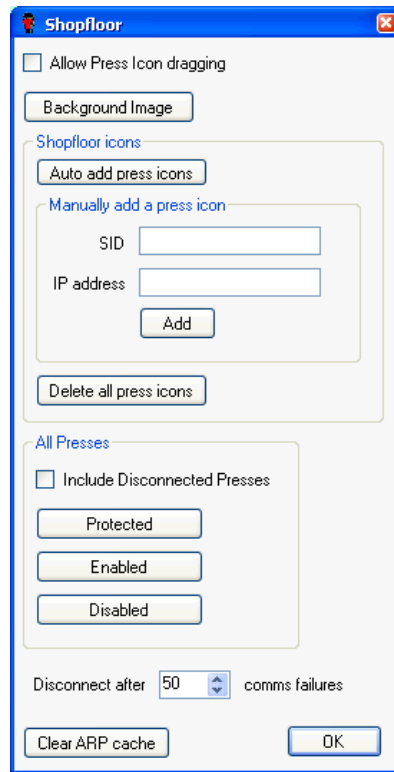


Sentry Hub

Setting up the Shopfloor view

The main window of SentryHub is intended to provide a graphical representation of the production area or *Shopfloor*. Icons representing crimping presses can be loaded into the Shopfloor view and each press icon is associated with a Sentry. Most aspects of the shopfloor view can be controlled from the *Setup...Shopfloor* menu.



Background Image

You can customise the shopfloor view by loading a suitable image.

You might want to make the window look something like your actual shopfloor, especially if you have many press icons, so you can quickly associate a particular icon with a physical press location.

One effective way to do this might be to take a document scan or a digital photograph of a plan drawing of the actual shopfloor layout.

To load a new background image go to the Setup...Shopfloor menu and press the Background Image_button then browse to select the graphical file: most BMP, JPG and GIF file formats are supported.

The image is displayed in the shopfloor view at its native scale so you should pre-scale it accordingly using appropriate image processing software.

Some very simple graphic files are installed with the application, these samples are intended just to illustrate the idea.

There is also a *Clear Background.gif* file containing an empty image. You can load this file if you want to clear the background.

Note that the file *Shopfloor.bmp* in the application folder contains a working copy of the current background image.

Adding press icons

There are two primary ways to add press icons to the shopfloor.

Automatically adding icons

Automatically adding press icons is quick and easy, SentryHub broadcasts a network command asking all sentries to make themselves known and then adds icons according to the replies received.

It is important to know that it can only work for sentries located in the same local subnet as the SentryHub computer, although this is a very common configuration.

Network routers, switches, hubs and similar hardware block broadcast messages from reaching anywhere outside the local subnet.

Click the Auto add press icons button and, within a few seconds, icons are placed in the shopfloor for all new sentries discovered in this way.

Icon placement

When new icons are added, (whether automatically or manually), they are placed below any icons which already exist in the shopfloor view. Placement starts at the left hand side of the shopfloor window with successive icons being placed to the right until reaching the edge of the view window.

It is possible for new icons to be placed below the bottom edge of the window; in this case scrollbars will appear.

Icon Positioning

Press icons may be positioned within the shopfloor view by dragging then with the mouse. The Allow Press Icon Dragging box must be checked to enable this.

Each time the SentryHub software is started, this box gets unchecked - reducing the chances of icons being moved unintentionally.

Note that the press icons are drawn on top of any background image which may be loaded. The icons are strictly rectangular but do contain *pseudo-transparent* regions through which you can see the background.

There is no restriction preventing overlapping icons but you should try to avoid this because you will not be able to see parts of icons which are covered by even the transparent regions of other icons.

Deleting press icons

All the press icons in the shopfloor can be deleted together by pressing the Delete all press icons button.

To delete specific individual icons directly from the shopfloor window, right-mouse click the icon and select Delete from the context menu:-



Setting the connection mode for all presses

One of the connection modes may be globally applied to all press icons in the shopfloor by pressing one of the *Protected*, *Enabled* or *Disabled* buttons.

These global changes are normally restricted to presses which are already in a *connected* state. Disconnected presses are not influenced unless the Include Disconnected Presses box is checked.

