

RPC-80

Playback unit

Manual - 2

Configuration

March 2007

REDPOST

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GENERAL DESCRIPTION

Using the configuration section you can tailor the operation of the RPC-80 playback unit to suit your exact requirements. When you have made your chosen settings you return to the normal operating mode and the normal simplicity of control.

These instructions for configuration are offered in a separate manual because it is not necessary for everybody involved with the day to day operation of the RPC-80 to be familiar with them. This manual assumes that you are reasonably familiar with the normal operation of the RPC-80 as described in Manual-1.

The RPC-80 is supplied in a "default" configuration with many of the features described in this manual turned off. It is perfectly possible to continue to use the playback unit in that form but the extra features, once set up correctly, can extend the usefulness of the whole monitoring system.

The setting section allows you to control and adjust some features such as the clock without entering the configuration section. This section is described in Manual-1.

ENTERING CONFIGURATION SECTION

The configuration section is protected by a simple password system that is designed more to prevent inadvertent operation than to deny access to a determined person.

To enter the configuration section, first enter the setting section in the normal way by switching on and holding down any button until the opening display of time and date is over. This is described in more detail in Manual-1.

Choose SET CLOCK and then RESET DATE AND TIME. Change the year number to the password number in just the same way that you would set the year. The clock and calendar will not be disturbed by this but, if you have set the correct password number, you will move into the configuration section. The password number is 1991.

The first display asks you to please read this manual before continuing and it is important that you should at least have this manual ready to refer to before starting to change any settings.

GENERAL OPERATION

The display and the buttons

The general principle behind the controls of playback unit is covered in Manual-1 and repeated here with an extra section on setting letters for such things as channel names.

The two line display tells you what is going on or asks you a question using the top line. The bottom line is used to label the buttons. Not all the buttons are labelled every time. If a button does not have a label then pressing it will have no effect. Every time you press a button you hear a short beep to confirm the action. The buttons are covered to make them splash-proof and so you should press them firmly. If you do not hear the beep then you may not have pressed the button hard enough.

Some displays have two things to tell you at once and they do this by alternating two displays: both on the top line. One will be the main display and will be shown first and for longer than the secondary display. Any buttons will be labelled on the bottom line as usual.

Some displays have too much information to fit onto one or two lines. In this case both lines are given over to the main display and two right pointing arrows show you that there is more to follow on the secondary display. If there are any buttons on this type of display they can only be on the secondary display.

Menus & repeating buttons

Sometimes the display shows you one of a list of options and you can move forward and backward through the list using the buttons. This is called a menu. The centre and right hand buttons are both labelled MORE (i.e. more options available) but with right and left pointing arrows to show the direction of movement through the list. If you hold either of these buttons down it will repeat its action so that you can step through the list quite fast. When you are stepping forward and you reach the last item on the list your next step will be to the first item. Similarly when stepping backward the list loops round from the first to the last item. The left hand button, meanwhile, is labelled OK and you press this button when the option you want to select is showing on the display.

Whenever a menu is shown for the first time the menu option showing will be the current setting of that particular parameter.

Setting numbers

Sometimes the display shows you a number that you can change. An example would be the day of the month. The first time the number is shown there will be two buttons labelled OK and CHANGE. Press OK if you do not need to change the number at all, otherwise press CHANGE. If you opt to change the number, a flashing cursor appears under the first digit of the number and the centre and right hand buttons are labelled "-" (minus) and "+" (plus). The minus button reduces the number while the plus button increases it. If you hold down either of these buttons it will repeat its action. The left hand button is labelled DIGIT OK and you press this button each time a digit is correct. The cursor then moves to the right, under the next digit.

When all the digits have been adjusted the display changes again to the one with two buttons labelled OK and CHANGE. This gives you a chance to change your mind if you have made a mistake. If everything is correct press OK.

When changing the digits you will notice that only numbers that make sense in any particular situation are possible. For example, you will not be able to set the date to the 38th of the month.

Setting letters

Sometimes the display shows you a name that can consist of letters and numbers that you can change. An example would be a channel name. The method of setting a name is very similar to that for numbers described above.

The first time the name is shown there will be two buttons labelled OK and CHANGE. Press OK if you do not need to change the name at all, otherwise press CHANGE. If the name has not been set up before you will be shown a blank. There will always be inverted commas ("...") or square brackets ([...]) to show you where the name will appear and how long it can be.

