Introduction

Progress in hardware technologies, embedded operating systems, and data acquisition and control systems (DAQ) has led to increased reliability, accuracy and affordability.

DAQ systems are commonly used in industrial process control automation, data acquisition, remote equipment monitoring, machine vision, motion control, and video surveillance.

IEI provides a range of products for different DAQ needs. The VITO series of high performance industrial control systems offer a range of extensions expansion, unrivaled flexibility and wide networking functionality. The eFIAT is a cost-effective data acquisition terminal for reading barcode and IRFD LF/HF signals. Minimal hardware investment is required for an automatic identification data collection system.
Traditionally, shop floor data must be collected with a barcode or RFID device attached to a computer:

- Every workstation needed a computer. The expense of a computer and all the necessary software is hard to justify for such a simple, dedicated task.
- It’s difficult to recognize the data source after the data is sent to the backend server.
- Special provision must be made to deal with networking issues, power failure and other inconveniences.

IEI eFIAT-100 is simpler and more robust:
- Compact size to save space
- Simple installation interface for convenience of usage and maintenance
- Multiple expansion interfaces are provided, supporting up to four barcode scanners and RFID readers (2 x USB, 1 x RS-232, 1 x PS/2) and capable of transferring at up to 80 bytes/s. Total hardware savings of around 80%.
- All information collected is automatically forwarded to the backend server with both the terminal IP address and port number making identification of the data source easy.

3 Steps to Use and Manage eFIAT-100

**Step.1** To configure your eFIAT-100

- **Initiation**: The first time the FIAT is turned on, the default device name “eFIAT-100” is displayed. There are three ways to configure the device.
  1. Press F1 function key and use keypad to input settings
  2. Use the web management page to login and change settings through your web browser
  3. Connect eFIAT-100 to Ethernet and use eFIAT Administrator utility to set up multiple devices

- **SETTING MODE and WORKING MODE**:
  1. Press F1 to enter the settings mode. The following settings are configurable:
     - A. Password
     - B. Ethernet
     - C. Serial
     - D. PS2
     - E. USB
     - F. Buzzer
     - G. Time
  2. After configuration, press F3 on the device to run the data acquisition program, or F5 to run a customized application. The collected information will then be forwarded to the backend server.

- Press F2 on the device to show the current IP address of the device. Press F5 to show the current data and time of the device. F6 to F8 are reserved for custom applications.
- The web interface allows changing of the system settings and monitoring of the input data status.

**Step.2** Administration through the web

In the settings mode, the peripheral devices connected to the eFIAT-100 are configured to automatically forward the collected data to the IP address and port number specified in the settings. The included example program and source code provide the basis for creating your own custom applications.

**Step.3** To manage eFIAT-100 via web page or administration tool

- The eFIAT-100 is a web-enabled device with a built-in web server, FTP server and related Internet services.
- Built-in management web pages and web server make it easy to manage and monitor the eFIAT-100 remotely over a network.
- With these management web pages, users can:
  1. In setting mode: configure the device settings
  2. In working mode: monitor the input data

In addition, eFIAT Administrator PC site utility enables IT administrators to monitor, synchronize configuration and upgrade firmware for multiple eFIAT-100s via the Internet.
System Stability Enhancement Design

Ensure normal operation against network failure

1. Network failures are automatically detected and a warning message is shown.
2. Collected data is stored in local memory until the network comes back online. Up to 10,000 records can be stored on the device.
3. After network recovery, all the recorded data is uploaded to the server.

Battery backup

- The eFIAT-100 supports backup power that is activated in the following sequence:
  1. By default power is drawn from the DC power input.
  2. Input switches to the 4.8V battery pack when main DC power fails.
  3. Once power is restored, the system switches to drawing power from the DC power input.
- These features ensure against temporary loss of main power.

Redundant backend server support

- A redundant server setup allows data to be stored in two places to provide a backup in case of server failure.
- The eFIAT-100 can be configured to send all collected data to two backend servers simultaneously.

Barcoded system settings

- The barcode reader switches to keyboard input mode after pressing F1 and entering the settings menu. The settings information can be programmed into a barcode for easy setup of all system settings.

Multi-layer authentication

- A password is required to switch modes and change the system settings. The password is required whenever F1, F3 or F5 are pressed.
- Three levels of user authentication are offered, user level depends on the entered password.

Information rich data packets

- Each data packet sent from the device to the server includes the name of the device, the username of the current user, the I/O port, the data and the time the data was recorded.

