500 DataMod Tool

User Guide

contrec

Publication No: 500-DM-UG v2.00 - 21 October 2018

500 DataMod Tool - User Guide

The instructions given herein cover the general description, installation, operation and maintenance of the subject equipment/software. Contrec Limited reserves the right, without prior notice, to make engineering refinements that may not be reflected in this manual.

Should any questions arise which cannot be answered specifically by this manual, they should be directed to Contrec Limited for further detailed information and technical assistance.

Contrec Limited will not accept any liability for either direct or consequential damages resulting from the use or misapplication of the contents of this manual.

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Chapter 1
Introduction

Welcome to 500-Series DataMod Tool

This User Guide relates to the use of the 500-Series DataMod Tool. The DataMod program enables you to perform the following functions for a 500-Series based instrument:[1]

- Collect live or logged data from 515-Series instruments
- Display collected process data
- Generate PDF reports (with option of auto-save and auto-print of PDF reports)
- Instant access to the last auto report
- Produce data in CSV format commonly used in 3rd party software
- Customisable reports (special custom templates also available)
- Modbus RTU communication via serial port or TCP/IP (IoT solutions)
- Monitor batch or load controllers to Auto Collect delivery data
- Confidence in data integrity

The tool is simple to use and data is easy to collect. The program allows multiple custom set-ups to be saved for easy re-use, automatically starts with the previous configuration and allows saved reports to be re-opened. All of this is achieved without the configuring a single Modbus register!

System Requirements

The 500-Series DataMod Tool has the following system requirements:[2]

- Windows based Personal Computer
- 256MB Memory (or higher), and 10MB available Hard Disk space
- Display Resolution 1024 x 768 minimum
- Serial Communications Port or TCP/IP connection (requires serial to TCP/IP converter at 515 instrument side)
- Microsoft Windows 7 (or higher), normal DPI setting
- PDF Reader, such as Adobe Acrobat Reader V4.0 or higher (to view/print generated reports)
- Internet access for periodic software verification

1. The DataMod tool is compatible with 515 instruments with software versions starting from 2.9.080 (or 3.0.383 if Load application and auto-collecting is required).
2. It is not possible to have multiple DataMod applications open on the same device.

User Licence

The 500-Series DataMod Tool is able to be installed as a time limited fully operational trial version.

An installation of the trial version of the DataMod software can be changed to a fully licenced installation with the entry of an activation code.

A single licence allows the DataMod program to run on a single computer. Software licence will be validated, periodically requiring internet access.

Installation

Use the following procedure to install the software onto a computer:

1. Select and Run the 500-DM-x.x.xxx.exe file from appropriate local drive or internet link.
2. If necessary, provide authorisation to Run the InstallShield program.
3. The InstallShield Wizard will start with a typical welcome screen.

   It is recommended to allow the default installation to take place (the default location for installation is C:\Contrec\500-DataMod\).
4. Follow the remainder of the instructions of the InstallShield Wizard on the screen to complete the installation.

Hardware Connection

The 515 Series instruments use industry standard Modbus RTU protocol. The DataMod program offers a selection of Modbus transmission modes that can be used from a Windows based computer. Selections can be: ***RTU Serial*** (for direct local connection), ***TCP/IP*** or ***RTU over TCP/IP*** (for Internet or Ethernet based solution for remote access with a serial to TCP/IP converter at the 515 instrument side). In any case, to use the DataMod program there must be a transparent and robust serial communication connection between the instrument and the computer running DataMod. Settings of a Modbus serial-to-TCP converter should match the serial port settings of 515 instrument, and the selection of transmission mode of ***TCP/IP*** or ***RTU over TCP/IP*** in the DataMod program.

515 Instrument Connection

The 515 instrument currently has RS232 and RS485 serial ports (with an Ethernet port soon to be an available option). Either port can have the Modbus RTU protocol assigned to it and both ports have the ability to set the baud rate, parity and stop bits as required. The 515 instrument can also have the Modbus address set as required. The default factory setting for a 515 instrument is for Modbus RTU protocol to be assigned to the RS485 port, and the default settings are 19200 baud rate, even parity and 1 stop bit.

The RS232 port can be used when there is only one 515 instrument to communicate with over a short distance and there is no need to use the RS232 port for another protocol or function, such as a local printer output.

The RS485 port is used when there are multiple instruments to communicate with on the same network, or when there is a significant distance between the 515 instrument and the computer collecting the data.

Computer Port Connection

It is common nowadays for Microsoft Windows based computers not to have a RS232 or RS485 serial port. Most computers have wireless, USB or Ethernet ports and rely on serial communication converters to connect to external RS232 or RS485 devices.

There are many such serial communication converters available, but the device used must be robust, have a reliable Windows driver and operate as a transparent serial port.

The DataMod program allows the user to select the appropriate serial port or TCP/IP connection on the computer. For the serial port, it provides access to set all the normal serial communication port settings, such as baud rate, parity and stop bits (these must be set to match the 515 instrument settings). For TCP/IP connections, it allows entry of the port and host name / IP address.

DataMod Introduction

Starting DataMod

To start the DataMod software, double click on the **500-Series DataMod** icon on the Windows desktop. The program starts with a typical welcome screen as shown in Figure 1.

Figure 1 500-Series DataMod Welcome Screen

The main screen of the DataMod program is shown in Figure 2. The main Toolbar is found on the right hand side, the Information and Progress bar is displayed along the bottom and the two main viewing control tabs (***Report Items*** and ***Report Data***) are located in the upper left.

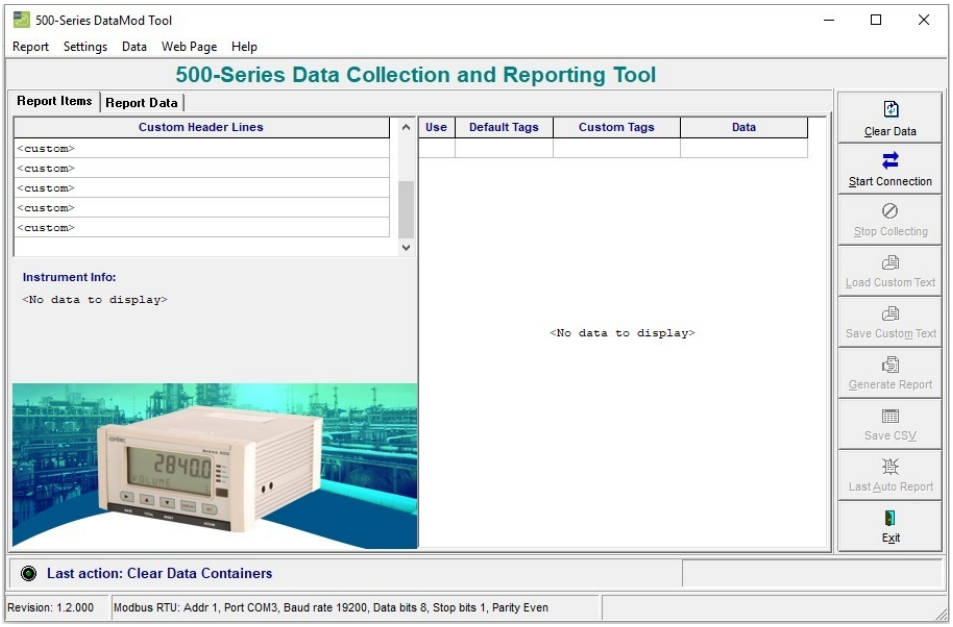


Figure 2 500-Series DataMod Main Screen

The ***Report Items*** and the ***Report Data*** screens will become populated after some initial communication connection has been established and data has been collected from a 500-Series instrument.

Report Items Screen

The ***Report Items*** tab displays a screen with the following key features:

- **Default and Custom Tags** - This section displays the list of the instrument variables with their default tags (names) and provides the ability to enter ***Custom Tags*** and to choose the variables to be included in the reports. ***Custom Tags*** and variable selections can only be made after the initial communication connection has been established and the instrument type and main menu list has been identified.

- **Data -** This column shows the last set of data collected from the instrument.

- **Custom Header Lines** - This section allows the user to enter up to 5 lines of custom header information that will be included in the reports.

- **Instrument Info** - This section is populated with information collected from the instrument and DataMod entries including:
  - Hardware model information
  - Application pack and input usage
  - Program Manager software version used to create application
  - Custom version number
  - Instrument name and serial number.
  - Unit Tag

  (The above is included in the reports and is used as part of the report file name.)

- **Information and Progress Bar** - This section provides feedback regarding the current program status or the previous action carried out. The coloured flashing ‘lamp’ and messages provide clear and helpful information.

Report Data Screen

The ***Report Data*** tab displays a screen with the tabulated data collected from the instrument. There are horizontal and vertical scroll bars to allow all fields of data to be viewed.

Only the items selected in the variables list on the ***Report Items*** screen will be shown in the table of data.

The default variable tags and units of measurement (as extracted from the instrument) are listed along the top row of the table and repeated as fixed labels at the bottom of the table to always remain visible. The ***Custom Tags*** (names) are shown in the yellow shaded row at the top of the table.

The quotation symbol (**“**) is used to indicate that no custom tag has been entered for that variable.

Menu & Toolbar

Menu Bar

The menus and sub items as listed in Table 1 are found in the menu bar along the top of the screen. Some functions are also found in the side toolbar. Please refer to the Toolbar functions below for full description.

Menu	Sub Item	Function
Report	Load Template	Load a custom report template created and supplied by Contrec (contact your distributor for details).
	Load Custom Text	Open a previously saved DataMod custom text file.
	Save Custom Text	Save DataMod custom text and item selection file.
	Open Saved Report	Open a previously saved report in the Preview screen.
	Generate Report	Generate and open report in a Preview window with the ability to print, save or export as PDF.
	Save CSV	Save collected data report to a CSV file.
	Last Auto Report	Open the last automatically generated PDF report.
	Exit	Exit the DataMod program.
Settings	Modbus	Open the Modbus Connection Settings dialog box.
Data	Clear Data	Clear any custom text and any data previously collected.
	Start Connection*	Open the dialog box to start instrument connection process.
	Start Collecting*	Start the data collection process. *(* Start Collecting replaces the Start Connection menu item after connection is established.)*
	Stop Collecting	Stop collecting data from the instrument.
Web Page		If internet connection is available, the Contrec website is opened using the computer's default browser.
Help	User Guide	Open the 500 DataMod Tool User Guide (this document) in the computer's default PDF reader.
	About	Display the version details of the DataMod program.

Table 1 500 DataMod Menu

DataMod Toolbar

The DataMod toolbar buttons (found on the right hand side) provide the functions as described in Table 2.

