

## Market Analysis & Forecasts



### Assessment of the Total Available Market for the Industrial Internet of Things (IIoT)

2016 Edition | Market Analysis and Forecasts to 2021  
July 2016 | 62 Pages

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## Abstract

Semicast has covered the market for industrial electronics and semiconductors since 2006 and views the sector as a series of markets within a market, each with its own trends and suppliers. This arguably makes it the most complex sector for electronics and semiconductor vendors to understand and support. Semicast defines the industrial electronics market to include traditional areas such as factory automation, motor drives, lighting, building automation, surveillance, test & measurement and power & energy, as well as medical and industrial transportation equipment such as construction and mining; aerospace & defense is excluded. Using this definition Semicast estimates that global revenues for industrial electronics totaled just over \$800 billion in 2015, while semiconductor revenues in the industrial sector are estimated to have totaled almost \$41 billion.

The Internet of Things (IoT) has been the key focus area for the electronics and semiconductor industry for the last five years. It is Semicast's view that Industrial IoT can be broadly described as intelligence and connectivity being added to ever smaller, distributed, remote industrial devices. This includes obscure, somewhat dull product categories, such as pressure measurement, proximity sensors and motion detectors, which offer none of the glamor and allure of smart phones, smart watches or wearables, but which nonetheless are manufactured in volumes of ten of millions of units per year. Unlike wearables and other "smart things", demand for these devices is established and their market sizes known; the trend of IIoT is for more of them to be intelligent and connected. This intelligence and connectivity increasingly comes from the addition of sub-\$1 32-bit microcontrollers, together with wireless communications such as 6LoWPAN, Bluetooth/BLE, LoRa, NFC, Sub-1/2.4 GHz, Wi-Fi and ZigBee. These intelligent, connected, industrial devices generate the Little Data which has never previously been captured, to be processed locally or fed straight to the Cloud for Big Data analytics, thus creating the IIoT of smart buildings, cities, factories, grid, medical, payment and security.

This study does not provide revenue and unit estimates specifically for intelligent and connected industrial devices since that cannot be reliably forecast. Instead Semicast has used its more than ten years experience of the industrial electronics market to present the total available market for more than 130 industrial and medical electronics equipment types, including dumb, intelligent, connected and isolated equipment. There then follows an assessment of the total number of devices **available** to be connected to the IIoT, which either already have intelligence and connectivity (such as PLCs), or are judged suitable to have it added (such as LED lighting). Base year is 2015, with forecasts provided to 2021.

**It is strongly recommended that this study is used as a companion to the two Semicast studies [Tactical Analysis of the World Industrial/Medical Electronics Market & Supply Chain](#) and [Industrial/Medical Semiconductor Service](#), to ensure completeness of the overall forecasts.**

## Industrial Market Segments & Sub-segments

The study segments the market for industrial electronics systems into nine segments and further sub-segments as follows:

### Segment

- Factory Automation & Control
- Motor Drives
- Lighting, Building Automation , HVAC & Refrigeration
- EPOS, EFT & ID
- Test & Measurement
- Consumer Medical
- Medical Imaging & Diagnostics
- Power & Energy
- Industrial Transport

### Additional sub-segmentation

- Control & Compute, Process Measurement & Field Instruments, Switchgear, Misc. Automation
- Lighting, Building Automation, HVAC & Refrigeration
- Application Specific Test & Measurement, General Purpose Test & Measurement, Instrumentation & Other Equipment
- Medical Imaging, Diagnostics/Therapy & Monitoring

## Industrial Equipment Coverage

The total available market for industrial equipment types analyzed in the study are as follows:

**Factory Automation & Control: Control & Compute** [Industrial Ethernet Infrastructure, Computer Numerical Control, Industrial PCs, Embedded Computer Boards & Modules, HMIs & Operator Panels, Machine Vision Inspection Systems, PLCs & PACs, Distributed & Remote I/O Modules] ; **Process Measurement & Field Instruments** [Process Analytical Instruments, Flow Measurement, Level Measurement, Pressure Measurement, Temperature Measurement, Process Variable Transmitters, Telemetry / RTUs, Process/Temperature Controllers, Position Sensing] ; **Switchgear** [Circuit Breakers, Contactors, Protection Relays, Solid State Relays] ; **Miscellaneous Automation** [Pumps, Robotics, Semiconductor Manufacturing & Test Equipment, Welding].

**Motor Drives:** AC Drives, DC Drives, Servo Drives, Stepper Drives, Soft Starters/Brakes.

**Lighting, Building Automation, HVAC & Refrigeration:** **Lighting** [Electronic Ballasts/Lamps & Modules, Lighting Controls, Street Lights/Traffic Lights & Control] ; **Building Automation** [Fire Detection, Fire Alarm Control Panels & Annunciators, Fire Alarm Notification, Intruder Alarm Control Panels, Intruder Detection & Notification, CCTV/Video Surveillance Cameras, CCTV/Video Surveillance Equipment, Electronic Access Control, Elevators & Escalators] ; **HVAC & Refrigeration** [Boilers & Warm Air Furnaces, Circulator Pumps, Compressors, Electronic Room Thermostats & Controls, Humidifiers/Dehumidifiers, Unitary Air Conditioners, Commercial Refrigeration].

**EPOS, EFT & ID:** ATMs, Handheld EFT Transaction Terminals, POS Authentication Pads, EPOS/ECR/Cash Drawer, Handheld Data Terminals, Fuel Dispensers, Vending/Payment/Change Machines, Card Readers, Coin Acceptors & Currency Validators, Printers, Scanners, Smart Cards.

**Test & Measurement: Application Specific T&M** [Automotive Test Equipment, Broadband Test Equipment, Fiber Optic Test Equipment, Wireless Test Equipment, Other Test Equipment] ; **General Purpose T&M** [Counters & Timers, Logic Analyzers, Digital Multimeters, Network Analyzers, Digital Oscilloscopes, PC-based Test Equipment, RF Power Meters, PXI/VXI-based Test Equipment, Signal/Function Generators, Spectrum Analyzers, Other General Purpose T&M] ; **Instrumentation & Other Equipment** [Calibration Instruments, pH/ORP Instruments, Chart Recorders & Data Acquisition, Laboratory Instrumentation, Scales & Weighing Equipment, Non-Destructive Test Equipment].

**Consumer Medical:** Blood Glucose Meters, Blood Pressure Monitors, Telehealth Gateways, Fitness Monitors, Electronic Thermometers, Pregnancy Testers/Fertility Monitors.

**Medical Imaging & Diagnostics: Medical Imaging** [CT, Ultrasound, MRI, PET/PET-CT, CR/DR, Picture Archiving & Communications] ; **Diagnostics, Therapy & Monitoring** [ECG, Dialysis Machines, Medical Ventilators, Point-of-care Testing, Pulse Oximetry Monitoring, Multiparameter Patient Monitors, Medical Lasers, Medical Endoscopes, Infusion Pumps, Pacemakers, Implantable Cardioverter Defibrillators, Cardiac Resynchronization Therapy, Pain Management Devices, External Defibrillators, Digital Hearing Aids, Sleep Diagnostics, Therapy & Interfaces, Fitness Machines, Electronic Beds, Electronic Wheelchairs, Powered Scooters].

**Power & Energy:** AC/DC Power Supplies, DC/DC Converters, DC/AC Power Inverters, Industrial Battery Chargers, UPS, Generators, Smart Utility Meters, Electric Vehicle Charging Stations & Infrastructure, Distribution & Substation Automation, Renewable Energy.

**Industrial Transport:** Construction, Lifting & Mining, Agricultural Equipment, Materials Handling Vehicles, Refrigerated Trailers, Electric Motorized Vehicles, Rolling Stock, Signaling & Systems.

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## Example Tables

**Global Equipment Production Estimates and Forecasts in the Factory Automation & Control Sector**

Units (KU)	2015	2016	2017	2018	2019	2020	2021	CAGR	DIFF	SUM
								(15/21)	(15-21)	(15>21)
<b>Control &amp; Compute</b>										
Industrial Ethernet Infrastructure										
Computer Numerical Control (CNC)										
Industrial PCs										
Embedded Computer Boards & Modules										
HIMIs & Operator Panels										
Machine Vision Inspection Systems										
PLCs & PACs										
Distributed & Remote I/O Modules										
<b>Process Measurement &amp; Field Instruments</b>										
Process Analytical Instruments										
Flow Measurement										
Level Measurement										
Pressure Measurement										
Temperature Measurement										
Process Variable Transmitters										
Telemetry / RTUs										
Process/Temperature Controllers										
Position Sensing										
<b>Switchgear</b>										
Circuit Breakers										
Contactors										
Protection Relays										
Solid State Relays										
<b>Miscellaneous Automation</b>										
Pumps										
Robotics										
Semiconductor Manufacturing & Test Equipment										
Welding										
<b>Sector Total</b>										
Annual Growth Rate										

**System Revenues in the Factory Automation & Control Sector by Equipment Type**

Revenues (US\$ Millions)	2015	2016	2017	2018	2019	2020	2021	CAGR	DIFF	SUM
								(15/21)	(15-21)	(15>21)
<b>Control &amp; Compute</b>										
Industrial Ethernet Infrastructure										
Computer Numerical Control (CNC)										
Industrial PCs										
Embedded Computer Boards & Modules										
HIMIs & Operator Panels										
Machine Vision Inspection Systems										
PLCs & PACs										
Distributed & Remote I/O Modules										
<b>Process Measurement &amp; Field Instruments</b>										
Process Analytical Instruments										
Flow Measurement										
Level Measurement										
Pressure Measurement										
Temperature Measurement										
Process Variable Transmitters										
Telemetry / RTUs										
Process/Temperature Controllers										
Position Sensing										
<b>Switchgear</b>										
Circuit Breakers										
Contactors										
Protection Relays										
Solid State Relays										
<b>Miscellaneous Automation</b>										
Pumps										
Robotics										
Semiconductor Manufacturing & Test Equipment										
Welding										
<b>Sector Total</b>										
Annual Growth Rate										

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## Example Tables

Assessment of the Total Available Market for the Industrial Internet of Things in the Factory Automation & Control Sector

	2015	2016	2017	2018	2019	2020	2021	CAGR (15/21)	DIFF (15-21)	SUM (15>21)
<b>Control &amp; Compute</b>										
Industrial IoT TAM Revs (\$m)										
Industrial IoT TAM Units (KU)										
<b>Process Measurement &amp; Field Instruments</b>										
Industrial IoT TAM Revs (\$m)										
Industrial IoT TAM Units (KU)										
<b>Switchgear</b>										
Industrial IoT TAM Revs (\$m)										
Industrial IoT TAM Units (KU)										
<b>Miscellaneous Automation</b>										
Industrial IoT TAM Revs (\$m)										
Industrial IoT TAM Units (KU)										
<b>Industrial IoT TAM Revs (\$m)</b>										
Annual Growth Rate										
<b>Industrial IoT TAM Units (KU)</b>										
Annual Growth Rate										

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## Analyst Biography

Colin Barnden - Principal Analyst



Colin joined Semicast Research in 2006 and is principal analyst for semiconductor research and vice president of business development. Prior to joining Semicast, he worked for 12 years at IMS Research, rising to the position of Senior Research Director of its Semiconductor Research Group and responsible for analyst coverage on the analog/mixed signal, optoelectronic and embedded processing industries. Colin also set-up and established IMS Research's Automotive Electronics Group. During his tenure, Colin authored dozens of reports and became a well respected industry analyst. He holds a B.S. in Electronic Engineering from Aston University, England and has more than twenty years of experience as an industry analyst.

## About Semicast

Founded in 2006, Semicast has an established reputation at most top 20 semiconductor suppliers, with areas of expertise covering industrial and medical electronics and semiconductors; under-the-hood automotive electronics; automotive audio, infotainment & navigation systems; automotive semiconductors; and embedded processing.

With more than twenty years of market research experience, our analysts use a combination of technical expertise, a proven method for producing electronics focused market research and specific applications knowledge to produce concise and timely research to help you make effective business decisions.

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