Device Name / User Name / I/O Port / Date/Time

- The server decodes the data packet to extract the information.
eFIAT-100 Compact form factor floor information acquisition terminal with ARM processor + Linux platform, rich peripheral expansion interfaces and turnkey software integrated

**Features**
- Compact form factor design
- 16 character x 2 lines backlight LCM & 4 Status LED display
- 17 numeric/direction/Enter & 8 programmable function keys
- 2 x USB + 1 x PS/2 peripheral integration
- 10/100Mbps ethernet connectivity
- 1 x MiniSD expandable storage capacity
- Optional redundant battery pack for power failure backup

**Specifications**
- CPU / MCU: Nuvoton (Winbond) ARM9 W90910@200MHz RISC-based CPU
- System memory: 64MB SDRAM
- NAND Flash: 128MB for Embedded OS and data programming
- Operation System: Linux Kernel 2.6.18
- Display: 16 Characters x 2 Lines backlight LCM
- Status LED: Power/Connection/Battery status/Data transfer LED Indicators
- Communication: 1 x 10/100Mbps Ethernet
- Keypad: 17 numeric/direction/enter & 8 programmable function keys
- Peripheral Expansion: 1 x PS/2 + 2 x High Speed USB2.0 + 1 x RS-232 + 1 x miniSD + 1 x RS-485
- Power: 1 x 5V DC input + 1 x 2-pin connector for 4.8V Battery Input + 1 x Power Switch
- Power Consumption: 5W
- Operation Temperature: 0~50°C
- Construction Mechanical: PC + ABS
- Dimensions (WxHxD): 111.0 mm x 134.9 mm x 42.1 mm
- Weight: 280g

**Dimensions (mm)**

**Packing List**
- 1 x eFIAT-100
- 1 x Power adapter
- 1 x Utility CD includes application tools, SDK and technical documents

**Ordering Information**

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>eFIAT-100-R10</td>
<td>Linux Integration Product, shop Floor Data Collector, Winbond ARM 9, 64MB SDRAM, RoHS</td>
</tr>
<tr>
<td>46026-000100-RS</td>
<td>eFIAT-100 Optional 4x 1.2V Battery Pack</td>
</tr>
</tbody>
</table>
RFID TAG Reader Device & Module

Introductions to RFID

- Radio Frequency Identification (RFID) is one member in the family of Automatic Identification and Data Capture (AIDC) technologies and is a fast and reliable means of identifying just about any material object. Primarily, the two main components involved in a Radio Frequency Identification system are the Transponder (tags that are attached to the object) and the Interrogator (RFID reader). Communication between the RFID reader and tags occurs wirelessly and generally does not require a line of sight between the devices. An RFID transponder, considered as a next generation barcode, is a miniscule microchip that is attached to an antenna. They come in a wide variety of sizes, shapes, and forms and can be read through most materials with the exception of conductive materials like water and metal, but with modifications and positioning even these can be overcome. An RFID reader typically contains a module (transmitter and receiver), a control unit and a coupling element (antenna). The reader has three main functions: energizing, demodulating and decoding. In addition, readers can be fitted with an additional interface that converts the radio waves returned from the RFID tag into a form that can then be passed on to another system, like a computer or any programmable logic controller. Anti-Collision algorithms permit the simultaneous reading of large numbers of tagged objects, while ensuring that each tag is read only once.

Software Support

- Driver support OS: Windows 2000, Windows XP, Windows XPe, Windows CE 5.0 and Linux (based on project)
- A desktop interface for
  - Configuring and testing ICP RFID reader module
  - Reading and writing tags
  - Demonstrating the user of the RFID API
- SDK (Software Development Kits)
  - Installed on development PC with DLL files
  - Easy-to-use APIs
  - Command set for serial communication
  - Embedded Visual C++ and .NET Compact Framework support

RFID Applications

- Some examples of RFID in action are shown below.

LIVESTOCK IDENTIFICATION
An RFID tag is small and slim enough to be embedded under an animal's skin and is most commonly used for identification of household pets. The tags also help farmers in identifying and tracking their cattle. The tags are also used for wildlife conservation.

FUEL DISPENSING LOYALTY PROGRAMS
Customers pay for their fuel at the pump with a wave of their key tag.
### Features

1. Compact, stylish design
2. RS-232 and USB plug
3. Keyboard-Event Support (USB Only)
4. LF (EM4305/EM4450 R/W), HF ISO14443 (including MiFare), ISO15693 available
5. Reader to reader anti-collision
6. SDK CD with developer documents, Demo program and source code

### IRFD-X10 Series

Is a short range RFID reader. The reader has an RS-232 and USB connector. When connected using USB it supports the keyboard event driver for easy integration into any computer system or embedded system. The stylish and flexible design comes at an affordable price, and makes it the ideal choice.

### Why Keyboard event?

Most applications need to deal with the RF procedure which means that programmers need to put in a lot of effort even if only the UID is needed.

The IRFD reader series includes the keyboard event function in its USB driver. It can simulate data input as a presses of the keys on the keyboard. This makes software integration quick and easy.

