

EXTERNAL DATABASE ADMINISTRATOR'S GUIDE

Version 8.0

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1. Introduction

This document contains a general description of External DB features available in Administration interface of TEKLYNX CENTRAL Printing Interface.

The set of features described in this document are targeted on configuration of the following requirements:

- Obtaining the label data from external database
- Batch printing of labels assigned to specific products
- · Confidentiality and integrity of label/products data
- Filtering the main data from external database based on additional properties (table columns)
- Uniqueness of labels printed
- · Reset of connections

Section 2 of this document contains a description of new and updated configuration elements.

Section 3 contains additional notes administrators should consider while configuring Printing Interface.

For detailed configuration of Printing Interface please review internal application help file. Additional technical information and guides are provided in <u>References</u> section.

2. Configuration

2.1 Options

Printing Interface Administrator's interface has several new features configurable on the Options page as shown on the image below:

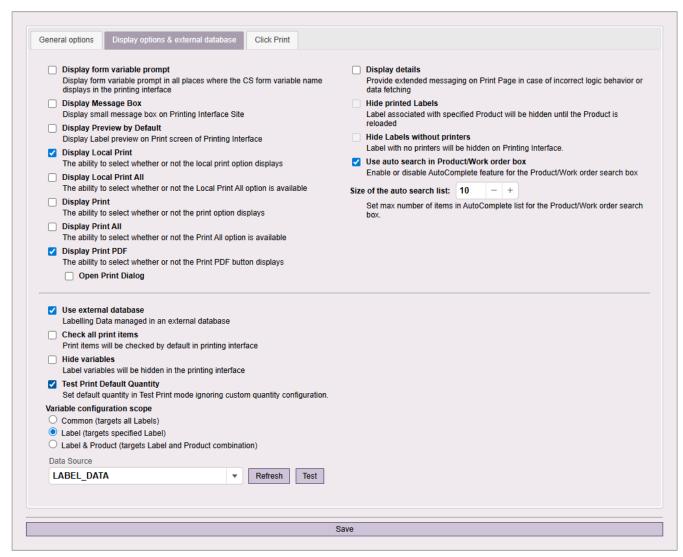


Figure 1 - Options configuration form

When you enable "Use external database" option the set of related options become available.

2.1.1 Check all print items

This option controls a default behavior of Printing Interface which automatically defines a set of labels that should be included to the batch printing.

If this feature is **enabled** then all products loaded to the grid according to user-defined filter selection (or product/workorder name entered) will be checked by default (included to batch printing request). **Otherwise**, all grid items will be unchecked by default (excluded from batch printing).

2.1.2 Hide variables

When this option is enabled the label variables form will not be visible in Printing Interface. Thus the user will not be able to change values of label variables. The data for them will be obtained at print-time according to the configuration of label data.

2.1.3 Variable Configuration Scope

Depending on the schema of external database the system may be configured to use appropriate label's variables data. The following scopes are available:

Common (targets all labels)

When this scope is selected label data will be configured on per-variable basis. This scope is best suited for cases, when you have the same set of variables on multiple labels. For example, if there are two labels Label A and Label B, both having variable VAR1, you should define the data only for a single label (say Label A). The system will translate provided configuration for all labels having VAR1 variable.

Label (targets specified label)

This scope allows configuration of label data on per-label basis and is best suited for cases, when you have multiple labels with different variables. Thus, when you define data for VAR1 on Label A, its values will be appropriate only for that label.

• Label & Product (targets label and product combination)

This scope allows configuration of label data on per-product basis. Use this scope when you need to distinguish label data in different products, even if these products contain the same labels. Considering there are PRODUCT X and PRODUCT Y, both hosting Label A, the label data should be defined separately for these two products.

Once set, the **Variable Configuration Scope** is used globally for processing the data from external database.

2.2 Workorders

NOTE: Configuration on this page may only be made if the "Work order" option is enabled on Options page.

Work orders Save Test Work orders table Work orders Number ▼ WORKORDER_NUMBER_OF_CODE Search Autocomplete SQL SELECT DISTINCT [OFs].[WORKORDER_NUMBER_OF_CODE] FROM [OFs] WHERE [OFS].[WORKORDER_NUMBER_OF_CODE] LIKE [APPLICATION].Searchinput+% ORDER BY [OFs].[WORKORDER_NUMBER_OF_CODE] ASC Key Field ▼ Add No Data Found 1-10 of 16 _EXT_WORKORDER_ID _EXT_WORKORDER_NAME 5414 265321 6293 272382 4506 272711 6142 272858 6152 272861 5916 274041 7429 275459 7680 275695 7677 276848 7699 278027 **44 4 1 2 > >>** Reset layout Rows per page: 10

Figure 2 - Work Orders configuration form

The general workflow of configuration is described in Printing Interface Administration's help file (see section "External Database mode").

