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1. Introduction

This document describes how to install and use the IMD Manager. The IMD Manager is used for configuration, monitoring and troubleshooting of DEIF’s Integrated Motor Driver (IMD). It does not describe how each parameter is configured, but rather the principles of using the IMD Manager. Installation instructions for the IMD Manager can be found at the end of this manual.

Read instructions
Read the IMD 100 Function description (document no. 4189360013) and the IMD Integration manual in order to understand the functions and configuration of the IMD.

1.1 Revision history

Apart from editorial changes the following changes have been made in this revision:

<table>
<thead>
<tr>
<th>Date</th>
<th>Revision</th>
<th>Changes</th>
</tr>
</thead>
<tbody>
<tr>
<td>2016-12-22</td>
<td>A</td>
<td>This is the first version of the document.</td>
</tr>
</tbody>
</table>

1.2 Conventions

The following conventions are used in this document:

<table>
<thead>
<tr>
<th>Used in document</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monotype font</td>
<td>Used when describing a path or text input in a machine human interface</td>
</tr>
<tr>
<td>⏎</td>
<td>Used to illustrate a space and Enter characters</td>
</tr>
<tr>
<td>!</td>
<td>A yellow symbol that illustrates hazard type (this symbol is an example for general hazard). There are different types such as electrical, chemical and so on.</td>
</tr>
<tr>
<td>Danger!</td>
<td>A signal word used to indicate an imminently hazardous situation, which if not avoided, will result in death or serious injury. (ISO 3864)</td>
</tr>
<tr>
<td>Warning!</td>
<td>A signal word used to indicate an imminently hazardous situation, which if not avoided, could result in death or serious injury. (ISO 3864)</td>
</tr>
<tr>
<td>Caution!</td>
<td>A signal word used to indicate a potentially hazardous situation, which if not avoided, could result in minor or moderate injury. (ISO 3864)</td>
</tr>
<tr>
<td>Read instructions</td>
<td>A blue symbol that illustrates a need for mandatory action. In this example read instructions. Other types of blue symbols exist and always indicate mandatory action.</td>
</tr>
<tr>
<td>🔄</td>
<td>A symbol used to draw attention to extra information or an action that is not mandatory</td>
</tr>
</tbody>
</table>
### 1.3 Product user documentation

The IMD product has an extensive user documentation, targeted towards different audience and product use stages.

The following documents are part of the user documentation:

**Table 1  IMD user documentation**

<table>
<thead>
<tr>
<th>Document</th>
<th>Target audience</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>IMD 100 datasheet</strong> Document no.: 4921260015</td>
<td>Buyers and technicians of (potential) customers</td>
<td>Describes relevant specifications and give an overview of the IMD functions</td>
</tr>
<tr>
<td><strong>IMD 100 function description</strong> Document no.: 4189360013</td>
<td>Mainly technicians and engineers of (potential) customers.</td>
<td>Describes the functions of the IMD. Gives the reader an understanding of the purpose of the IMD in a system, and which functions can be utilised in a pitch system. The functions are described so that the reader can understand what each function is used for.</td>
</tr>
<tr>
<td><strong>IMD 100 integration manual</strong> Document no.: 4189360015</td>
<td>Engineers at customer R&amp;D department</td>
<td>Describes how to integrate the IMD in a pitch system. Gives extensive knowledge about: IMD SW (parameters and how to achieve specific functionality) How to create customized parameter file for use in production Requirements for external interfaces/components</td>
</tr>
<tr>
<td><strong>IMD Manager installation instructions</strong> Document no.: 4189360018</td>
<td>Engineers at customer R&amp;D department, as well as commissioners and service personnel</td>
<td>Describes how to install the IMD Manager. The IMD Manager is an application used to configure and control the IMD using the Service USB connector.</td>
</tr>
<tr>
<td><strong>IMD Manager user manual</strong> Document no.: 4189360019</td>
<td>Engineers at customer R&amp;D department, as well as commissioners and service personnel</td>
<td>Describes how to use the IMD Manager. The IMD Manager is an application used to configure and control the IMD using the Service USB connector.</td>
</tr>
<tr>
<td><strong>IMD 100 installation instructions</strong> Document no.: 4189360005</td>
<td>Technicians at production site where the IMD is mounted in the cabinet/hub</td>
<td>Describes how to mount, connect and perform initial start, test, and configuration (using a configuration file) of the IMD at production.</td>
</tr>
<tr>
<td><strong>IMD 100 initial configuration and verification manual</strong> Document no.: 4189360016</td>
<td>Commissioners or other personnel with similar qualifications, as well as service personnel (for SW upgrade)</td>
<td>Describes how to upgrade the IMD SW, how to load configuration file, and how to verify the IMD installation to the possible extent.</td>
</tr>
<tr>
<td><strong>IMD 100 service and maintenance manual</strong> Document no.: 4189360017</td>
<td>Service and warehouse personnel</td>
<td>Describes preventive (scheduled) and corrective maintenance of the IMD, as well as storage requirements.</td>
</tr>
</tbody>
</table>
The IMD 100 documentation is written anticipating an OEM (original equipment manufacturer) product use-cycle in a wind turbine. The envisioned cycle is described in Figure 1 on page 7. The description also explains the tasks, who is expected to execute the task, the location where the execution takes place and the supporting DEIF documentation for the task. Many details in these tasks depends on the actual implementation, which is why the IMD documentation will never stand alone.

