

200 Series

PU Monitor / PU & Pressure Monitor

Operating

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OPERATING THE 200 SERIES P.U. MONITORS

1 Switch on the P.U. monitor by bringing either end of the magnetic actuator close to the rectangle marked "CONTROL" The round lamp will flicker quickly for a short time to show that the monitor is responding to the actuator. Remove the actuator.

The monitor is now idle. The round lamp flashes once every second.

2 Connect the probes. Start recording by operating the control with the actuator. The round lamp flickers to show the monitor is responding.

The monitor is now recording. The round and the square lamps flash alternately.

3 Stop recording by removing one of the probes or by operating the control again. Recording also stops after the recording timer runs out. (The monitor is normally supplied with this timer set to 4 hours.)

The monitor is now ready to print out or to record again. The square lamp flashes once every second.

4 To record again, start recording in exactly the same way as described in (2) above.

After the second recording is finished the square lamp flashes twice, pauses for one second, flashes twice etc. etc. to show that there are two files recorded.

Up to 4 files can be recorded in this way. After each recording the flashing square lamp will show the number of files recorded.

When you have recorded your files you then connect the monitor to the RPC-80 playback unit to print out the graphs and other results from the recorded files. The RPC-80 manual will guide you.

The operating information for the monitors is also shown in graphical form on the enclosed quick reference sheet.

SWITCHING ON AND OFF

The monitor does not have a separate on/off switch. The first time you operate the control it will switch on. If you leave it idle (the round lamp flashes once per second) it will wait for 15 minutes and then switch off.

However, when there are any recorded files (the flashing square lamp showing the number of files recorded) the monitor will try to preserve those files and will **never** switch off until the battery is completely flat.

After printing the files on the RPC-80 you will be asked if you are ready to erase the files. If the printing was successful you should erase before you disconnect the monitor from the playback unit. The monitor will then return to the normal idle condition (the round lamp flashes once per second) and after 15 minutes will switch off unless new recordings are started.

If you don't erase you will not be able to record any new files anyway - the act of printing the existing files disables further recording to prevent confusion between those files that have been printed and those that have not.

If for any reason you need to switch off the monitor without printing out the files then there is a way to do so and it is shown in the operating quick reference sheet. This will only work after recording (the flashing square lamp showing the number of files recorded) so you must stop any recording run first.
WARNING you will lose all your recorded files.

PROBLEMS DETECTED BY THE MONITOR

The round and square lamps flash together if there is a problem and the monitor cannot do what you ask. This usually happens when you try to start a recording run. Count the number of flashes and refer to the table below which is also printed on the front panel of the monitor.

1 The memory is full and no more files can be recorded.

The memory will sometimes fill up before you have recorded the maximum number of 4 files. This will be true if the files are very long and the monitor has many input channels.

After you have printed out the recorded files you will normally erase them using the playback unit. If you do not erase them you will not be able to record any more; the memory will always appear to be full. This avoids confusion between those files that have been printed and those that have not.

2 The battery voltage is too low to start recording.

Normally the battery is re-charged while you print out the recorded files. If files are left in the monitor it will not switch off and the battery will eventually be run down. You should connect the monitor to the playback unit for about an hour so that the battery can be re-charged.

3 There is no probe connected.

In monitors with several channels, all the probes must be connected before recording can start. You may connect a dummy plug or a fixed test plug in place of a normal temperature probe but all the sockets must be occupied. You will get this fault if you contrive to disable all the active channels with dummy plugs.

4 The probe is faulty.

In monitors with several channels then one or more of the probes is faulty. The fault could be that the probe is off-scale either high or low.

In pressure monitors, if the pressure probe is faulty it can be set inactive so that recording can continue with the temperature probes only. See RPC-80 Manual-2.

5 Electronic fault.

The monitor performs a comprehensive series of self-tests every time it is switched on. One of these tests has failed.

There is one self-test that you have some control over. Do not switch the monitor on when it is plugged into the RPC-80 playback unit and the RPC-80 is not itself switched on. The un-powered connection will cause the self-test of the data communication circuit to show a fault.

P.U. & PRESSURE MONITORS

Setting pressure zero

For the pressure measuring channel of the P.U. and Pressure monitor we suggest that you set the pressure zero when switching on for the first time each day. This will correct for changes in atmospheric pressure. Atmospheric pressure changes only slowly and so you should not need to set the zero more often than once per day.

Before setting the pressure zero you must disconnect the pressure connection to the can fitting so that the sensor in the monitor is at atmospheric pressure. Release the coupling by pulling back on the locking ring and then pulling the coupling away from the monitor. If there is still a can in place on the can fitting then any pressure in the can will be held by the valve in the free part of the coupling.

