Model Information

Main Features

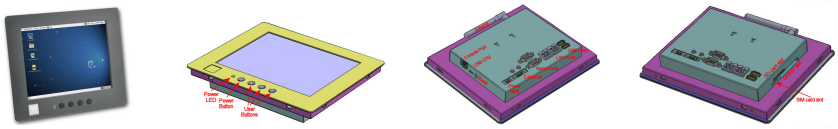
- Ready-to-run Debian GNU/Linux
- 32-bit ARM Cortex-A8 600MHz
- 256MB DDR2 / 256MB NAND Flash
- 8" Panel, resistive Touch, sunlight readable
- Multiple Connectivity Interfaces
  - 2 x LAN ports
  - 2 x USB 2.0 Host and 1 x USB OTG
  - 2 x RS232/422/485 / 1 x CAN-BUS
  - 1 x Audio In/-Out
  - 1 x SD-card slot bootable / 1 x CFAST-Slot
  - 1 x mPCIe / SIM card slot for Wifi or 3G/4G-Modems
- Options: WLAN 802.11b/g/n / Bluetooth 2.1 EDR
- Low Power, fanless
- IP65 small size case
- Wall and VESA 75 mounting

Contact Online...

VS-860 RISC based Touch Panel PC

Quick Link: | Main Features | More Pictures | Overview | Software Specifications | System | Display, Touch, Audio | Serial Ports | CAN Bus | Wireless interface (option) | Power Requirements | Housing and Mounting | Environmental Data | Standards | MTBF (Mean Time Between Failures) | Warranty | Ordering Information | Options | Packaging |

More Pictures



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Overview

The VS-860 is an industrial embedded RISC Panel PC based on ARM Cortex-A8. It features an integrated 8" display panel with a resistive touch function. The great variety of interfaces offered are the basis for a modern HMI device. Qualities such as low power consumption (22W typical includes display), an extended temperature range (-10°C to 50°C) and a wide range power supply (9 — 30V DC) make it an ideal system for industrial automation.

Bright Touchscreen

The contrast ratio and high luminance (1000 cd/m²) of the integrated TFT display are highly suitable for sunlight-readable applications. The 4:3 aspect ratio of the panel is compatible with most of existing HMI applications.

Easy-to-use starter kits

The VS-860 RISC Panel PC runs Linux flavored distributions on an ARM core as operating system. In addition, a prepackaged bootable SD card is provided: The Debian GNU/Linux installed. This comes as a starter kit with further accessories and documentation.

Booting options and BSPs

The VS-860 can boot from the internal NAND flash or SD-card. The NAND flash is a robust boot medium capable of withstanding power cuts and vibrations. The SD-cards have the advantage of providing arbitrarily large storage amounts. The Buildroot BSP provides a small footprint and comfortably fits into the NAND storage, whereas the Debian is best used on the SD-card.

Rich connectivity

The system allows extension with broadband GSM/3G/4G-Modems for installation on mobile internet bases. WLAN802.11b/g/n (joined with Bluetooth) is available as a common option; furthermore, two locations for SMA-antenna sockets are provided. The great variety of interfaces like LAN, USB, RS232/422/485 serial ports and CAN-Bus enable VS-860 to act like a powerful gateway between networks and various industrial devices and field buses. At the same time the display allows for HMI operation.

Software Specifications

Linux	Debian Lenny available as ready-to-run SD card image

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System

Hardware	• ARM Cortex-A8 32-bit RISC CPU, 600 MHz • 256 MB SDRAM (512 MB option) • 256 MB NAND Flash (512 MB option) • Real time clock with battery backup (CR2032) • Watchdog Timer
Mass Storage	• Internal NAND Flash Memory • SD-card Reader SD 2.0 / SDHC • CFast-Slot Type II, SATA connection
Network	• 2x Fast Ethernet • Option: WLAN 802.11b/g/n • Option: Bluetooth 2.1 EDR
Display & Touch	• 8" Panel 800×600 • Resistive Touch function • 1000 cd/m², outdoor sunlight readable
Audio	Audio-In and -Out Jacks
Expansion Slot	• 1x miniPCI Express, USB 2.0 signals (for GSM/3.5G, GPS, …) • SIM Slot for GSM/3.5G modems in miniPCIe slot
Serial Interfaces	• 2x USB 2.0 as Host • 1x USB 2.0 OTG • 1x Console Port RS232, up to 115200 bps • 2x RS232/422/485 up to 3.0 Mbps • 1x CAN Bus up to 1.0 Mbps
LED	• 1x Power on Front • LAN: 2x 10M/Link, 100M/Link, integrated in RJ45 connector
Buttons	• 1x Power On/Off • 3x free for user application