Behind the scenes background service

SentryHub attempts to connect to each sentry associated with the shopfloor icons in turn, asking for status information and sometimes sending commands to them.

When each round of communications is complete the icons in the shopfloor view are updated to reflect the status of each press.

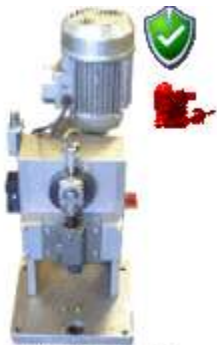
SentryHub also maintains database records of the status of each Sentry and records a log of any status changes. These records can be useful for example in demonstrating ISO/TS 16949 compliance and in managing the predictive maintenance of application tooling.

Press Icon Symbols



Alpha1 S1

When an icon is first created, it is not known whether its associated sentry is on-line. The *offline* warning symbol shows until after a successful connection has been made.



Alpha1 S1

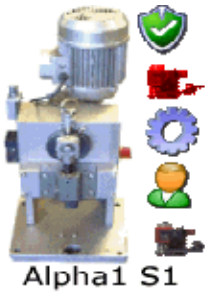
Once a successful connection has been made to the Sentry the offline warning is replaced by other status symbols.

The status symbols represent the control mode being applied to the Sentry through the network and also the data reported back by the Sentry.

Up to five symbols may be visible at one time.

The symbols are arranged in a vertical column to the right of the press icon.

The illustration shows a common state *Protected* and a common warning *no_ADM*.



The Connection mode and state

Warnings or problems are highlighted

A Works Order is in progress

An Operator is logged on

An ADM is connected

Connection mode and state Symbols



Sentry is **OFFLINE** : no response was obtained



PROTECTED mode : Sentry is online and will decide itself whether to BLOCK or UNBLOCK the press depending on the status of the connected ADM



ENABLED mode : Sentry is online but bypassed, the press is UNBLOCKED



DISABLED mode : Sentry is online but bypassed, the press is BLOCKED



DISCONNECTED mode : Communication is suspended, Note Sentry will revert to non-networked operation which is similar to PROTECTED mode but without data logging.



Warning symbols



A Works Order problem



An Operator problem



A CFA problem



An ADM problem

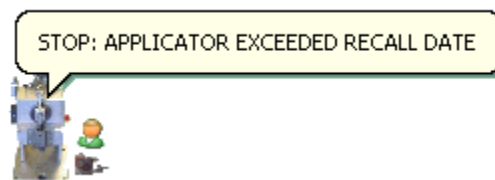
Warning states are emphasized by flashing these symbols to attract attention.

If multiple problems are present, with each flash the warning symbol will cycle through those present.

The *no_ADM* state is a common problem state (e.g. when a press is not being used);

This particular problem does not cause the warning symbol to flash because it does not demand any attention or intervention.

More detailed information or a description of the problem may be available. It can usually be viewed by hovering the mouse pointer over the body of the press icon itself until a *tool tip* pops up:



Other tool tips may be viewed by hovering the mouse pointer over the ADM, Operator, Works Order or Connection State symbols.

Press Details

Each press icon has an associated detailed view.

To open the detail views double-click the body of the press icon **or** right-mouse click the icon and select *Details* from the context menu.



Identifying the press

The SID field shows the sentry's unique Silicon Identification. You cannot change this value. You can only enter a SID into a press icon when you manually add an icon. It is automatically assigned when automatically adding press icons.

Name

The Name field contains up to 16 characters of text which may be used to provide a more meaningful way of identifying the press or sentry. A typical use for the Name field would be to describe the location of the press.

Each Sentry stores its own name in non-volatile memory.

When SentryHub connects to a Sentry it reads the name and displays it as part of the press icon, beneath the press body.

When the detail view is opened, you may edit the Name field.

If you do edit the name, then press the OK button, a command will be transmitted to the Sentry to update its name accordingly. The next time the icon is updated by the background service, the name displayed on the icon will update accordingly.

The Name field is the same as the field accessible from the web page and displayed by pressing the ident button.

