Features

- 5051 Aluminum Alloy Box with Protective Coating and a 6016-T6 Aluminum Alloy Base
- Freescale® i.MX 6S Industrial Processor @ 800MHz
- Single ARM Cortex™-A9 CPU
- 1GB of Soldered DDR3 RAM
- High-Performance Video and Graphics
  - HD1080p, 3D, and 2D HW Accelerators
- Multiple Video Interfaces
  - HDMI 1.4 and Two Channel LVDS
  - MIPI Capture and Display and CMOS Camera Input
- Gigabit Ethernet (GbE) with IEEE-1588™
- Two USB 2.0 Ports and One USB On-The-Go Port
- Two CAN Ports
- Two RS-232/422/485 Serial Ports up to 1Mbps
- Three RS-422/485 Serial Ports up to 5Mbps
- 24 Lines GPIO Tolerant up to 30VDC
- HDMI and Stereo Audio
- CF AST, SD, and MicroSD Sockets
- Mini-Pcle and IO60 Expansion
- Powered by PoE or 10-50VDC Input
- Fanless -40° to +85°C Operation

Product Description

WinSystems’ SYS-398S single-core enclosed single board computer combines high performance multimedia graphics with a rich mixture of Industrial I/O. The Freescale i.MX 6S processor’s integrated power management provides excellent efficiency and allows operation from -40°C to +85°C without active cooling. It is designed for demanding graphics applications in security, transportation, medical, and digital signage.

The low power, high-performance of ARM cores coupled with readily available software tools make them an excellent choice for embedded systems. Leveraging Freescale’s proven track record in long term product support with the operating system and application development driven by consumer ARM devices, the SYS-398S is ideal for off-the-shelf industrial designs.

Enclosed in a custom anodized aluminum enclosure for added protection, the SYS-398S is durable and ready for the most rugged environments.

The SYS-398S series also introduces the IO60 expansion connector to allow for additional functionality. The IO60 specification supports I2C, SPI, TTL-UART, and PWM signals, allowing stackable expansion through off-the-shelf or application specific designed modules. When coupled with the Mini-Pcle socket, the SYS-398S is one of the most expanable ARM designs currently on the market.

WinSystems reserves the right to make changes to products and/or documentation without further notification. Product names of other companies may be trademarks of their respective companies.
## SYS-398S
Single-Core ARM® Industrial Computer with i.MX 6S Processor in Alluminum Enclosure

<table>
<thead>
<tr>
<th>Model</th>
<th>SYS-398Q-2G-0</th>
<th>SYS-398D-2G-0</th>
<th>SYS-398S-1G-0</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Processor</strong></td>
<td>Freescale i.MX 6Q</td>
<td>Freescale i.MX 6DL</td>
<td>Freescale i.MX 6S</td>
</tr>
<tr>
<td><strong>Cores</strong></td>
<td>4x ARM Cortex A9</td>
<td>2x ARM Cortex A9</td>
<td>ARM Cortex A9</td>
</tr>
<tr>
<td><strong>Frequency</strong></td>
<td>800MHz</td>
<td>800MHz</td>
<td>800MHz</td>
</tr>
<tr>
<td><strong>Cache</strong></td>
<td>32KB/32KB L1, 1MB, L2</td>
<td>32KB/32KB L1, 512KB L2</td>
<td>32KB/32KB L1, 512KB L2</td>
</tr>
<tr>
<td><strong>Memory</strong></td>
<td>2GB 64bit DDR3 256KB</td>
<td>2GB 64bit DDR3 128KB</td>
<td>1GB 32bit DDR3 128KB</td>
</tr>
</tbody>
</table>

### Hardware Display

<table>
<thead>
<tr>
<th>Accelerators</th>
<th>NEON Media Processor Engine</th>
<th>NEON Media Processor Engine</th>
<th>NEON Media Processor Engine</th>
</tr>
</thead>
<tbody>
<tr>
<td>3D Graphics Core</td>
<td>Open GL ES 3.0, Open CL</td>
<td>Open GL ES 3.0, Open CL</td>
<td>Open GL ES 3.0, Open CL</td>
</tr>
<tr>
<td>2D Graphics Core</td>
<td>Dual BitBit</td>
<td>Dual BitBit</td>
<td>Dual BitBit</td>
</tr>
<tr>
<td>Vector Graphics Core</td>
<td>OpenVG 1.1</td>
<td>OpenVG 1.1</td>
<td>OpenVG 1.1</td>
</tr>
</tbody>
</table>