If you opt to change the name, a flashing cursor appears under the first character of the name and the centre and right hand buttons are labelled "-" (minus) and "+" (plus). The minus button moves backward through the alphabet while the plus button moves forward. If you hold down either of these buttons it will repeat its action. The left hand button is labelled OK> and you press this button each time a character is correct. The cursor then moves to the right, under the next character.

Only the numbers 0 to 9, a blank or space, a full stop (.), an oblique stroke (/) and uppercase letters A to Z are offered as you move through the alphabet with the minus and plus buttons. If the name is shorter than the maximum size allowed then you should leave the remaining characters as spaces and step through each one with the OK> button.

When all the characters have been adjusted the display changes again to the one with two buttons labelled OK and CHANGE. This gives you a chance to change your mind if you have made a mistake. If everything is correct press OK.

THE MAIN MENU

The various parts of the configuration section are grouped under the headings of the main configuration menu. These menu headings are used as the headings for the manual sections that follow.

GENERAL FORMAT SETUP

This section covers the general format of the printed text, graphs and display.

SELECT LANGUAGE allows you to choose the language that will be used for all the text and displays. The language you choose comes into use at once and applies to all the monitors used with this playback unit. Some of the older 100 Series PU monitors are programmed with French language text and displays. When these monitors are used with the RPC-80 they produce text and displays in the language set here by the SELECT LANGUAGE menu.

SELECT DECIMAL POINT offers a choice of two number display formats using the dot (99.9) or the comma (99,9) to separate the integer part from the fractional part of the number. No separators are offered between the thousands. The chosen format applies to all printed output, displays and pre-processed data output on the External Link.

SET GRAPH FORMATS leads you into the settings for all the graph variables and introduces the idea of user formats.

User formats

The RPC-80 is supplied with all the format details pre-set to standard values and you do not need to change any item that you are happy with or that does not apply to your installation. Just press the OK button when you are shown an item and it will remain as it is. Remember that when you are first shown an item the display will show the current setting or value of that item.

PU user

FORMAT FOR PU USER sets up the graph format for use with PU monitors.

Choose from the following units:-

For temperature channels; °C or °F.

For pressure channels; bar, lb/in² or kg/cm².

The chosen units apply to all printed output, displays and pre-processed data output on the External Link and apply to all PU monitors used with this playback unit. The older 100 Series PU monitors were programmed with various units as requested by customers at the time of purchase. When these monitors are used with the RPC-80 they produce all output in the units set here by the UNITS menu.

Choose the starting point of the temperature and pressure graph scales.

Choose the size of the graph major division steps for the temperature and pressure graph scales.

For maximum clarity and ease of interpreting the graph you should choose the starting point and step sizes from the numbers 0, 1, 2, 5, 10, 20, 50 etc. The starting point can be a negative number but the step size must be positive.

The total span of each scale will depend on the step size you choose and the number of major divisions that fit onto a page. This depends on the graph style (see below) and the paper size you are using. Remember that the scales run across the shortest dimension of the page.

Choose the graph style.

You can choose inch or metric sizes with major graph divisions of one inch or 20 millimetres. Fewer major divisions will fit onto the page with the inch size but the graph will have greater resolution and therefore show slightly more detail.

You can also choose the type of grid that is printed as a background to the graph. The standard grid with major divisions and tenths accurately divides each grid square into tenths and makes the graph easier to interpret. Turning the grid off completely will result in slightly faster graph printing in most cases.

Head space correction

Monitors that measure pressure in cans and bottles use a pressure sensor inside the instrument that connects to the container via a quick release coupling and a fine flexible tube. This inevitably causes a slight increase in volume which slightly disturbs the pressure in the container. If the theoretical volume of the head space of the container is known and entered into the RPC-80 then the unit can make a first order correction for the error. The pressure sensor connections must be cleaned out after each run so that the pipe and coupling are empty if this error correction is to operate correctly. The error is only significant when head space volume is less than about 20 millilitres. The maximum correction allowed will increase the recorded pressure by 5%. You may choose not to make this correction if you use many different sizes of container and print all the results with one RPC-80.

