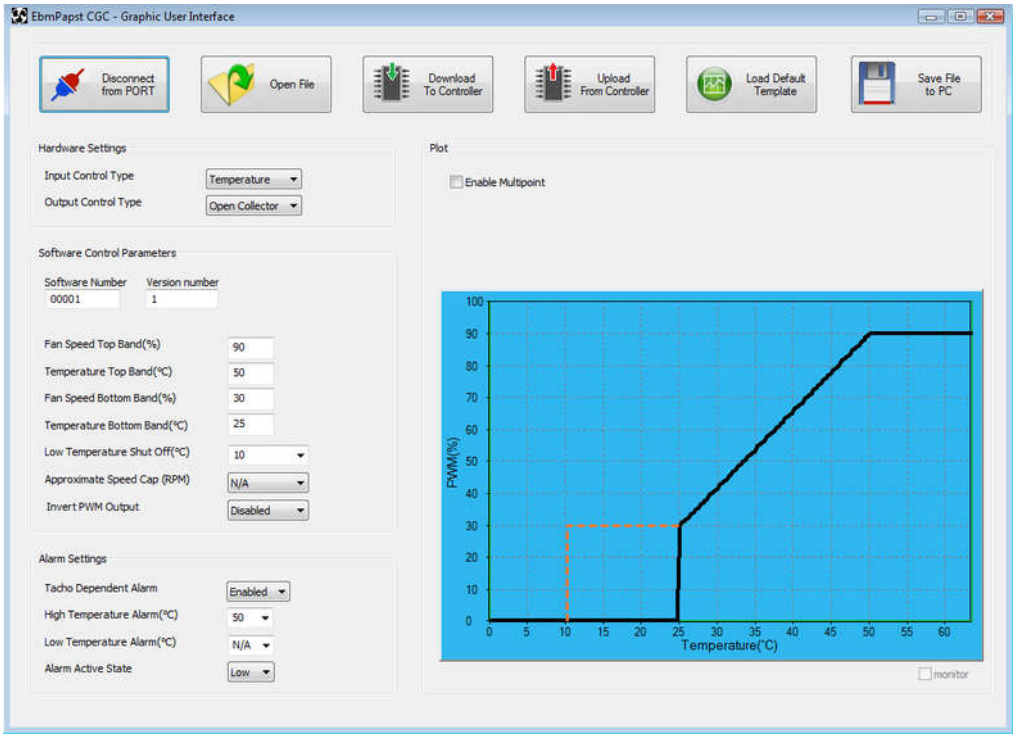
Graphical User Interface (GUI) Instructions For the Configurable Generic Controller

Part Number: CGCXX00000

Fan speed controller
10-57V supply, highly configurable with alarm indications and monitoring function



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ebm-papst UK Ltd
Chelmsford Business Park
Chelmsford
Essex
CM2 5EZ

Tel: +44 (0) 1245 468555
Fax: +44 (0) 1245 466336

www.ebmpapst.co.uk

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DOCUMENT HISTORY

Issue	Date	Comments	Author
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T:\Design Projects\15148 - Controller GUI - epUK\OMI

1 Summary

This user manual describes how to install the Configurable Generic Controller (CGC) Graphical User Interface (GUI) software on a PC, Laptop or Windows based tablet. This manual also describes how to configure the CGC using the GUI.

Please note that this manual should be used in conjunction with the Operation and Maintenance Instructions for the CGC – see document reference 210-OMI14028.

There are a number of ways in which the GUI software can be used:

- To communicate with the controller to program operational parameters
- To create operational parameters offline and save the data in a configuration file for later download to the controller
- To open a pre-programmed configuration file which can then be downloaded to the controller
- To generate a default template which can be downloaded to the controller and restore it to its factory default settings
- To upload the configuration file from an already programmed controller into the GUI
- To monitor the controller's input/output real-time and project it on the GUI's temperature/voltage plot

Operating and Programming instructions

To download the full operating and maintenance instructions, the programming software, the instruction manual for the software and example configuration files, visit www.ebmpapst.co.uk/cgc
The CE documentation can be found on the full operating and maintenance instructions available from the website

2 GUI Installation and Initial Operation

2.1 Software Installation:

Download software from the following link www.ebmpapst.co.uk/cgc
Unzip the file and select the Controller Configuration setup file **ebmpapst CGC Interface Installer.exe**.

