INDUSTRIAL
IOT

Solving your operational challenges today

RS

Contents

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Terms & Conditions

Industrial IoT – Understanding the basics

The concept of IoT – The Internet of Things - in the consumer space is already well established. Examples like the Google Nest are allowing us to create a connected home with thermostats, cameras and even doorbells all connected via the Internet to smart apps and cloud services.

So, the concept is proven, the technology exists, and the benefits are clear: convenient, mobile or remote access to devices or data reliably and securely helping you to make decisions faster.

You may have already started an Industrial Internet of Things project, or you may have thought I know I need to do something - *but where do I start?*

6 Steps on the Industrial IoT journey

Based on insight from manufacturers and IIoT pioneers we've listed six steps to consider when in pursuit of the connected factory.

1. Carefully consider what you are trying to achieve

Be clear on what the challenge is you wish to use IIoT to solve. If it's just one or two elements or conditions which you want to monitor or track, focus on those. It will reduce complexity and cost allowing you to prove the benefits faster.

2. Start small

Don't try and create a complete IIoT infrastructure in one hit, even if you are considering purchasing an off the shelf software solution. Prove it, build on that knowledge, and demonstrate the value.

3. Get the buy-in from IT

If this could be a potential barrier don't try and go around the IT team, be clear on your objectives and work with them. If they have concerns, you can start with closed networks or cellular networks (3/4G) which create physical isolation from the business's IT infrastructure for which the IT team are responsible.

4. Operational Equipment Effectiveness (OEE)

If your primary objective is improving this then you may wish to consider a combination of tapping into existing data – trapped in PLCs or other parts of the control system – and connected T&M which can help improve predictive maintenance, reduce unplanned downtime and speed up the diagnostics process. You may also need to add additional sensors which can provide data on conditions – for example motor vibration – which are not known to the control system.

5. Exposing Productivity Data

If your main objective is accessing production data so you can better understand how your process is performing, unlocking existing data should be your first step. Virtually all the key attributes – speed, output, process variables, etc – are available within the control system. In many cases these can be retrospectively released via protocol monitors completely transparently, without the control system being compromised.

6. Start on-premise before thinking about the cloud

This approach has multiple benefits. Firstly, it can allay security concerns that your IT team might have. It can also simplify the solution, while not preventing the data from being 'cloud ready' in the future. Our experts suggest that in many cases the information will only be used or accessed on site so the benefits of a cloud-based solution might be negligible.

Within the following pages you'll find products which can help unlock productivity data, products which can add intelligence to existing machinery making them IIoT ready and products which enable to you to monitor conditions or make measurements and share these easily with colleagues or for reference.

One thing is clear. Industrial IoT and the concept of Industry 4.0 is here to stay, and you need to be considering how you will start using it today.

SMC IO-Link

New technology enables sensors and actuators to become smarter but…

What is IO-Link really?

IO-Link (IEC61131-9) is an open standard serial communication protocol that allows the bi-directional exchange of data from sensors and devices that support IO-Link and are connected to a master. The IO-Link master can transmit this data over various networks, fieldbuses, or backplane buses, making the data accessible for immediate action or long-term analysis via an industrial information system (PLC, HMI, etc.).

Each IO-Link device has an IODD (IO Device Description) file that describes it and its IO-Link capabilities.
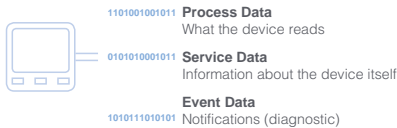
Did you know that…

IO-Link is *not* another fieldbus. It is a point-to-point communication between a compatible IO-Link Master and a field device. Because IO-Link is an open standard, Master devices are available for virtually **any fieldbus or automation system (PLC)**.

IO-Link with SMC: **The 6 advantages**

Increased data availability

There are **three primary data types** made available, which are categorized into *cyclic data* (data automatically transmitted on a regular basis) or *acyclic data* (data transmitted as needed or upon request).

1101001001011 **Process Data**
What the device reads

0101010001011 **Service Data**
Information about the device itself

Event Data
1010111010101 Notifications (diagnostic)

Product diagnostic

No need to wait for a process failure to replace a sensor. Devices are always being monitored to know the state of their health with **Event Data**.

Depending on the device, you can track if they are suffering excessive temperature, pressure, if they are out of range, internal default, etc.

Standard wiring

The entire measured value **transmission is digital**, thus, all device **parameter are stored in the IO-Link** master. The data transfer is based on a 24 V signal and the **shielded wires are not required**.

Remote access

Customised solutions force a **continuous change in parameters**. The overall setting control from the control system (PC) minimises time, increasing machine availability.

10101110110101
10101110110101

Easy device replacement

Plug & play replacement simplifies the connection: a common connector for communication and power. Parameters are saved in the master, enabling **automatic setting** once the device is connected.

Tamper free

The key-lock function keeps unauthorised persons from tampering with the settings.

Together these advantages result in:

▶ Reduce overall costs.   ▶ Increase process efficiency.   ▶ Improve machine availability.

Pneumatic Rotary Actuators

- The SMC CRB1 series vane style rotary actuator used compact auto switches and rotation angle of up to 270° is possible for the entire series
- The double vane style offered on the 90° and 100° rotation allow twice the torque of the single vane. The bearing are used throughout the series to support thrust and radial load
- In addition, rubber bumpers are used internally making this series highly reliable

IO-Link

302-5800	50mm Bore
232-8948	50mm Bore
232-8949	80mm Bore
196-1180	80mm Bore
302-5793	50mm Bore
232-8845	50mm Bore
849-7045	50mm Bore
196-1179	50mm Bore
232-8947	100mm Bore
849-7042	50mm Bore

Digital Hydraulic Pressure Switches

- The SMC ISE20A series high-precision digital pressure switch is a compact, pressure switch (for positive pressure) and can be integrated with ZX or ZR vacuum systems
- This pressure switch has a positive pressure with applicable fluid air, non-corrosive gas, non-flammable gas

IO-Link 10 bar

231-5361	1 bar
231-5354	10 bar
231-5362	1 bar
231-5356	10 bar
231-5355	10 bar

ISE7 Series Pressure Sensor for Air & General Fluids

- High precision digital pressure switch with unique rotating angled display and IP67 protection - perfect for washdown environments
- 3 setting modes and IO-Link as standard
- Digital output select from NPN or PNP open collector
- 181-6337 is suitable for air only, other options are suitable for use with general fluids

IO-Link

181-6337	0 to 1 MPa, ¼" port, IO-Link 2 switched outputs

VX2 Series – 2 Port Valves

- Suitable for use with air, medium vacuum, water or oil
- 20% greater flow rate than conventional 2-port solenoid valves
- Stainless steel or resin body options
- Resin body versions use SMC one-touch fittings to aid fast installation

893-0025	Size 1, 24Vdc N/C, VX210JG
893-0041	Size 3, 24Vdc N/C, VX232DGAXB
893-0069	Size 1, 24Vdc N/C, VX212MGKXB
893-0063	Size 2, 24Vdc N/C, VX222HGKXB
893-0057	Size 3, 24Vdc N/C, VX234GGA
893-0075	Size 1, 230Vac N/C, VX212ALAXB
893-0094	Size 2, 230Vac N/C, VX224ELAXB
893-0097	Size 3, 230Vac N/C, VX234GLA

Energy Saving Vacuum Units

- Energy saving injectors with integral 24Vdc solenoid valve help reduce air consumption by up to 90%
- Digital pressure switch for vacuum with energy saving function cuts supply air when the pressure reached the desired vacuum
- Three nozzle sizes available with air connection via Ø 8 One-touch fittings

204-3329	10mm nozzle, -0.91bar 56L/min, ZK2A
204-3332	12mm nozzle, -0.91bar 74L/min, ZK2A
124-4233	1.2mm with Press. Sensor 0 to -101 kPA
204-3334	12mm nozzle, -0.91bar 74L/min, ZK2A
124-4235	1.0mm with Press. Sensor -100 to 100 kPA
204-3335	0.7mm nozzle, -0.91bar 34L/min, ZK2A
204-3336	10mm nozzle, -0.91bar 56L/min, ZK2A
204-3338	12mm nozzle, -0.91bar 74L/min, ZK2A
204-3341	12mm nozzle, -0.91bar 74L/min, ZK2A

PSE560 General Purpose Pressure Sensor

- IP65 sealed pressure sensor with stainless steel 316L wetted parts
- Suitable for fluids and gases which are compatible with 316L - options for vacuum and positive pressure
- 12-24Vdc power with proportional output either 1-5V or 4-20mA

700-7581	PSE560-01 0-101 kPA 1-5V
700-7588	PSE563-01 -100 to 100kPA 1-5V
700-7597	PSE563-01-28 -100 to 100kPA 4-20mA

IO-Link enabled Digital Pressure Switch

- The PAC50 digital pressure switch offers users the ability to both monitor and control pneumatic air pressures
- A combination of colour change display, configurable NPN/PNP or 4-20 mA outputs and the option of IO-Link capability enhance its versatility
- IP65/67 polycarbonate body with the choice of G ¼ or 4mm push-fit process connections

SICK

100-0674	Pressure switch -1 to +1 Bar, PNP, 4mm
100-0675	Pressure switch -1 to +1 Bar, PNP, G¼"
100-0678	Pressure switch 0-10 Bar, IO Link, PNP, 4mm
100-0679	Pressure switch 0-10 Bar, IO Link, PNP, G¼"

CleverLevel® Point Level Detection

- An innovative level switch based on frequency sweep technology providing point level detection for all media via G½ A hygienic process fitting
- Reliable regardless of the medium: liquid, paste-like, sticky or solid and distinguishes foam and liquid
- IO-Link enabled providing additional performance and status information on the process and sensor

189-2704	PNP, Standard Approvals
189-2705	PNP, ATEX Approved
189-2706	Digital push-pull, ATEX Approved

OMT100 IO-Link Distance Sensor

- IO-Link capable photoelectric sensors combine simple NPN/PNP switching with communication down to sensor level, allowing sensor intelligence to be used to its full potential
- Designed for long operational life with a choice of LED or laser light spot
- Two switched outputs with teach-in button and function for precise configuration

PEPPERL+FUCHS

124-0325	R100 100mm Red LED, IO-Link, 2 push-pull o/p
124-0326	R100 100mm Laser, IO-Link, 2 push-pull o/p
124-0337	R101 100mm Laser, IO-Link, 2 push-pull o/p

E2E Inductive sensors with IO-Link

- Based on the existing E2E series nickel-plated brass IP67 threaded inductive sensors but with IO-Link capability
- The sensors still operate in the traditional way with a PNP NO/NC switched output, with the added benefit of IO-Link status data being accessible via a gateway over the same wiring

OMRON

124-4439	M12, Sr 3mm, NO/NC, M12 - E2E-X3B4-M1TJ-IL3 0.3M
124-4440	M18, Sr 7mm, NO/NC, M12, E2E-X7B4-M1TJ-IL3 0.3M
124-4441	M30, Sr 10mm, NO/NC, M12, E2E-X10B4-M1TJ-IL3 0.3M

E3Z Photoelectric sensors with IO-Link

- Omron's popular E3Z series of photoelectric sensors with IO-Link connectivity built-in
- IO-Link connectivity makes sensor level information visible and notifies of faults and problems in the sensor in real time
- Retro-reflective versions have polarised light source for shiny object detection

OMRON

124-4436	Retro-reflective, Sr 4m, M8, E3ZR86IL3OMS
124-4437	Diffuse, Sr 1m, M8, E3ZD87IL3OMS
124-4438	Diffuse, Sr 90mm narrow, M8, E3ZL86IL3OMS
124-4435	Thru-beam, Sr 15m, M8, E3ZT86IL3OMS

Colour Mark Detection Sensor with IO-Link

- The E3S-DC colour mark photoelectric sensor offers reliable detection of colour markings on any type of packaging - even glossy
- High luminance, three-element (RGB) LED light source for greater light intensity
- Highly efficient optics technology enables stable detection even of subtle colour differences
- Narrow beam and large lens, NC/NO configurable push-pull output, full IO-Link V1.1 capability built-in

OMRON

124-4428	E3S-DC Colour Mark Sensor

Flow & Pressure Sensors

- IO-Link enabled flow and pressure sensors for inline measurement and monitoring for process applications
- Offers easy integration of critical process information via IO-Link communication
- Integrated temperature monitoring for detecting system abnormalities - local indication as well as Analog, IO-Link & PNP control outputs
- Compact and flexible design - easily install in place of an existing gauge

OMRON

181-0651	Flow to 100l/min - E8FC-25T
181-0608	Pressure to 10bar - E8PC-010T-E
181-0609	Pressure to 100bar - E8PC-100T-E

LASCAR electronics

The EL-MOTE-TC and EL-MOTE-DTC are wireless, Cloud-enabled data loggers that monitor temperature across a maximum range of -200 to 1,190°C. Both versions of the EL-MOTE are perfect for industrial environments, and thanks to their water-resistant design, they can be used outside as well as indoors. View and analyse readings via the EasyLog Cloud using any web browser, smartphone or tablet.

