



GE VERNOVA

Asset Performance Management

APM Classic

V4.6.11.0.0

Data Loaders

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Chapter 1

Overview

Topics:

- [About the APM Connect Data Loaders](#)
- [Access the Data Loaders Page](#)
- [Data Loader Workflow](#)

About the APM Connect Data Loaders

The APM Connect Data Loaders allow you to import records from external sources into APM.

Foundation Data Loaders

- Foundation Equipment and Functional Location Data Loader: This loader builds out the Asset Hierarchy based on the asset parents structure defined in the workbook.
- Foundation Taxonomy Data Loader: This loader creates, or updates Taxonomy Categories, Classes, and Types based on the data in the Excel source.
- Foundation Work History Data Loader: This loader creates the necessary work history and work history detail records and links them to the corresponding equipment or functional location as defined in the Excel workbook.

APM Rules and the Data Loaders

When loading data into APM, it is important to understand how APM treats data, and the subsequent impact on data loads.

APM creates records based on the rules for that family. Therefore, the data that is loaded into APM via the Data Loaders are also subject to the same rules. This could result in blank Equipment records with no data if the rules for the family do not require data. Similarly, there is no restriction on key fields having to contain a value other than what is required by the rules.

For example, the baseline Equipment family does not have any fields that are marked as required in the rules, so when using the data loaders, equipment records are created even with only one field populated in the worksheet. If you only populated Maintenance Plant on the APM data loader spreadsheet, then an equipment records would be created with only maintenance plant and no other identifying information.

Access the Data Loaders Page

Procedure

In the module navigation menu, select **Tools > Data Loaders**.

The **Data Loaders** page appears, displaying the list of the Data Load jobs that are running or complete. You can use this page to download the Data Loader Templates and import data through the Data Loader user Interface. For more information on the columns available in this page, refer to the [Field Descriptions of the Data Loaders Page](#) topic.

JOB ID	DATA LOADER	DESCRIPTION	STATUS AND LOG	DATE/TIME	USER
64263071151	Rounds Routes	AES	Cancelled	04/22/2019 23:32:35 PM	Administrator, Meridium
64262928967	APM Family	jan19	Complete	03/04/2019 00:58:26 AM	new, GWSuperAdmin
64262928952	APM Family	jan19	Errors	03/04/2019 00:52:15 AM	new, GWSuperAdmin
64262928945	APM Family	jan19	Errors	03/04/2019 00:44:59 AM	new, GWSuperAdmin
64262928934	APM Family	jan19	Errors	03/04/2019 00:40:08 AM	new, GWSuperAdmin
64262928077	GAA Wind Asset Hierarchy	Invenergy	Complete	03/01/2019 00:38:06 AM	Super User, Baseline
64262927853	APM Family	feb 19	Complete	02/26/2019 22:11:56 PM	Super User, Baseline
64262927466	APM Family	events mar 19 UNO company	Complete	02/19/2019 16:59:34 PM	Super User, Baseline
64262927435	GAA Wind Asset Hierarchy	Uno	Complete	02/19/2019 16:50:30 PM	Super User, Baseline

Data Loader Workflow

This workflow provides the basic, high-level steps for using this module. The steps and links in this workflow do not necessarily reference every possible procedure.

Procedure

1. Identify the data you want to transfer from external sources to APM.
2. Download the Data Loader Workbooks, and then populate the data loader workbooks.

Tip: Alternatively, you can use a zip file of .csv files that conform to the data loader workbook format.
3. **Optional:** Test the connections required to complete a data load.
4. In APM, select the appropriate file, and then run a data import job.
5. Review the Data Import Log for warnings, messages, or errors.
6. If there are transfer errors, resolve the errors.

Chapter 2

Workflow

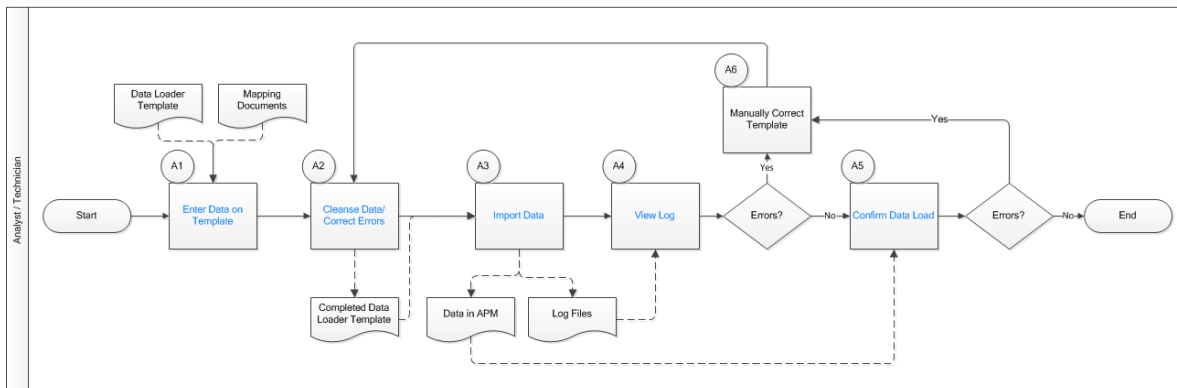
Topics:

- [General Data Import Workflow](#)
- [Enter Data on Template](#)
- [Cleanse Data / Correct Errors](#)
- [Import Data](#)
- [View Log](#)
- [Confirm Data Load](#)
- [Manually Correct Template](#)

General Data Import Workflow

The APM Connect Data Loaders provide users with the ability to import data from external sources into the various APM modules. All data loaders share common capabilities and architecture. Each one uses an Excel worksheet as the source of data to be loaded into APM, and each contains the intelligence to load the specific data model for which it was intended.

Tip: Select a shape with blue text for details about the step in the workflow. For more information, refer to the topic Interpreting the Workflow Diagrams.



Enter Data on Template

Persona: Analyst/ Technician

Identify the type of data to load, navigate to **Tools > Data Loader**, download the spreadsheet template, and make it available for editing. There are several standard data loads that can be processed to load data to APM. Options include loaders from Foundation, MI, Strategy, Rounds, and FE.

Use the correct template and mapping document to layout the data import, and then populate the spreadsheet with records that you want to load based on the rules detailed in the mapping document .

Cleanse Data / Correct Errors

Persona: Analyst / Technician

After populating the spreadsheet, use Excel tools to detect and correct (or remove) incomplete, corrupt, or inaccurate records from the worksheet.

Import Data

Persona: Analyst / Technician

Using the Data Import feature, accessed via the **Tools** menu in APM, import the data into APM.

View Log

Persona: Analyst / Technician

Review the log file that is available through the record explorer, or, if the user has access, in the APM Connect Administration Center.

