REDLINK-2

Communications Software for PU Monitors

Operating manual

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REDPOST

Introduction

Redlink-2 software allows you to transfer recorded data from Redpost PU Monitors into a PC. The software can be used with either the Redpost RPC-80 printer/charger or the Redpost RPC-50 battery charger. Either of these can act as a link between the PC and a PU Monitor.

The RPC-80 links to all types of Redpost PU monitor. The RPC-50 links to Redpost PU monitors type RPU-120+, RPU-351, RPU-352 and RPU-353.

Once transferred to the PC the recorded data is saved and the archive can be sorted and viewed. Graphs and tabulated lists of each file can be viewed and printed. The data can also be saved in a format compatible with various spread-sheet programs.

Connections

Use with Redpost RPC-80

IMPORTANT: *The RPC-80 must have software version [p] or later installed for Redlink-2 to function with it. The version letter is shown on the RPC-80' s display. Upgrade kits are available. (Uppercase versions e.g. [A] are later than all lower case ones)*

You can use Redlink-2 software with the RPC-80 to link all types of Redpost PU monitor to a PC. The data lead type RED 80-PC connects between the connector on the RPC-80 and the serial port of the PC. If necessary use the 9-way adapter supplied.

You should adjust the RPC-80 communications settings to:-
 9600 baud, 8 bit, 1 stop, no parity, soft handshake.

These are the original factory default settings. See the RPC-80 configuration manual (Manual-2) for the adjustment details.

Use with Redpost RPC-50

You can use Redlink-2 software with the RPC-50 to link Redpost PU monitors type RPU-120+, RPU-351, 352 and 353 to a PC. The data lead type RED 80-PC connects between the connector on the RPC-50 and the serial port of the PC. If necessary use the 9-way adapter supplied.

There are no communications settings to make.

USB Interface

The RPC-50 and RPC-80 do not support the USB interface and must be used with a serial port. Some computers have no serial ports. In that case you can obtain a device to convert a USB port into a serial port. Follow the instructions supplied with the converter to set up a virtual serial port and then use it to communicate with Redlink-2.

Settings

For all Redpost equipment the final output device dictates all settings for PU calculation, date and time. Therefore, when connecting to a PC the settings and clock in the PC take priority when results are displayed or printed by the PC.

Redlink-2 recalculates the results from the raw data based on values you choose when setting up the software. The clock in the PC is also used as a reference for the file timing. These features make it easy to maintain a plant-wide standard for PU calculations and the date & time and to change those standards without making modifications to all the monitors. When using PU monitors with Redlink-2 you must be aware that different standards for PU calculation (including PU cutoff temperature) may apply to the results shown on the PC and those displayed directly by the monitors.

Display units

Redlink-2 will display all records, results etc. in the same units regardless of any settings in the individual PU monitors. The units for temperature and pressure can be selected using the Configuration screen.

Date & number formats

The formats in which dates, times and numbers will be displayed and printed are controlled by the settings you have already made in your Windows Operating System (Regional Settings). The date format used is the so called "Short date". Choose only numeric styles for the short date format.

You can change the width of any display column by dragging the dividing line in the column heading. Columns are automatically re-sized after you change the language for the display.

System requirements

To install and run Redlink-2 you will need an IBM compatible PC with:

- 486 processor or higher
- 16MB RAM
- CD drive
- SVGA video adapter and screen, at least 800 x 600 pixels, 16-bit colours
- Redpost RPC-50 or Redpost RPC-80 with software version [p] or later. (Uppercase versions e.g. [A] are later than all lower case ones)
- The fonts Arial and Lucida Console should be installed. (If these fonts are not already available the installation program will attempt to add them to your system.)
- For printing graphs a colour printer is recommended.

Redlink-2 has been tested for use on Microsoft™ Windows™ 95, Windows™ 98, Windows™ 2000 and XP™ Home edition.

Installation

Insert the Redlink-2 CD into your CD-ROM drive. If the installation does not start automatically then click Start..Run and type *D:\setup* (where D is the drive letter of your CD drive) and click OK. The Installation Wizard will guide you through the installation process.

Finally, close the post-installation window headed "Finished - postinstall". A window now shows a shortcut to the new program. Drag the shortcut to the desktop if required otherwise merely close the window. A shortcut will be automatically added to your Start Menu "Programs" list under the "Redpost" heading.

