20 • BESTCOMS*Plus*® Software

General Description

BESTCOMS*Plus*® is a Windows®-based, PC application that provides a user-friendly, graphical user interface (GUI) for use with Basler Electric communicating products. The name BESTCOMS*Plus* is an acronym that stands for Basler Electric Software Tool for Communications, Operations, Maintenance, and Settings.

BESTCOMS*Plus* provides the user with a point-and-click means to set and monitor the DECS-250. The capabilities of BESTCOMS*Plus* make the configuration of one or several DECS-250 controllers fast and efficient. A primary advantage of BESTCOMS*Plus* is that a settings scheme can be created, saved as a file, and then uploaded to the DECS-250 at the user's convenience.

BESTCOMS*Plus* uses plugins allowing the user to manage several different Basler Electric products. The DECS-250 plugin opens inside the BESTCOMS*Plus* main shell. The same default logic scheme that is shipped with the DECS-250 is brought into BESTCOMS*Plus* by downloading settings and logic from the DECS-250. This gives the user the option of developing a custom setting file by modifying the default logic scheme or by building a unique scheme from scratch.

BESTlogic™*Plus* Programmable Logic is used to program DECS-250 logic for protection elements, inputs, outputs, alarms, etc. This is accomplished by the drag-and-drop method. The user can drag elements, components, inputs, and outputs onto the program grid and make connections between them to create the desired logic scheme.

BESTCOMS*Plus* also allows for downloading industry-standard COMTRADE files for analysis of stored oscillography data. Detailed analysis of the oscillography files can be accomplished using BESTwave™ software.

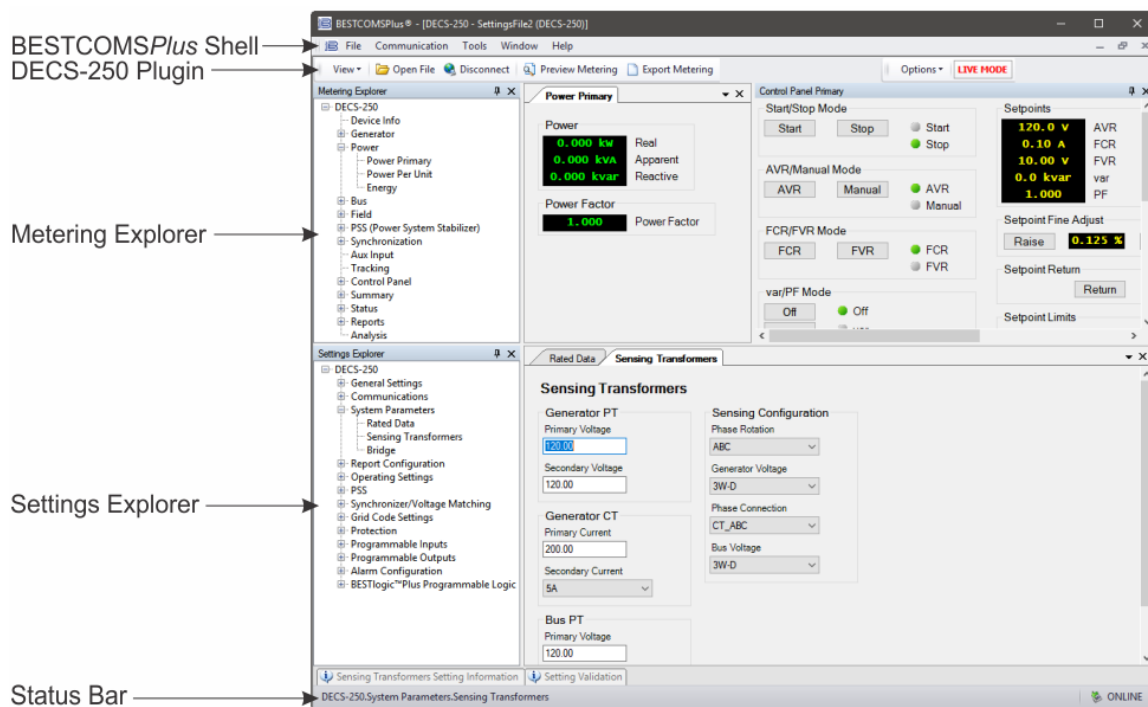Figure 20-1 illustrates the typical user interface components of the DECS-250 plugin with BESTCOMS*Plus*.

Figure 20-1. Typical User Interface Components

Installation

BESTCOMS*Plus*® software is built on the Microsoft® .NET Framework. The setup utility that installs BESTCOMS*Plus* on your PC also installs the DECS-250 plugin and the required version of .NET Framework (if not already installed). BESTCOMS*Plus* operates with systems using Windows® 7 SP1, Windows 8.1, Windows 10 version 1607 (Anniversary Update) or later and Windows 11. System recommendations for the .NET Framework and BESTCOMS*Plus* are listed in Table 20-1.

Table 20-1. System Recommendations for BESTCOMS*Plus* and the .NET Framework

System Type	Component	Recommendation
32/64 bit	Processor	2.0 GHz
32/64 bit	RAM	1 GB minimum, 2 GB recommended
32 bit	Hard Drive	200 MB (if .NET Framework is already installed on PC.)
		4.5 GB (if .NET Framework is not already installed on PC.)
64 bit	Hard Drive	200 MB (if .NET Framework is already installed on PC.)
		4.5 GB (if .NET Framework is not already installed on PC.)