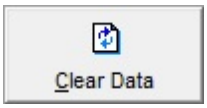
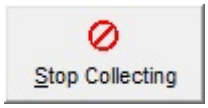
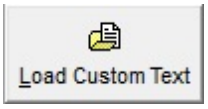
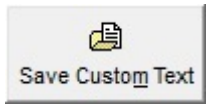
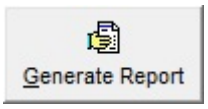
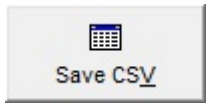
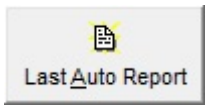
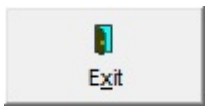
Option	Toolbar Button	Description
Clear Data		Clear any previous data that has been collected. Also clears any custom text and any custom variable selections.
Start Connection		Open the Data Collection Options dialog box to start the connection process. The instrument will be identified and the Report Items screen will be populated with the instrument info and the main menu items.
Start Collecting		Collect data from the instrument. The button text flashes blue to indicate the DataMod program is connected and ready to proceed.
Stop Collecting		Allow the data collection process to be stopped. The data collected prior to stopping the process is retained.
Load Custom Text		After connection has been established, a previously saved custom configuration can be loaded to apply preferred variable selections and custom text.
Save Custom Text		Custom settings that have been applied after connection has been established can be saved for convenient re-use in the future.
Generate Report		After data has been collected (and any relevant custom settings have been applied), a report can be generated from the ***Report Data***. The report will be opened in a Preview window with the ability to print, save or export as PDF.
Save CSV		After data has been collected (and any relevant custom settings have been applied), the ***Report Data*** can be saved in CSV format for future use with other applications.
Last Auto Report		Open the last automatically generated PDF report in the computer's default PDF reader.
Exit		Exit the DataMod program.

Table 2 500 DataMod Toolbar Buttons

Chapter 2
Operation

DataMod Overview - Quick Guide

The tables below briefly outline example procedures for using the DataMod program to establish communications with a 515 instrument, apply customisations if required, collect data and generate reports. For a detailed description of each part of the operation including data collection, communications setup and how to customise reports, please refer to the appropriate sections.

Quick Guide for Live Time-based Data Collection

This quick guide example shown in Table 3 demonstrates the basic steps required to collect data and generate a custom report of collected time-based data.

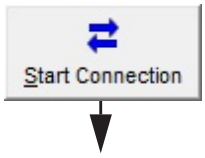
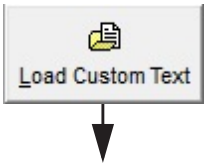
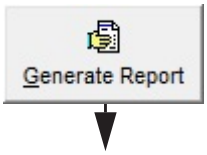
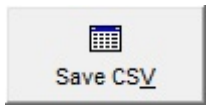
Step	Toolbar Button	Description
1. Start Connection		Open the Data Collection Options dialog box. Set the type of instrument and type of data collection required and click Start to establish connection. The instrument will be identified and the ***Report Items*** screen will be populated with the instrument info and the main menu items.
2. Load Custom Text		After connection has been established, a previously saved custom configuration can be loaded to apply preferred variable selections and custom text.
4. Start Collecting		Start Collecting data from the instrument and view progress on the status bar, each incoming data record on the ***Report Item*** screen or the collected data on the ***Report Data*** screen.
5. Stop Collecting		Stop the data collection process. The data collected prior to stopping the process is retained and can be viewed, printed and manually exported as PDF or CSV.
6. Generate Report		After data has been collected, a report can be generated from the ***Report Data*** screen. The report will be opened in a Preview window with the ability to print, save or export as PDF.
7. Save CSV		After data has been collected, the ***Report Data*** can be saved in CSV format for future use with other applications.

Table 3 Quick Guide Example of DataMod Operation for Time-based General Applications

Quick Guide for Load based Auto Collection and Print

One of the key designed uses of DataMod is to provide a simple and efficient way for single standalone 515 Load controller installations to get a report (delivery docket) generated and printed automatically to the host computer's default A4 printer, each time an operator or driver completes a load. It is a significant benefit to have the load delivery docket already printed and awaiting collection by the time the operator or driver arrives at the office.

This quick guide example shown in Table 4 demonstrates the minimal steps required for a control room operator to start the DataMod program ready to automatically generate and print reports. This example assumes that the Modbus settings and any custom text file and report template has been saved or loaded previously and that the Rollover Number has been set to 1 for one load per report.

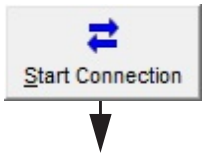
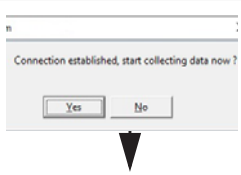
Step	Toolbar Button	Description
1. Start Connection		Open the Data Collection Options dialog box. Ensure the Application Type is set to Load and Auto Collect, Auto Save Reports and Auto Print Reports have been selected. Click Start to establish connection. The instrument will be identified and the ***Report Items*** screen will be populated with the instrument info and the main menu items.
2. Confirm Start Collecting Now		After connection has been established, click Yes to start the collection process immediately.
At this point the DataMod program monitors the 515 Load controller. When DataMod detects that a load has just been completed, the delivery data is collected, data is displayed in ***Report Items*** and ***Report Data*** screens and a report is generated and printed automatically. DataMod then continues to monitor the 515 Load controller, ready to detect the completion of the next delivery. DataMod can continue to monitor the load controller indefinitely and as the program needs no interaction automatically generate and print reports, it can be minimised on the computer screen to run in the background.		
3. Last Auto Report		If the printer was off-line at the time of Auto-print or additional copies of a the last report are required, the Last Auto Report button can be used to open the Report in the default PDF reader and printed again.
4. Stop Collecting		When automatic report and print generation is no longer required or changes to the setup are required, Stop the data collection process. The reports collected prior to stopping the process have been saved in the 'reports' folder in PDF and CSV formats.

Table 4 Quick Guide Example of DataMod Operation for Load Applications

DataMod Setup

This section of the 500 DataMod Tool User Guide describes in detail how data can be collected from a 515 instrument with compatible application software.[1]

The DataMod program is used to collect data from an instrument and allows custom tags, custom header text and the selected variables to be displayed as a table of ***Report Data***. Data can be collected as live or previously logged data and the collection can be tailored for 515 instruments of a General, Batch or Load type. The prepared data can then be used to generate a structured report that can be saved, printed or exported in PDF or CSV format.

The features of Auto Save Reports and Auto Print Reports, in conjunction with a custom report template allow the DataMod software to be used as a very simple way for single standalone Load applications to get a professional A4 delivery docket to be printed automatically on the host computers default office printer without any operator intervention.

Figure 3 below shows a typical ***Report Items*** screen after data has been collected and some custom header, tags and selections have been made.

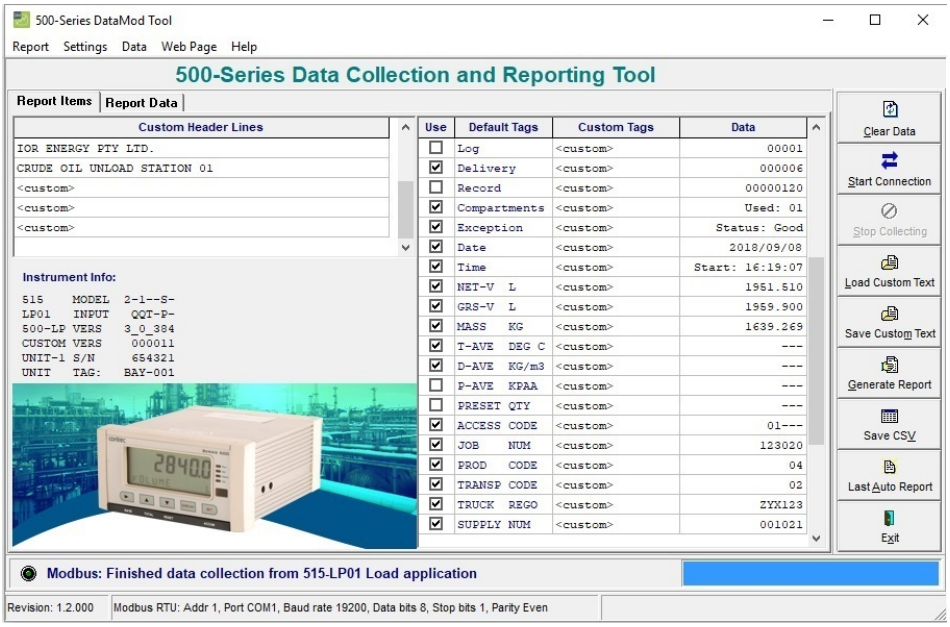


Figure 3 Example 500 DataMod Report Items screen

The instructions and information provided below will describe the Modbus connection settings and how the functions and features of the DataMod program are used to collect and present important field data as required.

1. The DataMod tool is compatible with 515 instruments with software versions starting from 2.9.080 (or 3.0.383 if Load application and auto-collecting is required).

Modbus Connection Settings

The ***Modbus Connection Settings*** dialog box is used to provide selection of the Transmission Mode and then RTU Serial Settings or the TCP/IP Settings, depending on the selection.

The ***Modbus Connection Settings*** can be accessed via the Menu Toolbar (under Settings) or via the ***Data Collection Options*** dialog box, which is opened as part of the ***Start Connection*** process.

Please note that the DataMod program initial settings are RTU Serial, with port configurations that should suit most 515 applications.

Note: As most current computers do not have direct RS232 or RS485 ports, USB converters are often used. It must be known what COM port is used by the driver for the USB converter.

An example of the ***Transmission Mode*** being set to ***RTU Serial*** and the associated serial settings are shown in Figure 4.

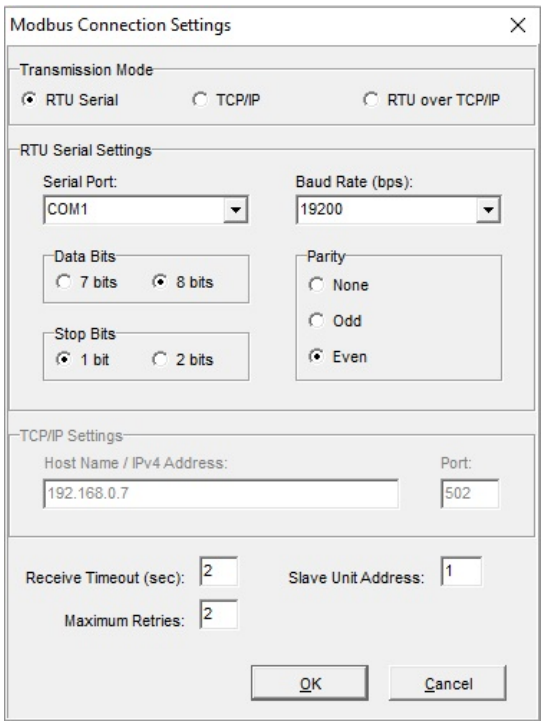


Figure 4 Modbus Connection Settings - RTU Serial Communications

The DataMod program's default Modbus settings for ***Receive Timeout*** and ***Maximum Retries*** should suit most 515 instrument applications. However, these settings can be changed if required.

