

Make or Buy?

The table below indicates an estimated cost and time comparison between making a display controller device from scratch based on available source code products and the approach of creating a product solution based on the HMI-3570 design package provided by SYS TEC electronic.

	Make	Buy
Hardware design; from specification to passing certification	2 engineers x 1 year 110.000 EUR	Design package available within 4 weeks 55.000 EUR
Integration of Linux OS, drivers and IEC 61131-3 runtime system	2 engineers x 6 months 51.000 EUR	Design package available within 4 weeks 36.000 EUR
Integration of CANopen Manager according to CiA 302 based on a available source code package	1 engineer x 8 months 34.000 EUR	
Target visualization	1 engineer x 6 months 26.000 EUR	
Time and engineering cost to serial ready prototype	Total time: 50 months Total engineering cost: 221.000 EUR	Total time: 4~6 months Total engineering cost: 91.000 EUR

Ordering Information

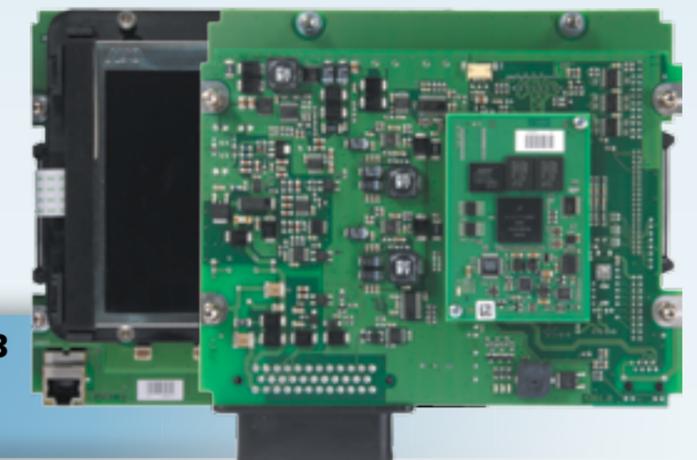
Order#	Available Packages and Products
13131900	Design Package HMI-3570
13131910	Design Package Option IEC 61131 OpenPCS
13131920	Production Quality Package
13131930	Design Package Option CANopen Manager C/C++
13131940	Certification Package 2004/108/EC
13139000	Reference and Evaluation System MBC-1784 and HMI-3570

About SYS TEC electronic

SYS TEC electronic is a system house for customized electronic systems. Founded in 1990 in Germany, SYS TEC electronic has more than 25 years of experience providing a comprehensive service from consulting to OEM integration and series production or transfer of technology to our customers in the field of industry, transportation, communication, energy and computing.

SYS TEC electronic offers a ready-to-use reference design of a Human Machine Interface (HMI) device as the base of your own product developments. By using this design package, you will save your valuable time and efforts in developing and integrating a market-ready device solution.

- Significantly shortens time-to-market
- Reduces effort in realizing own product designs
- Sourcing information of all components included
- One time buy-out fee; no royalties or product licenses
- Complementary design services and training available



The HMI-3570 reference design is meant for OEM that plans to develop own HMI or display controller devices to be used in mobile machinery that is operating under harsh conditions.

The electronics used in the HMI-3570 reference design meet the requirements of electromagnetic interference (EMI) as well as the temperature and mechanical stresses that are typically occurred in mobile applications.

SYS TEC electronic offers the HMI-3570 reference design as a design package. The HMI-3570 product design is complete and has already been verified. Thus, the customers that would like to create own display controller solutions may directly use this design package to save valuable time.

The design material of the HMI-3570 reference design is delivered in source format, including the corresponding project files and the component libraries of the electronic components used in the design. With the design material, the customer can instantaneously start working to create own product solutions.

Besides the hardware design material, SYS TEC electronic also delivers the necessary software design material to operate the device. The design package includes a Linux Board Support Package (BSP) that has been especially optimized to realize a very short boot-up time of less than 4 seconds from powering on the device.

Together with the design package is a complete development environment (IDE) for customer's own C/C++ application development under Linux. The IDE is Eclipse-based and includes a target cross-compiler, debugger and reference projects. All IDE components are pre-integrated in a ready-to-use virtual machine.



Design Package Overview

(1) IEC 61131-3 with CANopen Manager and Target Visualization

This design package integrates an IEC 61131-3 runtime kernel with CANopen Manager and Target Visualization. It includes a pre-integrated IEC 61131-3 runtime environment specifically adapted to the hardware and software environment of the HMI-3570. The IEC 61131-3 runtime environment comes with a seamlessly integrated CANopen Manager according to CiA 302 specification. In addition, the design package includes a ready-to-use Target Visualization. This Target Visualization is perfectly integrated with the IEC 61131-3 runtime kernel and the underlying operating system. It comes with a special editor to create versatile user interfaces and supports a variety of standard features such as pictures, trend charts, tables, bar graphs or instruments. Beyond the standard features, it is also possible to create user-specific elements by grouping an assignment of elements in so-called Macro functions and reuse these Macro functions in other projects. A specific feature of this Target Visualization is the iGrafix element. Using this element in a page allows for displaying vector-based data from a file. For example, iGrafix element could be used to display the position of a tool or machine part and update the data at runtime.