HEAD SPACE CORRECTION? allows you to choose whether to make the correction. HEAD SPACE VOLUME allows you to set the theoretical volume in millilitres (same as cubic centimetres).

The correction will be applied to printed output, displays and pre-processed data output on the External Link from the pressure channel of all 200 & 300 series PU monitors used with this playback unit. If you choose to make this correction then the head space volume will be printed on the results page with the pressure channel results.

Channel names

Monitors with more than one channel are shown on the graph with several traces identified by numbers. It is helpful to be able to give the channels names as well as these numbers. Channel 1 should always be used in PU monitors for the temperature of the product being pasteurised and so this channel could perhaps be named "PRODUCT". The second channel could be used to measure the water spray temperature in the pasteuriser and so could be named "SPRAY". These names appear on the printed results and help to make them easier to interpret.

SET CHANNEL NAMES lets you set up names for the three possible channels of the PU monitor. The names can have up to 15 characters (letters or numbers). Channels 1 and 2 are temperature channels; channel 3 is the pressure channel. When used with monitors having fewer than three channels the extra names are ignored. The names you set apply to all PU monitors; you cannot set different names for individual monitors.

Note. Channel 3 name is **always** used for the pressure channel. The older 100 Series RPT-122 pressure monitor has only two channels. The pressure channel is channel 2 and will use trace No 2 on the graph but will use the name you set here for channel 3.

After you have set up the graph format for the PU monitor user you will be returned to the SET GRAPH FORMATS display where you can exit this part of the setting section by pressing the CANCEL button. If you continue by pressing the OK button you can make further changes to the formats.

Leaving Graph Formats section

After you have set up the graph format for the PU monitor user you will be returned to the SET GRAPH FORMATS display where you can exit this part of the setting section by pressing the CANCEL button. If you continue by pressing the OK button you can make further changes to the formats.

All the graph format settings are printed on the Status Report for the RPC-80. See Manual-1.

PU CALCULATION SETUP

This section covers the selection of PU calculation constants and of the PU Cut-off temperature.

Pasteurisation units

Experiments on mixed populations of the common brewery contaminants have shown that at temperatures over about 50°C there is a ten-fold increase in kill rate for every 7°C increase in temperature. For example, if the time required to kill a population of contaminant cells at 60°C is found to be 5 minutes then if the temperature were to be increased to 67°C the time required would be only 0.5 minutes. The Z Value is defined as the increase in temperature required to produce a ten-fold increase in kill rate. The Z Value in this case is therefore 7°C.

For beer the Pasteurisation Unit (PU) has been defined (arbitrarily) as the biological destruction observed when beer is held for one minute at a temperature of 60°C. This temperature, where 1 PU per minute is achieved, is known as the Base Value: 60°C in this case. The same definition of the PU is often used for soft drinks and other beverages but, where there is a possibility of spore-forming bacterial contamination being present, very much higher temperatures are required for pasteurisation and so other definitions are in use outside the brewing industry. Experiments have shown that Pasteurisation Units are additive in their effect in situations where the temperature is changing such as in the tunnel pasteurisation process.

If you select STANDARD PU CALCULATION then the Base Value will be set to 60°C and the Z Value to 7°C. (If the temperature units have been set to Fahrenheit then the Base value will be set to 140 °F and the Z Value to 12.5 °F.) These are the normal settings for beer production.

If you select CUSTOM PU CALCULATION then you will be able to set up any Base Value and Z Value that you require. Settings will depend on conventional practice in various industries.

The PU calculation that you choose will apply to all PU monitors that use this RPC-80 playback unit.

PU cut-off temperature

At temperatures below about 50°C it is doubtful that any significant pasteurising effect is achieved even though from a strictly mathematical point of view the correct PU total could still be obtained, given enough time in the pasteuriser. For this reason it is desirable to set a temperature level below which no PUs are added to the total. This is known as the PU Cut-off temperature.

The PU Cut-off temperature is initially set to 50°C (122 °F) but you can set any temperature that you require. Higher settings will give a more conservative picture of total PU achieved.

The Cut-off temperature that you choose will apply to all PU monitors that use this RPC-80.

Dual channel monitors

It is possible to set up different PU Cut-off temperatures for channel 1 and channel 2 on dual channel monitors. This can be useful when setting up a pasteuriser and when comparing the effect that changes in the Cut-off temperature have on total PU achieved.