To install and run BESTCOMS*Plus*, a Windows user must have Administrator rights. A Windows user with limited rights might not be permitted to save files in certain folders.

Install BESTCOMS*Plus*®

Note
Do not connect a USB cable until setup completes successfully. Connecting a USB cable before setup is complete may result in unwanted or unexpected errors.

Run the setup file for the BESTCOMS*Plus* application. The setup utility installs BESTCOMS*Plus,* the .NET Framework (if not already installed), the USB driver, and the DECS-250 plugin for BESTCOMS*Plus* on your PC.

When BESTCOMS*Plus* installation is complete, a Basler Electric folder is added to the Windows programs menu. This folder is accessed by clicking the Windows *Start* button and then accessing the Basler Electric folder in the *Programs* menu. The Basler Electric folder contains an icon that starts BESTCOMS*Plus* when clicked.

Connect the DECS-250 and Start BESTCOMSPlus®

Note that if a DECS-250 is not connected, you will not be able to configure certain Ethernet settings. Ethernet settings can be changed only when an active USB or Ethernet connection is present.

Connect a USB Cable

The USB driver was copied to your PC during BESTCOMS*Plus*® installation and is installed automatically after powering the DECS-250. USB driver installation progress is shown in the Windows Taskbar area. Windows will notify you when installation is complete.

Note
In some instances, the Found New Hardware Wizard will prompt you for the USB driver. If this happens, direct the wizard to the following folder: C:\Program Files\Basler Electric\USB Connect Driver\

If the USB driver does not install properly, refer to the *Maintenance* chapter for a troubleshooting procedure.

Connect a USB cable between the PC and your DECS-250. Apply operating power (per style chart in the *Introduction* chapter) to the DECS-250 at rear terminals A, B, and C. Wait until the boot sequence is complete.

Start BESTCOMS*Plus*®

To start BESTCOMS*Plus*, click the *Start* button, point to *Programs*, *Basler Electric*, and then click the *BESTCOMSPlus* icon. During initial startup, the *BESTCOMSPlus Select Language* screen is displayed (Figure 20-2). You can choose to have this screen displayed each time BESTCOMS*Plus* is started, or you can select a preferred language and this screen will be bypassed in the future. Click *OK* to continue. This screen can be accessed later by selecting *Tools* and *Select Language* from the menu bar.
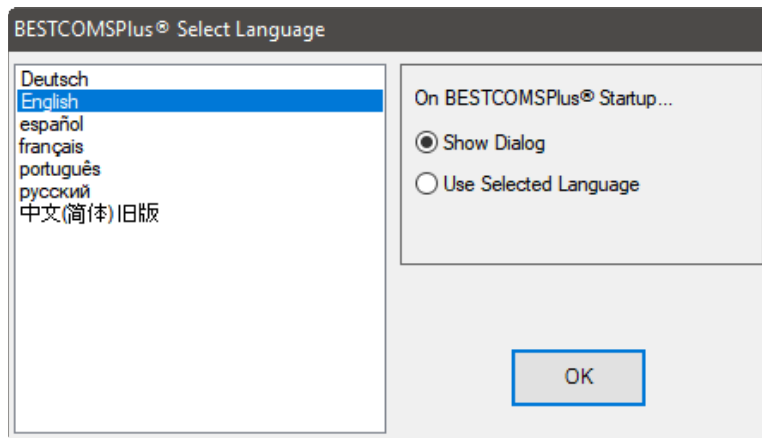

Figure 20-2. BESTCOMS*Plus* Select Language Screen

The BESTCOMS*Plus* splash screen is shown for a brief time. See Figure 20-3.

Figure 20-3. BESTCOMS*Plus* Splash Screen

The BESTCOMS*Plus*® platform window opens. Select *New Connection* from the *Communication* pull-down menu and select *DECS-250*. See Figure 20-4.
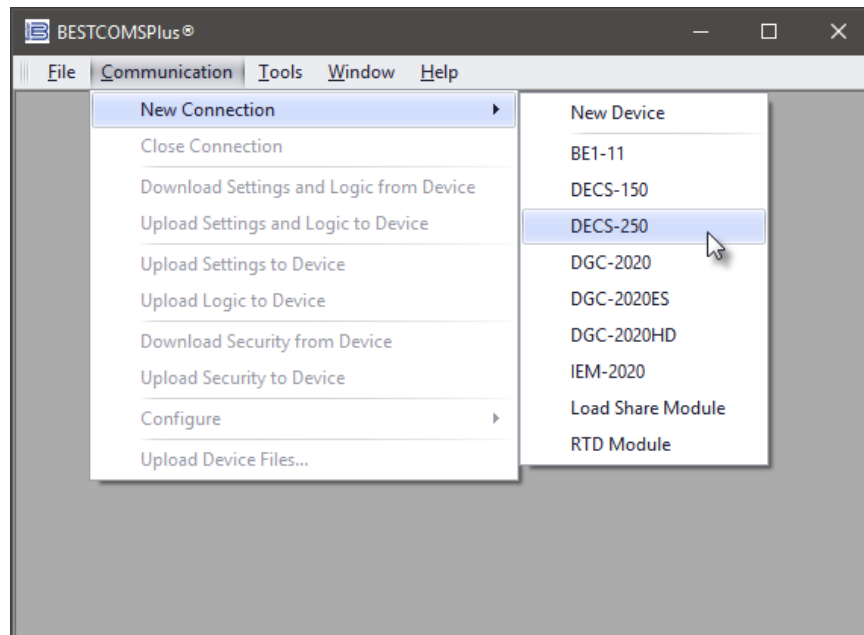
Figure 20-4. Communication Pull-Down Menu

