Operator’s Manual

Database Connector
## Operator’s manual for the following products

<table>
<thead>
<tr>
<th>Art. Nr</th>
<th>Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>5580210</td>
<td>Fast Ethernet Port Database Connector</td>
</tr>
<tr>
<td>5580212</td>
<td>License Database Connector</td>
</tr>
<tr>
<td>DL40100</td>
<td>cab Database Connector A-Serie</td>
</tr>
</tbody>
</table>

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### Europe

**Germany**
cab Produkttechnik GmbH & Co KG
Wilhelm-Schickard-Str. 14
76131 Karlsruhe
Tel. +49 721 6626 0
Fax +49 721 6626 129
info@cab.de
www.cab.de

cab Produkttechnik
Sömmerda GmbH
Am Unterwege 18-20
99610 Sömmerda
Tel. +49 3634 6860 0
Fax +49 3634 6860 129
info@cab.de
www.cab.de

**France**
cab Technologies s.à.r.l.
2a rue de la Moder
Z.A. Nord du Val de Moder
67350 Niedermoenich
Tel. +33 388 722501
Fax +33 388 722502
info@cab-technologies.fr
www.cab-technologies.fr

### America

**USA**
cab Technology, Inc.
87 Progress Avenue Unit 1
Tyngsboro, MA 01879
Tel. +1 978 649 0293
Fax +1 978 649 0294
info.us@cab.de
www.cab.de/us

**Latin America**
Alejandro Balmaceda
Hacienda Jurica Pte 1615
Colonial de Valle
32553 Ciudad Juárez
Tel. +52 656 682 3745
Fax +52 656 682 4301
a.balmaceda@cab.de
www.cab.de/es

### Asia

**Taiwan**
cab Technology Co., Ltd.
台北市松山區忠孝東路三段16F-1, No. 700, Jhongfeng Rd
Junghe, Taipei 23552
Tel. +886 (02) 8227 3966
Fax +886 (02) 8227 3566
info.asia@cab.de
www.cab.de/tw

**China**
cab (Shanghai) Trading Co., Ltd.
A507, No. 268, Tong Xie Rd
Shanghai 200335
Tel. +86 (021) 6236 3161
Fax +86 (021) 6236 3162
info.cn@cab.de
www.cab.de/cn

**South Africa**
cab Technology (Pty) Ltd.
14 Republic Street
Bordeaux
2125 Randburg
Tel. +27 11 886 3580
Fax +27 11 789 3913
info.za@cab.de
www.cab.de/za

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1 Introduction

1.1 Instructions

Important information and instructions in this documentation are designated as follows:

**Danger!**
Draws your attention to an exceptionally grave, impending danger to your health or life.

**Warning!**
Indicates a hazardous situation that could lead to injuries or material damage.

**Attention!**
Draws attention to possible dangers, material damage or loss of quality.

Notice!
Gives you tips. They make a working sequence easier or draw attention to important working processes.

Environment!
Gives you tips on protecting the environment.

► Handling instruction.

▷ Reference to section, position, illustration number or document.

* Option (accessories, devices, special fittings).

Hour Information in the display or in the user interface.

1.2 System requirements

- PC with 2 GHz or higher processor
- 1 GB available RAM (depending on the operating system)
- 200 MB available hard disk space
- 32/64 bit Microsoft® Windows® operating system
  - XP Server 2003
  - Vista Server 2008
  - 7 Server 2008 R2
  - 8 Server 2012
  - 8.1 Server 2012 R2
  - 10
- Supported databases: MS Access, MS SQL Server, Oracle, DBase and all ODBC connections
- Administrator rights on local computer for installation and configuration
- Printer with X2 or higher main board
1.3 Overview

Database Connector is a module that gives cab printers directly access to external databases through TCP/IP. It is possible, for the same label, to access simultaneously multiple tables in the database. Similarly, several printers are accessing the same database and this simultaneously, thus ensuring data consistency.

It provides access to any type of database through an ODBC (Open Database Connectivity) or ADO (ActiveX Data Object) driver.

The most common databases are:
- Access
- SQL Server
- Oracle
- DBase
- Informix
- Paradox
- Foxpro

Database Connector is composed of two separate modules:
- SQLClient integrated in the printer.
- The server part installed on a computer.

