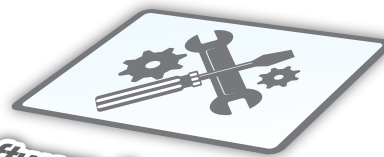


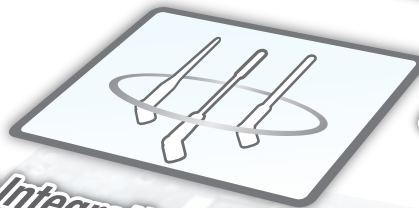
Embedded Wireless Modules

Enhancing Embedded Device Connectivity

- / GPS Modules
- / Cellular Modules
- / WiFi Modules
- / Bluetooth Modules



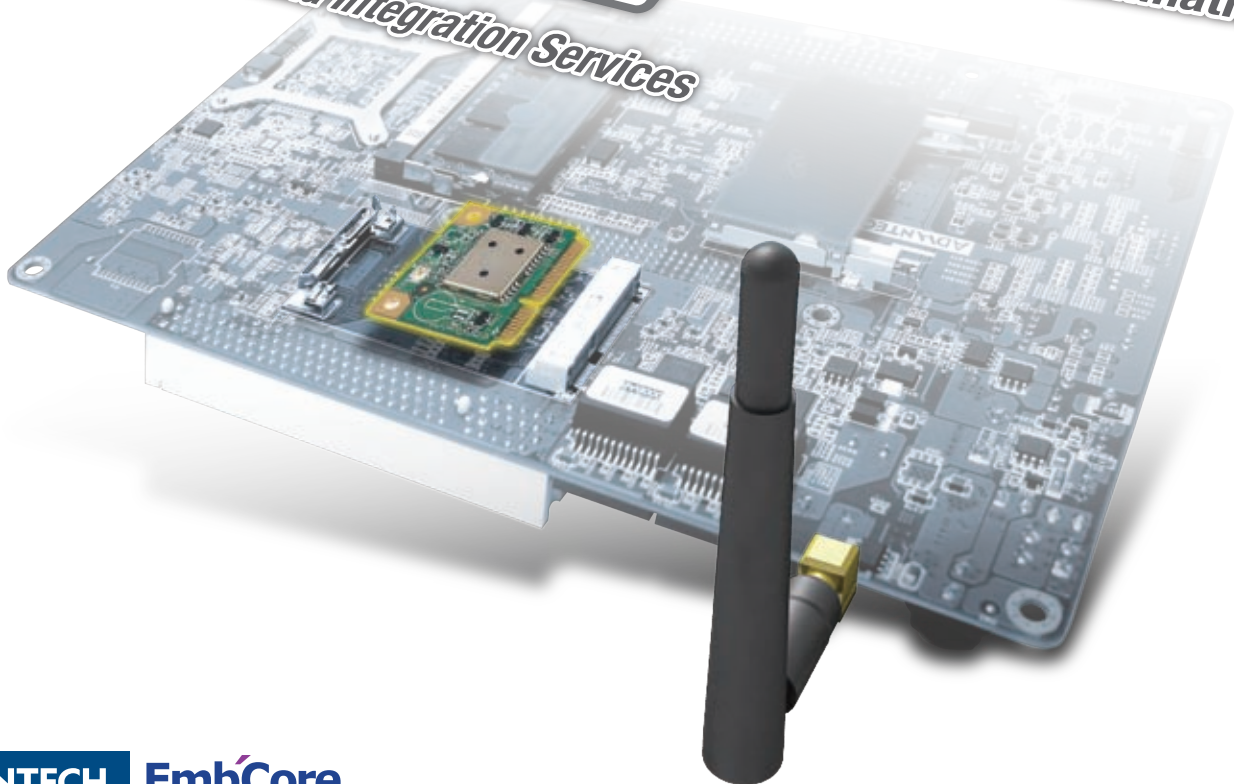
Software Services



Antenna Integration Services



Compatibility Examination



About Embedded Wireless Modules

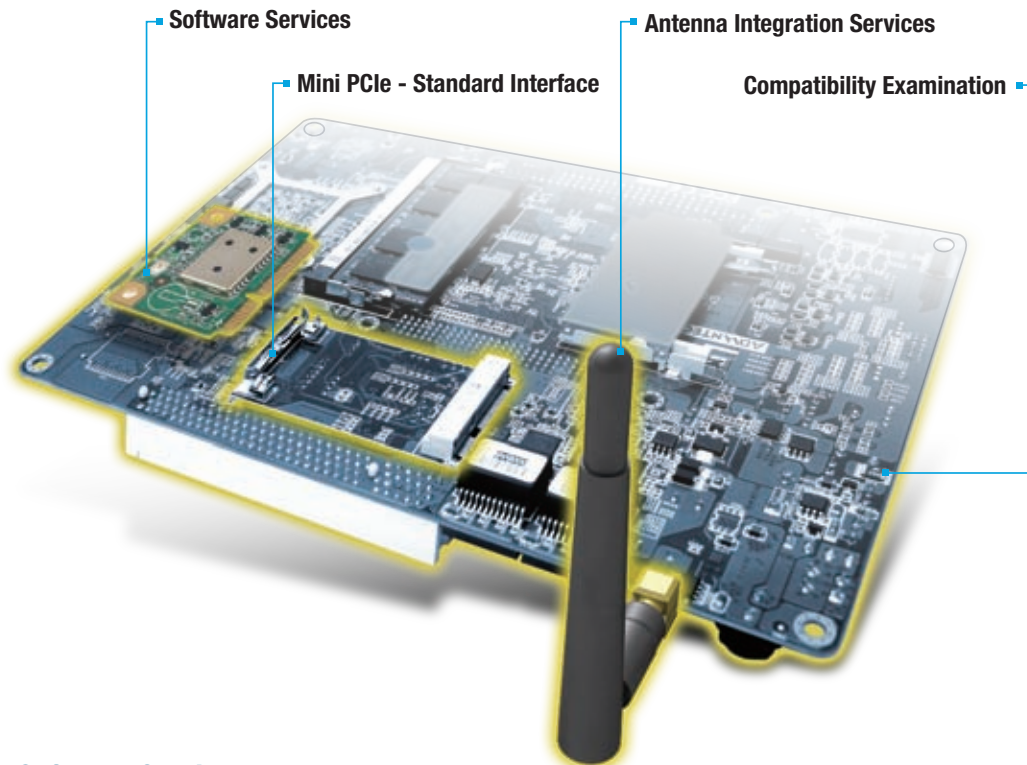
Advantech embedded wireless modules provide high quality, high performance and value-added solutions for embedded customers. We offer various embedded wireless modules, including GPS, WiFi, Cellular, Bluetooth and RFID modules. Besides wireless modules, we also provide a selection of antennas and cables. All of these help you to choose the exact wireless module and antenna to suit your application.

Advantech includes various API and utilities to get the most out of your application. A GPS parser API translates raw NMEA position, longitude, latitude and UTC timings used for GPS applications. Connection Manager provides a user-friendly interface to connect and disconnect to the network, and detect the display carrier name and signal strength. This simplifies connection to the internet without the need for complicated AT-commands.

Advantech gives customers a total solution from boards, to software, to modules. All embedded wireless modules are verified for compatibility with Advantech platforms, so customers can easily choose the right board with the right solution. Advantech Embedded Wireless Modules provide significant benefits to embedded customers—not just cost efficiency, but also reduced engineering design effort and faster time to market.



Integrated Wireless Module Services



Software Services

Advantech has strong customization capability to help our partners differentiate their product and stand out from others in embedded markets.

- ▶ **Cellular Connection Manager**
Eliminate complicated AT-Commands and enable easier cellular connectivity for embedded devices.
- ▶ **GPS Parser and API**
Receive satellite data, UTC timings, and GPS signal strength.



Antenna Integration Services

Advantech works with leading partners to offer a selection of different antennas or cables.

- ▶ Various kinds of antennas and cable connectors to choose from.
- ▶ Tests to ensure reflected power corresponds to the correct frequency values.



Compatibility Examination

Advantech develops boards and systems that support our partners in each application market.

- ▶ Use of IQChariot, GPS Stimulator, and EMI/EMS with Windows or Linux OS to examine the performance and throughput under X86/RISC platforms.
- ▶ Full examination of boards and modules, cables and antennas, to assure a total solution for easier design.

GPS Solutions

Advantech developed a GPS Parser utility with a user friendly GUI and API to help customers monitor signal strength and synchronize precise time. GPS Parser can receive satellite data and translate raw NMEA position, velocity and time data.

Software Services - Parser & API

- ▶ Receives GPS and GALILEO signals
- ▶ Sets COM port and Baud rate
- ▶ Starts or stops parsing NMEA data
- ▶ Gives longitude, latitude and UTC timing



Application Fields

- Location Based Services
- Environmental Monitoring
- Aviation Equipment
- Rail Transportation
- Telecoms
- Surveying & Mapping
- Marine

GPS Modules



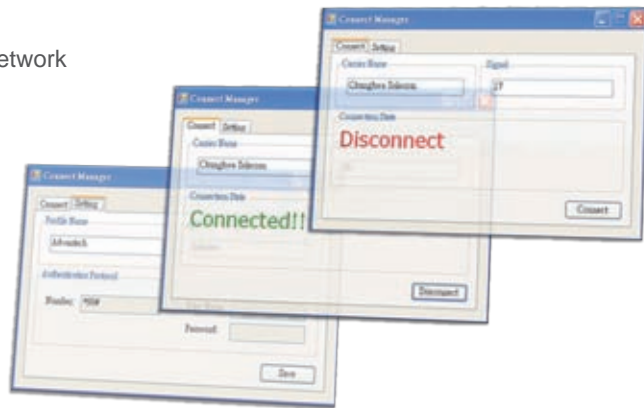
Model Name	EMW-G107F	EMW-G107H
Function	GPS	GPS
Connector	Full Mini-PCIe	Half Mini-PCIe
Interface	USB	USB
Chip	U-blox Neo-5Q	U-blox Neo-5Q
Operating Temp	-40 ~ 85°C	-40 ~ 85°C
Antenna Connector	Hirose U.FL	Hirose U.FL
OS/Drivers	Win7, Vista, XP, WinCE 5.0/6.0, and Linux	Win7, Vista, XP, WinCE 5.0/6.0, and Linux
Utility	Parser/API	Parser/API
Part Number	EWM-G107F01E	EWM-G107H01E

Cellular Solutions

Advantech Connection Manager is a user-friendly Graphical User Interface (GUI) tool that detects available cellular networks, automatically connects or disconnects to them, and displays carrier name and signal strength. Connection Manager makes it easy to control and monitor wireless modules.

Software Services – Connection Manager

- ▶ Graphical user interface tool
- ▶ Connect and disconnect to cellular network
- ▶ Detect and display carrier name
- ▶ Detect and display signal strength
- ▶ Pin code lock and unlock



Application Fields

- In-Vehicle Computers
- Rugged Tablet PCs
- Digital Signage Station
- Gaming Systems

Cellular Modules



Model Name	EWM-C104F	EWM-C105H
Function	3.5G Modem	3.75G modem
Connector	Full Mini-PCle	Half Mini-PCle
Interface	USB	USB
Chip	Qualcomm	Infineon
Operating Temp	-20 ~ 70°C	-30 ~ 70°C
Antenna Connector	Hirose U.FL	Hirose U.FL
OS/Drivers	Windows 7/ Vista/XP/ WinCE 5.0/ Linux 2.6x	Windows 7/ Vista/ XP
Utility	Connection Manager	Connection Manager
Part Number	EWM-C104F01E	EWM-C105H01E

WiFi Solutions

Advantech offers the Chariot professional WLAN software testing tool from NetIQ that can be used to measure throughput performance. It can generate network traffic information and measure performance metrics such as throughput and response times across a range of protocols, including TCP, UDP, and RTP.

Software Services – Chariot Examination

- ▶ Fully tests real-world networking application loads.
- ▶ Gauges response time and throughput for standard transactional applications.
- ▶ Measures jitter, delay and lost data for streaming applications.

Application Fields

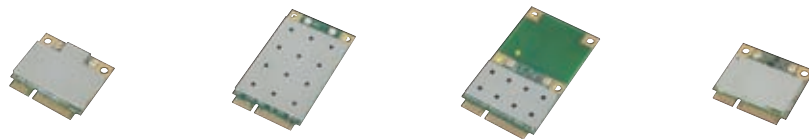
- POS/KIOSK
- Medical Nursing Cart
- Rugged Notebook/Tablet PC
- Vehicle Computer
- Digital Signage



WiFi Modules



Model Name	WiFi-105E	WiFi-109E	WiFi-110E	WiFi-112E
Function	802.11 b/g/n	802.11 a/b/g/n	802.11 b/g/n	802.11 b/g/n
Connector	Full Mini-PCle	Full Mini-PCle	Mini-PCI	Half Mini-PCle
Interface	PCIE	PCIE	PCI	PCIE
Chip	Ralink RT3091	Atheros AR9280	Ralink RT2860	Atheros AR9285
Operating Temp	0 ~ 80°C	-10 ~ 65°C	-5 ~ 55°C	0 ~ 80°C
Antenna Connector	Hirose U.FL	Hirose U.FL	Hirose U.FL	Hirose U.FL
OS/Drivers	Windows XP / Vista	Windows XP / Vista / Linux	Windows XP / Vista / Linux	Windows XP / Vista
Part Number	WIFI-105E	WIFI-109E	WIFI-110E	WIFI-112E



Model Name	WiFi-118E	WiFi-119E	EWM-W121F	EWM-W122H
Function	802.11 b/g/n	802.11 a/b/g/n	802.11 b/g/n	802.11 b/g/n + BT 3.0HS
Connector	Half Mini-PCle	Full Mini-PCle	Full Mini-PCle	Half Mini-PCle
Interface	PCIE	PCIE	PCIE	WIFI (PCIE) BT(USB)
Chip	Ralink RT3091	Atheros AR9280	Atheros AR9285	Ralink RT3090BC4
Operating Temp	0 ~ 80°C	0 ~ 70°C	0 ~ 80°C	0 ~ 70°C
Antenna Connector	Hirose U.FL	Hirose U.FL	Hirose U.FL	Hirose U.FL
OS/Drivers	Windows XP / Vista / Win7	Windows XP / Vista	Windows XP / Vista	Windows XP / Vista / Win7
Part Number	WIFI-118E	WIFI-119E	EWM-W121F01E	EWM-W122H01E

Bluetooth Solutions

Advantech bluetooth modules support a variety of bluetooth profiles that expand the scope of bluetooth devices. They offer great value added solutions for a multitude of applications.

Advantech Bluetooth Profiles

- ▶ Advanced audio distribution profile (A2DP)
- ▶ Device ID profile (DID)
- ▶ File transfer profile (FTP)
- ▶ Human interface device profile (HID)
- ▶ LAN access profile (LAP)
- ▶ Personal area networking profile (PAN)
- ▶ SIM access profile (SAP, SIM)

Application Fields

- Rugged Handheld Device
- Rugged Tablet PCs
- Voice Communication
- Short Range Data Transmission

Bluetooth Modules















Model Name	BT-300E	BT-101E
Function	Bluetooth	Bluetooth
Connector	USB type A	6-pin header
Interface	USB	USB
Chip	CSR	Broadcom
Operating Temp	0 ~ 60°C	0 ~ 80°C
Antenna Connector	N/A	PCB antenna
OS/Drivers	Windows 2000 / XP / Vista	Windows XP / Vista / Win7
Utility	Windows default	Windows default
Part Number	BT-300E	BT-101E

Antenna & Cables Selection Table

Advantech offers and integrates all kinds of antennas and cables for you. We can help you choose the right cable after assessing connector type and length, and help you select the right antenna for the right compact wireless module by frequency and antenna type.

Antenna

Part Number	Frequency	Antenna Gain	Length (cm)	Polarization	Connector
 1750005865	GSM dipole antenna 900/1800/1900 MHz	- 10 ~ - 6dBi @ 824 ~ 960 MHz - 8 ~ + 1dBi @ 1710 ~ 2170 MHz	10.9±0.2	Linear	RP-SMA male
 1750006119	GSM dipole antenna 900/1800/1900 MHz	2.0 ± 0.7dBi @ 900 MHz 2.0 ± 0.7dBi @ 1900 MHz	16.95±0.3	Linear	SMA male(MM)
 1750000820	WiFi integrate embedded antenna 2.4Ghz	2.0 ± 0.7dBi @ 2450 MHz	antenna 3.9 wire-1 15.5 wire-2 35.5	Linear	U.FL female
 1750000900	WiFi integrate embedded antenna 2.4Ghz	2.0 ± 0.7dBi @ 2450 MHz	antenna 3.9 wire-1 25 wire-2 39	Linear	U.FL female
 1750000318	WiFi dipole antenna 2.4Ghz	2.0 ± 0.5dBi @ 2450 MHz	10.9±0.2	Linear	RP-SMA Female(MF)
 1750003418	WiFi dipole antenna 2.4Ghz	9.0 ± 0.5dBi @ 2450 MHz	39.4	Linear	RP-SMA Female(MF)
 1750005866	Coaxial Cable	SMA (F) to MHF	10	N/A	U.FL female/ RP-SMA female
 1750005885	Coaxial Cable	SMA (F) to MHF	23	N/A	U.FL female/ RP-SMA male
 1750006009	Coaxial Cable	SMA (F) to MHF	25	N/A	U.FL female/ RP-SMA female
 1750006010	Coaxial Cable	SMA (F) to MHF	20	N/A	U.FL female/ RP-SMA male
 1750006043	Coaxial Cable	SMA (F) to MHF	15	N/A	U.FL female/ RP-SMA male
 1750006120	GPS antenna 1575Mhz	Antenna 4.5 dBi LNA 28 dBi	Cubic antenna 4.3x3.5x1.6 wire length:500	RHCP	SMA male(MM)

Medical Nursing Cart with Wireless Signal Detection

Introduction

Tablet PCs can be used in all kinds of applications, and medical nursing carts are one of them. Nursing carts help nurses record patient information during visits, reduce transcription errors, and improve the speed of recording, transmitting and searching. They eliminate handwritten paperwork and storage, help deliver better professional healthcare, and create a safer digital medical environment.

Application Requirements

A Taiwan customer in the medical field who is dedicated to improving the quality of service in hospitals, hopes to speed up data processing and delivery. To transfer critical data instantly, their application needed to insure that the Wifi signal strength on the nursing cart was strong and clear. The customer carefully researched the market and chose Advantech for its trusted product offering, strong technical support and solid integration services. The solution they wanted needed functions to identify and distinguish Wifi signal strength.

Solutions

To meet their requirements, Advantech choose WiFi-105E Mini-PCle card and created an ODM board with signal query mapping mechanisms based on the Windows OS environment. They implemented a micro-controller to connect the WiFi-105E card with another program which detects the current Wifi signal strength. Using 3-color green, orange, and red LEDs to present different signal strengths helped end users easily identify the signal strength to maintain the nursing cart's continuous operation and mobility. Advantech supports customers with technical integration for Wifi modules, software programs, and hardware platforms, and provides customized solutions from our design-in services which can fulfill any demand.

Benefits

- ▶ Embedded wireless design-in consulting services
- ▶ Embedded wireless modules of Mini-PCle standard interface for easy integration
- ▶ Various antennas and cables for selection
- ▶ One-stop shopping assures both time and cost efficiency



GPS Atomic Clock Synchronization for Power Grid Transmission

Introduction

Electrical power is essential for the proper functioning of society, providing energy for many different devices and applications. Power plants transmit generated power through the grid to suburban areas, so the power grid must function continuously and reliably. To keep all this running properly the power plant needs systems which can monitor and detect problems that could cause catastrophic failure and huge economic loss—before they happen.