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Display, Touch, Audio

Display Size	8 inch, in metal case
Technology	TFT-LCD Display
Luminance	1000 cd/m²
Contrast ratio	400 : 1
Resolution	800 × 600
Aspect ratio	4 : 3
Touchscreen	Resistive Touch function
Audio	Analog Audio -In and -Out

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Serial Ports

No. of Ports/Type	2 × RS232/422/485 selected by software or by DIP-switches Highspeed UART, 128 Byte FIFO
Connector	DB-9 male

Operating Modes	• RS232 • RS422 full duplex (120Ω on/off) • RS485 4 wire, full duplex (120Ω on/off) • RS485 2 wire, half duplex (120Ω on/off)
Configuration	One DIP switch per port can set operating mode and RS422/485 termination Software can override the operating mode for each port No High/Low biasing resistors needed
Signals	• RS232: TxD,RxD, RTS,CTS, DTR,DSR, DCD, RI, GND • RS422: Tx+/-, Rx+/-, GND • RS485 4 wire: Tx+/-, Rx+/-, GND • RS485 2 wire: Data+/-, GND
RS485 Data Direction control	by ARTc (Automatic Receive Transmit control)
Data bits	5, 6, 7, 8
Stop bits	1, 2
Parity	None, Even, Odd, Mark, Space
Flow Control	RTS/CTS, XON/XOFF
Baudrate	RS232: 200 bps to 921.6/1000 kbps RS422/485: 200 bps to 3.7Mbps Supports non-standard baudrates

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CAN Bus

No. of Ports/Type	1 × CAN Bus
Connector	3-pin terminal block
Signals	CAN_H, CAN_L, CAN_GND
Speed	CAN 2.0A / 2.0B up to 1 Mbit/s
Transceiver	SN65HVD233 (Texas Instruments)
Linux OS	Supports SocketCAN and unified VSCAN API
CANopen	Open source CANfestival framework fully implements CANopen functionality.

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Wireless interface (option)

Standards	2.4GHz Radio, supports IEEE Std. 802.11b/g/n
WLAN Modes	Access Point (AP) or Client (Station)
TX Power	802.11b: Typ. 15.5dBm ±1.5 dBm @ 1Mbps (DSSS) Typ. 15.5dBm ±1.5 dBm @ 11Mbps (OFDM) 802.11g: Typ. 15.6dBm ±1.5 dBm @ 6Mbps (CCK) Typ. 13.5dBm ±1.5 dBm @ 54Mbps (OFDM) 802.11n: Typ. 13.4dBm ±1.5 dBm @ 6.5Mbps (OFDM) Typ. 13.3dBm ±1.5 dBm @ 150 Mbps(OFDM)
RX Sensitivity	802.11b: -95.6dBm @ 1Mbps, -88dBm @ 11Mbps 802.11g: -91.3dBm @ 6Mbps, -74.2dBm @ 54 Mbps 802.11n: -88.8dBm @ 6.5Mbps (20 MHz), -72dBm @ 72.2Mbps (20 MHz)

Transmission Rate	802.11b: 11Mbps 802.11g: 6 to 54Mbps 802.11n: 6.5 to 150Mbps
Transmission Distance	Up to 100m in open areas
Wireless security	• WEP • WPA • WPA2 • WPA2-Enterprise (IEEE 802.1X/RADIUS)
Antenna Connector	RP (Reverse-Polarity) SMA
Bluetooth	Bluetooth 2.1 EDR
BT Antenna	shares antenna with WLAN function