Using Redlink-2

Set up

Switch on your PC and ensure that the Redpost RPC-80 (or RPC-50) is connected to the mains and switched on. Start Redlink-2 by clicking the icon on the PC desktop.

If Redlink-2 is newly installed you should choose Configuration to set up the way that Redlink-2 will work. See Configuration Screen.

Transferring data from a PU monitor

To read data from a Redpost PU monitor choose Communication from the opening screen. Connect the monitor to the RPC-80 or RPC-50 using Redpost lead RED80-100/200.

The RPC-80 will show a message that it has sensed a monitor connected to its input. If the RPC-80 has Calibration Checking enabled (See RPC-80 Manual-2) you will need to either perform the calibration check, or dismiss the request before you can transfer data from the monitor. When the RPC-80 is ready the prompt "PRINT" will appear on the display. Only then can data be transferred using Redlink-2.

When downloading files from 100 Series Monitors wait until the ON/OFF light is flashing again before proceeding. (The 100 series monitors are models RPU-120, RPU-122 and RPT-122.)

If you are using an RPC-50 no preliminary action is needed.

In the Redlink-2 Communications screen click "Read Data". Redlink-2 will transfer files from the monitor to the PC. The progress bar will show the status of the transfer. For instruments such as the RPU-242, RPU-352 & RPU-353 there may be more than one file to transfer. Redlink-2 transfers these one after another and the progress bar resets to zero for each file. This process is automatic: no user intervention is needed.

When all files are transferred exit the Communications screen by clicking "Main Menu".

Deleting files from your monitor

After transfer to the PC remember to delete the file(s) in the monitor if you no longer need them. On 100 and 200 series monitors switch the monitor off (see monitor manual). On an RPU-120+ (RPU-351) monitor hold the actuator over the on/off button and wait until the display confirms that the file has been erased.

The 200 Series and 300 Series monitors are capable of storing more than one file. If you have transferred files from these monitors then you have to delete them from the monitor before you can record again. Refer to the monitor's manual for more information.

Redlink-2 checks each file to ensure it has not been previously transferred. This prevents accidental over-writing of any remarks that you might have added.

Looking at your results

To view the data that has been transferred click the "Analyse and Graphs" button on the Main Menu screen.

Choosing what to analyse

You can choose the files that are displayed by clicking the arrow in the "Show readings from:" box.

"Today" will display all files that were recorded today. "This month" will display all files that have been recorded in the past 31 days. "This year" will display all files that have been recorded in the past 365 days.

NOTE it is the *recording* date that is shown for each file except in the case of 100 Series monitors which have no clock and show the date of transfer to the PC. (The 100 series monitors are models RPU-120, RPU-122 and RPT-122.)

You can organise the list of files by sorting it (ascending or descending) according to:
- File number
- Date order (The date column shows today's date as an example of the date format.)
- PU value order
- Maximum temperature order
- Recording duration order

Viewing the results

Select the recording you want to view by clicking on its file number. The contents of the file are displayed in the results box. Using the buttons at the left of the screen you can now:

- Choose "Look at Table" to see the full table of measurements recorded against time
- Choose "Calculated Results" to see a summary of the recording including PUs achieved, maximum temperature reached, TDUs and the constants that Redlink-2 used to make the calculations
- Choose "Remarks" to add comments about the recording. These will be stored with the file. Click in the box and type up to 10 lines of comments.

Viewing a graph

Choose "Look at Graph" to see a graph of the recording. You can zoom into any part of the graph by holding the left mouse button and dragging the pointer from top left to bottom right across the area you want to magnify. The graph is magnified when you release the left mouse button.

By holding the right mouse button you can move (pan) the graph around in the display window to see other parts of it .
To reset the graph to normal size, double click the left mouse button anywhere on the graph.

The PU cutoff temperature (in force at the time the file was downloaded) can appear as a line on the graph if you check the relevant box.

Click on any of the graph line legends below the graph to change the colour and thickness of that line. Avoid choosing light colours if you wish to print the graph on a monochrome printer.

Printing and saving your results

You have the choice to print either the full results list or just a summary of the results. NOTE: long recordings will need several pages to print the full results.

