Battery and Power Supply Information

Low battery indication

A low battery is indicated when the keypad LEDs start to dim. When only the ‖ and ▶ keys remain illuminated, this indicates that the battery requires changing as soon as possible; further use may result in unexpected behaviour!

Changing the Battery

The ProcessMaster is powered by an internally fitted 9v battery, type PP3 or equivalent (MN1604, 6F22). Alkaline types will give the longest life but rechargeable types can be used if preferred.

To gain access to the battery, firstly ensure the unit is switched off and any cables disconnected, then remove the four screws on the base of the main console. Place the unit right way up and gently lift the lid section away from the base taking care not to place undue strain on any of the wiring. The battery can now be changed. Carefully remove the old battery from its holder and discard (observing any local regulations regarding disposal). Fit the new battery into the holder, observing correct polarity.

To refit the lid assembly to the base, firstly locate the front of the lid on the base and ensure the sensor connector fits in the hole in the front of the base. Taking care not to trap any wiring, fully mate the two sections and replace the screws.

Using a mains power supply

For optimum performance and reliability we suggest you use a plug-in power supply. These are available from RH Designs for customers in the UK and those countries which use the two-pin "Schuko" style European plug, and from local retailers in other countries. Before using a non-RH Designs unit contact us for advice because **INCORRECT VOLTAGE OR POLARITY CAN CAUSE EXTENSIVE DAMAGE TO THE PROCESSMASTER WHICH WILL NOT BE COVERED BY THE GUARANTEE.**

The power connector is located on the rear panel of the unit as shown below.

On-off switch *9v DC Power input socket*
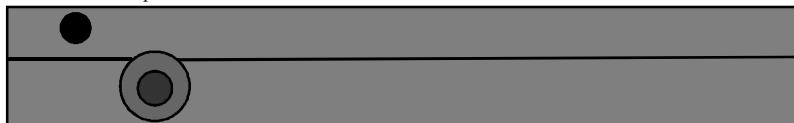
Rear Panel view

ProcessMaster *II*
Compensating Process Timer

IMPORTANT POWER INFORMATION

The ProcessMaster is designed to operate from a 9v supply using a 9v PP3 / 6F22 / MN1604 type battery or from a plug-in DC power supply module. Suitable power supplies are available from electrical retailers. See page 16 for further information.

Incorrect voltage or polarity may cause extensive damage to the unit which will not be covered by the guarantee - please take great care when using a non-RH Designs power supply.

The power supply connector is on the lower rear panel of the unit - refer to the illustration below. Do not change the battery or plug in or unplug a power supply while the ProcessMaster II is switched on. Doing so may damage the sensitive electronics in the unit.

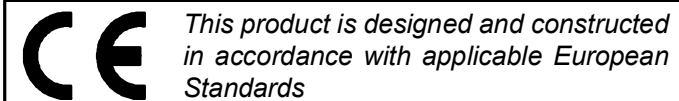*On-off switch*   *9v DC Power input socket*

Rear Panel view

Standby Mode

The ProcessMaster II incorporates a standby mode which it will automatically enter 30 seconds after the last button was pressed. This saves battery life by turning off the display. To wake up the timer, press any key. While the ProcessMaster II is in standby, the decimal point of the Step display will flash. The keypad illumination remains lit. Standby mode can be disabled via User Options.

GUARANTEE

This equipment is guaranteed against faulty components or manufacture for a period of two years from the date of original purchase. Should a fault develop within this period, please telephone us for advice before returning the unit. If there is a fault, we will repair or replace (at our option) the equipment at no charge. This guarantee does not affect your statutory rights. Damage due to misuse of the equipment, and any consequential loss arising out of the use or misuse of the equipment are not covered by this guarantee.