**Notice!**
To use Database Connector, SQLClient must have been previously enabled on the printer.
- For A-Series / Hermes A printers, SQLClient is enabled through a specific Ethernet card.
- For A+-Series / Mach4 / Hermes+ / Hermes C / PX / XC / XD4 printers, SQL client is activated by default since firmware version 3.37.
- For EOS printers, SQL client is activated by default since firmware version 4.16.
2.1 Installing the client part on the printer

2.1.1 Installing on A-Series and Hermes A printers
   To install on A-Series and Hermes A printers, just insert the additional network card on the back of the printer
   Operator’s manual network card for A-Series.

2.1.2 Installing on A+-Series, EOS, Hermes+, Hermes C, Mach4, PX, XC or XD4
   The Database Connector module is already activated by default:
   - since firmware version 3.37 for A+, Hermes+, Hermes C, Mach4, PX, XC, XD printers
   - since firmware version 4.16 for EOS printers.

   If you have an older firmware version, you need to update it before using Database Connector.
   Check out our website: www.cab.de/en (Support & Downloads section) for the latest firmware version.

   You can always check on the printer if the activation is done properly through the menu PPP => PPP short status
   printer configuration manual.

2.2 Installing the server part on the computer
   The server part of Database Connector must be installed on a computer that will act as a server and allow the
   connection to the database.

   ▶ Insert the CD-ROM into your computer drive.
   A menu will automatically appear in which you can select Database Connector.
   You can also download the installation file from our website: https://www.cab.de/en/marketing/label-software/databaseconnector/
   If this is not the case or if you have downloaded the installation file, double-click on the file
   "DatabaseConnector_Setup.exe".

   ▶ Check the 32 or 64 bit architecture of the ODBC driver used to connect to the database. The architecture of
   Database Connector must be the same as the ODBC driver. This information will be required upon installation.

   ▶ Select the installation language of the program.

   ![Select Setup Language]
   Figure 1 Installation language selection

   If the Log Service is not installed, its installation will start before installing Database Connector.
   This service allows you to record all events related to Database Connector.
   It will allow to check for errors and if necessary to correct them.
2 Installation

- Start installation by clicking the Next button.

Figure 2  Start of installation program

- Enter user information and then select 32 or 64 bit architecture depending on your operating system and on the ODBC driver you want to use to connect to the database. Click on the Next button.

Figure 3  User information  Figure 4  Architecture selection

**Attention!**
The architecture of Database Connector must be the same type as the ODBC driver.
If you have a 64 bit architecture, it is possible to download the 32 bit ODBC drivers on Microsoft’s website.
Select the target folder and the start menu folder.

Select the additional tasks to be done by the installation program and check the selected options summary.

Click on the **Install** button.
Wait until the end of the installation, then choose if you want to start the program and click on the Finish button.

Figure 9  Installation progress  Figure 10  End of installation

2.3 Starting the program

After installing Database Connector, an icon of the program is placed on the user desktop and/or in the start menu (depending on the selected installation options).

Start the program by double clicking on one of these icons.

Attention!

You must run Database Connector as an administrator in order to be able to modify settings or to modify the service state.

If you are using Windows Vista or higher, this can be done by right clicking on the program icon and selecting “Run as administrator”.

3.1 Database Connector Standard

**Warning!**
If you have a firewall on your computer, you must open the port used by Database Connector (by default 1001). If the port is closed the program will not work.

1. Start / stop the service
2. Connection string
3. Connection string wizard
4. Port
5. Log events

![Figure 11 Database Connector Standard](image1)

► Start or stop the service using the button next to the status (1).

The Main tab allows you to select the connection string to the database (2), the port used by Database Connector (4) and the parameters for recording events (5).

► Choose the database provider, depending on the type of database, by pressing the button next to the connection string (3).

![Figure 12 Data Link Properties](image2)
3.2 Database Connector Extended

1. Start / stop the service
2. Connection string
3. Connection string wizard
4. Port
5. Log events
6. Filter control characters

Figure 13 Database Connector Extended

**Attention!**
Click on the **Restart** button, if Database Connector was already running, or click on the **Apply** button in the main interface to apply the changes.

### 3.2.1 Synchronizing devices

Apart from the classical use of Database Connector, it is possible to synchronize one or more peripherals with a master device. 

- **6.1 Operating diagram of Database Connector Extended in Printer Association mode**

The master device must be a cab printer with the Database Connector option. Associated devices are not necessarily cab printers.

