**. The steering trim rocker retains its function.

The digi-adjustor controls **channel 6**.

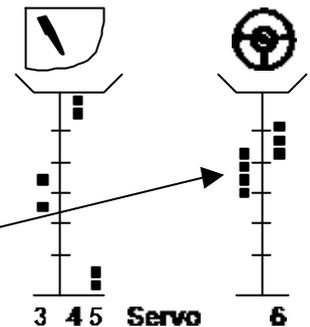


Each of the auxiliary channels 3 to 6 can be operated in three different ways or control modes.

- ❖ PR proportional (25 steps)
- ❖ FL Flashing
- ❖ 3ST 3 stages (left, centre, right)

The screen shot here shows the settings for the auxiliary channels. Servo 3 is at centre, servos 4 and 5 are at their end-points. Servo 6 is proportionally controlled and is about 8 steps away from centre.

The trim setting for the steering remains in the same position on the screen.



When you first select the vehicle type „2+5 CH“ for a model memory, all the auxiliary channels default to the control mode „3ST“.

You can adjust the travel and centre for these functions in the menu point „S-TRAV“ of the  menu (see 8.3).

These are the options for controlling the auxiliary channels 3 to 6:

- **Control mode „PR“ (proportional)**
Every time you press the associated rocker, the servo position alters by one increment or step, and the maximum number of steps is 25. The digi-adjustor controls servo 6 in a similar way.
- **Control mode „FL“ (flashing)**
The term „flashing“ means that the servo switches from centre to one end-point every 0.5 sec. You can switch the flashing on and off by pressing the associated rocker briefly. The digi-adjustor controls servo 6 in a similar way.

- **Control mode „3ST“ (3 stages)**

In this mode the servo switches between centre and one end-point when you briefly press the same side of the associated rocker. If you press the other side of the rocker briefly, the servo switches immediately to the opposite end-point. The digi-adjustor controls servo 6 in a similar way.

We recommend that you simply try out the different control modes with a servo.

Special case: channel 7 is controlled by the handle button .

Channel 7 can only be used in the control mode „2ST“ (2 stages). When you press the handle button, servo 7 runs to its second position, and stays there until you release the button. The position of servo 7 is not shown on the screen.

You can adjust both servo positions in the menu point „STRV“ of the menu  (see 8.3).

8.1. *Selecting the model type 2+5 CH (truck)*

If you just want to experiment with this option for a while, switch to a vacant model memory (menu point „GO TO“).

- Search for the menu point „TYPE“ using the  button.
- Select „2+5 CH“ using the digi-adjustor.
- Hold the handle button  pressed in for longer than 3 seconds to confirm your selection.

Press any menu button (except ) to return to the operating display.

 If you use the vehicle type „2+5 CH“ (TRUCK), **no timer functions are available**, although you can still check the transmitter's operating time.

8.2. *Setting the control mode for the auxiliary channels (menu point „S-NORM“)*

The control modes for the auxiliary channels are located in the same part of the menu where you set the signal format and direction of servo rotation.

- Search for the menu point „S-NORM“ using the  button.
- Search for the servo you wish to adjust using the handle button .
- Use the digi-adjustor to select one of the control modes **PR**oportional, **FL**ashing or **3ST**ages.

Press any menu button (except ) to return to the operating display.

8.3. *Adjusting travel and centre of the auxiliary channels (menu point „S-TRAV“)*

The steering wheel is used to select the servo position to be adjusted for the auxiliary channels.

- Search for the menu point „S-TRAV“ using the „“ button.
- Search for the servo you wish to adjust using the handle button .
- Use the steering wheel to select left (L), centre (□) or right (R)
- Change the setting using the digi-adjustor.

Press any menu button (except ) to return to the operating display.

8.4. *Truck steering and throttle/brake*

The method of setting up these functions is exactly the same as with all other vehicle types (see 1.3 to 1.5).