An example of the ***Transmission Mode*** being set to ***TCP/IP*** (or ***RTU over TCP/IP***) and the associated TCP/IP settings are shown in Figure 5.

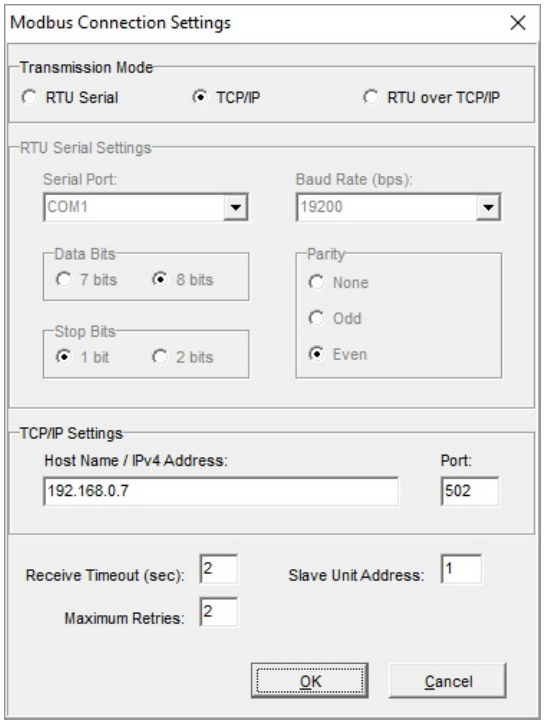


Figure 5 Modbus Connection Settings - TCP/IP Communication

To return to the Data Collection Options dialog box, click OK to apply the settings on return, or click Cancel to return without applying any changes.

Automatic Saving of Modbus Settings

Any changes to the Modbus Connection Settings are automatically saved to be re-used the next time the DataMod program is started. The DataMod program upon restart will also automatically re-use any Data Collection Options, Custom Text and Tags and any Custom Report Template that were previously in use. This feature greatly simplifies the start-up process and access to data in instruments of a fixed system.

Logging and Data Collection Types

The DataMod program uses industry standard Modbus RTU communications protocol to access the data held in the instruments. The 515 instrument can be a General flow type application (with time based logging) or a Batch or a Load type application (with delivery or transactions based logging).

As well as extracting the previously logged data, DataMod allows live data to be collected from the General (flow) type applications at programmable intervals. The DataMod program also provides the option of continual monitoring of the Batch and Load type applications to Auto Collect the last delivery or transaction data as soon as a delivery is complete.

When viewing the logged data on the 515 instrument (or retrieving via serial communication), it is important to understand how the logs are numbered, i.e. log indexing/numbering always starts from the most recent log and continues towards the older logs in chronological order. Once the new logging occurs, it becomes available as the Log Number 1 and so on.[1]

Time based logging

When an instrument uses time based logging, a log is taken at the rollover of the time base (i.e. on the hour for hourly logs, etc.).

The most recent log of any particular time base is numbered as Log 001 with older logs having increasing numbers. For example, a log that was stored 5 time bases ago (if hourly logs, 5 hours ago) will be numbered as Log 005, etc.

Delivery based logging

When an instrument uses delivery or transaction based logging, a log of the relevant batch or load information is taken at the end of a delivery.

The most recent delivery log is numbered as Log 00001 with older logs having increasing numbers. For example, a log that was stored 5 deliveries ago will be numbered as Log 00005, etc.

A unique delivery number is also assigned to each batch or load and is stored as part of the logged data. The delivery number increments with each batch or load made and it is only reset when the instrument logs are cleared.

Typically the logs are collected starting from the most recent one (Starting Number set to 1), but users can change the logs retrieval ***Starting Number*** and ***Number of Logs*** to suit their needs.

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1. Logged data includes snapshot of application's relevant main menu variables together with the time/date stamp. In addition, logs of Batch/Load applications also include unique (sequentially incremented) delivery number.

For example, if the most recent delivery number is 000124, but the desired delivery numbers to be collected are from 000101 through to 000120 (20 records), then the 'Log to Retrieve' ***Starting Number*** should be set to 5 and the ***Number of Logs*** to 20 (refer to Figure 6).

Live Data Collection (General Application Type)

When data is required to be captured from an instrument on a more frequent or different time basis than the 515 internally logging, or there is the desire for ongoing automatically generated reports, then the ***Live Data Collecting*** options should be used. If either of the 'Live' ***Log Types*** are selected, the ***Interval*** (in seconds) and the ***Rollover Number*** can be entered.

If for example, the ***Interval*** is set to 60 (seconds) and the ***Rollover Number*** is set to 10, then a snap shot of the live data is collected every minute and, if the ***Auto Save Reports*** option is selected, a report in PDF and CSV format, is automatically saved every 10 records (in this case, every 10 minutes). The status line indicates the progress of the collection cycle. The Auto Saved reports in a default installation are saved in: C:\Contrec\500-DataMod\reports.

If automatic printing of reports is required, refer to **Auto Print Reports** on page 16.

Auto Collect (Load & Batch Application Types)

When the 515 ***Application Type*** is either Load or Batch, the ***Auto Collect*** option can be used to ensure the DataMod program continually monitors the 515 instrument to identify when a delivery record is ready to be collected on completion of a batch or a load. The ***Rollover Number*** is used to determine the number of records in the cycle to be held in the ***Report Data*** screen before the oldest is removed from the list and the new one is added.

If for example, the ***Rollover Number*** is set to 10, then the 11th delivery record will overwrite the 1st record collected in that collection cycle. If the ***Auto Saved Reports*** option is selected, a report in PDF and CSV format will be automatically saved every 10 deliveries. The status line indicates the progress of the collection cycle.

Auto Save Reports

When either '***Live***' data collection for General applications is selected or ***Auto Collect*** is selected for Batch or Load applications, then the option of ***Auto Save Reports*** becomes available. This option can be used to ensure DataMod automatically saves a report of the collected data in PDF and CSV format. The ***Rollover Number*** is used to determine the number of records collected in a cycle before a report is generated.

The auto-saved reports in a default installation are saved in:
C:\Contrec\500-DataMod\reports

Both the PDF and CSV report file names take the format of:
515-xxxx-nnnnnn-yyyymmdd-hhmmss_uuuuuuu
where:
515-xxxx - is the instrument application pack.
nnnnnn - is the instrument serial number.
yyyymmdd - is the year, month, day date stamp when the report was generated.
hhmmss - is the hour, minute, second time stamp when the report was generated.
uuuuuuu - is the ***Unit Tag*** as entered in the Data Collection Options dialog box.

An example file name would be:
515-LP01-654321-20180908-134608_BAY-001.pdf

Auto Print Reports

Whenever the ***Auto Save Reports*** feature is selected and active, the ***Auto Print Reports*** option becomes available. If enabled, this DataMod feature allows the PDF report, as it is generated, to be automatically printed to the host computer's default office printer using its default settings. It is important to test the printout and adjust any required settings of the office printer.

After the data is collected and the PDF and CSV reports are automatically generated and saved, the DataMod program will print the PDF report to office printer and then continue communication with the 515 instrument to collect data and generate reports as required.

Auto Print for Load Applications

For Load applications especially, the Auto Print feature is designed to be used as a simple way for single standalone installations to get an A4 delivery docket to print automatically without any operator intervention. DataMod will trigger a printout of the PDF using the computers default printer and its default settings.

Note, in load (or batch) applications where there is the desire to have a delivery docket or report generated for every load transaction, then the ***Rollover Number*** should be set to 1.

For a professional and tailored report, Contrec can be contacted to arrange for the purchase of a custom Report Template designed to suit such requirements, as shown in the examples in **Samples of Custom Reports** on page 31.

Data Collection Options Setup

The ***Data Collection Options*** dialog box allow the nature of the DataMod data collection to be defined. This includes the 515 Application Type and the type and number of logs to be collected.

The ***Data Collection Options*** are accessed as part of the ***Start Connection*** process. This ensures the user has the opportunity to confirm that the Application Type is correct and the Data Collection Options are as required before proceeding with data collection.

As all DataMod settings are automatically saved for re-use to simplify the operation of the program, there will be no requirement to make changes to the settings if DataMod is being used for repetitive data collection.

Click on the 

button to open the ***Data Collection Options*** dialog box as shown in Figure 6.

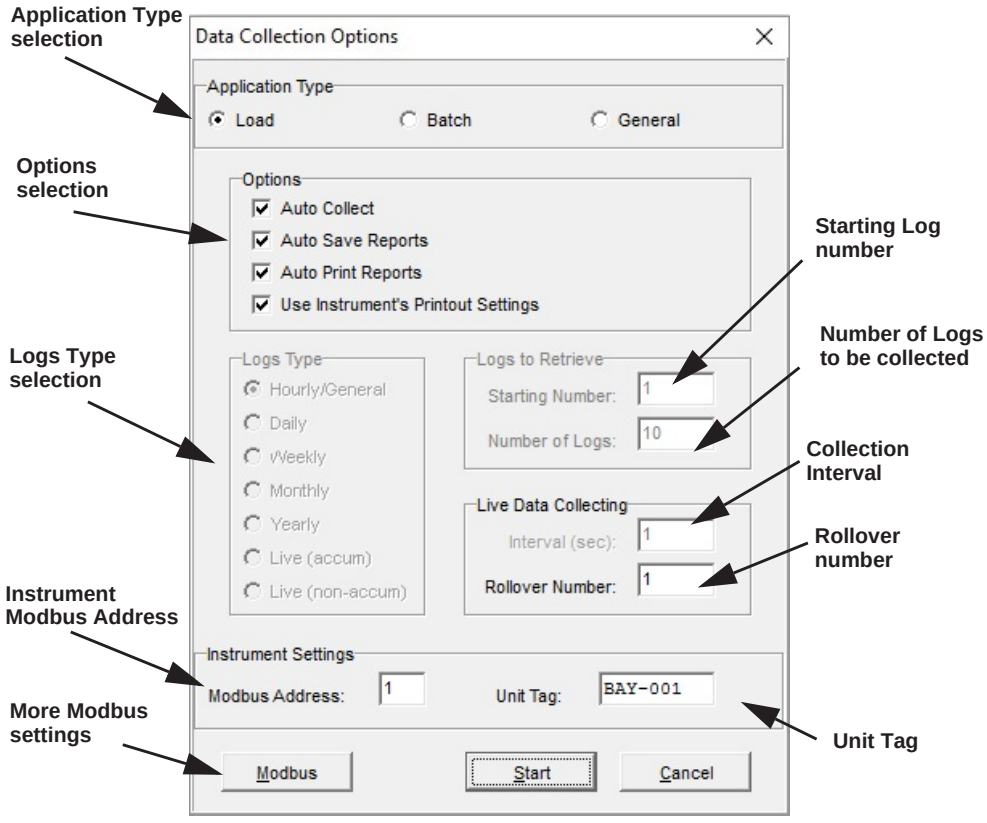

Figure 6 Data Collection Options dialog box.