It is also possible to turn off the PU calculation on channel 2 of a dual channel monitor. Where the second channel is monitoring pasteuriser spray temperature there is no requirement to calculate the PU total achieved and the lack of PU figures make the results easier to read. You will be asked the question PU ON CHANNEL 2? with buttons marked YES and NO for your reply.

The PU calculation and Cut-off that you choose are printed on the Status Report for the RPC-80. See Manual-1.

100 & 300 Series PU monitors

The PU calculation and Cut-off temperature that you choose will apply to all PU monitors that use this RPC-80 playback unit. This means, for the 100 & 300 Series monitors, that their own internal settings for PU calculation and Cut-off will be over-ridden. You may therefore get different results when you print out the 100 Series monitor on the older RPC-42 printer/charger or display the results on the monitor's own display. The advantage of having all the control in the RPC-80 playback unit is that it is very easy to maintain a common standard across all the monitors in an installation. Changes in that standard are easily handled without individual modifications to all the monitors.

PU cut-off and the graph

The PU Cut-off temperature is printed on the graph as a dashed line so that it is easy to see the area where the temperature trace exceeds the Cut-off and where PUs are being added to the total.

In the case of two different Cut-off levels being set, they cannot both be shown on the graph when the RPC-80 is used with a multi-channel monitor. However, the channel 1 Cut-off will be shown when the RPC-80 is used with a single channel monitor. If there is no PU calculation on channel 2 then the Cut-off will only be shown on the graph if channel 1 is active.

MONITOR SETUP

This section covers setting up a 200 or 300 series PU monitor from the playback unit.

Unlike the other setup sections, the changes you make here will apply only to the monitor that is connected to the RPC-80 at the time.

The monitor must be switched on and connected before you start the setting procedure. Switch on the monitor before connecting it to the RPC-80.

Active channel setup

At first the SELECT ACTIVE CHANNELS display alternates with the serial number of the monitor that you have connected. Press the OK button to start.

You will be presented with a display showing all the possible input channels of the monitor with a tick (4) next to the active ones and a cross (X) next to the inactive ones. If you want to change the status of any of the channels press the CHANGE button. If everything is as you want it then press the OK button.

Having decided to make any changes you use the OFF and ON buttons to change the active/inactive status of the channel shown by the flashing cursor. A tick (4) shows an active channel and a cross (X) shows an inactive one. The OK> button moves the cursor to the next channel. When all the possible channels have been set the display changes again to the one with two buttons labelled OK and CHANGE. This gives you a chance to change your mind if you have made a mistake. If everything is correct press OK.

Monitors are despatched with all channels active. You can make the temperature channels of a PU monitor inactive on a temporary basis by using dummy plugs. You might wish to use this part of the configuration section to make a more permanent change. You cannot use dummy plugs for the pressure channel of the PU monitor and so you must use this method of making channel inactive.

There are advantages in making channels inactive when you do not require their information. There will be no irrelevant information in the graph or the results. Each record will take less space in the monitor's memory and so longer recording times may be possible. Inactive channels are not checked for correct probe operation and so you can run with damaged probes.

All sockets must always be occupied with a probe, a test plug or a dummy plug before a PU monitor is sent through the pasteuriser. The pressure channel of a PU monitor can be left unconnected.

You cannot make all the channels of a monitor inactive. If you try to do so, channel 1 will be set active. The active channel setup is therefore not available for single channel monitors.

Monitor ID setup

Each monitor can be given its own identification, which is separate from the manufacturer's serial number. This ID can be your own factory instrument number or similar identification. The ID will appear on the printed results page. This type of ID may be required for BS 5750 (ISO 9000).

At first the SET MONITOR ID display alternates with the serial number of the monitor. Press the OK button to start. Set up the ID as required. The ID can have up to 15 characters (letters or numbers) and you can change it at any time. The ID can also be left blank if you do not require it.

The active channels you select and the instrument ID that you choose are printed on the Status Report for the monitor. See Manual-1.

Neither of these setting procedures is available for the older 100 Series PU monitors.

RPC-80 SETUP

This section covers the display contrast, cal-check and back-up battery of the RPC-80 playback unit.