9. The “toolbox”

The „toolbox“ is opened with the  button, and in it you will find:

❖ **All the settings which apply to the transmitter generally**

When you select one of these settings, the screen displays the symbol „*“ instead of the memory number. This is intended to remind you that the setting you have chosen applies to the transmitter as a whole, and not to a specific model memory. These settings are: user’s name, trigger deadband, display language, battery alarm threshold, and confirmation beep ON/OFF.

The following parameters can be set for **each model memory individually**:

- ❖ **Vehicle type**
- ❖ **Modulation (AM or FM)**
- ❖ **Base settings for the servos („S-NORM“ and „S-TRAV“)**
- ❖ **Increment (step) size for the trims and the digi-adjustor**

Section 9 describes all the adjustment facilities which have not yet been covered.

9.1. *Adjusting the trigger deadband („“ menu, DEADB)*

The deadband for the trigger functions prevents the throttle or brake responding when you simply touch the trigger (or even just shake or disturb the transmitter). The throttle would then jump from Idle ID to Initial Throttle IT, and the brake from „off“ (corresponding to the servo’s idle position) to the Engage Point EP.

The default setting for the deadband is 5%, but you can set it to any value within the range 2% to 20%, depending on how „nervous“ your trigger finger is.

This is the procedure:

- Search for the menu point „DEADB“ using the „“ button.
- Adjust the deadband with the digi-adjustor.

Press any menu button (except ) to return to the operating display.

9.2. Switching between AM and FM („“ menu, AM-FM)

One absolute innovation on the PROFI CAR system is the ability to use the transmitter with AM (amplitude modulation) receivers as well as FM receivers (frequency modulation) without changing the RF module. You can decide which modulation is to be used for each model memory in the menu point AM-FM.

- Search for the menu point „AM-FM“ using the „“ button.
- Select the modulation which matches the receiver in your model using the digi-adjustor.

Press any menu button (except ) to return to the operating display.

9.3. Entering the owner's name („“ menu, NAME)

You can customise your transmitter by entering a name consisting of 6 characters, and this will appear briefly on the screen when you switch on the transmitter. The following characters are available:

A B C D E F G H I J K L M N O P Q R S T U V W X Y Z -- 0 1 2 3 4 5 6 7 8 9

- Search for the menu point „NAME“ using the „“ button.
- The first character flashes, and you can change it using the digi-adjustor.
- Press the handle button  to move on to the next character, and also from the last character back to the first.

Press any menu button (except ) to return to the operating display.

9.4. Selecting the display language („“ menu, TEXT)

The five optional languages for the screen display are:

GER=German, ENGL=English, FRANCE=French, ITAL=Italian, ESPAN=Spanish

- Search for the menu point „TEXT“ using the „“ button.
- Use the digi-adjustor to select ENGL (English)

Press any menu button (except ) to return to the operating display.

9.5. Setting the battery alarm threshold („“ menu, ALARM)

The threshold for the battery alarm can be set to any value within the range 6.80 V to 7.20 V in increments of 0.05 V. The default alarm threshold is 6.80 V.

The higher you set the threshold, the more reserve time you have between the alarm sounding and the transmitter giving up the ghost

This is the procedure:

- Search for the menu point „ALARM“ using the „↶“ button.
- Set the alarm threshold to any value in the range 6.80 V to 7.20 V in increments of 0.05 V.



Press any menu button (except ↶) to return to the operating display.

10. Tips on installing the receiving system in the model

There is usually very little scope for altering the arrangement of the receiving system in a model car, but please take particular care over positioning and deploying the receiver aerial.

The following points are particularly important:

- Keep the receiver as far as possible away from
 - electric motors
 - electrical ignition systems
 - servos
 - batteries
 - cables (especially high-current leads)
- **Deploy the aerial in as straight a line as possible, and run it out of the model by the shortest possible route, arranging it vertically upwards.**
- If you are obliged to shorten the aerial, note that the **minimum length is 40 cm!**
- Never wind up the aerial or leave it coiled inside the model.
- Do not deploy the aerial inside carbon fibre model components, and don't stick or tape it on top of any component which is reinforced with carbon fibre (shielding effect).
- Protect the receiver from vibration (wrap it in foam and stow it loosely in the model)



TIP ! If your model is powered by an electric motor:

Separate the receiving system from the power system by as large a distance as possible, as the high currents in the power circuit can produce interference. Ensure that all electric motors are effectively suppressed.