The described product use-cycle might not apply as is to all customers, but the tasks are universal and can therefore be adapted. For example, if the SW upgrade, configuration and verification is done during the turbine commissioning, the applicable documentation can be used at this stage instead of a separate stage at the end of production.

<table>
<thead>
<tr>
<th>Document</th>
<th>Target audience</th>
<th>Content</th>
</tr>
</thead>
<tbody>
<tr>
<td>IMD 100 installation checklist</td>
<td>Technicians at production site where the IMD is mounted in the cabinet/hub</td>
<td>Installation tasks with check boxes to document the tasks done during installation</td>
</tr>
<tr>
<td>Document no.: 4189360021</td>
<td></td>
<td></td>
</tr>
<tr>
<td>IMD 100 configuration and verification checklist</td>
<td>Commissioners or other personnel with similar qualifications, as well as service personnel (for SW upgrade)</td>
<td>configuration and verification tasks with check boxes to document the tasks done during installation</td>
</tr>
<tr>
<td>Document no.: 4189360022</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>
1. IMD evaluation and purchase

- **Task:** Evaluation of the IMD
- **Who:** Customer buyers and engineers
- **Supporting DEIF documents:**
  - Datasheet
  - Function description

2. IMD integration in the customer’s product

- **Task:** Integrate the IMD in the turbine systems.
- **Who:** Customers R&D.
- **Where:** Customers facility
- **Output:**
  - Wiring diagram
  - Cabinets specifications
  - IMD configuration file
  - Controller application SW (not IMD scope)
- **Supporting DEIF documents:**
  - Datasheet
  - Function description
  - Integration manual
  - IMD Manager Installation instructions
  - IMD Manager user manual

3. Installation

- **Task:** Install the IMD in the cabinet, install the cabinet in the hub.
- **Who:** Installation personnel.
- **Where:** Customer’s production facility.
- **Supporting DEIF documents:**
  - Installation manual
  - Installation check list

4. Initial configuration and verification

- **Task:**
  - Upgrade the IMD SW if needed
  - Configure the IMD with the configuration file
  - Test the IMD installation
- **Who:** Commissioning or similar personnel.
- **Where:** Customer’s production facility
- **Supporting DEIF documents:**
  - Initial configuration and verification manual
  - Configuration and verification check list
  - IMD Manager Installation instructions
  - IMD Manager user manual

5. Commissioning on site

- **Task:** Commission the whole turbine
- **Who:** Commissioning personnel
- **Where:** Turbine erection site
- **Supporting DEIF documents:**
  - None. This task is entirely customer’s task based on customer’s documentation

6. Service and maintenance

- **Task:**
  - Service of the IMD
  - Replacement (disposal) of IMD
  - Storage of spare parts
- **Who:** Service and warehouse personnel.
- **Supporting DEIF documents:**
  - Service and maintenance manual
  - IMD Manager Installation instructions
  - IMD Manager user manual

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**Figure 1** Tasks and documentation overview
2. Installation of the IMD manager

The IMD manager requires a Windows (XP or newer) operating system.

