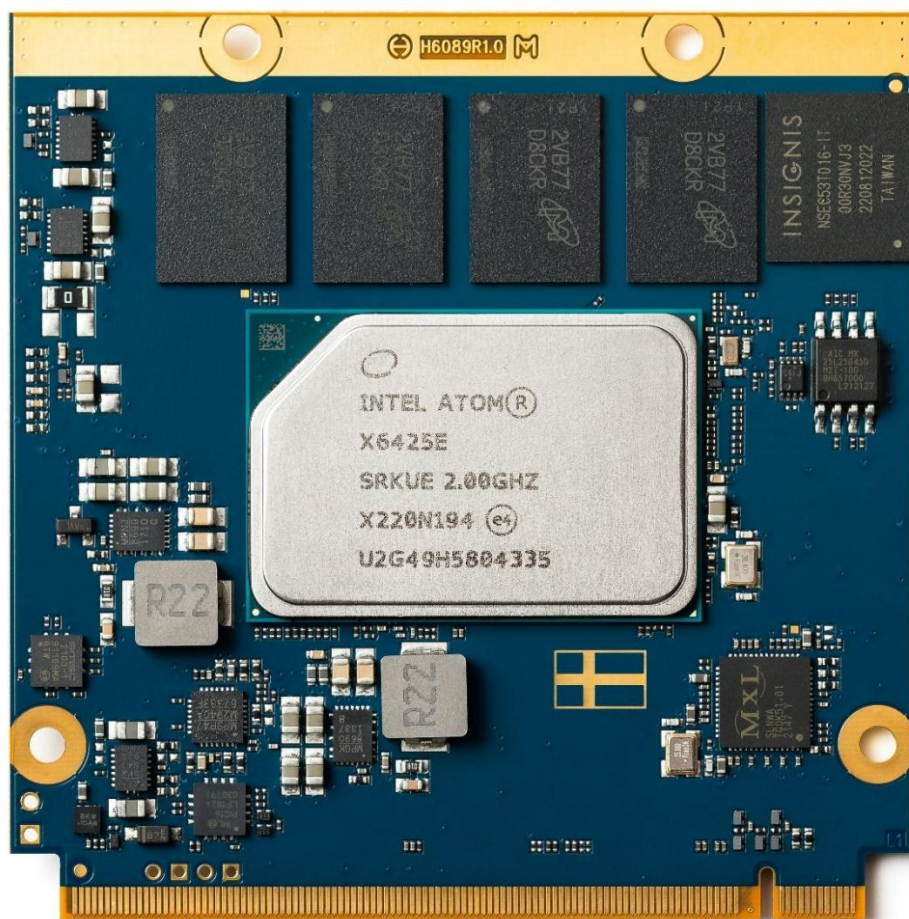


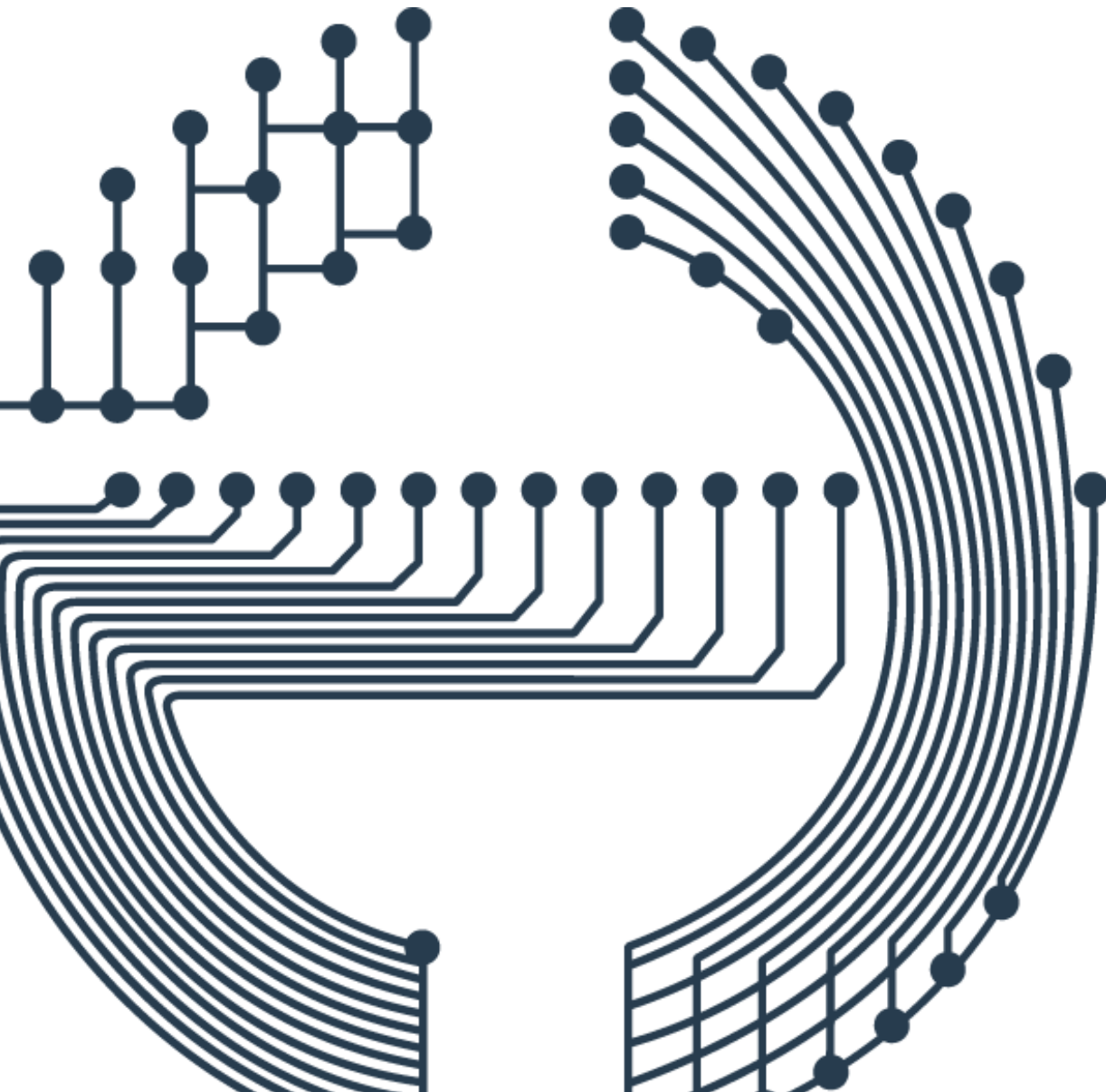
x86 Yocto BSP Manual



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	x86 Yocto BSP Manual		

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1. Document information

1.1. Introduction

This document is a software reference guide that provides guidance on obtaining, building and modifying a BSP for Hectronic x86 based Starter kits.

The manual is aimed for SW engineers who will build and modify software for any of Hectronics Starter kit modules.

1.2. Document revisions

Revision	Date	Signature	Description
0.1	2026-05-06	Per Askvid	First draft version
0.2	2026-09-11	Jonas Antoni	Update to Yocto 6.0 (Wrynose)
1.0	2026-09-14	Johan Zackrisson	Document release

1.3. References

Number	Description	File/URL
1	H6089 Reference manual	Doc id: 08975

2. Prerequisites

The BSP is based on the Yocto Project Wrynose release and has been tested on Ubuntu 22.04. It is assumed that standard development tools and required Yocto build dependencies are installed on the host system, including git, the repo tool, and necessary build utilities.

At least 80 GB of free disk space is required.

3. Obtaining the BSP

The BSP sources code is managed using the repo tool, which allows synchronization of multiple git repositories using a manifest. The manifest is located at <https://github.com/hectronic-sw/hectronic-manifest>.

Initialize the repo workspace using the provided manifest:

```
mkdir yocto-x86
cd yocto-x86
repo init -u https://github.com/hectronic-sw/hectronic-manifest -b wrynose -m
repo/intel-x86.xml
repo sync
```

These commands will configure the workspace and set the appropriate branch. The sync command will download all required repositories and layers.

4. Building

To initialize the yocto build environment:

```
TEMPLATECONF=`pwd`/sources/meta-hectronic-x86/conf/templates/<board> .  
sources/openembedded-core/oe-init-build-env
```

Now the build directory is set up, and it is ready to build the <board> system. Board is typically a Hectronic CPU board or a starter kit, such as:

- h6089 – Elkhart lake QSeven module
- h1190 – H6089 Starter kit

There are several standard images available for evaluation, or to be used as a base for development. The two most useful images are:

- core-image-minimal – Console based image
- core-image-sato – Image with graphical support

