Arrakis Mk4 Series

Version:
v1.0.2

Date:
15.08.2025

Contents

1 Copyright

2 Regulatory Compliances

2.1 Complies with the following EU directives

Radio Equipment Directive (2014/53/EU) only applies to devices containing radio module EM05-G.

No	Short Name
2014/35/EU	Low Voltage Directive (LVD)
2014/53/EU	Radio Equipment Directive (RED)
2014/30/EU	Electromagnetic Compatibility (EMC)
2011/65/EU	Restriction of the use of certain hazardous substances in electrical and electronic equipment Directive (RoHS2)
2015/863/EU	Amendment to Annex II in Directive 2011/65/EU regards the list of restricted substances (RoHS3)

2.2 References of standards applied

Standard	Reference	Issue
EN 18031-1	Common security requirements for radio equipment - Part 1: Internet connected radio equipment	2024
EN 55032	Electromagnetic compatibility of multimedia equipment - Emission Requirements	2015+A11:2020+A1:2020
EN 55035	Electromagnetic compatibility of multimedia equipment - Immunity requirements	2017+A11:2020
EN (IEC) 61000-3-2	Electromagnetic compatibility (EMC) - Part 3-2: Limits - Limits for harmonic current emissions	2014 2019+A1:2021
EN 61000-3-3	Electromagnetic compatibility (EMC) - Part 3-3: Limits - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems	2013 2013+A2:2021+AC:2022
EN 61000-4-2	Electromagnetic compatibility (EMC). Testing and measurement techniques. Electrostatic discharge immunity test	2009
EN 61000-4-3	Electromagnetic compatibility (EMC) - Part 4-3: Testing and measurement techniques - Radiated, radio-frequency, electromagnetic field immunity test	2006+A1:2008+A2:2010
EN 61000-4-4	Electromagnetic compatibility (EMC) - Part 4-4 : Testing and measurement techniques - Electrical fast transient/burst immunity test	2012
EN 61000-4-5	Electromagnetic compatibility (EMC) - Part 4-5: Testing and measurement techniques - Surge immunity test	2014+A1:2017
EN 61000-4-6	Electromagnetic compatibility (EMC) - Part 4-6: Testing and measurement techniques - Immunity to conducted disturbances, induced by radio-frequency fields	2014+AC:2015
EN 61000-4-8	Electromagnetic compatibility (EMC) - Part 4-8: Testing and measurement techniques - Power frequency magnetic field immunity test	2010
EN IEC 61000-4-11	Electromagnetic compatibility (EMC) - Part 4-11: Testing and measurement techniques - Voltage dips, short interruptions and voltage variations immunity tests	2004+A1:2017
EN 301 489-1 (module)	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 1: Common technical requirements; Harmonised Standard for ElectroMagnetic Compatibility	V2.2.3
EN 301 489-52 (module)	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services; Part 52: Specific conditions for Cellular Communication User Equipment (UE) radio and ancillary equipment; Harmonised Standard for ElectroMagnetic Compatibility	V1.2.1
Draft EN 301 489-19 (module)	ElectroMagnetic Compatibility (EMC) standard for radio equipment and services - Part 19: Specific conditions for Receive Only Mobile Earth Stations (ROMES) operating in the 1,5 GHz band providing data communications and GNSS receivers operating in the RNSS band (ROGNSS) providing positioning, navigation and timing data	V2.2.0
ETSI EN 301 908-1	IMT cellular networks; Harmonised Standard for access to radio spectrum; Part 1: Introduction and common requirements Release 15	V15.1.1

2.3 FCC PART 15 VERIFICATION STATEMENT

WARNING

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Notice: The changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

May Contain transmitter module:

- XMR2024RG255CGL
- N7NEM75T
- XMR2021EM05G
- RYK-WHFQ262ACNIBT
- RYK-WPET236ACNBT

2.4 ICES-003 ISSUE 7 VERIFICATION STATEMENT

CAN ICES3(A)/NMB3(A)

This device complies with CAN ICES-003 Issue 7 Class A. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation. Cet appareil est conforme à la norme CAN ICES-003 Issue 7 Class A. Le fonctionnement est soumis auxdeux conditions suivantes : (1) cet appareil ne doit pas causer d'interférences nuisibles et (2) cet appareil doit accepter toute interférence reçue, y compris les interférences pouvant opération indésirable.

May Contain transmitter module:

- 2417C-EM75T
- 6158A-FQ262ACNIBT
- 6158A-PET236ACNBT
- 10224A-2021EM05G

3 Safety Instructions

Please read these instructions carefully and retain them for future reference.

1. Disconnect this equipment from the power outlet before cleaning. Do not use liquid or sprayed detergent for cleaning. Use a moist cloth or sheet.
2. Keep this equipment away from humidity.
3. Ensure the power cord is positioned to prevent tripping hazards and do not place anything on top of it.
4. Pay attention to all cautions and warnings on the equipment.
5. If the equipment is not used for an extended period, disconnect it from the main power to avoid damage from transient over-voltage.
6. **Prolonged usage with less than 12V may damage the PSU or destroy the mainboard.**
7. Never pour any liquid into openings as this could cause fire or electrical shock.
8. Have the equipment checked by service personnel if:
    - The power cord or plug is damaged.
    - Liquid has penetrated the equipment.
    - The equipment has been exposed to moisture in a condensation environment.
    - The equipment does not function properly, or you cannot get it to work by following the user manual.
    - The equipment has been dropped and damaged.
9. Do not leave this equipment in an unconditioned environment, with storage temperatures below -20 degrees or above 60 degrees Celsius for extended periods, as this may damage the equipment.
10. Unplug the power cord when performing any service or adding optional kits.
11. Lithium Battery Caution:
    - Risk of explosion if the battery is replaced incorrectly. Replace only with the original or an equivalent type recommended by the manufacturer. Dispose of used batteries according to the manufacturer's instructions.
    - Do not remove the cover, and ensure no user-serviceable components are inside. Take the unit to a service center for service and repair.

4 Product Specifications

4.1 Technical Details

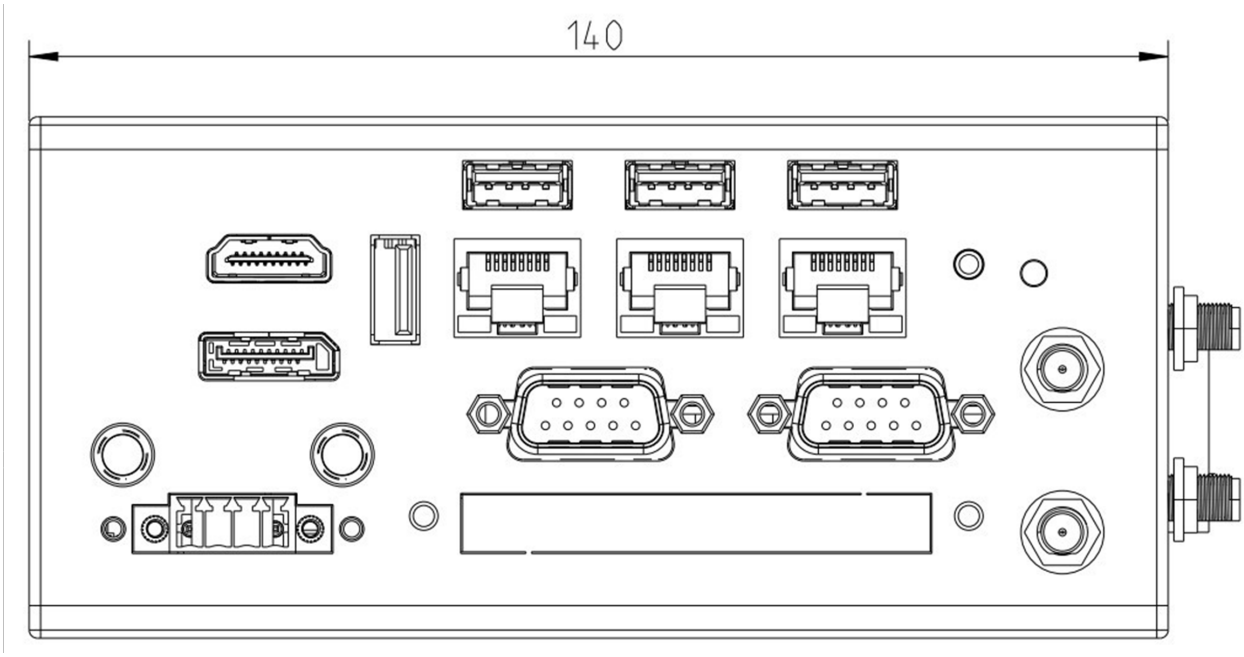
Feature	Specification	Details
Processor	CPU	Intel Atom® x6413E Processor, 1.5/3.0 GHz (Standard)
Memory	RAM	Up to 32GB DDR4 SoDIMM, 3200 MHz
Storage	NVMe	1x NVMe B+M Key, 2x PCIe 3.0 Lanes
	SATA	1x SATA DOM Connector
Security	TPM	TPM 2.0
I/O Ports	DisplayPort	1 port
	HDMI	1 port
	Gigabit Ethernet	3x RJ45 ports, 2.5 Gigabit, Intel i225/226-IT LAN chip
	USB 3.0	3 ports
	USB 2.0	1 port
	Serial Ports (RS232/422/485)	2 ports, with optional 2 additional RS232/422/485
Connectivity	Ethernet	3x (10/100/1000/2500 Base-T), Intel i225/226-IT LAN chip
	WLAN (optional)	Optional, via mPCIe
	WWAN (optional)	Optional 4G/5G
Expansion	SIM Slot	1x Nano SIM Slot, plus 2x optional Micro SIM Slots
Additional	Digital I/O and CAN	Optional Digital I/O, CAN available
	Watchdog Timer	System reset, programmable from 1 to 255 seconds
Environmental	Operating Temperature	-20° to 70° C
	Storage Temperature	-20° to 80° C
	Humidity	5% to 95% non-condensing
Power	Power Supply	12-36V DC, 4-pin terminal block type and DC jack
	Power Adapter	Optional 60W, 24V/5A external, CR1220 CMOS Battery
Mounting	Options	Wall mount and DIN-Rail mounting kits available
Operating System	Compatibility	Windows 10/11, Ubuntu Linux, others upon request
Physical Build	Material/Color	Steel / Aluminum
	Ingress Protection	IP20
	Dimensions	64 x 140 x 92 mm
	Weight	800 g