Double click and follow the instructions on the screen. When finished, either choose to launch the application from the installer or by clicking on the desktop icon:



ebmpapst CGC Interface

To initiate the communication between controller and PC/laptop, connect the PC/laptop to the controller using the USB to Serial interface programming cable and run the GUI software.

2.2 Hardware:

The CGC is designed to be connected to a PC/laptop using an ebm-papst cable assembly part number 210-HAR11887, USB to serial data adapter. The cable and the driver software are compatible with the following operating systems:

- **Microsoft Windows XP**
- **Microsoft Windows Vista**
- **Microsoft Windows 7**
- **Microsoft Windows 10**

If your PC/laptop does not have the drivers for the cable, the GUI installer will identify this and install them before installing the actual GUI software.

2.3 Software Use

2.3.1 Compatibility

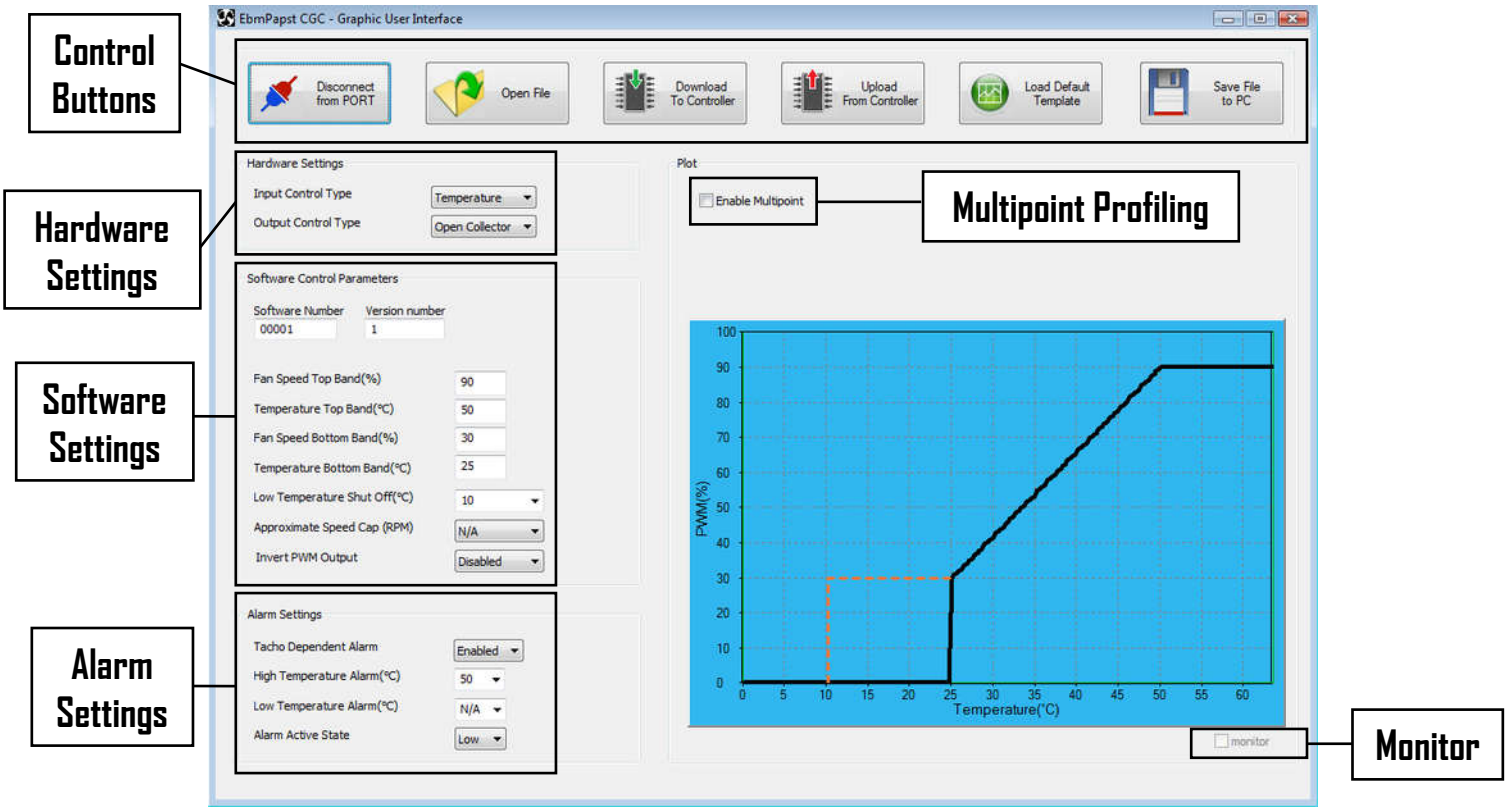
This GUI software is compatible with the following operating systems:

- Windows XP
- Windows Vista
- Windows 7
- Windows 10

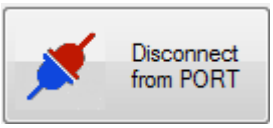
2.3.2 Controller Programming

To fully program the CGC, work through the fields following the instructions laid out in sections 3 to 9 as detailed below.

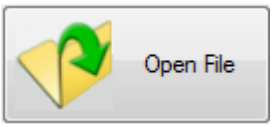
3 Summary of Main Areas of the GUI



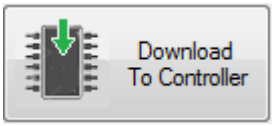
- Control Buttons



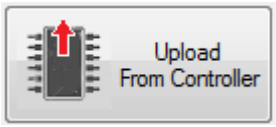
Configures the communication between the PC/laptop and the USB Serial adapter cable



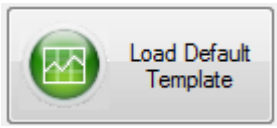
Opens an existing configuration file stored on the PC or network



Downloads the current values in the GUI as a configuration file to the controller



Populates the GUI with the configuration file stored in the controller



Loads a default template to the GUI, overwriting any previous parameters



Saves the parameters in the GUI to an external ".dat" file on the PC/laptop

- Hardware Settings

Control input type	–	Temperature / Voltage (0V-10V)
Output Control Type	–	Voltage (0V-10V) or Open Collector

- Software Control parameters

Software Number	–	User Defined
Issue/Version number	–	User Defined
Fan Speed Top Band	–	Maximum permissible fan speed
Temperature/Voltage Top Band	–	Maximum fan speed Temp. (T_2)
Fan Speed Bottom Band	–	Minimum fan speed
Temperature/Voltage Bottom Band	–	Minimum fan speed Temp. (T_1)
Low Temperature Shut Off	–	Minimum speed cut-off
Approximate Speed Cap RPM	–	Safety limit in rpm
Invert PWM Output	–	"+ve" or "-ve" Fan Control Profile

- Alarm Settings

Tacho Dependent Alarm	–	Low RPM Alarm Enable/Disable
High Temperature Alarm	–	Alarm triggers when reached
Low temperature Alarm	–	Alarm triggers when reached
Alarm Active State	–	High / Low open collector output

- Multi Point

  Free hand configuration of the fan Temperature/Voltage input and PWM profile

- Monitor

  Displays a real-time representation of the input and output of controller in the plot area

Note: Volatile Memory Alert

The information displayed in the GUI software is held in volatile memory which will be lost if the software is shut down.

