



Productive
Computing

Creating Efficiency Through Automation

FMBooks Connector

ONLINE EDITION



Functions Guide

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I. Introduction

Description: The FM Books Connector plug-in is a powerful tool used to move data between FileMaker® Pro and Intuit® QuickBooks Online. In this Functions Guide we will describe all available FileMaker functions, parameters, return values and error handling.

Intended Audience:

Intermediate to advanced developers or persons with knowledge of FileMaker Pro or FileMaker Pro Advanced, especially in the areas of scripting, calculations and relationships as proper use of the plug-in requires that FileMaker integration scripts be created in your FileMaker solution.

Successful Integration Practices:

- 1) Read the Developer's Guide
- 2) Read the Functions Guide
- 3) Familiarize yourself with basic accounting practices and QuickBooks
- 4) Download a demo: <http://www.productivecomputing.com/fm-books-connector-online/>
- 5) Watch video tutorials: <http://www.productivecomputing.com/video>
- 6) Use the Intuit's Accounting API Reference guide: <https://developer.intuit.com/docs/api/accounting>
- 7) Use the Intuit's Migration guide [https://developer.intuit.com/docs/0025_quickbooksapi/0058_faq/qbo_xml_sdk \(soap\) to v3 rest migration](https://developer.intuit.com/docs/0025_quickbooksapi/0058_faq/qbo_xml_sdk_soap_to_v3_rest_migration)

II. Function Descriptions

This section of the document describes the available FileMaker plug-in functions for FM Books Connector.

A. Session Functions

1) PCQO_BeginSession

Description:

This function begins a session for working with a QuickBooks Online company.

Dependencies: none

Parameters: none

Return Values:

0 for success, or "!!ERROR!!"

Notes & Examples:

This function will set the plug-in up for authentication with a QuickBooks Online company. Upon a successful call, it will bring up the default internet browser navigated to Intuit's authentication portal.

Starting in version 2.0.0.0, the Mac version of the FM Books Connector Online plug-in utilizes an in-app authentication window instead of the default internet browser. This in-app window combines the functionality of PCQO_BeginSession and PCQO_Authorize in order to completely authorize the session, from start to finish.

The Server version of the plug-in cannot use the PCQO_BeginSession function. This function will return an error if called from the server Scripting Engine or Web Publishing Engine. To acquire a session, please use a client build of the FM Books Connector Online and pass the session string from PCQO_SSaveSessionInfo to the server plugin's PCQO_SLoadSessionInfo call. For more information, please reference the "Server Session Management" section in the Developer's Guide.

2) PCQO_Authorize(SessionString)

Description:

This function authorizes the plug-in with a provided session string generated by Intuit when authenticating to a QuickBooks Online company.

Dependencies:

PCQO_BeginSession must have been called, and the user authorized the FM Books Connector Online to communicate with their company.

Parameters:

| Parameter Name | Purpose | Values | Default Value |
|----------------|--|--------|---------------|
| SessionString | An encoded session string acquired from a successful call to PCQO_BeginSession | | |

Return Values:

0 for success, or "!!ERROR!!"

Notes and Examples:

This function is only necessary when using the Windows version of the plug-in. The Mac version requires only PCQO_BeginSession to authorize a connection. The Server version cannot begin, authorize, or end its own session.

3) PCQO_EndSession

Description:

This function ends the currently begun and/or authorized session with QuickBooks Online.

Dependencies: none

Parameters: none

Return Values:

0 for success, or "!!ERROR!!"

Notes & Examples:

If no session is currently active, will return 0.

The Server version of the plug-in cannot begin, authorize, or end its own session.

4) PCQO_SSaveSessionInfo

Purpose:

Saves the currently active and authenticated session with QuickBooks Online to an encoded session information string. This session information can be shared with another instance of the FM Books Connector plug-in through the FileMaker solution, or shared between FileMaker sessions.

Dependencies:

An active and authenticated session with QuickBooks Online.

Parameters:

None

Return Values:

An encoded session string, or "!!ERROR!!"