Refer to the following information for a detailed description of each setting.

Once the required selections and settings have been made, the user would click ***Start*** to continue with the Start Connection process, or click ***Cancel*** to return to the main screen.

A number of options and selections are available to allow the data of interest to be collected from the instrument. The available selections are described below. Greyed out options indicate that they are not applicable to the selected configuration. Refer to **Logging and Data Collection Types** on page 14 for full detail and description.

- **Application Type -** The application type (Load, Batch and General) determines how data is collected and what options and selections become available.

- **Options**
  - *Auto Collect* is only available for Load and Batch types.
  - *Auto Save Reports* is available for 'Live' data collection or when Load and Batch is set to Auto Collect.
  - *Auto Print Reports* is only an available option when Auto Save Reports is selected and active.
  - *Use Instrument's Printout Settings* can be selected to allow the instrument's printout settings to determine the items to be included in the ***Report Data***. Alternatively, there is the ability to select or deselect the variables to be included in the ***Report Data*** by using the check boxes in the Custom Text and Tag section of the ***Report Items*** screen.

- **Log Types** - This section is only available for General type applications. When collecting data from a 515 Flow Computer or Controller with time based logs, the type of log of interest (a particular Timebase or Live log) should be selected.[1]

- **Logs to Retrieve** - Enter the log ***Starting Number*** and ***Number of Logs*** to be collected.

- **Live Data Collecting** - Enter the live collection ***Interval*** time and the ***Rollover Number*** that determines the cycle and report length.

- **Instrument Settings** - Enter the ***Modbus Address*** (RTU slave address) of the 515 instrument (range 1-247) and enter the ***Unit Tag*** that will be included in the generated reports and in the report's PDF and CSV file names.

- **Modbus** - This button is used to gain access to the Modbus Connection Settings dialog box (including computer serial port settings) as described in **Modbus Connection Settings** on page 12. While the 515 instruments use Modbus RTU to provide access to data, the DataMod program also provides the option of using TCP/IP connection for remote access and IoT solutions. If TCP/IP connection is used in DataMod, a serial to TCP/IP converter is required on the instrument side.

Automatic Saving of Data Collection Options

Any changes to the Data Collection Options are automatically saved to be re-used the next time the DataMod program is started. The DataMod program upon restart will also automatically re-use any Modbus Connection Settings, Custom Text & Tags and any Custom Report Template that were previously in-use. This feature greatly simplifies the start-up process and access to data in instruments of a fixed system.

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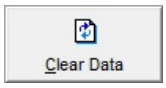
1. Time based selection is not applicable to 515 Batch or Load applications.

DataMod - Establish Connection

Clear Data

The Clear Data function clears any collected data and custom text or selections from the ***Report Items*** and ***Report Data*** screens. This is generally only used when there is a new type of instrument or if fresh custom settings need to be applied.

Click on the 

button to clear the data.

Start Connection

Before the collection of data is started, the DataMod program first requires communication connection to be established. This allows the instrument to be identified, and essential instrument information and main menu items to be gathered and displayed on the ***Report Items*** screen. This then gives the user the opportunity to apply any required custom text or item selection.

Note: To make the use of DataMod more efficient, the last used custom text is always automatically restored after restarting the software regardless of the connected instrument. It is therefore the user's responsibility to ensure that appropriate customisation is applied.

The Start Connection process includes giving the user the opportunity to confirm the Application Type is correct and the Data Collection Options are as required before proceeding.

Click on the 

button to open the ***Data Collection Options*** dialog box as shown in Figure 6.

If any setup changes are required, refer to **Data Collection Options Setup** on page 17 for detailed information.

Also, if required, the ***Modbus Connection Settings*** can be accessed and confirmed via the ***Modbus*** button on the Data Collection Option dialog box. Refer to **Modbus Connection Settings** on page 12 for detailed information.

Establishing Connection

Click ***Start*** at the bottom of the ***Data Collections Option*** dialog box to establish connection once the hardware connection is in place with the appropriate matching communications setting on the instrument and computer.

The status bar will show an initial progress message relating to scanning for the instrument and then ‘Collecting Instrument Info’ and then ‘Tags’ as per Figure 7.

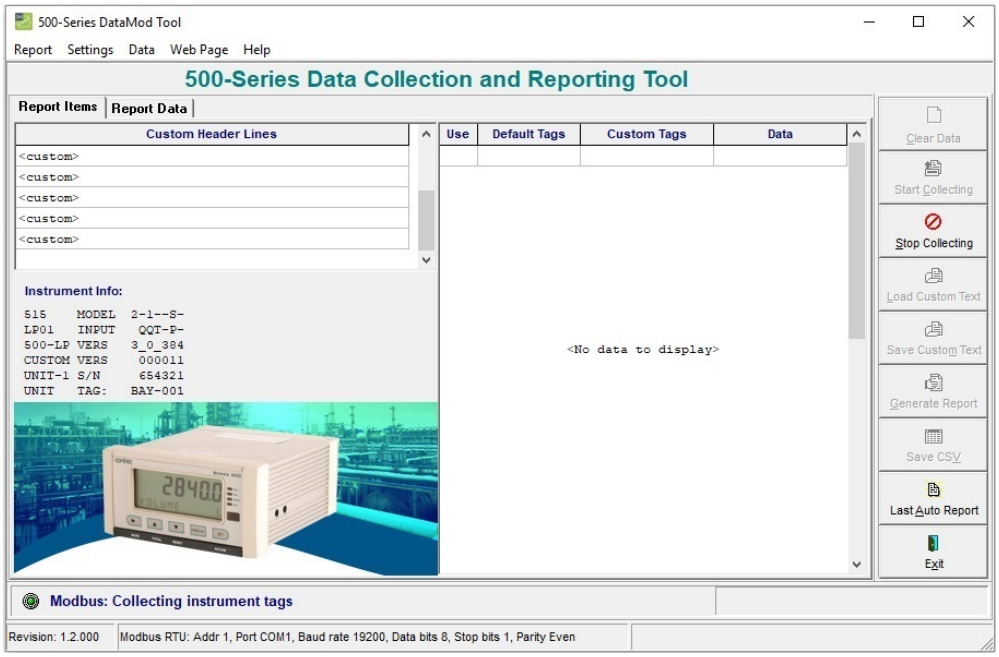


Figure 7 Start Connection - Collecting Instrument Tags

After the connection has been established and the instrument information and tags have been collected, the DataMod program will then present the prompt as per Figure 8.

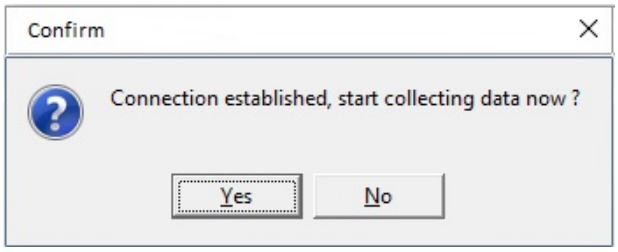


Figure 8 Connection Established - Start Collecting Data Prompt

Press ‘Yes’ if text and tags customisation is not required (i.e. DataMod has previously been setup), to proceed directly to collecting data as per **Data Collection** on page 25.

Otherwise, press ‘No’ and the Instrument Info and main menu items will be displayed in the Report Items screen as per Figure 9.

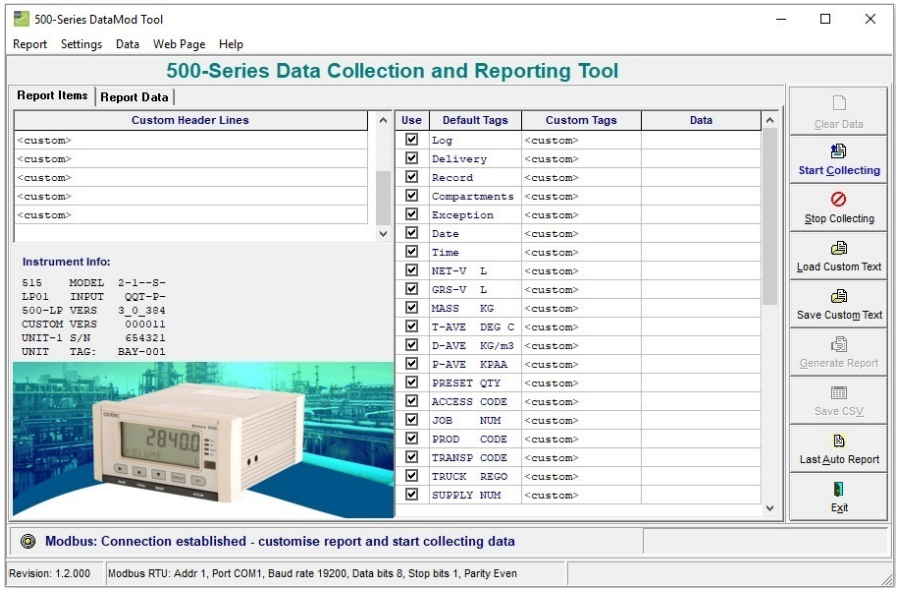


Figure 9 Connection Established - Report Items displayed

At this point, changes to custom text and item selection can be made, or a **Custom Text** file and/or custom **Report Template** can be loaded.

Custom Text and Tags

Set Custom Text and Tags

After connection has been established, custom text can be entered into the ***Custom Header Lines*** and the ***Custom Tags*** as shown in Figure 10. Items that are not required in the report data can be deselected using the tick boxes in the 'Use' column.

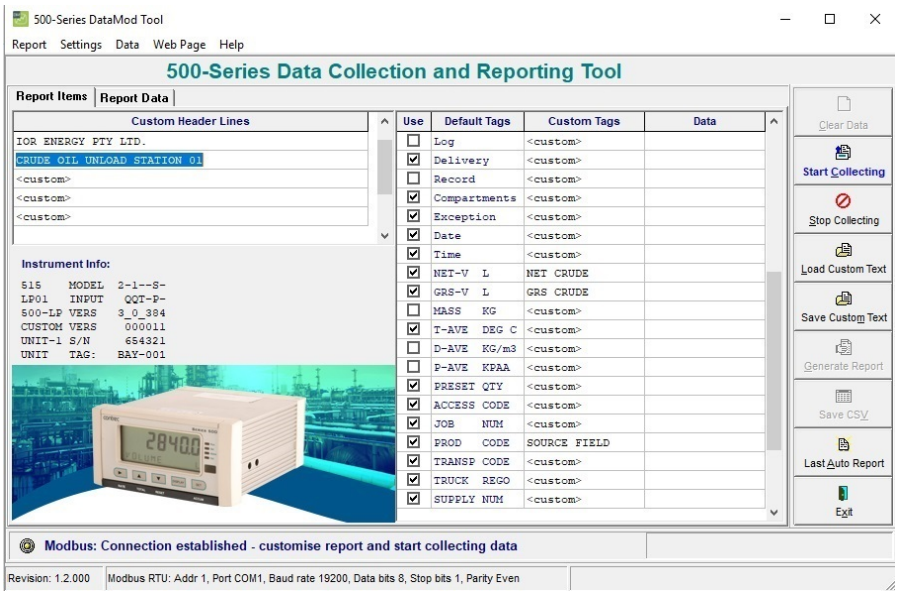
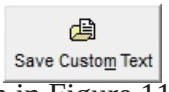


Figure 10 Report Item - Set Custom Text and Tags

The custom text and selected items will then be reflected when data is viewed in the ***Report Data*** screen.