With the monitor off - no lamps flashing - switch on the monitor by bringing either end of the magnetic actuator close to the rectangle marked "CONTROL". The round lamp will flicker to show that the monitor is responding to the actuator but continue to hold the actuator against the "CONTROL" rectangle. After about 10 seconds the round lamp flickers again to show that the pressure zero is set and then the monitor switches off. Now remove the actuator. Wait about 2 seconds and then switch on in the normal way and start recording as required.

IMPORTANT!

Remember to disconnect the pressure connection to the can fitting before setting the pressure zero.

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 small error caused by the volume of the pressure sensor and coupling. 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.

GLOSSARY

- Channel.
A channel is an input to the monitor from a sensor etc. that can be read and recorded.
A channel can be active or inactive. Only active channels will be recorded.
- Field.
A field is a reading from an active channel that has been recorded in the monitor.
- Record.
A record is a set of fields from all active channels that were recorded at the same moment and stored in the monitor.
- File.
A file is set of records stored in the monitor. Records are arranged in time order.

RPC-80 CONFIGURATION. P.U. Monitors.

The RPC-80 is supplied in a "default" configuration with many of the features described in Manual-2 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.

If you are using P.U. Monitors you may find the following features useful. You will find more details on each feature in Manual-2.

Language

The display and printed text can be in one of four languages.
You can choose the decimal point character used for numbers.

Units

You can choose the temperature and pressure units that will be used for display and printed results.

Graph

Choose the way that the graph is printed and the range of values it covers.

Channel Names

Give each input channel a name to help in reading the results.

Active Channels.

Monitors are despatched with all channels active but you can set one or more channels inactive if you wish. There are advantages in making channels inactive when you do not require their information.

PU Calculation

For special situations you can set up a non-standard PU calculation.
Choose the PU cut-off temperature and switch on a PU calculation for channel 2 of multi-channel instruments.

Templates

Using templates as well as checking the total PUs can give a more detailed view of the pasteurising process. A template is a stored record of an ideal run made when everything is operating correctly. Subsequent recording runs are compared with the template and the degree of fit is calculated. A recording run can also be printed as a graph superimposed on a template.

Monitor ID

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).

Cal-Check

The cal-check or calibration check feature performs a simple test that checks the monitor input circuit and input socket. The playback unit keeps track of these checks for each monitor. You can select the frequency of these checks.

RPC-80 ID

Each RPC-80 playback unit 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.

Full List

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. You can 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.

Technical Specification : 200 Series PU Monitors.

- Storing data
 - max No. of files : up to 4 recording runs
 - max No. of fields : 16272 total (a field is one channel record)
 - recording timer default setting : maximum 4 hours per run
 - recording interval default setting : 10 seconds
- Recording inputs

	temperature	pressure
- nominal range	: -5 to +100 °C *	: 0 to 10 bar gauge *
- actual indicating range	: -11.24 to +104.16 °C	: -0.500 to +14.000 bar gauge
- resolution	: 0.02 °C	: 0.002 bar

* Note that the RPC-80 playback unit can show results in alternative units if required.

- Measuring accuracy (worst case, all errors, including sensors)
 - temperature : ± 0.25 °C (sensor in range 40 to 80 °C)
: ± 0.4 °C (over rest of range)
 - pressure * : ± 0.08 bar (sensor in range 0 to 8 bar gauge and 40 to 80 °C)
: ± 0.2 bar (all other conditions) **

* Assumes zero point has just been set and that any head space error will be corrected for in the RPC-80 playback unit.

** Prolonged operation of the sensor above 10 bar may result in increased zero point drift. This will reduce the accuracy of recordings. Set the zero point before each recording run when working at pressures above 10 bar.

- Operating conditions (operation outside these limits will cause permanent damage)
 - instrument : -10 to +85 °C
 - temperature sensor : -30 to +150 °C
 - pressure sensor : -30 to +125 °C and -1 to 19 bar gauge

- Dimensions : (Length x Width x Height)
 - in compact frame : 330 x 180 x 150 mm
 - in dual frame : 450 x 180 x 230 mm

- Weight : 6.5 kg including frame and one bottle holder

- Material : Stainless steel, toughened glass.

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- Calculation of pasteurisation units (PU) takes place in the RPC-80 playback unit
 - accuracy : better than ± 0.001% for calculation alone *
 - range : 0 to 9999.9 PU
 - resolution : 0.1 PU

* Note that a temperature measurement error of ± 0.25 °C represents ± 8% error in PU value.

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