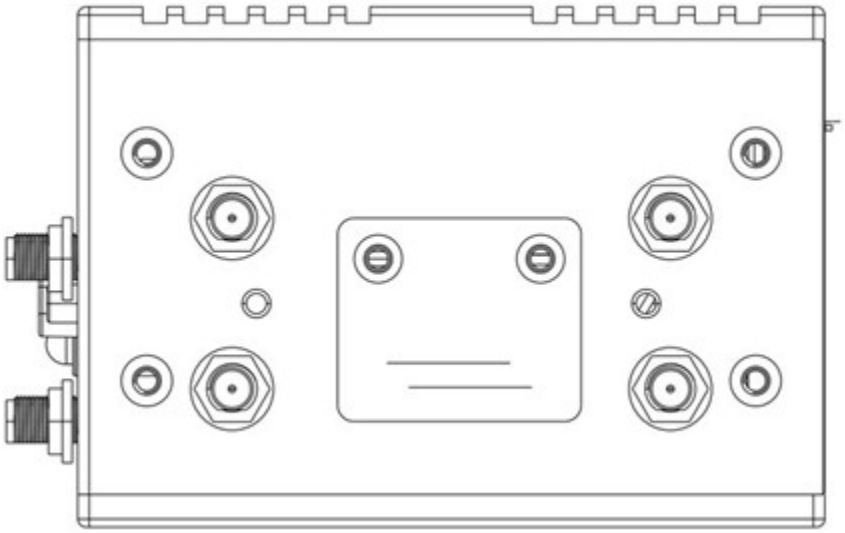
5 System Information

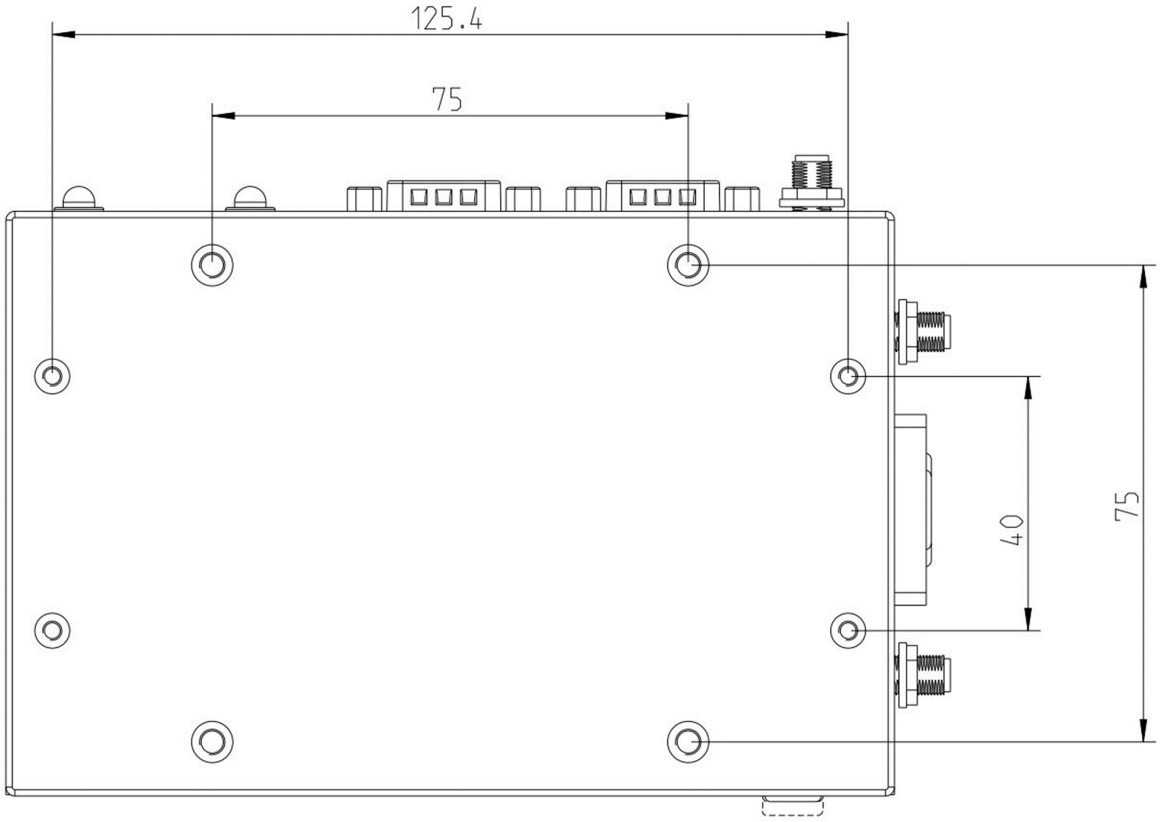
Being a powerful, yet small fanless system, the Arrakis Mk4 may reach very high surface temperatures in excess of 60°C/140°F with risk of injury. Users should ensure sufficient protection against touching.

To allow for sufficient heat removal we recommend: 30mm distance on either side of the Arrakis Mk4 when mounted on a DIN-Rail 100mm headroom above the Arrakis Mk4 when mounted horizontally. The heatsink should be on top.

5.1 System Drawing



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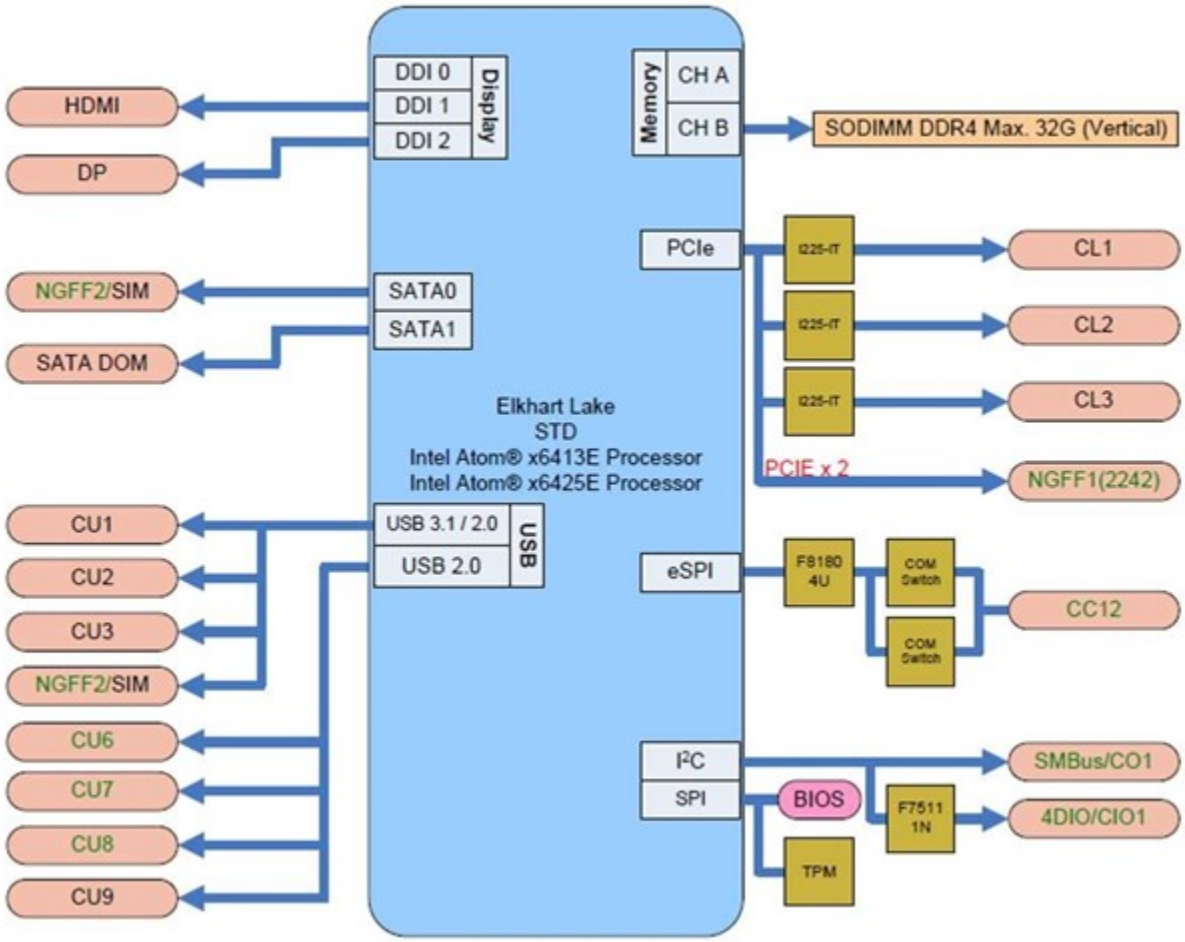
75

5.2 Mainboard Block Diagram

This block diagram describes the relationship among all interfaces and modules on the mainboard.