Notes & Examples:

Sample script:

```
# Assume that the session has already begun and the user has been authenticated...  
#  
# Get the active session information  
Set Variable [ $sessionInfo, Value: PCQO_SSaveSessionInfo ]  
If ( $sessionInfo = "!!ERROR!!" )  
# Handle error...  
Else  
# Set the session field with the active QBO session information  
Set Field [ Preferences::QBOSessionInfo, Value: $sessionInfo ]  
End If  
#
```

When using the server-side plug-in, session information must be generated by a client-side version of the FM Books Connector Online plug-in and passed through FileMaker to the server plug-in, via a field or script parameter. For more information and for examples, see the “Server Session Management” section in the Developer’s Guide.

5) PCQO_SLoadSessionInfo(SessionInfoString)

Purpose:

This function will take a session information string generated by PCQO_SSaveSessionInfo and load it into the plug-in. This will make the loaded session information into the plug-in's active session, allowing it to communicate using a previously-begun and authorized session with QuickBooks Online. Loading a new session information string will overwrite the existing session. This is useful when sharing the session with multiple users of the FM Books Connector Online plug-in, or when managing multiple connections to multiple companies with one plug-in.

Dependencies:

none

Parameters:

| Parameter Name | Purpose | Values | Default Value |
|-------------------|--|--------|---------------|
| SessionInfoString | An encoded string that contains the session information, as generated by PCQO_SSaveSessionInfo | | |

Return Values:

0 for success, or "!!ERROR!!"

Notes & Examples:

Sample script:

```
# Assume that the fields and tables referenced below are the same as the previous sample script
#
# Load the session information from the Preferences table into the plug-in
Set Variable [ $result, Value: PCQO_SLoadSessionInfo( Preferences::QBOSessionInfo ) ]
If ( $result = "!!ERROR!!" )
# Handle error...
Else
# Report success, set connection state flags, etc.
End If
#
```

Note that if the PCQO_EndSession function has been called by any plug-in using the same session as the one loaded by this function, it will invalidate ALL instances of that session, and a fresh call to PCQO_BeginSession will need to be made.

6) PCQO_RefreshSession

Purpose:

This function will attempt to refresh the current session, thus obtaining a new session token and extending the life of the connection by six months. It will only be successful if called within 30 days of the expiration of the current token.

Dependencies:

Must have a session currently active.

Return Values:

0 for success, or “!!ERROR!!”

Notes & Examples:

The lifetime of an authenticated session with Intuit QuickBooks Online is six months, or 180 days. During this time period, information can be transferred freely between QuickBooks Online and FileMaker via the FM Books Connector Online plug-in. However, after this period, a new session will be required in order to continue communication.

Instead of requiring a complete session reconnection (i.e. beginning a new session, authorizing the connection, and restoring the session information), an authenticated session can be refreshed using the PCQO_RefreshSession call. This call is only successful and valid if within 30 days of the expiration date for the current session. If the call is successful, the current token is disabled and invalidated, and a new token is loaded into memory. After calling PCQO_RefreshSession successfully, make sure to store the new session information back into FileMaker by calling PCQO_SSaveSessionInfo.

This function can also be called by the server version of the plug-in.

B. Request Functions

1) PCQO_RqNew(Operation ; EntityType)

Description:

Begins a new request. The request will be performing an operation based off of the Operation parameter, and affect the type of QuickBooks Online entities designated by EntityType.

Dependencies:

Plug-in must be authorized.

Parameters:

| Parameter Name | Purpose | Values | Default Value |
|----------------|--|--|---------------|
| Operation | The type of "CRUD" operation to perform. | "Create", "Query", "Update", or "Delete" | |
| EntityType | The entity to perform the "CRUD" operation on. | Any valid QuickBooks Online entity. | |

Return Values:

0 for success, or "!!ERROR!!"

Notes & Examples:

Explanation of the "CRUD" Operations:

- Create: Creates a new entity.
- Query: Sets up a query for one or more entities.
- Update: Updates an existing entity.
- Delete: Deletes an existing entity.

Example 1:

In the FM Books Connector, when creating a new customer, the RqNew function would be structured as:

```
PCQB_RqNew( "CustomerAdd" )
```

In the FM Books Connector Online, the matching RqNew function call would be structured as:

```
PCQO_RqNew( "Create" ; "Customer" )
```

Example 2:

FM Books Connector:

```
PCQB_RqNew( "InvoiceMod" )
```

FM Books Connector Online:

```
PCQO_RqNew( "Update" ; "Invoice" )
```

2) PCQO_RqAddFieldWithValue(FieldName ; Value)

Description:

This function is used to add a field and a value to the current request.