The *DECS-250 Connection* screen shown in Figure 20-5 appears. Select *USB Connection* and click *Connect*.
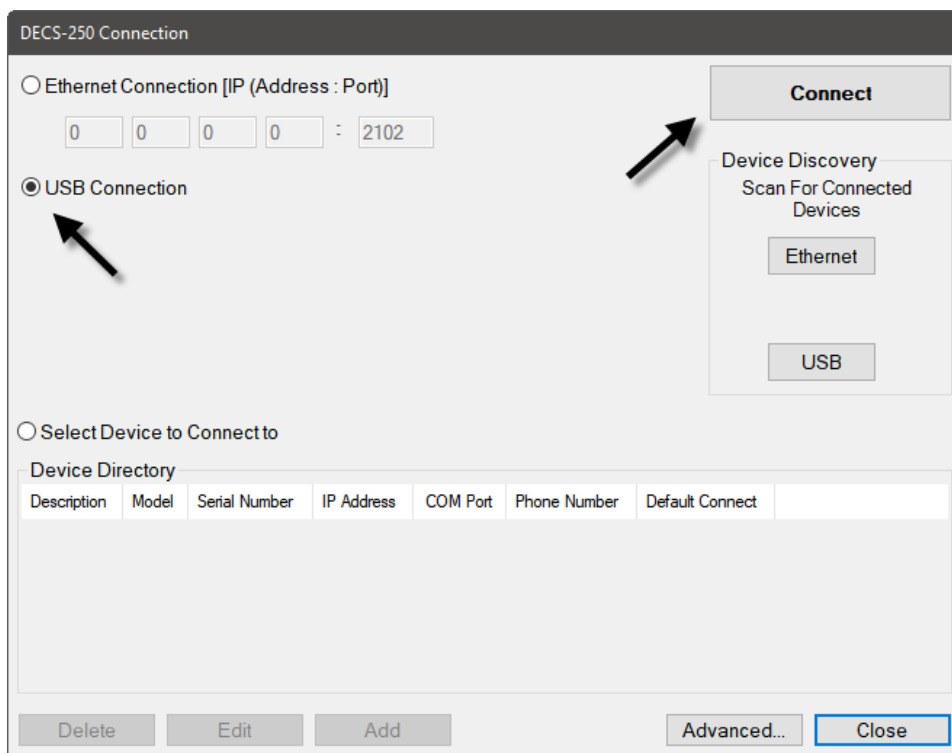

Figure 20-5. DECS-250 Connection Screen

Establishing Communication

Communication between BESTCOMS*Plus* and the DECS-250 is established by clicking the *Connect* button on the *DECS-250 Connection* screen (see Figure 20-5) or by clicking the *Connect* button on the lower menu bar of the main BESTCOMS*Plus* screen (Figure 20-1). If you receive an "Unable to Connect to Device" error message, verify that communications are configured properly. Only one Ethernet

connection is allowed at one time. Download all settings and logic from the device by selecting *Download Settings and Logic* from the *Communication* pull-down menu. BESTCOMS*Plus* will read all settings and logic from the DECS-250 and load them into BESTCOMS*Plus* memory.

Menu Bars

The menu bars are located near the top of the BESTCOMS*Plus*® screen (see Figure 20-1). The upper menu bar has five pull-down menus. With the upper menu bar, it is possible to manage settings files, configure communication settings, upload and download settings and security files, and compare settings files. The lower menu bar consists of clickable icons. The lower menu bar is used to change BESTCOMS*Plus* views, open a settings file, connect/disconnect, preview metering printout, switch to live mode, and send settings after a change is made when not in live mode.

Upper Menu Bar (BESTCOMS*Plus*® Shell)

Upper menu bar functions are listed and described in Table 20-2.

Table 20-2. Upper Menu Bar (BESTCOMS*Plus*® Shell)

Menu Item	Description
File	
New	Create a new settings file
Open	Open an existing settings file
Open File As Text	Generic file viewer for *.csv, *,txt, etc. files
Close	Close settings file
Save	Save settings file
Save As	Save settings file with a different name
Export To File	Save settings as a *.csv file
Print	Open the print menu
Properties	View properties of a settings file
History	View history of a settings file
Recent Files	Open a previously opened file
Exit	Close BESTCOMS*Plus* program
Communication	
New Connection	Choose new device or DECS-250
Close Connection	Close communication between BESTCOMS*Plus* and DECS-250
Download Settings and Logic from Device	Download operational and logic settings from the device
Upload Settings and Logic to Device	Upload operational and logic settings to the device
Upload Settings to Device	Upload operational settings to the device
Upload Logic to Device	Upload logic settings to the device
Download Security from Device	Download security settings from the device
Upload Security to Device	Upload security settings to the device
Configure	Ethernet settings
Upload Device Files	Upload firmware to the device
Tools	
Check for Updates	Check for BESTCOMS*Plus*® updates via the internet
Select Language	Select BESTCOMS*Plus* language
Set File Password	Password protect a settings file