Application Requirements

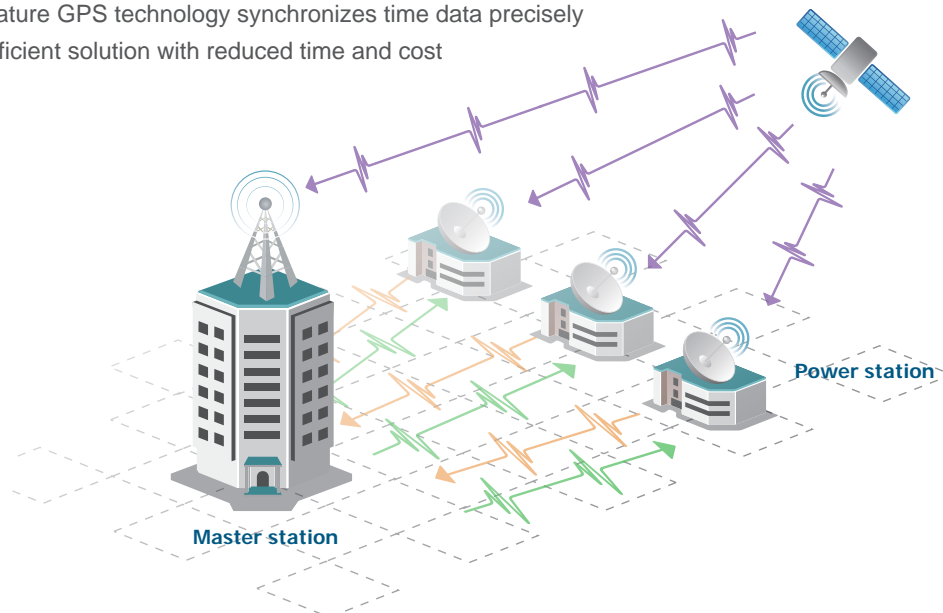
To quickly find the source of any potential power blackouts, the power plant sends a loop back code to each power station in the grid for feedback. This mechanism detects line faults and can quickly restore the whole system if necessary. A customer approached us wanting to enhance the time synchronization mechanism of the feedback code from the stations so they can receive the loop back code precisely—thereby accurately locating the fault and making the recovery process more efficient.

Solutions

Eager to solve this critical issue, the customer evaluated the market options and chose Advantech which provided them with wireless GPS modules. EWM-G107H was integrated with Advantech's AIMB-212 industrial motherboard and placed in the power station devices to synchronize time data. By analyzing the precise timing of any electrical anomalies after the power plant sends out the loop back code, enabled the customer to trace the exact location of a power line break. This application used GPS satellites for high-precision timing over long distances of the power network, and helped them quickly locate power failures as soon as possible to avoid damage.

Benefits

- ▶ Ready to use modules for embedded OS and applications
- ▶ GPS modules with Mini-PCIe interface for easy integration and upgrades
- ▶ Mature GPS technology synchronizes time data precisely
- ▶ Efficient solution with reduced time and cost



Regional Service & Customization Centers

China	Kunshan 86-512-5777-5666	Taiwan	Taipei 886-2-2792-7818	Netherlands	Eindhoven 31-40-267-7000	Poland	Warsaw 48-22-33-23-730	USA	Milpitas, CA 1-408-519-3800
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Worldwide Offices

Greater China

China

Toll Free	800-810-0345
Beijing	86-10-6298-4346
Shanghai	86-21-3632-1616
Shenzhen	86-755-8212-4222
Chengdu	86-28-8545-0198
Hong Kong	852-2720-5118

Taiwan

Toll Free	0800-777-111
Rueiguang	886-2-2792-7818
Yang Guang	886-2-2792-7818
Shing-Tien	886-2-2218-4567
Taichung	886-4-2378-6250
Kaohsiung	886-7-229-3600
Hsinchu	886-3-516-9320

Asia Pacific

Japan

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Tokyo	81-3-6802-1021
Osaka	81-6-6267-1887

Korea

Toll Free	080-363-9494
Seoul	82-2-3663-9494

Singapore

Singapore	65-6442-1000
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Malaysia

Toll Free	1800-88-1809
Kuala Lumpur	6-3-7724-3555
Penang	60-4-397-3788
	60-4-397-4188

Thailand

Bangkok	66-2-248-3140
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India

Toll Free	1800-425-5070
Bangalore	91-80-2337-4567

Australia

Toll Free	1300-308-531
Melbourne	61-3-9797-0100
Sydney	61-2-9482-2443

Indonesia

Indonesia	62-21-7690525
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Russia

Toll Free	8-800-555-01-50
Moscow	7-495-232-1692

Europe

Toll Free	00800-2426-8080
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Germany

Munich	49-89-12599-0
Düsseldorf	49-211-97477-0

France

Paris	33-1-4119-4666
Grenoble	33-4-7670-4700

Italy

Milano	39-02-9544-961
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Benelux & Nordics

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Roosendaal	31-165-550-505

UK

Berkshire	44-1344-3812210
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Poland

Warsaw	48-22-33-23-740 / 41
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Americas

North America

Toll Free	1-800-205-7940
	1-888-576-9668
Cincinnati	1-513-742-8895
Milpitas	1-408-519-1788
Irvine	1-949-789-7178

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Saude-São Paulo	55-11-5592-5355

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EmbCore

www.advantech.com

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