Save Custom Text and Tags

Saving a Custom Text and set-up file allows the same custom settings to be re-used in the future. This will save time and allow reports and saved CSV files to remain consistent.

Click on the 

button to open the Save DataMod Custom Text dialog box as shown in Figure 11. Select the preferred destination folder, enter the file name and click Save to save the .dmt file.

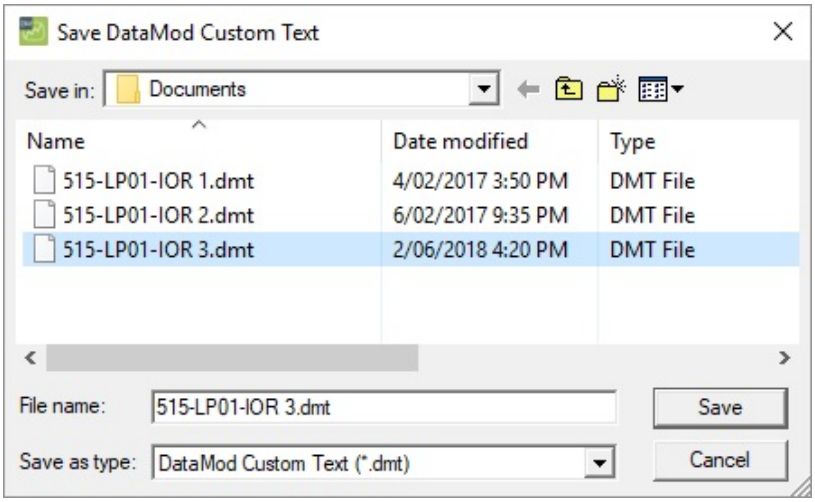
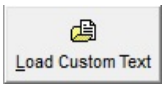


Figure 11 Save DataMod Custom Text dialog box

Load Custom Text and Tags

After DataMod connection has been established, as shown in Figure 8, a previously saved Custom Text and selection file can be loaded to quickly achieve a consistent report format.

Click on the 

button to open the Load DataMod Custom Text dialog box.

It is the users responsibility to only load a saved Custom Text .dmt file that matches the 515 application in the instrument. The user will not get the desired report if, for example, a .dmt file relating to 515 Gas Flow computer was loaded and applied to the data collected from a 515 Load computer. Therefore, it is a good practice to use a file name that reflects the 515 application that the Custom Text file relates to.

Select the required folder and file name and click Open to load the .dmt file to apply to the collected data as shown in Figure 12.

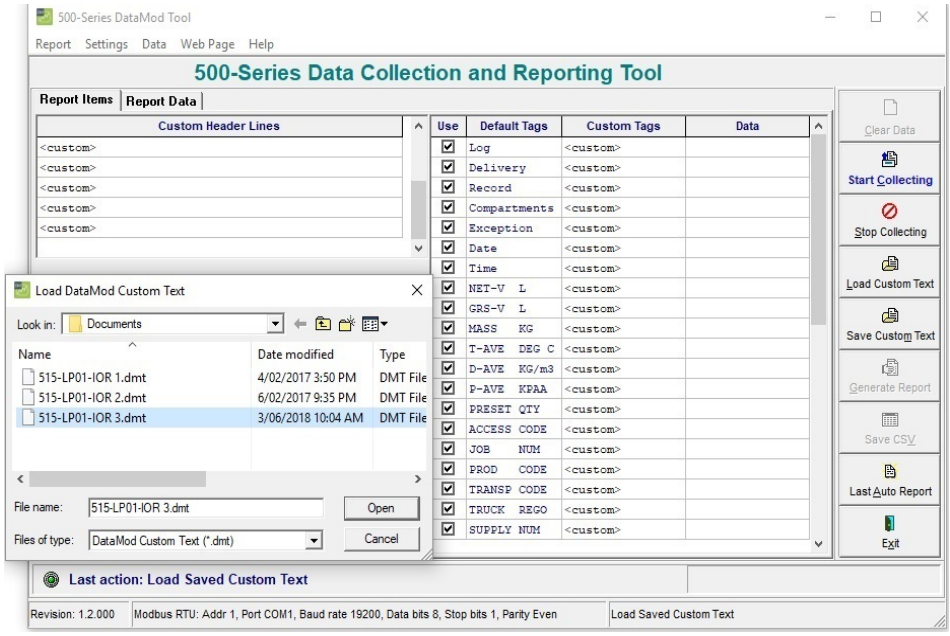


Figure 12 Load DataMod Custom Text dialog box

When the custom text file is loaded, the settings are applied to the collected data as shown in the example in Figure 13.

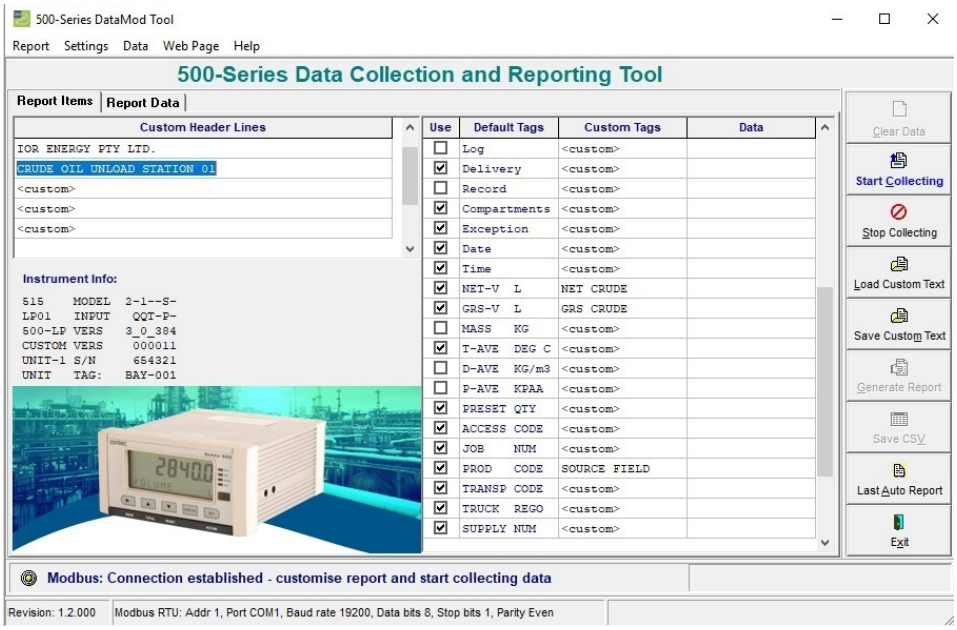


Figure 13 Report Item - Custom Text and Tags Loaded

Note: Any custom settings (entered by the user or loaded from a .dmt file) will remain until the Clear Data button is used. The DataMod program can be closed and re-opened and the data can be collected again from the instrument and the custom text and settings will still apply.

Data Collection

Start Collecting Data

After connection has been established and any custom text requirements applied, the DataMod program is ready to start collecting data. The original ‘Start Connection’ button will be replaced with a ‘Start Collecting’ button with blue flashing text.

Click on the 

button to start the data collecting process.

While data is being collected the last collected record is shown in the Data column and the status bar indicates the cycle position as per Figure 14 .

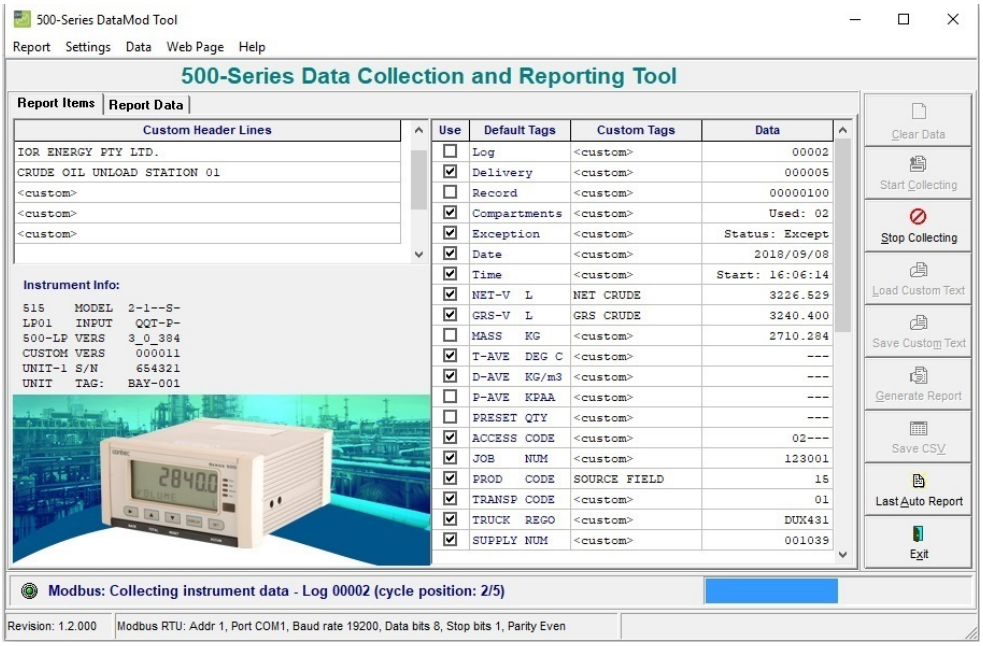
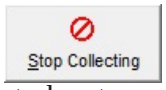


Figure 14 500 DataMod - Collecting Instrument Data

Any incoming and collected data can be viewed in the Report Data screen during the collection process.

Stop Collecting

The 

button will become available and will allow a data collection cycle to be stopped. Any collected data or Auto Save reports to that point will be retained.

Data Collection Finished

Once a preset number of requested logs have been collected, the progress bar will indicate that collection has finished and the majority of the toolbar buttons will become available as shown in Figure 15 (the example data has been collected from a Load application).