With electric models it is wise to carry out a particularly thorough range check before you run the model for the first time (see 11.2.).

11. The system in use

11.1. *Post Office Regulations for the U.K.*

Radio controlled models are of two types - those which operate on the ground or on water, known as „surface“ models, and those which operate in the air. The first group includes model cars, trucks and buggies, and also model boats of all types. The second encompasses fixed-wing model aircraft and rotary-wing machines (mainly helicopters).

The frequency bands available for radio controlled models are 26.960 to 27.280 MHz General use, **40.665 to 40.955 MHz (Channels 50 - 79 incl.) Surface only**, and 458.500 to 459.500 MHz General. Since the 26/27 MHz band is also allocated for Citizens Band radio and other users, and the 458/459 MHz band is also available for use by telemetry and other equipment, radio controlled vehicles are generally operated on the the 40 MHz band.

As of 1 January 1981 model control equipment was exempted from the licensing requirements of the Wireless Telegraphy Act 1949. This simply means that no licence is required to operate RC equipment in the U.K. If you need further information please contact:

The Low Power Radio Section, Radio communications Agency
Room 712, Waterloo Bridge House, Waterloo Road, London SE1 8UA

11.2. *Range testing*

The range check is one those procedures which make an important contribution to the operational security and safety of your model. We have many years of experience in this matter, and have carried out many measurements; the result is an effective recipe for a range check which will always keep you on the safe side:

- Collapse the transmitter aerial completely and switch the transmitter on.
- The test should be carried out with the model's motor running. Ask your assistant to hold the model, or pack it up in such a way that the steering system and driven wheels can move freely.
- Check that there are no large metal objects (cars, wire fence etc.) in the vicinity.
- Ensure that no other transmitters are switched on - even on other channels - otherwise the test cannot be expected to give meaningful results.
- Switch on the transmitter, then the receiver. Walk away from the model holding the transmitter, and check the controls constantly. You should obtain a safe range of about 30 m between transmitter and car, with the model still responding immediately and correctly to control commands, without making any unwanted movements.

TIP !

If the effective radio range is inadequate, check the following points:

- ❖ Electric motors and electrical ignition systems may not be adequately suppressed.

- ❖ The receiver aerial may be damaged, too short (less than 40 cm) or badly positioned.
- ❖ Ambient conditions may be poor (damp track surface, metal fences shielding the signal, etc.).

If the range is not sufficient with the aerial collapsed, and you cannot locate the source of the problem as described above, try the following alternative test: extend the transmitter aerial fully, then repeat the check as described above. If the effective range is 1.5 times longer than the farthest reach of the track, you should be safe to operate the system.

- 🗿 If you are still in any doubt - don't risk it and run the model! Take your time to check everything in peace and quiet, so that you can locate and solve the problem before you place your valuable model at risk!

11.3. Care of the transmitter

Protect your transmitter from mechanical damage, temperatures above 60°C (direct sun inside a car), damp, solvents, model fuel, combustion residues and dust. Kindly bear in mind that a rapid change in temperature (e.g. moving the model from a warm workshop to a cold car) can cause condensation on and in the transmitter, and condensation may prevent the unit functioning correctly. If this should happen, it makes sense to carry out a particularly thorough range check, and allow your transmitter plenty of time to adapt to the ambient temperature. Check that the transmitter is completely dry both inside (battery compartment) and out before using it.

Cleaning the transmitter

The best tool for removing dust is a soft paintbrush. The transmitter case can be cleaned with a slightly moist soft cloth and a mild household cleaner.

- 🗿 Check that no fluid gets inside the transmitter.

11.4. Maintenance

Your transmitter contains no parts which require maintenance.

- 🗿 Nevertheless, we strongly recommend that you carry out a range check and examine all the working systems at regular intervals.