6 Power Supply

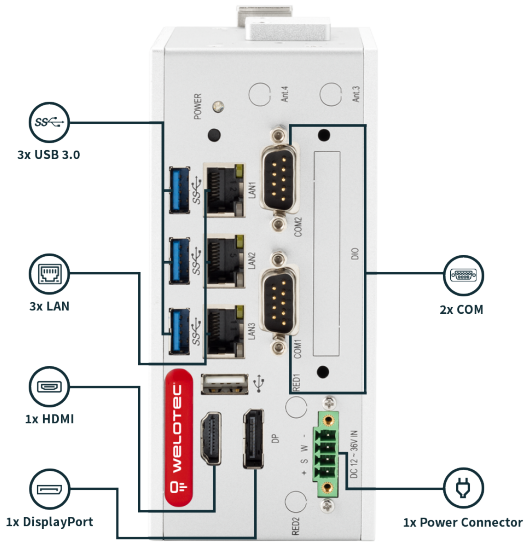
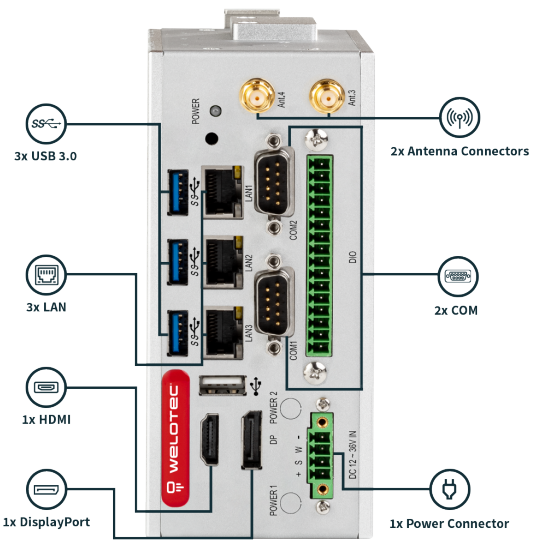
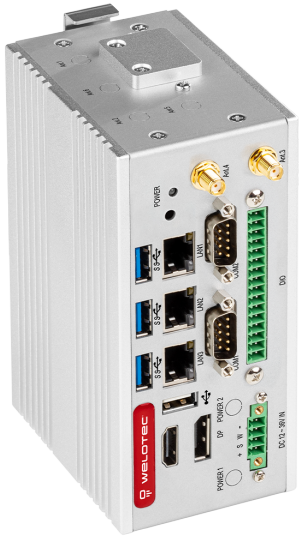
⚠ Please ensure no external voltage is applied to PSW! This could cause damage.

The Arrakis Mk4 can be powered using a **terminal block** or a **DC jack**, supporting a voltage range of **9–36V DC** for versatile connectivity.

Pin	Description
Pin 0 – VCC (left)	V+ (9–36V DC)
Pin 1 & 2 – PSW	External power switch
Pin 3 – GND (right)	Ground

7 Interfaces and Connections

7.1 Arrakis Mk4 Series

Arrakis Mk4	Arrakis Mk4 (with optional Radio Module)
	
	
	

7.2 Antenna Configurations

Interface	ANT1	ANT2	ANT3	ANT4	ANT5	ANT6
LTE			Diversity	Main	GNSS	
5G		Diversity*	Diversity	Main	GNSS	Diversity
WiFi	X	(X)*				

*with 5G Antenna allocation is dependent on customer requirements

8 Radio Modules (only relevant with optional LTE/WiFi Modules)

The Arrakis Mk4 may contain the following RF Modules:

- Quectel EM05-G
- Quectel RG255C-GL
- Sierra Wireless EM7590
- Sierra Wireless MC7430
- SparkLAN WZ-WNFQ-262ACNI(BT)
- SparkLAN WZ-WPET-236ACN(BT)

8.1 LTE

Quectel EM05-G	Supported Bands
LTE	FDD B1/ B2/ B3/ B4/ B5/ B7/ B8/ B12/ B13/ B14/ B18/ B19/ B20/ B25/ B26/ B28/ B66/ B71 TDD B38/ B39/ B40/ B41
WCDMA	B1/ B2/ B4/ B5/ B6/ B8/ B19

Quectel RG255C GL	Supported Bands
LTE	FDD B1/ B2/ B3/ B4/ B5/ B7/B8/ B12/ B13/ B14/ B17/ B18/ B19/ B20/ B25/ B26/ B28/ B30/ B66/ B70/ B71 TDD B34/ B38/ B39/ B40/ B41/ B42/ B43/ B48 DL 2x2 MIMO B1/ B2/ B3/ B4/ B5/ B7/ B12/ B13/ B14/ B17/ B18/ B19/ B20/ B25/ B26/ B28/ B30/ B34/ B38/ B39/ B40/ B41/ B42/ B43/ B48/ B66/ B71/ B71
5G	NR 3GPP Release 17 RedCap SA operation, Sub-6 GHzNRSA n1/ n2/ n3/ n5/ n7/ n8/ n12/ n13/ n14/ n18/ n20/ n25/ n26/ n28/ n30/ n38/ n40/ n41/ n48/ n66/ n70/ n71/ n77/ n78/ n79 DL 2x2 MIMO n1/ n2/ n3/ n5/ n7/ n8/ n12/ n13/ n14/ n18/ n20/ n25/ n26/ n28/ n30/ n38/ n40/ n41/ n48/ n66/ n70/ n71/ n77/ n78/ n79

Sierra Wireless EM7590	Supported Bands
LTE	FDD B1/ B2/ B3/ B4/ B5/ B7/ B8/ B12/ B13/ B14/ B18/ B19/ B20/ B25/ B26/ B28 B29/ B32/ B66 /B71 TDD B38/ B39/ B40/ B41 B42/ B43/ B48
WCDMA	B1/ B2/ B4/ B5/ B6/ B8/ B9/ B19

Sierra Wireless MC7430	Supported Bands
LTE	FDD B1/ B3/ B5/ B7/ B8/ B18/ B19/ B21/ B28TDD B38/ B39/ B40/ B41
WCDMA	B1/ B5/ B6/ B8/ B9/ B19
TD-SCDMA	B39

8.2 WiFi

8.2.1 SparkLAN WZ-WNFQ-262ACNI(BT)

WiFi Output Power & Sensitivity

IEEE Standard	Data Rate	Tx ± 2dBm	Rx Sensitivity
802.11b	11Mbps	18dBm	-85dBm
802.11g	54Mbps	14,5dBm	-71dBm
802.11n / 2.4GHz (HT20)	MCS7	14dBm (1TX)17dBm (2TX)	-67dBm
802.11n / 2.4GHz (HT40)	MCS7	13.5dBm (1TX)16.5dBm (2TX)	-65dBm
802.11a	54Mbps	14dBm	-75dBm
802.11n / 5GHz (HT20)	MCS7	13dBm (1TX)16dBm (2TX)	-71dBm
802.11n / 5GHz (HT40)	MCS7	13dBm (1TX)16dBm (2TX)	-67dBm
802.11ac (VHT80)	MCS9	11dBm (1TX)14dBm (2TX)	-57dBm

8.2.2 SparkLAN WPET-236ACN(BT)

WiFi Output Power & Sensitivity

IEEE Standard	Data Rate	Tx ± 2dBm	Rx Sensitivity
802.11b	11Mbps	15dBm	-80dBm
802.11g	54Mbps	14dBm	-70dBm
802.11n / 2.4GHz (HT20)	MCS7	13dBm (1TX)16dBm (2TX)	-61dBm
802.11n / 2.4GHz (HT40)	MCS7	13dBm (1TX)16dBm (2TX)	-61dBm
802.11a	54Mbps	13dBm	-70dBm
802.11n / 5GHz (HT20)	MCS7	12dBm (1TX)15dBm (2TX)	-60dBm
802.11n / 5GHz (HT40)	MCS7	12dBm (1TX)15dBm (2TX)	-60dBm
802.11ac (VHT80)	MCS9	9dBm (1TX)12dBm (2TX)	-51dBm
Bluetooth	3Mbps	0 Output Power 4 dBm	<0,1%BER at -70dBm>

Notes

- **Down/RX:** Refers to the downlink frequency range.
- **Up/TX:** Refers to the uplink frequency range.
- **Max Transmission Power:** Maximum power at which the device transmits.

9 BIOS

9.1 Introduction

The BIOS (Basic Input/Output System) resides in the Flash Memory on your motherboard, serving as the essential link between hardware and the operating system. When the computer starts, the BIOS takes control, performing the POST (Power-On Self Test) to verify the functionality of hardware components. After detecting and configuring hardware parameters, the BIOS hands over control to the operating system. As the central communication channel between hardware and software, the BIOS ensures system stability and peak performance.

In the BIOS setup menu, various configuration options are available. Below are the navigation keys for modifying these settings:

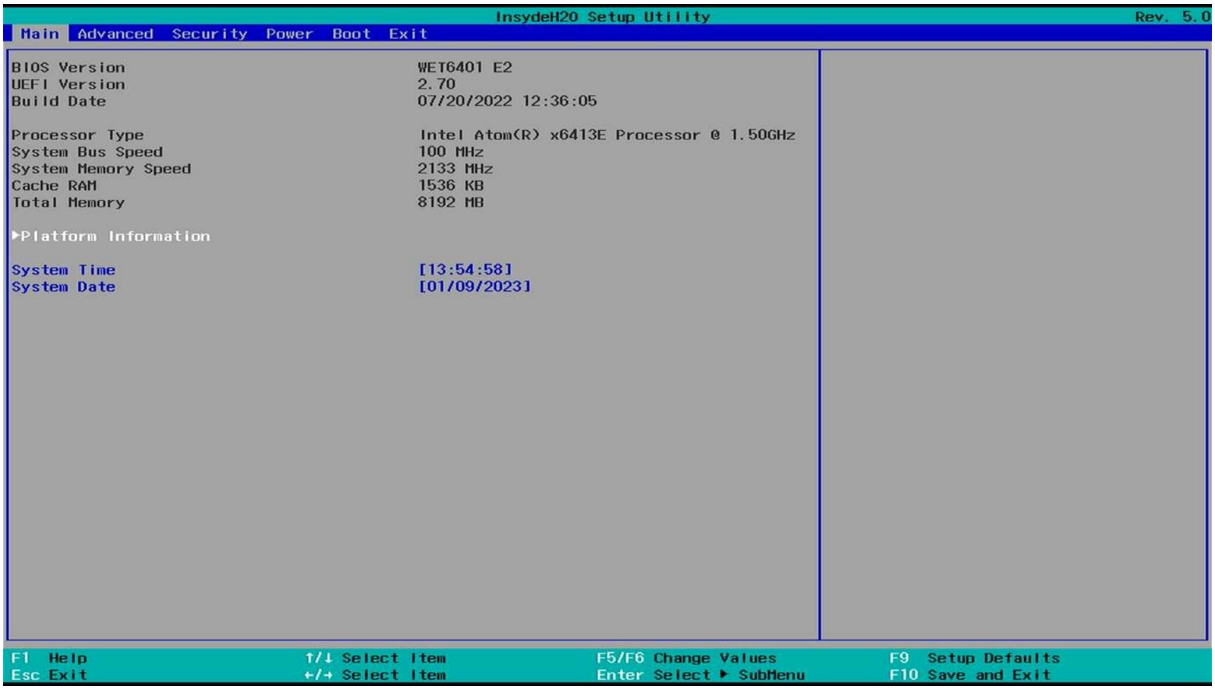
- **Esc:** Exit the BIOS Setup.
- **Arrow keys (↑↓←→):** Navigate through options.
- **F10:** Save changes and exit the setup.
- **Page Up/Page Down or +/-:** Modify values for the selected option.

