

ifm electronic



Automation Technology for the Machine Tools Industry *Catalogue 2014/2015*

www.ifm.com/gb/machine-tools

ifm – close to you!

ifm – Your partner for machine tools



The name ifm stands for a large range of different sensors and systems for automation technology worldwide.

For more than forty years the family-run company has been researching, developing and producing with the aim of optimising technical processes and conserving resources.

An extremely wide product range provides sufficient flexibility to meet customer requirements in the most varied industries: from an individual sensor and matching accessories to a complete system solution. Of course all relevant approvals are available.

As one of the global players, ifm guarantees worldwide availability of the units. More than 70 branch offices worldwide ensure competent advice on-site.

ifm – close to you!



<i>ifm – the company</i>	4 - 5	
<i>General information</i>	6 - 7	
<i>Machine tools</i>	8 - 31	
<i>ifm – worldwide addresses</i>	32 - 35	

The company in your vicinity.



State-of-the-art communication.

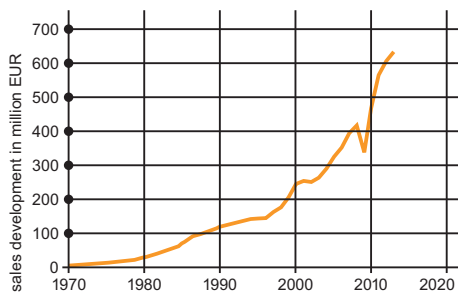
With the right address – www.ifm.com – only a mouse click separates you from the world of automation technology. See the power of our products in interactive representations. Gain an impression with 3-dimensional views of our units. Download CAD drawings for direct integration in your applications. Or order online in ifm's e-shop – fast, convenient and reliable.

We are there for you.

Close contact with our customers is part of our success. Therefore we have consistently developed our sales network right from the start. Today the ifm group of companies is represented in more than 70 countries – close to you! With application advice and service at the heart of our operation. For the introduction of new products and technologies we support you with workshops and seminars in our training centres or in your plant.

Security by success.

Since its foundation in 1969 ifm has constantly grown, now having more than 5000 employees worldwide, and achieved a turnover of more than EUR 630 million in 2013. This success gives you the security of having a reliable partner for the implementation of your automation projects. Comprehensive service and a warranty of 5 years on standard units are just two examples of this reliability.



Turnover development since 1970.



Not only components.

ifm stands for a large range of different sensors and systems for automation. Our range of more than 7,800 articles guarantees flexibility and compatibility. So there is always a reliable solution for your automation projects – from the individual sensor with practical accessories to the complete system.

Availability guaranteed.

Your deadlines matter to us. That is why we are constantly optimising our production processes in order to be able to quickly and flexibly produce large quantities at a constantly high quality – and to continue to shorten delivery times. Your order is dispatched via our centralised logistics centre reliably and on time.

Quality as part of our philosophy.

The quality standard of our products is an integral part of our company philosophy. And we guarantee it! So we provide you, the users, with a maximum degree of security: By means of our own production technology, ifm film technology, as well as by means of extensive quality assurance measures such as 100 % final testing. By quality we understand, for example, ecologically conscious production – Made in Germany!