Click either "Print Results" or "Print Summary". The Print Preview window will open. From here you can choose to send your results to a printer or to save them as a report that can be viewed later.

You can also save your results in a form that can be read by other programs such Microsoft™ Excel™. The "Save as CSV" button allows you to save your file as a Comma Separated Variable type which is a format common to many spreadsheets. Clicking "Save as CSV" opens a file browser window that enables you to choose a name and folder for storing the CSV file.

About file numbers

All Redpost PU monitors except 100 Series (RPU-120, RPU-122 and RPT-122) create a unique number for every recording run. The number is made up from two parts. The first part is the monitor's serial number and the second part is an incrementing number that the monitor creates each time it does a recording. Redlink-2 checks each file to ensure it has not been transferred previously.

In the case of the 100 Series monitors the first part of the file number is the monitor serial number, but Redlink-2 generates the second part from a running number that it stores. Redlink-2 cannot check whether the same file has been downloaded previously.

Communication Screen

The Communication screen is used when you want to transfer recordings from your PU monitor to the PC.

Read data

Click this button to start the transfer of data from your PU monitor to the PC. If the monitor can store more than one file they will all be transferred automatically after the button is clicked once.

Cancel

Click this button to stop file transfer.

Main menu

Click this button to return to the main menu.

Analysis and Graphs Screen

The Analysis and Graphs screen is used to look at your recorded files and to print and save them.

Buttons give access to calculated results, a graphical display of the recordings, and the facility to print the results. For further information refer to the section "Using Redlink-2".

Configuration Screen

The Configuration screen enables you to set various items that will be used by Redlink-2 to store your data files, perform PU calculations and select the language that Redlink-2 uses.

The screen gives access to three further pages that can be selected by clicking one of the three buttons on the left-hand side of the screen.

After making your settings return to the main menu by clicking the "Main Menu" button.

Language Page

Click the Language button. You can select the language used for the text on the display and printed output from the list of languages that appears when you click the arrow beside the dialogue box. This is independent of the language chosen for display on the PU Monitor.

The Windows operating system should also be installed with the correct language and character set for your country.

System Page

Company name

> Click in the box and enter an optional company name of up to 20 characters. This name will appear on printed output.

Company site

> Click in the box and enter an optional site name of up to 20 characters. This name will appear on printed output.

Data directory

> Normally, before you run Redlink-2 for the first time a data folder will be created automatically in the PC to hold all your downloaded files. See "Installation". If you need to change to a different folder enter the name of that folder here. You can use the "browse" button to locate it and then double click its name.

Communications port

> Enter the number of the COM port (serial port socket) that you have plugged the data lead into on the PC. The data lead is the lead that connects the PC to the Redpost RPC-80 or RPC-50. The default setting is COM1.

Units

> Select the temperature units for the display and printed output to be Centigrade (Celsius) (°C) or Fahrenheit (°F). After changing temperature units you should check and adjust the settings on the PU calculation page.

> Select the pressure units to be bar, kPa or psi.

PU calculation Page

> This page can be accessed by clicking the PU calculation button. It allows you to change the way in which Redlink-2 calculates PU values. Select the display units for temperature (on the System page) before setting the PU values.

> Remember that if you change these settings the PU values that Redlink-2 calculates may be different from those shown on the monitor or on the RPC-80 print-out.

> The PU calculation settings in force at the time are recorded with each file as it is downloaded. Files already in the archive are not modified by changing the PU settings.

PU background

The Pasteurisation Unit (PU) is defined as relating to the sterilising effect observed when the product is held for one minute at a temperature termed the Base value. At this temperature therefore, 1 PU per minute is achieved.

Experiments on various mixtures of the common brewery biological contaminants showed that at temperatures over about 50°C there is an approximately ten-fold increase in sterilising effect for every 7°C increase in temperature. For example, if the time required to kill a population of micro-organisms 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 increase in temperature required to produce a ten-fold increase in kill rate is termed the Z value. The Z value in this case is therefore 7°C.

For beer the PU is normally defined by a Base value of 60°C and a Z value of 7°C. The same definition is often used for soft drinks and other beverages. Where there is any possibility of spore-forming bacterial contamination being present (for example in tomato juice) very much higher temperatures are required for pasteurisation. In these situations the definition of Base value 80°C and Z value 10°C is often used. Other definitions are also in use outside the brewing industry.

At product temperatures below about 50°C it is doubtful that any significant sterilising 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 calculated by a PU monitor. This is termed the PU cutoff temperature.

Set the PU cutoff temperature at least 5°C lower than the planned product temperature in the holding zone of the pasteuriser. Higher values will give a very conservative figure for PU achieved and will reduce the repeatability of the result because the product temperature will be changing only slowly as it crosses the cutoff temperature threshold. For beer the cutoff is not normally set below 50°C.

A packaging specification will normally set the PU definition and a target PU value for each product to ensure sufficient pasteurisation.

TDU background (Flavour Degradation)

Thermal Degradation Units give a measure of amount of flavour change (chemical reaction) that has been caused by the pasteurisation process. From the flavour degradation point of view it is better to achieve the PU target by using a higher temperature for a shorter time.

The calculated value is divided by 10 and shown as TDU/10. The definition therefore becomes 0.1 TDU/10 per minute at 20°C. This gives better alignment with standard PU calculation. (It gives 1.6 TDU/10 per minute at 60°C, TDU = PU at approx. 62°C). No TDUs are accumulated below 20°C. The definition does not change when working in Fahrenheit:- 0.1 TDU/10 per minute at 68°F.

A packaging specification may set a target TDU/10 value to ensure that even though pasteurising conditions may be correct the product flavour is not harmed.

PU cutoff temperature

You can change the cutoff temperature in steps of 0.1 degree.
Popular settings for beer are 50°C and 55°C (125°F and 130°F).
The same setting applies to all temperature channels.

PU calculation – Base & Z values

You can select a Base value of 60, 70 or 80°C (140, 160 or 180°F).

The normal setting for beer is 60°C (140°F).

You can select a Z value of 6.94*, 7 or 10°C (12.5 or 18°F). The normal setting for beer is 7°C (12.5°F).

The same settings apply to all temperature channels.

*Note that 6.94°C is equivalent to a value of 12.5°F : a value often used in American text books when working in Celsius.

TDU calculation

There are no settings to make for the TDU calculation. The definition is fixed as described above.

Troubleshooting

If you are getting an error message from Redlink-2 when trying to download files first check that the Redpost equipment (RPC-80 or RPC-50) is connected to the mains and switched on. Then check that the connecting lead is firmly plugged in at both ends.

If you are using a Redpost RPC-80 verify that it has software version [p] or later. The version letter is shown on the RPC-80 opening display as a letter enclosed in square brackets [ ].
(Uppercase versions e.g. [A] are later than all lower case ones)

RPC-80 Cal-check

If you are connecting to PU monitors via the RPC-80 then the RPC-80 may be waiting for you to choose whether or not to perform a Cal-check. This depends on the setting you have made in the RPC-80. You can't download data until you have answered this question and the "PRINT" prompt is showing on the RPC-80.

100 series monitors

If you are connecting to the older 100 series PU monitors via the RPC-80 then the whole file may take several minutes to transfer into the RPC-80. During this period the ON/OFF light on the monitor will be permanently lit. You must wait until the ON/OFF light is flashing again before clicking the "Read Data" button on Redlink-2.
(The 100 series monitors are models RPU-120, RPU-122 and RPT-122).

Data Lead

You may be using the wrong data lead to connect to the PC. There are several similar looking PC leads available for various functions. Use only the lead supplied with Redlink-2 which will be marked "RED 80-PC". At the PC end you may need to use the 25 to 9 pin adapter supplied with the kit.

Communication Port

You may have plugged the data lead into the wrong socket on the PC. The physical socket number must match the Communication Port number you chose on the Configuration Screen. If you have a choice we suggest that you use COM port 1.

RPC-80 Baud Rate

You may have set the RPC-80 to the wrong baud rate etc. See the section on "Connections".

PUs appear incorrect

The PU results calculated by Redlink-2 may be different from those displayed by the monitor, or printed by the RPC-80. The reason for this is that one or more of the calculation constants in Redlink-2 (Cutoff temperature, Base or "Z") have been set to be different from the values in the monitor or the RPC-80.