To ensure that data is not lost, it is recommended that any work on the software is regularly downloaded to the controller or saved to a configuration file. These two actions can be executed using one of the two software buttons at the top of the screen.

- 'Download to Controller'
  - When the GUI software has been connected to the controller and is communicating with the controller. Note that his button only becomes available after successfully connecting the GUI with the controller
- 'Save file to the PC'
  - This function saves the parameters active in the GUI software into a configuration file for later use.

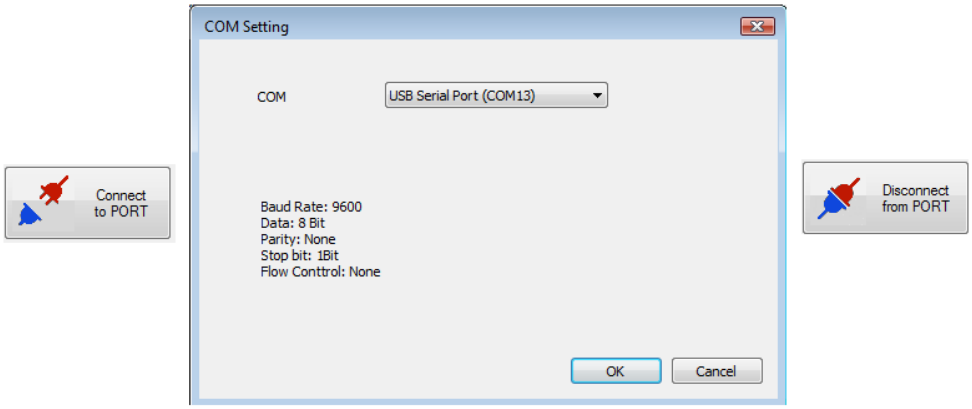
4 Connect to PORT

This configures the port connection on the PC to the GUI software. The communication between the PC and the controller is achieved using a USB serial interface cable. The software will then enable the communication between the PC and the controller when the correct COM port is specified.

When connecting to the controller via the GUI software, it is important to ensure that the USB interface cable is connected to both PC and controller.

Click on “Connect to PORT” button to select the USB Serial Port, and then press “OK”. If the USB cable is connected to both PC and controller, the “Download to Controller” and “Upload from Controller” buttons will become available to indicate that the communication has been successfully established.

The “Connect to PORT” button will then change to “Disconnect from PORT”, which can be used to disconnect the PC from the COM port.



Note: Always disconnect before shutting down the software.

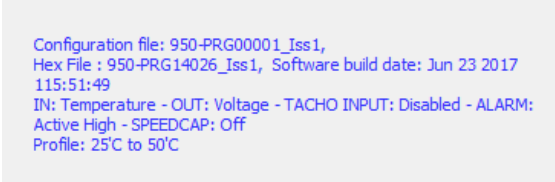
5 Configuration File Actions



- Open File from PC
  - This function populates the GUI with the parameters of a previously saved configuration file stored on the PC or other memory device
- Download To Controller
  - This function uses the values currently stored in the GUI to overwrite the settings previously stored on the controller. Please note that this button will become available only when the GUI successfully communicates with the controller.
- Upload to Controller
  - This function populates the GUI with the configuration file currently stored in the controller. Please note that this button becomes available only when the GUI successfully communicates with the controller.
- Load template
  - This function re-loads the standard template into the GUI clearing any previous configuration. It is recommended that any previous work is saved before loading the default template.
- Save file to PC
  - This function saves the values entered into the GUI to a configuration file that can be loaded into the software and used for programming at a later time

5.1 Controller Information

After successfully downloading a configuration file to the controller, a blue set of text will be displayed on the top right hand side of the GUI window, which contains data from the controller, such as hex file part number, issue date and a summary of the configuration settings.