Filters assigned to configuration of work orders will be used to filter the labels result set.

Filters which are added to configuration of work orders can be set as **required**. The user will not be able to perform a search without selection of values in required filters.

NOTE: The system should already have appropriate filters configured before adding them to configuration on this page. See Filters section and application's help file for details.

2.3 Products

NOTE: If "Work order" option is enabled on Options page it is required to configure column mappings on Workorders page prior to make any configurations on Products page.

Products

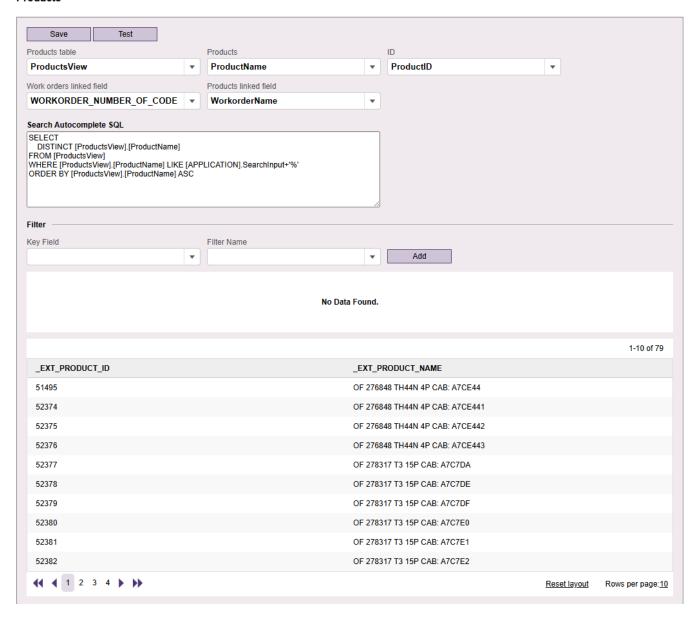


Figure 3 - Products configuration form

The general workflow of configuration is described in Printing Interface Administration's help file (see section "External Database mode").

If application is not configured with Work Order option, Filters assigned to configuration of Products will be used to filter the labels result set.

Filters assigned to configuration of Products can also be marked as required.

Required filters will not allow search request to be sent until the value in their corresponding dropdowns is selected.

NOTE: The system should already have appropriate filters configured before adding them to configuration on this page. See Filters section and application's help file for details.

If the filter you want to add to configuration refers [APPLICATION]. SelectedProduct variable the system will generate an error message.



Figure 4 - Error message of using filter with incompatible variable on Products form

2.4 Labels

NOTE: Make sure you configured correct column mappings on Products page before making any configuration on this page.

Labels

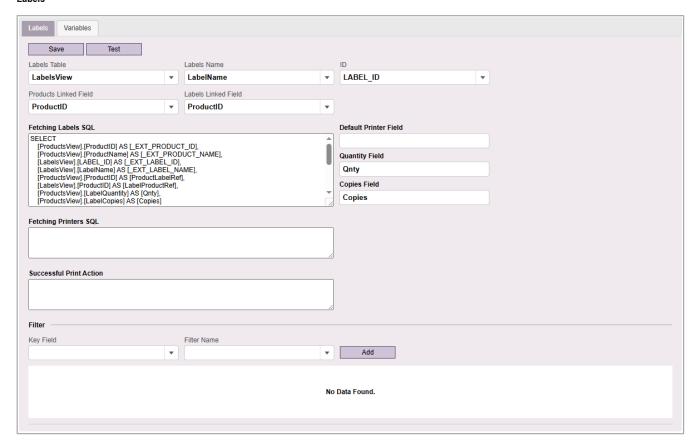


Figure 5 - Labels configuration form

The general workflow of configuration is described in Printing Interface Administration's help file (see section "External Database mode").

Fetching Labels SQL

SQL query to fetch labels from external database is generated using the following dropdowns: Labels Table, Label Name field, ID column in labels table, Products linked field and Labels linked field.

There are several new configuration fields available on this form:

Default Printer Field

This field allows SQL-based query column to be mapped on default printer parameter (UI control or @PRINTER_NAME in SENTINEL) when printing single label (either in single printing request or batch printing request).

Quantity Field

This field allows SQL-based query column to be mapped on quantity parameter (UI control or @LABEL_QUANTITY in SENTINEL) when printing single label (either in single printing request or batch printing request). If this field is empty then default value is used (default value = 1).