Confirm Data Load

Persona: Analyst / Technician

By searching record manager or creating a query of families loaded, validate that data is loaded successfully. Ideally, run the test validation query as indicated in the mapping document.

Manually Correct Template

Persona: Analyst / Technician

After running the data load, if the status shows errors, review the error log to identify the root cause, and then make any needed changes to the spreadsheet and retry.

Chapter 3

Data Loaders

Topics:

- [Download the Data Loader Workbooks](#)
- [Import Data Loader Workbooks](#)
- [Test Data Loader Connection](#)
- [Run a Data Import Job](#)
- [Access the Details of an Import Job](#)
- [About Populating Site Reference Data](#)
- [Considerations for Loading with .CSV Files](#)
- [About the Rounds Pro Data Loaders](#)
- [About the Rounds Data Loaders Requirements](#)
- [About the Rounds Pro Data Loaders General Loading Strategy](#)
- [About the Rounds Pro Data Loader Workbooks Layout and Use](#)
- [About the Rounds Pro Data Loaders Load Verification](#)


Download the Data Loader Workbooks

Procedure

1. [Access the Data Loaders page](#), and then select **Download Templates**.
The **Download Templates** window appears, displaying a list of the data loader categories.
2. Select the category whose template you want to download.

Data Loader Category	Workbooks in the Category
APM Connect	<ul style="list-style-type: none"> • APM Family • Equipment and Functional Location • Tag to Asset Relationship • Taxonomy • Work History
APM Failure Elimination	<ul style="list-style-type: none"> • Production Loss Analysis (PLA) 1-Admin • Production Loss Analysis (PLA) 2-Event • Production Loss Analysis (PLA) 3-Plan • Root Cause Analysis (RCA) • System Reliability
APM Foundation	<ul style="list-style-type: none"> • Asset Criticality Analysis (ACA Checklist) • Asset Criticality Analysis (ACA) • Custom Asset Hierarchy • Geographic Information System (GIS) • Policy Instance Data Loader • Risk Matrix • Role
APM Health	<ul style="list-style-type: none"> • Rounds Allowable Values • Rounds Readings • Rounds Routes • Rounds Templates
APM Mechanical Integrity	<ul style="list-style-type: none"> • Inspection Management (IM) Assets • Inspection Management (IM) Functional Location • RBI Components To TML Groups Relationship • Risk Based Inspection (RBI) 580 • Risk Based Inspection (RBI) 581 • Risk Based Inspection (RBI) Corrosion Loop • Thickness Monitoring (TM) Equipment • Thickness Monitoring (TM) Functional Location • Thickness Monitoring (TM) Piping Equipment • Thickness Monitoring (TM) Piping Functional Location
APM Power Generation	<ul style="list-style-type: none"> • Generation Availability Analysis (GAA) Events • Generation Availability Analysis (GAA) GADS Amplification Codes • Generation Availability Analysis (GAA) GADS Cause Code
APM Safety	<ul style="list-style-type: none"> • Calibration • Hazards

Data Loader Category	Workbooks in the Category
APM Strategy	<ul style="list-style-type: none"> Asset Strategy Management (ASM) Asset Strategy Management (ASM) Templates Failure Modes and Effects Analysis (FMEA) FMEA Analysis Template FMEA Asset Template RCM Analysis Template Reliability Centered Maintenance (RCM)
APM Wind Generation	<ul style="list-style-type: none"> GAA Wind Asset Hierarchy GAA Wind Events GAA Wind Sub Group Capacity

- In the **Templates** column, in the row for the data loader whose template you want to download, select .

The template is downloaded, and can be [populated with data](#) to load into APM.

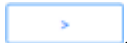
Import Data Loader Workbooks

About This Task

You can import custom Data Loader workbooks or localized workbooks into APM, so that they can be accessed on the [Data Loaders](#) page.

Procedure

- Access the **Export** page.
- In the **Available Items** section, in the **Select metadata type** drop-down, select **DataLoader Templates**.
The **Available Items** section is populated with the Data Loader catalog entries.
- Select the box of Data Loader whose workbook you want to modify, and then select



The Data Loader appears in the **Selected Items** section.

- In the **File Name** box, enter a name for the file that will be exported, and then select the **File Type** XML(.xml).
- Select **Start Export**.

The Data Loader files are exported, and a zip file is downloaded containing three files:

<Data Loader Name> Files:

A folder containing the excel source workbook for that data loader.


<DataLoaderName>.xml:

An xml containing the metadata for the data loader catalog item.

ExportLog:

A log file detailing the export from APM.


- Open the `<DataLoder Name> Files` folder, and place a copy of the workbook to be imported into the folder.
- If you want to replace the default workbook with the workbook to be imported, rename the workbook to be imported to match the exact naming structure of the default template, and then delete the default template.

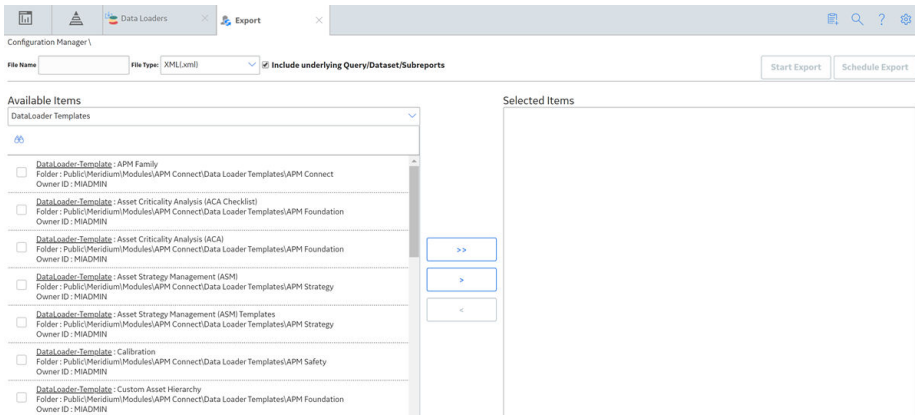
- Important:** The name of the file to be imported must match the original file name exactly. Otherwise, the workbook will not be available to download in APM
8. If you want to add an additional workbook, and keep the default workbook:
 - a) Ensure the workbook to be imported has a unique name, different from the naming structure of the default workbook, and then delete the default workbook.
 - b) Open the <DataLoaderName>.xml file.
 - c) In the DATALOADERTEMPLATE_ID, DATALOADERTEMPLATE_DESC, and the DATALOADERTEMPLATE_FILE_NM parameters, replace the existing value with the name of the new workbook to be imported.
 - d) Save the file.
 9. Create a zip file with the <Data Loader Name> Files folder containing the new workbook to be imported, the <DataLoaderName>.xml file, and the ExportLog file.
 10. Access the **Import** page.
 11. In the **Import File** box, select **Choose File**, and then navigate to the zip file you created in the previous step.
 12. Select the box of Data Loader whose workbook you want to import, and then select .
 13. Select **Start Import**.
The new workbook is imported into APM.

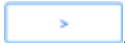
Results

The workbook that you imported can be download on the Data Loaders page.

Import an Additional Equipment and Functional Location Workbook


1. Access the **Export** page,
2. In the **Available Items** section, in the **Select metadata type** drop-down, select **DataLoaders Template**.
The **Available Items** section is populated with the Data Loader catalog entries.
3. Select the **Equipment and Functional Location** box, and then select .
The Equipment and Functional Location Data Loader appears in the **Selected Items** section.
4. In the **File Name** box, enter Equipment and Functional Location Export, and then select the **File Type** XML(.xml).



5. Select **Start Export**.
The Data Loader workbook files are exported, and a zip file is downloaded containing three files:
 - **Equipment and Functional Location Export Files:** A folder containing the default Equipment and Functional Location Data Loader workbook.
 - **Equipment and Functional Location Export.xml:** An .xml containing the metadata for the catalog item.
 - **ExportLog:** A log file detailing the export from APM.
6. Open the `Equipment and Functional Location Export Files` folder, and place a copy of the workbook to be imported into the folder. In this example the workbook name is `Equipment and Functional Location_DE`.
7. Ensure the template to be imported has a unique name different from the naming structure of the default template, and then delete the default template.
8. Open the `Equipment and Functional Location Export.xml` file.
9. In the **DATALOADERTEMPLATE_ID** and **DATALOADERTEMPLATE_DESC** parameters, replace `Equipment and Functional Location` with `Equipment and Functional Location_DE`.
10. In the parameter **DATALOADERTEMPLATE_FILE_NM**, replace the value with `Equipment and Functional Location_DE.xml`.
11. Save the file.
12. Create a zip file with the `Equipment and Functional Location Export` files.
13. Access the **Import** page.
14. In the **Import File** box, select **Choose File**, and then navigate to the zip file `Equipment and Functional Location Export`.
In the **Available Items** section **The Equipment and Functional Location** entry appears.
15. Select the **The Equipment and Functional Location** box, and then select .
16. Select **Start Import** Button.
The new template is imported into APM, and is available to download on the Data Loaders page.

Test Data Loader Connection

Procedure

1. Access the [Data Loaders](#) page.
2. If, on the upper-left corner of the page, the **<number> Error** link appears beside the , then select the link.

Note: If the number of errors link does not appear, then the connections needed to use the data loaders are configured properly.

The **Connection Errors** dialog box appears displaying the connections status for each connection point needed to use the data loaders.

3. Select **OK**.
The connection status is tested.

Results

The following table describes the connection status for data import jobs.

Connection Test	Description	If you get an Error...
APM Connect Web API Test	Test the connection between the APM web API and the APM Connect server.	Ensure the ports are open between the APM Server and the APM Connect server.
APM Connect Configuration Test	Test the configuration of the APM Connect connection parameters configured in APM.	Ensure the parameters configured in APM are correct to establish connection from APM and APM Connect.
APM Fileshare Access Test	Tests the file share system is connected to the APM Server, so that the server can read and write to the configured file shares.	Ensure the parameters configured in APM are correct to establish connection from APM, and the user has the necessary permissions to access the file share.
APM Staging Database Test	Tests the APM Server is connected tot the APM Connect IR database.	Ensure that PostgreSQL is accepting the connection from APM . These connections are managed in the file pg_hba.conf.
APM Connect Fileshare Access Test	Tests the file share system is connected to the APM Connect server, so that the server can read and write to the configured file shares.	Ensure the parameters configured in APM are correct to establish connection from APM, and the user has the necessary permissions to access the file share.
APM Connect Staging Database Test	Tests the connection between the APM Connect server and the IR database to ensure that files can read and written to the IR.	Ensure the RunDataLoaderRoute.cfg is configured correctly.

Run a Data Import Job

Before You Begin

This topic assumes that you have migrated your data to the required format for the modules into which you want to import data. The format should match either:

- The format matching the Excel workbook templates.
- [A conforming zip file containing .csv files.](#)

Procedure


1. [Access the Data Loaders](#) page.
2. Select **Import New**.
The **Import Data** window appears.



3. In navigation tree, select the data loader category, and then select the data loader that you want to use to import data according the following table.

Data Loader Category	Workbooks in the Category
APM Connect	<ul style="list-style-type: none"> • APM Family • Equipment and Functional Location • Tag to Asset Relationship • Taxonomy • Work History
APM Failure Elimination	<ul style="list-style-type: none"> • Production Loss Analysis (PLA) 1-Admin • Production Loss Analysis (PLA) 2-Event • Production Loss Analysis (PLA) 3-Plan • Root Cause Analysis (RCA) • System Reliability
APM Foundation	<ul style="list-style-type: none"> • Asset Criticality Analysis (ACA Checklist) • Asset Criticality Analysis (ACA) • Custom Asset Hierarchy • Geographic Information System (GIS) • Policy Instance Data Loader • Risk Matrix • Role
APM Health	<ul style="list-style-type: none"> • Rounds Allowable Values • Rounds Readings • Rounds Routes • Rounds Templates
APM Mechanical Integrity	<ul style="list-style-type: none"> • Inspection Management (IM) Assets • Inspection Management (IM) Functional Location • RBI Components To TML Groups Relationship • Risk Based Inspection (RBI) 580 • Risk Based Inspection (RBI) 581 • Risk Based Inspection (RBI) Corrosion Loop • Thickness Monitoring (TM) Equipment • Thickness Monitoring (TM) Functional Location • Thickness Monitoring (TM) Piping Equipment • Thickness Monitoring (TM) Piping Functional Location
APM Power Generation	<ul style="list-style-type: none"> • Generation Availability Analysis (GAA) Events • Generation Availability Analysis (GAA) GADS Amplification Codes • Generation Availability Analysis (GAA) GADS Cause Code
APM Safety	<ul style="list-style-type: none"> • Calibration • Hazards
APM Strategy	<ul style="list-style-type: none"> • Asset Strategy Management (ASM) • Asset Strategy Management (ASM) Templates • Failure Modes and Effects Analysis (FMEA) • FMEA Analysis Template • FMEA Asset Template • RCM Analysis Template • Reliability Centered Maintenance (RCM)
APM Wind Generation	<ul style="list-style-type: none"> • GAA Wind Asset Hierarchy • GAA Wind Events • GAA Wind Sub Group Capacity

4. In the **Select a File for importing** box, select **Choose File**, and then navigate to and select the file that you want to import.