9.2 Accessing BIOS

To enter the BIOS Setup:

1. Power on the system and press the `Del` key immediately.
2. If you miss the initial prompt, restart the system by turning it off and back on, or use `Ctrl` + `Alt` + `Delete` for a soft reboot.

9.3 BIOS Menu and Function Keys



The BIOS menu is organized into multiple tabs, each offering distinct configuration options. Use the following keys to navigate and modify settings:

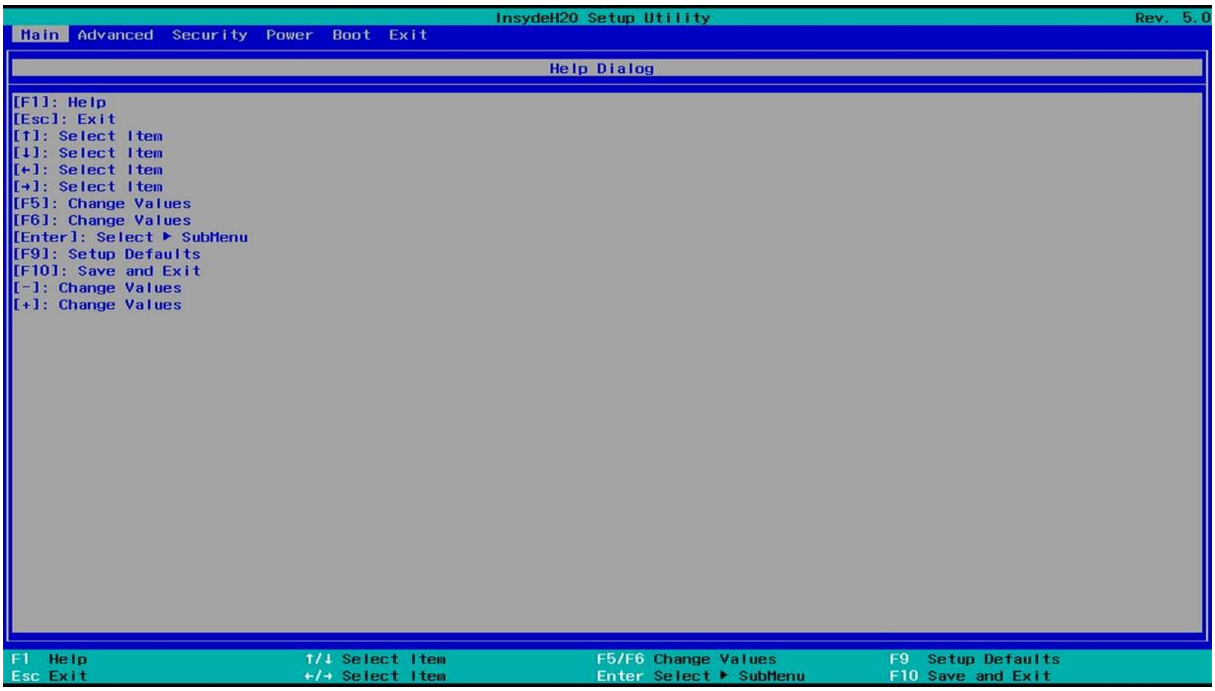
- **Navigation:**
  - Use ← and → to switch between tabs.
  - Use ↑ and ↓ to highlight menu options.
- **Selection and Modification:**
  - Press `Enter` to select options for editing.
  - Adjust values using + or − keys.
- **Shortcut Keys:**
  - `F1`: Displays general help.
  - `F2`: Restores the previous value.
  - `F3`: Loads optimized default settings.
  - `F4`: Saves changes and resets the system.
  - `Esc`: Exits the BIOS Setup.

9.3.1 Menu Tabs Overview

- **Main:** Adjust basic system settings.
- **Advanced:** Configure advanced system options.
- **Security:** Set BIOS passwords for added security.
- **Power:** Manage ACPI and wake device settings.
- **Boot:** Control boot sequence and related settings.
- **Exit:** Save, discard, or restore default settings before exiting.

The selected menu is highlighted for clarity.

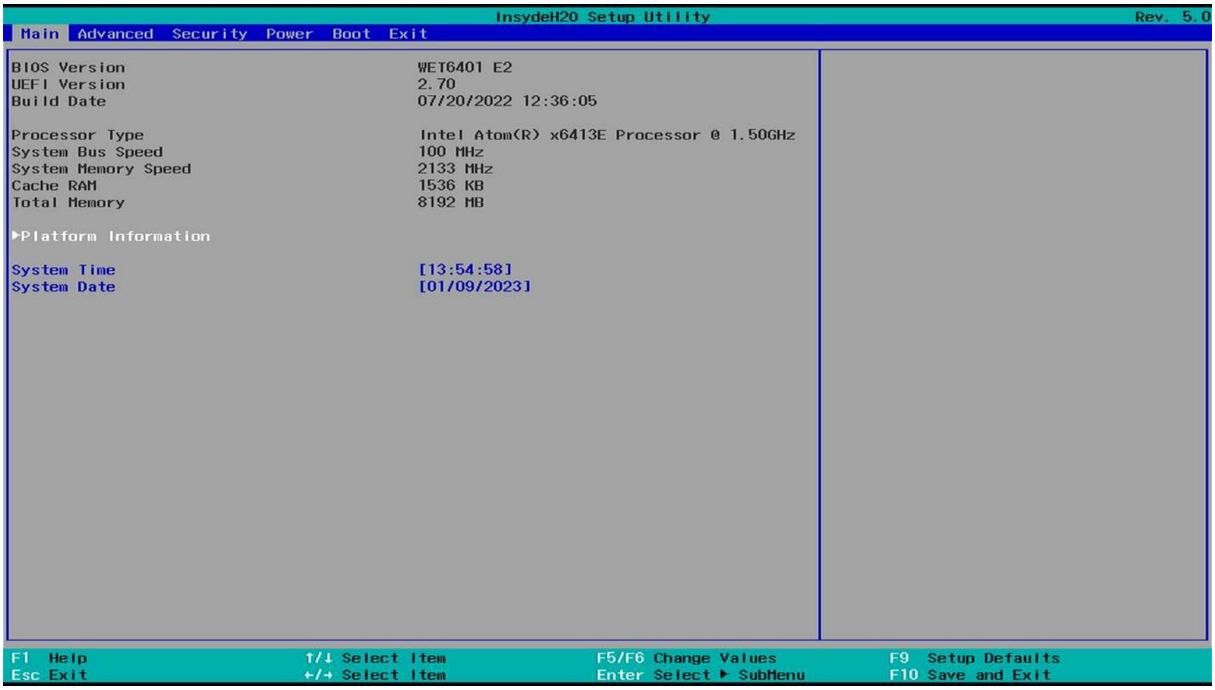
9.4 BIOS Help



For assistance with BIOS settings, press `F1`. This displays a detailed help window with information about the highlighted option, the available settings, and navigation tips. Press `Esc` to close the Help window.

9.5 Menu Options

9.5.1 Main Menu

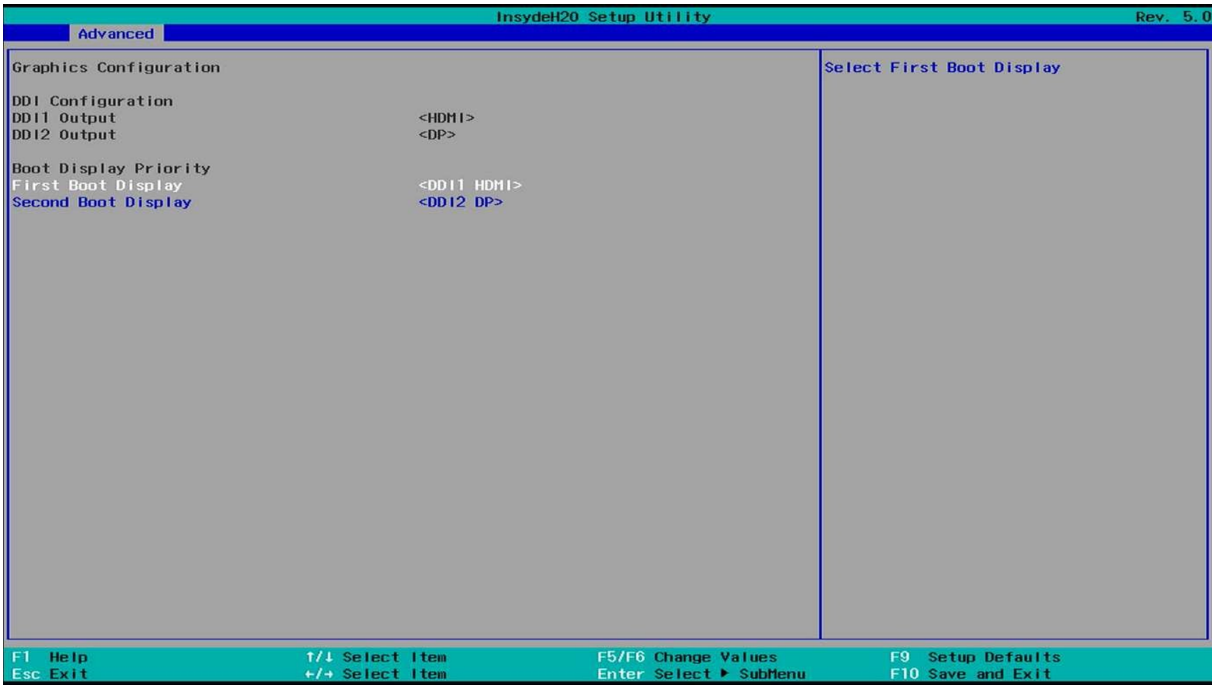


The **Main** tab displays basic system information and allows you to adjust key settings:

- **System Date:** Set the system's date. Use the `Tab` key to switch between day, month, and year fields.
- **System Time:** Adjust the system clock. Use `Tab` to navigate between hour, minute, and second fields.