CE — *This product is designed and constructed in accordance with applicable European Standards*

PROCESS 7	CONT y / n		ATC y / n		
	STEP		TIME	TEMP	FACT
1					
2					
3					
4					
5					
6					
7					
8					
9					

PROCESS 8	CONT y / n		ATC y / n		
	STEP		TIME	TEMP	FACT
1					
2					
3					
4					
5					
6					
7					
8					
9					

PROCESS 5		CONT y / n		ATC y / n	
	STEP		TIME	TEMP	FACT
1					
2					
3					
4					
5					
6					
7					
8					
9					

PROCESS 6		CONT y / n		ATC y / n	
	STEP		TIME	TEMP	FACT
1					
2					
3					
4					
5					
6					
7					
8					
9					

Contents

Introduction

Thank you for choosing the ProcessMaster II, the versatile photographic process timer designed by photographers. The ProcessMaster II can be used to monitor all types of photographic processes (film and paper development etc.) as well as many other processes that require a controlled sequence of time periods. A footswitch is provided allowing you to start the timer while keeping your hands free for pouring chemicals etc.

Please spend a little time familiarising yourself with this manual and with the ProcessMaster II's controls before installing it in your darkroom, this will maximise your chances of early success with the product.

We have laid out this manual as a series of operations, beginning with the basic operation of the timer, and then progressing through the more advanced functions such as compensating development. Each operation is described diagrammatically, with detailed notes to accompany the basic description.

Safety Information

Since the ProcessMaster II is designed for use for photographic processing it is envisaged that it will be used in wet areas of the darkroom, and may be operated by persons with wet fingers or become splashed with liquids from time to time. The keypad and display is therefore sealed, and if the timer is operated from its internal battery supply it is inherently safe. If however you operate the unit from an external power supply, this must carry the usual safety approvals (such as a CE mark) and must be plugged into a wall outlet located away from the wet areas of the darkroom so that it is not at risk from liquid splashes or spillage.

If the keypad is splashed, wipe it clean as soon as possible with a damp cloth or absorbent tissue to minimise the possibility of damage. Mild household cleaners such as washing-up liquid can be used to assist removal of stains, but do not use solvent or abrasive cleaners as these will damage the keypad surface. Do not use excessive pressure over the display window or the key areas to prevent damage.

Ensure that no liquids enter the enclosure via the temperature probe or power sockets; should this occur it is possible that the internal electronics could be damaged, and such damage will not be covered by the guarantee.

Features

Programmable 8 process, 9 step timer

The ProcessMaster II can store up to eight different processes in its internal channel memory, and each process can have up to 9 steps. Each step can range from 5 seconds to 120 minutes in length. All programmed information is retained when the

PROCESS 3		CONT y / n		ATC y / n
	STEP	TIME	TEMP	FACT
1				
2				
3				
4				
5				
6				
7				
8				
9				

PROCESS 4		CONT y / n		ATC y / n
	STEP	TIME	TEMP	FACT
1				
2				
3				
4				
5				
6				
7				
8				
9				

Process Memo

Fill these tables in as a ready reference for your programmed processes.

PROCESS 1		CONT y / n		ATC y / n	
	STEP		TIME	TEMP	FACT
1					
2					
3					
4					
5					
6					
7					
8					
9					

PROCESS 2		CONT y / n		ATC y / n	
	STEP		TIME	TEMP	FACT
1					
2					
3					
4					
5					
6					
7					
8					
9					

ProcessMaster II is switched off. Audible beeps prompt for chemical agitation, and an audible countdown sounds during the last ten seconds of a step.

As despatched from the factory the ProcessMaster II is preset with a time of 5 minutes in each step of each process. These can quickly be changed to suit your own requirements. For example you may wish to use Process 1 for b/w printing, Process 2 for film processing, etc. Once you have programmed the timer with your choice of processes, you simply select the particular process you wish to use at any time. Any step can be changed temporarily if required without affecting the stored process.

Tables are provided on pages 14-15 for you to fill in as a reminder of your programmed processes.

Pause / resume / restart / continue functions

Each time step can be paused, restarted and resumed at will. In addition, the ProcessMaster II can be set to run a programme continuously so that no operator intervention is needed between steps, or to pause between steps in which case the subsequent step is initiated by a press of the Start key / footswitch.