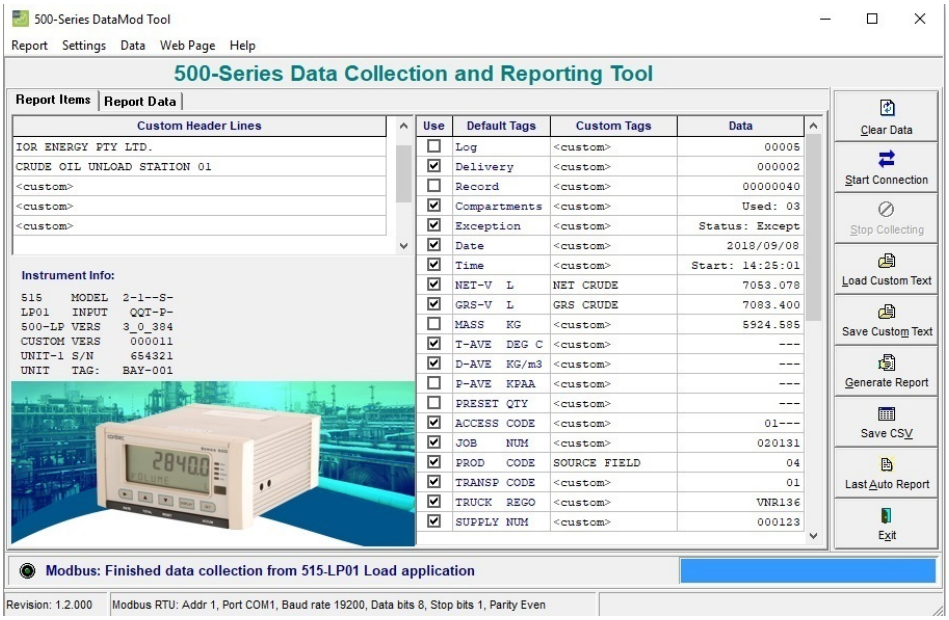


Figure 15 Report Item - Finished Data Collection

The custom text and selected items will then be reflected when data is viewed in the ***Report Data*** screen as shown in Figure 16. The horizontal and vertical scroll bars can be used to view all data.

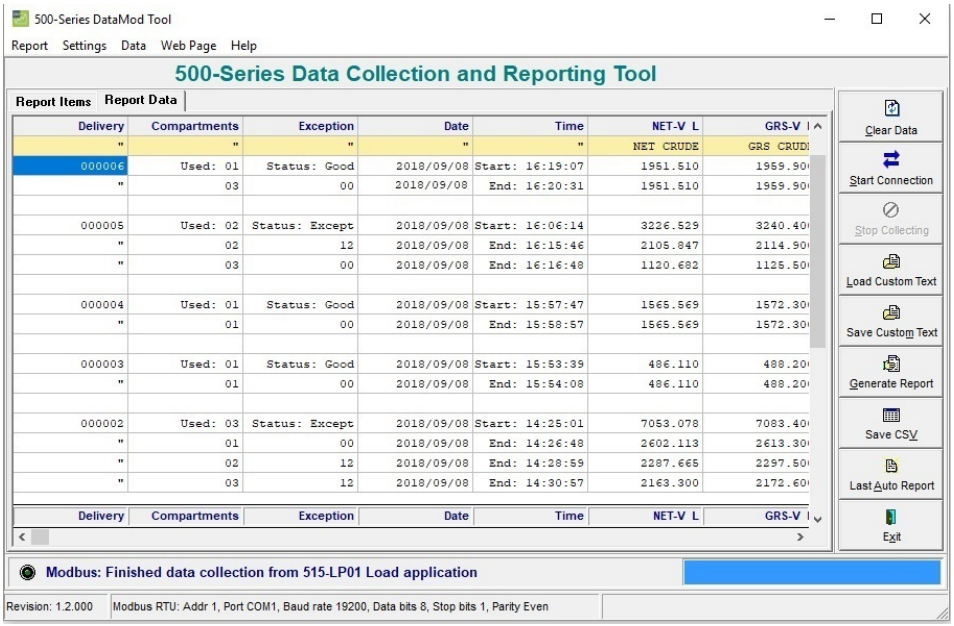
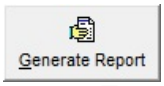


Figure 16 Report Data - View Custom Data

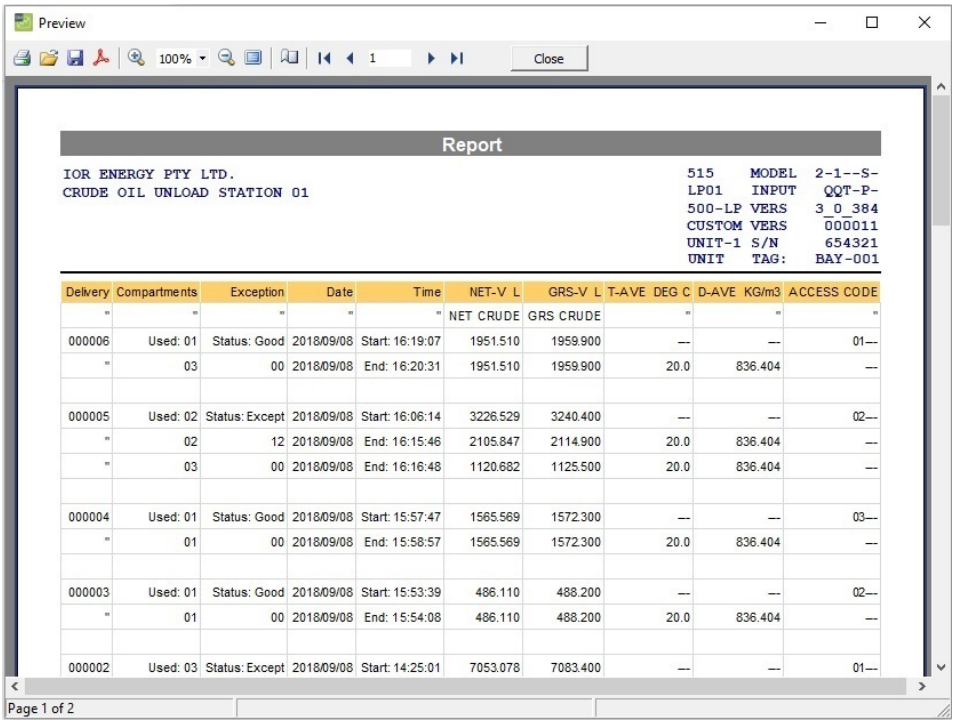
DataMod Reports

Generate Report

After data has been collected and any further desired custom text and selections have been applied, a report can be generated.

Click on the 

button to view the collected data in the report preview window as shown in Figure 17.



Delivery	Compartments	Exception	Date	Time	NET-V L	GRS-V L	T-AVE DEG C	D-AVE KG/m3	ACCESS CODE
"	"	"	"	"	NET CRUDE	GRS CRUDE	"	"	"
000006	Used: 01	Status: Good	2018/09/08	Start: 16:19:07	1951.510	1959.900	---	---	01---
"	03	00	2018/09/08	End: 16:20:31	1951.510	1959.900	20.0	836.404	---
000005	Used: 02	Status: Except	2018/09/08	Start: 16:06:14	3226.529	3240.400	---	---	02---
"	02	12	2018/09/08	End: 16:15:46	2105.847	2114.900	20.0	836.404	---
"	03	00	2018/09/08	End: 16:16:48	1120.682	1125.500	20.0	836.404	---
000004	Used: 01	Status: Good	2018/09/08	Start: 15:57:47	1565.569	1572.300	---	---	03---
"	01	00	2018/09/08	End: 15:58:57	1565.569	1572.300	20.0	836.404	---
000003	Used: 01	Status: Good	2018/09/08	Start: 15:53:39	486.110	488.200	---	---	02---
"	01	00	2018/09/08	End: 15:54:08	486.110	488.200	20.0	836.404	---
000002	Used: 03	Status: Except	2018/09/08	Start: 14:25:01	7053.078	7083.400	---	---	01---

Figure 17 DataMod Report Preview - Single page

In the report Preview window the following options are available:

- **PRINT** - Open the standard print dialog box.
- **OPEN** - Open a previously saved .fp3 prepared report file.
- **SAVE** - Save the report in .fp3 prepared report format for future use.
- **EXPORT AS PDF** - Save the report in PDF format.
- **CHANGE VIEW** - Zoom in or out or use forward/reverse arrows to view other pages.

The Report is generated in A4 portrait format. If the number of variables in the report do not fit across a single A4 page, the report will continue to become two (or more) pages wide, as shown in Figure 18.

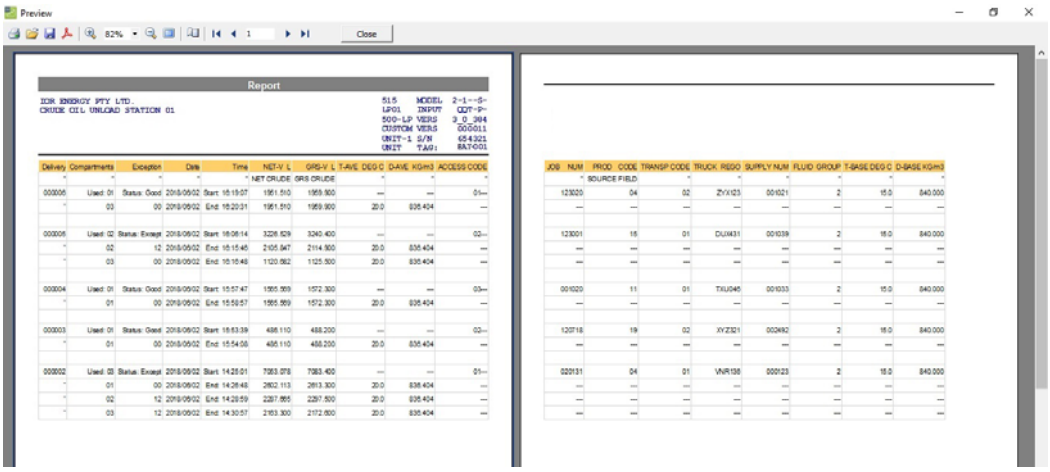
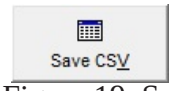


Figure 18 DataMod Report Preview - Double page

Save Report as CSV

After data has been collected and any desired custom text and selections have been applied, a report can be saved in CSV format for future use.

Click on the 

button to open the Save Data in CSV Format dialog box as shown in Figure 19. Select the preferred destination folder, enter the file name and click Save to save the .csv file.