9.6 Advanced BIOS Settings

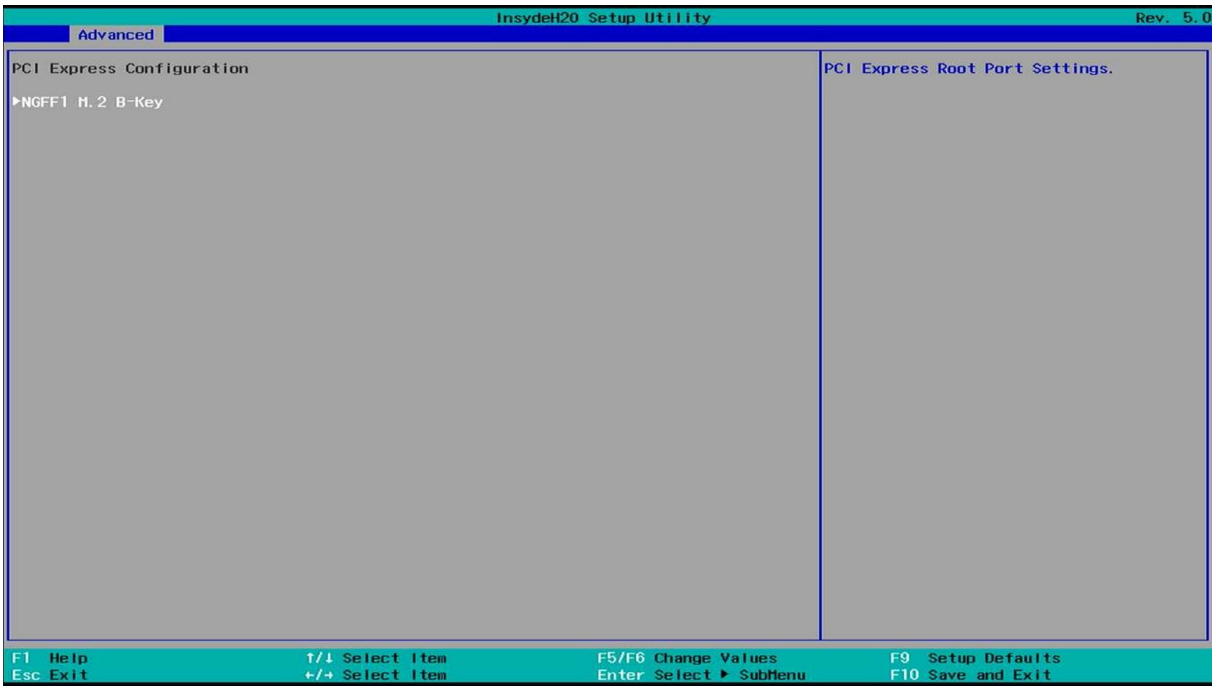
9.6.1 Graphics Configuration



Manage display settings to optimize the graphics output:

- **First Boot Display:** Select the primary display for boot. Options include eDP, DDI1 HDMI, DDI2 HDMI (default is HDMI).
- **Second Boot Display:** Set the secondary display priority. Options include DDI1 HDMI, DDI2 HDMI (default is DP).

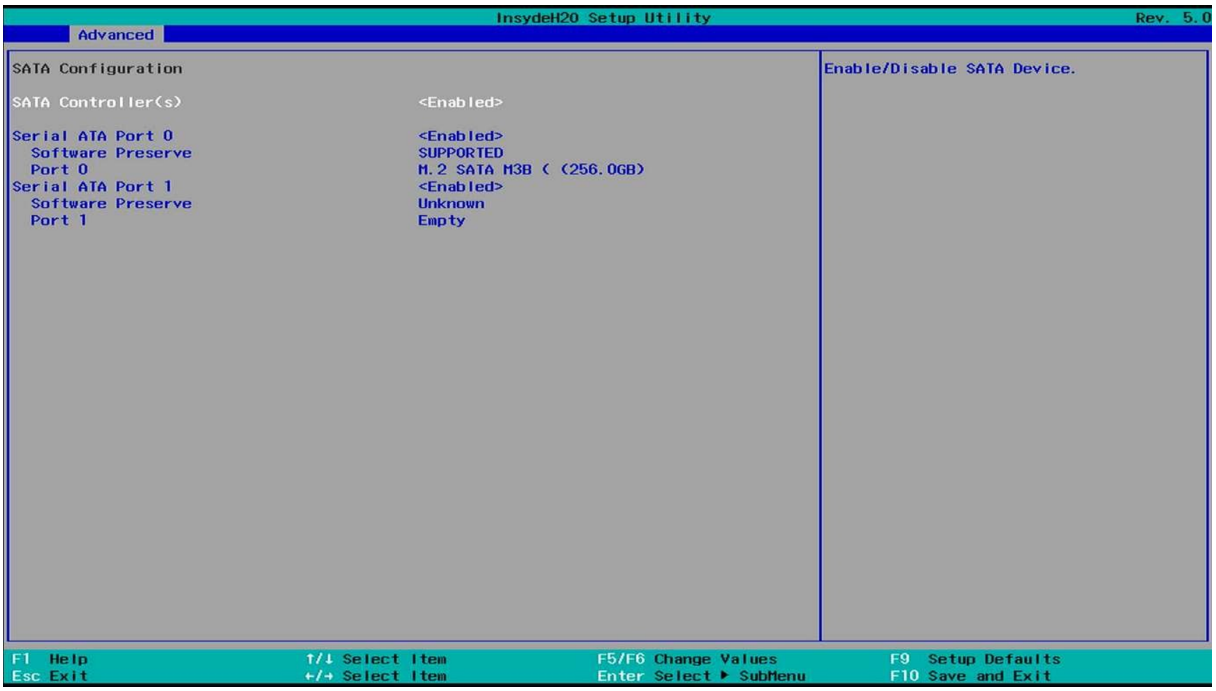
9.6.2 PCI Express Configuration



Control the functionality of PCI Express slots:

- **PCIe Slots:** Enable or disable specific PCI Express slots.
- **Speed Settings:** Configure the PCIe slot speed. Available options include Auto, Gen1, Gen2, and Gen3.

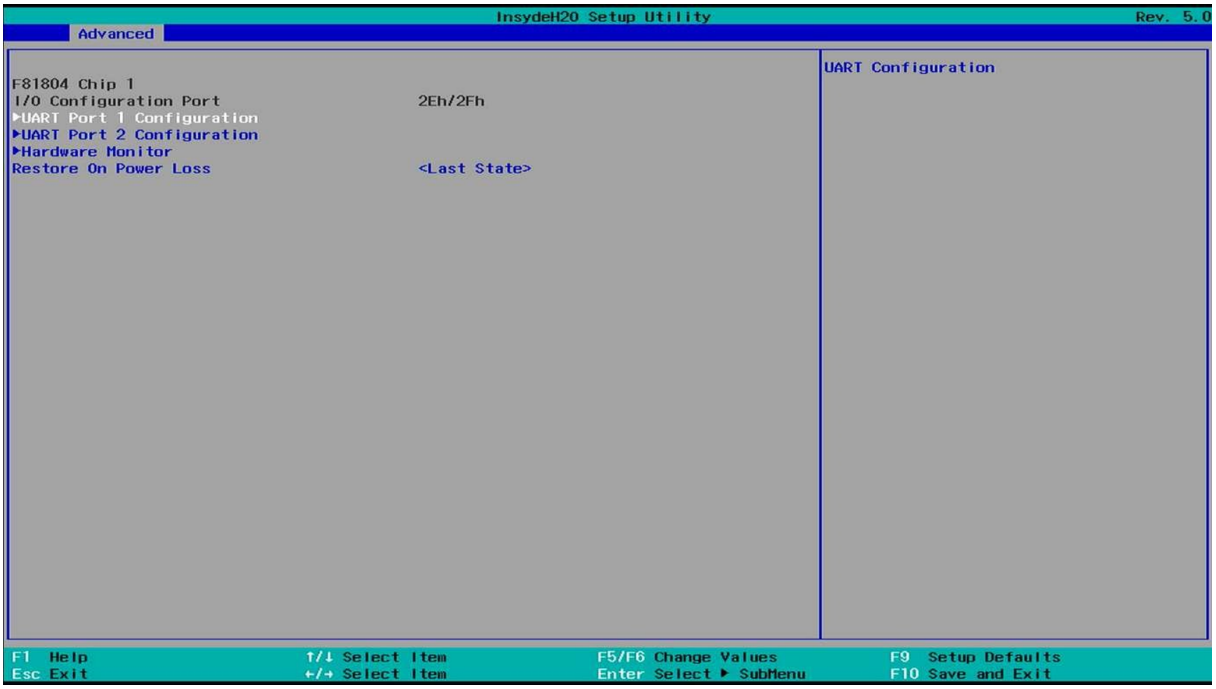
9.6.3 SATA Drives Configuration



Enable or disable SATA interfaces and manage connected drives:

- **SATA1 & NGFF1 M.2 Devices:** Toggle the activation of these interfaces for connected storage devices.