Dependencies:

Plug-in must be authorized.

Parameters:

| Parameter Name | Purpose | Values | Default Value |
|----------------|--|--------|---------------|
| FieldName | The name of the field in the request to set. | | |
| Value | The value to set the field to. | | |

Return Values:

0 for success, or "!!ERROR!!"

3) PCQO_RsGetFirstFieldValue(FieldName)

Description:

Returns the value stored for the field with the name specified by \$field.

Dependencies:

Plug-in must be authorized. Must have an active record in memory.

Parameters:

| Parameter Name | Purpose | Values | Default Value |
|----------------|--|---|---------------|
| FieldName | The name of the field to get the value from. | Any valid field name for the requested entity type. | |

Return Values:

The value stored in the field, or "!!ERROR!!"

Notes & Examples:

As of version 1.0.0.0, all values are returned as string values.

4) PCQO_RqAddRelatedRecord(Type)

Description:

This function adds a related record to the current request. The related record becomes active until the PCQO_RqCloseRelatedRecord function is called. Calls to PCQO_RqAddRelatedRecord and PCQO_RqAddFieldWithValue will add records and fields to the currently active record until PCQO_RqCloseRelatedRecord is called.

Dependencies:

Plug-in must be authorized.

Parameters:

| Parameter Name | Purpose | Values | Default Value |
|----------------|------------------------------------|--|---------------|
| Type | The type of related record to add. | Any valid related record type according to the primary request entity. | |

Return Values:

0 for success, or "!!ERROR!!"

5) PCQO_RqCloseRelatedRecord

Description:

This function closes the related record and sets the active record to its parent.

Dependencies:

Plug-in must be authorized. A related record must be currently active.

Parameters: none

Return Values:

0 for success, or "!!ERROR!!"

6) PCQO_RqExecute

Description:

This function posts the request to QuickBooks Online. If the request is processed by QuickBooks, a set of records will be created in response and held in memory for parsing. If the request is not valid or some other error has occurred, then an error is returned.

Dependencies:

Plug-in must be authorized. A request must be created and currently active.

Parameters: None

Return Values:

0 for success, or "!!ERROR!!"

7) PCQO_RqUseJSON(JSON)

Description:

This function attempts to load a provided JSON-formatted string into the plug-in as the QBO Request. If PCQO_RqExecute is then called, the loaded request will be submitted to QuickBooks Online.

Dependencies: None

Parameters:

| Parameter Name | Purpose | Values | Default Value |
|----------------|---|--------|---------------|
| JSON | JSON - formatted document to be loaded as the request | | |

Return Values:

0 for success, or "!!ERROR!!"

8) PCQO_RqUseXML(XML)

Description:

This function attempts to convert a provided XML-formatted string to a JSON document, and load it as the Request. If PCQO_RqExecute is then called, the loaded request will be submitted to QuickBooks Online.

Dependencies: None

Parameters:

| Parameter Name | Purpose | Values | Default Value |
|----------------|---|--------|---------------|
| XML | XML - formatted document to be loaded as the response | | |

Return Values: 0 for success, or "!!ERROR!!"

C. Response Functions

1) PCQO_RsOpenFirstRecord

Description:

Since a response may include several records, it is necessary to be able to iterate through these records. This function will access the first record in the response. Use PCQO_RsOpenNextRecord to iterate through the rest of the records in this response.

Dependencies:

Plug-in must be authorized. A call to PCQO_RqExecute must have succeeded.

Parameters: none

Return Values:

0 for success, "END" if there are no records in the response, or "!!ERROR!!"

2) PCQO_RsOpenNextRecord

Description:

This functions opens the sibling record of the current record, or the next record in the response. The record becomes the active record for reading.

Dependencies:

Plug-in must be authorized. Must have already called PCQO_RsOpenFirstRecord.

Parameters: none

Return Values:

0 for success, "END" if there are no more records in the response, or "!!ERROR!!"