Copies Field

Allows setting of SQL-based query column to be mapped on copies parameter (UI control or @LABEL_COPY in SENTINEL) when printing single label. If this field is empty the default value is used (default value = 1).

Fetching Printers SQL

Allows setting of SQL-based statement to fetch printer names from external database.

Successful Print Action

Allows setting of SQL-based statement which should be executed on external database after single label is successfully printed. This setting may be used when label, product or workorder data should be updated (or removed) from external database after printing.

Application variables prefixed with [APPLICATION] token are supported when defining queries for three fields mentioned above.

NOTE: Currently the syntax of statement entered in **Successful Print Action** field is not validated against SQL standards. It is required to re-check correctness of statement before saving it (maybe by using some additional tools like SQL Server Management Studio). The system will execute any statement provided, no matter how complex it is:

```
DELETE FROM [Product] WHERE [pid] = [APPLICATION].SelectedProductID;

IF NOT EXISTS (SELECT TOP 1 [pid] FROM [Product] WHERE [workorder_id] = [APPLICATION].SelectedWorkOrderID)

BEGIN

DELETE FROM [WorkOrder] WHERE [wid] = [APPLICATION].SelectedWorkOrderID;

END
```

Filters assigned to Labels are always displayed after the product/workorder search field, unless the filter is referenced in another filter assigned on Products or Work Orders page (see Section 2.5.1 for details).

Filters which are added to configuration of Labels can also be marked as required.

NOTE: The system should already have appropriate filters configured before adding them to configuration on this page. See <u>Section 2.5</u> and application's help file for details.

2.4.1 Label Variables

As mentioned in <u>Section 2.1.3</u> the label data is defined based on **Variable Configuration Scope** selected on the Options page.

Labels

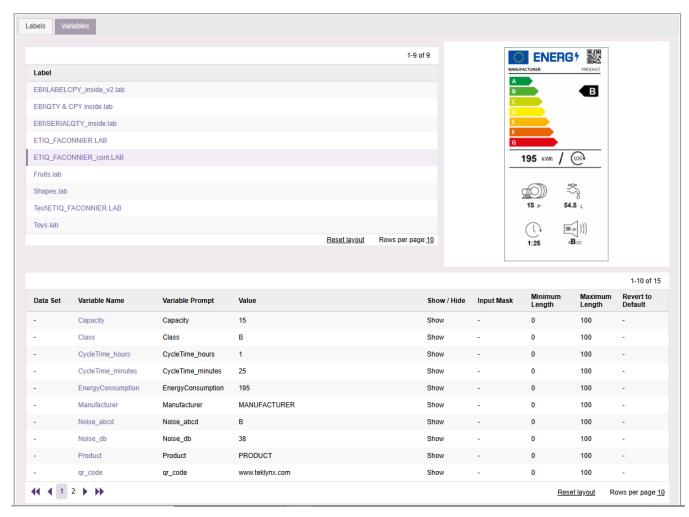


Figure 6 - Label Variables

When defining label data you can use three different sources for variable values which will be used during printing: **Static Values**, **From a table** (Database Column) or **SQL** query (see Figure 7). If you choose **SQL** query there is a possibility to define a query having references to application variables in SQL WHERE predicates (see Section 2.6 for details).

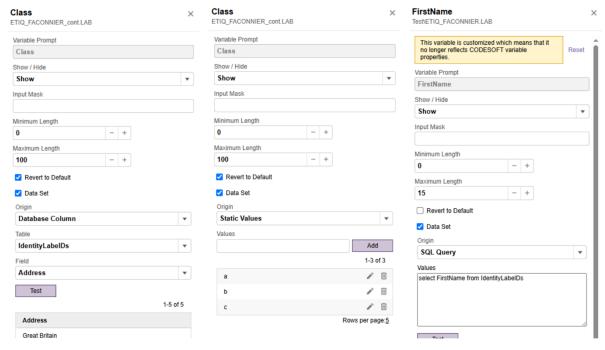


Figure 7 - Variable dialog

The **Test** button in Data Source dialog is used for retrieving test results as well as validating the correctness of provided query. Test results contain top 10 records obtained from external database, ignoring references to application variables, but including their correspondent columns in test results (they are displayed with gray foreground).