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Power Requirements

Input Voltage	9 — 30V DC
Power Consumption	• 0.9A @ 12V minimal • 1.8A @ 12V typical, plus devices on USB
Connector	2-pin Terminal Block

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Housing and Mounting

Case	0.8mm sheet metal
Weight	w/o box 1.40kg; w/h box 1.85kg
Dimensions	219×44×179 mm³ (W×L×H)
Mounting	• Panel Wall Mount • VESA 75×75

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Environmental Data

Operating Temp	−10°C — 50°C
Storage Temp	−20°C — 70°C
Ambient Humidity	10-85% non-condensing

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Standards

Certifications	CE, FCC
EMI	• EN 55022 Class B • EN 61000-3-2: Limits of harmonic current emissions • EN 61000-3-3: Limitation of voltage changes • 47 CFR FCC Part 15 Subpart B
EMS (EN 55024)	• EN 61000-4-3: Radiated RFI • EN 61000-4-4: Electrical Fast Transient • EN 61000-4-5: Surge • EN 61000-4-6: Induced RFI • EN 61000-4-8: Power Frequency Magnetic Field • EN 61000-4-11: Power supply dips
ESD	EN 61000-4-2 4kV contact 8kV air for USB and Ethernet

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MTBF (Mean Time Between Failures)

MTBF	soon available
Standard	Telcordia (Bellcore) Standard; RelCalc. 5.0 BELL-7

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Warranty

Warranty Period	2 years

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Ordering Information

6850	VS-860
6851	VS-860 WLAN (with Bluetooth and Wireless LAN)

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Options

6031	Power adapter 110-230V AC to 12V @1A, DC, EU plug
6034	Power adapter 110-230V AC to 12V @1A, DC, US plug
6855	Starter Kit Linux • 4GB microSD card for Linux inserted • Power adapter 12V @ 1A • Adapter cable for console port • Documentation and Development Software on DVD
3304	GSM/UMTS mPCIe card for 3G modem
3306	GSM/UMTS/LTE mPCIe card for 3G/4G modem

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Packaging

Packing list	• VS-860 RISC Panel PC • 2-pin Terminal Block for power supply • 3-pin Terminal Block for CAN Bus • 4 × hooks for Panel Mount • Antenna (WLAN model only)

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Front View

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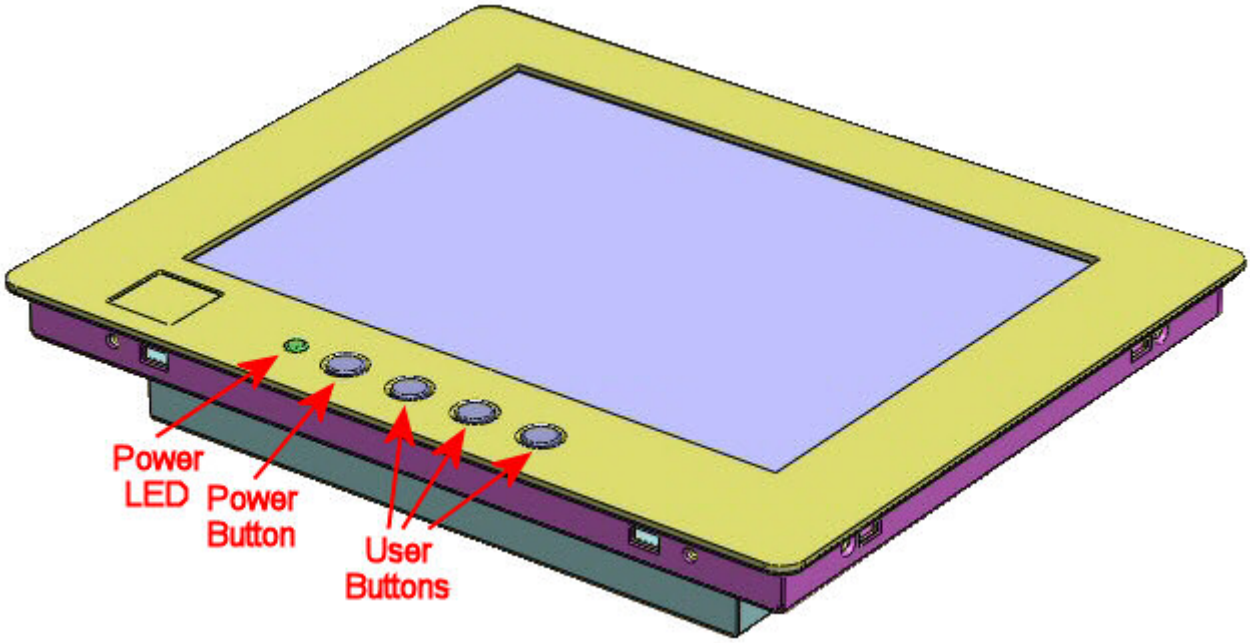