IP Address

This is the network IP address at which the SentryHub's background service attempts to communicate with the Sentry.

The value is set up, along with the SID, when a Shopfloor icon is first added.

You are allowed to change the IP Address field and you might need to do this if your shopfloor contains manually added icons in non-local network segments where Automatic reassignment of IP Addresses does not work.

The *Web Page* button opens a simple web browser window and attempts to open a web page at this IP Address. You could use this to confirm a correct assignment when editing the IP Address.

Automatic reassignment of IP Addresses

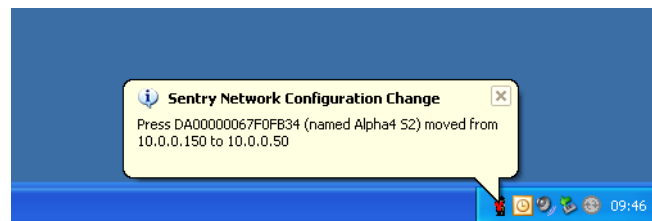
During background service communication the sentry's SID is checked and usually the Sentry's SID correctly matches the icon's SID.

If a Sentry does not respond or if its SID does not match, SentryHub recognises that something in the network configuration has changed and attempts to adjust accordingly.

This might happen for example if DHCP addressing is employed, after a total power down a DHCP server may allocate totally new IP addresses to every Sentry.

When SentryHub detects a configuration change, it attempts to recover by broadcasting to the local network to build a live list of IP addresses and SIDs for all the sentries in the local network. SentryHub then attempts to automatically re-assign the press icon's IP Address fields by looking for matching SIDs in the live list.

When automatic reassignment takes place, SentryHub displays brief notification messages from the icon in the system tray:



Connection modes

Each shopfloor press icon can send commands to its Sentry to override the local decision making mechanism built into the Sentry.



Protected mode

This is the default connection mode.

The Sentry itself takes the decision whether to block or unblock its press depending on the state of the attached ADM.

Sentry also blocks the press if no ADM is connected.

In this mode SentryHub asks for, and records, status information during background processing.

Communication failures cause the press icon to display the Offline status and repeated failures lead to automatic disconnection.



Enabled mode

SentryHub sends commands to the Sentry to ignore the result of its ADM checks and always UNBLOCK the press even if no ADM is connected. In this mode SentryHub asks for, and records, status information during background processing.

Communication failures cause the press icon to display the Offline status and repeated failures lead to automatic disconnection.



Disabled mode

SentryHub sends commands to the Sentry to ignore the result of its ADM checks and always BLOCK the press even if a valid ADM is connected.

In this mode SentryHub asks for, and records, status information during background processing.

Communication failures cause the press icon to display the Offline status and repeated failures lead to automatic disconnection.



Disconnected mode

SentryHub does not attempt to communicate with the Sentry during background processing. The Sentry will revert back to its default standalone mode to block or unblock its press depending on the state of the attached ADM.

In this mode SentryHub does not ask for, and does not record, any status information during background processing.

Repeated communications failures in other modes lead to this mode being automatically set. Communication failures cause the press icon to display the Offline status and repeated failures lead to automatic disconnection.



In the Enabled or Disabled mode, the Sentry displays a message on its LCD screen to inform the press operator that the Sentry is being controlled remotely through the network connection.

You may change the message by entering new text into the *Display this Message* boxes. Each box corresponds to one line of the LCD panel.

Automatic Disconnection

Sentries normally reply to network communications within about 100mS and once a Sentry has responded, SentryHub's background service can immediately go on to service other icons in the shopfloor.

Sometimes delays can be introduced due to network conditions so SentryHub waits longer for a reply to arrive.

If no reply is received within a reasonable time (1000mS), the communication attempt is aborted and the icon temporarily displays the *offline* symbol.

If this happens repeatedly the icon's connection mode is automatically changed to *Disconnected*.

To restore communications from *Disconnected* mode you must manually select one of *Protected*, *Enabled* or *Disabled* modes.

Status Details



If a CFA has been associated with the press, status information is displayed next to the button.
Pressing this button opens a window to control and view Crimp Force settings and data in more detail.