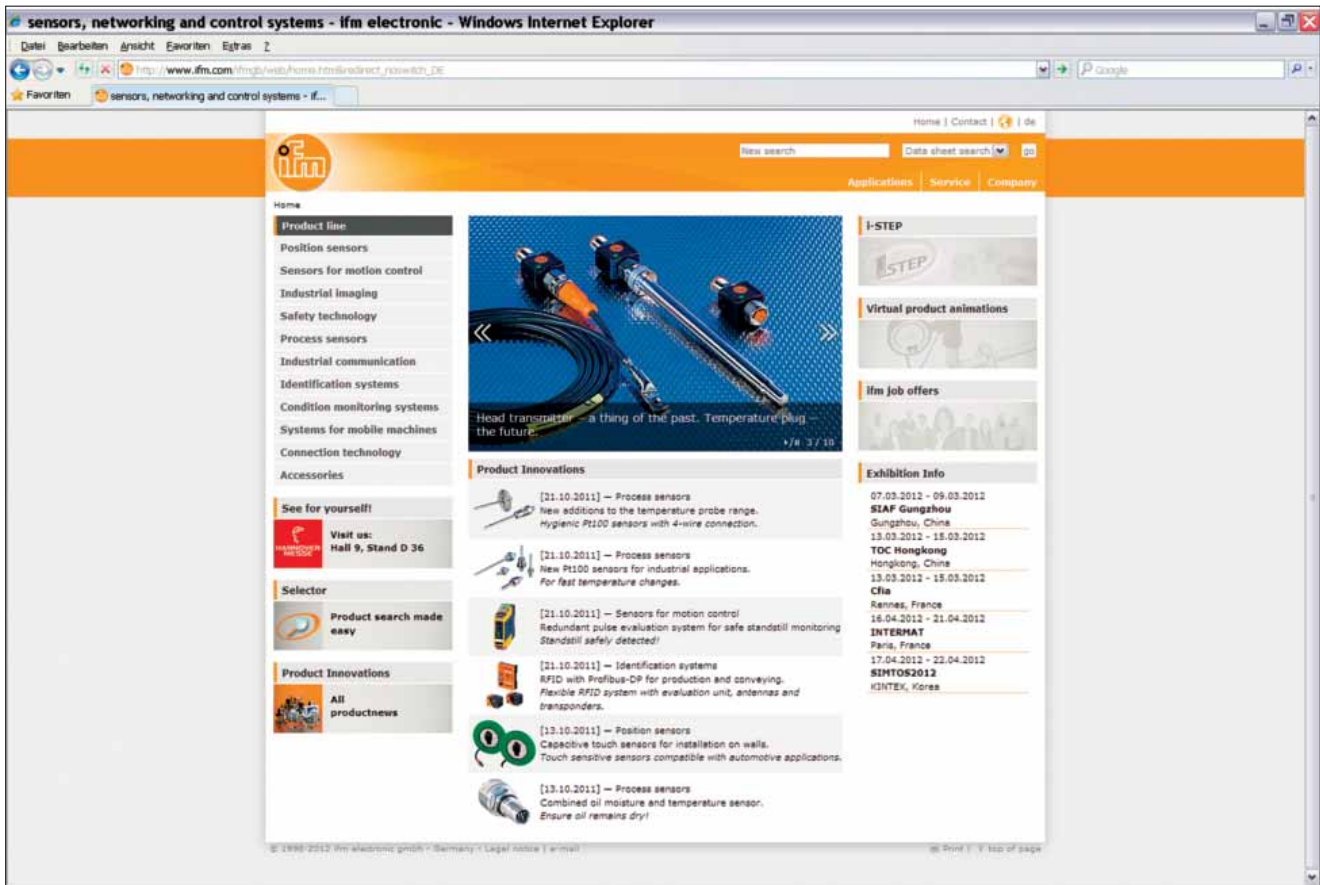


The development of innovative products is one of our core competences. From high-quality standard solutions to products specially tailored to the requirements of the individual industries – from mobile machines to the food industry.



www.ifm.com

Information around the clock and around the globe in 23 languages on the internet.



• Information

- product innovations
- company news
- exhibition info
- locations
- jobs

• Documentation

- data sheets
- operating instructions
- manuals
- approvals
- CAD data

• Communication*

- request for documents
- recall service
- live advice
- newsletter

• Selection

- interactive product selection aids
- configuration tools
- data sheet direct

• Animation

- virtual product animations
- flash movies (video sequences)

• Application

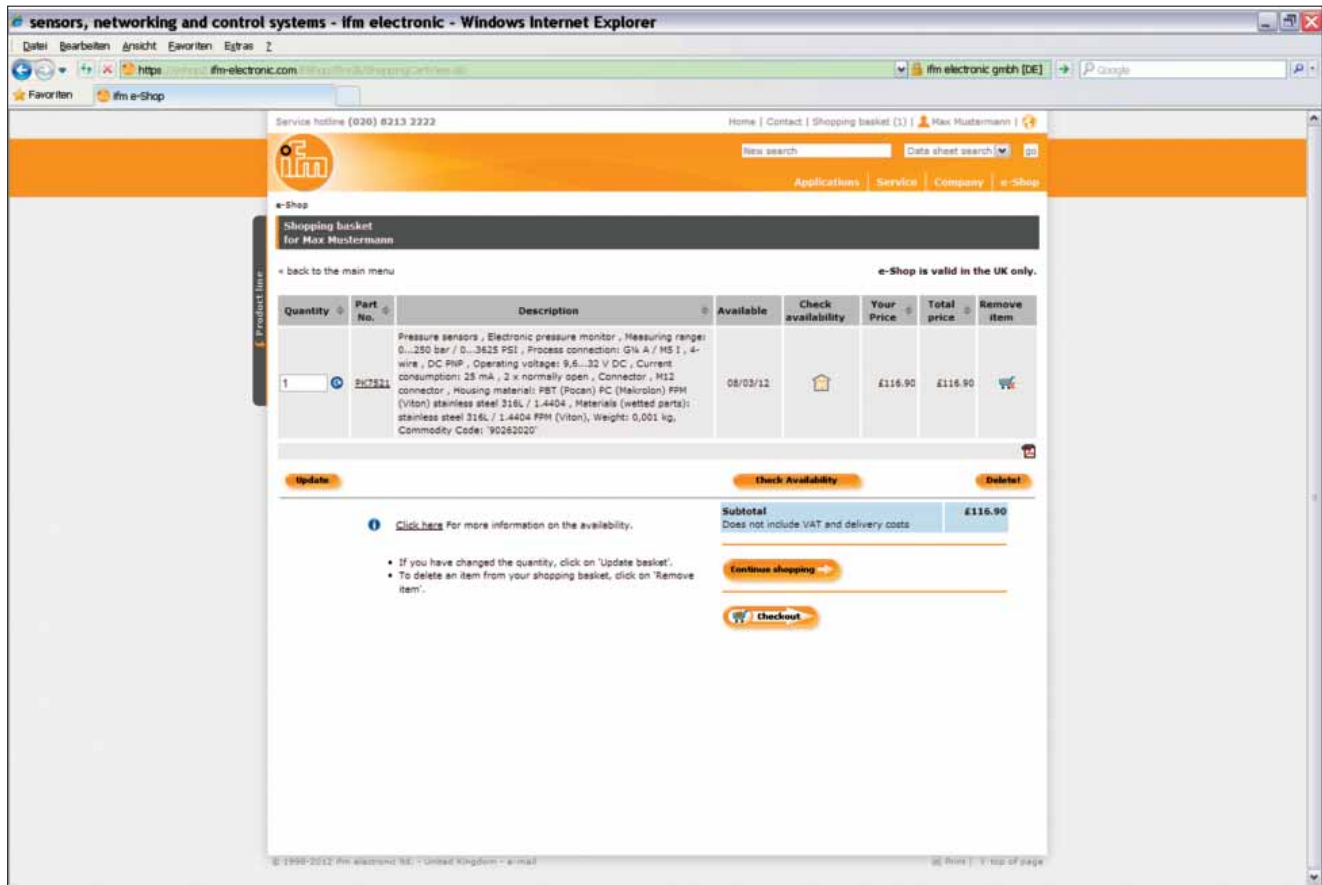
- applications
- product recommendations
- calculation aids