"Run-on" mode

In "Run-on" mode, timing continues after timeout and the display shows by how much the programmed time has been exceeded. This can be useful if you want to add some time to a step and can be especially useful in conjunction with the percentage time display (e.g. to add 10% to a step).

Automatic Temperature Compensation (ATC)

The supplied Temperature Probe can be plugged into the socket on the front of the ProcessMaster II and used to measure liquid temperatures for automatic process control. For each of the early process steps (1 - 5) you can instruct the ProcessMaster II to control the development time to give consistent results, over a temperature range of +15 to +30 degrees Celsius. The unit standardises at +20 Celsius and the compensation factor effectively covers most, if not all photographic material combinations. If the temperature rises the timer will speed up, and vice versa. We recommend you use ATC for b+w processes only; colour processes demand closer temperature control and temperature changes can affect colour balance and contrast.

Factorial Development

The ProcessMaster II can be used to control "factorial development" of prints, a method of maintaining consistent print densities as the developer is used up. This method is also known as the "Watkins factor" after its inventor. A range of factors can be programmed in.

Compensating Development

The ProcessMaster II can display development times in percentages, allowing easy implementation of Zone System adjustments and manual compensation for temperature changes during film development.

User Options

You can customise many of the ProcessMaster II's features. The display brightness can be changed, the audible beeps switched on or off, and the power saving standby mode disabled if required.

Terminology

The following frequently used expressions are defined here:

1 **Step**: a single time period such as 30 seconds or 5 minutes, which forms part of a process. Such a step might be development time, fixing time etc.
2 **Process**: a sequence of time *steps* to accomplish a task. For example, a typical black and white paper process comprises four steps - develop, stop, fix, wash.
3 **Channel**: a bank of memory in the Process Master II to store a sequence of time *steps* for a *process*.
4 **Compensation**: an adjustment to a *step*, expressed as a percentage, used to compensate for changes in temperature, contrast etc. For example "20% more development".
5 **Programme**: a sequence of *steps* stored in a *channel*, which represents a *process*.

Setting up

Plug the temperature probe and footswitch, if required, into their respective sockets on the front panel of the ProcessMaster II. If you are using an external power supply (see page 20) plug its output connector into the ProcessMaster II *before* plugging the power supply into the wall socket. Switch on at the wall socket if necessary. Switch the ProcessMaster II on by pressing in the on/off switch situated on the rear panel. This is a press-on press-off switch - press the switch again to switch off. If you are using an external power supply we recommend that you switch off at the mains or unplug the power supply when not using your ProcessMaster II.

Temperature probe connector   *Footswitch connector*   *Fig.1 Front panel connectors*

chemicals in advance and place the containers in the bath as well so that the chemicals are all at the correct temperature prior to processing.

If none of the above work, the probe can be attached to the outside of the tank using something like "Blu-Tak", adhesive tape, or an elastic band. If you do this, make sure the metal casing of the probe is in contact with the tank over as large an area as possible to minimise any errors.

Whichever technique you employ, please take care to minimise the amount of twisting the probe cable has to cope with, to avoid reducing its life. The joint between the cable and the probe itself is leakproof and chemical resistant; however try not to allow any liquid to drip down the cable and into the connector on the ProcessMaster II as this could cause internal damage and won't be covered by the guarantee. Should a spillage occur, wipe clean with a tissue immediately.

Most film/developer combinations require a compensation of 8% per degree Celsius. For example, if the development time at 20ºC is 10 minutes, then at 21ºC it will be 10mins minus 8%, or 9mins 12sec. Note that when ATC is set, the indicated total time does not change - the compensation is achieved by speeding up the "seconds" so in our example, at 21ºC the count down from 10.0mins will actually take 9mins 12 sec.

The time-temperature graph below is reproduced by kind permission of Ilford Photo / Harman Technology Ltd.