Display contrast

SET DISPLAY CONTRAST allows you to adjust the RPC-80 display to give the desired contrast between the dots that form the characters and the background. Use the LESS and MORE buttons as required. The buttons do not repeat if held down. The display is adjusted for good readability before despatch.

Cal-check setting

The cal-check or calibration check feature of the 200 & 300 series PU monitors performs a simple test that checks the monitor input circuit and input socket. This applies to the temperature channels only. Test components are built into the lead that connects the monitor to the playback unit. The playback unit keeps track of these checks for each monitor. You can select the frequency of the checks in this part of the configuration section.

Each time a monitor is connected to the RPC-80 it first finds out how recently the cal-check has been performed on that monitor and whether all channels passed. The RPC-80 then calculates if another check is due according to the chosen setting.

The cal-check takes place with fixed inputs that represent 60°C and the actual readings are shown as well as the pass or fail result. Channels are checked even if they have been set inactive. For monitors with several temperature channels the check is performed on all at the same time with pass or fail shown for each channel. In this case a fixed 60°C test plug is required for all but the first channel. The pass and fail criteria are based on the original specification of the monitor. If the monitor fails the cal-check it can still be used if you wish; it is not banned from operation in any way.

The SELECT CAL-CHECK TIMING menu gives you the choice of daily, weekly or monthly checks. You can also choose to never check. The setting you choose applies to all 200 & 300 series PU monitors that are used with this playback unit. The RPC-80 is despatched with the cal-check turned off. The date of the last successful cal-check is printed on the Status Report for the monitor. See Manual-1.

The cal-check does not apply to the older 100 Series PU monitors.

RPC-80 ID setup

Each RPC-80 can be given its own identification, which is separate from the manufacturer's serial number. This ID can be your own factory instrument number or similar identification. The ID will appear on the printed status report for the playback unit. This type of ID may be required for BS 5750 (ISO 9000).

The SET RPC-80 ID display introduces this section. Press the OK button to start. Set up the ID as required. The ID can have up to 15 characters (letters or numbers) and you can change it at any time. The ID can also be left blank if you do not require it.

Back-up battery

This small back-up battery maintains the clock and calendar functions while the mains power to the RPC-80 is switched off. It has no connection with the batteries in the monitors.

The battery should last approximately ten years but we recommend that you replace it every seven years. The date that the battery is fitted is saved in the RPC-80 and a warning starts to be issued every week after the battery is seven years old.

When it becomes necessary to replace the battery you will need to record the date of the change so that any present 7 year warning messages are cancelled and future 7-year warnings can be issued correctly.

After setting the RPC-80 ID as above you will see FINISHED RPC-80 SETUP? Normally you will press the YES button and return to the main menu. This display is really a screen to "hide" the battery date setting section from accidental use. Obviously it is important not to change the battery fitting date unless you have actually fitted a new battery.

If you answer NO to FINISHED RPC-80 SETUP? the display will change to RPC-80 BATTERY CHANGE with YES and NO buttons. This display alternates with one showing today's date. Press YES only if you have just fitted a new battery. If the date is incorrect you will get a chance to change it later.

The display now changes to IS DATE CORRECT? still alternating with the date display. If you need to change the date press NO. The date in the RPC-80's calendar can now be changed. After changing the date you will be returned to the IS DATE CORRECT? display. The CANCEL button allows you to leave this section without changing any calendar settings and without disturbing the battery fitting date. Press YES only if you have just fitted a new battery and the date is correct. The battery fitting date will be recorded.

Do not change the battery fitting date unless you have just fitted a new battery.

FULL LIST SETUP

This section covers the control of full list printing.

As well as the normal graph and results it is possible to obtain a printed list of all the recorded data from a PU monitor. This will be printed after the main results page. In this part of the configuration section it is possible to choose the circumstances under which the full list will be printed. The list can be printed automatically or the operator can be left to decide if it is required. The graph gives such a detailed picture of the recorded run that the full list of all results is seldom needed.

The list shows the data for all active channels in tabulated format using the selected units. The time elapsed since the start of the file is shown in "hours : minutes : seconds" format.

Long recording runs at short recording intervals on PU monitors with several channels will generate a very large amount of data and this can run to tens of printed pages. If the list is enabled and would take up many pages the operator is always offered the chance to abandon it before it starts.

There are five choices in the full list menu and these are described below.