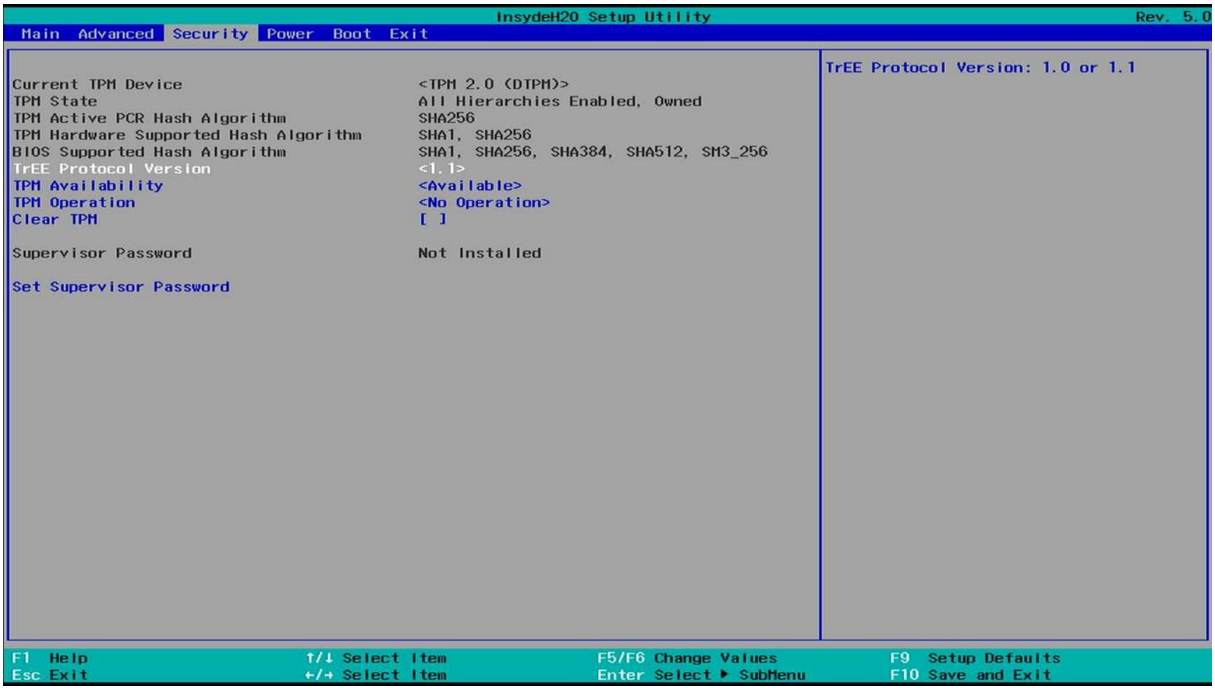
9.6.4 SIO Configuration (FINETEK 81804)



Configure serial ports and system recovery settings:

- **Serial Ports 1/2:** Enable or disable COM1 and COM2 ports. Default is Enabled.
- **Base I/O Address / Interrupt:** Set custom I/O addresses and IRQs:
  - Default for COM1: `IO=3F8h; IRQ=4`
  - Default for COM2: `IO=2F8h; IRQ=3`
- **Restore on Power Loss:**
  - **Last State** (default): Restores the previous system state after power is restored.
  - **Always On:** The system powers on automatically.
  - **Always Off:** The system remains off after power loss.

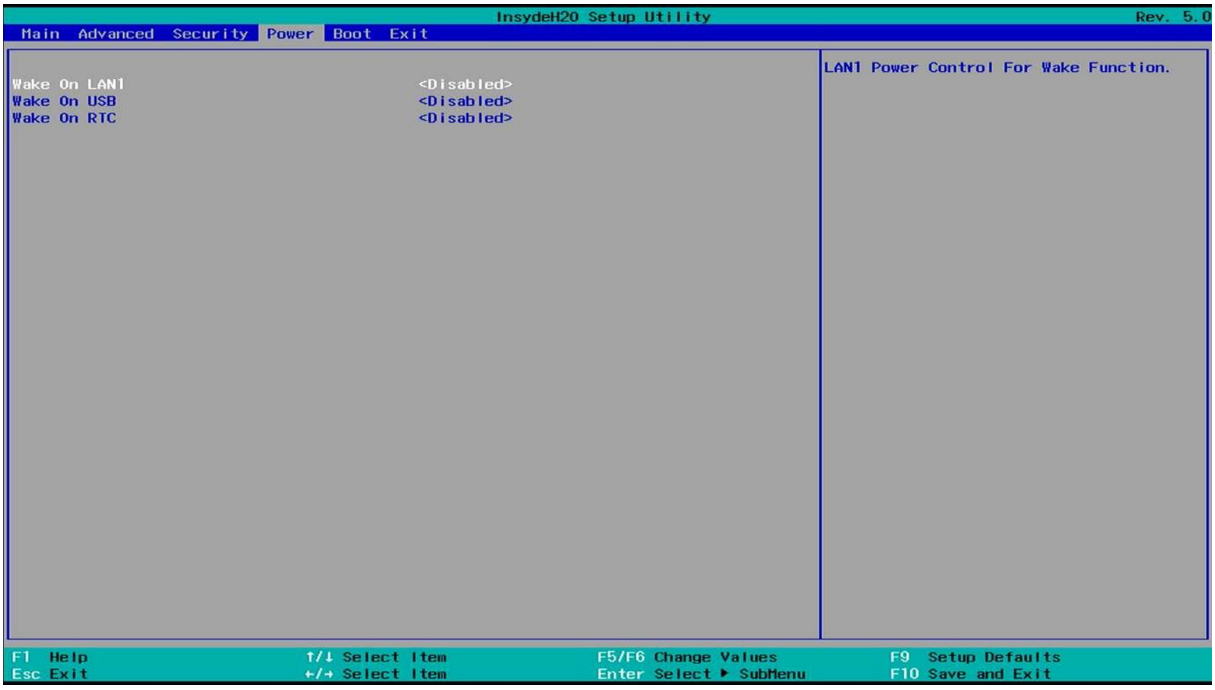
9.7 Security Settings



Set up passwords to protect BIOS access:

- **Supervisor Password:** Create or modify a password:
  1. Select “Supervisor Password.”
  2. Enter a password (3–10 characters).
  3. Press `Enter` to confirm.

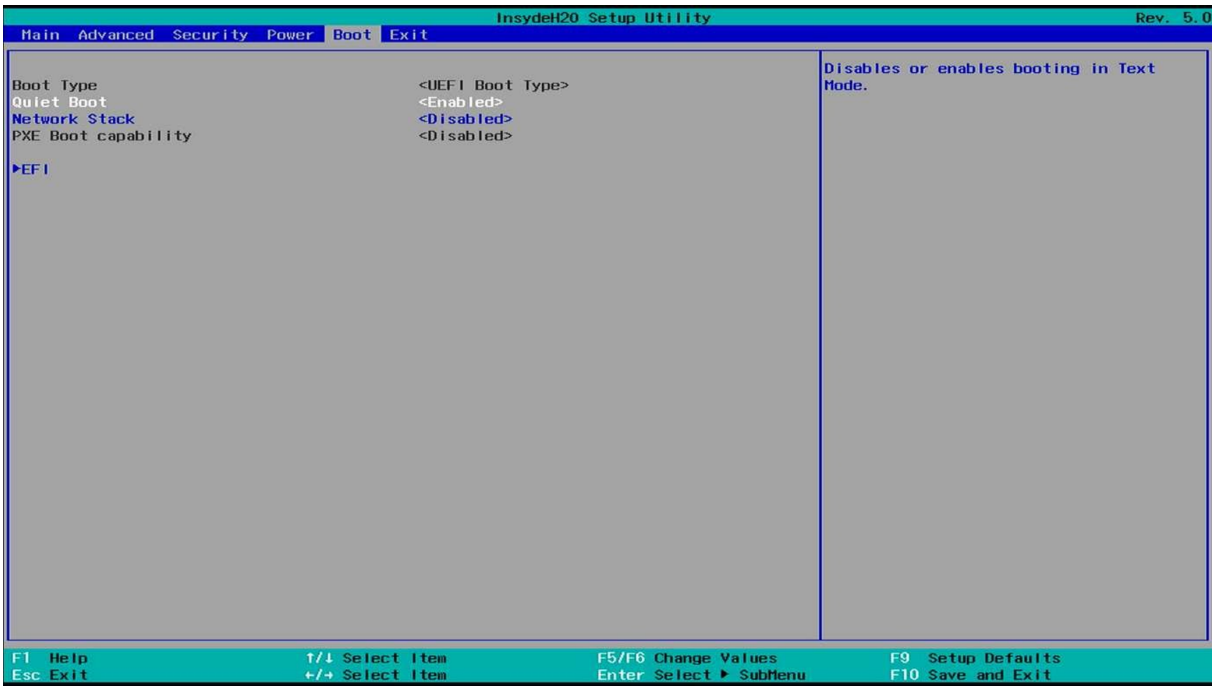
9.8 Power Management



Configure power-related settings:

- **Wake on LAN:** Enable the system to wake from S3/S5 states via LAN. Options include S3, S5, S3/S5, and Disabled (default).
- **ACPI S3:** Enable or disable the ACPI S3 sleep state. Default is Disabled.