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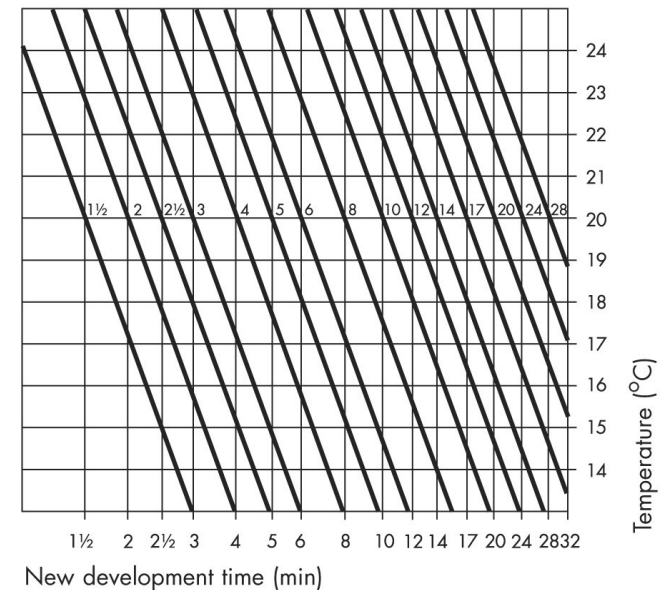
30 second intervals e.g. 5mins 0sec, 7mins 30sec, etc. to maximise the settling time at the start of the step before the first reading is taken.

Positioning the probe is also important, and will depend on the type of processing tank or tray you're using. If you're using open tray processing (for sheet film or prints) simply place the probe in the liquid ensuring at least half its length is immersed. Some hand tanks (e.g. the Paterson type) can use a rotary agitation system - just twist the agitator rod. You may find the probe can be threaded through the agitator (as shown in the picture on the preceding page) in which case it can be left in situ throughout processing.

If you're using inversion agitation, you'll need to remove the probe and re-fit the tank lid prior to inverting the tank. Be sure to replace the probe in good time prior to the next temperature reading. Alternatively you might want to consider fitting the probe to the tank lid as shown in the picture below; this will allow you to invert the tank while the probe remains in the chemicals. You'll need a watertight cable gland, available from electrical suppliers or from RH Designs. Drill a suitable hole in the tank lid, thread the probe cable through the gland and fit the assembly to the lid, tightening the gland sufficiently that it is leak-proof, but do not overtighten.

For rotary processors which use a water bath (such as the Jobo type) simply place the probe in the water bath. However, be aware that the temperature inside the tank may be slightly different to that of the water bath; you will need to do some testing to see whether you need to make any adjustments to processing time.

If your tank doesn't allow the probe to be placed in the chemicals during processing, we recommend the use of a water bath to control the temperature of the chemicals in which case the probe can be placed in the bath. This is good practice anyway and will minimise changes in temperature during processing. Ideally, prepare the

Do not plug or unplug any external connectors while the ProcessMaster II is switched on as this may damage the sensitive electronics in the unit.

Basic Use

In everyday use, operation is generally restricted to selecting the required process using the Process key, then executing it using the Start/Stop and (if required) Pause keys. However, prior to first use you will need to programme your desired process(es) into the timer as shown in the following sections.

The Keypad and Display

The display has four digits. The leftmost digit shows the process step number, the right hand three digits display the time. In addition, all four digits are used to display messages when necessary. Above the time display are thirteen indicator LEDs which show:

- **1 - 8**   Channel number in use. In normal operation these show a steady illumination. The indicators will flash in programming mode. The channel in use is indicated by the right-hand end of the bargraph display.
- **+/-**   Compensation indicator. When illuminated, compensation is in use (temperature or factorial)
- **!**   Warning indicator. Flashes if the probe temperature is out of range, or when temperature compensation has been set but the probe is disconnected
- **%**   Percentage display indicator. Indicates that the time display is showing a percentage of the time remaining, not real time.
- **⇆**   Run-on indicator. Indicates that the programmed time has elapsed and the timer is now counting up.
- **▶▶**   Continuous mode indicator. When lit, indicates that the timer will not pause between steps.