NEVER PRINT FULL LIST

The list is never printed and the operator is never asked if the list is required. Playback units are despatched with this setting.

ALWAYS PRINT FULL LIST

The list is always printed without any intervention by the operator. If the list would take up more than 4 pages the operator is offered the chance to abandon printing before it starts. This setting could be used when special tests are being run while setting up a pasteuriser or if particular problems are being encountered but it is not recommended for normal use.

ALWAYS ASK

At the end of every print out the operator is asked if the full list is required. The display shows the simple question PRINT FULL LIST NOW? with YES and NO buttons for the reply. If the list would take up more than 4 pages the operator is offered the chance to abandon printing before it starts.

PRINT AFTER PROBLEMS

The list is always printed, without any intervention by the operator, after a run in which a problem is encountered. A "problem" in this case is an off scale reading or zero PU achieved on any active channel. If the list would take up more than 4 pages the operator is offered the chance to abandon printing before it starts.

ASK AFTER PROBLEMS

At the end of a print out in which a problem has been encountered the operator is asked if the full list is required. The display shows the simple question PRINT FULL LIST NOW? with YES and NO buttons for the reply. A "problem" in this case is an off scale reading or zero PU achieved on any active channel. If the list would take up more than 4 pages the operator is offered the chance to abandon printing before it starts.

PRINTER SETUP

This section covers the choice of printer and paper size.

Printer type

The SELECT PRINTER TYPE menu offers a choice of printers by name.

Only the Hewlett-Packard PCL3 setting is available on this version of the RPC-80. (March 2007)
The Hewlett-Packard 'PCL3' setting is correct for several Hewlett-Packard ink-jet printers and Laser printers. Certain other laser printers can also be used with this setting.

A list of currently recommended printer types can be supplied upon request.

If the RPC-80 is supplied together with a printer then it is despatched set ready for that printer.

All printers are used for black printing only even if they are capable of printing in colour. With certain types of ink-jet printer you may need to install both colour and black ink cartridges even for black only printing. See the printer's manual.

Paper Size

The SELECT PAPER SIZE menu offers a choice of UK, USA and European paper sizes by name and dimensions.

The RPC-80 is despatched set for A4 paper size.

It is important to set the correct paper size in this section before attempting to use the printer. You will normally also need to set the paper guides on the printer to suit the chosen paper size. You should never change any of the printer switches - all necessary changes are made by signals sent to the printer by the RPC-80.

Note. The US Legal paper size is available from the menu but you may find this size is difficult to use with some printers. The paper is so long that some sheet feeders do not support it correctly.

EXTERNAL LINK SETUP

This section covers the serial format settings and use of the External Link.

The External Link menu allows you to set the serial format for communications on the link.

A series of menus lets you choose the:-

Baud Rate (300 to 19200)
Number of Data Bits (7 or 8)
Number of Stop Bits (1 or 2)
Parity (None, Odd or Even)
Handshake (Hard or Soft)

All these must be set up to match the serial format of the external computer connected to the external link.

The final menu in this series lets you select the type of serial handshaking as either HARD HANDSHAKE RTS/CTS or SOFT HANDSHAKE XON/XOFF. These terms are explained in more detail below under the sub-heading "Serial Handshaking". The handshaking must be chosen to match that of the external computer connected to the external link.

External Link socket

The External Link socket is a female 25 way "D" connector arranged in the RS232 Data Terminal Equipment (DTE) format. The connections are:-

Pin	Signal Name		in/out	notes
1	Chassis ground			
2	Transmit Data (TXD)		out	
3	Receive Data (RXD)		in	
4	Request to Send (RTS)		out	hard handshake
5	Clear to Send (CTS)		in	hard handshake
7	Signal ground			
14	(test signal)		out	fixed "Off" (-9 volts)
20	Terminal Ready (DTR)		out	fixed "On" (+9 volts)

Serial handshaking

When serial communications take place between two parties there may be times when either party is temporarily unable to receive data. In order to prevent data from being lost the communication is controlled by a handshake system that signals to each party when the other party is ready and able to receive.

Hard Handshake

In the Hard Handshake system the handshaking is managed by two extra signal connections. The signals are described below from the point of view of the RPC-80.