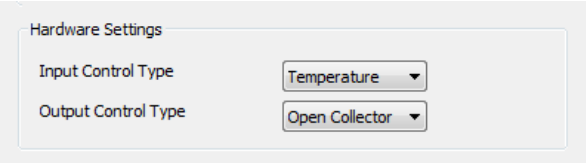
5.2 Naming and saving your work

When creating a new set of parameters to be downloaded to the controller it is recommended that the configuration file is assigned a software number and issue number. This data can be entered in the text boxes in the software control parameters.
It is recommended to regularly save changes to the configuration file by pressing the 'save configuration file to PC' button. This will open a standard Windows format file window where the location to save the configuration file can be chosen. Regularly saving the parameters to a configuration file will avoid the risk of losing work.

5.3 Warning – Usage of Load Default Template Button

The standard template can be reloaded at any time by pressing the 'Load template' button. By choosing to load the template any existing data currently shown on the screen will be overwritten. If the configuration file currently displayed is required for later use, it should be saved using the 'save configuration file to PC' button before loading the template file.

6 Hardware Settings (Fan settings)

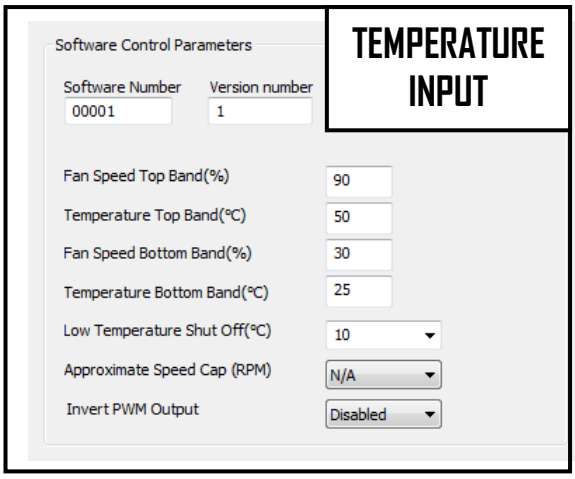


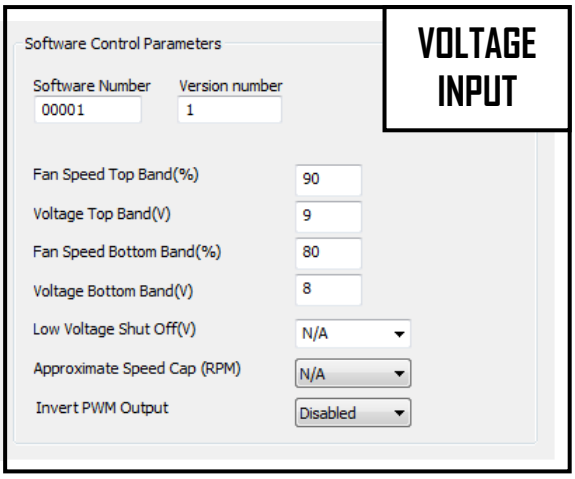
Control Input	Operational Description
Temperature	The controller responds to a temperature sensor input and will vary the control signal to the fan based on the programmed temperature profile.
Voltage	The controller responds to 0-10V input signal and will vary the control signal to the fan based on the programmed response profile.
Output Control Type	
Open Collector	For fans designed to respond to an open collector PWM signal
Voltage	For fans designed to respond to a 0-10V analogue signal

⚠ Warning

If the **Output Control Type** is incorrectly set to 0-10V when an Open Collector fan is fitted the maximum input control voltage limit may be exceeded which could damage the fan.