• Transaction*

- e-shop processing
- e-procurement catalogues

*Some offered information is available country-specific

Convenient order processing via the e-shop** on the internet.



Secured authentication

Individual order history

Customer-related price indication

Convenient quick input form

Real time availability check

Simple order processing

Personal product favourites

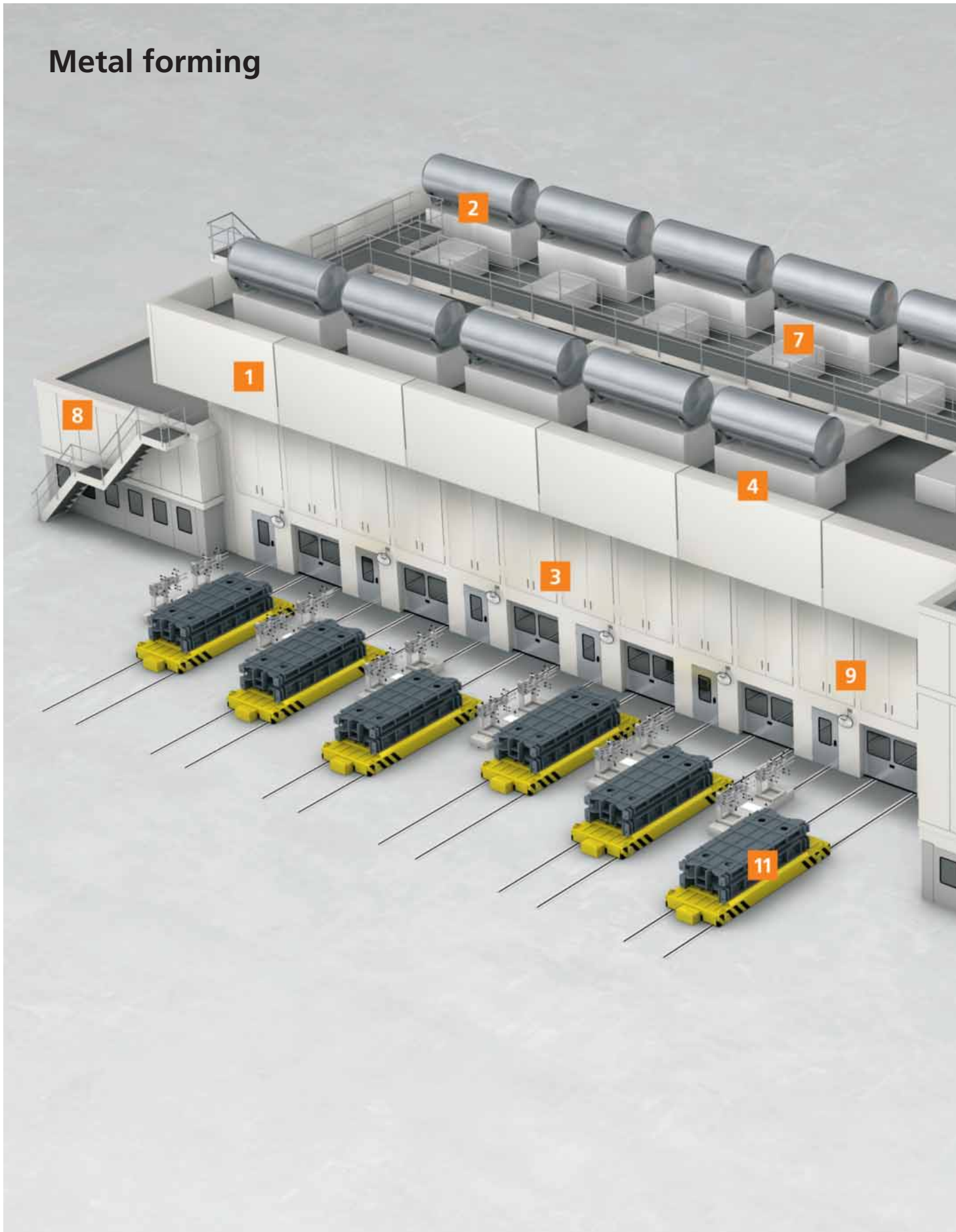
Management of shipping addresses

Online parcel tracking

Confirmations by e-mail

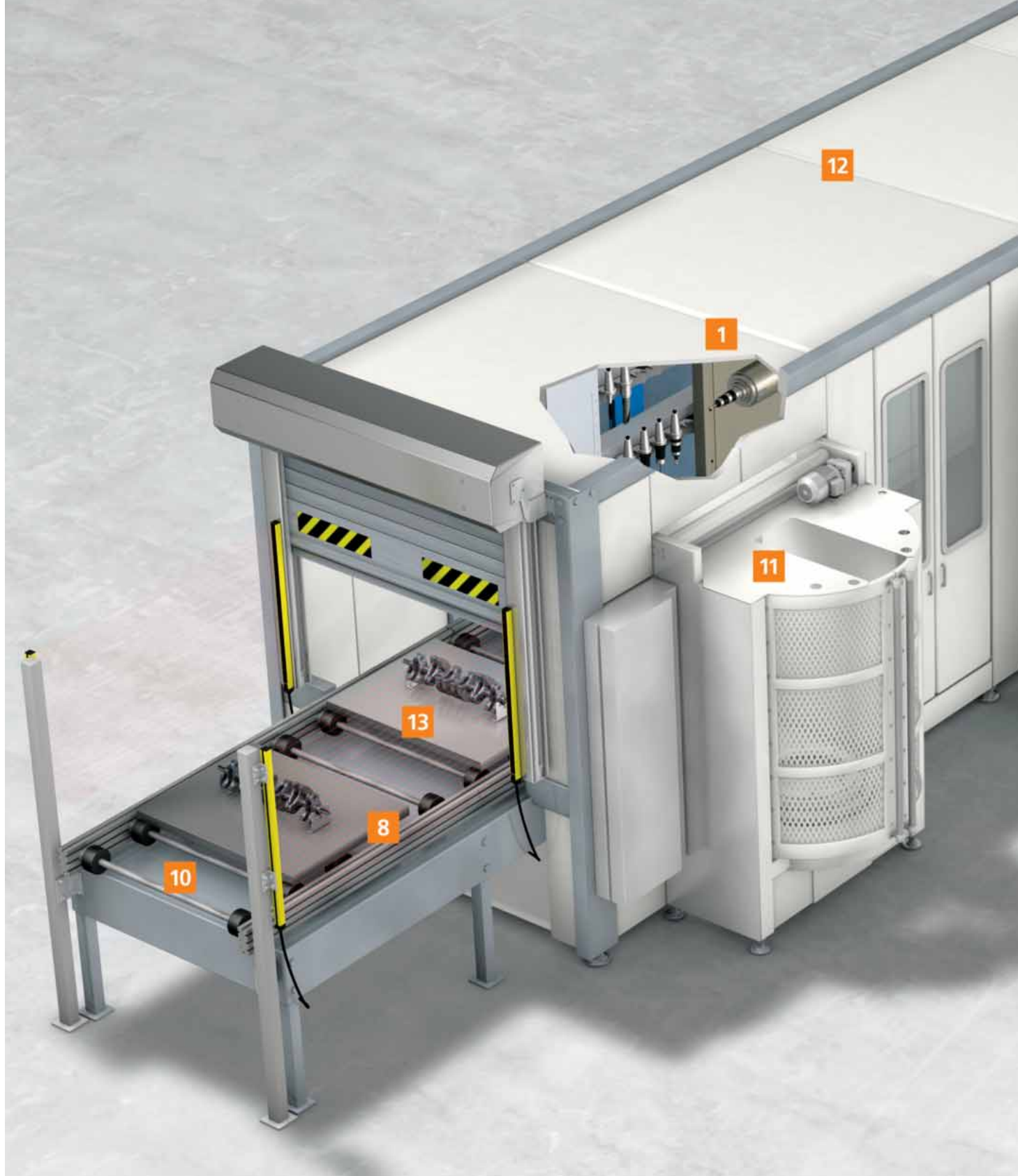
** Already available in many countries.

Metal forming





Metal working





Machine	Application	Product group	From page
1 Drives / spindles			
	Monitoring of drives	Vibration monitoring systems	15
	Drill bit breakage monitoring on spindles	Vibration monitoring systems	15
	Internal cooling of drill	Flow sensors / flow meters	15
2 Hydraulics			
	Level monitoring in hydraulic power packs	Level sensors	16
	Temperature measurement in hydraulic power packs	Temperature sensors	16
	Pressure measurement on filters and axes	Pressure sensors	17
3 Pneumatics			
	Compressed air treatment	Pressure sensors	18
	Measurement of compressed air consumption	Flow sensors / flow meters	18
	Vacuum monitoring on grippers	Vacuum sensors	19
4 Cooling			
	Cooling in machines	Flow sensors / flow meters	20
	Suction of oil mist	Flow sensors / flow meters	20
	Fan monitoring	Vibration monitoring systems	20
5 Coolants			
	Hydrostatic pressure measurement	Pressure sensors	21
	Leakage detection	Level sensors	21
	Limit level detection	Level sensors	21
6 Swarf / scrap disposal			
	Swarf hopper monitoring	Laser sensors / distance measurement sensors	22
	Rotational speed monitoring	Pulse evaluation systems	22
	Position detection	Laser sensors / distance measurement sensors	22
7 Lubrication			
	Oil condition monitoring	Systems for oil quality monitoring	23
	Oil moisture measurement	Systems for oil quality monitoring	23
	Cycle detection on lubricant distributors	Inductive sensors	23