Back View

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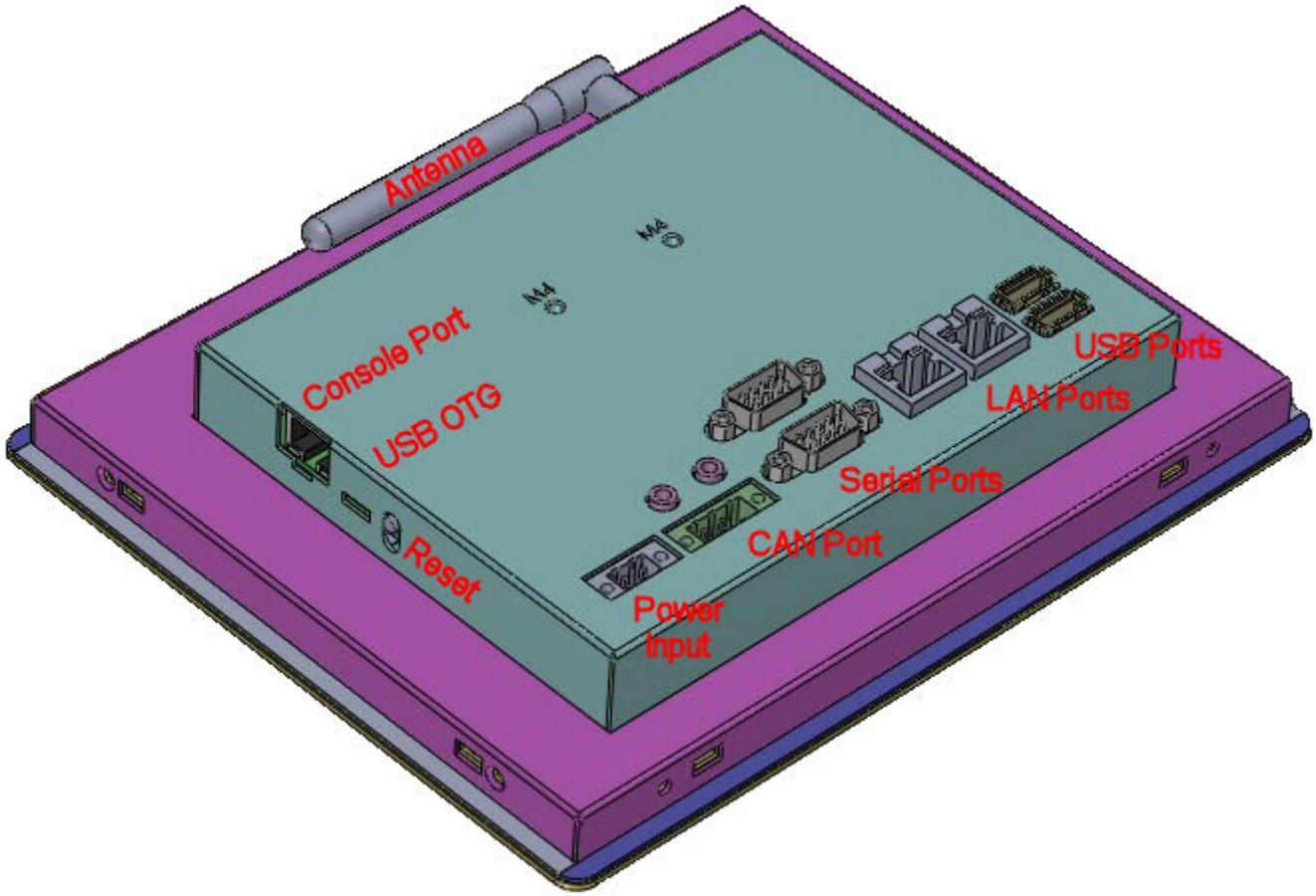

