

CitectSCADA

Version 5.5

Using Reports

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Configuring Reports

You can request regular reports on the status of your plant, and reports that provide information about special conditions in your plant. Reports can be run on a request basis, at specified times, or when certain events occur (such as a change of state in a bit address). Output from a report is controlled by a device. A Report can be printed when it runs, or saved on disk for printing later. (Reports saved on disk are stored in ASCII or RTF format, depending on how the data in the report was formatted in the report format file.) You can use a text editor or word processor to view, edit, or print the report, or you can display it in CitectHMI/SCADA as part of a page.

Reports can also include Cicode statements that execute when the report runs.

Reports are configured in two stages:

- Report Properties - specify the name of the report, when it is run, etc.
- Report format file - specify how the report will look when it is printed.

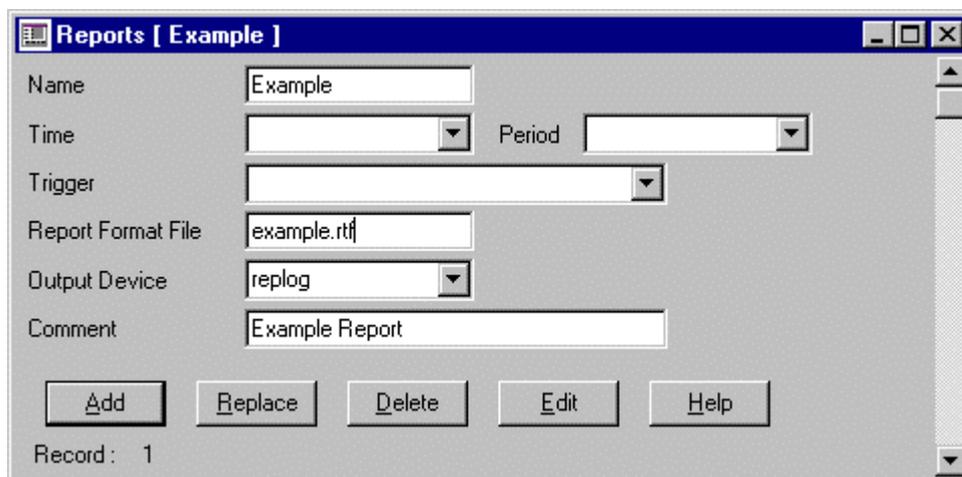
NOTE: If any report data is associated with an I/O Device that fails at startup or that goes off line while CitectHMI/SCADA is running, the associated data is not written to the report (because the values would be invalid). An error code is written instead.

➤ Follow these steps to design, configure and use a report:

1. Configure a device for output of the report (e.g. if you want to save a report to a file when it is run, then set up an ASCII_DEV device).
2. Configure the properties of the report.
3. Edit the report format file. Remember that for an RTF report, the report format file must be saved in RTF format (i.e. with a .RTF file extension).
4. Define your PC as a Reports Server using the Computer Setup Wizard.

➤ To configure report properties:

1. From the System menu select Reports
2. Complete the Reports form. Press Edit if you need to edit the report format file. Use the Help button for more information about the fields.
3. Press the Add button to append a record you have created, or the Replace button if you have modified a record.



Reports Form Properties

The Reports form has the following properties:

Name (253 Chars.)

The name of the report. The name can be a maximum of 64 characters, or 253 characters including the path. It can consist of any character other than the semi-colon (;) or single quote ('). If you are using Distributed Servers, the name must be unique to the cluster (e.g. you cannot have the same report name in more than one cluster).

Time (32 Chars.)

The time of day to synchronise the report, in hh:mm:ss (hours:minutes:seconds).
If you do not specify a time, the report is synchronised at 0:00:00 (i.e. midnight).

Period (32 Chars.)

The period of the report, in hh:mm:ss (hours:minutes:seconds). Alternatively you can:

- Specify a weekly period by entering the day of the week when the report is to start, e.g. Monday, Tuesday, Wednesday, etc.
- Specify a monthly period by entering the day of the month when the report is to start, e.g. 1st, 2nd, 3rd, 4th, 5th, etc.
- Specify a yearly period by entering the day and the month when the report is to start, e.g. 1st January, 25th February, etc. The day and month must be separated by a space.

If you do not specify a period, the report is run daily.

Trigger (64 Chars.)

Any Cicode expression (or Variable tag) to trigger the report. If the result of the expression (in this field) is TRUE, and the **Time** and **Period** fields are blank, the report is run. The report is only run when the expression becomes TRUE, and it must become FALSE then TRUE again before the report is re-run.

Report Format File (253 Chars.)

The name of the report format file. If you do not specify a file extension, it defaults to .RPT. Any valid file name can be used, however you cannot use a Path Substitution in this field. If you specify a filename without a path, the file saves into the directory predefined as Run. The report is assumed (by the CitectHMI/SCADA compiler) to be ASCII unless an RTF extension is used.