Menu Item	Description
Compare Settings Files	Compare two settings files
Auto Export Metering	Exports metering data on a user-defined interval
Event Log - View	View the BESTCOMS*Plus* event log
Event Log - Verbose Logging	Enable/disable verbose logging
Event Log - Verbose Communication Logging	Enable/disable verbose communication logging
Generate Certificate (this function is not applicable to the DECS-250)	Generate a certificate
Accepted Devices (this function is not applicable to the DECS-250)	View and delete accepted devices

Window	
Cascade All	Cascade all windows
Tile	Tile horizontally or vertically
Maximize All	Maximize all windows
Help	
Check for Updates	Check for BESTCOMS*Plus*® updates via the internet
Check for Update Settings	Enable or change automatic checking for update
About	View general, detailed build, and system information

Lower Menu Bar (DECS-250 Plugin)

Lower menu bar functions are listed and described in Table 20-3.

Table 20-3. Lower Menu Bar (DECS-250 Plugin)

Menu Button	Description
View	Enables you to view the Metering Panel, Settings Panel, or Show Settings Information. Opens and saves workspaces. Customized workspaces make switching between tasks easier and more efficient.
Open File	Opens a saved settings file.
Connect/Disconnect	Opens the *DECS-250 Connection* screen which enables you to connect to the DECS-250 via USB or Ethernet. Also used to disconnect a connected DECS-250.
Preview Metering	Displays the *Print Preview* screen where a preview of the Metering printout is shown. Click on the printer button to send to a printer.
Export Metering	Enables all metering values to be exported into a *.csv file.
Options	Displays a drop-down list entitled *Live Mode Settings* which enables *Live* mode where settings are automatically sent to the device in real time as they are changed.
Send Settings	Sends settings to the DECS-250 when BESTCOMS*Plus* is not operating in Live Mode. Click on this button after making a setting change to send the modified setting to the DECS-250.

Settings Explorer

The Settings Explorer is a convenient tool within BESTCOMS*Plus*® used to navigate through the various settings screens of the DECS-250 plugin. Descriptions of these configuration settings are organized as follows:

- General Settings
- Communications
- System Parameters
- Report Configuration
- Operating Settings
- PSS
- Synchronizer/Voltage Matching
- Grid Code Settings
- Protection
- Programmable Inputs
- Programmable Outputs
- Alarm Configuration
- BESTlogic*Plus* Programmable Logic

Logic setup will be necessary after making certain setting changes. For more information, refer to the *BESTlogicPlus* chapter.

Settings Entry

When entering settings in BESTCOMS*Plus*, each setting is validated against prescribed limits. Entered settings that do not conform with the prescribed limits are accepted but flagged as noncompliant. Figure 20-6 illustrates an example of flagged, noncompliant settings (locator A) and the Setting Validation window (locator B) used to diagnose faulty settings.
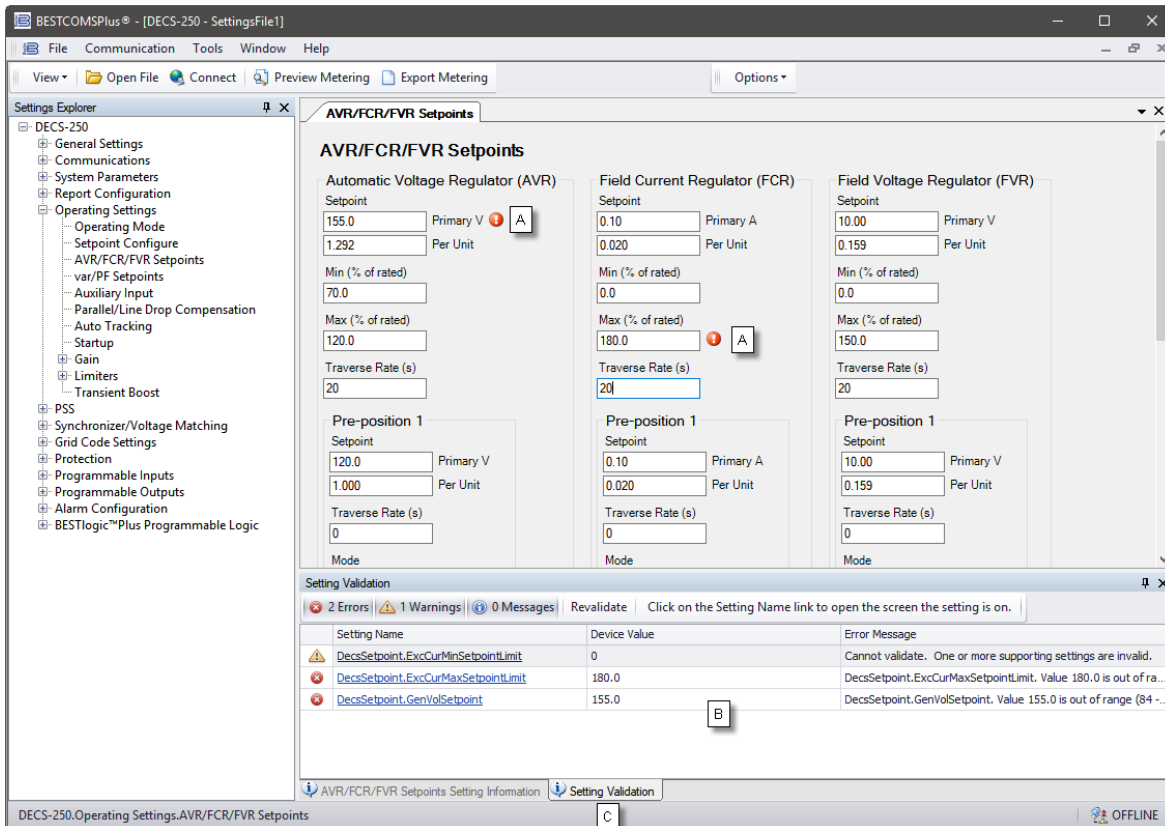

Figure 20-6. Flagged, Noncompliant Settings and the Seting Validation Window

The Setting Validation window, viewed by selecting the Setting Validation tab (locator C), displays three types of annunciations: errors, warnings, and messages. An error describes a problem such as a setting that is out of range. A warning describes a condition where supporting settings are invalid, causing other settings to be noncompliant with the prescribed limits. A message describes a minor setting issue that was automatically resolved by BESTCOMS*Plus*. An example of a condition triggering a message is entry of a settings value with a resolution that exceeds the limit imposed by BESTCOMS*Plus*. In this situation, the value is automatically rounded and a message is triggered. Each annunciation lists a hyperlinked name for the noncompliant setting and an error message describing the issue. Clicking the hyperlinked setting name takes you to the setting screen with the offending setting. Right-clicking the hyperlinked setting name will restore the setting to its default value.

Note
It is possible to save a DECS-250 settings file in BESTCOMS*Plus* with noncompliant settings. However, it is not possible to upload noncompliant settings to the DECS-250.

Metering Explorer

The Metering Explorer is used to view real-time system data including generator voltages and currents, input/output status, alarms, reports, and other parameters. Refer to the *Metering* chapter for full details about the Metering Explorer.

Settings File Management

A settings file contains all DECS-250 settings including logic.

A settings file created in BESTCOMS*Plus* will have one of two file extensions. Settings files created in version 4.00.00 and later are given an extension of "bst4". Settings files created in versions prior to 4.00.00 will have an extension of "bstx".

It is possible to save only the DECS-250 logic displayed on the BESTlogic*Plus* Programmable Logic screen as a separate logic library file. This ability is helpful when similar logic is required for several DECS-250 systems. The file extension of a logic file created in BESTCOMS*Plus* will be either "bsl4" (version 4.00.00 and later) or "bslx" (versions prior to 4.00.00).

It is important to note that settings and logic can be uploaded to the device separately or together, but are always downloaded together. For more information on logic files, refer to the *BESTlogicPlus* chapter.

Opening a Settings File

To open a DECS-250 settings file with BESTCOMS*Plus*, pull down the *File* menu and choose *Open*. The *Open* dialog box appears. This dialog box allows you to use normal Windows techniques to select the file that you want to open. Select the file and choose *Open*. You can also open a file by clicking on the *Open File* button on the lower menu bar. If connected to a device, you will be asked to upload the settings and logic from the file to the current device. If you choose *Yes*, the settings displayed in BESTCOMS*Plus* instance will be overwritten with the settings of the opened file.

Saving a Settings File

Select *Save* or *Save As* from the *File* pull-down menu. A dialog box pops up allowing you to enter a filename and location to save the file. Select the *Save* button to complete the save.

Upload Settings and/or Logic to Device

To upload a settings file to the DECS-250, open the file or create a new file through BESTCOMS*Plus*. Then pull down the *Communication* menu and select *Upload Settings and Logic to Device.* If you want to upload operational settings without logic, select *Upload Settings to Device*. If you want to upload logic without operational settings, select *Upload Logic to Device*. You are prompted to enter the username and

password. The default username is "**A**" and the default password is "**A**". If the username and password are correct, the upload begins and the progress bar is shown.

Download Settings and Logic from Device

To download settings and logic from the DECS-250, pull down the *Communication* menu and select *Download Settings and Logic from Device*. If the settings in BESTCOMS*Plus*® have changed, a dialog box will open asking if you want to save the current settings changes. You can choose *Yes* or *No*. After you have taken the required action to save or discard the current settings, downloading begins. BESTCOMS*Plus* reads all settings and logic from the DECS-250 and loads them into BESTCOMS*Plus* memory.

Printing a Settings File

To view a preview of the settings printout, select *Print* from the *File* pull-down menu. To print the settings, select the printer icon in the upper left corner of the *Print Preview* screen.

Comparing Settings Files

BESTCOMS*Plus* has the ability to compare two settings files. To compare files, pull down the *Tools* menu and select *Compare Settings Files*. The *BESTCOMSPlus Settings Compare Setup* dialog box appears (Figure 20-7). Select the location of the first file under *Left Settings Source* and select the location of the second file under *Right Settings Source*. If you are comparing a settings file located on your PC hard drive or portable media, click the folder button and navigate to the file. If you want to compare settings downloaded from a unit, click the *Select Unit* button to set up the communication port. Click the *Compare* button to compare the selected settings files.
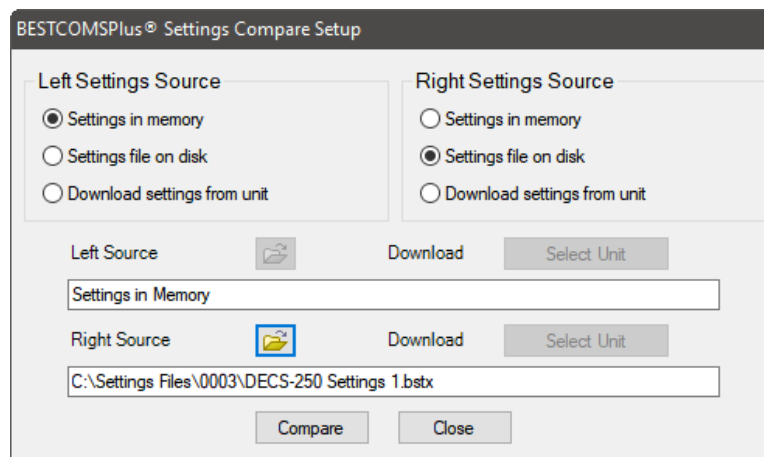

Figure 20-7. BESTCOMS*Plus* Settings Compare Setup

A dialog box will appear and notify you if any differences were found. The BESTCOMS*Plus*® *Settings Compare* dialog box (Figure 20-8) is displayed where you can view all settings (*Show All Settings*), view only the differences (*Show Settings Differences*), view all logic *(Show All Logic Paths),* or view only logic differences *(Show Logic Path Differences).* Select *Close* when finished.
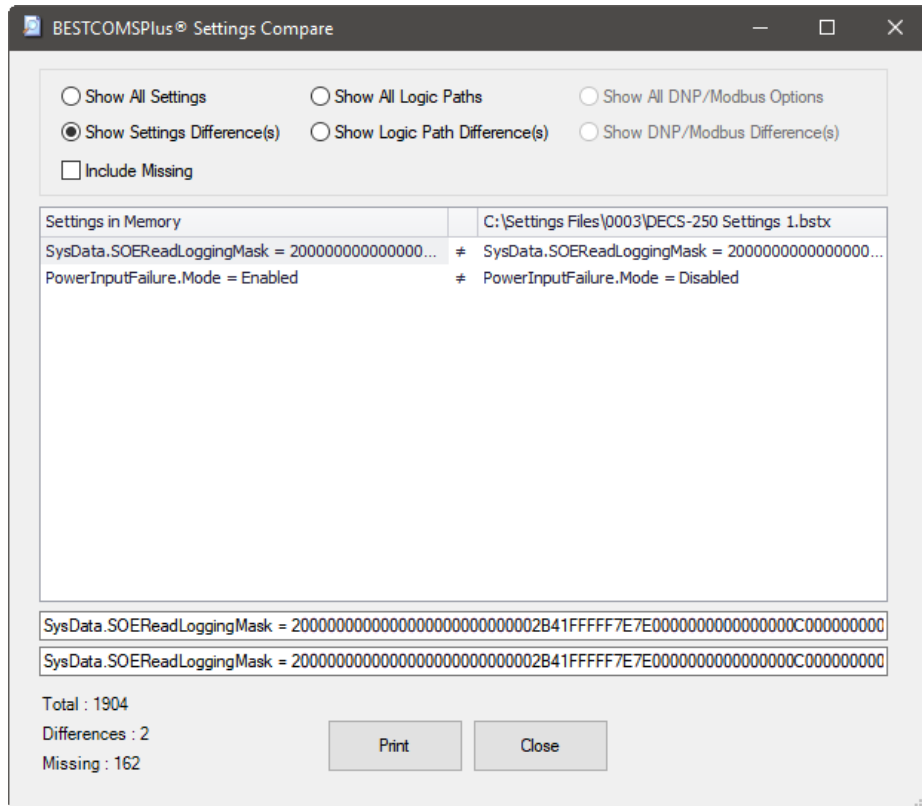
Figure 20-8. BESTCOMS*Plus*® Settings Compare

Automatic Metering Export

The auto export metering function automatically exports metering data over a user-defined period when a DECS-250 connection is active. The user specifies the *Number of Exports* and the *Interval* between each export. Enter a filename for the metering data and a folder in which to save. The first export is performed immediately after clicking the *Start* button. Click the *Filter* button to select specific metering screens. Figure 20-9 illustrates the *Auto Export Metering* screen.
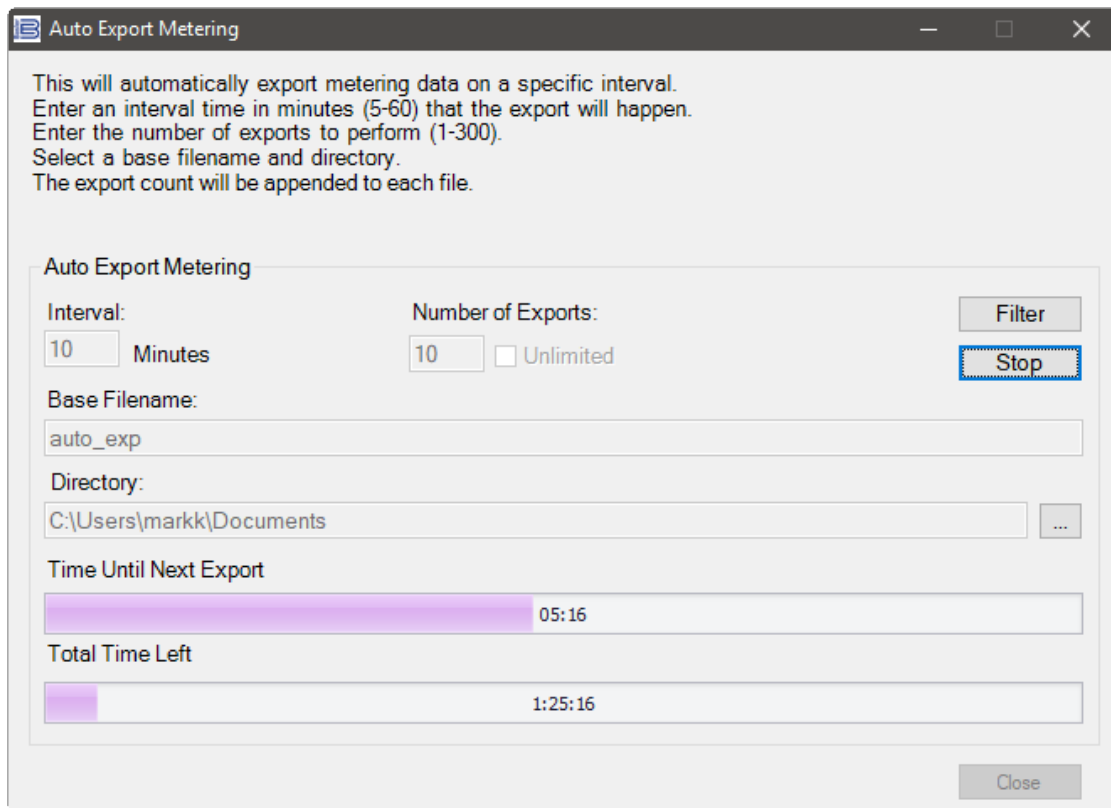
Figure 20-9. Auto Export Metering Screen

Firmware Updates

Future enhancements to the DECS-250 functionality may require a firmware update. Because default settings are loaded when DECS-250 firmware is updated, your settings should be saved in a file prior to upgrading firmware.

Warning!
Before performing any maintenance procedures, remove the DECS-250 from service. Refer to the appropriate site schematics to ensure that all steps have been taken to properly and completely de-energize the DECS-250.

Caution – Settings will be lost!
Default settings will be loaded into the DECS-250, reports and events will be cleared, and the DECS-250 will reboot when firmware is updated. BESTCOMS*Plus*® can be used to download settings and save the settings in a file so that they can be restored after updating firmware. Refer to *Settings File Management* for help with saving a settings file.

> **Note**
>
> The latest version of BESTCOMS*Plus* software should be downloaded from the Basler Electric website and installed before performing a firmware upgrade.

A device package contains firmware for the DECS-250, the optional Contact Expansion Module (CEM-2020), and the optional Analog Expansion Module (AEM-2020). Embedded firmware is the operating program that controls the actions of the DECS-250. The DECS-250 stores firmware in nonvolatile flash memory that can be reprogrammed through the communication ports. It is not necessary to replace EPROM chips when updating the firmware with a newer version.

The DECS-250 can be used in conjunction with CEM-2020 or AEM-2020 expansion modules which expand the DECS-250 capabilities. When upgrading the firmware in any component of this system, the firmware in ALL of the components of the system should be upgraded to ensure compatibility of communications between the components.

> **Caution**
>
> The order in which the components are upgraded is critical. Assuming a system of a DECS-250 and expansion module(s) is in a state where the DECS-250 is communicating with the system expansion module(s), **the expansion module must be upgraded before the DECS-250.** This is necessary because the DECS-250 must be able to communicate with the expansion module(s) before the DECS-250 can send firmware to it. If the DECS-250 were upgraded first, and the new firmware included a change to the expansion module communication protocol, it is possible that the expansion module(s) could no longer communicate with the upgraded DECS-250. Without communications between the DECS-250 and the expansion module(s), upgrading the expansion module(s) is not possible.

> **Note**
>
> If power is lost or communication is interrupted during file transfer to the DECS-250, the firmware upload will fail. The device will continue to use the previous firmware. Once communication has been restored, the user must start the firmware upload again. Select Upload Device Files from the Communication pull-down menu and proceed normally.

Upgrading Firmware in Expansion Modules

The following procedure is used to upgrade firmware in the expansion modules. This <u>must</u> be completed before upgrading firmware in the DECS-250. If no expansion module is present, proceed to *Upgrading Firmware in the DECS-250.*

1. Remove the DECS-250 from service. Refer to the appropriate site schematics to ensure that all steps have been taken to properly and completely de-energize the DECS-250.

2. Apply only control power to the DECS-250.

3. Enable the expansion modules that are present in the system. If they have not already been enabled, enable the expansion modules in the BESTCOMS*Plus* Settings Explorer, Communications, CAN Bus, Remote Module Setup screen.

4. Verify that the DECS-250 and the associated expansion modules are communicating. This can be verified by examining the alarm status using the Metering Explorer in BESTCOMS*Plus* or from

the front panel by navigating to Metering > Status > Alarms. When communications are functioning properly, there should be no active AEM or CEM Communications Failure alarms.

5. Connect to the DECS-250 through the USB or Ethernet port if not already connected.

6. Select Upload Device Files from the Communication pull-down menu.

7. You will be asked to save the current settings file. Select Yes or No.

8. When the Basler Electric Device Package Uploader screen (Figure 20-10) appears, click on the Open button to browse for the device package you have received from Basler Electric. The Package Files along with File Details are listed. Place a check in the boxes next to the individual files you want to upload.
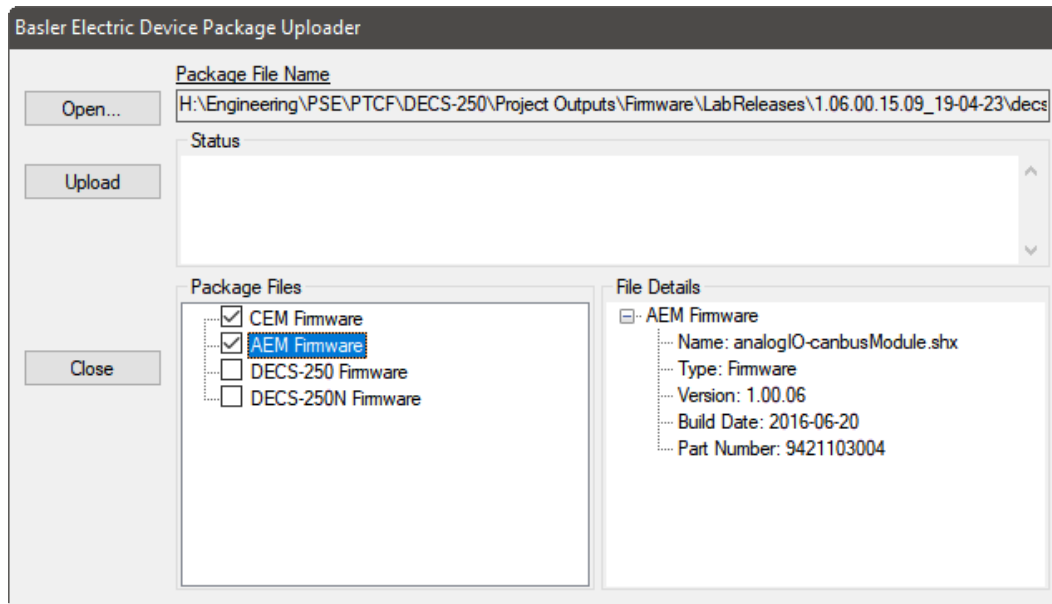

Figure 20-10. Basler Electric Device Package Uploader

9. Click on the Upload button and the Proceed with Device Upload screen will appear. Select Yes or No.

10. After selecting Yes, the DECS-250 Selection screen will appear. Select either USB or Ethernet.

11. After file(s) have been uploaded, click the *Close* button on the Basler Electric Device Package Uploader screen and disconnect communication to the DECS-250.

Upgrading Firmware in the DECS-250

The following procedure is used to upgrade firmware in the DECS-250. This must be completed after upgrading firmware in any expansion modules.

1. Remove the DECS-250 from service. Refer to the appropriate site schematics to ensure that all steps have been taken to properly and completely de-energize the DECS-250.

2. Apply only control power to the DECS-250.

3. Connect to the DECS-250 with BESTCOMS*Plus*. Check the firmware Application Version on the General Settings > Device Info screen.

4. Select Upload Device Files from the Communication pull-down menu. You do not have to be connected to the DECS-250 at this time. Save settings when prompted, if desired.

5. Open the desired device package file (decs-250.bef).

6. Check the box for DECS-250 Firmware. Note the version number of the DECS-250 firmware; this is the version that will be used to set the Application Version in the settings file in a later step.

7. Click the Upload button and follow the instructions that appear to begin the upgrade process.

8. After the upload is complete, disconnect communication to the DECS-250.

9. Load the saved settings file into the DECS-250.

    a. Close all settings files.

    b. From the File pull-down menu, select New, DECS-250.

    c. Connect to the DECS-250.

    d. Once all settings have been read from the DECS-250, open the saved settings file by selecting File, Open File in the BESTCOMS*Plus* menu. Then browse for the file to upload.

    e. When BESTCOMS*Plus* asks if you wish to upload settings and logic to the device, click Yes.

    f. If you are receiving upload failures and indications that the logic is incompatible with the firmware version, check that the DECS-250 style number in the saved file matches that of the DECS-250 into which the file is being uploaded. The style number in the settings file is found under General Settings > Style Number in BESTCOMS*Plus*.

    g. If the style number of the settings file does not match that of the DECS-250 into which it is to be loaded, disconnect from the DECS-250, then modify the style number in the settings file. Then repeat the steps titled *Load the Saved Settings File into the DECS-250.*

BESTCOMS*Plus*® *Updates*

Enhancements to DECS-250 firmware typically coincide with enhancements to the DECS-250 plugin for BESTCOMS*Plus*®. When a DECS-250 is updated with the latest version of firmware, the latest version of BESTCOMS*Plus* should also be obtained.

*   You can download the latest version of BESTCOMS*Plus* by visiting www.basler.com.

*   BESTCOMS*Plus* automatically checks for updates when Check Automatically is selected on the Check for Updates User Settings screen. This screen is accessed under the Help drop-down menu. (An internet connection is required.)

*   You can use the manual "check for updates" function in BESTCOMS*Plus* to ensure that the latest version is installed by selecting Check for Updates in the Help drop-down menu. (An internet connection is required.)