Other Back View

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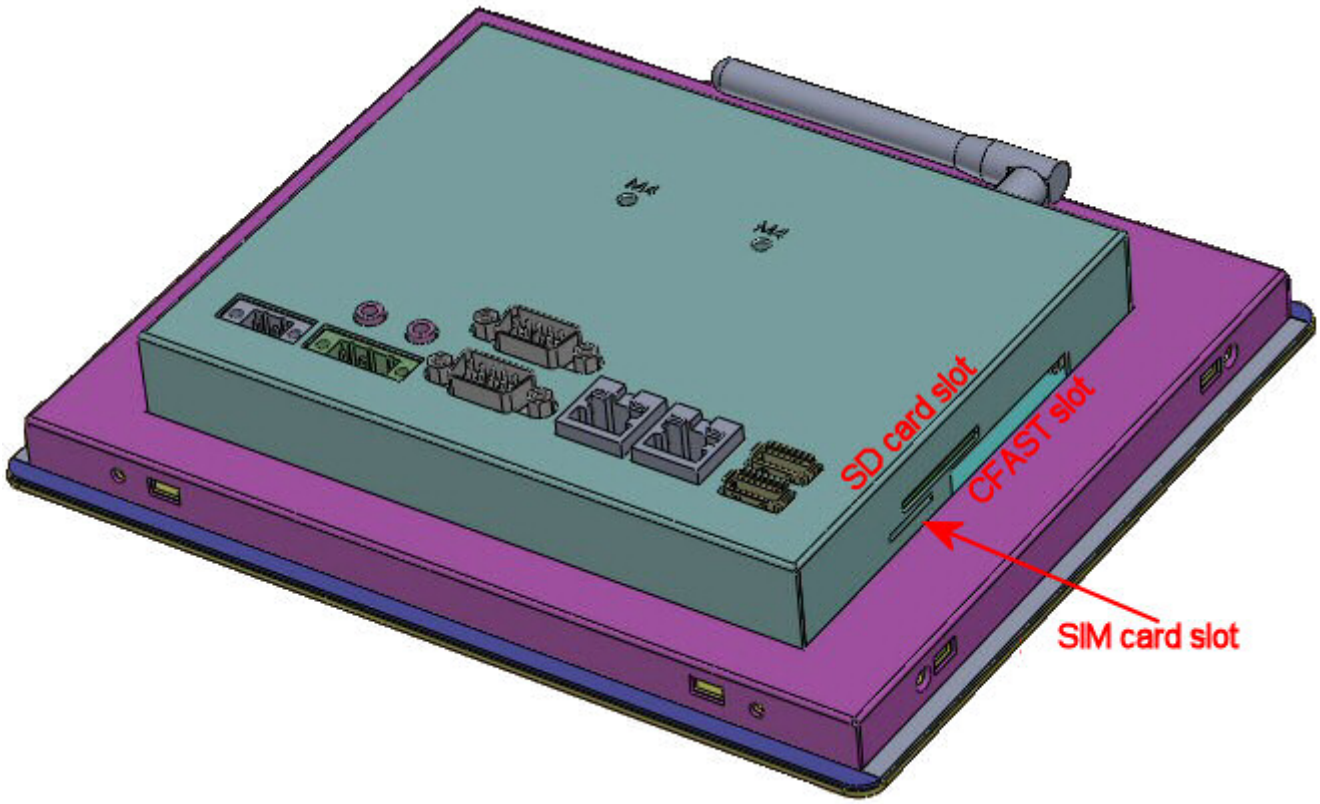

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