Other images can be found at: <https://docs.yoctoproject.org/ref-manual/images.html>

To start the build process:

```
bitbake core-image-minimal
```

or:

```
bitbake core-image-sato
```

After a successful build the generated images can be found in:

```
tmp/deploy/images/<board>/
```

To boot the system, write the generated .wic image to a USB drive using a suitable disk imaging tool.

To re-initialize the build environment (required when a new login-session is created) it is enough to run:

```
. sources/openembedded-core/oe-init-build-env
```

The TEMPLATECONF variable can be left out.

5. BSP overview

This BSP is built using Yocto and consists of several meta layers. Each layer provides specific functionality such as board configuration, kernel modifications, or additional software components.

The layers are organized according to standard Yocto practices.

5.1. Standard Layers

The BSP includes a set of standard layers provided by Yocto Project and Intel. These layers provide the base functionality required to build a complete Linux system and are reused across multiple platforms. These layers are poky which is the reference distribution from yocto and forms the base of the build system. meta-intel layer provides hardware support for intel based platforms. The meta-openembedded layer is a collection of community-maintained metadata that extends the functionality of the Yocto Project.

5.2. Hectronic layers

In addition to the standard Yocto layers, this BSP includes Hectronic-specific layers. These layers provide board support, product configuration, and system integration for Hectronic platforms.

5.2.1 Meta-hectronic-x86

The meta-hectronic-x86 layer provides support for both standalone x86 based modules, and complete system configurations using reference carriers. The design follows a layered approach where a base machine configuration for the h6089 module is extended to define a complete system h1190 which includes a carrier board.

The h6089 machine represents the Q7 computer module itself.

It includes

- CPU and chipset configurations
- Kernel selection and configuration

The h1190 machine defines a complete system consisting of:

- H6089 Q7 module
- A compatible carrier board

The h1190 configuration extends the h6089 machine by inheriting its base configuration and adding system specific drivers and I/O configurations.