Clear to Send (CTS) is an input to the RPC-80 that controls the transmitter in the RPC-80. The signal comes from the RTS or DTR output of the external computer. When CTS is On the RPC-80 will transmit its data, when CTS is Off the RPC-80 will wait and not transmit.

Request to Send (RTS) is an output from the RPC-80 that must control the transmitter in the external computer. The signal usually goes to the CTS input of the external computer. When RTS is **on** the RPC-80 is ready and able to receive data and the external computer can transmit, when RTS is **off** the external computer must wait and not transmit.

During Hard Handshake the characters used for Soft Handshake control should not be used. If they are received by the RPC-80 they will be treated as normal data characters which may produce errors.

Soft Handshake

In the Soft Handshake system the handshaking is managed without extra signal connections by sending handshake characters mixed in with the data characters. These handshake characters are known as "XOn" and "XOff".

When either party is unable to receive it sends the XOff character to the other party. When either party receives the XOff character that party must stop transmitting and wait.

When either party is again ready to receive it sends the XOn character to the other party. When either party receives the XOn character that party can re-start transmitting.

At the start of communications it is assumed that both parties are ready to receive until they signal otherwise. In practice the RPC-80 sends XOn after you switch it on to indicate it is ready.

The XOn character is fixed as	ASCII DC1 / Hex 11 / Decimal 17
The XOff character is fixed as	ASCII DC3 / Hex 13 / Decimal 19

During Soft Handshake the signals used for Hard Handshake should not be used. On the RPC-80 the RTS output is always **on** and the CTS input is ignored. No connection need be made to either signal.

Serial input buffer

The serial data received by the RPC-80 first enters a buffer. In both handshaking systems the "Not Ready" signal or character is sent by the RPC-80 when the buffer becomes 75% full. When the RPC-80 has used enough data from the buffer so that it is only 50% full then the "Ready" signal or character is sent. In this way there is some tolerance for data to continue to arrive after the "Not Ready" signal has been sent and after the "Ready" signal has been sent there will be capacity for a reasonable amount of continuous reception. The size of the buffer is fixed at a total of 255 data characters.

"DIALOG" LANGUAGE

We have developed the DIALOG data logger control "language" to act as a common interface between all our new instruments. This allows any of the recording instruments to be controlled and interrogated by the RPC-80 playback unit. An external computer can also send DIALOG messages via the playback unit to the monitor itself. DIALOG allows you access to all functions except certain factory test and set-up procedures. DIALOG only applies to the 200 & 300 series PU monitors. All data output will be in the units and number format of the monitor connected to the playback unit. Any pressure readings will not have the head space volume correction.

An external computer can also use DIALOG "Escape Scripts" to communicate with the playback unit to obtain data in a pre-processed format from all types of monitor including the older 100 series PU monitors. In this case the data output will be in the units, number format and language chosen for the playback unit. Any pressure reading correction that you have selected will be applied to the data just as it is to the printed results.

The Playback unit and the Monitors can be operated without any knowledge of DIALOG; only if you wish to connect an external computer via the external link and write special control software is there any need to consider it. The DIALOG manual is available on request.

DATA TRANSFER TO PERSONAL COMPUTER

The optional Redlink 2 software allows you to easily transfer results from the RPC-80 to any IBM[®] PC or compatible personal computer that has a serial port. The software is supplied with an interface cable and full instructions and can be used with Microsoft Windows[®]. It automates the use of the DIALOG Escape Scripts so that results can be transferred from all types of Redpost PU monitors in the units, number format and language chosen for the playback unit.

Full details of the External Link settings that you need to make are included with the instructions for the Redlink 2 software.

FIRMWARE UPDATE

The firmware (internal software) that controls the RPC-80 can be updated if new features become available. This is done via a connection to a suitable IBM[®] PC or compatible personal computer. The firmware update kit includes a computer disc, the required connecting lead and full instructions.

When the RPC-80 is first switched on the display shows the code letter for the firmware version currently installed. It appears as a letter in square brackets, e.g. [S]. The complete software version number and code letter is printed on the Status Report for the RPC-80. See Manual-1.

FINISHED SETUP : EXIT

Choose this option when you have finished using the configuration section. The RPC-80 playback unit will return to normal operation.

All the settings you have made will apply to the next print out that you make and will remain in force until you change them. All the settings are remembered when mains power is removed from the RPC-80.

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