NOTE: The file name of your report format file can be up to 64 characters long, or 253 characters including the path. It can consist of any characters other than the single quote ('), and the semi-colon (;).

Output Device (10 Chars.)

The device where the report will be sent.

For RTF reports that are to be saved as a file, select a device of type ASCII_DEV here. Due to the differing natures of their content, however, it is NOT recommended that the same ASCII device be used for logging both RTF and non-RTF reports.

NOTE: If two or more reports are running at the same time and are sending their output to the same printer, the output of each report can become mixed. You must use semaphores to control the access to the printer in each report. If the report only contains Cicode statements (and has no output data), this property is optional.

Comment (48 Chars.)

Any useful comment.

NOTE: The following fields are implemented with extended forms (press F2).

Privilege (16 Chars.)

The privilege required by an operator to run this report - if the report is a command-driven report.

If the report is time-driven or event-driven, this property is ignored.

NOTE: If you assign an acknowledgment privilege to a report, you should not assign a privilege to the command(s) that run the report. If you do assign a different privilege to the commands, an operator must have both privileges to run the report.

Area (16 Chars.)

The area to which this report belongs. Only users with access to this area (and any required privileges) will be able to run this report. For example, if you enter Area 1 here, operators must have access to Area 1 (plus any required privileges) to run this report.

Running Reports

You can run a report by the following methods:

- Automatically when CitectHMI/SCADA starts up
- Automatically at a specified time and period
- Automatically when an event is triggered
- By using a command
- A combination of the above

Running a Report on Startup

You can run a report on startup. CitectHMI/SCADA searches for a report called "Startup" when it starts up, and if CitectHMI/SCADA locates this report, it is run automatically. You can change the name of the default report with the *Computer Setup Wizard*.

Specifying Times and Periods

The Period determines when the report is run. You can specify the period in hh:mm:ss (hours:minutes:seconds), for example:

Period
Comment

Period
Comment

Period
Comment

Period
Comment

Period
Comment

Period
Comment

You can also specify the time of day to synchronise the report, for example:

Time
Comment

Time

Comment

The Time synchronises the time of day to run the report and, with the Period, determines when the report is run, for example:

Time

Period

In this example, the report is run every hour, on the hour. If you start your runtime system at 7:25am, your report is run at 8:00am, and then every hour after that.

Using Triggers

You can use any Cicode expression (or Variable tag) as a trigger for a report. If the result of the expression (in the Trigger field) becomes TRUE, and if the Time and Period fields are blank, the report is run. For example:

Time

Period

Trigger

This report is only run when the expression (Trigger) becomes TRUE, i.e. when the digital tag RCC1_MC is ON and the analog tag RCC1_SPEED is less than 10. The expression must become FALSE and then TRUE again before the report is run again.

If you use the Time and/or Period fields, the Trigger is checked at the Time and/or Period specified, for example:

Time

Period

Trigger

This report is run each hour, but only if the expression (Trigger) is TRUE (i.e. if the digital tag RCC1_MC is ON and the analog tag RCC1_SPEED is less than 10).

Using Commands

If the Time, Period, and Trigger fields are all blank, the report can only be run by a command that calls the Cicode Report() function.

The Report Format File

The Report Format file specifies how data is formatted in a report. You can use fixed text, Cicode expressions and database variables in any report.

You must use a text editor to create (and modify) the report format file. You can use any text editor supported by Windows (e.g. ED for Windows or the Windows Notepad editor). If your report format file is in RTF (Rich Text Format), it is recommended that you use Microsoft Wordpad.

Including Fixed Text

You can include fixed text in the report, specifying the text exactly as you want it to appear (e.g. Name of Report, Description, etc).

Including OLE (RTF files only)

Objects can be linked to or embedded within an RTF report format file, however, such objects will not be displayed or printed from CitectHMI/SCADA.

Using Fonts (ASCII format only)

If your format file is in ASCII format, you can use any text font supported by Windows in the report. To specify a font, use the PrintFont() function. RTF format files do not require this function, as they use the formatting features of the host word processor.

Including Cicode Expressions and Variables

You can include Cicode expressions and variables by enclosing them (and optional format specifications) in braces {} - for example:

```
{TIME(1) }  
{PV12:####.##}  
{PV12:4.2}
```

The size of each field (i.e. the number of characters) is determined by either the format specification, or by the number of characters between the braces. In the above example, the variable PV12 is formatted with four characters before the decimal point and two characters after.

You do not have to include the format - for example:

```
{PV12}
```

In this case, the variable is formatted using only four characters (i.e. the number of characters between the braces).

NOTE: The following rules apply when logging a report to a **database device**:

- The format (for the report field) must not specify a field size greater than the size of the relevant field specified in the device.
 - No spaces are allowed between each field specification, e.g.:
{TIME(1) }{PV12:####.##}{PV12:4.2}
-

Including Blocks of Cicode

You can include a block of Cicode, using the following format:

```
{CICODE}  
Statements;  
{END}
```

The block of Cicode is delimited by the commands {CICODE} and {END}. After the {END} command, the report switches back into WYSIWYG mode. If the entire report is Cicode or the last section is Cicode, the {END} command is not required.