7 Software Control Parameters (Profiling Settings)



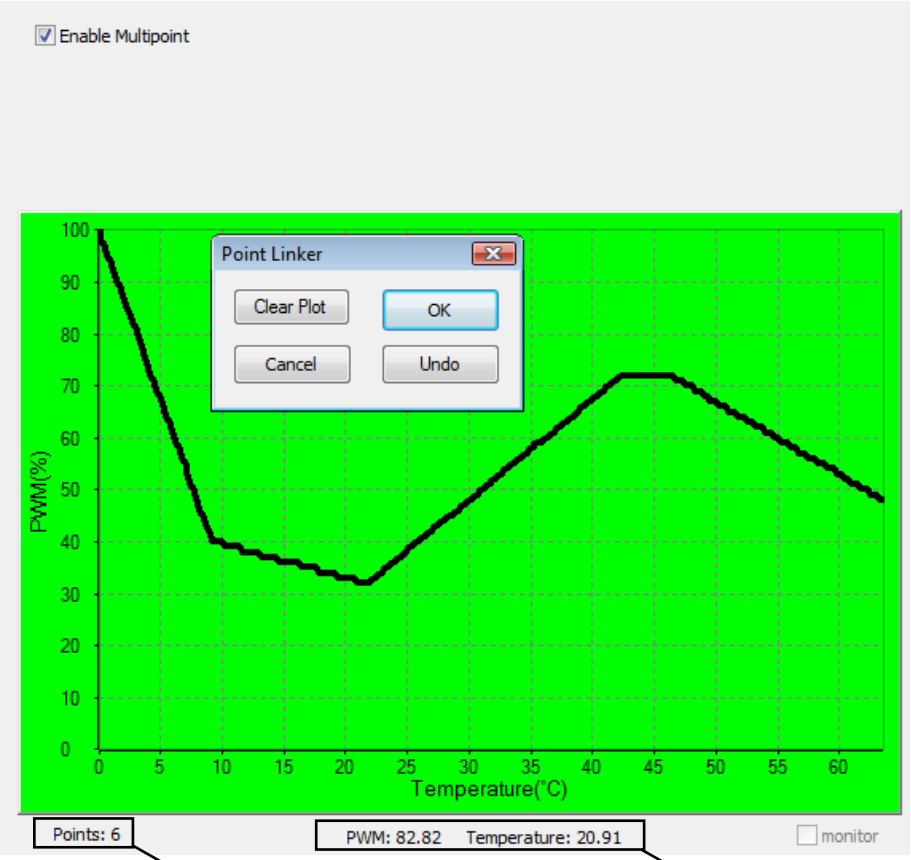


Parameter	Options
Software Number	User defined code to identify parameter list with application (default 00001)
Version Number	Version control number if required (default 1)
Fan Speed Top Band	Maximum permissible fan speed (0-100%)
Temperature/ Voltage Top Band	Control input level to reach maximum permissible speed
Fan Speed Bottom Band	Minimum fan speed (0-100%)
Temperature/Voltage Bottom Band	Control Input level at which the fan will run at minimum speed
Low Temperature/Voltage Shut Off	Temperature at which the fan will switch off. If “Always On” is selected, the fan’s minimum speed will be dictated by the Fan Speed Bottom Band parameter.
Approximate Speed Cap	This feature will limit maximum fan speed attainable. After every power cycle, if the fan speed exceeds this set point, the control signal output will be reduced until the speed is on or below this value. This will prevent the fan speed to increasing beyond this limit. There are 5 options: 1000 rpm 2000rpm 3000rpm 4000rpm N/A - inactive Note: This is an approximation of the tacho value and must not expect extreme high level of accuracy. It is designed for fans with 1 pulse per revolution fan tacho. If fans with more than 1 pulse per revolution tacho are used, the controller can vary the output PWM in different ways, which is not recommended and therefore this feature should be set to ‘N/A’ if the fan has more than 1 pulse per revolution tacho.
Invert PWM	This inverts the output signal to the fan and is for fans with negative control input response.

8 Multi Point (Free Hand Profiling)

Enabling Multipoint gives the user the free hand to set the temperature or voltage profile against the PWM value. Up to 255 points can be achieved by double clicking on the required point on the plot. To clear the plot in an event of error, right click within the plot and then click on the 'Clear Plot' button. Similarly, the "Undo" button can undo the last point drawn in the graph.