### Specifications

<table>
<thead>
<tr>
<th></th>
<th>IRFD-110</th>
<th>IRFD-210</th>
<th>IRFD-410</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Operating frequency</strong></td>
<td>13.56 MHz</td>
<td>125 KHz</td>
<td>13.56 MHz</td>
</tr>
<tr>
<td><strong>UART</strong></td>
<td>RS-232</td>
<td>RS-232</td>
<td>RS-232</td>
</tr>
<tr>
<td><strong>USB</strong></td>
<td>USB 2.0 full speed with 3.3/5V logic levels</td>
<td>USB 2.0 full speed with 3.3/5V logic levels</td>
<td>USB 2.0 full speed with 3.3/5V logic levels</td>
</tr>
<tr>
<td><strong>RFID Protocol</strong></td>
<td>ISO 15693 (R/W)</td>
<td>ISO 11784, ISO 11785 (EM4305/EM4450 R/W)</td>
<td>ISO 14443A / Mifare (R/W)</td>
</tr>
<tr>
<td><strong>Control Interface</strong></td>
<td>USB / UART</td>
<td>USB 2.0</td>
<td>USB / RS-232</td>
</tr>
<tr>
<td><strong>Processor</strong></td>
<td>TI MSP430</td>
<td>EM4095</td>
<td>PN532</td>
</tr>
<tr>
<td><strong>dimensions</strong></td>
<td>22 mm X 50 mm X 7 mm</td>
<td>22 mm X 53 mm X 7 mm</td>
<td>22 mm X 53 mm X 7 mm</td>
</tr>
<tr>
<td><strong>Power Consumption</strong></td>
<td>5V @150mA</td>
<td>5V @150mA</td>
<td>5V @150mA</td>
</tr>
<tr>
<td><strong>Storage Temperature</strong></td>
<td>-10°C~ 70°C</td>
<td>-10°C~ 70°C</td>
<td>-10°C~ 70°C</td>
</tr>
<tr>
<td><strong>Operating Temperature</strong></td>
<td>0°C~ 50°C</td>
<td>0°C~ 50°C</td>
<td>0°C~ 50°C</td>
</tr>
<tr>
<td><strong>Operating Humidity</strong></td>
<td>10%~85% RH</td>
<td>10%~85% RH</td>
<td>10%~85% RH</td>
</tr>
<tr>
<td><strong>Driver Support</strong></td>
<td>Windows® XP/XPE</td>
<td>Windows® XP/XPE</td>
<td>Windows® XP/XPE</td>
</tr>
</tbody>
</table>
IEI RFID Platform

The IRFD series have been tested to work on all IEI products. Using the serial or USB interface the RFID reader can be installed on a panel PC or data collector without any worry about drivers and compatibility.

IRFD-110
IRFD-110 is a ISO15693 reader which is ideal for mid-range reading applications such as desktop reading, visitor registration or embedded systems.

IRFD-210
IRFD-210 with low frequency can be integrated with HR system as access control or duty on/off registration. It can also provide a cost effective way to update the card data.

IRFD-410
IRFD-410 is compatible with ISO14443 standard which is mainly used in finance (e-payment, member loyalty program) or transportation (e-ticket) applications.

Software Support
- Driver Support OS: Windows 2000, Windows XP, Windows XPe, Windows CE 5.0 and Linux (based on project)
- A desktop interface for
  - Configuring and testing ICP RFID reader module
  - Reading and writing tags
  - Demonstrating the user of the RFID API
- SDK (Software Development Kits)
  - Installed on development PC with DLL files
  - Easy-to-use APIs
  - Command set for serial communication
  - Embedded Visual C++ and .NET Compact Framework support

Dimensions (mm)

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>IRFD-110-R10</td>
<td>Window® XP Integration Product, RFID reader and antenna, HF 13.56MHz, TITRF7960, USB/UR interface, RoHS</td>
</tr>
<tr>
<td>IRFD-210-R10</td>
<td>Window® XP Integration Product, RFID reader and antenna, LF 125KHZ EM4095, USB/UR interface, RoHS</td>
</tr>
<tr>
<td>IRFD-410-R10</td>
<td>Window® XP Integration Product, RFID reader and antenna, HF 13.56MHz NXP PN532, USB/UR interface, RoHS</td>
</tr>
</tbody>
</table>

Packing List
1 x IRFD-110 / IRFD-210 / IRFD-410
1 x Utility CD incuding SDK, utilities, and technical documents
1 x 5Vdc 12W power adapter with DC plug in females; 100-240VAC input
1 x USB / RS232 Y cable

Ordering Information
Introduction

- RFID tags are uniquely identifiable and carry information to identify objects, the information can be updated too. RFID tags are available in lots of different shape and sizes for various applications.

How to choose your Tag?

Choosing the correct tag is a crucial step in designing an RFID system because tag choice affects the efficiency and performance of operation. The factors below should be taken into consideration before deciding on which tag to use.