Machine	Application	Product group	From page
8 Workpiece loading			
	Finger protection	Safety light curtains	24
	Part detection	Fail-safe inductive sensors	24
	Protective opening of gantry robots	Fail-safe inductive sensors	24
9 Part seat monitoring			
	System solution for part seat monitoring	Pressure sensors	25
	Compressed air monitoring	Pressure sensors	25
	Differential pressure measurement	Pressure sensors	25
10 Workpiece transport			
	Position detection	Inductive sensors	26
	Part detection	Laser sensors / distance measurement sensors	26
	Position detection	Inductive sensors	26
11 Tool changing system			
	Position check of tool	Inductive sensors	27
	Tool identification	RFID 13.56 MHz	27
	Tool detection	Laser sensors / distance measurement sensors	27
12 Energy efficiency			
	Leakage detection	Flow sensors / flow meters	28
	Measurement of compressed air consumption	Flow sensors / flow meters	28
	Detection of water	Flow sensors / flow meters	28
13 Part detection / quality control			
	Quality assurance	Vision sensors	29
	Release for work step	Capacitive sensors	29
	Identification	1D/2D code readers	29
14 Signal transmission			
	Controllers and gateways	AS-Interface controllers / gateways	30
	Safe standstill monitor	Pulse evaluation systems	30
	Industrial communication	AS-Interface I/O modules	31

Sensors and systems for machine tools



Machine tools are often used as diligent helpers in almost all manufacturing companies in this world.

The machine tool sector is divided into the main fields of cutting and forming (turning, milling, drilling, grinding, sawing) as well as joining machines.

These processes are divided into the 'wet'- i.e. flooded with coolant, – MQL (minimum quantity lubrication) and 'dry' working. ifm sensors can be used in all applications.

The topics "energy efficiency" and "quality assurance" are currently the focus of a lot of attention. Here again, ifm offers application-specific sensors at a favourable price / performance ratio.


Drives / spindles



Condition monitoring of drives

VSA series sensors record the vibration levels of the drives, enabling condition-oriented maintenance.

Vibration monitoring systems



Type	Description	Order no.
	Vibration sensor · For connection to external diagnostic electronics · Connector · stainless steel 316L / 1.4404	VSA001




Drill bit breakage monitoring on spindles

VSA series sensors detect the spindle condition and the vibrations in the machine tool in case of a drill bit breakage.

Vibration monitoring systems

Type	Description	Order no.
	Vibration sensor · For connection to external diagnostic electronics · Cable with connector, screened · housing: stainless steel 316L / 1.4404	VSA002
	Diagnostic electronics for vibration sensors · 4 sensor inputs 0...10 mA or IEPE · TCP/IP Ethernet interface · Frequency-selective machine monitoring of up to 4 measuring points · Integrated history memory with real-time clock · Counter function · Combicon connection · PA	VSE100

Flow transmitters with non-return valve

Type	Process connection	Measuring range [l/min]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U _b [V]	Order no.
	G ½	0.3...25	0...60	200	< 0.01	24	SBU623


Hydraulics




Monitoring hydraulic systems

LR and TR series sensors detect the level and the temperature. Any deviations from the target values are detected at once.

Temperature sensors

Type	Measuring range [°C]	Process connection	Display LED	U _b [V]	Current consumption [mA]	I _{load} [mA]	Order no.
	-40...300	G ½ A	Display unit	18...32	50	250	TR7432

Level sensors with guided wave radar


Type	Process connection	Probe length [mm]	Active zone [mm]	Inactive zone [mm]	U _b [V]	Medium temperature [°C]	I _{load} [mA]	Order no.
	G ¾ A	–	L-40 (L-60)	30 / 10 (30)	18...30	0...80	200	LR7000



Oil recirculation pump station

The PG electronic contact manometer combines an easy-to-read manometer display with the advantages of an electronic pressure sensor.

Pressure sensors in the circulating oil lubrication

Type	Process connection	Display LED	Measuring range [bar]	P _{overload} max. [bar]	P _{bursting} min. [bar]	U _b DC [V]	Order no.
	G ½	Display unit	0...100	300	700	18...32	PG2452



Hydraulics



Filter monitoring

PNI-type electronic pressure sensors with an analogue input evaluate the pressure difference in filter elements in combination with PA-type transmitters.

Differential pressure measurement with PNI and PA


Type	Process connection	Display	Measuring range	P _{overload}	P _{bursting}	U _b DC	Order no.
		LED	[bar]	max. [bar]	min. [bar]	[V]	
	G 1/4 I	Display unit	0...25	100	350	18...30	PNI023
	G 1/4 I	—	0...25	150	350	9.6...32	PA3023



Weight compensation Z axis (in general "vertical" axes)

A hydraulically generated primary pressure compensates the weight of the vertical axes so that the axis drives consume an almost identical amount of energy.

Pressure sensors


Type	Process connection	Display	Measuring range	P _{overload}	P _{bursting}	U _b DC	Order no.
		LED	[bar]	max. [bar]	min. [bar]	[V]	
	G 1/4 I	Display unit	0...100	300	650	18...36	PN7002

Pneumatics

**Maintenance unit**

The PK6524 pressure sensors monitor the correct working pressure in the compressed air supply. The SD6000 compressed air meter determines the consumption.