(2) Design Package CANopen Manager C/C++

The CANopen Manager source code available as an add-on to the design package allows easy integration of CANopen functionality into own C/C++ applications. It supports automatic configuration of CANopen nodes at system startup and monitors their operational status. The CANopen Manager is fully compliant to CiA 302 specification and supports easy integration into own user-applications. The CANopen Manager Source Code comes with demo applications specific to the HMI-3570 reference design. With this design package, OEM may scale the CANopen functionality and offer flexible CANopen communication libraries to their customers.

(3) Production Quality Package

Producing high volume serials at continuous high quality level requires sophisticated device tests and quality guidelines to be followed throughout the assembly process.

To achieve this goal, SYS TEC electronic offers a special Production Quality Package that includes sophisticated end-of-line tests, technologies information and processing instructions.

The Production Quality Package includes:

- Processing and assembly flow chart
- SMD assembly processing instructions
- THT assembly processing instructions
- Mask and processing instructions for conformal coating of PCB
- Device assembly and finishing instructions
- Quality assurance checklist
- QA certificate template
- End-of-line test documentation
- Device test reference manual for test developers
- Test equipment manufacturing documentation (mechanical drawings, wiring schema, BOM, hardware)
- Automated test application for end-of-line device test (Labview runtime executable for Windows PC)

	Design Package	Optional Packages
Hardware Design Material		
Schematic Diagram (Altium Designer Project)	X	
PCB Layout data (Mentor Expedition PCB project)	X	
3D-Model of PCB (Step file, 3D PDF)	X	
Gerber Files	X	
Bill of Material with sourcing information	X	
Datasheets of key components	X	
Hardware Design Manual ⁶⁾	X	
Prototype Assembly Instructions	X	
Software Design Material		
Linux BSP (source code)	X	
U-BOOT bootloader (source code and binary)	X	
Target-specific drivers		
CAN driver	X	
RS232 driver	X	
LCD driver	X	
I/O driver (e.g. LED backlight control)	X	
HID driver (keypad, scroll wheel, touch screen)	X	
Beeper driver	X	
SPI driver	X	
Watchdog	X	
System diagnostics (on-board temperature and voltage monitoring)	X	
Target Visu DataServer (binary only) ⁵⁾		(1)
Target Visu MicroBrowser (binary only) ⁵⁾		(1)
IEC 61131-3 runtime system ⁴⁾		(1)
CANopen Manager for IEC 61131-3 runtime system		(1)
CANopen Library for C/C++		(2)
Reference Application for IEC 61131-3 with Target Visualization		(1)
Reference Application for C/C++	X	
Software Design Manual	X	
Documentation		
Getting Started Guide	X	
HMI-3570 Device Manual	X	
IEC 61131-3 OpenPCS User Manual		(1)
CANopen for IEC 61131-3 User Manual		(1)
CANopen User Manual		(2)
Spidercontrol PLC Editor User Manual		(1)
Hardware		
3x HMI-3570 devices, assembled and tested	X	
Adapter cables for HMI-3570	X	
USB/CAN interface (incl. driver CD for Windows PC)		(1)+(2)
Software		
IDE for IEC 61131-3 application development (OpenPCS Automation Suite) ²⁾		(1)
SpiderControl PLC Editor Extended ^{2) 5)}		(1)
IDE for C/C++ application development ³⁾	X	
CANopen Configuration Suite ²⁾		(1)+(2)
CANinterpreter, CAN-bus Analyser tool ²⁾		(1)+(2)
Service and Support		
5-days workshop on customer site		Optional
6 months support via e-mail/phone	X	

¹⁾ Labview is a product of National Instruments. The Labview runtime executable is executable under Windows 7 and does not require a Labview Developer License. However, in order to alter the automated test control application is a Labview Developer License required.

²⁾ Delivered as binary executable ready for use on a standard PC running Windows 7 or higher

³⁾ Integrated Development Environment (Compiler, linker, debugger, Eclipse IDE) for C/C++ application development in a ready-to-use VMWare virtual machine

⁴⁾ The IEC 61131-3 runtime kernel is used under license from Infoteam Software AG, Bubenreuth, Germany. Prior delivery of IEC 61131-3 runtime kernel requires purchase of a Development License and a valid OEM contract must be signed with Infoteam Software company.

⁵⁾ The SpiderControl PLC Editor and Target Visualization MicroBrowser and the Data Server are used under license from iniNET GmbH, Muttentz, Switzerland. Prior delivery of the Target Visu software components, a valid OEM contract must be signed with iniNET company. Additional per device runtime fee apply to the Target Visualization software installed on the HMI device. The SpiderControl PLC Editor software is licensed per seat.

⁶⁾ Enclosure's design material is not included in the scope of delivery.