Fig.2 The keypad and display

The keypad comprises eight tactile keys. Most keys have more than one function depending on the operating mode of the ProcessMaster II but in normal operation only the primary function is used. The eight keys are:

- ⏸   Pause key. When the timer is counting, press this key to pause the countdown. When the timer is paused, press ⏸ again to resume the count from the point where it was paused, or press ▶ to restart the step from the beginning.
- ▶   Start key. Press to start the timer. If Factorial Development is set, while the timer is counting press ▶ again to calculate a new time period.
- ▲   Increase Time key. Press to increase by one time step. Press and hold to increase time continuously.
- ▽   Decrease Time key. Press to decrease by one time step. Press and hold to decrease time continuously.
- **NOTE**: changes to the time setting outside programming mode are temporary and will not be stored as part of the programme. See "Time setting and display" below.
- ✗   Clear / Exit key. Press to reset to step one of the process or to exit the current more.
- ✧   User Options key. Selects and sets user options. See "User Options"
- %   Percent key. Press during timing to toggle between percentage and real time displays
- 🗐   Program / Channel key. Press briefly to enter Programming Mode. Press and hold to select a different channel.

The footswitch exactly duplicates the operation of the Start (▶) key.

The keys are described with their actions in the following sections.

Time setting and display

For steps 1 - 5 of any process, time can be set in intervals of 5 seconds up to a maximum of 120 minutes (2 hours). The display can only show three digits so above 9 minutes 55 seconds (shown as 9.55 on the display) the last seconds digit is not displayed. A time display of (for example) 11.4 therefore indicates 11 minutes 40 (or 45) seconds. Due to this limitation, when setting times above 10 minutes be aware that two key presses will be required to change the display, the first press advances the time by 5 seconds as usual but this will not be shown on the display.

For steps 6 - 9 of any process, time can be set in intervals of one minute up to a maximum of 120 minutes (2 hours).

If any step is set to zero time it will be regarded as the end of the process. If a process comprises fewer than 10 steps, the first zero-time step encountered will cause the timer to stop and reset to step 1 automatically, ready for a repeat sequence if required.

During countdown, the time display decimal point flashes to indicate that timing is in progress. Above 99 minutes, the display will change once a minute as it can show

3   Press ⏸ to set Run-On Mode on or off. The display shows Run. on or Run. off as appropriate. As a reminder, the Run-On indicator shows for the step during programming and flashes when in use.

4   Continue programming the channel or press ✗ to return to normal mode.

To toggle the running counter display between seconds and percentage, press the % key. At the end of a step, the display reverts back to time. When the display is showing percentage, the % indicator lights up. The percent display can be used in any of the steps in a sequence. Press % again to return to seconds display.

If a step is set to use Run-On with a percentage display, the display initially starts at -100, quickly changing to -99 and then counts down to 0. The rate at which the display changes will obviously depend on the programmed time as each change takes 1/100th of that time. When 0 is reached, the count starts increasing until it reaches 100 at which point the timer stops automatically.

Getting the best from the Temperature Probe

Note: when progamming a process using ATC, enter all times as though processing temperature is 20ºC (68ºF), even if you intend to use a different temperature when running the process.

For best results when using the Automatic Temperature Compensation (ATC) feature it is essential to know how the probe works and how best to position it. When a process step is specified to use ATC, the ProcessMaster II samples the temperature at intervals of 30 seconds, just before each agitation beep. This allows you to, for example, remove the probe from a hand developing tank in order to invert the tank to agitate the chemicals. Place the probe back in the chemicals as soon as possible after agitation so that it has enough time to stabilise before the next reading is taken. Like all thermometers, the probe requires time to stabilise before a reading is taken, so ideally any step using ATC should be set to a total time which is a multiple of

lower with ▽, to your chosen Factor. If you want to switch off Factorial Development, when the setting is 2, press ▽ one more time and the three horizontal bars will show on the display.

4 For automatic temperature compensation, press the ▽ button, the display will show Atc . Press the ▲ button to switch off compensation and three horizontal bars will show on the display.

5 Press ✗ to save your settings and return to program mode.

6 Press ✗ again to return to normal mode.

To use Factorial Development mode, start the development step as usual and as soon as the image mid-tones start to appear, press ▶ or the footswitch. The display briefly shows FACt and then countdown continues with the new time calculated according to the time elapsed so far multiplied by the Factor.