<table>
<thead>
<tr>
<th>Attachment</th>
<th>Memory Capacity</th>
<th>Performance Criterion</th>
<th>Robustness</th>
<th>Visual Identification</th>
<th>Cost</th>
</tr>
</thead>
<tbody>
<tr>
<td>Surface material of object, available attachment area</td>
<td>Depending on specific storage needs</td>
<td>Reading distance and data rate</td>
<td>The more robust, the more expensive</td>
<td>Certain tags can be printed on and come in different shapes and sizes</td>
<td>Actual cost per tag and how often the tags need to be replaced</td>
</tr>
</tbody>
</table>

IEI 13.56MHz (ISO-15693) RFID Tags

<table>
<thead>
<tr>
<th>Form Factor</th>
<th>Proximity Card</th>
<th>Label</th>
<th>Laundry Tag/Token</th>
<th>Mount-on-metal</th>
<th>on-metal</th>
<th>Wristband</th>
<th>Smart Disc</th>
</tr>
</thead>
<tbody>
<tr>
<td>Application</td>
<td>● Access control</td>
<td>● Asset Management</td>
<td>● Field service</td>
<td>● Patient identify</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Campus ID</td>
<td>● Library</td>
<td>● Factory automation</td>
<td>● Loyalty Program</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>● e-Payment</td>
<td>● Counterfeig</td>
<td>● Asset Management</td>
<td>● Entertainment</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Production run card</td>
<td></td>
<td></td>
<td>● Access Control</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Dimension</td>
<td>Square : 85.6x 54x 0.76mm</td>
<td>22/25/30/40mm dia</td>
<td>14/17/32mm diameter</td>
<td>65 x 35.6 x 6.5mm</td>
<td>65 x W 25 x T 3 mm</td>
<td>78 x 15 x 2.5mm</td>
<td>80/120mm dia</td>
</tr>
<tr>
<td>Material</td>
<td>PVC</td>
<td>PP/PET</td>
<td>PPS/Nylon+GF/PRT</td>
<td>PC</td>
<td>Epoxy+PVC</td>
<td>Silicone+PPS</td>
<td>PC</td>
</tr>
<tr>
<td>Environment Proof</td>
<td>● Temperature</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>● Water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>▼ : Temperature</td>
<td></td>
<td></td>
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<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>▲ : Water</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Available IC</td>
<td>NXP (I-CODE SL/SL1-S), TI (Tag-it HF Standard/Pro/Plus, Infineon (my-d SRF 55V25/35V10S))</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>MOQ</td>
<td>100 pcs/box</td>
<td>500 pcs/roll</td>
<td>200 pcs</td>
<td>100 pcs/box</td>
<td>500 pcs/box</td>
<td>2000 pcs/box</td>
<td></td>
</tr>
</tbody>
</table>
## VITO-2688 / VITO-2000 Series Selection Guide

![VITO-2688](image1.png) ![VITO-2060](image2.png) ![VITO-2070](image3.png)