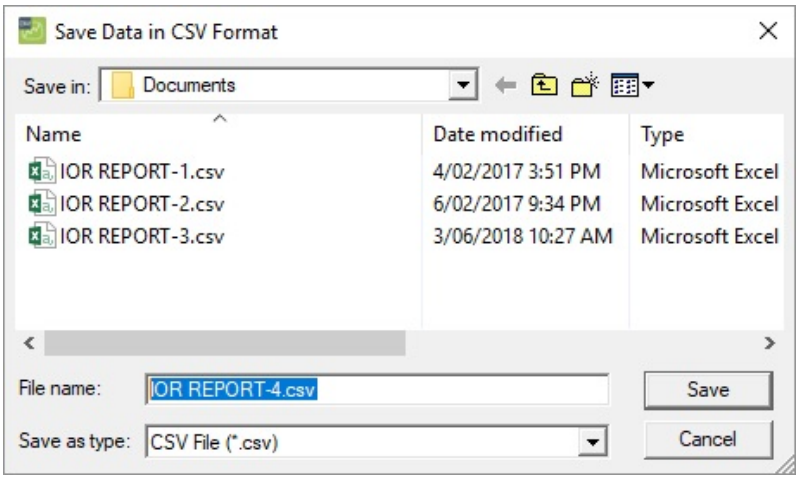
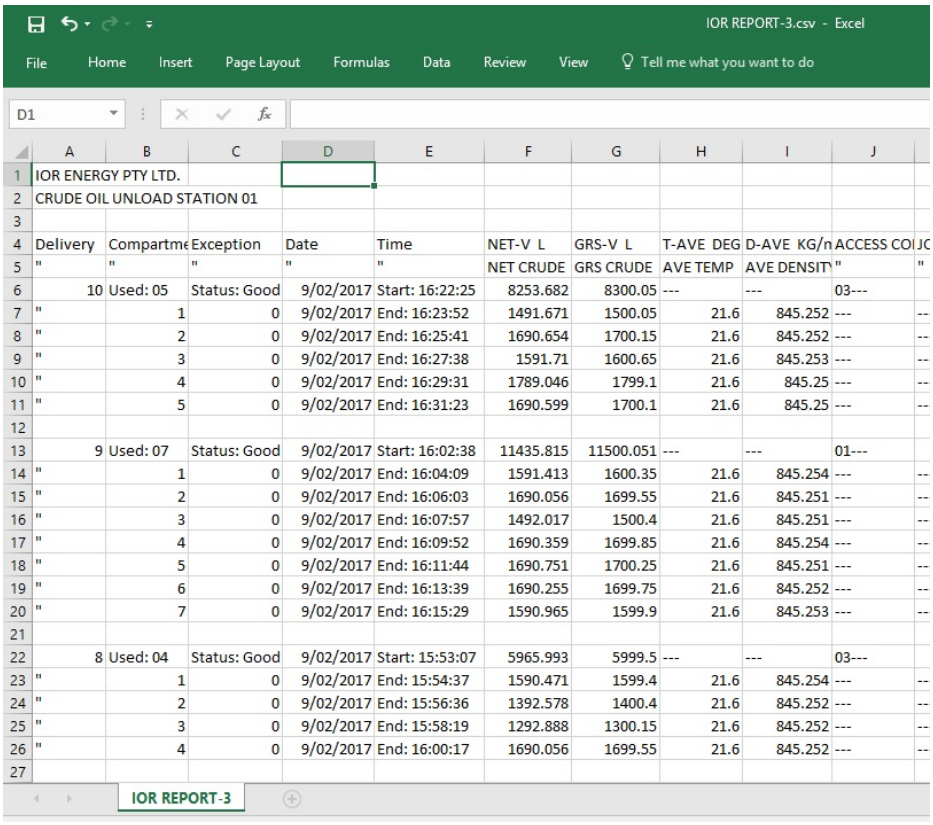


Figure 19 Save Data in CSV Format dialog box

A CSV file can be imported into many applications. It can also be opened and viewed in spreadsheet programs such as Excel where the data can be sorted and re-arranged as needed. An example of a DataMod CSV file opened in Excel is shown in Figure 20.



	A	B	C	D	E	F	G	H	I	J
1	IOR ENERGY PTY LTD.									
2	CRUDE OIL UNLOAD STATION 01									
3										
4	Delivery	Compartme	Exception	Date	Time	NET-V L	GRS-V L	T-AVE DEG	D-AVE KG/n	ACCESS CO
5	"	"	"	"	"	NET CRUDE	GRS CRUDE	AVE TEMP	AVE DENSIT	"
6	10	Used: 05	Status: Good	9/02/2017	Start: 16:22:25	8253.682	8300.05	---	---	03---
7	"	1	0	9/02/2017	End: 16:23:52	1491.671	1500.05	21.6	845.252	---
8	"	2	0	9/02/2017	End: 16:25:41	1690.654	1700.15	21.6	845.252	---
9	"	3	0	9/02/2017	End: 16:27:38	1591.71	1600.65	21.6	845.253	---
10	"	4	0	9/02/2017	End: 16:29:31	1789.046	1799.1	21.6	845.25	---
11	"	5	0	9/02/2017	End: 16:31:23	1690.599	1700.1	21.6	845.25	---
12										
13	9	Used: 07	Status: Good	9/02/2017	Start: 16:02:38	11435.815	11500.051	---	---	01---
14	"	1	0	9/02/2017	End: 16:04:09	1591.413	1600.35	21.6	845.254	---
15	"	2	0	9/02/2017	End: 16:06:03	1690.056	1699.55	21.6	845.251	---
16	"	3	0	9/02/2017	End: 16:07:57	1492.017	1500.4	21.6	845.251	---
17	"	4	0	9/02/2017	End: 16:09:52	1690.359	1699.85	21.6	845.254	---
18	"	5	0	9/02/2017	End: 16:11:44	1690.751	1700.25	21.6	845.251	---
19	"	6	0	9/02/2017	End: 16:13:39	1690.255	1699.75	21.6	845.252	---
20	"	7	0	9/02/2017	End: 16:15:29	1590.965	1599.9	21.6	845.253	---
21										
22	8	Used: 04	Status: Good	9/02/2017	Start: 15:53:07	5965.993	5999.5	---	---	03---
23	"	1	0	9/02/2017	End: 15:54:37	1590.471	1599.4	21.6	845.254	---
24	"	2	0	9/02/2017	End: 15:56:36	1392.578	1400.4	21.6	845.252	---
25	"	3	0	9/02/2017	End: 15:58:19	1292.888	1300.15	21.6	845.252	---
26	"	4	0	9/02/2017	End: 16:00:17	1690.056	1699.55	21.6	845.252	---
27										

Figure 20 Example of CSV file Opened in Excel

Custom Report Templates

Some users of the DataMod program may desire to go beyond the generic layout of the standard report in order to meet their specific requirements. In Load applications for example, a Bill of Lading style report may be required. The standard DataMod includes two Bill of Lading style reports, one for the 515-LP (Petroleum Volume Correction) and another for the 515-LC (standard) Load Control applications.

In a default installation these .fr3 report template files:
Template_LC_Multi.fr3 (for Standard Load Apps),
Template_LP_Multi.fr3 (for Petroleum Load Apps) and
Template_Plain.fr3 (the default report template)
can be found in C:\Contrec\500-DataMod\custom.

Whether it is tailoring to the existing Load templates with company details and logo (as per the IOR examples below) or some other special customisation for another 515 application, Contrec can be contacted to arrange for the purchase of a custom Report Template designed to suit the specific requirements. After adequate details of the required report have been provided, a .fr3 Report Template will be supplied. It is recommended to save the template in C:\Contrec\500-DataMod\custom.

Load a Custom Report Template

Use the Report Menu to select the Load Template option as shown in Figure 21.

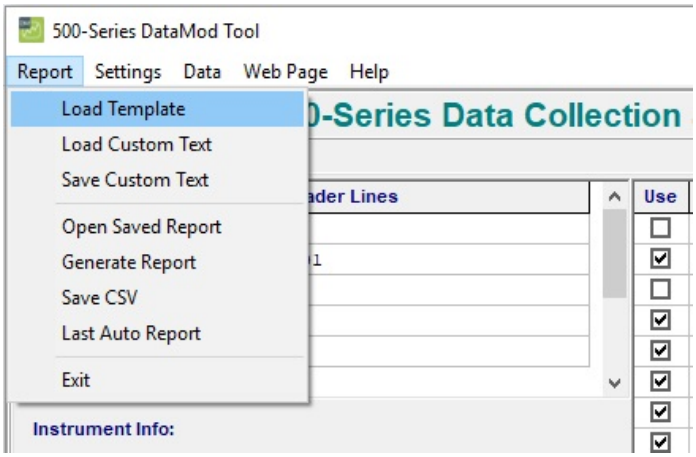


Figure 21 500 DataMod Report Menu - Load Template

The Load Report Template dialog box will open as shown in Figure 22. Select the appropriate folder and .fr3 report template file. This template will then be applied whenever the Generate Report function is used. It is also applicable for any Auto-Saved reports if the template was loaded before data collection started.