### Video Interfaces

| HDMI 1.4 Type A | Up to Four Active Displays | Up to Two Active Displays | Up to Two Active Displays |
| MIPI/DSI | HD1080p60 2x(2048x1536 or 2x(1280x720) Capture + Display | HD1080p30 2x(1366x768) | HD1080p30 2x(1366x768) |

### MIPI

- Display Port + Camera Input

### Camera Interface

- CMOS 8 bit
- CMOS 8 bit
- CMOS 8 bit

### Ethernet

- 1Gbps Wake on LAN IEEE 1588
- 1Gbps Wake on LAN IEEE 1588
- 1Gbps Wake on LAN IEEE 1588

### Serial

<table>
<thead>
<tr>
<th>RS-232/422/485</th>
<th>2x up to 1Mbps</th>
<th>1x up to 1Mbps</th>
<th>1x up to 1Mbps</th>
</tr>
</thead>
<tbody>
<tr>
<td>RS-422/485</td>
<td>3x up to 5Mbps</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### CAN Ports

- Two
- Two
- Two

### USB Ports with Over-Current Protection

- 6xUSB 2.0 + On The Go
- 6xUSB 2.0 + On The Go
- 2xUSB 2.0 + On The Go

### Audio Interfaces

- HDMI + Line In/Out, Mic, Head
- HDMI + Line In/Out, Mic, Head
- HDMI + Line In/Out, Mic, Head

### General Purpose I/O

- 24 Lines Tolerant to 30V
- 24 Lines Tolerant to 30V
- 24 Lines Tolerant to 30V

### Mass Storage

- CFast +SD/SDIO + MicroSD
- SD/SDIO + MicroSD
- SD/SDIO + MicroSD

### Expansion Bus Connectors

<table>
<thead>
<tr>
<th>Mini PCIe</th>
<th>One Half Size I2C, SPI, TTL &amp; PWM</th>
<th>One Half Size I2C, SPI, TTL &amp; PWM</th>
<th>One Half Size I2C, SPI, TTL &amp; PWM</th>
</tr>
</thead>
<tbody>
<tr>
<td>IO60</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

### Operating Temperature

- -40°C to +85°C
- -40°C to +85°C
- -40°C to +85°C

### Timers

- Three
- Three
- Three

### Real Time Clock

- Secure RTC
- Secure RTC
- Secure RTC

### Battery

- Optional External
- Optional External
- Optional External

### Watchdog Timer

- Programmable + TrustZone
- Programmable + TrustZone
- Programmable + TrustZone

### Electrical

- IEEE802.3at (Up tp 25W)
- IEEE802.3at (Up tp 25W)
- IEEE802.3at (Up tp 25W)

- +10 to 50VDC
- +10 to 50VDC
- +10 to 50VDC

### Mechanical

<table>
<thead>
<tr>
<th>Dimensions</th>
<th>8 x 5 in (203.20 x 127 mm)</th>
<th>8 x 5 in (203.20 x 127 mm)</th>
<th>8 x 5 in (203.20 x 127 mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Weight</td>
<td>1.20 lbs (545 gm)</td>
<td>1.20 lbs (545 gm)</td>
<td>1.20 lbs (545 gm)</td>
</tr>
<tr>
<td>Thickness</td>
<td>1.6 (40.64 gm)</td>
<td>1.6 (40.64 gm)</td>
<td>1.6 (40.64 gm)</td>
</tr>
</tbody>
</table>

### Custom Configurations

Our engineering staff can utilize building blocks contained in our standard products to address most requirements that arise. We will work directly with your staff to define an optimum solution to reduce your time-to-market.

### Ordering Information

Visit our website, send us an email or call directly to speak with an Applications Engineer who can advance your unique project. Please reference the product number below. SYS-398S-1G-0 Enclosed Quad-Core ARM 3.5" SBC