2.1 Installing USB driver

It is recommended to connect the IMD to the computer that will be used to run the IMD manager for the first time while the computer is connected to the internet. This way the computer will automatically download the necessary USD driver.

If this is not possible, go to Silicon Labs home page and download the latest driver for CP210x USB to UART Bridge (http://www.silabs.com/products/mcu/Pages/USBtoUARTBridgeVCPDrivers.aspx).

Info
The link above was valid at the time when this manual was written. If the link does not work anymore, search for CP210x USB to UART Bridge driver in Silicon Labs home page.

2.2 Installing the IMD manager

1. Save the installation file (IMD Manager setup VxxxRxxxxx.exe) on your disk
2. Double-click on the file (execute)
3. If a security warning for unknown publisher appears, click on the “Run” button
4. Click “Yes” in the User account control dialogue, to allow the installation to make changes
5. Accept the destination folder for the installation or select another and click “Next >”

![Select Destination Location](image)

Info
If the IMD manager is already installed on your PC, step 5 on page 9, and step 6 on page 9, will be skipped.

6. Select whether to create a start menu folder and click “Next >”

![Select Start Menu Folder](image)
7. Select whether to create an icon on your desktop and click “Next >”

8. Click on Install

Info
If the IMD manager is already installed on your PC, the folder information will not be shown.

9. When the installation is completed, click on “Finish”. The IMD manager is now installed on your computer.
3. Glossary

3.1 Terms and abbreviations

IMD Integrated Motor Drive
N/A Not applicable

3.2 Units

<table>
<thead>
<tr>
<th>Unit</th>
<th>Unit Name</th>
<th>Quantity name</th>
<th>US unit</th>
<th>US name</th>
<th>Conversion</th>
<th>Alternative units</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>ampere</td>
<td>Current</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ºC</td>
<td>degrees Celsius</td>
<td>Temperature</td>
<td>ºF</td>
<td>Fahrenheit</td>
<td>[\frac{T[\degree C]}{\left(\frac{T[\degree F]}{9} - \frac{32}{9}\right)}]</td>
<td></td>
</tr>
<tr>
<td>g</td>
<td>gram</td>
<td>Weight</td>
<td>oz</td>
<td>ounce</td>
<td>1 g = 0.03527 oz</td>
<td></td>
</tr>
<tr>
<td>Hz</td>
<td>hertz</td>
<td>Frequency (cycles per second)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>bps</td>
<td>Bits per second</td>
<td>Data transmission speed</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>kg</td>
<td>kilogram</td>
<td>Weight</td>
<td>lb</td>
<td>pound</td>
<td>1 kg = 2.205 lb</td>
<td></td>
</tr>
<tr>
<td>m</td>
<td>metre</td>
<td>length</td>
<td>ft</td>
<td>foot (or feet)</td>
<td>1 m = 3.28 ft</td>
<td></td>
</tr>
<tr>
<td>mA</td>
<td>milliampere</td>
<td>Current</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>ms</td>
<td>millisecond</td>
<td>Time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nm</td>
<td>Newton metre</td>
<td>Torque</td>
<td>Lb-in</td>
<td>pound-force inch</td>
<td>1 Nm = 8.85 lb-in</td>
<td></td>
</tr>
<tr>
<td>RPM</td>
<td>revolutions per minute</td>
<td>Frequency of rotation (rotational speed)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>s</td>
<td>second</td>
<td>Time</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V</td>
<td>volt</td>
<td>Voltage</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V AC</td>
<td>volt (alternating current)</td>
<td>Voltage (alternating current)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>V DC</td>
<td>volt (direct current)</td>
<td>Voltage (direct current)</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>W</td>
<td>watt</td>
<td>Power</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Ω</td>
<td>ohm</td>
<td>Resistance</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>