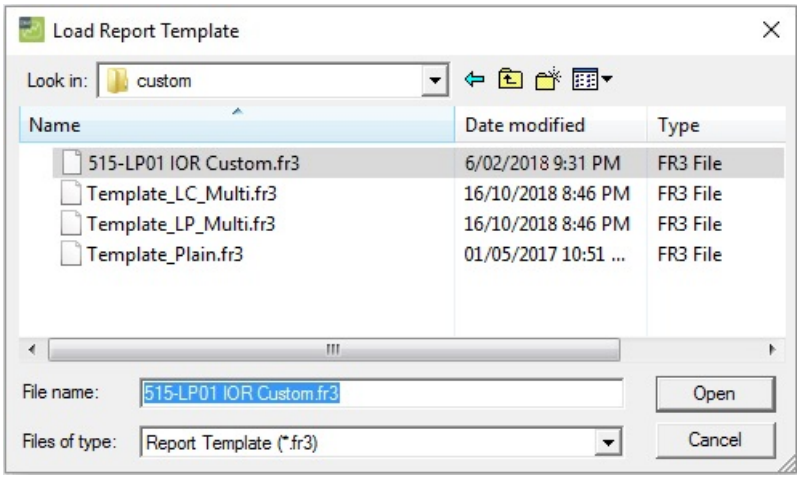


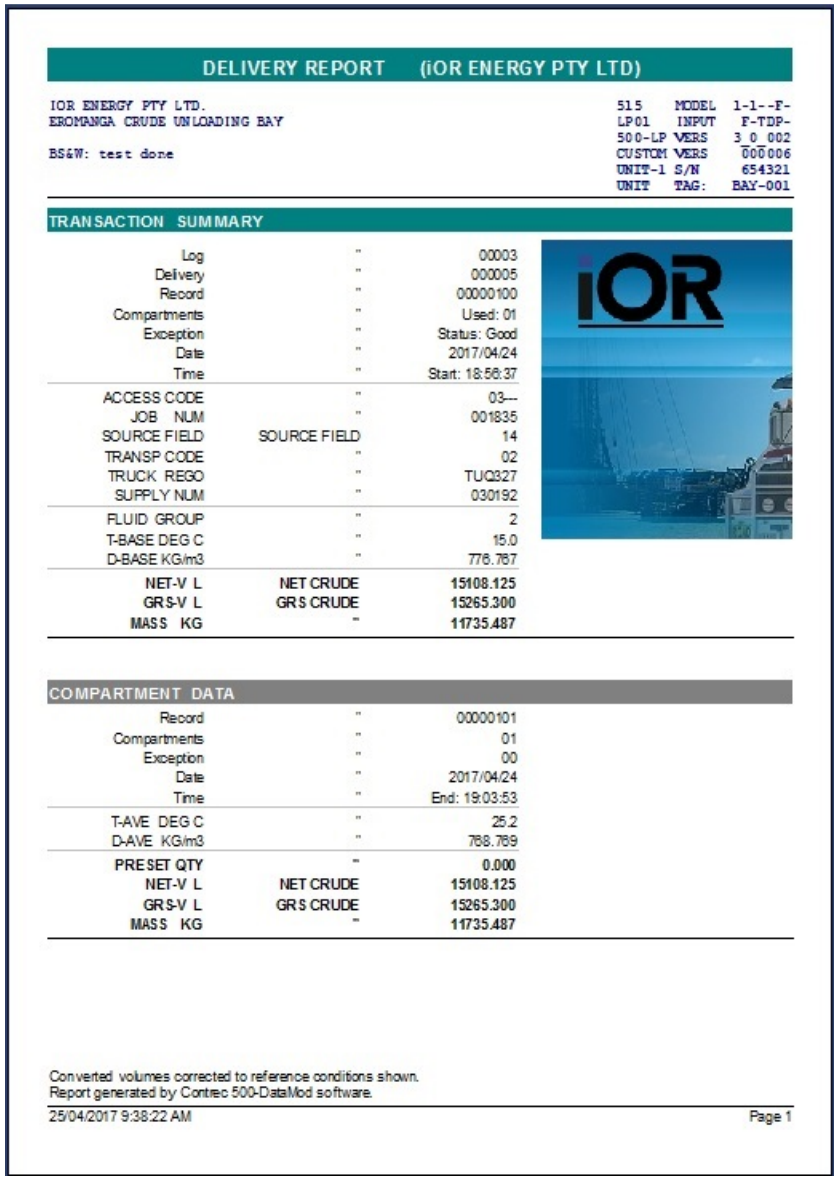
Figure 22 Load Report Template dialog box

Samples of Custom Reports

Once a Custom Report Template has been loaded, that template will be used each time the Generate Report button is used or when an Auto-Saved report is generated. A custom report can include a specific report heading, company logo and graphics, site or installation details and specific layout and content as required. Below are examples of a custom report created to suit a 515 LP01 Unload application. This custom report is suited to single or multi compartment transactions.

Single Compartment Transaction Report

A custom single compartment transaction report is shown in Figure 23.



DELIVERY REPORT (iOR ENERGY PTY LTD)

IOR ENERGY PTY LTD.
EROMANGA CRUDE UNLOADING BAY

BS&W: test done

515 MODEL 1-1--F-
LP01 INPUT F-TDP-
500-LP VERS 3_0_002
CUSTOM VERS 000006
UNIT-1 S/N 654321
UNIT TAG: BAY-001

TRANSACTION SUMMARY

Log	"	00003
Delivery	"	000005
Record	"	00000100
Compartments	"	Used: 01
Exception	"	Status: Good
Date	"	2017/04/24
Time	"	Start: 18:56:37
ACCESS CODE	"	03---
JOB NUM	"	001835
SOURCE FIELD	SOURCE FIELD	14
TRANSP CODE	"	02
TRUCK REGO	"	TUQ327
SUPPLY NUM	"	030192
FLUID GROUP	"	2
T-BASE DEG C	"	15.0
D-BASE KG/m3	"	776.767
NET-V L	**NET CRUDE**	**15108.125**
GRS-V L	**GRS CRUDE**	**15265.300**
MASS KG	"	**11735.487**

COMPARTMENT DATA

Record	"	00000101
Compartments	"	01
Exception	"	00
Date	"	2017/04/24
Time	"	End: 19:03:53
T-AVE DEG C	"	25.2
D-AVE KG/m3	"	768.769
PRESET QTY	"	**0.000**
NET-V L	**NET CRUDE**	**15108.125**
GRS-V L	**GRS CRUDE**	**15265.300**
MASS KG	"	**11735.487**

Converted volumes corrected to reference conditions shown.
Report generated by Contrec 500-DataMod software.

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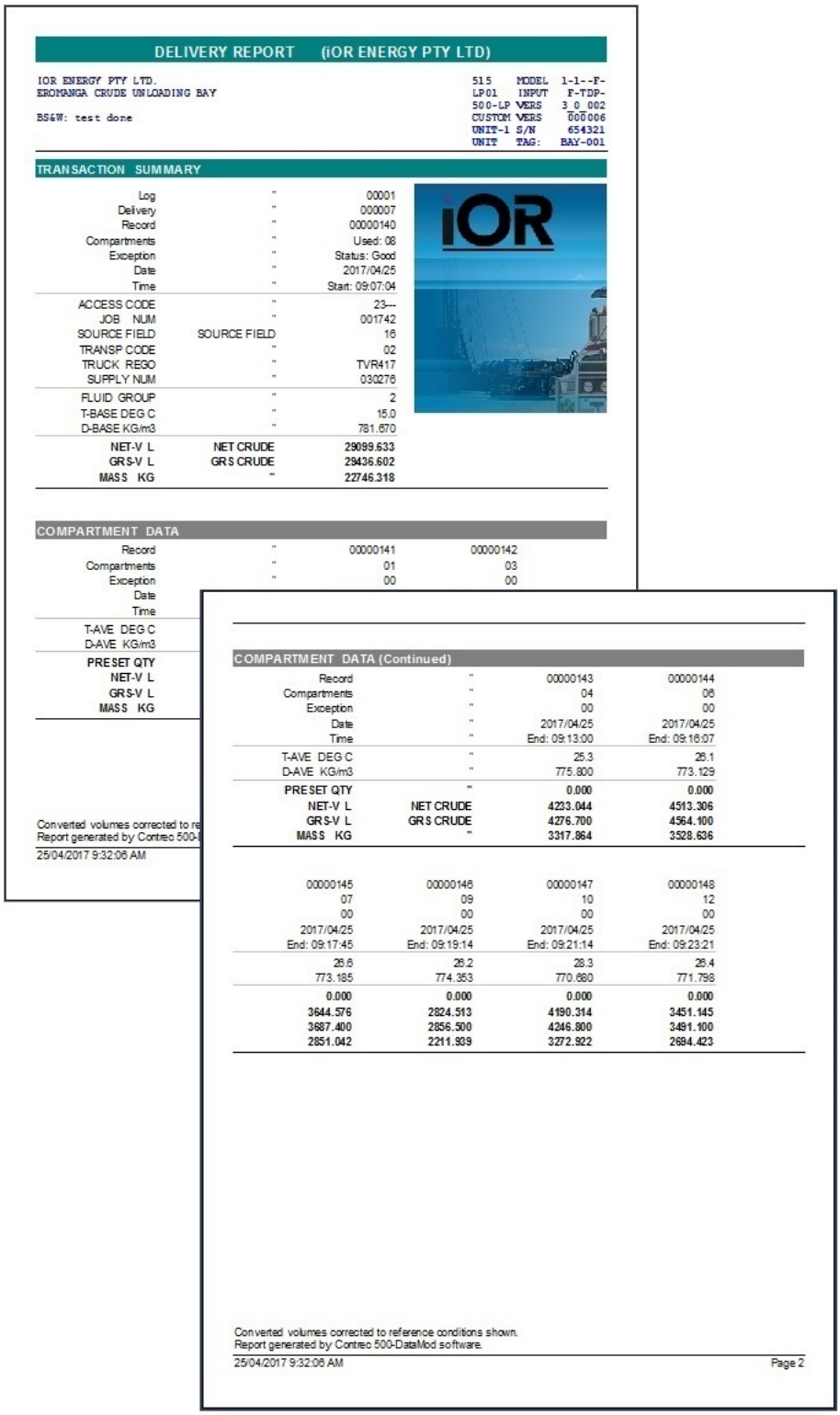
Figure 23 Single Compartment Transaction Report

Multiple Compartment Transaction Report

A custom multiple compartment transaction report is shown in Figure 24.



DELIVERY REPORT (iOR ENERGY PTY LTD)

IOR ENERGY PTY LTD.
EROMANGA CRUDE UNLOADING BAY

BS&W: test done

515 MODEL 1-1--F-
LP01 INPUT F-TDP-
500-LP VERS 3_0_002
CUSTOM VERS 000006
UNIT-1 S/N 654321
UNIT TAG: BAY-001

TRANSACTION SUMMARY

Log	"	00001
Delivery	"	000007
Record	"	00000140
Compartments	"	Used: 08
Exception	"	Status: Good
Date	"	2017/04/25
Time	"	Start: 09:07:04
ACCESS CODE	"	23---
JOB NUM	"	001742
SOURCE FIELD	SOURCE FIELD	16
TRANSP CODE	"	02
TRUCK REGO	"	TVR417
SUPPLY NUM	"	030276
FLUID GROUP	"	2
T-BASE DEG C	"	15.0
D-BASE KG/m3	"	781.670
NET-V L	NET CRUDE	29099.633
GRS-V L	GRS CRUDE	29436.602
MASS KG	"	22746.318

COMPARTMENT DATA

Record	"	00000141	00000142
Compartments	"	01	03
Exception	"	00	00
Date			
Time			
T-AVE DEG C			
D-AVE KG/m3			
PRESET QTY			
NET-V L			
GRS-V L			
MASS KG			

Converted volumes corrected to re
Report generated by Contrec 500-
25/04/2017 9:32:06 AM

COMPARTMENT DATA (Continued)

Record	"	00000143	00000144	
Compartments	"	04	06	
Exception	"	00	00	
Date	"	2017/04/25	2017/04/25	
Time	"	End: 09:13:00	End: 09:16:07	
T-AVE DEG C	"	25.3	26.1	
D-AVE KG/m3	"	775.800	773.129	
PRESET QTY	"	0.000	0.000	
NET-V L	NET CRUDE	4233.044	4513.306	
GRS-V L	GRS CRUDE	4276.700	4564.100	
MASS KG	"	3317.864	3528.636	

00000145	00000146	00000147	00000148
07	09	10	12
00	00	00	00
2017/04/25	2017/04/25	2017/04/25	2017/04/25
End: 09:17:45	End: 09:19:14	End: 09:21:14	End: 09:23:21
26.6	26.2	28.3	26.4
773.185	774.353	770.680	771.798
0.000	0.000	0.000	0.000
3644.576	2824.513	4190.314	3451.145
3687.400	2856.500	4246.800	3491.100
2851.042	2211.939	3272.922	2694.423

Converted volumes corrected to reference conditions shown.
Report generated by Contrec 500-DataMod software.
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Figure 24 Multiple Compartment Transaction Report