Pressure monitoring with PK sensor

Type	Process connection	Display	Measuring range	P _{overload}	P _{bursting}	U _b DC	Order no.
		LED	[bar]	max. [bar]	min. [bar]	[V]	
	G 3/4 male / M5 female	Operation	0...10	25	300	9.6...32	PK6524


**Compressed air treatment for the purging air**

The overpressure of the purging air inside spindles and distance measurement devices prevent unintended penetration of cooling lubricants.

Pressure sensors

Type	Process connection	Display	Measuring range	P _{overload}	P _{bursting}	U _b DC	Order no.
		LED	[bar]	max. [bar]	min. [bar]	[V]	
	G 1/4 I	Display unit	-1...10	75	150	18...36	PN5004

Compressed air meter for the measurement of compressed air consumption


Type	Process connection	Setting range	Pressure rating	Response time	U _b	Order no.
		[Nm ³ /h]	[bar]	[s]	[V]	
	G 1/4 (DN8)	0.12...15.00	16	< 0.1	18...30	SD5000

Pneumatics


**Vacuum sensors monitor the suction grippers**

PN7 series vacuum sensors detect the required vacuum for operating the suction grippers.

Vacuum sensors

Type	Process connection	Display	Measuring range	P _{overload}	P _{bursting}	U _b DC	Order no.
		LED	[bar]	max. [bar]	min. [bar]	[V]	
	G 1/4 I	Display unit	-1...1	20	50	18...36	PN7009


Connectors

Type	Cable	Wire specification	Material housing / nut	U	T _a	Pro-tection	LEDs	Order no.
				[V]	[°C]			
	10 m black PUR cable	4 x 0.34 mm ² , Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	—	EVC006

**Leakage detection in compressed air systems**

The SD type compressed air meters continuously detect the consumption of the treated compressed air. Actual / target comparisons ensure early detection of leakage.

Compressed air meter for the measurement of compressed air consumption

Type	Process connection	Setting range	Pressure rating	Response time	U _b	Order no.
		[Nm ³ /h]	[bar]	[s]	[V]	
	R1/2 (DN15)	0.6...75.0	16	< 0.1	18...30	SD6000


Cooling




Cooling with fluids

The SU flow meter monitors the flow and the temperature of the media. If oil is used in the working space, the oil mist has to be sucked away.

Flow meters

Type	Process connection	Measuring range [l/min]	Medium temperature [°C]	Pressure rating [bar]	Response time [s]	U _b [V]	Order no.
	G1	0.2...100.0	-10...80	16	< 0.250	19...30	SU8000

Flow sensors for machine suction


Type	Setting range liquids / gases [cm/s]	Greatest sensitivity [cm/s]	Medium temperature [°C]	Response time [s]	Max. T ₀ gradient [K/min]	Pressure rating [bar]	Order no.
	3...300 / 200...2000	3...60 / 200...800	-20...60	1...10	15	300	SF311A



Fan monitoring on oil coolers

The oil is cooled to a defined value. The VKV vibration monitor to DIN ISO 10816 detects any damage to the rotating parts in the fan system.

Vibration monitoring systems

Type	Description	Order no.
	Vibration monitor · Connection via M12 connector · Vibration monitor to DIN ISO 10816 · Measuring range RMS: 0...25 mm/s · Switching outputs: normally closed and analogue 4...20 mA · Housing materials: PBT / PC / FPM / stainless steel 316L / 1.4404	VKV021


Coolants




Level monitoring in coolant tanks

The coolant level in tanks can be continuously monitored by LMT or the PA hydrostatic pressure sensor.

PA pressure sensor

Type	Process connection	Display	Measuring range	P _{overload}	P _{bursting}	U _b DC	Order no.
		LED	[bar]	max. [bar]	min. [bar]	[V]	
	G 1/4 I	—	0...0.25	10	30	9.6...32	PA3028

LMT point level sensor

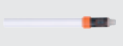
Type	Process connection	Process pressure max.	Application	Protection	Order no.
		[bar]			
	G 1/2 A	-1...40	liquid, viscous and powdery media	IP 68 / IP 69K	LMT121



Overflow and leakage prevention

The LI214x level sensor reliably monitors if any coolant escapes from the pipes and tanks through leaks.

Level sensors (to section 19 of the German Federal Water Act WHG)


Type	Probe length	Output	U _b	Medium temperature water	Medium temperature oil	I _{load}	Order no.
	[mm]		[V]	[°C]	[°C]	[mA]	
	132	Normally closed	10...36	0...35	0...65	200	LI2141

Swarf / scrap disposal

**"Full" detection for swarf hoppers**

The O1D photoelectric sensor uses the analogue output to the controller to detect the level in the swarf hopper. Both long swarf and short-chipping swarf are detected.


PMD photoelectric sensors for detecting the loading condition

Type	Operating principle	Range	Sampling rate [Hz]	Spot Ø at max. range [mm]	U _b [V]	Order no.
	Photoelectric distance sensor	0.2...10 m	1...33	< 15 x 15	18...30	O1D105
	Photoelectric distance sensor	0.3...6 m	1...33	< 8 x 8	18...30	O1D155


**Removal of scrap bales**

The O5D photoelectric distance sensor detects if the conveyor belt is clear. The compact DIA speed monitor detects the pulses of the conveyor driveshaft.