What should you do if problems arise or you have queries?

The first stop should be your local model shop, where advice is gladly given.

The addresses of our Service Centres are printed on the last page of these instructions.

For technical queries, and questions regarding the use of the transmitter, please call us on the **MULTIPLEX hotline** on +49-7233-7343.

You can also reach us by E-mail at this address: technik@multiplex-rc.de.

Specification, system characteristics

PROFI CAR 403

PROFI CAR 707

Weight including battery	~ 600 g	
Dimensions (W x H x D)	175 x 210 x 75 mm	
Power supply	6 NC or NiMH cells	
Current consumption		
– including RF module	~ 190 mA	
– excluding RF module	~ 25 mA	
Operating time with RF module		
– 600 mAh NC	~ 2.45 hr	
– 1000 mAh NC	~ 4.30 hr	
– 1500 mAh NiMH	~ 7.00 hr.	
Integral thermal fuse in battery	✓	
Battery alarm		
– Variable threshold	6,8 V – 7,2 V	
Operating temperature range	- 15° C to + 50° C	
Switchable modulation	AM – FM	
Model memories	6	12
Channels (depending vehicle type)	3 – 7	
Steering functions	DUAL RATES/EXPO/SLOW	
Steering trim accept	✓	
Brake functions	EXPO	
Throttle functions	2-point curve with EXPO	
	5-point curve	
Traction-Control	–	✓
ABS (Advanced Braking System)	–	✓
Throttle/brake separate	–	✓
2 nd brake servo	–	✓
2 nd steering servo	–	✓
Selectable signal norm MPX/UNI	✓	✓
Timer/lap counter modes	3	
Lap time memories	50	
2 nd timer for operating time	✓	✓
Nominal time entry	✓	✓
Race duration entry (laps/time)	✓	✓
Selectable display language	German/English	

Menu summary for the PROFI CAR 403 and 707

Menu points with dark background: PROFI CAR 707 only

				
T-CURV <i>Adjust throttle curve</i>	CENTRE	T-MODE	TYPE <i>Select vehicle type</i>	GO TO <i>Switch model memory</i>
BRAKE 1 <i>Brake curve 1 (rear)</i>	TRAVEL	OPTIME <i>Check operating time</i>	DEADB <i>Set trigger deadband</i>	COPY <i>Copy model memory</i>
BRAKE 2 <i>Brake curve 2 (front)</i>	DUAL <i>Threshold and delay for Auto Dual Rates</i>	ERASE <i>Operating time, laps, nominal time, duration</i>	AM-FM <i>Set modulation to suit receiver</i>	NAME <i>Enter model name</i>
ABS <i>Advanced Braking System</i>	SLOW <i>Separate for enter turn and exit turn</i>	TIMES <i>Check times in lap memory</i>	S-NORM <i>Servo norm and direction of rotation</i>	PREV <i>Reverse last change</i>
TC <i>Traction Control</i>	EXPO <i>Progressive and degressive</i>	T-NOM <i>Enter nominal lap time</i>	S-TRAV <i>Select servo travel left/centre/right</i>	ERASE <i>Erase model data entirely or partially</i>
START <i>Activate automatic start function</i>		DURA <i>Enter race duration in laps or time</i>	STEP <i>Select increment size for trims, etc</i>	
			NAME <i>Enter owner's name</i>	
			TEXT <i>Select language for display text</i>	
			ALARM <i>Set battery alarm threshold</i>	
			SOUND <i>Switch beeps off, except battery alarm</i>	

Service addresses:

Belgium	Jean Marie Servais, Jambes	081-304564
France	Claude Hubscher, Strasbourg	03-88411242
Germany	MULTIPLEX Service, Niefern	07233-7333
Netherlands	Jan van Mouwerik, Maasland	01-059-13594
Austria	Heinz Hable, Wien	0732-321100
Sweden	ORBO, Solna	08-832585
Switzerland	Werner Ankli, Zullwil K. Elsener, Basel	0691-7919191 061-3828282

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