<table>
<thead>
<tr>
<th>Model name</th>
<th>VITO-2688</th>
<th>VITO-2060</th>
<th>VITO-2070</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>ULV Intel® Celeron® M 1 GHz / Zero Cache</td>
<td>AMD® Geode™ GX466 333 MHz</td>
<td>AMD® Geode™ LX 800 550 MHz</td>
</tr>
<tr>
<td>Memory socket</td>
<td>1 x 200-pin 1 GB (max.) 266/200 MHz DDR SDRAM SO-DIMM</td>
<td>1 x 200-pin 1 GB (max.) 266/200 MHz DDR SDRAM SO-DIMM</td>
<td>1 x 200-pin 1 GB (max.) 400/333 MHz DDR SDRAM SO-DIMM</td>
</tr>
<tr>
<td>Memory size</td>
<td>512 MB</td>
<td>256 MB</td>
<td>256 MB</td>
</tr>
<tr>
<td>Display interface</td>
<td>VGA 15-pin D-SUB output</td>
<td>VGA 15-pin D-SUB output</td>
<td>VGA 15-pin D-SUB output</td>
</tr>
<tr>
<td>Operating systems</td>
<td>Windows® XP Embedded / Linux (OEM/ODM)</td>
<td>Windows® CE 5.0, Windows® XP Embedded / Linux (OEM/ODM)</td>
<td>Windows® CE 5.0, Windows® XP Embedded / Linux (OEM/ODM)</td>
</tr>
<tr>
<td>Button/switch</td>
<td>1 x reset button / 1 x power switch</td>
<td>1 x reset button</td>
<td>1 x reset button</td>
</tr>
<tr>
<td>Mouse/keyboard</td>
<td>2 x PS/2</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Audio</td>
<td>-</td>
<td>1 x line out</td>
<td>1 x line out</td>
</tr>
<tr>
<td>VGA</td>
<td>1 x VGA</td>
<td>1 x VGA</td>
<td>1 x VGA</td>
</tr>
<tr>
<td>External CF card slot</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>External PC card slot</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Printer port</td>
<td>-</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>USB port</td>
<td>2 x USB 2.0</td>
<td>2 x USB 2.0</td>
<td>4 x USB 2.0</td>
</tr>
<tr>
<td>Serial port</td>
<td>2 x RS-232 (9-pin D-SUB)</td>
<td>2 x RS-232 (9-pin D-SUB)</td>
<td>7 x RS-232 (9-pin D-SUB), 1 x RS-422/485 (9-pin D-SUB) with Windows® XP, 3 x RS-232 (9-pin D-SUB), 1 x RS-422/485 (9-pin D-SUB) with Windows® CE 5.0</td>
</tr>
<tr>
<td>Ethernet port</td>
<td>4 x Ethernet (10/100BASE-T)</td>
<td>2 x Ethernet (10/100Base-T)</td>
<td>1 x Ethernet (10/100Base-T)</td>
</tr>
<tr>
<td>Communication</td>
<td>2-channel isolated CAN interfaces</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Digital input channel</td>
<td>4-channel isolated DI</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Digital output channel</td>
<td>4-channel isolated DO</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>Expansion</td>
<td>802.11b/g wireless LAN</td>
<td>-</td>
<td>-</td>
</tr>
<tr>
<td>4 x LAN</td>
<td>3 Power</td>
<td>4 x DIO/DIO</td>
<td>Power LED</td>
</tr>
<tr>
<td>3 Power</td>
<td>10 x COM</td>
<td>2 x CAN</td>
<td>-</td>
</tr>
<tr>
<td>LED indicator</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Watchdog timer</td>
<td>Yes</td>
<td>Yes</td>
<td>Yes</td>
</tr>
<tr>
<td>Power requirement</td>
<td>9~36 VDC (e.q +24 V@1 A) (min.24 W, ATX)</td>
<td>9~36 VDC (e.q +24 V@1 A) (min. 24 W), ATX</td>
<td>9~36 VDC (e.q +24 V@1 A) (min. 24 W), ATX</td>
</tr>
<tr>
<td>Storage interface</td>
<td>One internal CF type I/II slot and one IDE</td>
<td>1 x internal CF type I/II slot</td>
<td>1 x internal CF type I/II slot</td>
</tr>
<tr>
<td>Storage</td>
<td>1 G CF card or 2.5&quot;1.8&quot; 40 G HD (optional)</td>
<td>256 M1 G CF card</td>
<td>256 M1 G CF card</td>
</tr>
<tr>
<td>Operating environmental</td>
<td>Operation temperature: 0°C ~ 60°C Relative humidity: 5% ~ 95% RH without condensation Vibration: 5-17 Hz, 0.1&quot; double amplitude displacement, 17-640 Hz, 1.5 G acceleration peak to peak Shock: 10 G acceleration peak to peak (11ms)</td>
<td>Operation temperature: 0 ~ 60°C Relative humidity: 5 ~ 95% RH without condensation Vibration: 5<del>17 Hz, 0.1” double amplitude displacement, 17</del>640 Hz, 1.5G acceleration peak to peak Shock: 10G acceleration peak to peak (11ms)</td>
<td>Operation temperature: 0 ~ 60°C Relative humidity: 5 ~ 95% RH without condensation Vibration: 5<del>17 Hz, 0.1” double amplitude displacement, 17</del>640 Hz, 1.5G acceleration peak to peak Shock: 10G acceleration peak to peak (11ms)</td>
</tr>
<tr>
<td>Dimensions</td>
<td>480 mm x 198.12 mm x 42 mm</td>
<td>223.6 mm x 11.07 mm x 61.8 mm</td>
<td>223.6 mm x 11.07 mm x 61.8 mm</td>
</tr>
<tr>
<td>Weight</td>
<td>2.8 kg</td>
<td>1.3 kg</td>
<td>1.3 kg</td>
</tr>
<tr>
<td>Color</td>
<td>Black</td>
<td>Black and Silver</td>
<td>Black and Silver</td>
</tr>
<tr>
<td>Construction</td>
<td>Aluminum extrusion, heavy-duty steel chassis</td>
<td>Aluminum extrusion, heavy-duty steel chassis</td>
<td>Aluminum extrusion, heavy-duty steel chassis</td>
</tr>
<tr>
<td>Mounting</td>
<td>19&quot; 1U rack mount</td>
<td>Wall mount, DIN-rail mount</td>
<td>Wall mount, DIN-rail mount</td>
</tr>
</tbody>
</table>
**VITO-2688**

**Industrial Communication Server with ULV Intel® Celeron® M 1 GHz, 4 x LAN, 10 x COM, 2 x USB, 2 x isolated CAN, 4 x isolated DI, 4 x isolated DO**

### Features
- ULV Intel® Celeron® M 1GHz zero cache processor
- Supports 512 MB up to 1 GB memory
- Two RS-232 (9-pin D-SUB)
- Eight isolated RS-232/242/485 (5-pin screw terminal) ports with automatic flow control
- Four 10/100 Mbps Ethernet RJ-45 ports and two USB ports
- Windows® XP Embedded ready platform
- Included remote display for easy configuration
- Provides Modbus RTU/ASCII to Modbus TCP Gateway utilities
- Supports Modbus/RTU and Modbus/TCP devices
- Support DI/DO and CAN Bus options
- 19" 1U form factor

### Specifications

**System hardware**
- CPU: ULV Intel® Celeron® M 1 GHz / Zero Cache
- System chipsets: Intel® 852GM +ICH4
- Memory socket: 1 x 200-pin 1 GB (max.) 266/200 MHz DDR SDRAM SO-DIMM
- Memory size: 512 MB
- Keyboard/mouse: 2 x PS/2
- Expansion slots: -
- PC/104: -
- Printer port: -
- Storage interface: 1 x CF type II slot 1 x IDE
- Storge: 1 G CF card or 2.5”/1.8” 40 G HD (optional)
- VGA: 1 x VGA 15-pin D-SUB output support up to 1600 x 1200
- Audio: -
- Watchdog timer: Programmable

**I/O & communication**
- LAN: 4 x Ethernet (10/100Base-T with RJ-45 port)
- Serial port: 2 x RS-232 (9-pin D-SUB)
- 8 x isolated RS-232/242/485 with 5-pin screw terminal automatic RS-485 data flow control
- USB port: 2 x USB 2.0

**Channel**
- Model name: VITO-2688
- Communication interface: 2-channel isolated CAN Bus
- Digital input: 4-channel isolated DI
- Digital output: 4-channel isolated DO
- Analog input: 4-channel isolated DO

**Power**
- Power input: 9~36 VDC (e.g. +24 V @ 1 A) (min:24 W), AT
- Power consumption: 20W

**Environmental**
- Humidity: 5% ~ 95% RH without condensation
- Vibration: 5~17 Hz, 0.1” double amplitude displacement, 17~64 Hz, 1.5 G acceleration peak to peak
- Shock: 10 G acceleration peak to (1ms)

**General**
- Dimensions (WxDxH): 480 mm x 198.12 mm x 42 mm
- Construction: Aluminum extrusion, heavy-duty steel chassis
- Mounting: 19” 1U rack mount
- Weight: 2.8 kg
- OS support: Windows® XP Embedded / Linux (OEM/ODM)

### Dimensions (mm)

**Packing List**
- 1 x VITO-2688
- 1 x Utility CD including SDK, utilities, and technical documents
- 1 x Null modem cable
- 1 x Screw kit
- 1 x Rack mount kit

### Options

#### Part No. Description

**VITO-CF-2688XPE-R10**
- 1 GB CF memory card with built-in Windows® XP Embedded OS image, licensed sticker, and SLD S/W CD

**63000-UP0451E24P56L-RS**
- 24 VDC 45 W power adapter with bare wire; 90~264 VAC input

### Ordering Information

**Part No. Description**

**VITO-2688-R10**
- Industrial communication server with ULV Intel® Celeron® M 1GHz, 512 MB 400 MHz DDR SDRAM, 1 x VGA, 4 x LAN, 10 x COM, 2 x USB, 2 x isolated CAN, 4 x isolated DI, 4 x isolated DO
## Specifications

### System Hardware

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>CPU</td>
<td>AMD® Geode™ LX800, 500 MHz</td>
</tr>
<tr>
<td>System chipsets</td>
<td>AMD® Geode LX800 + AMD® CS5536</td>
</tr>
<tr>
<td>Memory socket</td>
<td>1 x 200-pin 1 GB (max.) 400/333 MHz DDR SDRAM SO-DIMM</td>
</tr>
<tr>
<td>Memory size</td>
<td>256 MB</td>
</tr>
<tr>
<td>Keyboard/mouse</td>
<td>-</td>
</tr>
<tr>
<td>Expansion slot</td>
<td>-</td>
</tr>
<tr>
<td>PC/104</td>
<td>1 x PC/104</td>
</tr>
<tr>
<td>Printer port</td>
<td>-</td>
</tr>
<tr>
<td>Storage interface</td>
<td>1 x CF type II slot</td>
</tr>
<tr>
<td>Storage</td>
<td>256 M/1 G CF card</td>
</tr>
<tr>
<td>VGA</td>
<td>1 x 15-pin D-SUB VGA output supports up to 1600 x 1200</td>
</tr>
<tr>
<td>Audio</td>
<td>1 x line out</td>
</tr>
<tr>
<td>Watchdog timer</td>
<td>Programmable</td>
</tr>
</tbody>
</table>

### I/O & Communications

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>LAN</td>
<td>1 x Ethernet (10/100Base-T with RJ-45 port)</td>
</tr>
<tr>
<td>Serial port</td>
<td>Windows® XP Embedded: 7 x RS-232 (9-pin D-SUB), 1 x RS-422/485 with 9-pin D-SUB connector automatic RS-485 data flow control</td>
</tr>
<tr>
<td>Windows® CE 5.0</td>
<td>Windows® CE 5.0: 3 x RS-232 (9-pin D-SUB), 1 x RS-422/485 with 9-pin D-SUB connector automatic RS-485 data flow control</td>
</tr>
<tr>
<td>USB port</td>
<td>4 x USB 2.0</td>
</tr>
<tr>
<td>Digital input signal</td>
<td>DI ch, 2,000 VDC isolation, 2,000 VDC ESD protection and 70 VDC overvoltage protection</td>
</tr>
<tr>
<td></td>
<td>0 ~ 50 VDC input range and 10 kHz speed</td>
</tr>
<tr>
<td></td>
<td>Digital input levels with dry contact: Logic level 0: Close to GND, Logic level 1: Open</td>
</tr>
<tr>
<td></td>
<td>Digital input levels with wet contact: Logic level 0: +2 V max, Logic level 1: +4 V ~ +50 V</td>
</tr>
<tr>
<td>Digital output signal</td>
<td>DO ch 2000 VDC isolation and 200mA max/ch sink current keeps.</td>
</tr>
<tr>
<td></td>
<td>Keeps output status after system hot reset.</td>
</tr>
<tr>
<td></td>
<td>5~30 VDC output range and 10kHz</td>
</tr>
<tr>
<td>Counter / timer</td>
<td>2x 16-bit: - counter source: Di6 &amp; Di7, - Pulse output: DO6 &amp; DO7, Can be cascaded as one 32-bit counter/timer, Down counting, preset counting value, interrupt handling, Timer time base: 100/101 kHz, 100 Hz</td>
</tr>
<tr>
<td>Analog input signal</td>
<td>2 ch. input type: Thermocouple: J,K,T,E type, Input range: ±5 V, ±2.5 V, 0<del>2.5 V, 0</del>5 V</td>
</tr>
<tr>
<td></td>
<td>Supports T/C types J,K,T,E</td>
</tr>
<tr>
<td>CAN communication interface</td>
<td>Compatible with CAN specifications 2.0</td>
</tr>
<tr>
<td></td>
<td>3800VDC isolated by photo coupler for dual ports.</td>
</tr>
<tr>
<td>Power</td>
<td>Power input 9~36 VDC (e.q +24 V@1 A) (min.24 W), ATX</td>
</tr>
<tr>
<td></td>
<td>Power consumption 15 W</td>
</tr>
<tr>
<td></td>
<td>Operation temperature 0 ~ 60°C</td>
</tr>
<tr>
<td></td>
<td>Humidity 5% ~ 95% RH without condensation</td>
</tr>
<tr>
<td></td>
<td>Vibration 5<del>17 Hz, 0.1&quot; double amplitude displacement, 17</del>640 Hz, 1.5 G acceleration peak to peak</td>
</tr>
<tr>
<td></td>
<td>Shock 10 G acceleration peak to peak. (11ms)</td>
</tr>
<tr>
<td></td>
<td>Dimensions (WxDxH) 223.6 mm x 110.7 mm x 61.8 mm</td>
</tr>
<tr>
<td></td>
<td>Construction Aluminum extrusion, heavy-duty steel chassis</td>
</tr>
<tr>
<td></td>
<td>Mounting Wall mount, DIN-rail mount</td>
</tr>
<tr>
<td></td>
<td>Weight 1.3 kg</td>
</tr>
<tr>
<td></td>
<td>OS support Windows® CE 5.0, Windows® XP Embedded / Linux (OEM/ODM)</td>
</tr>
</tbody>
</table>
Dimensions (Unit:mm)

Mounting Support

Wall Mount (Standard)

DIN Mount (Optional)

Packing List

1 x VITO-2070
1 x Utility CD including SDK, utilities, and technical documents
1 x Null modem cable
1 x Screw kit
1 x Wall mount kit

Serial Port Support Limitation

VITO-2070 only Supports 4 serial port in Windows CE environment.

Options

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VITO-CF-2070CE-R10</td>
<td>256 MB CF memory card with built-in Windows® CE 5.0 OS image, licensed sticker, and BSP S/W CD</td>
</tr>
<tr>
<td>VITO-CF-2070XPE-R10</td>
<td>1 GB CF memory card with built-in Windows® XP Embedded OS image, licensed sticker, and SLD S/W CD</td>
</tr>
<tr>
<td>63000-UP0451E12P71L-RS</td>
<td>12 VDC 45 W power adapter with lock screw; 90~264 VAC input</td>
</tr>
<tr>
<td>63000-UP0451E24P56L-RS</td>
<td>24 VDC 45 W power adapter with bare wire; 90~264 VAC input</td>
</tr>
<tr>
<td>DK-200MM</td>
<td>Din mount kit</td>
</tr>
</tbody>
</table>