Note that Factorial timing can be used on any of the first five steps of any process but not on the subsequent steps, and cannot be used in conjunction with automatic temperature compensation.

To use Automatic Temperature Compensation, insert the probe into the liquid 20 seconds before you start step 1 and use the timer as normal; see "Getting the best from the Temperature Probe" for more information.

During Factorial Development or Automatic Compensation, the compensation indicator lights.

Manual Compensation - % display and Run-On mode

It is often necessary to adjust film development times to account for changes in conditions, for push or pull development or for Zone System contrast compensations. Such adjustments are usually expressed in percentages. The ProcessMaster II incorporates a useful Percentage Display Mode, activated at any time with a single button press, in which the remaining time of a step is displayed as a percentage of the programmed time. This makes it easy to stop development at, say, 20% less than the programmed time. The Run-on feature continues to count up once the programmed time has expired so in conjunction with the Percentage Display makes it easy to give for example 10% more development. The Run-on counter mode automatically stops at 100% i.e. double the programmed time but can be halted at any time by pressing ▶ or the footswitch.

Note that Run-on mode can be set on any of the first five steps of any channel but not on the subsequent steps, and once set on a channel, disables the Factorial mode. The percent display mode and Run-On mode can work at the same time as automatic temperature compensation.

To set Run-On Mode:

1 Press ▤ briefly to enter Program mode for the desired channel.

2 Press ▤ again if necessary to select the step in which you want to select Run-On.

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only whole minutes. Between 10 minutes and 99 minutes, the rightmost digit of the display changes once every 10 seconds. Below 10 minutes, the display changes every second.

The displayed time setting can be changed at any time while the timer is not counting, but unless the ProcessMaster II is in programming mode (see "Programming a Channel" below) the changes will not be stored. This allows temporary changes to be made to a process without affecting the stored programme. If a change is made it will remain effective until the step has been executed after which the step will revert to the programmed time setting.

Selecting a Channel

1 Press and hold ▤ until the display shows CHAn. Release the key. The channel indicators along the top of the unit indicate the currently selected channel; the selected channel is indicated by the right-hand end of the bargraph display.

2 Using ▲ and/or ▽ step through the eight different channels until the indicators show the desired channel number.

3 Press ✗ to select the channel and exit to normal operation, or press ▤ to start programming in the times and options. The channel will remain selected until you change to a different channel, even when the unit is switched off.

Programming a Channel

1 Press ▤ briefly. The channel indicators blink to remind you that you are in program mode and the selected channel. The Step display shows 1 and the channel indicator flashes to indicate programming mode. The time display shows the currently set time for step 1, the first step of the process.

2 Using ▲ and/or ▽, change the time until the desired time is displayed.

3 Press ▤ to advance to the next step and repeat 2 as necessary.

4 Repeat 2 and 3 until all desired steps have been programmed.

5 If the process comprises fewer than 9 steps, set the final step to zero to terminate the sequence.

6 Press ✗ to exit and return to normal operation.

Note:

During programming, the step being programmed can be run by pressing ▶.

To set continuous or paused operation, see "User Options" on page 10.

Running a Process

1 Select the desired channel (see Selecting a Channel, page 8). The step display shows 1 and the time display shows the length of the first step.

2 Select continuous or paused mode if required (see User Options, page10).

3 Press ▶ or the footswitch briefly and release. The ProcessMaster II times the first step. If the sounder is turned on (see User Options, page 10) it will beep every thirty seconds to prompt for agitation if required. During the last ten seconds of the step an audible countdown is sounded as an alert.

4 To pause the countdown at any time, press II. The display shows PSE. To resume press II again, or to restart the current step from the beginning press ▶ or the footswitch.

5 To abort a countdown press ✗. The display shows StoP, the current step is aborted and the ProcessMaster II waits for the ▶ key to start the next step (note that even when Continuous mode is selected, aborting a step causes the unit to wait for ▶ before continuing).