If a works order has been assigned to the press, status information is displayed next to the button.
Pressing this button opens a window to control and view the settings and data in more detail.



If an operator has logged on to the press, by connecting his ID tag to the Sentry, identification information is displayed next to the button.



If an operator and a supervisor are logged on to the press, by connecting their ID tags to the Sentry, identification information is displayed next to the button.



If an ADM is connected to the press, identification information can be displayed next to the button.
Pressing this button opens a report window from where you can access reports specific to this applicator.



Pressing this button opens a report window showing the database record of the press itself.

Journal Database

When a Sentry reports a changed status, in terms of the connection of ADM or operator ID tags, a journal record of the change of status is logged in a database.

The journal database can be queried to build management reports for traceability.

Also when an applicator is serviced, using ADM software or a remote device accessing the ADM through the Sentry network, the service events are also logged.

It is important that only one journal database is used as fragmented records would lead to confusion and inaccurate data.

When the SentryHub software is installed the journal database file *Sentry_Journals.mdb* is located in the application folder.

It is suggested that this file could be copied to a centrally accessible location, perhaps in a network shared storage resource.

If you have already similarly set up the journal database for ADM software then you will not need to copy the file, just use the one set up for ADM.

Similarly if you install ADM at a later time you should set it up to use the central journal database installed by SentryHub.

Select the *Setup...Journal Database Location* menu item to open a file browser window and browse to select the centralised database file you wish to change to.

Reports

SentryHub can produce several management reports.

The reports are generated in a separate window in rich-text format.

The contents of the report window can be selected and copied to the clipboard with standard copy commands <ctrl>C.

The clipboard data can then be pasted into Microsoft Word, Microsoft Excel etc to produce presentation quality reports or to perform further analysis.

Hub Status Log

Reports the times that SentryHub was active.

When SentryHub is stopped (marked by a *Network Stop* event) it cannot make journal entries so the journal database may start to contain 'stale' or out of date data.

Live Applicators List

Reports the ADMs which were present in the SentryHub network during the latest round of background service connections.

It also shows the number of usage cycles remaining before the Applicator is scheduled for servicing.

Live Press List

Reports Sentries which responded during the latest round of background service connections.

It also shows the presence of any connected ADMs or Operator ID tags.

All ID Tag History

Reports the logging on (connection events) and logging off (disconnection events) of all operator ID tags at all points in the network.

Audit Trail

Reports 'snapshots' of the status of the SentryHub network taken at regular points in time e.g. every hour.

Applicator Service Priority

Produces lists of Applicators sorted by ascending number of usage cycles remaining before the Applicator needs to be serviced.

There are two data sources which may be used to calculate service priority and each has its own strengths and weaknesses.

It may be best to review both reports to arrive at a final decision based on the prevalent applicator usage patterns.

According to Sentry Records

Whenever an ADM is connected to a Sentry, the Sentry calculates how many usage cycles remain available before the Applicator must be serviced. This value is communicated to the SentryHub and is stored in SentryHub's core database.

These value are reported here.

Values will easily get out of date for ADMs which are infrequently connected to a networked Sentry.

According to ADM Service Records

Each time an applicator is connected to ADM software, the ADM software records data in its journal database. This data is used to create the report.

Values will easily get out of date for applicators which are actively in use as the ADM software does not have access to real-time usage figures.

SIDs

The Sentry and ADM system uses electronic components which have individual and unique serial numbers assigned during manufacture, producing a highly secure and tamper-resistant way of uniquely identifying ADMs, Sentries and Operators.

The serial numbers are laser-cut into the silicon devices, leading to the name **Silicon IDentification**, or SID for short.

The unique 64-bit binary numbers are represented in 16 character hexadecimal notation where each character 0..9 or A..F represents 4 of the bits.

Generally when a new device is initialised and added the Sentry system, its SID gets copied into its name field so that even the name fields are uniquely identifiable from the start. Of course the name field should be later updated to reflect a more meaningful Identifier.

For more information please contact our sales department.

sales@circuitmaster.co.uk or +44 (0) 1706 630 606