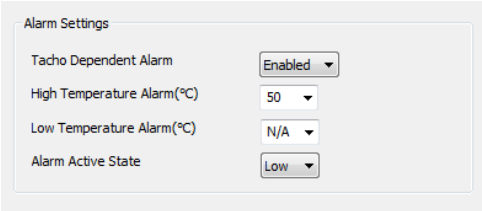
To zoom into an area for more depth, hold down the left button of the mouse and draw a rectangle from top left to bottom right. The smaller the rectangle size, the higher the magnification in the zoom depth.
To un-zoom, hold down the left mouse button and draw the any size rectangle from bottom right to top left.



Note:

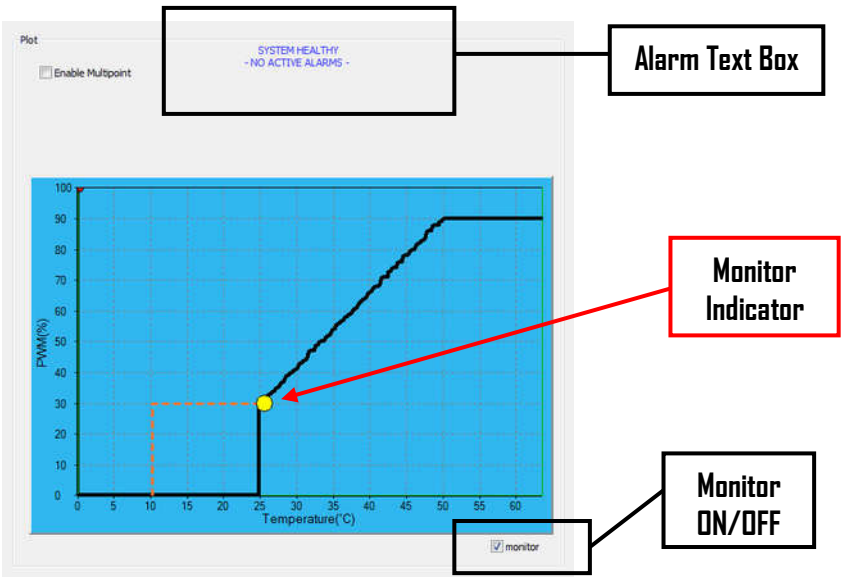
Most of the parameters in the "Software Control Parameters" will be greyed out and not editable if multipoint mode is enabled.

9 *Alarm Configuration*



Alarm condition	Description of operation
Tacho Dependent Alarm	This function enables/disables the Low RPM alarm, which is a Tacho dependent alarm. For fans without a Tacho output, this parameter should be set to “Disabled” in order to avoid defaulting the controller to an alarm condition. If this function is disabled then the “Speedcap” feature will become disabled as well.
High Temperature / Voltage Alarm	This function triggers an alarm when the temperature or voltage exceeds the pre-set value. The pre-set value can range from 1 to 115 for temperature mode, and 1 to 9 for voltage mode.
Low Temperature / Voltage Alarm	This function triggers an alarm when the temperature or voltage falls under the pre-set value. The pre-set value can be -35 to 55 for temperature mode, and 0 to 9 for voltage mode.
Alarm Active State	This sets the alarm polarity for when there is an alarm present

10 *Monitor*



The “monitor” checkbox will become available only upon a successful download/upload of a profile from/to the controller, and will become unavailable if any parameter in the GUI is changed after that e.g. input/output type or editing profile.

When the monitor is enabled, a yellow dot representing the real-time state of the controller’s input and output is projected on the plot. If any alarms are triggered, they will be shown in BLUE on the Alarm Text Box above the plot.

11 Contact details



Right-clicking on the GUI's title (on the top) will bring a menu where 'About CGC Interface' is available. This shows the window above, which contains the company contact details and the website from which the current software version can be obtained.