6 At the completion of each step the ProcessMaster II pauses and waits for the ▶ key to start the next step, unless Continuous mode is selected when the next step will start automatically.

7 To repeat the process, whenever the ProcessMaster II is paused between steps, press ✗ to reset to step 1. The display shows clr and the process can then be run from the beginning using ▶.

Using the Temperature Probe

See the "Advanced Features" section for full information about setting up and programming the Temperature Probe.

For those processes that require Automatic Temperature Compensation, plug in the temperature probe and place the probe into the liquid whose temperature is to be measured.

For those channels that you have programmed to use Automatic Temperature Compensation, the ProcessMaster II samples the liquid temperature every 30 seconds. If the probe is accidentally left disconnected, a warning Prob is briefly displayed, the ! indicator lights and the unit reverts to standard time. If the liquid temperature goes outside the range of +15 to +30 Celsius, the unit will limit the range of time adjustment and display a warning message Hot or Cold. If additional temperature sampling is required, press ✧ briefly whilst the timer is running. When temperature compensation is active, the compensation indicator flashes.

Note:

Like all thermometers the probe requires some time to settle before reaching a the liquid temperature. To ensure that your compensated development times are accurate, set the probe in place about 20 seconds before you start the timer.

User Options

Several ProcessMaster II features can be customised, and the settings will be retained when the unit is switched off. These option settings apply to all processes, not just that which is currently selected.

To review and / or change the User Options, press ✧ briefly. The display shows USEr. Subsequent presses cycle through the options. The ✗ key stores the settings and exits, any other keypress toggles the option setting. The available options are:

- Continous Operation: The display shows cont. In Continuous mode the ProcessMaster II starts timing the subsequent step as soon as the current step has finished. In Paused mode, the timer stops at the end of each step and waits for ▶ to start the next step. The option settings are on and off. It is a global setting, for every step and channel.

- Beeper: The display shows BEEP. The settings are on and off. If the sound is turned on, agitation reminders occur every 30 seconds and an audible countdown sounds during the last ten seconds of every step. The unit also beeps when a key is pressed. Agitation prompts are a single beep at 30 seconds and a double beep at each full minute.

- Display: The display shows dISP. Option settings are bright or dim display.

- Battery Saver: The display shows SAuE. The options are on and off. If power save is on, the ProcessMaster II "goes to sleep" after 30 seconds of inactivity. The keypad illumination remains lit, and pressing any key will wake the unit up again. If you're using a mains power supply with your ProcessMaster II we recommend you turn this feature off, otherwise leave it enabled to prolong battery life.

Advanced Features

Factorial print development and temperature compensation

Factorial development is a method which improves the consistency of print processing as the developer exhausts or with changes in temperature. Development time is expressed as a multiple (the "Factor") of the time taken for the image first to appear in the developer. So for example if the factor is 4 and it takes 30 seconds for the first signs of an image, the required development time is 4x30 seconds, or two minutes. If, later in the session, the time taken for the first signs of an image is 40 seconds, total development time would be 4x40 seconds, and so on. Factorial development is generally useful only with fibre-based black and white papers as they do not have developer in their emulsions. The ProcessMaster II can work out the total development time based on your preferred Factor which can be in the range 2 to 9. We suggest using a factor of 6 as a good starting point.

Automatic Temperature Compensation (ATC) is a system which allows the user to set the standard processing time for 20 Celsius after which the time is automatically adjusted should the temperature change; the timer will count faster for higher temperatures, or slower for cooler temperatures. In the ProcessMaster II the compensation factor is approximately 8% per degree Celsius. Standard films and developers, such as those from Ilford, assume 8% per degree.

The Factorial setting or Automatic Temperature Compensation setting can be set, individually for each channel, with the same menu:

1 Press 📄 briefly to enter Program mode in the desired channel.

2 Press ✧ to review the current setting. The default is no compensation, shown as three horizontal bars.

3 To set factorial development, press the ▲ button, the display will show fc 2 where 2 is the factorial setting. Further presses using ▲ increase the factor or