A block of Cicode does not send any output to the device unless you use either the Print() or PrintLn() functions. If you use one of these functions, the argument is printed to the device.

Cicode Variables

You can also declare variables for use within your Cicode block. You must declare all variables at the beginning of the file (i.e. before any report format or Cicode). You should add a {CICODE} block first, for example:

```
{CICODE}  
INT    nVar1;  
STRING sVar2;  
  
Statements;  
  
{END}  
  
Remainder of report
```

Including Comments

You can include comments by using the comment character '!' enclosed in braces - for example:

```
{!This is a Comment}
```

NOTE: A comment in the body of a report differs from a comment in a Cicode block. A comment in a Cicode block does not require braces.

Issuing a Form Feed (ASCII format only)

You can use a form feed specifier:

```
{FF}
```

Including Plots

You can include a plot (graph) of data in the report by using the Plot functions.

Including Trend Data

You can include raw trend data in the report by using the TrnGetTable() function.

Including Trend Graphs

You can include a trend graph in the report by using the TrnPlot() function.

Report Example

The following is an example of a report format file (for a printer or ASCII file device):

```

-----
SHIFT REPORT
-----
{Time(1) } {Date(2) }
Shift Production           {Shift_Prod:###.##} tonnes
Total Production          {Total_Prod} tonnes
{! The following Cicode displays "Shift Report Complete" on the screen}
{CICODE}

Print("End of Report")
Shift_Prod = 0;           ! Reset the Shift production tonnage

Prompt("Shift Report Complete");

{END}
{FF}

```

This report produces the following output to the device and displays "Shift Report Complete" on the graphics page.

```

-----
SHIFT REPORT
-----
6:00am    12/3/92
Shift Production      352.45 tonnes
Total Production      15728 tonnes
End of Report

```

➤ To edit a report format file:

1. From the Reports properties form, select the relevant report, and press the **Edit** button

- or -

1. Click on the Edit Report tool.



2. Select the report to edit
3. Click on the **Edit** button.

NOTE: If the report format file exists, it is loaded into the editor for you to edit. If the file does not exist, CitectHMI/SCADA creates a new file.

➤ To change the report format file editor:

1. Click on the Options tool.



- or -

1. From the File menu select **Options**
2. Enter the name of the new **Editor**
3. Click on the **OK** button.

Handling Communication Errors in Reports

You can handle errors in communication with I/O Devices (for example, an I/O Device fails at startup or goes off line while CitectHMI/SCADA is running) in several ways:

- You can write communication errors and invalid data to the report as error codes.
- You can disable the running of reports that are triggered from an I/O Device, if the I/O Device has a communication failure.

Reporting Errors in I/O Device Data

If a communication error occurs (with an I/O Device) or if the data is invalid, one of the following errors is written to the report (instead of the value):

Error	Meaning
#COM	Communication with the I/O Device has failed
#RANGE	The value returned is out of range
#DIV/0	An attempt was made to divide a number by 0 (zero)
#STACK	The value has caused a stack overflow
#ASS	The value is incorrectly associated (with a substitution string or Genie).
#ERR	An uncommon error has occurred. (Use the IsError function to find the error.)
#MEM	Out of memory or more than 64K bytes of memory requested.

For example:

Report Format:

```
{PV_1} {SP_1} {OP_1}
```

If the above report is run when the value of PV_1 is out of range (e.g. 101.5), SP_1 is 42.35 and OP_1 is 60.0, the output of the report is:

Report Output:

```
#RANGE 42.35 60.0
```

In some cases, for example, when reports are written to a database device, you might want to disable the error messages and write the values to the report (even if the values are invalid). Use the ERR_FORMAT_OFF command to disable all error messages and write all data as values.

For example:

Report Format:

```
{ERR_FORMAT_OFF}  
{PV_1} {SP_1} {OP_1}
```

If the above report is run when the value of PV_1 is out of range (e.g. 101.5), SP_1 is 42.35 and OP_1 is 60.0, the output of the report is:

Report Output:

42.35 60.0

To re-enable the error messages, use the ERR_FORMAT_ON specifier.

NOTE: If an I/O Device goes off line and you have disabled communication errors, the value printed into the report is either 0 (zero) or the last value read from the I/O Device when the report was last run. In either case, the value is invalid.

Preventing Reports From Running

You can prevent the running of reports that are triggered from I/O Devices if a communication error occurs, with the [Report]ComBreak parameter. For example, you might configure a report to be run every hour when a bit is on. The I/O Device associated with that bit goes off line. If the [Report]ComBreak parameter is 0, the report does not run. If the parameter is 1, and if the latest valid value that was read from that bit was 1, the report is run.

NOTE: This parameter only applies to the trigger of the report - not to the data in the report.