PMD distance sensors with time of flight measurement for detecting the loading condition

Type	Operating principle	Range	Sampling rate [Hz]	Spot Ø at max. range [mm]	U _b [V]	Order no.
	Background suppression	0.03...2 m	33	< 5	10...30	O5D100

Compact speed monitors for checking the conveyor

Type	U _b [V]	In-puts	Input function	Setting range [puls. / min.]	Setting range [Hz]	Out-puts analog	Out-puts relays	Out-puts transist.	Order no.
	10...36 DC	1	PNP	5...300	15000	–	2	1	DI5009


Lubrication




Oil condition monitoring in circulating lubrication systems

LDP detects smallest particles in the oil. The oil is filtered in recirculating pump stations. In addition, LDH100 continuously checks the water content in the oil and the temperature.

Oil particle sensor

Type	Process connection	Process pressure max. [bar]	Application	Protection	Order no.
	Minimess M16 x 2	–	Mineral oils (e.g. HLP), ester oils (e.g. HEES), biodegradable oils (e.g. HETG)	IP 67	LDP100

Oil moisture sensor


Type	Process connection	Process pressure max. [bar]	Application	Protection	Order no.
	G 3/4	10	Mineral oils, synthetic esters, biodegradable oils, air	IP 67	LDH100



Principle of central lubricating system for grease

The distributor supplies the connected points of lubrication, one after the other, with the lubricant in exactly defined quantities. The complete cycle is monitored by the IR5041 piston detector.

Cycle detection on progressive distributors with piston detector

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f [Hz]	I _{load} [mA]	Order no.
	–	1.5 f	steel (1.7225)	10...36	IP 67	100	100	IR5041


f = flush / nf = non flush

Workpiece loading

**Access prevention of loading openings on roller tracks**

OY series safety light curtains restrict unauthorised access to accessible areas such as the loading zones. They correspond to type 4, in accordance with EN 61496.


Safety light curtains for access prevention

Type	Sensor length [mm]	Resolution / detection capacity [mm]	Protected area height [mm]	Protected area width [m]	Response time [ms]	U _b [V]	Order no.
	1263	14	1210	0...3 / 1...6	16.5	24	OY008S

**Protection of loading openings for gantry robots**


Category 4 and SIL 3 contactless inductive safety sensors directly detect the safe position of gantry robots – without requiring a special target.

Inductive fail-safe sensors to protect the loading opening

Type	Length [mm]	Enable zone [mm]	Housing material	U _b DC [V]	Protection	Response time in case of a safety request / enable time [ms]	Order no.
	66	4...20 nf	PPE	24	IP 65 / IP 67	≤ 50 / ≤ 200	GM705S

f = flush / nf = non flush

Connectors

Type	Cable	Wire specification	Material housing / nut	U [V]	T _a [°C]	Pro- tection	LEDs	Order no.
	10 m black PUR cable	4 x 0.34 mm ² , Ø 4.9 mm	TPU / Brass	250 AC 300 DC	-25...90	IP 65 / IP 67 / IP 68 / IP 69K	–	EVC003


Part seat monitoring



System solution
for part seat monitoring

The workpieces to be processed must lie flat to ensure dimensional accuracy. The PS7 control unit detects any contamination due to swarf or abrasion.

Control unit for part seat monitoring



Type	Description	Order no.
	Control unit for part seat monitoring · Setting by adjustment of the pneumatic bridge · Integrated pressure sensor with 2 switching outputs · and 4-digit alphanumerical display for trend display or display of current pressure · Cable	PS7570



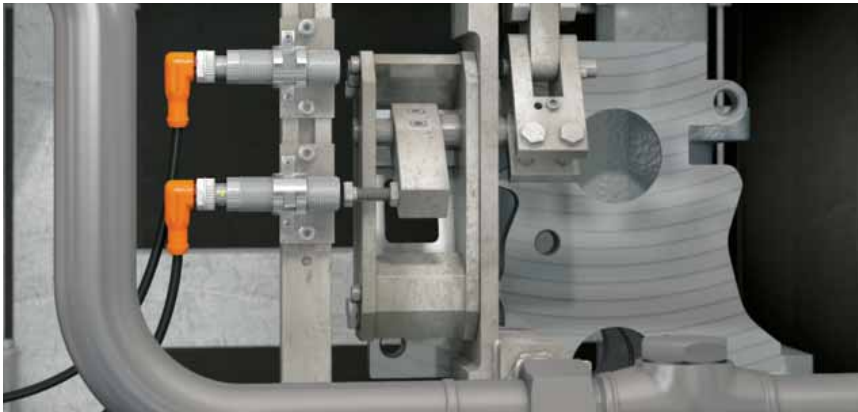
Part seat monitoring of workpieces
by means of differential pressure
measurement

All bore holes are covered when the workpiece is correctly seated. The minimum differential pressure determined is the reference value.