2.5 Filters

Filters are used in Priting Interface to provide a possibility to filter product data based on values of additional columns in external database tables. As with data sources for variables there are three ways to configure a single filter:

- Static Values
- Database Column
- SQL query

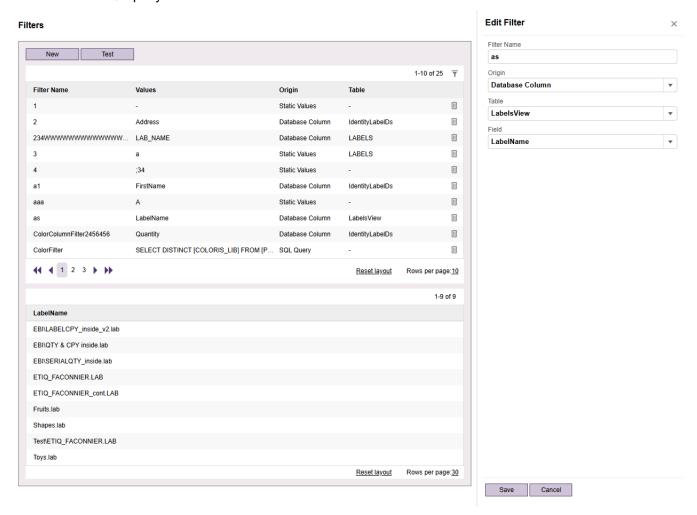


Figure 8 - Filters configuration form

When using SQL query as filter data source there is a possibility to include application variables to limit data available for this filter when it is displayed in Printing Interface (see Section 2.6 for details).

Test button allows observing top 10 results returned from external database. All columns specified in SQL WHERE clause are dispalyed with gray foreground.

2.5.1 Reference to another filter

Filters of SQL query data origin may contain reference to another filter. For example, if you created a filter named *MaterialFilter* with static values, then you can create a filter named *ColorFilter* with the following configuration query:

SELECT DISTINCT [Color] FROM [Product]

WHERE [Material] = [APPLICATION].MaterialFilter

NOTE: Reference to another filter should begin with [APPLICATION] key.

With such configuration the set of values available in the *ColorFilter* dropdown will depend on a value selected from *MaterialFilter* dropdown. If the value for *MaterialFilter* is not provided by the user, then *ColorFilter* dropdown will contain all values ignoring the dependency from referenced filter.

NOTE: In Printing Interface the filter's dropdown will be disabled until the value of required referenced filter is selected.

The following figure shows an example of configuration provided above and how filter dropdowns are organized on Printing Interface (both *ColorFilter* and *MaterialFilter* are assgined to configuration of Products page):



Figure 9 - Example of displaying referenced filter

Referenced filter is displayed before the filter which contains a reference to it, so the *MaterialFilter* comes first.

NOTE: The single filter query can contain only one reference to another filter.

NOTE: The referenced filter should be created before referencing it in another filter.

2.5.2 Data confidentiality

The filters also provide a feature of data confidentiality within external database mode. This feature is based on using application variables within the filter's configuration (see Section 2.6 for details).

For example, there could be a column named [username] in external database which contains UMSS username assigned to specific workorder/product. You can create a filter which will automatically limit the set of workorders/products available for printing based on the username logged in to Printing Interface. This could be done with the following configuration steps:

1. On Filters page you should create new filter with **SQL query** data origin:

In case of "Work order" option, column located in WorkOrder table:

SELECT DISTINCT [username]
FROM [WorkOrder]
WHERE [username] = [APPLICATION].ConnectedUser

In case of disabled "Work order" option, column located in Product table:

SELECT DISTINCT [username]
FROM [Product]
WHERE [username] = [APPLICATION].ConnectedUser

- 2. Add this filter to configuration on appropriate page depending on the enabled options (Work orders, or Products).
- 3. Set the Required option for this filter.

For convenience, filters which are marked as required and contain the single value will automatically set this value as selected in appropriate dropdown.

NOTE: If data confidentiality is important, it is required to control the presence of OR conditional operators (conjunction operators) in filters settings applied on Work Orders, Products and Labels pages. The OR operator will affect the data obtained from external database based on actual filter values selected by user in Printing Interface.

2.6 Application Variables

The system provides the set of application variables which may be used in SQL-based queries throughout the TEKLYNX CENTRAL Printing Interface configuration forms. The full list of supported application variables is provided in Table 1.

Table 1 - Application variables

Application variable name	Description	Limitations
ConnectedUser	Provides access to current username logged in to Printing Interface	
Workstation	Provides access to client workstation name	
SelectedWorkOrder	Provides access to workorder name currently processed by application. The value is taken from external table column defined with the Work Order field on Work Orders configuration page.	Can not be used in SQL-based filters and SQL-based label data sources if "Work order" logic is disabled
SelectedProduct	Provides access to product name currently processed by application. The value is taken from external table column defined with the Products field on Products configuration page.	Can not be used in SQL-based filters if "Work order" option is enabled
SelectedLabel	Provides access to label name currently processed by application. The value is taken from external table column defined with Labels field on Labels configuration page.	Can not be used in SQL-based filters
SelectedWorkOrderID	Provides access to currently processed ID (primary key) of workorder record in external database. The value for this variable is taken from external table column defined with Work order ID field on Workorders configuration page.	Can not be used in SQL-based filters. Reference to this variable in SQL-based label data sources is only possible if "Work order" logic is enabled
SelectedProductID	Provides access to currently processed ID (primary key) of product record in external database. The value for this variable is	Can not be used in SQL-based filters
	The value for this variable is taken from external table	

	column defined with Products ID field on Products configuration page.	
SelectedLabelID	Provides access to currently processed ID (primary key) of label record in external database.	Can not be used in SQL-based filters
	The value for this variable is taken from external table column defined with Labels ID field on Labels configuration page.	
SelectedPrinter	Provides access to printer name currently processed by application	Can not be used in SQL-based filters
SelectedBatchPrinter	Provides access to printer name selected for batch printing operation	Can not be used in SQL-based filters
AllowedPrinters	Provides printers list that meets the configured restrictions of Users and Workstations Logics	Can not be used in SQL-based filters
SearchInput	Main search field value on Print page	Can not be used in SQL-based filters

NOTE: References to application variables are only supported for SQL-based configuration elements, such as filters with SQL query data origin, SQL-based variable values, **Quantity** field, **Copies** field, **Successful Print Action** field.

Each reference to application variable should be prefixed with [APPLICATION] key. When in SQL-based query you refer to application variable or filter name do not surround variable name with square brackets ([]), only the [APPLICATION] key should have these brackets:

```
SELECT [qty]

FROM [Product]

WHERE [pname] = [APPLICATION].SelectedProduct

or

SELECT [user_id]

FROM [WorkOrder]

WHERE [user_id] = [APPLICATION].ConnectedUser

or
```

SELECT [material]

FROM [Product]

JOIN [WorkOrder] ON [Product].[workorder_ref] = [WorkOrder].[wname]

WHERE [Product].[pname] = [APPLICATION].SelectedProduct

AND [WorkOrder].[user_id] = [APPLICATION].ConnectedUser

For additional SQL syntax considerations review Section 3.1.

3 Additional notes

3.1 SQL query syntax

The system does not provide full support of SQL syntax, statements and query validation. It is recommended to follow certain rules when defining queries for different configuration elements:

1. The majority of configuration elements operate only on SQL SELECT statement.

The one and the only element where more complex SQL commands and constructs could be defined is the **Successful Print Action** field on Labels page (see <u>Section 2.4</u>).

2. When referencing external table names and columns it is recommended to surround them with square brackets ([]):

```
SELECT [product_code]
FROM [Product]
WHERE [product_name] = 'PRODUCT_1234'
```

3. JOINs statements over two or three tables are supported. Make sure you refer to external column with adding the table name to column specification (note: table aliases are not currently supported):

```
SELECT [Product].[product_code]
FROM [Product]
JOIN [Label] ON [Product].[label_ref] = [Label].[label_ref]
WHERE [Product].[product_name] = [APPLICATION].SelectedProduct
AND [Label].[type] = 'DT_ECONOMY'

SELECT [Product].[product_code]
FROM [Product]
INNER JOIN [Label] ON [Product].[label_ref] = [Label].[label_ref]
INNER JOIN [WorkOrder] ON [Product].[workorder_ref] = [WorkOrder].[wname]
WHERE [Product].[product_name] = [APPLICATION].SelectedProduct
AND [Label].[type] = 'DT_ECONOMY'
AND [WorkOrder].[username] = [APPLICATION].ConnectedUser
```

4. In WHERE clause the value must follow the = sign and not precede it:

```
Correct:
SELECT [workorder_num]
FROM [WorkOrder]
WHERE [workorder_name] = [APPLICATION].SelectedWorkOrder
Incorrect:
SELECT [workorder_num]
FROM [WorkOrder]
WHERE [APPLICATION].SelectedWorkOrder = [workorder_name]
```

References

The following additional guides are provided on TEKLYNX CENTRAL installation media:

[1] TC_80_Installation_Guide.pdf Contains detailed description of TEKLYNX CENTRAL installation process

[2] TC_80_IIS_Configuration_Guide.pdf Contains description of configuration Internet Information Services for Printing Interface application

[3] TC_80_Upgrade_Guide.pdf Contains description of upgrading TEKLYNX CENTRAL installation from previous version



France +33 (0) 562 601 080

Germany +49 (0) 2103 2526 0 **Singapore** +65 6908 0960 **United States** +1 (414) 837 4800

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