To use a non-cab device, you must know the programming language of this device and it must be accessible via TCP/IP.

The command syntax must be stored in a database or in a file and thereby kept in touch with the type of use (volume traded, printing execution time...).

For example, PCL or PostScript streams are not recommended for this type of use.

It is also possible to create multiple associations.

A slave associated cab device can still be used independently. A slave device sees its print jobs linked to the master, but the slave device can also run a Database Connector query (assuming it also has this option).
The configuration of associations is done in the Printer association tab.

![Printers association tab](image1)

**Adding a master device**

First of all a master device must be declared.

- Click the + button (1) at the bottom of the master device table to insert a new record.

![Adding a master device](image2)

- Configure the master device and click on the **OK** button

1. Name of the master device
2. IP address of the master device
3. IP port of the master device (default 9100)
4. Used to compare two fields and perform a specific action

![Master device](image3)
When the master configuration device is validated, it is then possible to define one or more associated slave devices.

Adding a slave device

Notice!
It is not possible to add a slave device if no master device has been previously defined.

Add a slave device by clicking on the + button at the bottom of the slave table (right pane).

1. Enables / disables the association for this device and allows, for example, temporary inactivation of an association
2. Name of the slave device
3. IP address of the slave device
4. IP port of the slave device
5. Processing priority of print jobs.
   Used to slightly influence the data rate between devices. The usual values are normal or below normal. Other values are reserved for special cases.

Device tab

6. Value in milliseconds to slightly delay the printing.
7. Sequence to send before the print job, is executed once per print job.
   ▷ Specific syntax
8. Sequence inserted before sending each stream
9. Used as line separator. If it is empty then CRLF will be used
10. Sequence added to the end of each stream
11. Sequence sent between the end of the print job and the disconnection

Database tab

The definition of the print job sent to the slave device can be either stored in a database field (12), or in a file (13).

Depending on the chosen option, you must either define the query (14) to recover the sequence or set the file path.

It is also possible to incorporate variables, for both query or in the file.

To define a variable just use the following syntax:
<#VariableName>

Attention!
It is absolutely necessary that this variable corresponds to a field name and that this field name is defined in the layout of the master printer, even if the master device does not itself use this field!
Specific syntax

Sequences used by devices generally include characters that are not available on the keyboard. To specify these characters, a specific encoding is used:

<table>
<thead>
<tr>
<th>Syntax</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>\a</td>
<td>Bip</td>
</tr>
<tr>
<td>\b</td>
<td>Backspace</td>
</tr>
<tr>
<td>\f</td>
<td>Form feed</td>
</tr>
<tr>
<td>\n</td>
<td>Line feed</td>
</tr>
<tr>
<td>\r</td>
<td>Carriage return</td>
</tr>
<tr>
<td>\t</td>
<td>Tab</td>
</tr>
<tr>
<td>\v</td>
<td>Vertical tab</td>
</tr>
<tr>
<td>&quot;</td>
<td>&quot;</td>
</tr>
<tr>
<td>'</td>
<td>'</td>
</tr>
<tr>
<td>?</td>
<td>?</td>
</tr>
<tr>
<td>\xnn</td>
<td>Hexadecimal sequence &quot;nn&quot; represents the hexadecimal character</td>
</tr>
<tr>
<td>\0...\7</td>
<td>Octal sequence</td>
</tr>
</tbody>
</table>

Table 1 List of syntaxes

This encoding is used for the following fields:

*Before job, Before disconnect, Line separator, Prefix, Suffix.*

**Example of use:**  \x1bc\n equals ESCc + CR + LF
3.2.2 Remote Trigger

The Remote Trigger mode automatically selects a label file based on one or more parameters. This mode necessarily requires the use of a label file (called 'Remote Trigger') specific to the application and created by cab and also a configuration file. 

The operator selects the ‘Remote Trigger’ label on the printer via the classical label loading procedure. 

Then he enters an ID number on the printer (OF, for example) which will be sent to Database Connector Server and used to find the label filename to be printed.

Notice!
Depending on the application, it may also be possible to enter several parameters.

The label ‘Remote Trigger’ establishes a connection with Database Connector Server and requests the execution of a SQL query. The connection string defined in the General tab will be used. Database Connector Server runs the query and returns the result like a typical query. The result of the query (usually the name of the mask) is returned to the printer which then loads the corresponding label.

Notice!
The processed label is like a typical label with the ability to also use Database Connector queries.

Attention!
The label file must exist in the default memory (IFFS, CF ...) of the printer.

![Figure 19 Remote Trigger](image)

- Enable the Remote Trigger mode (1)
- Define a query (2) to retrieve the name of the label file.
  
  To use a variable in the query, simply use the following syntax: :<#VariableName>

- Confirm the changes by clicking the Apply or Restart button (3) (according to the state of the service).
3.2.3 File Mode

The File Mode mode allows from a label file stored locally in a memory of the printer, to start printing a label file stored on a remote computer accessible by Database Connector Server.

This mode requires the use of a label file (called ‘File Mode’) specific to the application and created by cab and also a configuration file. 

The 'File Mode' file can be selected on the printer via the typical label loading procedure. (cab Printer Configuration Manual) or for example with a Labelbox.

The printer sends the request to Database Connector Extended on the local server.

Database Connector Extended then recovers from the shared folder, the file containing the data of the appropriate label. The information necessary to print the label are then returned to the printer.

The file containing the label data is a print file in the native cab file format (JScript instructions). It should contain all the instructions needed to print (and only those) and must correspond to the destination device.

File Mode 1

This mode is used when the print file is intended to be used repeatedly and not uniquely.

The 'File Mode' file stored on the printer will be set to use the File Mode 1 and will send the asked filename to Database Connector Extended.

File Mode 2

This mode is used when the print file is intended to be used uniquely.

The 'File Mode' file stored on the printer will be set to use the File Mode 2 and will send the prefix of the asked filename to Database Connector Extended.

Then Database Connector Extended recovers from the shared folder and according to the selected sorting, the file whose name begins with this prefix and sends it to the printer.

1. Filter some wrong characters when the file was generated from a windows driver where bidirectionality is activated.
2. Activate / deactivate File Mode 1
3. Directory where files are stored for File Mode 1
4. Extension of the files for File Mode 1
5. Activate / deactivate deleting the file after sending for File Mode 1
6. Directory where files can be stored for archive after deleting for File Mode 1
7. Activate / deactivate File Mode 2
8. Directory where files are stored for File Mode 2
9. Extension of the files for File Mode 2
10. Files sorting type
11. Activate / deactivate deleting the file after sending for File Mode 2
12. Directory where files can be stored for archive after deleting for File Mode 2
3.4 Event log

Database Connector records every action performed. This allows to have an history in case of a problem or error and thus to find out the cause and get a solution more easily. All these actions are registered directly in the Windows Event Viewer.

- You can easily access the events by clicking on the View log (1) button of the main interface.

![Figure 21 Log access](image)

- The log interface will open, allowing you to view only the events related to Database Connector.

![Figure 22 Event log](image)
You can also view these information in the Windows Event Viewer.

**Notice!**
To access the Event Viewer:
- on Windows XP, Server 2003
  - Control Panel => Administrative Tools => Event viewer
  - Control Panel => System and security => Administrative Tools => Event viewer
4 Creating a label with a labeling software

Notice!
Labels using Database Connector can be made directly with the labeling software cablabel R2 Pro, cablabel S3 Pro or Codesoft.
- Only cablabel R2 Pro, cablabel S3 Pro, Codesoft Pro and Enterprise allow you to use Database Connector.
- Database Connector only works with native printers and does not work with Windows drivers.

4.1 Creating a label with cablabel R2 Pro or Codesoft

4.1.1 Activating the Database Connector option
- Start cablabel R2 Pro or Codesoft.
- Install a native cab printer.
- Enable the Database Connector option in the printer configuration by entering the computer IP address where the server part is installed.

![Printer configuration](image)

Create one or more queries.
In the next examples we will use the table below:

![Query result](image)
4 Creating a label with a labeling software

4.1.2 Creating a query

To create queries, you must use the free variables of cablabel R2 Pro or Codesoft.

- Create a free variable.
- Place the variable on the label as a text.
- Right-click on the variable to access the Specific options.

![Figure 26 Specific options](image1)

![Figure 27 Specific options settings](image2)

- Enable Database Connector and select the variable type Request.
- Enter the SQL query in the Value field.

Example: `SELECT * FROM Products WHERE ArtCode = {CodeArt}`

If you need to use a variable from the label in the query, just use the name of this variable by enclosing it in braces `{}` and with single quotes if it a string.

Example: `{CodeArt}` for a variable representing an integer in the database

`'{CodeArt}'` for a variable representing a character string in the database

**Notice!**

You can also make this variable invisible through the Invisible object at print job option if you do not want it to appear on the printed label, which is very often the case.
4.1.3 Creating a variable with the result of a query

To create a variable with the result of a query you should still use the free variables of cablabel R2 Pro or Codesoft.

- Create a free variable.
- Place the variable on the label as a text, barcode or picture.
- Right-click on the variable to access the Specific options.

![Specific options](image)

- Enable Database Connector and select Variable.
- Use the name of the free variable containing the SQL query.
- Add, separated by a comma, the index of the desired field. The index of the first result field is always 1.

If we take the table and the previous query, the index 1 represents the field Artcode, index 2 the field Barcode, index 3 the field ProdNameUs ...

**Example:** Requete1.7

Requete1 is the name given to the free variable that contains the SQL query.
7 is the index of the field from the database (in the example the field ProdNameIt).

**Notice!**
You can also make this variable invisible through the Invisible object at print job option if you do not want it to appear on the printed label.
4.2 Creating a label with cablabel S3 Pro

In cablabel S3 Pro, just use the Database Wizard.

Configure the Database Connector connection string.
Select the data source using the Query Builder.

After that, the different desired fields of the label may be linked to the data source.

**Notice!**

For more information ➤ Operator’s manual cablabel S3 Pro, chapter Database Wizard.
5 Creating a label directly in JScript programming language

5.1 List of commands

Below is the list of specific JScript commands to use Database Connector.

**E SQL;Server_IP:Server_Port**
Enables Database Connector specifying the IP address and port of the server.
This command is to be added at the beginning of the file after the "S" command with the label size.
*Server_IP*: IP address of the computer where the Database Connector server part is installed.
*Server_Port*: port of the computer where the Database Connector server part is installed.

**Example**: E SQL;192.168.10.32:1001
In the example the IP address of the server is 192.168.10.32 and port 1001.

**[SQL:Query]**
This command is added behind a text or barcode field.
The command “E SQL...” must of course have been previously specified.
*Query*: any SQL query.

**Example**: T:Requete;10,15,0,3,5;[SQL:SELECT * FROM Products WHERE ArtCode={CodeArt}]
Selects all fields from the table Products where the field ArtCode is equal to the part number entered by the operator.

**[SQLLOG:Query]**
Same function as [SQL:Query], except that SQLLOG is performed only when the label is printed.
This allows to make a logging in a database.
*Query*: any SQL query.

**Example**: T;57.4,5.3,0,3,3.57,q100;[SQLLOG:UPDATE Products SET LastPrinted='{Hour0}' WHERE ArtCode={CodeArt}][I]

**[SPLIT:Result,Index]**
This command is added behind a text or barcode field.
*Result*: name of the field where the result of the query is stored.
*Index*: field index to retrieve from the query (1 is the first field).

**Example**: T:Product;23.1,13.8,0,3,3.57,q100;[SPLIT:Requete,3]
In the example, we retrieve the third field of the “Requete” request.

**Notice!**
More information about the direct programming of the printer ➔ cab Programming Manual.
5 Creating a label directly in JScript programming language

5.2 Full sample

The following example is distributed with Database Connector. You can find it in the “Exemples” folder located in the installation folder of the program (by default C:\Program Files\cab technologies\Database Connector\Exemples)

It is used with the Access database located in the same folder.
6.1 Operating diagram of Database Connector Extended in Printer Association mode

Figure 30  Database Connector Extended in Printer Association mode
6.2 Operating diagram of Database Connector Extended in Remote Trigger mode

Remote Trigger: function which retrieves the layout and the print quantity from a manufacturing order.

SQL Client: function which retrieves all the information needed to print from the database.
6.3 Configuration file for Remote Trigger and File Mode

A configuration file is required for using ‘Remote Trigger’ and ‘File Mode’ labels. This file contains especially the IP address and port of the Database Connector server.

**Attention!**
The configuration file must exists in the default memory (IFFS, CF ...) of the printer and must be named config.ini

In Remote Trigger and File Mode:
1. IP Address of Database Connector server
2. Port used by Database Connector server

In File Mode only:
3. Name assigned to the printer and prefix in the file name to send

Figure 32 Configuration file