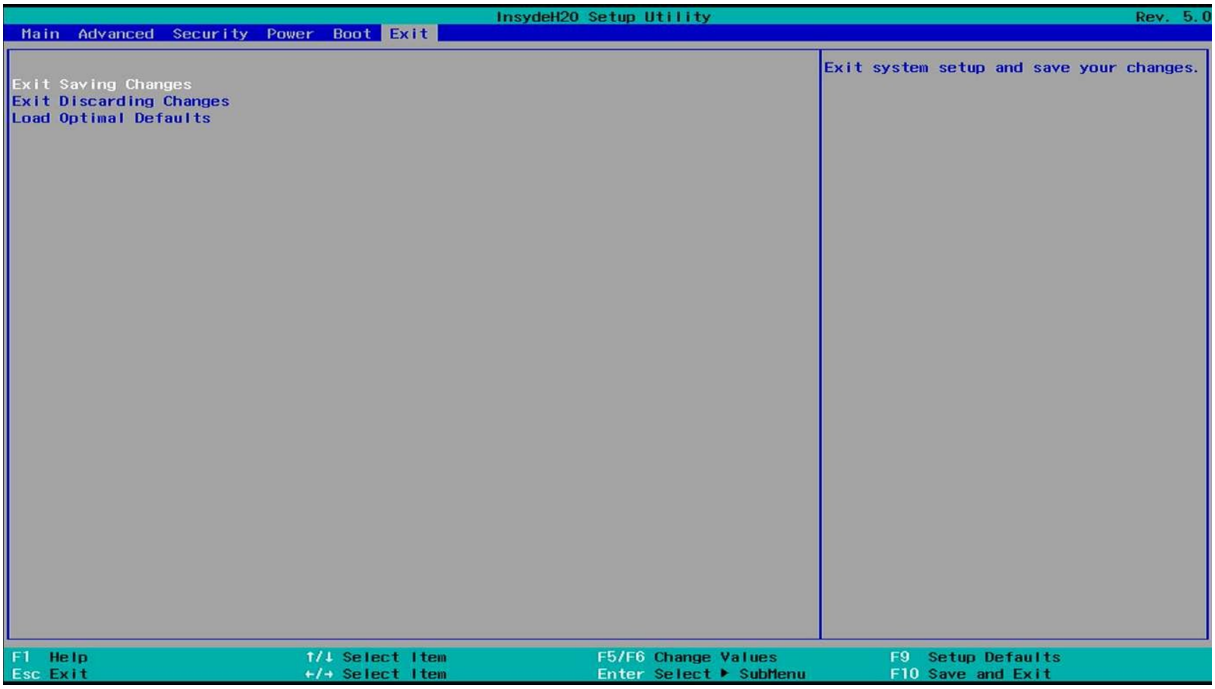
9.9 Boot Settings



Manage system boot priorities and behavior:

- **Boot Type:** Supports UEFI Boot only.
- **Quiet Boot:** Choose whether to display boot messages (`Enabled` by default).
- **PXE Boot Capability:** Select the network protocol for PXE boot:
  - Disabled (default), UEFI IPv4, UEFI IPv6.
- **EFI Boot Priority:** Specify the EFI storage device to boot from, displayed only if EFI is detected.

9.10 Exit Options



Choose how to save or discard changes made in the BIOS:

- **Exit Saving Changes:** Save all changes and reboot the system.
- **Save Changes Without Exit:** Save changes but remain in the BIOS.
- **Exit Discarding Changes:** Reboot the system without saving changes.
- **Load Optimal Defaults:** Restore factory default settings.
- **Discard Changes:** Cancel all unsaved changes.

10 Driver Installation

The Arrakis Mk4 is usually shipped with an Operating System preinstalled (recommended)

In case you have chosen to purchase an Arrakis Mk4 without preinstalled operating system or need to reinstall, you can download all available System drivers from this address:

To Install the Drivers, please execute the driver installation programs according to the on-screen instructions.

11 Appendix A: Power Consumption

11.1 System Specifications

Component	Details
CPU	Intel® Atom® x6413E
RAM	DDR4 8GB, 2400MHz
Operating System	Windows 10 IoT 2019 LTSC
Test Program	PassMark® Performance Test
Storage (NVMe)	64GB

Note: Specifications are for reference purposes only and may vary based on system configuration.

11.2 Power Consumption Data

Voltage	Power Off	Startup (Max)	Startup (Stable)	Burn-in (Max)	Shutdown
12V	0.14A	0.95A	0.62A	1.10A	0.82A
24V	0.09A	0.50A	0.32A	0.57A	0.42A

Note: Power consumption varies based on hardware configuration, connected peripherals, and software applications.

12 Appendix B: F75111N DIO & Watchdog Device

The Arrakis Mk4 system provides optional DIO (Digital Input/Output) ports. This appendix explains the programming of these features, focusing on the Watchdog Timer under DOS.

12.1 Watchdog Timer Setup for DOS

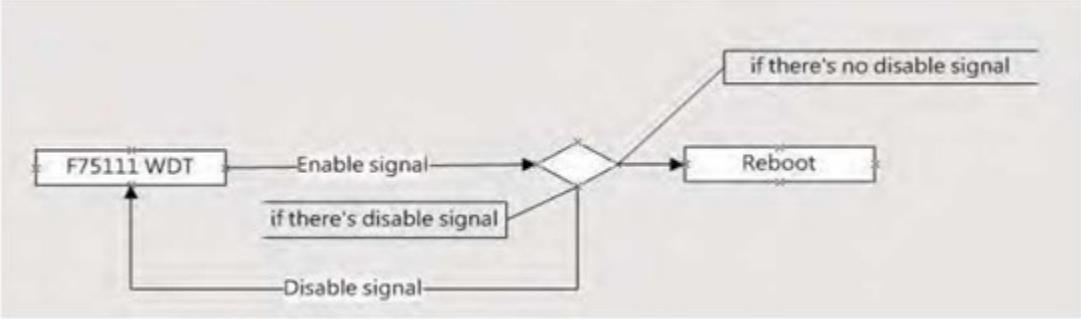
You can access the necessary source and binary files here.

- **Source file:** `F75111_Dos_Src.rar`
- **Binary file:** `F75111_Dos_Bin.rar`

12.1.1 Using the Demo Application

To use the Watchdog Timer demo application, follow these steps:

1. Boot the system into the MS-DOS operating system.
2. Locate and run the `75WDT.EXE` binary file.
3. When prompted:
   - Input `1` to enable the Watchdog Timer.
   - Input `0` to disable it.
4. Enter the desired countdown duration (in seconds) for the timer. When the countdown completes, the system will reset automatically.



12.1.2 Introduction

Using the Watchdog Timer Demo

```
WriteI2CByte(I2CADDR, CONFIG, 0x03);  // Set Watch Dog Timer function
WriteI2CByte(I2CADDR, WDT_TIMER, timer);  // Set Watch Dog Timer range (0-255)
WriteI2CByte(I2CADDR, WDT_TIMER_CTL, 0x73);  // Enable Watch Dog Timer in seconds and pulse mode
```

Alternatively:

```
WriteI2CByte(I2CADDR, WDT_TIMER_CTL, 0x00);
```

Pause Function Example

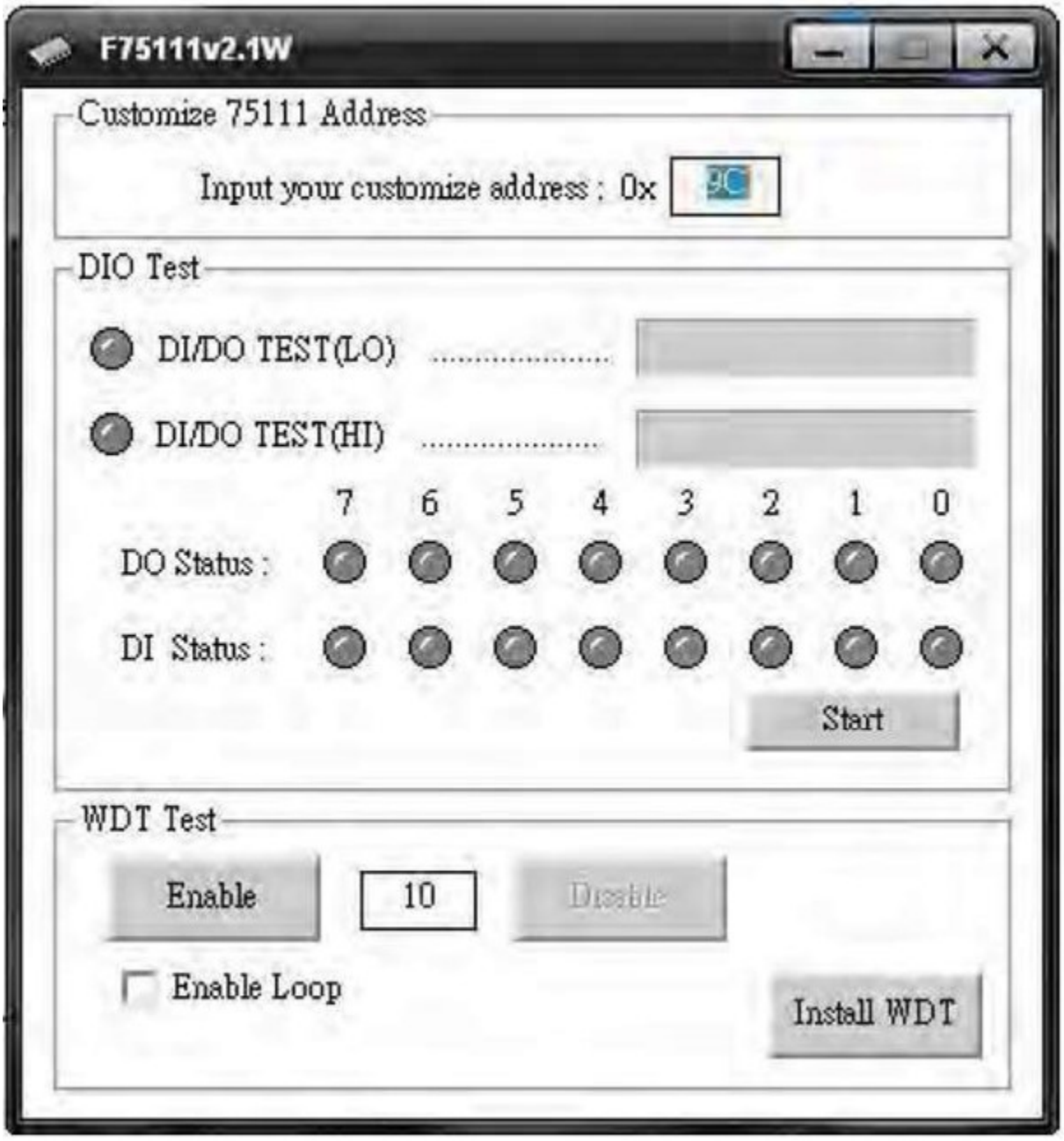
```
void pause(int time) {
    asm mov ah,0h; // Read system time counter
    asm int 1ah;
    asm add dx,time;
    asm mov bx,dx;
label:
    asm int 1ah;
    asm cmp bx,dx;
    asm jne label;
}
```

12.2 Watchdog Timer and DIO under Windows

You can access the necessary source and binary files here.