EasyLog

◀ EL-MOTE-TC

Cloud Enabled

Product	Description	RS Part
EL-MOTE-TC	Thermocouple Probe Cloud-Connected Temperature Data Logger -200 to 1,190°C (J-Type)	184-7730
EL-MOTE-DTC	Dual Channel Thermocouple Probe Cloud-Connected Temperature Data Logger -200 to 1,190°C (J-Type)	184-7731

Ideal for use in industrial environments

PerfTrak Machine Performance Tracker

- A machine performance tracking system which combines IoT technologies with the principles of Lean Management & CI (continuous improvement) in order to monitor machine performance & OEE
- The module captures sensor data, which is sent via Bluetooth to an Android© tablet where operators input reasons for any performance losses
- This consolidated dataset creates a powerful, instant access set of decision making tools

PTV - ProducTVity Station

- A ready to deploy solution for displaying productivity information and process status on standard TVs & monitors - allowing data to be shared & acted upon
- Via over 300 communications drivers, three serial ports and an Ethernet port, the PTV can connect and collect data from virtually any PLC, drive, fieldbus, bar code scanner, etc.
- A data dashboard is then displayed via DVI output on any 720p & 1080p/i monitor or TV while built-in data-logger can records key performance data and provides email and SMS message alerts

SmartMONITOR Monitoring & Andon Solution

- SmartMONITOR is the smart monitoring and data collection solution for businesses looking to gather reliable data to optimise manufacturing processes
- Provides both an Andon light wireless solution for call-for-action and operational monitoring
- A complete plug-n-play solution which can be retrofitted and offers either manual control or full PC monitoring

TEEP TRAK

183-0023

red lion

905-5719 Productivity Station - PTV00000

WERMA

184-5123	WIN Wireless Receiver with Ethernet
184-5124	WIN Slave Transmitter Module
185-3038	WIN KombiSIGN 71 Base Unit
184-5126	Red KombiSIGN LED Module
184-5128	Amber KombiSIGN LED Module
184-5127	Green KombiSIGN LED Module
455-3407	KombiSIGN Terminal Unit
314-7332	KombiSIGN Tube Mounting Base

The real recipe for success for Data, Signal and Power:
the Han® F+B Inserts.

The Han® F+B is the first connector for the food industry that can be configured with 25 different inserts. It can be used to transfer bus systems, signals or power with contacts up to 40 A.

COMMUNICATION BREAKDOWN

The concept of 'The Industrial Internet of Things' and the digitisation of the manufacturing world opens the doors to unprecedented business opportunities and operational benefits. However this is only possible if meaningful information can be shared openly, seamlessly and securely.

OPEN WIRELESS NETWORKS

One challenge which IIoT faces is the need to connect devices, often legacy ones which are not Ethernet enabled, or those which are outside the reach of cabled Ethernet networks. While IEEE 802.11 WiFi networks are one solution their range and other technical restrictions can be a barrier.

LORAWAN™ AND SIGFOX

These are examples of low power, wider area open networks which meet the increasing requirements of mass IoT applications. Their combination of low device integration cost, low connectivity fee, high network capacity, low power usage and long range have made them attractive to industrial applications which often require a small amount of data to be transmitted frequently.

4G AND BEYOND...

While there is much excitement about the arrival of 5G, the reality for industrial applications is that 3/4G offers more than enough in terms of data-rates and latency for the vast majority of industrial IOT tasks.

Cellular network coverage is continually improving around the world, it's very standardised and the choice of industrial cellular hardware – such as modems & routers – is continually expanding. This combined with the relatively low subscription costs makes cellular connectivity an attractive option for IIoT projects.

OPEN DATA STANDARDS – OPC UA

Industrial IOT enables a broader range of technologies which have previously not been connected to IP-based networks and connects them via new, emerging networks. However, they still need a common way to communicate if the information is to be usable. Therefore, a strong case exists for standardised 'Middleware' which can be the key enabler to this fourth industrial revolution. OPC UA is a standard that could make this a reality.

OPC UA addresses the need for standardised data connectivity and interoperability either in Machine-to-Machine (M2M) data connectivity within factory floor systems or device-to-cloud or server data transfer – such as production data passing from PLCs to an ERP system. In both cases, OPC UA provides a secure, reliable foundation robust enough to facilitate standards-based data connectivity and interoperability.

The true value of IIOT can only be fully realised if communication between devices is based on a global communication standard that can satisfy a wide range of complex requirements. This could be a high speed one-to-many broadcast communication, or a secure client/server model for bi-directional communication and control. OPC UA supports both requirements.

Beyond simple 'data' sharing, a core IIoT era standard must facilitate rich information exchange, especially important when large amounts of data are pooled (aggregated) from a diverse eco system of third-party systems found in typical production environments. The OPC UA standard's object oriented information modelling mechanisms directly fulfil this requirement while standardising the semantic data description, enabling the possibility of integration across all network layers as well as platform and vendor independence.

If IIoT is to become 'business as usual' the need to find a platform independent data exchange standard is paramount. In many ways it's the missing piece of the puzzle as there are many technologies, IO-Link is one example, which can get device level data onto a network – but allowing this data to be shared openly and securely is vital.

RS CONTINUALLY WORK WITH EXPERT BRANDS WHO ARE BRINGING OPC UA AND OPEN NETWORK ENABLED DEVICES TO MARKET, ALLOWING YOU TO EMBRACE THE BENEFITS OF IIOT AND START YOUR INDUSTRY 4.0 JOURNEY.

Schneider Electric

Innovation at Every Level

EcoStruxure is Schneider Electric's IoT-enabled, plug-and-play, open, interoperable architecture and platform for buildings, data centres, infrastructure and Industrial applications.

Delivering innovation at every level from connected products to Edge Control and Apps, Analytics and Services.

Eco Struxure™
Innovation At Every Level

Modicon M340 Automation Platform

- More than just a PLC, Modicon Programmable Automation Controllers (PACs) are built to suit the needs of the process industry and a wide range of demanding automation applications
- A powerful mid-level PLC ideal for machine or process control with functionality which allows seamless integration with SCADA or DCS level and powered by Ecostruxure Control Expert

An All-in-one CPU

- Multitasking system for performance
- Modular design with expansion up to max. 1024 discrete + 256 analogue I/O
- 2 additional ports as required: Ethernet, CANopen, Modbus
- Integrated RTU solution for Water, O&G, Power and Infrastructures
- Process control (Integrated Process Control library)

148-177	BMXP341000 - Level 1 M340 CPU + Modbus
681-8715	BMXP342000 - Level 2 M340 CPU + Modbus
148-161	BMXP342020 - Level 2 M340 CPU + Ethernet
148-183	BMXDDI1602 - I/O Module 16 Inputs, 24Vdc
147-641	BMXDDO1602 - I/O Module 16 Outputs 24Vdc
148-127	BMXDDM16022 - I/O Module 8 Inputs, 8 Outputs 24Vdc
147-887	BMXDDM16025 - I/O Module 8 Inputs, 8 Outputs 24Vdc
147-988	BMXAMI0410 - I/O Module 4 Inputs, 24Vdc
147-893	BMXCPS3020 - Power Supply - 24-48 Vdc, 24Vdc, 4.5A
148-032	BMXCPS2010 - Power Supply - 24Vdc, 2.5A
147-938	BMXXBP0800 - M340 Backplane 8 Slots
147-786	TCSMCN3M4M3S2 - Modicon M340 / M580 Cable

EcoStruxure™ Control Expert

- EcoStruxure Control Expert (formerly Unity Pro) is a unique software platform to increase productivity and performance of your Modicon M340, M580, M580 Safety, Momentum, Premium, Quantum applications
- An "All-in-one" software solution with five IEC61131-3 languages & Legacy LL984
- FDT/DTM standard for device integration with full suite of libraries, function blocks, simulation and conversion tools from Concept, ProWORX, PL7 Pro

186-5626	CEXSPUCZSSPMZZ, Small, 1 user license
186-5627	CEXSPUCZLSPMZZ Large, 1 user license
186-5629	CEXSPUCZXSPMZZ Extra Large, 1 user license

Modicon M580 Programmable Automation Controllers

Modicon M580 is the world's first ePAC to embed the benefits of Ethernet right into the heart of your plant control architecture giving advantages such as:

Data Transparency:
- No routing configuration needed thanks to standard IP routing within all systems
- Data-bridging solutions such as for HART data

Integration:
- Easy cabling with third Ethernet port available on all Ethernet modules
- Open to third party devices supporting Modbus TCP and Ethernet IP
- Performance & Security:
- 1Gbps Ethernet interface in CPU with 100Mbps backplane performance
- Embedded security features to IEC62443 standards and Achilles Level 2 certification
- The M580 is the NEW recommended controller for PlantStruxure, and is configured using Unity Pro allowing M340, Premium & Quantum users to easily migrate their application without re-write

820-8476	Processor Module Level 1 - BMEP581020
820-8473	Processor Module Level 2 - BMEP582040
820-8479	Processor Module Level 2 - BMEP582020
820-8482	Processor Module Level 3 - BMEP583020
820-8485	Processor Module Level 3 - BMEP583040

Cloud Connected Sensor XIOT

- The XIOT Cloud connected switch from Telemecanique Sensors is based on LPWAN (low power wide area network) technology, operated by Sigfox
- The Sigfox network is already very extensive in Europe uses antennas with a range of around 50km - you can see a coverage map on the Sigfox website
- The XIOT transmitter accepts 2 signal contact inputs, when these change state a signal is sent via the Sigfox LPWAN network to the Telemecanique secure servers. A notification is they delivered via the iOS/Android App or e-mail to one or more recipients
- You can purchase the XIOT transmitter complete with prepaid 5-year access to Cloud services giving you out of the box remove IIOT enable switch or IO monitoring

180-9169	XIOT with Prepaid Cloud Services

BB-400 Industrial Edge Controller

- An Industrial Edge Controller, powered by a Raspberry Pi combined with an Arduino creating the perfect platform for smarter machine communication
- Integrated 8 channel Digital IO, Serial Port, Bluetooth, WIFI, NFC, RTC and 2 independent ethernet ports
- Easily connect to processes, sensors, switches, machines and PLCs; data processed locally or sent to the cloud, with control via built in software or benefit from Linux and Raspbian open software
- 5-30Vdc powered with built in UPS power supply for safe shutdown of processor in event of power loss

brainboxes

POWERED BY Raspberry Pi

181-7467   BB-400

Industrial Ethernet DIA Cloud Router

- Data acquisition device connected to cloud servers
- Supports a two-way data collection channel between the device and the cloud
- It helps to setup a secure tunnel between the user and the remote device.

DELTA

241-1647   5 ports - RJ45

CloudRail.Box Gateway

- Connect to over 12,000 IO-Link compatible industrial sensors and other devices to the cloud platform of your choice in the most easiest and fastest way
- It's as simple as plugging in a compatible device, selecting your cloud service - Amazon Web Services (AWS), Microsoft Azure, IBM Cloud, Google Cloud, SAP or the Alibaba Cloud - done!
- Works seamlessly with IO-Link masters - such as those from IFM - simply use the embedded config tool to setup & select the cloud service and you have data flowing to the cloud

KUNBUS Industrial communication

193-8181   CloudRAIL.box

REVOLUTION PI Open-Source IPC

- An open-source industrial PC based on the Raspberry Pi Compute module housed in a 22.5mm wide DIN Rail module with 12-24Vdc supply
- The open-source nature of the PiRev means it can run CODESYS, Node-RED and other IEC 61131-3 compliant platforms as well as accessing the KUNBUS Cloud service
- The RevPi features a 10/100 Ethernet port, 2 × USB 2.0, Micro HDMI socket and PiBridge socket to allow expansion modules including digital I/O, analogue I/O, RTD temperature and a complete range of fieldbus gateways supporting Modbus, ProfiBus, Ethercat, CANopen and more...