3) PCQO_RsGetFirstFieldValue(FieldName)

Description:

Returns the value stored for the field with the name specified by \$field.

Dependencies:

Plug-in must be authorized. Must have an active record in memory.

Parameters:

| Parameter Name | Purpose | Values | Default Value |
|----------------|--|---|---------------|
| FieldName | The name of the field to get the value from. | Any valid field name for the requested entity type. | |

Return Values:

The value stored in the field, or "!!ERROR!!"

Notes & Examples:

As of version 1.0.0.0, all values are returned as string values.

4) PCQO_RsOpenFirstRelatedRecord(Type)

Description:

This function sets the active record to the first record of the specified type.

Dependencies:

Plug-in must be authorized. Must have an active record in memory.

Parameters:

| Parameter Name | Purpose | Values | Default Value |
|----------------|-------------------------------------|---|---------------|
| Type | The type of related record to open. | Any valid related entity type for the active parent record. | |

Return Values:

0 for success or "!!ERROR!!"

5) PCQO_RsOpenNextRelatedRecord

Description:

This function opens the sibling record of the current record, or the next related record. The record becomes the active record for reading.

Dependencies:

Plug-in must be authorized. Must have another related record as the active record.

Parameters: none

Return Values:

0 for success, "END" if there are no more records in the response, or "!!ERROR!!"

6) PCQO_RsCloseRelatedRecord

Description:

This function closes the related records and returns to the parent record. The parent becomes the active record and is available for parsing using the several Response functions.

Dependencies:

Plug-in must be authorized. Must have a related record to the parent active in memory.

Parameters: None

Return Values:

0 for success, or "!!ERROR!!"

7) PCQO_RsUseJSON (JSON)

Description:

This function attempts to load a provided JSON-formatted string into the plug-in as the Response. Any subsequent calls to Response functions (e.g. PCQO_RsOpenFirstRelatedRecord, PCQO_RsGetFirstFieldValue, etc.) will act on the loaded JSON string.

Dependencies: None

Parameters:

| Parameter Name | Purpose | Values | Default Value |
|----------------|--|--------|---------------|
| JSON | JSON - formatted document to be loaded as the response | | |

Return Values:

0 for success, or "!!ERROR!!"

8) PCQO_RsUseXML (XML)

Description:

This function attempts to convert a provided XML-formatted string to a JSON document, and load it as the Response. Any subsequent calls to Response functions (e.g. PCQO_RsOpenFirstRelatedRecord, PCQO_RsGetFirstFieldValue, etc.) will act on the loaded JSON string.

Dependencies: None

Parameters:

| Parameter Name | Purpose | Values | Default Value |
|----------------|---|--------|---------------|
| XML | XML - formatted document to be loaded as the response | | |

Return Values:

0 for success, or "!!ERROR!!"

D. Other Functions

These functions are primarily for debugging purposes.

1) PCQO_SGetStatus

Description:

This function is used to retrieve a verbose explanation of errors. Immediately after an error is returned, please call PCQO_SGetStatus to obtain a full description of the error. The status is used to identify errors in the request or the processing of request. The text returned by this function helps the user to troubleshoot script or logic failures.

Dependencies: none

Parameters: none

Return Values:

A string description of the last error to occur.

2) PCQO_SGetJSON(Type)

Description:

This function returns the request or response XML text in its entirety.

Dependencies:

Plug-in must be authorized and have prepared a request, or received a response.

Parameters:

| Parameter Name | Purpose | Values | Default Value |
|----------------|--|--|---------------|
| Type | The type of XML to pull from the plug-in | "Request" to get the XML representation of the request, "Response" to get the XML representation of the response. | |

Return Values:

The XML text, or "!!ERROR!!"

Notes & Examples:

This function is intended to aid in determining issues with malformed or incomplete requests and responses. Though the plug-in can provide the XML of a request or response, it cannot accept XML for using as a request as of version 1.0.0.0.

3) PCQO_SCountEntities(EntityType)

Description:

This function returns a count of all entities of a given EntityType.

Dependencies:

Plug-in must be authorized.

Parameters:

| Parameter Name | Purpose | Values | Default Value |
|----------------|--|-------------------------------------|---------------|
| EntityType | The type of entity to get the count of | Any valid QuickBooks Online entity. | |

Return Values:

Count of entities, or "!!ERROR!!"

Notes & Examples:

This will return ALL entities within the QuickBooks Online company file for the matching entity type. If you wish to limit the entities to a certain criteria, create a custom request using the standard PCQO_RqNew and PCQO_RqAddFieldWithValue functions for a "Query" operation.

This function has the same result as the following function call combination:

```
PCQO_RqNew( "Query" ; $EntityType )  
PCQO_RqAddFieldWithValue( "QueryString" ; "SELECT * FROM " & $EntityType & "" )  
PCQO_RqExecute
```

E. Registration Functions

The plug-in offers the following functions for registration and plug-in checker purposes.

1) PCQO_GetOperatingMode

Description:

Used to identify the operating mode of the plug-in. Operating mode indicates if the plug-in has been properly registered.

Dependencies: none

Parameters: none

Return Values:

"DEMO" for demo mode, "LIVE" for live mode, "UNREGISTERED" for unregistered mode, or "EXPIRED" for expired mode after 2 hour or 30 day timeout.

2) PCQO_Register(ServerName ; ServerPort ; ServerPage ; LicenseID)

Description:

The plug-in must be registered with Productive Computing, Inc., before use. This function registers the plug-in. The values for each of the parameters of this function are supplied by Productive Computing.

Dependencies: none

Parameters:

| Parameter Name | Purpose | Values | Default Value |
|----------------|--|--|---------------|
| ServerName | Name of the Productive Computing licensing server | "licensing.productivecomputing.com" | |
| ServerPort | Port to access the Productive Computing licensing server | "80" | |
| ServerPage | PCI Registration page | "/PCIReg/pcireg.php" | |
| LicenseID | License ID to register against | Your purchased license ID, or "DEMO-FMBO1" | |

Return Values:

0 for success, or an error string.

3) PCQO_Version(Type)

Description:

Used to identify the product and product version installed on a machine.

Dependencies: none

Parameters:

| Parameter Name | Purpose | Values | Default Value |
|----------------|---------------------------------------|-----------------|---------------|
| Type | Type of version string to be returned | "Long", "Short" | "Short" |

Return Values:

The version string and/or name of the plug-in.

Notes & Examples:

The short version string includes only the version number of the plug-in. For example: "1.0.0.0".

The long version string includes the plug-in name and version number. For example: "FM Books Connector Online 1.0.0.0".

The default version string returned is short.

F. Additional Fields

The following fields are not defined in the ESR but are acceptable fields for the PCQO_RqAddFieldWithValue function for query operations.

| Module | Method | Field Name | Acceptable Values/Notes |
|--------|--------|---------------|---|
| Query | Set | MaxResults | Any integer value greater than 0. Default value is the number of the corresponding entity in QuickBooks Online, or 500 entities, whichever is less. |
| Query | Set | StartPosition | Any integer value greater than 0. Default value is 1. |
| Query | Set | QueryString | Any SQL Select statement that follows Intuit's SQL Syntax rules. The SQL Select syntax can be found at the following link: Intuit SQL Select Statement Syntax |
| Query | Get | CountResult | Returns the number of entities counted by a "count(*)" query operation |
| Update | Set | SparseUpdate | Determines whether the update will be a "Complete" or "Sparse" update. True or False. Default value is true. |

III. Contact Us

Successful integration of a FileMaker plug-in requires the creation of integration scripts within your FileMaker solution. A working knowledge of FileMaker Pro, especially in the areas of scripting and calculations is necessary. If you need additional support for scripting, customization or setup (excluding registration) after reviewing the videos, documentation, FileMaker demo and sample scripts, then please contact us via the avenues listed below.

Phone: 760-510-1200

Email: support@productivecomputing.com

Forum: www.productivecomputing.com/forum

Please note assisting you with implementing this plug-in (excluding registration) is billable at our standard hourly rate. We bill on a time and materials basis billing only for the time in minutes it takes to assist you. We will be happy to create your integration scripts for you and can provide you with a free estimate if you fill out a Request For Quote (RFQ) at www.productivecomputing.com/rfq. We are ready to assist and look forward to hearing from you!