- **Source file:** `F75111_DIOSrc.rar`
- **Binary file:** `F75111_DemoBin.rar`

12.2.1 How to Use the Demo Application



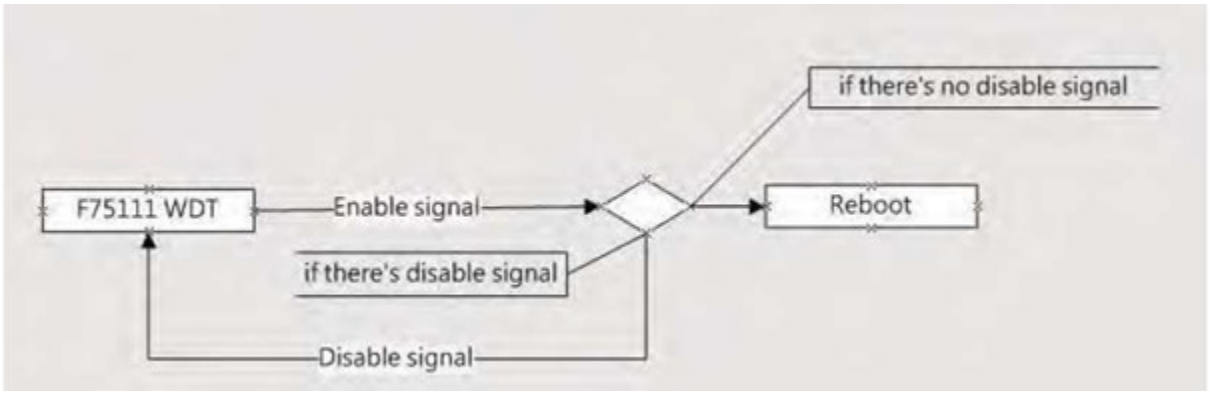
12.2.2 Using the Demo Application

Follow these steps to operate the DIO and Watchdog Timer (WDT) functions:

1. **Test the DIO Function:**
   - Press **Start** to begin testing the DIO functionality.
2. **Enable the Watchdog Timer:**
   - Press **Enable** to activate the Watchdog Timer (WDT).
3. **Disable the Watchdog Timer:**
   - Press **Disable** to deactivate the WDT.

4. **Perform a WDT Loop Test:**
   - Check the **Enable Loop** box, then press **Enable** to initiate a loop test for the WDT.
5. **Configure Autorun for the Application:**
   - Use **Install WDT** to set up the application to automatically run at system startup.
   - Press **Install WDT** again to remove the autorun configuration.

When the Watchdog Timer is active, the following icon will be displayed on the system:



12.2.3 Introduction

Watchdog Timer (WDT) Signal Handling

To enable the Watchdog Timer (WDT), use the following function:

```
F75111_SetWDTEnable(BYTE byteTimer);
// If no disable signal (F75111_SetWDTDisable()) is received before the timer countdown reaches 0,␣
↪the system reboots.
```

Initial Port Address Configuration

The initial internal port address for the F75111 device is `0x9C`.
Use this address to define GPIO pins for input/output operations and to enable the WDT function pin.

Setting Digital Output Value: Sample Code

```
void F75111::InterDigitalOutput(BYTE byteValue) {
    BYTE byteData = 0;
    byteData = (byteData & 0x01) ? byteValue + 0x01 : byteValue;
    // Additional bitmask adjustments can be applied here.
    this->Write_Byte(F75111_INTERNAL_ADDR, GPIO2X_OUTPUT_DATA, byteData);
}
```

Getting Digital Input Value: Sample Code

```
BYTE F75111::InterDigitalInput() {
    BYTE byteGPIO1X = 0, byteGPIO3X = 0, byteData = 0;
    this->Read_Byte(F75111_INTERNAL_ADDR, GPIO1X_INPUT_DATA, &byteGPIO1X);
    this->Read_Byte(F75111_INTERNAL_ADDR, GPIO3X_INPUT_DATA, &byteGPIO3X);
    // Adjustments to GPIO values can be made here before returning byteData.
    return byteData;
}
```

Enabling/Disabling WDT: Sample Code

- **Enable WDT**

```
void F75111_SetWDTEnable(BYTE byteTimer) {
    WriteByte(F75111_INTERNAL_ADDR, WDT_TIMER_RANGE, byteTimer);
    WriteByte(F75111_INTERNAL_ADDR, WDT_CONFIGURATION, WDT_TIMEOUT_FLAG | WDT_ENABLE | WDT_PULSE |␣
↪WDT_PSWIDTH_100MS);
}
```

- **Disable WDT**

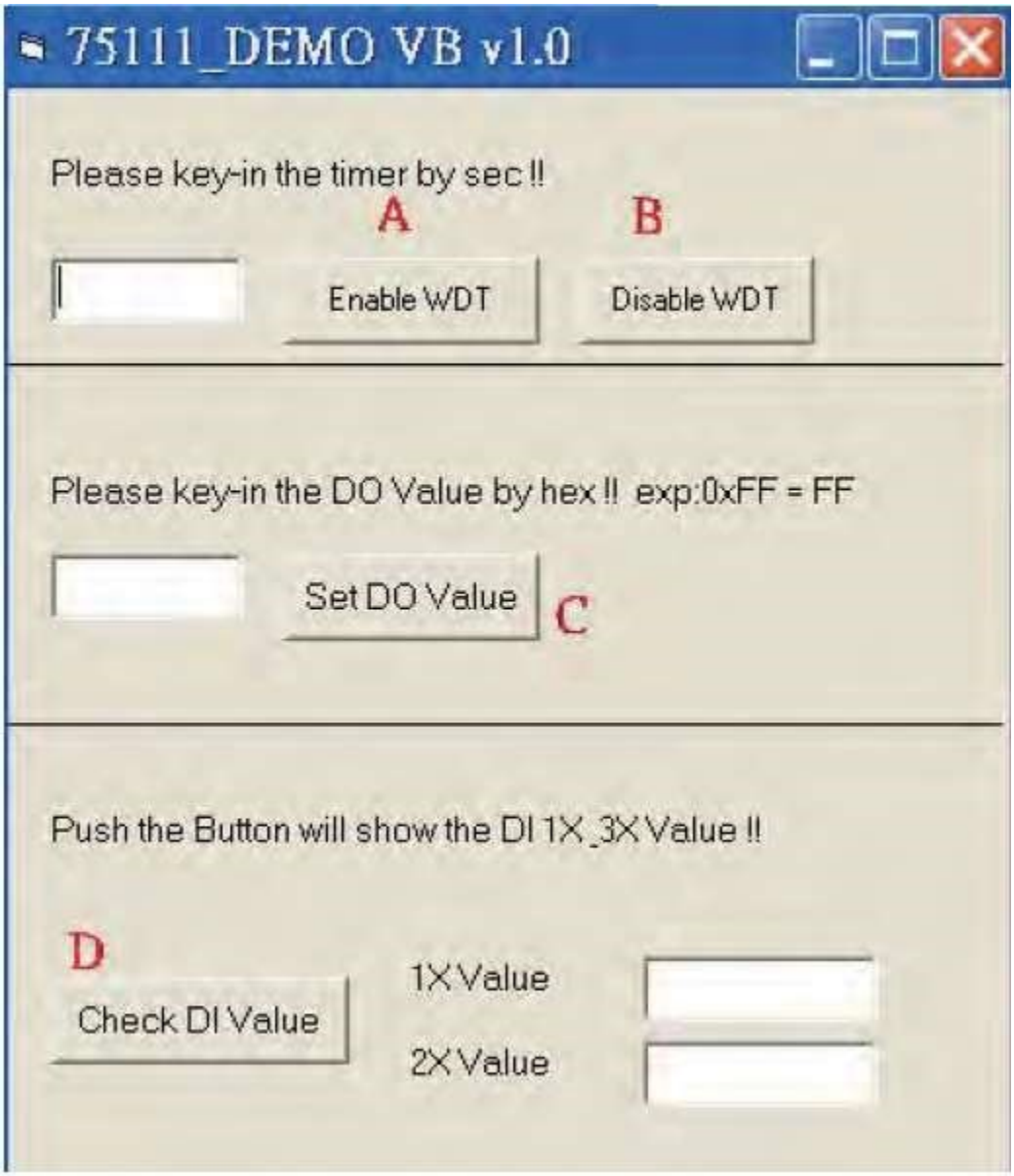
```
void F75111_SetWDTDisable() {
    WriteByte(F75111_INTERNAL_ADDR, WDT_CONFIGURATION, 0x00);
}
```

12.3 IO Device: F75111 in VB6 on Windows

You can access the necessary source and binary files here.

- **Source File:** `75111_VB_v10.rar`
- **Binary File:** `75111_VB_Src.rar`

12.3.1 Using the Demo Application



1. **Enable the WDT Timer:** Enter the countdown value (in seconds) in the left text box, then press **Enable**.
2. **Disable the WDT Timer:** Press the corresponding **Disable** button to stop the timer.
3. **Set Digital Output (DO) Value:** Input the desired hexadecimal value and press the corresponding button.
4. **Check Digital Input (DI) Value:** Press the button to display DI 1X & 2X values in the right text boxes.

12.4 Watchdog Timer and DIO in Linux

You can access the necessary source and binary files here.

- **Source File:** `F75111v2.0L.tar.gz`
- **Binary File:** `F75111v2.0LBin.tar.gz`

12.4.1 Compiling the Source Code

1. **Using Code::Blocks:**
   - Install Code::Blocks using `apt-get install codeblocks`.
   - Open the existing project file (`F75111.cbp`) and compile it.
   - Add the following linker option:
     `pkg-config --libs gtk+-2.0 gthread-2.0`
     Navigate to **Project -> Build Option -> Linker Settings -> Other Linker Options** to set this.
2. **Using Make:**

```
cd F75111
make
./src/f75111  # Run the compiled binary
```

12.4.2 Using the Demo Application

1. **Start DIO Testing:** Press **Start** to begin testing the DIO function.
2. **Enable the WDT:** Press **Enable** to activate the Watchdog Timer.
3. **Disable the WDT:** Press **Disable** to deactivate the Watchdog Timer.
4. **Perform a WDT Loop Test:** Check the **Enable Loop** box and press **Enable** to initiate loop testing.
5. **Configure Autorun:**

- Use **Install** to set up the application to run automatically at system startup.
- Use **Uninstall** to remove the autorun configuration.

When active, the system icon will blink: