

# PCL Printing Library

## Overview

The Beyond HMI PCL Printing Library (BhiLibPcl) for Wago e!COCKPIT allows a Wago PFC200 PLC to print directly to a PLC5-compatible laser or inkjet printer using a TCP/IP connection.

PLC5 is supported by some Hewlett-Packard printers and is also supported by other manufacturers' printers.

The library allows e!COCKPIT programmers to efficiently format documents and send them to the printer. Text can be printed at specific positions on the page.

A simple interface abstracts the TCP/IP socket management and print job management. The library can work with any font that is installed on the printer.

BhiLibPcl can be integrated with the Beyond HMI LACT library (BhiLibLACT) to permit printing of LACT batch reports to an Ethernet printer. Formatting of the batch report is controlled by a template ("layout") file – which the user creates in a simple *markup language*. Multiple layout files can be loaded onto the PLC and the desired batch report layout can be changed at print time.

The BhiLibPcl library uses runtime licensing. A license is required for each PLC which executes the library code. The program will run for approximately 100 printing operations in trial mode before a license is required. Licenses must be purchased from Beyond HMI, Inc.

Beyond HMI also provides a sample e!COCKPIT project which demonstrates how the library is typically implemented. End users are free to use and/or modify this project at no cost.

## Library Features

<b>Printer Connection</b>	TCP/IP	User specified IP address and port number (port 9100 is customary)
<b>Job Management</b>	Number of copies	User can specify number of copies to print
	Simplex/Duplex	Allows two-sided printing – as supported by the printer
	Positioning on Page	User-settable left and top margins
<b>Page Management</b>	Multipage printing	User can specify when/if to change pages
	Text Positioning – across the page	User can specify X-location of printed text (in inches)
	Text Positioning – down the page	Library automatically determines Y position – based on current font height
<b>Font Management</b>	Bold/Italic	Simple interfaces to switch between regular font, <b>bold font</b> , <i>italic font</i> , <b><i>bold+italic font</i></b>
	Font Height	Simple interface to select font height (printer will use nearest match)
	Font Pitch	Simple interface to select font pitch (printer will use nearest match)
	Font Spacing	Simple interface to select between fixed or proportionally-spaced font
	Stroke Weight	Simple interface to select stroke weights between ultra-thin and ultra-black (if fonts loaded in printer include these features)
	Font Style	Simple interface to select font styles: upright, italic, compressed, condensed, expanded, outlined, inlined, shadowed (if fonts loaded in printer include these features)
	Symbol Set	Simple interface to select the symbol set to be used
	Typeface Family	Simple interface to select the typeface family set to be used (font must be loaded on the printer)
<b>Custom LACT Batch Reports</b>	LACT Batch Source	LACT Batch data structure is created by the Beyond HMI LACT library (BhiLibLACT)

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	Printable Batches	Active ad hoc batch, previous ad hoc batch, current day batch, previous day batch, current month batch, previous month batch, or any historical batch retained in the BhiLibLACT database
	Report Formatting	End-user constructs a report layout file in a documented <i>markup language</i>
		Report layouts are loaded onto the PLC (one or many layouts per PLC)
		Layout to be used for printing is specified at print time
<b>Licensing</b>	Free for developer	Library file is free and can be added to any Wago e!COCKPIT instance
	Runtime Licensed	Library generates a site code
		Beyond HMI, Inc. generates a license file from site code
		License file is installed on the PLC. License is perpetual but only usable on that PLC.
		Library features will execute for about 100 print operations after restart in <i>trial mode</i> . License must be installed before this number of print operations are performed or printing will stop.
<b>Sample Project Available</b>	Unlicensed (free) sample project/program	Functional PLC sample program provided at no cost on request.