5. In the **Job Description** box, enter a short description of the job.
6. Select **Import**.
The job is run, and the status of the job appears in the **Status and Log** column.

Tip: If necessary, you can cancel an import job by selecting the  button that appears in the **Status and Log** column. If you cancel a job, any changes that have already occurred are not removed, therefore, you may need to manually modify records to update or remove unwanted data.

Status	Description
Waiting	Initial state when job is created. The data import job is queued for pre-processing on the APM Connect Server.
Staging In Progress	The data import job is being prepared on the APM Connect Server.
Staging Failure	The data import job failed during preparation.
Staging Complete	The data import job was prepared successfully.
Dataloader Enqueued	The maximum number of data load jobs has been exceeded, as determined in the APM Connect Connection Records, or there is a job of the same type running. The data import will begin once the other jobs are complete.
Configuring Dataloader	The data import job is configuring the proper user roles and arranging data processing for most efficient execution flow.
In Progress	The data import job is loading data into the APM Data Source.
Data Synchronization in Progress	The data import job is synchronizing the loaded data and relationships across the APM Data Source.
Job Cancelling	The data import job is in the process of being cancelled. This occurs after you select  .
Cancelled by User	The data import job was cancelled successfully. Note: When a job is cancelled, the data imported prior to cancelling is not removed.
Errors	The data import is complete, but encountered one or more errors. You can download the log file to view detailed error messages.
Complete	Data has been imported into APM. Note: If the  icon appears, the data was imported with warnings. You can download the log file to view detailed warning messages.

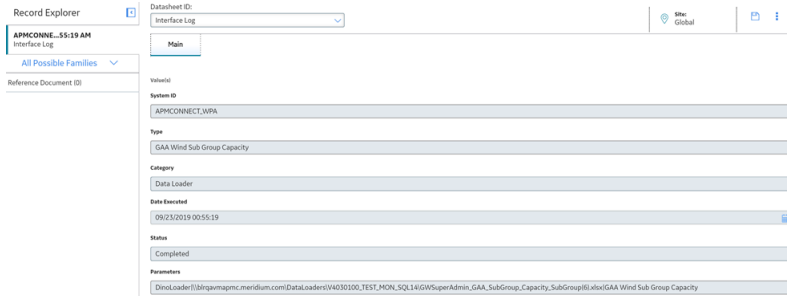
Access the Details of an Import Job


Before You Begin

This topic assumes that you have successfully [run a data import job](#).

Procedure

1. [Access the Data Loaders](#) page.
2. In the **Job ID** column, select the job that you want to open.
On a new page, the datasheet for the selected job appears.



- To view the information contained in the **Log Text**, select . The **Text Editor** window appears, displaying details about the job, such as error messages, warnings concerning the data load and general information regarding the data records that were loaded.

About Populating Site Reference Data

The APM Family Data Loader can be used to populate the Site Reference on Equipment and Functional Location records in APM.

About This Task

The APM Family Data Loader populates the **ENTY_KEY** system field and the **MI_SITE_KEY** system field associated with the Site Reference value to be populated. On asset records, the Site Reference is stored in the **MI_SITE_KEY** field, a system field in APM. The APM Data Loader uses the Site Name (**MI_SITE_NAME**) to translate the value to the corresponding Site Key and populate the **MI_SITE_KEY** field; therefore, you do not need to know the key to be able to populate the site reference. This functionality is important because this value can change from one database to another.

Procedure

- On the data worksheet, add a column that contains **MI_SITE_NAME** in the column name. For example if you are working with a relationship, where a distinction needs to be made regarding which family is associated with each column, then the column name will be prefaced with the Family ID. As shown in the following image, the column name might take the form **MI_EQUIP000|MI_SITE_NAME**, where **MI_EQUIP000** is the Family ID.

C	D	E
Technical Number	CMMS System	Site Reference Name
000 MI_EQUIP000_EQUIP_TECH_NBR_C	MI_EQUIP000 MI_EQUIP000_SAP_SYSTEM_C	MI_EQUIP000 MI_SITE_NAME
DC-PMP-574000	Houston, TX	Houston, TX

- Enter the site name to designate the site by which the asset record, once loaded into APM, will be filtered.
- Continue populating the source workbook, and then run the data loader.

Considerations for Loading with .csv Files

Typically when you load data into APM you will use the provided Data Loader workbooks, however, if you have a program that creates reports that generates .csv files, APM can load that data as long as you follow these guidelines.

The [Data Import job](#) can accept a .zip file that contains .csv files as input. The format of the .zip file is specific to each Data Loader and must contain .csv files that conform match these specific rules.

- There must be a .csv file for each worksheet defined in the workbook template for the Data Loader.
- The filename must match the worksheet name with the file extension .csv. For example, the .csv for the Equipment worksheet must be named `Equipment.csv`.
- The .zip must contain all the .csv files that match the worksheets expected by the data loader.

A .zip that meets all of these requirements can be used as input to the [Data Import job](#).

About the Rounds Pro Data Loaders

You can use the Rounds Pro Data Loaders to import content into the Rounds Pro module in bulk.

The Rounds Pro Data Loaders are used to create records in the following families and relevant relationships between them:

- Rounds Pro Picklist Values Data Loader
- Rounds Pro Step Template Data Loader
- Rounds Pro Route Masters Data Loader
 - Create Route
 - Create Step
 - Human Resource
 - Teams

About the Rounds Data Loaders Requirements

This documentation assumes that your organization has completed the deployment of the Rounds Pro module. The Rounds Pro Data Loaders should be used only after the Rounds Pro module has been implemented.

As part of the security settings, the Security User performing the data load operation must be associated with either the MI Data Loader User or MI Data Loader Admin Security Role, and must also be associated with the MI Operator Rounds Administrator Security Group or a Security Role that is associated with this Security Group.

The following requirements must be met for the data load operation to be performed:

- All imported date values are in UTC.
- Functional Locations and/or Equipment have already been loaded into APM.

- Blank values are not copied to the entities. If there are blank values, those fields will be skipped.
- No customization (that is, rules changes) is done on the related families that override the baseline families.

About the Rounds Pro Data Loaders General Loading Strategy

This section describes any prerequisites to loading the data and the order in which the data will be loaded.

Data Import

When importing data using the Rounds Pro Data Loaders:

- The batch records is limited .xls spreadsheet file.
- You must use the data loader workbook while considering the rules described in Workbook Layout and Use.
- When importing huge number of records using the Rounds Pro Data Loader, you can split the records in the spreadsheet into batches and assign a batch ID for each batch. Records within a spreadsheet of a batch should be coded with the same Batch ID. Each list of batch records should be loaded using an individual spreadsheet. Using the batch ID, you can import the records to the Data Loaders.
- Below are the recommendations of the number of records per batch that can be loaded into Data Loaders using the Batch IDs:
 - **Picklists:** 1000 records per batch (Same for both Reading and Action types)
 - **Step Templates:** 1000 records per batch
 - **Steps:** 1000 records per batch
 - **Conditions:** 1000 records per batch
 - **Routes:** 10 Routes (Not more than 1500 steps per route, no more than 5 user or team assignments per route)

Note: Small batches are less efficient compared to larger batches. There is overhead with each batch that can be reduced by reducing the number of batches.

Schedule and Date Fields

- The Rounds Pro Data Loaders require that Schedule values are expressed using the JSON format used in the APM database. Valid schedule expressions may be easily generated via the schedule setting feature on a schedule field in a Route or Checkpoint Task record in Record Manager, and then copying the resulting text value to the worksheet.
- The Route Data Loaders use a non-standard date format. Data should be formatted as yyyy-mm-dd hh-mm-ss (for example, 2015-05-23 17-45-34).
- All date values are assumed to be in UTC. The time zone of the user loading the data is not relevant.

About the Rounds Pro Data Loader Workbooks Layout and Use

Overview of Rounds Data Loader Workbooks

This section provides a high-level overview and explanation of how the data loader workbooks are constructed.

To import data using the Rounds Data Loaders, GE Vernova provides separate data loader workbooks for:

- **Rounds Pro Picklist Values**
- **Rounds Pro Steps**
- **Rounds Pro Step Template**
- **Rounds Pro Step Conditionals**
- **Rounds Pro Route Masters**

The workbooks support the baseline Rounds Pro functionality in APM. The workbooks must be used to perform the data load.

Each data loader workbook contains one worksheet for each node that will be populated in the data model.

Each worksheet in these data loader workbooks contain field values that must be mapped to the appropriate APM family or field combination. The individual sections in this document specify the source and target fields and relationships required between predecessors and successor.

The list of fields tabulated is not exhaustive.

Data Loader Batch Fields

The Rounds Pro Data Loaders workbooks include columns of data that are used to identify batches of related records. These values are not imported to a field in the APM database. Generally, these will be the first few columns in each worksheet. They each use a prefix that identifies the relevant record type being imported, whereas columns that will be imported have IDs that match the field IDs in APM, which generally use the prefix MI_.

Rounds Pro Picklist Values Data Loader Workbook

When importing data using the Rounds Pro Picklist Values Data Loader, the data loader will create one Picklist Value record for each row of the worksheet. If the import worksheet specifies a Picklist Value that is an exact match for an existing record, the record is not imported. Since the unique identification of a Picklist Value record includes all its fields, it is not possible to update existing Picklist Value records using the data loader.

Note: Picklist Values records do not support Site Filtering.

On the worksheet, you will specify the picklist values that will be used in Step Templates and Steps.

Field Caption	Field ID	Data Type (Length)	Comments
Picklist Batch ID	RTE_PICK_PCKLST_ID	Character (50)	This field is required for identification during the data load process and must be unique. The value in this field is not imported to APM.
Picklist ID	MI_RTE_PICK_PCKLST_ID_C	Character (50)	This field is required and must be unique.
Value	SYCD_ID	Character (50)	This field is required.
Description	SYCD_DESC_TX	Character (255)	Provide a brief description.
Sequence	SYCD_SEQ_NBR	Numeric	This field is required and must be unique within Picklist Values.

Rounds Pro Step Template Data Loader Workbook

When importing data using the Rounds Pro Step Template Data Loader, the data loader will create one Step Template record for each row in the data loader workbook. If the import worksheet specifies a Template ID value that matches the Template ID of an existing Step Template record, the existing record will be updated. If the worksheet specifies values for Category or Picklist Value that do not already exist in the database for the specified type (numeric or character) of Step Reading the record will not be imported.

The Step Templates will be loaded into APM and will be filtered based on the designated site name in the Site Reference Name field.

Step Template Worksheet

Field Caption	Field ID	Data Type (Length)	Comments
Template Batch ID	RTE_PICK_PCKLST_ID	Character (50)	This field is required for identification during the data load process. It should match the ID of the Template Batch to which the Step Template will be linked. Use <Dummy ID> if you want to import standalone records not linked to a Template Batch. The value in this field is not imported to APM.
Template ID	MI_RTE_PICK_PCKLST_ID_C	Character (50)	This field is required and must be unique. The value in this field is not imported to APM.

Field Caption	Field ID	Data Type (Length)	Comments
Step Type	MI_STP_TMP_STEP_TYPE_C	Character (50)	This field is required.
Reading Type	MI_ML_STP_TMP_READING_TYPE_C	Character (50)	This field is required. The valid values are: <ul style="list-style-type: none"> • Character • Numeric
Reading Picklist	MI_ML_STP_TMP_RDNG_PCKLST_C	Numeric	This field is required if selected as the Reading Type.
Reading Picklist Value	MI_ML_STP_TMP_RDNG_VALS_C	Character (50)	This field is required if Reading Picklist is selected.
Action Picklist	MI_ML_STP_TMP_ACTN_PCKLST_C	Character (50)	This field is required if it is selected.
Action Picklist value	MI_ML_STP_TMP_ACTN_VALS_C	Character (50)	This field is required if Action Picklist is selected.
Site Reference Name	MI_SITE_NAME	Character (50)	This field is required and must match an existing Site name. Note: If you want to set the site reference to be a Global Site Reference, enter the constant '*Global*' in the MI_SITE_NAME column on the spreadsheet.
Description	MI_STP_TMP_DESC_C	Character (255)	Please provide a brief description.
Locked	MI_STP_TMP_IS_LOCK_L	Boolean	The default value for this field is False.
Status	MI_STP_TMP_STAT_C	Character (50)	The default value for this field is Active.
Is Shutdown Required	MI_STP_TMP_REQ_EQUIP_SHUT_L	Logical	The default value for this field is False.
Unit of Measure	MI_STP_TMP_UOM_C	Character (50)	The field must be a valid value in the global Unit of Measure list. This field is disabled if the Reading Type field is Character.
Frequency	MI_STP_TMP_FREQ_C		<need information>

Field Caption	Field ID	Data Type (Length)	Comments
Lower Level 1 Value	MI_ML_STP_TMP_LO_LVL1_ALRT_VAL	Character (50)	Must use one of the Picklist Values specified for the Step Reading. This field is disabled if the Reading Type field is Numeric.
Lower Level 1 Message	MI_ML_STP_TMP_LO_LVL1_MSG_C	Character (50)	None
Lower Level 2 Value	MI_ML_STP_TMP_LO_LVL2_ALRT_VAL	Character (50)	Must use one of the Picklist Values specified for the Step Reading. This field is disabled if the Reading Type field is Numeric.
Lower Level 2 Message	MI_ML_STP_TMP_LO_LVL2_MSG_C	Character (50)	None
Lower Level 3 Value	MI_ML_STP_TMP_LO_LVL3_ALRT_VAL	Character (50)	Must use one of the Picklist Values specified for the Step Reading. This field is disabled if the Reading Type field is Numeric.
Lower Level 3 Message	MI_ML_STP_TMP_LO_LVL3_MSG_C	Character (50)	None
Upper Level 1 Value	MI_ML_STP_TMP_UP_LVL1_ALRT_VAL	Character (50)	Must use one of the Picklist Values specified for the Step Reading. This field is disabled if the Reading Type field is Numeric.
Upper Level 1 Message	MI_ML_STP_TMP_UP_LVL1_MSG_C	Character (50)	None
Upper Level 2 Value	MI_ML_STP_TMP_UP_LVL2_ALRT_VAL	Character (50)	Must use one of the Picklist Values specified for the Step Reading. This field is disabled if the Reading Type field is Numeric.
Upper Level 2 Message	MI_ML_STP_TMP_UP_LVL2_MSG_C	Character (50)	None

Field Caption	Field ID	Data Type (Length)	Comments
Upper Level 3 Value	MI_ML_STP_TMP_UP_LVL3 _ALRT_VAL	Character (50)	Must use one of the Picklist Values specified for the Step Reading. This field is disabled if the Reading Type field is Numeric.
Upper Level 3 Message	MI_ML_STP_TMP_UP_LVL3 _MSG_C	Character (50)	None

Rounds Pro Step Conditionals Data Loader Workbook

When importing data using the Rounds Pro Step Conditionals Data Loader, the data loader will create one Step Conditional record for each row in the data loader workbook. If the import worksheet specifies a Template ID value that matches the Template ID of an existing Step Conditional record, the existing record will be updated.

Step Conditionals Worksheet (MI_STP)

Field Caption	Field ID	Data Type (Length)	Comments
Conditional Step Batch ID	ROUNDS_STP_COND_BAT CH_ID	Character (50)	This field is required for identification during the data load process and must be unique. The value in this field is not imported to APM.
Step ID	MI_STP_ID_C	Character (50)	A unique ID to identify a step.
Related Asset ID	ROUNDS_STP_REL_ASSET_ ID	Character (50)	If this value matches an existing Asset ID, the Conditional Step will be linked to this asset.
Related Asset Family ID	ROUNDS_STP_REL_ASSET_ FAMILYID	Character (50)	If this value matches an existing Asset Family ID, the Conditional Step will be linked to this asset.
Step Name	MI_STP_COND_STP_NAME	Character (50)	The name of the Primary step. This field is required and must match an existing Step name.
Operator	MI_STP_COND_OPERATOR	Character (50)	This field specifies the operators that determine if the reading value entered for the primary Step meet the condition specified.
Conditions Field Value	MI_STP_COND_FLD_VAL	Character (50)	None

Field Caption	Field ID	Data Type (Length)	Comments
Conditional Step Name	MI_STP_COND_STP_NAME _COND	Character (50)	The name of the Conditional step.
Conditional Step Index	MI_STP_COND_STP_INDEX	Numeric (50)	None
Immediate Parent Step	MI_STP_COND_STP_PAREN T	Character (50)	This field contains the name of the current step in the route to which you want to add conditional steps.

Rounds Pro Routes Data Loader Workbook

When importing data using the Rounds Pro Routes Data Loader, you can

- Create Route Master
- Assign or unassign a Security User to the route

When importing data using the Rounds Pro Routes Data Loader, this data loader will create records as follows:

- **Route Master:** The Route Master data loader does the following:
 - Creates a Route Master record or a route template.
 - Associates or links existing steps created in the step dataloader or in the step designer.
 - Assigns the route to a user.
 - Assigns the route to a team.
 - Validates that the users, teams, and steps exist already when trying to link these items together.

Note: Update a Route Master or delete a Route Master functionality is not available.

The Route Master is created, associated to all the steps included and is assigned to all individuals and/or teams included.

The Route Master will be loaded into APM and will be filtered based on the designated site name in the Site Reference Name field.

Note: If you want to set the site reference, to be a Global Site Reference, enter the constant '*Global*' in the MI_SITE_NAME column on the spreadsheet.

- **Steps:** The data loader generates one step record for the existing steps in each row in the Step worksheet. Using this Step data loader, the steps are associated to the required route. The data loader creates one step record for each row in the Step worksheet. Step must exist before including it in the Step data loader.

The Next Date, Non-compliance Date, and the Non-compliance Next Check Date fields on the Step record will be populated automatically by existing rules based on the value in the Schedule column. If the Schedule is invalid, the record will not be created.

- **Human Resource:**

A relationship is created between the Route and the Human Resource record. Therefore, the Human Resource records must already exist before the data loader is used.

- **Teams:**

A relationship is created between the Route and the teams records. Therefore, the Teams records must already exist before the data loader is used.

Route Master Worksheet (MI_RTE_MST)

Field Caption	Field ID	Data Type (Length)	Comments
Route Batch ID	RTE_MST_BATCH_ID	Character (50)	This field is required for identification during the data load process and must be unique. The value in this field is not imported to APM.
Route ID	MI_RTE_MST_ID_C	Character (50)	<p>This field is required and must be unique.</p> <ul style="list-style-type: none"> When you use the data loader to create Route, Measurement Locations and Checkpoint Task records. When you use the data loader to create Route, Measurement Locations and Checkpoint Task records and assign the security users to Routes. <p>Note: This field is not required and may not be populated on this worksheet when you only assign or un-assign the security users to Routes.</p>
Route Description	MI_RTE_MST_DESC_C	Character (255)	A description of the route.
Schedule	MI_RTE_MST_SCHED_C	Character (50)	This option generates the route instances from an associated route.
EAM Job Key	MI_RTE_MST_EAM_JOB_KEY_C	Character (50)	This field is used to link a Route Master to a given EAM Job identifier.
Status	MI_RTE_MST_STATUS_F	Character (50)	This field indicates if the route has been added to the My Routes list.
Is Schedule Active	MI_RTE_MST_SCHEDULE_ISACTIVE	Logical	<p>This field indicates if the Route Schedule is active.</p> <p>A schedule can be created for a route in the Plan Routes section, after you select the schedule option.</p>

Field Caption	Field ID	Data Type (Length)	Comments
Next Due Date	MI_RTE_MST_NEXT_DUE_DT	Numeric (50)	The date when the next instance of the route will be generated if the route master corresponding to the instance has an active schedule.
Frequency	MI_RTE_MST_FREQ_N	Numeric (50)	This field displays a number for the duration at which a route schedule recurs.
Frequency Interval	MI_RTE_MST_FREQ_INTVAL_C	Character (50)	The time unit to measure the duration at which the route schedule recurs.
Floc Equipment Reference Number	MI_RTE_MST_FLOC_EQUI_REF_NUM_C	Character (50)	This field contains a unique alphanumeric number.
Floc Equipment Status	MI_RTE_MST_FLOC_EQUI_STS_C	Character (50)	This field displays the equipment status, Out of Service, Online, or Available.
Route Master Compliance Tracking Flag	MI_RTE_MST_CMPLNC_ISACTIVE	Button	Enable the button to activate compliance tracking for a schedule on a route.
Route Master Compliance Horizontal Interval	MI_RTE_MST_CMPLNC_HRZN_INTRVL	Character (50)	This field contains the time units to measure the frequency based on which the route instance must be completed.
Route Master Compliance Horizon Unit	MI_RTE_MST_CMPLNC_HRZN_UNIT	Numeric(50)	A number to specify the frequency in time units, such as days, weeks, and so on, based on which the route instance must be completed.
Basis For Occurrence	MI_RTE_MST_BASIS_FOR_OCCUR_C	Character (50)	You can select EAM or Schedule.

Steps Worksheet (MI_STP)

Field Caption	Field ID	Data Type (Length)	Comments
Route Batch ID	RTE_MST_BATCH_ID	Character (50)	This field is required for identification during the data load process and must be unique. The value in this field is not imported to APM.
Route ID	MI_RTE_MST_ID_C	Character (50)	<p>This field is required and must be unique.</p> <ul style="list-style-type: none"> When you use the data loader to create Route, Measurement Locations and Checkpoint Task records. When you use the data loader to create Route, Measurement Locations and Checkpoint Task records and assign the security users to Routes. <p>Note: This field is not required and may not be populated on this worksheet when you only assign or un-assign the security users to Routes.</p>
Related Asset ID	MI_STP_REL_ASSET_ID_C	Character (50)	If this value matches an existing Equipment ID (for Equipment) or Functional Location (for Functional Locations) the Checkpoint will be linked to this asset.
Step ID	MI_STP_ID_C	Character (50)	A unique ID to identify a step.
Step Type	MI_STP_STEP_TYPE_C	Character (50)	The type of the step, whether a strategy step, template step, or a normal step. This is a required field.
Step Sequence Number	MI_STP_SEQ_NUM	Character (50)	A unique number to identify the step sequence.

Human Resource Worksheet (MI Human Resource)

Field Caption	Field ID	Data Type (Length)	Comments
Route Batch ID	RTE_MST_BATCH_ID	Character (50)	This field is required for identification during the data load process and must be unique. The value in this field is not imported to APM.
Route ID	MI_RTE_MST_ID_C	Character (50)	<p>This field is required and must be unique.</p> <ul style="list-style-type: none"> When you use the data loader to create Route, Measurement Locations and Checkpoint Task records. When you use the data loader to create Route, Measurement Locations and Checkpoint Task records and assign the security users to Routes. <p>Note: This field is not required and may not be populated on this worksheet when you only assign or un-assign the security users to Routes.</p>
First Name	MI_HR_FIRST_NAME_CHR	Character (50)	The first name of the human resource personnel.
Last Name	MI_HR_LAST_NAME_CHR	Character (50)	The last name of the human resource personnel.

Teams Worksheet (MI_TEAMS)

Field Caption	Field ID	Data Type (Length)	Comments
Route Batch ID	RTE_MST_BATCH_ID	Character (50)	This field is required for identification during the data load process and must be unique. The value in this field is not imported to APM.
Route ID	MI_RTE_MST_ID_C	Character (50)	<p>This field is required and must be unique.</p> <ul style="list-style-type: none"> When you use the data loader to create Route, Measurement Locations and Checkpoint Task records. When you use the data loader to create Route, Measurement Locations and Checkpoint Task records and assign the security users to Routes. <p>Note: This field is not required and may not be populated on this worksheet when you only assign or un-assign the security users to Routes.</p>
Team Name	MI_TEAMS_TEAM_NAME_C HR	Character (50)	A unique ID to identify a team.

About the Rounds Pro Data Loaders Load Verification

After each worksheet is loaded:

- Review the data loader log to identify any errors or warnings
- Update the data loader workbook to correct any errors, and then re-import
- Repeat until the import of each record is error free

Note: It is recommended that a query is executed in APM on the relevant family to ensure that records have been created and populated as expected. Imported records should also be spot checked in the **Rounds Pro Manager** and the **Rounds Designer** to verify that the expected relationships have been created.

To perform the load verification of the loaded data loaders, log in to the Rounds Pro as a Rounds Pro Administrator user.

On the left navigation menu, select **Health**, and then select **Rounds Pro Manager**. The **Rounds Pro Manager** page appears. From the **Rounds Pro Manager** page, access the **Rounds Designer** and the Route details page to verify the data loaded using the data loaders.

Note: The data loaders will load new data records only. Any changes to the records that are loaded can be made through the Rounds Pro Manager only.

Data Loader Load Verification for Rounds Designer

Access the Picklist Management page and verify that the loaded data using Data loader appears as expected with all the records imported and that the values can be edited, or new values added to both the Action and Reading Picklist type. Also verify that you can create new character (and numeric, if applicable) Picklists.

Access the Step Template page and verify that the loaded Step Templates list appear as expected and the Step template records displays all the details and can be edited as required.

Verify that the Health Indicator are created for the given levels as expected.

Access a Step and verify that the loaded Steps list appear as expected in the asset hierarchy.

Select a Step to view the step details and verify that the Step records displays all the imported values and can be edited as required.

Access a Step that was imported and verify that the Health Indicators record is linked to the Step as expected.

Access a Step Condition and verify that all the data is loaded from the data loader for that conditional step.

Data Loader Load Verification for Route Masters

Access the Route Masters page.

Verify that the loaded **Route Masters** page appears as expected with all the data for the Routes, associated steps and is assigned to all individuals and/or teams included in the Data Loader.

In the **Route Masters** page, select a rout from the **ROUTE NAME** column, verify the following list for the selected route:

- The existing assigned assets and steps appear as expected.
- The existing steps created in the step data loader or in the step designer can be assigned to the route.
- The assigned Assets and Steps can be reordered.
- The asset details appearing as imported.
- The Route name and route description appear as imported.
- The route schedules have been populated.
- The route has been to a user or team.
- The Basic for Occurrence (EAM and Schedule) details are loaded as expected with all the required data.
- The Route Preview details are appearing as expected with the loaded data.
- It can be assigned to a new User or Team or remove the assigned team or user.

Verify that the updated changes in the routes are appearing as expected in the **Route Masters** page.

Chapter 4

Reference

Topics:

- [About the Data Loader Worksheets and Fields](#)
- [About the Configuration Worksheet](#)
- [System Code Tables Used by Data Loaders](#)

About the Data Loader Worksheets and Fields

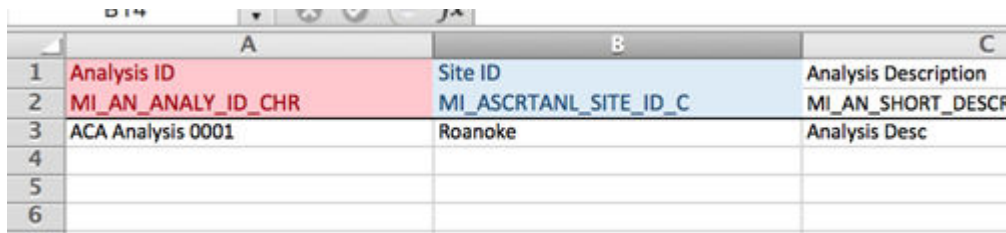
Field formats for the data loader workbooks carry specific value and cell requirements. This topic contains guidelines for data/time format, units of measure (UOM), and cell color coding.

Important: When using an Excel data loader workbook, to delete rows from the workbook, you must right-click the row number and then select **Delete**.

Cell Color Coding

In order to differentiate between required and recommended field values in the Excel workbook, cells adhere to the following color coding scheme:

- **Red:** a required field.
- **Blue:** a recommended field.



The screenshot shows an Excel spreadsheet with three columns: A, B, and C. Row 1 contains the headers: 'Analysis ID' (red background), 'Site ID' (blue background), and 'Analysis Description'. Row 2 contains the field IDs: 'MI_AN_ANALY_ID_CHR' (red background), 'MI_ASCRTANL_SITE_ID_C' (blue background), and 'MI_AN_SHORT_DESCR'. Row 3 contains sample data: 'ACA Analysis 0001', 'Roanoke', and 'Analysis Desc'. Rows 4, 5, and 6 are empty.

	A	B	C
1	Analysis ID	Site ID	Analysis Description
2	MI_AN_ANALY_ID_CHR	MI_ASCRTANL_SITE_ID_C	MI_AN_SHORT_DESCR
3	ACA Analysis 0001	Roanoke	Analysis Desc
4			
5			
6			

Note: The Column ID and Associated Field ID will both be colored the same.

Cells that Require Logical Values

When a cell corresponds to a field in APM that requires a Logical value, you should enter True or False.

Character Limits in Character Fields

In APM, family fields that have the Character data type (Character fields) restrict values to a maximum length. In the Excel workbooks, when entering data in a cell that represents a Character field, the values must not exceed the character limit of the corresponding field.

Date and Time Format

Dates should be entered as text in the following format: YYYY-MM-DD hh:mm:ss, where:

- **YYYY** is the four-digit year.
- **MM** is the two-digit month.
- **DD** is the two-digit day.
- **hh** is hours in 24-hour notation.
- **mm** is minutes.
- **ss** is seconds.

Note: It is recommended to enter the dates as text in the date fields stored in the data loader workbooks.

For example, a complete entry would be the following: 2015-05-01 17:53:00. This corresponds to 5:53 PM on May 1, 2015.

Note: Hours must be entered in 24-hour notation (e.g., 17:53:00, not 5:53:00). AM and PM should never be included. Unless otherwise noted in the applicable Mappings Document, times entered should be based on the time zone of the user who will be performing the data load.”

Language

Data loader Excel workbooks are available with field captions in all baseline languages supported by APM.

Reference Sheets

You can insert additional worksheets into your data loader workbook that will not be loaded into APM by encasing the worksheet name in parentheses. For example, if you wanted to add a sheet to record notes on the data loaded into the workbook, you could add a worksheet named (Notes). Because the name of the worksheet is in parentheses, the worksheet will not be loaded into APM.

Units of Measure

In the workbooks, values that correspond to a Unit of Measure (UOM) should be entered based on the current UOM Conversion Set setting for the user performing the data load.

For example, if the UOM Conversion Set for the user is Metric, metric values should be entered in the Excel workbook.

In cells that correspond to a field that uses a UOM, you should not enter the actual UOM. For example, you should enter 10, not 10 Inches.

About the Configuration Worksheet

The **Configuration** Worksheet is a common worksheet, which can be implemented by each of the data loaders. It allows you to control aspects of how your data is loaded such as batching and which other worksheets should be processed.

Note: The **Configuration** Worksheet cannot be used by the Failure Modes and Effects Analysis (FMEA) Data Loader, the Reliability Centered Maintenance (RCM) Data Loader, Thickness Monitoring (TM) Equipment Data Loader, or the Thickness Monitoring (TM) Functional Location Data Loader.

The Configuration worksheet is needed to describe the type of data that you will be loading and how that data should be handled during the data load.

Worksheet	Description
Configuration	The Configuration worksheet is needed to describe the type of data that you will be loading and how that data should be handled during the data load.

Configuration Worksheet

Field Caption	Field ID	Data Type (Length)	Comments
Load Data From Worksheet	LOAD_DATA_WORKSHEET	Boolean	<p>Identifies if data from the corresponding worksheet identified in the Data Worksheet ID column will be loaded or not.</p> <ul style="list-style-type: none"> • True: the corresponding worksheet will be processed. • False: The corresponding worksheet will not be loaded into the Meridium database.
Data Worksheet ID	DATA_WORKSHEET_ID	Character	<p>This column contains the name of the <data> worksheet where the actual data is located. It needs to have the same name as the <data> worksheet in the data loader workbook.</p>
Batch Size	BATCH_SIZE	Character	<p>Modifying this field is required to determine the number of records processed in each batch. Enter the batch size you want, and the Data Loader will process that many records per batch.</p> <p>For example, if you want to use a batch size of 100, enter 100, and the data loader will process 100 records per batch.</p> <p>Note: The recommended batch size is 100. If the Batch Size column is removed from the source workbook, the data loader will default to a batch size of 100.</p> <p>In addition to processing the data in batches, the log file reports progress by batch.</p>

System Code Tables Used by Data Loaders

The following table lists the System Code Tables that are used by the APM Connect Data Loaders.

Table ID	Table Description	Function
MI_WORK_PROCESS_ADAPTERS	Data Loader Jobs	Contains a list of all of the loaders and is used to link the corresponding Job Label in the APM Connect Administration Center.
MI_INTERFACE_LOG_CATEGORIES	Interface log categories	Contains a list of the log categories for APM Connect, and is used to categorize the log files by APM Connect component.