Ordering Information

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>VITO-2070X-R10</td>
<td>Multiport Data Collector with AMD® Geode™ LX 800 500 MHz, 256 MB 400 MHz DDR SDRAM, 1 x VGA, 1 x Line out, 1 x LAN, 8 x COM, 4 x USB</td>
</tr>
<tr>
<td>VITO-2070C-R10</td>
<td>Multiport Data Collector with AMD® Geode™ LX 800 500 MHz, 256 MB 400 MHz DDR SDRAM, 1 x VGA, 1 x Line out, 1 x LAN, 4 x COM, 4 x USB</td>
</tr>
</tbody>
</table>

Provide AMD® Geode™ LX 800 wide temperature OEM/ODM service
### Specifications

**CPU**
- AMD® Geode™ GX 466 333 MHz

**System chipsets**
- AMD® GX466 + CS5536

**Memory size**
- 256 MB

**Keyboard/mouse**
- 

**Expansion slot**
- 

**PC/104**
- 1 x PC/104

**Battery backup RTC**
- Yes

**Storage interface**
- 1 x CF type II slot

**VGA**
- 1 x 15-pin D-SUB VGA output supports up to 1024 x 768

**Audio**
- 1 x line out

**Watchdog timer**
- Programmable

**LAN**
- 2 x Ethernet (10/100Base-T with RJ-45 port)

**Serial port**
- 2 x RS-232 (9-pin D-SUB), 1 x RS-422/485 with 9-pin D-SUB connector automatic RS-485 data flow control

**USB port**
- 2 x USB 2.0

**Digital input signal**
- DI ch. 2000 VDC isolation, 2000 VDC ESD protection and 70 VDC overvoltage protection
- Digital input levels with dry contact: Logic level 0: Close to GND, Logic level 1: Open
- Digital input levels with wet contact: Logic level 0: +2 V max, Logic level 1: +4 V ~ +50 V

**Digital output signal**
- DO ch 2000 VDC isolation and 200mA max/ch sink current keeps.
- Keeps output status after system hot reset.
- 5~30 VDC output range and 10 KHz.

**Counter / timer**
- 2x 16-bit: - counter source: DI6 & DI7 ,
- Pulse output: DO6 & DO7 ,
- Can be cascaded as one 32-bit counter/timer, Down counting, preset counting value, interrupt handling, Timer
- time base: 100/10/1 KHz, 100 Hz

**Analog input signal**
- 2 ch. input type: Thermocouple: J,K,E type
- Input range : ±0V,±2.5V,±0~2.5V,±0~5V
- Supports T/C types:J,K,E

**CAN communication interface**
- Compatible with CAN specifications 2.0
- 3000V/DC isolated by photo coupler for dual ports.

**Power input**
- 9~36 VDC (e.g +24V@1A) (min.24W), ATX

**Power consumption**
- 20 W (typical)

**Environmental**
- Operation temperature: 0 ~ 60°C
- Humidity: 5% ~ 95% RH without condensation
- Vibration: 5~17 Hz, 0.1” double amplitude displacement, 17~640 Hz, 1.5 G acceleration peak to peak
- Shock: 10 G acceleration peak to peak, (11ms)

**Dimensions (WxDxH)**
- 223.6 mm x 110.7 mm x 61.8 mm

**General**
- Construction: Aluminum extrusion, heavy-duty steel chassis
- Mounting: Wall mount, DIN-rail mount
- Weight: 1.3 kg

**OS support**
- Windows® CE 5.0, Windows® XP Embedded / Linux (OEM/ODM)
### Dimensions (Unit:mm)

![Dimensions Image]

### Mounting Support

Wall Mount (Standard)

DIN Mount (Optional)

### Packing List

1 x VITO-2060
1 x Utility CD including SDK, utilities, and technical documents
1 x Null modem cable
1 x Screw kit
1 x Wall mount kit

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**45W AC/DC Adapter**
Part No: 63000-UP0451E12P71L-RS

**45W AC/DC Adapter**
Part No: 63000-UP0451E24P56L-RS

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### Options

<table>
<thead>
<tr>
<th>Part No.</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>VITO-CF-2060CE-R10</td>
<td>256 MB CF memory card with built-in Windows® CE 5.0 OS image, licensed sticker, and BSP S/W CD</td>
</tr>
<tr>
<td>VITO-CF-2060XPE-R10</td>
<td>1 GB CF memory card with built-in Windows® XP Embedded OS image, licensed sticker, and SLD S/W CD</td>
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<tr>
<td>63000-UP0451E12P71L-RS</td>
<td>12 VDC 45 W power adapter with lock screw; 90–264 VAC input</td>
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<td>Din mount Kit</td>
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### Ordering Information

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<th>Part No.</th>
<th>Description</th>
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</thead>
<tbody>
<tr>
<td>VITO-2060-R10</td>
<td>Generic Data Collector with AMD® Geode™ GX466 333 MHz, 256 MB 400 MHz DDR SDRAM, 1 x VGA, 1 x line out, 2 x LAN, 3 x COM, 2 x USB</td>
</tr>
</tbody>
</table>