KUNBUS Industrial communication

193-8175	RevPi Core 3, Quad Core, 1200MHz, 8GB Flash
193-8176	RevPi Core 3, Quad Core, 1200MHz, 16GB Flash
181-1143	RevPi DIO - 14 Digital I/O
181-1144	RevPi DI - 16 Digital In
181-1145	RevPi DO - 16 Digital Out
181-1146	RevPi AIO - 4 in, 2 out, 2 RTD
181-1137	Gateway Modbus TCP Slave
181-1139	Gateway Serial Slave
181-1135	Gateway EtherNet/IP Adapter/Slave
181-1134	Gateway CANopen Slave

DATA STATION PLUS Protocol Management

- Act as a transparent industrial data collection and management device with serial and Ethernet data ports and in-built protocol conversion which enables easy data mapping between PLCs, PCs and SCADA systems
- Converts numerous industrial standard protocols simultaneously and configured using Red Lion Crimson® 2.0 software
- The DSPGT000 version adds both data logging capability and web server with virtual HMI feature for dashboarding process data

red lion

905-5264	DSPLE000
905-5532	DSPGT000 - Data logger & Web server functions

D-Link DIR-X5460 WiFi Router

- Wireless fidelity 6 router with quantum leap in capacity and bandwidth with incredible combined wireless speed of up to 5,400 mbps and data rate of 2.4 and 5 GHz.
- Easy to Setup and Manage
- High-Speed Connectivity

D-Link

218-4475   5,400 mbps

IO-Link masters with EtherNet/IP interface

- IO-Masters in both I/O modules format for field applications and DIN rail options for cabinets
- Reliable transmission of machine data, process parameters and diagnostic data to the PLC or controller
- Suitable for up to 8 or 16 IO-Link devices, options available for EtherNet/IP, EtherCat, PROFINET and Modbus TCP
- Software LR AGENT EMBEDDED for direct communication with SAP

ifm electronic

183-2775	8-port, IO-LINK / 100Base-TX
183-2779	8-port, IO-LINK / 100Base-TX - Hygienic
183-2776	16-port, IO-LINK / 100Base-TX
183-2777	16-port, IO-LINK / 100Base-TX - Hygienic
183-2781	AL1900 - PROFINET Master
183-2782	AL1920 - EtherNET/IP Master
183-2784	AL1940 - Modbus TCP Master

O200 - Photoelectric Miniature Sensors

- Robust, compact photoelectric sensors with extremely high ambient light immunity for maximum sensing reliability
- Delivers reliable detection of shiny, black or transparent objects
- IIoT ready thanks to IO-Link

Baumer Passion for Sensors

IO-Link

187-1809	Retro-Reflective 4m - push/pull output
187-1810	Through-Beam 6m - Reciever push/pull output
187-1811	Through-Beam 6m - transmitter
187-1807	Background Sup'd 3 → 15mm - PNP output
187-1808	Background Sup'd 7 → 80mm - push/pull output
187-1806	Background Sup'd 3 → 132mm - push/pull + IO-Link

UR18 – M18 Robust Ultrasonic Sensors

- Extremely robust, precise ultrasonic distance sensors with repeat accuracy <0.5 mm
- Highest process reliability due to hermetically sealed sensor and short blind range of 70mm
- IO-Link functionality allows flexible parameterisation

Baumer Passion for Sensors

IO-Link

|	
187-1802	70 → 1000mm, dual push/pull o/p + IO-Link
187-1801	70 → 1000mm, voltage o/p + IO-Link

EAL580 - Absolute Optical Industrial Encoders

- Absolute optical multiturn encoders with 16 bit resolution and best in class installation depth
- Easy integration via choice of common industry interfaces – PROFINET, EtherCAT & EtherNet/IP
- Future-proofed for Industry 4.0 and IIoT

Baumer Passion for Sensors

188-3521	Sold Shaft with flange, EtherCat
188-3527	Hollow shaft, EtherCat
188-3523	Sold Shaft with flange, PROFINET
188-3529	Hollow shaft, PROFINET
188-3522	Sold Shaft with flange, Ethernet
188-3528	Hollow shaft, Ethernet

## IR08/12 Inductive Distance Measuring Sensors

- High accuracy distance measuring sensors that combine a programmable switching point push-pull output with IO-Link capability
- Offers multiple adjustable parameters and additional data via IO-Link V1.1
- LED indication with teach-in switching of either single point, two point, or window operation

Baumer Passion for Sensors
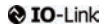
IO-Link

187-1795	M8, 0-3mm sensing, < 0,005mm accuracy
187-1796	M12, 0-6mm sensing, < 0,003mm accuracy

O300 - Photoelectric Miniature Sensors

- Additions to the popular O300 photoelectric sensor range now with added IIoT Ready IO-Link capability
- Line or spot beam shapes and enhanced processor performance for reliable detection
- qTeach programming as standard, with IO-Link adding adjustable parameters and additional data

IO-Link

Baumer Passion for Sensors
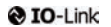
144-3576	Retro-Reflective 3.5m range
144-3577	Retro-Reflective 30 → 300mm range
187-1805	Diffuse 15 → 120mm range
187-1804	Light Barrier 30 → 120mm range

EAM 580 - Absolute Magnetic Industrial Encoders

- Robust magnetic sensing combined with an angular accuracy up to ±0.15˚ for precise positioning in demanding environments
- Durable design and easy integration with a choice of SSI & CANopen interfaces
- Industry 4.0 and IIoT ready

Baumer Passion for Sensors

188-3536	6mm Shaft with flat, SSI
188-3535	6mm Shaft with flat, CANOpen
188-3534	10mm Shaft with flat, SSI
188-3533	10mm Shaft with flat, CANOpen
188-3532	Hollow shaft, SSI
188-3530	Hollow shaft, CANOpen

RS

AE-CLOUD2 IoT Cellular MCU Development Kit

- Cloud connectivity kit designed specifically for IoT embedded systems
- Includes a GT202 Wi-Fi Module with Qualcomm QCA4002 chip, cellular antenna, and supports 802.11 b/g/n communication standards
- Features: Synergy S5D9 Arm® Cortex®-M4 Core, 640 KB SRAM, multiple sensors, and Ethernet, USB 2.0, UART, I2C, and SPI connectivity

RENESAS

177-1104

UltraLite IoT Evaluation Kit for Google Cloud

- The UrsaLeo UltraLite Development Kit provides a simple and easy way to connect a range of sensors to Google Cloud Platform
- Once assembled, data from the Thunderboards' environmental and motion sensors is immediately sent to Google Cloud where it can be viewed & manipulated
- Kit is based on a NXP iMX6UL dev board with Thunderboard 2 with 10 sensors (RS 171-7023) and Murata WiFi / BLE development module
- Supplied with PSU, 2 × USB cables and 16GB microSD pre-loaded with Yocto Linux and UrsaLeo Gateway demonstration

UrsaLeo

175-0395

EZ-BT Mesh Evaluation kit

- Evaluate SIG Mesh functionality using the EZ-BT WICED Module (CYBT-213043-02)
- The EZ-BT WICED Module is an integrated, fully certified, programmable Bluetooth® Smart Ready module
- This Eval kit also utilizes Cypress's CYW20819 silicon device, an ultra-low-power and highly integrated dual-mode Bluetooth 5.0 device

CYPRESS

187-4661

PSoC 6 Development Board

- PSoC 6 microcontroller development kit with Bluetooth 4.2 wireless connectivity
- 150/100MHz CY8C6347BZI-BLD53 ARM Cortex-M4/M0+ dual-core PSoC 6 with Bluetooth 4.2
- Designed to simplify IoT application design

CYPRESS

136-7817

RX65N Cloud Kit

- The Renesas RX65N Cloud Kit is a cloud communication evaluation kit that uses the RX65N microcontroller and can connect via Wi-Fi to Amazon Web Services (AWS)
- Kit includes a Wi-Fi module, a temperature/humidity sensor, optical sensor, a 3-axis accelerometer, and 2 × USB ports
- Data uploaded from the kit to AWS can be observed in the dashboard, with the programming edited or debugged in Renesas' e2 studio IDE by connecting the kit to a PC

RENESAS

189-0792

AVR-IoT WG Development Board

- Out of The Box and into The Cloud in 30 Seconds
- Combines a AVR® microcontroller and a Crypto Authentication™ secure element IC together with a fully certified Wi-Fi® network controller
- Includes a Li-Po battery port with charger, drag-and-drop programmer, light and temperature sensor, and supports over 500 ad-on boards

MICROCHIP

179-7560

The Infineon OPTIGA Trust E Evaluation and Demonstration Kit

- The Infineon OPTIGA Trust E evaluation and demonstration kit is a quick and easy way of getting started with IoT security
- It is an authentication device mainly used for IP protection of accessories and spare parts

Infineon

234-1602   I2C interface

PSRswitch Coded Non-Contact Switches

- PSRswitch is a fully electronic, compact, coded safety switch with integrated RFID transponder technology and intelligence for maximum protection against tampering
- A complete solution for flexible safety door compliant to EN ISO 14119 with comprehensive diagnostic information with IO-Link support
- Three coding types available; Multicode, Unicode, and Fixcode for complete system flexibility

IO-Link

190-8415	Unicode sensor - PSR-CT-C-SEN-1-8
190-8417	Multicode sensor - PSR-CT-M-SEN-1-8
190-8418	Actuator - PSR-CT-C-ACT

QUINT4 UPS with IQ Technology

- An intelligent UPS for integration into control systems to provide uninterrupted power supply, even in the event of a mains failure
- The IQ battery management system provides a powerful charger circuit and monitors both battery health & charge state to deliver superior system availability
- Easy integration into networks using USB interfaces (Modbus), PROFINET, EtherNet/IP and EtherCAT®
- Automatic recognition of the battery capacities and technologies (VRLA-WTR, LI-ION)
- SFB Technology selectively trips standard miniature circuit breakers. Loads connected in parallel continue working
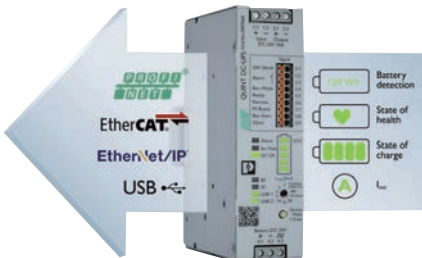
180-5492	5A UPS, No comms
180-5497	10A UPS, No comms
180-5493	5A UPS, USB comms (Modbus/RTU)
180-5498	10A UPS, USB comms (Modbus/RTU)
180-5502	20A UPS, No comms
180-5503	20A UPS, USB comms (Modbus/RTU)
180-5494	5A UPS, PROFINET comms interface
180-5495	5A UPS, EtherNet/IP™ comms interface
180-5496	5A UPS, EtherCAT® comms interface
180-5500	10A UPS, EtherNet/IP™ comms interface
180-5499	10A UPS, PROFINET comms interface
180-5505	20A UPS, EtherNet/IP™ comms interface
180-5504	20A UPS, PROFINET comms interface

Wireless IO Data Mux Set

- Wireless transmission of control signals, perfect for applications where installing cables is a challenge
- Sold as a "Ready to use" package, simply unpack – connect – switch on and the wireless link is working
- Supports 16 digital inputs and outputs and 2 analogue inputs and outputs (0-20mA/0-10V) with 10ms transmission response
- Package includes OMNI directional antennas offering ranges of between 50m and 100m indoors and over 200m outdoors line of sight

| 190-2102 | ILB BT ADIO MUX-OMNI - 2884208 |

WLAN 1100 Wireless Access Point

- A single 40mm hole mounting, shock proof & IP54 protected wireless access point with dual antenna supporting 2.4GHz and 5.0Ghz bands
- Supports WLAN 802.11 standards a, b, g & n as well as operating as either WLAN access point, client or repeater
- Mounts on a flat surface via M6 screws, offers a single RJ-45 10/100 Ethernet port, and is powered by 24Vdc via a single COMBICON connection

| 134-8668 | WLAN 1100 - 2702534 |

Phoenix Contact Data Acquisition

- The injectors connect Ethernet devices without PoE (e.g. switches) with PoE-ready end devices (e.g. IP cameras)
- The injector as power sourcing equipment (PSE) provides the required power to a powered device (PD) by way of the data cable
- The injector and end device negotiate the electrical power requirements autonomously

| 180-9172 | 10/100/1000 Mbps |

EASY-E4 Logic Controllers

- The latest evolution of the Eaton EASY series, the E4 combines the simple, intuitive easySoft 7 software with a even more powerful logic controller with embedded Ethernet as standard
- Starter kits contain the EASY-E4 control relay with LCD display, patch cable, and a full license for the easySoft 7 operating and programming software
- Comprehensive logic, arithmetic and PID functions, an on-board web server and support for Modbus TCP protocol allow Easy-E4 to work as either a standalone or system controller
- To find the complete range visit RS online and search 'Easy-E4'

188-3487	Starter Kit, 100-240Vac/dc, 8 × Inputs, 4 × Relay Outputs
185-7584	Starter Kit, 24Vdc, 8 × Input, 4 × Transistor Outputs
181-9079	Module 24Vdc, 8 × inputs, 4 × Transistor Outputs.
181-9081	Module12/24Vdc, 24Vac, 8 × Inputs, 4 × Relays Outputs
188-3483	Module 100-240V ac/dc, 8 × Inputs, 4 × Relay Outputs

3 Pole X Start Series Contactors

- X Start is the latest generation of contactors, overloads and relays from Eaton, based on the proven DIL series
- Full range of contactors, overloads and accessories available from stock - simply visit RS online and search 'xstart'

493-0337	32 A, 24 V dc Coil, 3NO, 15 kW
743-4920	17 A, 24 V dc Coil, xStart, 3NO, 7.5 kW
493-0163	12 A, 24 V dc Coil, 3NO, 5.5 kW
493-0078	9 A, 24 V dc coil, xStart, 3NO, 4 kW
513-0156	65 A, 24 V dc Coil, 3NO, 30 kW
743-4949	25 A, 24 V dc Coil, xStart, 3NO, 11 kW

Motor Protection Circuit Breaker - PKE

- PKE series motor-protective circuit-breakers provide electronic overload protection with the highest level of flexibility in a compact and modular design
- Wide current setting ranges with plug-in trip blocks up to 65 A
- SmartWire-DT interface increases the levels of system availability via process-relevant status data

774-0143	3P Channels, 0.3 → 1.2 A, 100 kA
774-0140	3P Channels, 1 → 4 A, 100 kA
774-0146	3P Channels, 3 → 12 A, 100 kA
774-0152	3P Channels, 8 → 32 A, 100 kA
774-0159	3P Channels, 8 → 32 A, 100 kA - No trip block
774-0180	Advanced Trip Block for use with PKE32

PowerXL Inverters DC1 Series

- DC1 inverters are compact variable frequency drives specifically designed for simple applications
- With only 14 basic parameters and outstanding ease of mounting and installation, the DC1 is perfect for quick build and commissioning
- Full range of single and 3 phase options available from stock, visit RS Online and search 'Eaton DC1'

134-8006	3 Phase 4kW, 400Vac in, 9.5A
134-8007	3 Phase 5.5kW, 400Vac in, 14A
134-8009	3 Phase 11kW, 400Vac in, 24A
134-8010	3 Phase 15kW, 400Vac in, 30A
134-8014	1 Phase 0.75kW, 230Vac in, 4.3A
134-8015	1-Phase 1.5kW, 230Vac in, 7A
134-8018	1-Phase 2.2kW, 230Vac in, 10.5A

SmartWire-DT System

- The SmartWire-DT makes standard Eaton control and switchgear capable of communication via intelligent add-on components and 8-core cables making in & outside panel connectivity possible
- SmartWire-DT gateways allow data to flow to the PLC or HMI via field bus systems such an CANOpen & PROFIBUS
- Plug-in interfaces are available for Eaton's popular DILM contactor series and PKE motor breaker series

|	
760-4703	SWD4-8SF2-5 SmartWire-DT Device Plug/Socket
763-1052	EU5C-SWD-CAN SmartWire-DT To CANopen Gateway
760-4665	M22-SWD-K11LED-R LED block with SmartWire-DT
760-4700	SWD4-5LF8-24-2S SmartWire-DT Link Cable
774-0196	DIL-SWD-32 SmartWire-DT interface for DILM
774-0165	PKE-SWD-32 SmartWire-DT interface for PKE

Industry 4.0 - From vision to reality

Festo is taking an integrated approach to the change in the world of manufacturing by playing an active role in the creation of new standards, close cooperation with partners and through intelligent products with "embedded functions" – the cyber-physical systems.

Taking the Industry 4.0 vision and using technology and innovation to drive the digitisation journey forward ensuring Festo will be at the heart of the digital factory.

Hardware for unlimited communication

Festo's CPX-IOT The industrial IOT gateway is based on the CPX module format.

• CPX-IOT collects information about Festo devices and their status via an Ethernet connection and a standardised communication protocol such as OPC UA, for example
• It then sends that information to the cloud via the second Ethernet connection using IoT protocols such as AMQP or MQTT
• Embedded industry standard protocols ensure data security
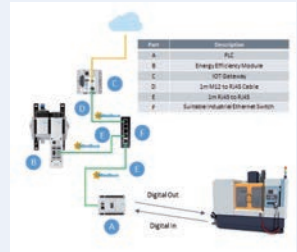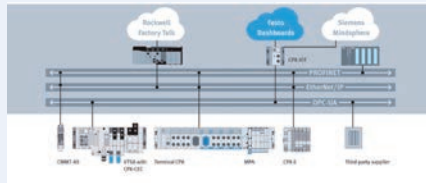
CPX IOT Gateway

• A turnkey IoT gateway solution from Festo which provides the data you need from the process to the cloud
• Connects components and modules from the field level, such as the Festo energy monitoring module MSE6-E2M or handling systems, to the Festo Cloud via their OPC UA interface
• Combining energy usage data from the pneumatics system with status information from the PLC enables users to significantly improve their overall equipment effectiveness (OEE)

197-5177	CPX-IOT gateway - 8069773	C
136-7083	1m M12 to RJ45 Cable	D
197-5176	1m RJ45 to RJ45 - NEBC-R3G4-ES-1-S-R3G4-ET	E
144-8673	5 port 10/100 Ethernet Switch	

Flow Sensor SFAB

• The SFAB is designed to monitor changes in flow and air consumption within pneumatic systems within adjustable thresholds
• Uni-direction flow operation with two digital outputs (NPN or PNP) and a single analogue (0-10V/4-2mA
• Output configuration and threshold setup, including hysteresis, via digital display and simple menu system

175-2132	Max. 10l/min
175-2134	Max. 50l/min
175-2136	Max. 200l/min
175-2138	Max. 600l/min
175-2140	Max. 1000l/min

Digital Pressure Switch

• SPAN series pressure sensors are ideal for universal measurement of pressure and vacuum
• 13 pressure ranges, all common pressure units, 2 line display, Switched outputs (PNP/NPN, NO/NC) and optional analogue outputs (0…10V, 1…5V, 4…20 mA)
• 30×30mm size, with G1/8 external, M5 internal pressure connection

126-0230	Pressure 0 > -1bar, 2×NPN/PNP Outputs,
126-0229	Pressure -1 > 1bar, 2×NPN/PNP Outputs,
126-0227	Pressure -1 > 1bar, 2×NPN/PNP Outputs, 4-20mA/0-10V & IO-Link
126-0228	Pressure 0 > +10bar, 2×NPN/PNP Outputs,
126-0226	Pressure 0 > +10bar, 2×NPN/PNP Outputs, 4-20mA/0-10V & IO-Link
126-0219	Electrical adapter SASC-P4-A-M8-S

SEVEN TIPS TO SECURE YOUR IIOT DEVICES

JOSEPH DA SILVA, CHIEF INFORMATION SECURITY OFFICER AT ELECTROCOMPONENTS PLC OFFERS HIS VIEW ON HOW TO ENSURE YOUR IIOT IMPLEMENTATION IS AS SECURE AS IT CAN BE.

Cyber-security has been a subject that has given IT managers sleepless nights for years, however the emergence of The Industrial Internet of Things (IIoT) has elevated the potential risk as increasing numbers of devices are connected to business networks.

While IIoT offers many exciting opportunities for businesses, from predictive and proactive maintenance all the way through to potential new income streams it's important to see any IIoT implementations as part of a system, and not just in the context of the overall IIoT solution.

IIoT implementations form part of a wider system within your business, whether intentional or not, and it's important to consider how an IIoT implementation could expand the overall attack surface of the whole organisation. An insecure IIoT solution could offer an entry point to your operational technology environment or your wider IT environment; or it could offer an entry point to your logistics processes, your stock control processes or your finance processes.

So, what can you do to protect yourself? Is it time to put on a tinfoil hat and return to the age of steam? Obviously not. Security is a risk-based game and the first step to mitigating risk is to understand it. Security should not be considered 'someone else's problem', it certainly shouldn't just be left to your IT team, and worst of all it should not be left to external suppliers.

Remember: every device is a potential new entry point for a hacker. You don't need to be an expert, but you do need to ask the right questions and take the right actions. Some of these are described below:

1 Change defaults. Most IIoT devices, and indeed most IT software, ships with default passwords. Get these changed immediately to something strong and unique (definitely don't use the same password for everything...). Avoid any equipment with hard-coded passwords; if it's hard-coded, it is already known by every hacker out there.

2 Separate networks. Do not put IIoT devices on your corporate network, or on the same network that you use for your OT equipment. This really is asking for trouble. A single device should not be able to access multiple networks either, otherwise they can be used as a 'bridge'.

3 Disable unnecessary functions. See that TV you have on the wall of your meeting room? Bet you it's a smart TV. Bet no-one's turned off the Bluetooth functionality. Or its microphone. Or the webserver that it operates. Unnecessary functions can be used as a 'way in', both to the device and to the wider network that it sits on. Turn things off programmatically, or physically disable them; a pair of pliers or liquid epoxy are simple ways to permanently disable a USB socket for example.

4 Stay up-to-date. Software vulnerabilities are very common, but what's more common are known fixes to these vulnerabilities not being applied promptly. Ensure firmware and software are regularly updated and have a process to do this, particularly if it involves planning in downtime. You're not going to be able to take a 24×7 assembly line down, but you should be able to tolerate downtime in condition monitoring sensors.

5 Test test test. Hire a specialist penetration tester who has expertise with industrial equipment and operational technology – not all of them do. This is a specialist area that requires specialist knowledge of PLCs and SCADA equipment and you want a friendly face to test it before an unfriendly one does. Most importantly, follow their recommendations – you may not be able to fix everything, but make risk-based decisions on what you do fix, what you mitigate through another route and what you accept.

6 Be clear who's doing what: even if you're buying a supposedly 'turnkey' solution, it's never quite as simple as that, particularly if the service provider are themselves relying on a number of third parties. Understand where your data is going, who has access to it and how it's being protected. "It's in BigCloudProvider's datacentre, it's secure" is not a good enough answer.

7 Finally, and most importantly: **have a plan for when things go wrong.** Run some scenarios and regularly test it via a simulation or a dry run. In the event of a security incident, it needs to be very clear who does what and when, and having this clearly documented and easily accessible, including templated communication statements, will save a lot of time and adrenaline.

Joseph is an accomplished Information Security leader with extensive IT and business experience across multiple sectors; he is driving Electrocomponents Information Security agenda to help both the organisation and its customers to understand and address risk whilst enabling business growth. He holds CCISO, CISM and BCS qualifications as well as an honours degree in Biochemistry and is currently performing research for his PhD.

Industrial Modem Cellular Modems

- ZETA-NLP-LTEM 4G / LTE Category M / NB IoT Ready industrial cellular modems with RS-232 and USB interfaces
- Easily connect equipment to the new LTE Cat M and NB IoT networks or existing 2G/3G/GSM cellular networks
- Starter kits include Antenna, Mains PSU, RS232 and USB cables
- Ideal for: environmental monitoring, industrial sensors, access control systems, car parking payment systems, and more

▲ Siretta

185-3053	Modem - EU Version
185-3055	Modem - Global Version
185-3056	Modem Starter Kit - EU
185-3058	Modem Starter Kit - Global

Low Profile Industrial Ethernet Switches

- Extremely flat construction - ideal for space-restricted installation
- PoE and fibre-optic ports available
- Perfect for expanding or setting up network infrastructure in a time-saving, economical way

HARTING

812-8806	3 × RJ-45 Port
812-8819	4 × RJ-45 Port
812-8816	5 × RJ-45 Port
812-8838	8 × RJ-45 Port

SNYPER-LTE+ Spectrum RF Detector

- A High performance network signal analyser dedicated to surveying the 4G/LTE, 3G/UMTS & 2G/GSM European networks with SIM free operation
- Reduce local surveys and coverage challenges, perform real graphical surveys with the Live Scan feature and see complete network breakdowns
- Frequency range from 700 MHz - 2.6 GHz (5G ready)

▲ Siretta

187-3714	

SFP Ethernet Media Converter

- Converts optical data signals to electrical signals. Any standard SFP (small form-factor pluggable) connection can be used for the inbound fibre connection, making it compatible with a range of devices.

StarTech.com
Hard to find made easy®

221-7267	Single Mode, Full Duplex - IMC1GSFP

Spider PoE DIN Rail Switches

- Up to four PoE ports, each with a capacity of 15.4W
- DIN Rail mounting and fast start-up (plug-and-work
- Robust design, suitable for challenging environments
- Special approvals (E13, C-Tick Declaration, GOST-R Certificate)

HIRSCHMANN
A BELDEN BRAND

826-3246	5 Port + PoE
826-3240	8 Port + PoE

Unmanaged Desktop Ethernet Switches

- Low cost fast ethernet switches ideal for small networks, computers, IP cameras, network printers and other Ethernet devices
- No complicated setup, just plug & play out of the box

D-Link®

760-3984	5 Port
760-4003	8 Port

Low Cost DIN Rail Ethernet Switches

- Compact plastic cased switches with galvanically isolated Ethernet ports capable of 10/100Mbps
- Temperature range of -40°C to +80°C and dual redundant supply input +5V to +30V DC
- Small footprint case - only 22.5mm wide, 94mm deep

RS PRO

144-8673	5 port
144-8674	8 Port

World's Strongest M12 Power Connectors and Cordsets

- The Lumberg Automation M12 Power Series opens the world of conventional M12 technology to high-power transmission
- Carrying 16A at 630V it is your answer to the increasing demand for powerful connectivity in the smallest possible housings
- High IP-protection class rating up to IP69K

lumberg automation

508-5315	Male straight to female RA with LED 5m
508-5309	Male straight to unterminated 2m
508-5270	Female straight to unterminated 10m
508-5258	Female straight to male straight 10m
508-5286	Female right angled with LED to unterminated 10m
508-5292	Female RA with LED 25m unterminated

RevConnect Connectivity System

- Offers versatility by using a universal termination core and termination method for all RJ45 connections
- Its unique universal termination process can be used with both shielded and unshielded cables, Category 5e through Category 6A, and can accept both jack and plug housings
- Both the new RevConnect 10GX Jacks and the 10GX Modular Jacks provide performance margins when installed as part of 10GX System
- All performance characteristics including ANEXT, NEXT, FEXT, Insertion Loss and Return Loss have been set to guarantee transmission performance up to 625MHz
- Connector parts priced each, supplied in packs, quantities as stated

176-3695	White plastic jack 10GX UTP, in pack of 24
176-3694	Black plastic jack 10GX UTP, in pack of 24
176-3693	RVAMJKSME-B24 metal jack 10GX shield, in pack of 24
176-3696	Cores, in pack of 50
176-3688	RVUTT01 Crimping tool

MachFlex Control Cables

- Designed for applications which are installed in occasional flexing and fixed locations
- YY examples shown only
- Extensive range includes CY, SY, YY, CSA from 0.75mm² to 2.5mm², and choice of reel sizes (50m shown)

176-2323	3 core
176-2334	4 core
176-2345	5 core
176-2356	7 core
176-2360	8 core

Multipair Industrial Cable

- Cable offers protection against electrical magnetic interference with the use of Beldfoil aluminium-polyester shielding
- The PVC outer jacket material offers protection against chemicals, oils & water spills
- 2 pair 22 AWG(7 × 30) stranded tinned copper conductors
- Pairs are cabled on a common axis to reduce outer diameter

|	
822-989	30m reel
823-005	152m reel
822-995	302m reel

Multicore Industrial Cables

- Computer EIA RS-232 cable, with 24 AWG stranded (7×32) tinned copper conductors
- Has semi-rigid PVC insulation, and overall Beldfoil® shield with 100% coverage
- 24 AWG stranded tinned copper drain wire
- PVC sheath
- On 304m reels

382-504	3 core
382-510	4 core
382-447	5 core
382-453	6 core
382-469	7 core
382-475	8 core
382-481	9 core
382-497	10 core

Lightweight Industrial Connectors For Reliable Power Transmission

- Lightweight plastic housing with the mechanical robustness of an industrial connector
- Reliable solution for the most demanding applications
- Ruggedised for performance – well-proven power supply for wet, dusty and harsh surroundings
- User-friendly termination and assembly
- Up to 16A at 400V
- High IP67 protection class rating

HIRSCHMANN

359-4384	Cable mount plug, male, 3 + PE
359-4390	Cable mount socket, female, 3 + PE
115-1941	Flange mount plug, male, 3 + PE
115-1935	Flange mount socket, female, 3 + PE
359-4407	Cable mount plug, male, 6 + PE
359-4413	Cable mount socket, female, 6 + PE
115-1991	Flange mount plug, male, 6 + PE
115-1985	Flange mount socket, female, 6 + PE

Cat7 Industrial Ethernet Cable

- Designed to withstand environmental and mechanical hazards, from extreme temperatures and sunlight, to solvents, oils, chemicals and moisture
- High shield coverage to maintain signal integrity in the industrial noisy environment
- IP67 rated
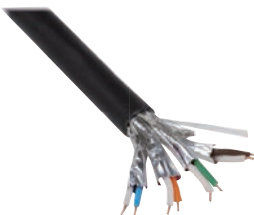
724-8846	1/23 core, PVC sheath
724-8855	1/23 core, flame retardant, non-corrosive sheath
724-8852	7/26 core, PUR sheath
724-8858	1/23 core, PUR sheath

Valve Connectors Type A

- Ready for any harsh environment. Rugged, highly impermeable design guarantees uncompromising reliability in the most demanding applications
- Engineered for mechanical challenges and vibrations, optionally with strain relief and UL2238 approval
- High impermeability combined with an extraordinary resistance towards environmental impacts, oils and lubricants
- Ambient temperatures from -40°C to +125°C

HIRSCHMANN

156-4757	PG11 gland
156-4741	PG9 gland

HellermannTyton

HellermannTyton is a leading manufacturer and supplier of quality products for fastening, fixing, installing, connecting, insulating, protecting and identifying electrical cables and network connectivity solutions.

MADE FOR REAL – that is HellermannTyton's motto and the brand's quality promise to end users across all industries. Wherever electricity flows or data is transferred, that's where the quality and ingenuity of our product solutions make the difference.

TULT Continuous Marker Tubing

- 3:1 heat shrink ratio and highly flexible
- Available in black, blue, red, white and yellow
- 8 sizes covering cable range 39mm to 1mm
- Good mechanical and solvent resistance
- Printable using TT431
- Wide range - examples shown

181-3124	3mm - 1mm yellow (22m)
181-3126	4.8mm - 1.6mm white (22m)
181-3125	4.8mm - 1.6mm yellow (22m)
181-3128	6mm - 2mm white (22m)
181-3127	6mm - 2mm yellow (22m)
181-3129	9mm - 3mm white (18m)

TT431 Printing System - Compact and Flexible

- Single-sided 300 dpi thermal transfer printer
- Colour LCD touch display with intuitive menu
- Ideal for printing labels, markers or tubing
- Variable print speed up to 150mm/s
- Optional cutter and label software TagPrint Pro

189-5253	TT431 printer
775-7879	S430 printer cutter
775-7873	TagPrint Pro 3.0 labelling software
692-6507	30mm Ribbon
124-9467	Tiptag 11×100mm

Halogen-Free TIPTAG Cable Markers - Tie-On Tags

- Ideal for use on wiring bundles with cable ties
- Supplied pre-perforated on reel
- Halogen free
- Available in white, yellow, red and blue (metal content versions also available)
- Examples shown, full range on the RS website

692-6664	11mm x 65mm white (reel of 190)
692-6661	11mm x 65mm yellow (reel of 190)
692-6674	15mm x 65mm white (reel of 190)
692-6670	15mm x 65mm yellow (reel of 190)
124-9465	15mm x 65mm blue metal content (reel of 120)

Colour Coded Pre-printed Slide-on Cable Markers

- Simple, slide-on, straight-cut wire markers
- A-Z, 0-9 and "+", "-", "/", "." and "earth" symbols
- Available in black on white, or on colours
- Examples shown
- For full range search "HOBS85" on the RS website

178-9563	Black on white 1.8mm - 6.3mm "A"
178-9564	Black on white 1.8mm - 6.3mm "B"
178-9565	Black on white 1.8mm - 6.3mm "C"
178-9566	Black on white 1.8mm - 6.3mm "D"
178-9567	Black on white 1.8mm - 6.3mm "E"

RFID Identification Tags

- Smarter than barcodes
- Cable tie accessories with integrated RFID tags
- Rewritable 13.56MHz high frequency transponder
- Cradle and hextag available for alternative fixing
- Robust and can be overpainted
- Supplied as a pack of 100

829-6114	RFID cable ties 200mm x 1.6mm, HF responder
829-6105	RFID cable ties 200mm x 1.6mm, LF responder
176-2223	RFID cradles

Pen-friendly Blank Nylon Identification Plates

- Can be flexibly marked with an indelible pen
- Attach to bundles with cable ties
- Choice of rectangular plates, and arrow tag plates for "HOBS85" pre-printed markers
- Examples shown, full range available on the RS website
- Supplied as a pack of 100

686-8625	63 × 9mm natural
686-8629	100 × 9mm natural
364-6738	62.5 × 4.7mm arrow head style natural

Industrial Ethernet PUR Cat5e Patchcords

- Ideal for use in industrial applications and challenging environments
- Excellent mechanical resistance, with RJ45 connectors at each end which are protected by the durable PUR sheath The cable is screened, so suitable for use in environments where electromagnetic signal interference may be a concern
- Flame retardant and halogen free, with RJ45 connectors

176-9600	2171501 - 1m
176-9601	2171503 - 3m
176-9603	2171505 - 10m
176-9604	2171506 - 20m

Etherline Industrial Data Cable

- For industrial ethernet in harsh industrial environments
- PUR outer sheath is resistant to mineral oils and abrasion
- Suitable for fixed installation in dry and damp rooms
- Halogen free
- Choice of categories, number of pairs, and variants for specific applications

807-9565	2170281 CAT.5e 2 pair 50m
807-9562	2170297 CAT.5e 4 pair 50m
807-9587	2170465 Cat.6A 4 pair 50m
807-9580	2170475 Cat.7 4 pair 50m
161-1947	2170481 Cat.7 4 pair torsion resistant 100m
161-1946	2170934 Cat.7 4 pair for flexible use 100m

Unitronic BUS PA Fast Connect Cable

- Designed for use in manufacturing and process automation
- Features a Fast Connect (FC) cable design that allows for quick and standardized connections in PROFIBUS systems
- The cable is oil resistant, and UV resistant, and is able to be used in fixed installations in challenging environments
- With a braided copper wire shield
- Supplied on 50m reels

807-9574	2170334 Blue IS 1 × 2 × 0.8mm²
807-9578	2170334 Black 1 × 2 × 0.8mm²

Unitronic® BUS AS-Interface Cable

- Two unscreened and geometrically coded flat cores (1.5mm²) transmit power and data with the conductors, achieved by 'vampire' clamping devices located within the control unit and peripheral modules
- Developed specifically for use with binary sensors and actuators
- Rubber insulated version (G) is suitable for use in dry and damp interiors with a low mechanical and chemical stress
- TPE insulated version is suitable for use in wet industrial environments with high mechanical and chemical stress, such as where cooling lubricants may be mixed with water
- Yellow (RAL 1023) outer sheath denotes standard data and power use
- Black (RAL 9005) outer sheath denotes 24V dc auxiliary power use

432-2483	2170228 (G) 2 × 1.5mm² Yellow 50m
454-9925	2170228 (G) 2 × 1.5mm² Yellow 100m
432-2506	2170229 (G) 2 × 1.5mm² Black 50m
432-2512	2170230 (TPE) 2 × 1.5mm² Yellow 50m
432-2528	2170231 (TPE) 2 × 1.5mm² Black 50m

Unitronic® BUS Cables

- Diverse range of bus cables, including for PROFIBUS, Modbus
- Choice of sheaths including PVC, halogen free and PUR which offers resistance to abrasions and mineral oils
- Popular examples shown, full range on the RS website
- Supplied on 100m reels

444-0159	2170220 PVC for PROFIBUS, 1 pair fixed install
787-4050	2170222 halogen free for PROFIBUS, 1 pair high flex
444-0070	2170204 PVC long distance bus, 2 pair fixed install
444-0115	2170214 PUR long distance bus, 2 pair high flex
787-4053	2170820 halogen free for PROFIBUS, 1 pair fixed fast connect

Unitronic® BUS HEAT 6722 Cable

- CAN bus cable offering higher temperature range, resistance against UV
- Good resistance to oil, petrol, acids and alkalis
- Halogen free PUR outer sheath
- Maximum bit rate: 1 Mbit/s for 40m segment length
- Supplied on 100m reel

161-1942	2170385 4 × 0.25mm²
161-1943	2170386 4 × 0.34mm²
161-1944	2170387 4 × 0.5mm²
161-1945	2170388 4 × 0.75mm²

Unitronic® BUS IBS Remote Bus Cable

- For industrial communications and field bus for sensors / actuators
- Suitable for stationary applications
- Data pairs (3 pairs x 2 cores x 0.22mm²)
- Foil screen
- Shielding braid made from copper wires

444-0086	2170206 Remote bus cable 100m
444-0109	2170208 Installation remote bus cable 50m

Unitronic® BUS DeviceNet™ Cable

- For industrial data networks operating DeviceNet
- Made up from a pair of data cores and two power supply cores
- Two main types of cable - Trunk (thick) and Drop (thin)
- Also highly flexible versions available for applications in robot technology and drag chains

444-0165	2170342 DeviceNet Thick PVC 100m
444-0171	2170343 DeviceNet Thin PVC 100m
444-0193	2170345 DeviceNet Thin flexible PUR 25m

Screened Multi-Pair Industrial Cable

- 7/0.203 (24AWG) stranded tinned copper conductors insulated in PVC
- Each pair wrapped in aluminised tape with a tinned copper drain wire
- Cables designed to meet the special requirements of high speed data transmission systems associated with data processing or information systems; also for process and control applications
- Euroclass Eca standards met
- Unshielded
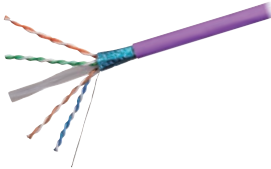- Grey colour

812-4684	1 pair, 100m
812-4680	2 pair, 100m
812-4693	2 pair, 500m
812-4687	5 pair, 100m

Cat 5e Ethernet Cable

- Category 5e cable to handle frequencies up to 100MHz
- Aluminium tape shielding
- Supplied in a 305m dispenser, for easy on-site transport and use
- Reel of 305m

557-159	U/UTP Purple
557-470	UTP Grey
557-193	UTP Purple

Multicore Screened Security Cable

- Power your alarm system with this cable from RS PRO. It's suitable for embedding in a wall or installing underground, making it more difficult to tamper with your security system. It's also flexible, so it's easy to bend or manipulate through small spaces
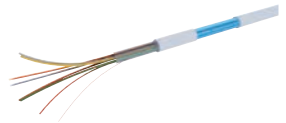
136-8142	6 Core, PVC Sheath, 0.22 mm², 100 m
136-8143	10 Core, PVC Sheath, 0.22 mm² CSA, 100 m
136-8144	6 Cores, 2 × 0.75 mm², 4 × 0.22 mm², 100m

Waterproof Cat5e Connectors / Cable Assemblies

- Cable assemblies offering either IP67 or IP68 panel sockets
- Fitted with cable and cable plug for internal installation inside equipment
- Shielded connectors and cabling
- Corresponding plugs to match IP rating also available

111-6738	Plug - plastic IP67
111-6736	Socket / cable assembly plastic IP67, 200mm
111-6737	Socket / cable assembly plastic IP67, 2m
111-6740	Socket / cable assembly metal IP68, 200mm
111-6741	Socket / cable assembly metal IP68, 2m
111-6743	Plug - full metal IP68

Cat 6a U/FTP Cable

- Used with 10GMbits/s networks, VOIP, IP Cameras and IP TV
- 4 pair multi-construction
- Bare copper conductor
- Skin-foam-skin insulation
- Choice of PVC or LSZH Jacket

209-7611	lszh, U/FTP, 100m
201-0537	lszh, U/FTP, 5m
201-0536	lszh, U/FTP, 3m
842-7349	LSZH, F/FTP, 500m
113-5902	PVC, S/FTP, 100m
113-5901	PVC, U/FTP, 100m

Hiflex-Y Data Cable

- For analogue transmission and digital signals in process control environments
- Bare copper strand conductors with PVC core insulation & outer sheath
- Flame retardant
- IEC 60228 & IEC 60332-1 standards met
- Part of a wider range on the RS website, and available in 100 metre reels

136-8196	2 cores, 0.34 mm²
136-8201	3 cores, 0.5 mm²
136-8195	3 cores, 0.25 mm²
136-8202	4 cores, 0.5 mm²

Cat 5e FTP PVC Patch Leads

- Manufactured from Category 5e FTP stranded cable and terminated with high grade modular plugs
- Booted strain relief gives cable support and latch protection
- PVC outer sheath material
- 3m and 10m versions also available

557-234	0.5m, grey
556-724	1m, grey
556-960	1m, black
556-972	2m, black
557-379	2m, green
556-241	5m, red
556-988	5m, black
557-385	1m, green
556-720	2m, grey
557-391	5m, grey
557-323	5m, green
556-297	5m, yellow

NaviTEK NT Network Troubleshooter

- For troubleshooting and maintenance of active and passive networks, helping to pinpoint and solve networking issues quickly
- Display network configuration
  - IPv4 / IPv6 compatible
- Advanced wiremap for miswires, split pairs, opens and shorts, plus distance to opens and shorts (TDR)
- PoE/PoE+ detection
- Ping and Traceroute testing
- Hub blink for port identification, DHCP client and switch detection - 10/100/1000Mb/s

IDEAL NETWORKS

897-7157

VisiFault™ Fibre Visual Fault Locator

- Bright red visible laser light source with continuous and flashing modes
- Accelerates end-to-end fibre continuity checks, speeds fibre tracing and identification, simplifies fibre polarity verification and aids in location of fibre faults including tight bends, breaks and bad connectors
- Survives drops, vibrations and impacts

FLUKE networks

540-8308

Network Cable Tester With Probe

- Ideal for troubleshooting and testing multiple cables such as UTP, STP, Cat cable and coaxial
- The cable tester features a user friendly interface with an easy to read LCD backlit display, allowing you to view results quickly and efficiently
- The LAN cable tracer probe is designed to identify and trace wires or cables within a group without damaging the insulation and can be used with any tone generator to identify wires

RS PRO

146-6833

LAN Cable Tester

- Able to detect faults, opens, shorts, mis-wires, crossed pairs, reversals and split pairs
- Also features distance to fault location
- One button puts the device into test mode
- Can be used on cables between 1m and 350m for all of your testing needs

RS PRO

462-9267

Aicheck G2 Handheld WiFi Test Equipment

- Provides actionable intelligence, simplifying wireless troubleshooting and validation
- It provides network professionals and technicians of any skill level with complete and accurate information

NETSCOUT.

204-8320   802.11a/b/g/n

NETcat® Pro Structured Wiring Troubleshooter

- For fast, accurate checking of cables, wiring and network service, using a back-lit touch screen display
- Tests wiring continuity and proper pair allocation, measures the length of cables and determines if network service is available
- Identifies Power over Ethernet (PoE) cables

GREENLEE.

736-1844

Fluke 805FC Vibration Meter

• Ideal for assessment and measurement of bearings, fans, cooling towers, gearboxes, pumps and many other applications
• Measures overall machine vibrations, bearing vibrations and temperature simultaneously
• Makes use of an innovative sensor to ensure measurement repeatability
• Bearing condition is assessed automatically with crest factor plus parameter, which does not require knowledge of the shaft diameter and rotational speed of the bearing, nor of the bearing class
• Temperature measurements are conducted touchless with an infrared sensor
• All measured values can be stored and exported to create trend plots that help predict the machine- and bearing condition
• Compatible with Fluke Connect mobile app for sharing of results and detailed analysis

FLUKE.

811-1397

Thermal Imaging Multimeter

• Industrial, all-in-one True RMS digital multimeter and thermal imager that can show you exactly where a hot spot or temperature anomaly is for faster troubleshooting
• Featuring Infrared Guided Measurement (IGM™) powered by a built-in 160 × 120 FLIR thermal imager, to visually guide you to the precise location of a problem
• Bluetooth® for data transfer to the FLIR Tools Mobile app

◆FLIR

168-1355 DM285

Thermal Camera For Continuous Monitoring

• Combines thermal and visual cameras in a small, affordable package for continuous temperature monitoring of critical electrical and mechanical equipment
• Provides live video and automated alarming when pre-set temperature thresholds are exceeded, plus trend analysis
• 80 × 60 pixels sensor, fixed focus
• Ethernet/IP and Modbus TCP compliant
• Compact and easy to install in confined areas, measuring only 54 × 25 × 95mm
• Multiple video options gives flexibility to best suit the subject matter

◆FLIR

893-8489 AX8

E54 Thermal Imaging Camera

• Use FLIR 1-Touch Level/Span to instantly improve image contrast and highlight potential electrical or mechanical issues
• The E54 measures up to 650°C (1202°F), offers 3 spotmeters, and displays the max/min temperature within an area live, on-screen.
• Onboard integration with FLIR routing software*, a built-in mic for voice annotation, and report generation features all help the E54 streamline your workday

◆FLIR

206-7257 320 × 240pixel

Fluke 376 AC/DC Clampmeter

• The Fluke True-RMS clamp meter measures current up to 1000A (AC/DC) with fix jaw and iFlex™ flexible current probe expands the measurement range to 2500 A AC while providing increased display flexibility, ability to measure awkward sized conductors and improved wire access

FLUKE.

914-5424 Max Current 999.9A ac

Mounted Infrared Camera

• The Fluke RSE600 is a mounted infrared cameras for research, science and engineering. Softwares like MATLAB and LabVIEW allows users to integrate infrared data, images and videos to support R&D analysis. It can Optimize images, generate customizable reports and export images to the format of your choice with SmartView desktop software

FLUKE.

240-6294 RSE600

WiFi Dataloggers

• Remote, flexible data logging for buildings and site monitoring and other applications
• Combines an unobtrusive, waterproof design with interchangeable measurement probes, up to two channels and up to 2 years of potential battery life
• Wirelessly stream, record and view temperature and humidity on the Cloud, using any web browser, smart phone or tablet
• Simple device setup using our smartphone App

RS PRO

172-0558	To 60°C, with short external probe
172-0560	To 60°C, with short external probe, high accuracy
172-0562	To 125°C, with external thermistor probe
172-0564	To 125°C, with external thermistor probe, high accuracy
172-0566	To 60°C, with external temp/RH probe
172-0568	To 60°C, with external temp/RH probe, high accuracy
172-0571	To 125°C, with two thermistor probes

DPI620 Genii Intrinsically Safe Advanced Modular Calibrator

- Multifunction capabilities, electrical frequency, temperature and pressure
- HART, Foundation Fieldbus & Profibus communicator
- Optional Fieldbus communicator
- Modular re-arrangeable and expandable concept
- Each individual component can be used as a stand-alone instrument
- Allows significant inventory reductions
- Improves operator safety and simplifies training
- Reduces cost ownership

123-6025

DPI620PC Package

- These packages make selection of all relevant parts a thing of the past
- These are pre-configured and offer a large saving versus the cost of buying the items individually
- Includes pressure calibrator, relevant pressure module, pneumatic pressure generating station, pressure relief valve, and 4Sight2 standard calibration software
- Hazardous area versions also available, please visit the RS website for more information (search for "DPI620SPC")

| DPI620PC-2barg (30 psi / 200 kPa) gauge |
| DPI620PC-7barg (100 psi / 700 kPa) gauge |
| DPI620PC-20barg (300 psi / 2 MPa) gauge |

DPI 705E Gauge Manometer

- The Druck DPI705E Internal Pressure Sensors includes an internal Absolute, Gauge or Differential sensor has a tough and rugged design with accurate and reliable measurements. It is designed for single handed operation and provides many essential features required for routine maintenance and system troubleshooting

201-2870   Max Pressure Measurement 70bar

UPS-III, 24mA Loop Calibrator

- Small but mighty, This loop calibrator offers maximum results with a compact design
- The calibrator forms part of an essential toolbox that one may need for calibration and troubleshooting, instrument maintenance and valve set-up.

434-7000   L129 × W77 × D24 mm

Hand Pressure Pump PV211-P

- Dual source of pneumatic pressure and vacuum
- Built-in fine adjust vernier
- Needle valve provides controlled pressure release
- Selector valve for vacuum or pressure generation
- Comfortable, ergonomically designed moulded handles
- Adjustable stroke
- Extremely efficient, only four strokes to 100 psi

529-3544

UNIK 5000 Pressure Sensors

- Ranges from 70 mbar (1 psi) to 700 bar (10,000 psi). Example shown -1 to +1.6 bar
- Accuracy to ±0.04% Full Scale (FS) Best Straight Line (BSL)
- Stainless steel construction
- Frequency response to 5kHz
- High over pressure capability
- Hazardous Area certifications
- mV, mA, voltage and configurable voltage outputs
- Multiple electrical & pressure connector options
- Operating temperature ranges from –55 to 125°C

746-3600

DPI 104 Digital Pressure Gauge

- Microprocessor-controlled gauges, featuring advanced silicon sensor technology and convenient design features to create an accurate and versatile test gauge
- With a digital display and are network-capable alternatives to standard analogue test gauges
- Can function as a master test gauge when used in conjunction with pneumatic and hydraulic hand pumps
- Provides a reliable and economical solution for a multitude of pressure sensing applications
- Pressure ranges to 20,000 psi (1400 bar), example shown 700 bar

532-6290

RS

Be sure. testo

testo 770-3 True-RMS Clamp Meter

- 600A AC/DC clampmeter and continuity tester
- Easy to operate thanks to the fully retractable pincer arm
- Auto AC/DC and large two-line display
- Improved true RMS method
- Bluetooth connection to your smartphone (with the testo Smart Probes App)

905-5898

testo 440 - Air Velocity and IAQ Measuring Instrument

- The datalogging testo 440 offers simultaneous display of 3 measuring values, with configuration and results at a glance
- Operates with wired and wireless probes. The latter offers greater measuring flexibility plus a reduced tangle of cables in the case
- testo 440 also included in application specific kits (as shown). Extensive range of probes also available

176-5582	Testo 440
176-5575	Testo 440 CO_2 kit with Bluetooth®
176-5580	Testo 440 100mm air vane kit with Bluetooth®
176-5572	Testo 440 Lux kit

testo Saveris 2-T2 WiFi Data Logger

- With display and 2 connections for NTC temperature probes
- Automated door contact and temperature monitoring with connectable probes (optional)
- WiFi data logger system with easy installation and operation
- Call up measurement data at any time via Smartphone, tablet or PC
- Limit value violation alarms by e-mail or (optionally) SMS

145-0234

RS700 Series Thermal Imaging Cameras

- New to RS PRO and packed with features to make your work easier, more productive and effective
- Temperature range of -20°C to +350°C
- IR Resolution RS700: 80 × 80 pixels; RS730 120 × 160 pixels
- Image modes: IR image, visual image, IR area on visual image
- On-board 5 Megapixels digital camera
- Wi-Fi connectivity (RS700 only) for results sharing
- Voice comment recording and text annotation on images

136-5667	RS700 80×80 pixels with wifi
136-5668	RS730 120×160 pixels

Fluke 1507 Insulation Tester

- Fluke 1507 (10 GΩ) and 1503 (2 GΩ) electrical insulation testers are compact, rugged, reliable and easy-to-use.
- Their multiple test voltages make them instruments of choice for troubleshooting, commissioning and preventative maintenance applications.
- The remote probe helps save time and money when performing tests

FLUKE

518-6008	CAT III 600V

Meterscope with Bluetooth

- Professional true RMS industrial digital multimeter with oscilloscope functions
- Large 50,000 count 320 × 240 TFT colour LCD display
- 20MHz/50MS/s bandwidth/ Real time sample rate
- Logging function with Trend Capture for easy review of logged data
- Bluetooth PC interface for easy data transfer
- IP67 rated, CAT IV 600V, CAT III 1000V

RS PRO

144-5337	HS-608

www.rsonline.co.za / www.rsonline.africa

TrueVolt Bench Digital Multimeters

- Enables measurements on very low power devices
- Auto calibration maintains measurement accuracy throughout the day
- Graphical capabilities such as trend and histogram charts offer more insights quickly
- With a data logging mode for easier trend analysis and a digitizing mode for capturing transients
- For more information visit the RS website

KEYSIGHT TECHNOLOGIES

777-7101	34460A 6.5 digits, 300 readings/s, 1k readings memory
777-7104	34461A 6.5 digits, 1k readings/s, 10k readings memory
867-2287	34465A 6.5 digits, 5k readings/s, 50k readings memory (std)
867-2280	34470A 7.5 digits, 5k readings/s, 50k readings memory (std)

TGF4000 2 Channel Arbitrary Function Generator

- Sine frequency up to 240MHz high sine purity
- Two identical channels with phase control, coupling and tracking
- Up to 100MHz high resolution pulse generator
- Wide range of standard and arbitrary waveforms built-in

Aim TTi

181-3540	4042 40MHz
181-3541	4082 80MHz
181-3542	4162 160MHz
181-3543	4242 240MHz

Digital / Programmable Bench PSUs

- Single output with constant current & constant voltage
- 10mV / 1mA high accuracy and resolution with low noise and ripple
- Programmable versions can be programmed by USB or RS232

RS PRO

175-7367	0-30V, 0-5A Programmable
175-7368	0-30V, 0-5A
175-7366	0-60V, 0-5A
175-7365	0-60V, 0-5A Programmable

Mixed Domain Scopes

- Offers up to 1GSa/s sample rate, and 10M memory depth per channel
- With 8" WVGA TFT LCD, and includes spectrum analysis and a dual channel 25MHz AWG functions
- Versions available with DMM and PSU, full details online

RS PRO

180-4797	100MHz 2 Channel
180-4798	100MHz 4 Channel
180-4799	200MHz 2 Channel
180-4800	200MHz 4 Channel
180-4801	100MHz 2 Channel with DMM and power supply
180-4802	100MHz 4 Channel with DMM and power supply
180-4803	200MHz 2 Channel with DMM and power supply
180-4804	200MHz 4 Channel with DMM and power supply

Single Channel Spectrum Analysers

- 10.1", WXGA (1366 × 768 pixels) resolution display
- Can measure high-power signals of up to +30dBm (1W)
- 6 markers shown vividly in different colours
- Two USB2.0 ports for storage media and connecting accessories, headphone jack, audio speaker, RF input
- Wifi enabled for remote control and measurement software
- Options available: FPC-K43 receiver mode (144-8217), FPC-K7 modulation analysis (144-8216), FPC-K55 advanced measurement (144-8218)

ROHDE & SCHWARZ

144-8210	1GHz
144-8211	2GHz
144-8212	3GHz

USB Real Time Spectrum Analyser

- The RSA306B uses your PC and Tektronix SignalVu-PC™ RF Signal Analysis Software to provide real time spectrum analysis, streaming capture and deep signal analysis capabilities for signals from 9kHz to 6.2GHz
- In a low-cost, highly portable package that is ideal for field, factory, or academic use
- +20dBm to -160dBm measurement range
- Mil-Std 28800 Class 2 environmental, shock and vibration specifications for use in harsh conditions
- Acquisition bandwidth of 40MHz enables wideband vector analysis of modern standards
- Minimum signal duration of 100μsec captured with 100% probability of intercept

Tektronix

| 111-2375 | |

Tektronix and Keithley

Built by Engineers. For Engineers.

4 Series MSO (Mixed Signal Oscilloscopes)

– 13.3-inch HD (1920x1080) capacitive touch display, 12-bit vertical resolution; up to 16 bits in High Res mode, support for over 20 serial bus protocols.

4 Series MSO
200MHz-1.5GHz, 2- or 4-channel models:

187-5439	MSO46, 6-channel, 200MHz model
187-5440	MSO46, 6-channel, 350MHz model
187-5441	MSO46, 6-channel, 500MHz model
187-5442	MSO46, 6-channel, 1GHz model
187-5443	MSO46, 6-channel, 1.5GHz model
187-5444	MSO44, 4-channel, 200MHz model
187-5445	MSO44, 4-channel, 350MHz model
187-5446	MSO44, 4-channel, 500MHz model
187-5447	MSO44, 4-channel, 1GHz model
187-5448	MSO44, 4-channel, 1.5GHz model

3 Series MDO (Mixed Domain Oscilloscopes)

– 11.6in HD (1920x1080) capacitive touchscreen, optional 16 digital channels for mixed signal analysis, built-in spectrum analyser on 1GHz/3GHz versions, and a wide range of serial bus decoding and triggering options.

3 Series MDO
100MHz-1GHz, 2- or 4-channel models:

187-5454	MDO34, 4-channel, 100MHz model
187-5455	MDO34, 4-channel, 200MHz model
187-5456	MDO34, 4-channel, 350MHz model
187-5457	MDO34, 4-channel, 500MHz model
187-5458	MDO34, 4-channel, 1GHz model
187-5449	MDO32, 2-channel, 100MHz model
187-5450	MDO32, 2-channel, 200MHz model
187-5451	MDO32, 2-channel, 350MHz model
187-5452	MDO32, 2-channel, 500MHz model
187-5453	MDO32, 2-channel, 1GHz model

2470 SourceMeter (SMU)

– Combines an innovative graphical user interface (GUI) with capacitive touchscreen technology to make testing intuitive and help engineers and scientists to learn faster, work smarter, and invent easier.

188-8377	2470 SourceMeter, 1100V, 1A, 20W

DMM6500 6½-digit touchscreen digital multimeter

– A touchscreen bench/production test DMM with more measurement capability - including transient capture, data visualization, and analysis – at the price of other 6½-digit DMMs with far less performance.


173-9960	DMM 6500 bench multimeter

Tektronix®

ROHDE&SCHWARZ
Make ideas real

Best sellers from Rohde & Schwarz

By popular demand, Rohde & Schwarz is extending and enhancing its "Everything you need. And more" promotion. Save today on fully equipped instruments from oscilloscope, spectrum & antenna analyser, signal generator, power analyser and power supply portfolio. Rohde & Schwarz has made it simple for you: no more need to pick-and-choose between the options, they are all included into the price.
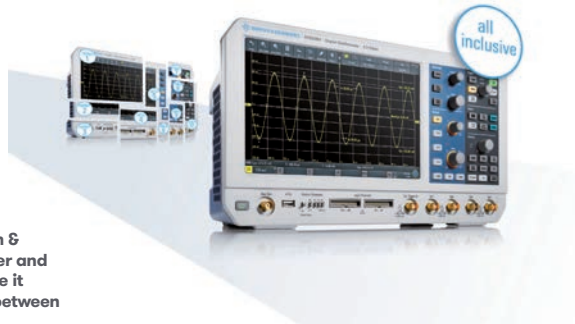
R&S®FPC1500 Spectrum Analyser

• Frequency range: 5kHz to 3GHz
• Phase noise: < -103 dBc/Hz (typ.)
• Options included: Tracking generator, VNA, signal generator, preamplifier, frequency extension,
• modulation analysis, receiver mode, advanced measurements

187-3725   FPC-COM2

R&S®RTM3004 Oscilloscope

• Bandwidth: 1GHz
• Channels: 4 analog / 16 digital
• Options included: AWG, MSO, I2C, SPI, UART/RS-232/ RS-422/RS-485, I2S LJ/RJ/TDM, MIL-1553, ARINC 429, CAN/LIN, power analysis, frequency response analysis, history & segmented memory, spectrum analysis

174-2865   RTM3K-COM4

R&S NGM-COM2b Bench Power Supply

• Comes with high accuracy and fast load recovery time, which are perfect for challenging applications. Their two-quadrant architecture allows them to function both as a source and a sink to simulate batteries and loads

237-1365   NGM-COM2a

FULL RANGE, FULL BENEFITS.

OUR NEW LED LUMINAIRES PRODUCT PORTFOLIO.

APPEALING. DISTINCT. FUNCTIONAL.

From shops and hotels through to industrial production halls – LEDVANCE's expanded selection of luminaires offers the right solution for manifold environments. This is because our entire range for standard applications combines technological and design innovations with proven strengths: great value for money, simplified installation and a guarantee of up to five years.

LEDVANCE

SMC

IO-Link

New technology enables sensors and actuators to become smarter but…

What is IO-Link really?

IO-Link (IEC61131-9) is an open standard serial communication protocol that allows the bi-directional exchange of data from sensors and devices that support IO-Link and are connected to a master. The IO-Link master can transmit this data over various networks, fieldbuses, or backplane buses, making the data accessible for immediate action or long-term analysis via an industrial information system (PLC, HMI, etc.).

Each IO-Link device has an IODD (IO Device Description) file that describes it and its IO-Link capabilities.
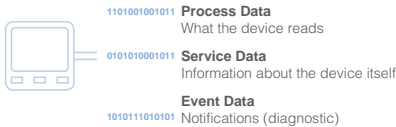
Did you know that…

IO-Link is *not* another fieldbus. It is a point-to-point communication between a compatible IO-Link Master and a field device. Because IO-Link is an open standard, Master devices are available for virtually **any fieldbus or automation system (PLC)**.

IO-Link with SMC: **The 6 advantages**

Increased data availability

There are **three primary data types** made available, which are categorized into *cyclic data* (data automatically transmitted on a regular basis) or *acyclic data* (data transmitted as needed or upon request).

1101001001011 **Process Data**
What the device reads

0101010001011 **Service Data**
Information about the device itself

Event Data
1010111010101 Notifications (diagnostic)

Product diagnostic

No need to wait for a process failure to replace a sensor. Devices are always being monitored to know the state of their health with **Event Data**.

Depending on the device, you can track if they are suffering excessive temperature, pressure, if they are out of range, internal default, etc.

Standard wiring

The entire measured value **transmission is digital**, thus, all device **parameter are stored in the IO-Link** master. The data transfer is based on a 24 V signal and the **shielded wires are not required**.
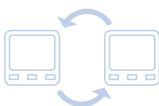
Remote access

Customised solutions force a **continuous change in parameters**. The overall setting control from the control system (PC) minimises time, increasing machine availability.

10101110110101
10101110110101

Easy device replacement

Plug & play replacement simplifies the connection: a common connector for communication and power. Parameters are saved in the master, enabling **automatic setting** once the device is connected.

Tamper free

The key-lock function keeps unauthorised persons from tampering with the settings.

Together these advantages result in:

▶ Reduce overall costs.　　▶ Increase process efficiency.　　▶ Improve machine availability.

FCS40 40W Compact Embedded Power Supplies

- 40W convection cooled suitable for both Class 1 & Class 2 Installations
- ITE & Medical (2× MOPP) approvals
- Compact 100 × 50mm footprint

177-7641	12Vdc
177-7645	24Vdc
177-7643	18Vdc
177-7647	48Vdc
177-7646	36Vdc

Ultra Compact 3W PCB Mount Power Supplies

- The VCE03 series of encapsulated PCB mount AC-DC single output PSUs are ideal for low cost industrial and domestic design applications
- These class II isolation parts benefit system designers with easy integration into a wide range of applications
- 85-305Vac input and <0.3W no load input power

172-0790	5Vdc
172-0791	9Vdc
172-0792	12Vdc
172-0793	15Vdc
172-0795	48Vdc

FCS60 60W Compact Embedded Power Supplies

- 60W convection cooled suitable for both Class 1 & Class 2 Installations
- ITE & Medical (2× MOPP) approvals
- Compact 100 × 50mm footprint

177-7648	12Vdc
177-7649	15Vdc
177-7651	18Vdc
177-7652	24Vdc
177-7653	36Vdc
177-7654	48Vdc

Ultra Compact 5W PCB Mount Power supplies

- The VCE05 series offers a highly reliable range of encapsulated AC-DC single output power supplies
- Designed for low cost industrial applications
- Output options from 3.3Vdc to 48Vdc and features a 130%, 30s peak load capability

124-6615	3.3Vdc
124-6616	5Vdc
124-6617	9Vdc
124-6618	12Vdc
124-6620	24Vdc
124-6621	48Vdc

VES150 Desktop Power Supplies

- 150W with Energy Efficiency Level VI
- Each power supply has standard C14 mains input, 1.2m lead, and 4 pin DC power connector
- China Compulsory Certification (CCC) qualified

172-0740	12Vdc 12.5A
172-0741	15Vdc 10A
172-0730	19Vdc 7.8A
172-0743	24Vdc 6.25A
172-0744	48Vdc 3.12A

IEC AC Inlet with EMC Filter

- A series of IEC320-C14 filtered inlets available in screw mount or snap-in options
- Features a compact design and suitable for class 1 appliances & ITE Applications, rear termination via 6.3 × 0.8mm Faston terminals
- Safety approvals are EN60939-2 for passive filters & ANSI/UL1283 for EMI filters

193-6513	3A snap-in - FASAS03PFR
193-6515	6A snap-in - FASAS06PFR
193-6517	10A snap-in - FASAS10PFR
193-6511	1A screw mount - FASAS01SFR
193-6514	3A screw mount - FASAS03SFR
193-6518	10A screw mount - FASAS10SFR

TBA Series 1W DC-DC Converters

- Continuous short circuit protection
- I/O isolation: 1'500 VDC or 3'000 VDC
- Operating temperature range -40 to +85 °C without derating

187-4567	5V dc out, 10.8-13.2Vdc input
187-4457	±5V dc out, 10.8-13.2Vdc input
187-4589	9V dc out, 10.8-13.2Vdc input
187-4606	12V dc out, 10.8-13.2Vdc input
187-4213	15V dc out, 10.8-13.2Vdc input
187-4403	3.3V dc out, 4.5-5.5Vdc input
187-4439	5V dc out, 4.5-5.5Vdc input
187-4501	12V dc out, 4.5-5.5Vdc input
187-4334	±12V dc out, 4.5-5.5Vdc input

TMPS 05 Series 5W AC-DC Power Modules

- PCB mounting AC-DC power module housed in a 25mm x 25mm package with a 85 → 264vac input
- Certified to EN 60335-1 for domestic appliance applications
- No load input power <300 mW to comply with ErP directive

892-0637	3.3Vdc out
892-0630	5Vdc out
892-0634	9Vdc out
892-0643	12Vdc out
892-0646	15Vdc out
892-0640	24Wdv out
892-0659	48Vdc out

TEL Series 10W DC-DC Converters

- Most compact 10 Watt converter in DIP-16 metal casing
- Highest power density of 3,83W/cm3
- 6-side shielded metal case with insulated baseplate

176-4567	3.3V dc out, 18-75Vdc input
176-4644	5V dc out, 18-75Vdc input
176-4642	12V dc out, 18-75Vdc input
176-4640	15V dc out, 18-75Vdc input
176-4551	24V dc out, 18-75Vdc input

TEC 3(WI) Next Generation 2W DC-DC converters

- High efficiency for low thermal loss
- Cost optimised
- Operating temperature range: -40°C to +90°C

174-2350	3.3V dc out, 9-36Vdc input
174-2358	5V dc out, 9-36Vdc input
174-2447	12V dc out, 9-36Vdc input
174-2456	15V dc out, 9-36Vdc input
174-2464	24V dc out, 9-36Vdc input
174-2322	±12V dc out, 9-36Vdc
174-2328	±15V dc out, 9-36Vdc

THL Series 15W DC-DC Converters

- 15 Watt converter in a 1" x 1" metal package
- Cost efficient design
- Ultra wide 4:1 input voltage range: 9-36 and 18-75 VDC

186-0234	3.3V dc out, 18-75Vdc input
186-0254	5V dc out, 18-75Vdc input
186-0257	12V dc out, 18-75Vdc input
186-0238	15V dc out, 18-75Vdc input
186-0218	24V dc out, 18-75Vdc input

TRS 2 Series 2W SMD DC-DC converters

- Housed in one of the most compact SMD cases
- Just 11.9mm x 11.3mm x 8mm
- Cost-efficient design - perfect for low cost IoT applications

176-4632	3.3V dc out, 4.5-13.2Vdc input
176-4623	5V dc out, 4.5-13.2Vdc input
176-4589	9V dc out, 4.5-13.2Vdc input
176-4615	12V dc out, 4.5-13.2Vdc input
176-4581	±5V dc out, 4.5-13.2Vdc input
176-4573	±12V dc out, 4.5-13.2Vdc input
176-4565	±15V dc out, 4.5-13.2Vdc input

DYMO

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ecospill®

Tailored Spill Control Solutions

We are a leading UK based manufacturer of spill prevention, containment & control products and services who provide practical, cost effective solutions for spill related issues.

We have a team of regional experts who are skilled in all aspects of spill management including the delivery of spill risk assessments and training, so are ideally placed to provide guidance and support to businesses whatever industry they are in.

A manufacturer of alcoholic beverages contacted us recently and the following is an example of how we worked with them to help them comply with and meet their environmental and health and safety obligations.

Problem

- Being located close to a water course means greater prominence is placed upon activities involving the handling of 'environmentally objectionable liquids' such as oils and chemicals and the wider consequential impact of spills escaping from site into the water environment.
- The business needs to be able to respond quickly, effectively and safely if an incident occurs.
- They need to have the correct equipment in place in the 'right' areas.

Solution

After consultation with the client and a thorough inspection of the site, we produced a comprehensive report detailing the following:

- The risks and consequential impacts if a spillage occurred.
- The client's current capability to deal with a spillage.
- Gaps in the employees' knowledge and a full training plan for First Responders and operatives.
- Product recommendations appropriate to their site.

Following this the client issued instruction that all recommendations should be taken on board.

Clip Top Carrier Spill Kits

- Handy kit contained in a clip top plastic bag with carry handle
- 15 litre kit contains: 10 × pads 50 × 40cm, 1 × 1.2m sock, 1 × waste bag and tie
- 30 litre kit contains: 20 × pads 50 × 40cm, 2 × 1.2m socks, 2 × waste bags and ties

192-7719	15 litre oil
192-7725	15 litre maintenance
192-7720	30 litre oil
192-7727	30 litre maintenance

Vinyl Holder Spill Kits

- Response kit contained in a vinyl holdall with easy carry strap and is ideal for indoor or outdoor use
- 30 litre kit contains: 20 × pads 50 × 40cm, 2 × 1.2m socks, 2 × waste bags and ties
- 50 litre kit contains: 30 × pads 50 × 40cm, 3 × 1.2m socks, 3 × pillows 38 × 23cm, 5 × waste bags and ties

192-7723	30 litre oil
192-7730	30 litre maintenance
192-7724	50 litre oil
192-7731	50 litre maintenance

Sustainable Spill Absorbents

- Sustainable absorbents made from recycled fibres with an extra layer of meltdown polypropylene
- Class A fire retardant when material is dry
- Available in pads 48 × 38cm or rolls 36cm x 40m

192-7708	Pads oil pack 100
192-7711	Pads maintenance pack 100
192-7709	Roll oil
192-7712	Roll maintenance

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Wera

Joker Wrench Ratchet Combi Set

- Unique holding function: the metal plate in the jaw holds nuts and bolts, allowing the user to position them wherever needed
- Fastening on the thread is done quickly and safely, thanks to the innovative limit-stop plate
- Double-hex geometry and the straight head design halves the return angle to 30°
- Ultra strong chrome molybdenum body; ultra fine 80 tooth ring ratchet provides a short return angle of 4.5°
- Set contains sizes: 8, 10, 11, 12, 13, 14, 15, 16, 17, 18 & 19mm

788-7110

KK VDE Extra Slim Torque Set

- Insulated and 100% individually tested VDE handles and blades for safe working up to 1,000 volts
- Adjustable torque setting 1.2 - 3.0 Nm via simple adjustment by hand of easy to read scale values
- Excess load signal triggered when pre-set torque value is reached preventing over tightening
- Extra slim blades for access to RCBOs, spring clamps, circuit breakers and recessed screws in tight spaces
- Set contains: KK60 i 0.4, KK60 iS 0.6, KK60 iS 0.8, KK60 iS 1.0, PH 1, PH 2, PZ 1, PZ 2, PZ/S 1, PZ/S 2, TX10, TX15, TX20, TX25

136-7120

Kraftform Micro Screwdriver Set

- Micro set is ideal for precision mechanical work
- Anti-roll feature and swivel cap for rapid twisting using the fast-turning zone
- Set contained in a robust belt pouch
- Set contains: Phillips (1 × PH 00×60; 1 × PH 0×60); Torx (1 × TX 5×40; 1 × TX 6×40); slotted (1 × 0.23×1.5×40; 1 × 0.30×1.8×60; 1 × 0.40×2.0×60; 1 × 0.40×2.5×80; 1 × 0.50×3.0×80); hexagon (1 × 0.9×40; 1 × 1.5×60; 1 × 2×60)

788-7034

7-Piece Tap Set

- Tap bits for cutting metric threads
- Hexagon shaft allows high torque transfer, whilst finely adjusted material elasticity ensures long service life
- Includes non-magnetic universal bit holder with Rapidaptor
- Contains sizes: M3, M4, M5, M6, M8, M10

123-1856

Kraftform Kompakt 20 Driver & Bit Set

- Magazine holder with six screw bits and bayonet blade released via the lever on the grip
- Quick change chuck with bit lock
- Grip length 118mm, blade length 100mm, bit length 25mm
- Contains: Kraftform® anti-slip grip holder with quick change chuck, slotted, Phillips® and Pozidriv® bits

512-1512

9-Piece Hex Key Set

- Long arm set with ball end
- Set contains 1.5, 2, 2.5, 3, 4, 5, 6, 8 and 10mm

638-8312

52-Piece Driver Bit Set

- Bits, bit holders and hex keys in one tool set
- Colour coded bits for easy identification
- Adaptors have quick release chuck
- Durable parts for a long life
- For full contents visit our website

123-0886

Tool-Check Plus

- Ideal for working in confined spaces
- ¼" mini ratchet, Kraftform holder, tough viscous bits for universal use
- Use of ¼" sockets also possible with the Wera adaptor 870/1 (RS No. 127-1282)

812-6204

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