Differential pressure measurement with PNI and PA


Type	Process connection	Display	Measuring range	P _{overload}	P _{bursting}	U _b DC	Order no.
		LED	[bar]	max. [bar]	min. [bar]	[V]	
	G 1/4 I	Display unit	0...10	50	150	18...30	PNI024
	G 1/4 I	—	0...10	75	150	9.6...32	PA3024

Workpiece transport

**Full-metal sensors for use in machining**

For reasons of weight, many components are manufactured from aluminium alloys. Full-metal inductive sensors with correction factor $K = 0$ are unaffected by aluminium swarf.

Full-metal inductive sensors with correction factor $K = 0$


Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Order no.
	M18 / L = 70	4.5 f	High-grade st. steel	10...36	IP 68	100	100	IGC249

f = flush / nf = non flush


**Detection of workpiece carriers and workpieces in series connections**

IM5123 inductive sensors detect the position of the workpiece carriers on accumulating conveyors. The OID photoelectric sensors signal if they are occupied.

PMD photoelectric sensors for detecting the loading condition

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
	Background suppression	0.03...2 m	Red	< 5	2 switching outputs normally open / closed complementary PNP	OID200

Inductive sensors for determining position

Type	Dimensions [mm]	Sensing range [mm]	Material	U_b [V]	Protection	f [Hz]	I_{load} [mA]	Order no.
	40 x 40 x 54	20 f	PA (polyamide)	10...36	IP 67	100	200	IM5123

f = flush / nf = non flush


Tool changing system



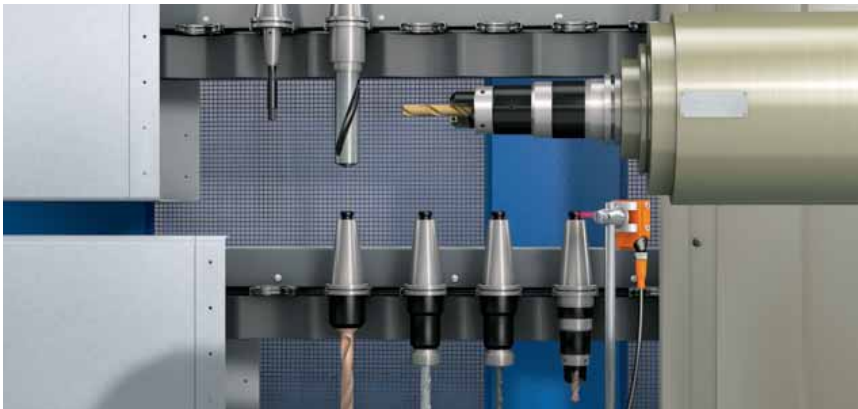
Inductive sensors detect the position of interchangeable tools

The IDC rectangular inductive sensors detect the position of the workpiece on the positioning table for automatic locking.

Inductive sensors

Type	Dimensions [mm]	Sensing range [mm]	Material	U _b [V]	Protection	f [Hz]	I _{load} [mA]	Order no.
	92 x 80 x 40	50 f	PPE	10...36	IP 67	70	250	ID5058


f = flush / nf = non flush




Detection of interchangeable tools

The tools are retrieved from the magazine via RFID detection. The O5D photoelectric sensors detect if the selected tool is present in the fixture.

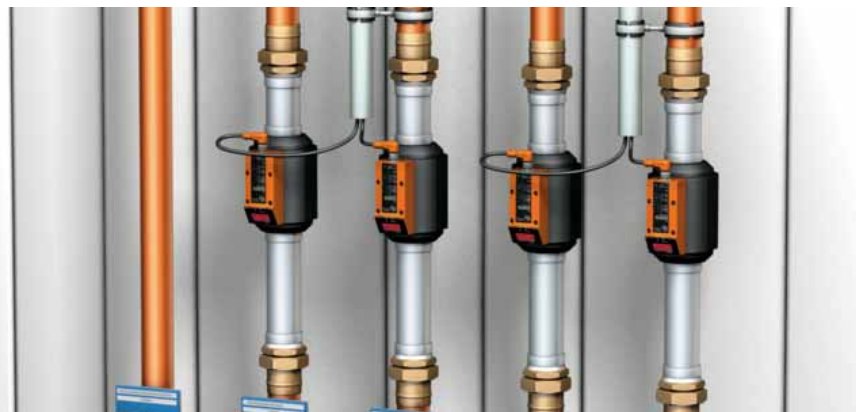
Photoelectric sensors for position control of tools

Type	Operating principle	Range	Type of light	Spot Ø at max. range [mm]	Output H = light-on D = dark-on	Order no.
	Background suppression	0.03...2 m	Red	< 5	2 switching outputs normally open / closed complementary PNP	O5D100

Read / write head for the RFID system



Type	Description	Order no.
	Read/write head · M12 connector · Housing materials: housing: stainless steel / Top: PPS	ANT410

Energy efficiency

**Detection of compressed air in main supply lines**

Here, SD2000 compressed air meters detect both the consumptions at normal pressure (6 bar) as well as in the high-pressure system (12 bar). Consumption is recorded and any leaks detected.


Compressed air meters for consumption measurement and leakage detection

Type	Process connection	Setting range [Nm ³ /h]	Pressure rating [bar]	Response time [s]	U _b [V]	Order no.
	R2 (DN50)	5...700	16	< 0.1	18...30	SD2000
	R1½ (DN40)	3.5...410.0	16	< 0.1	18...30	SD9000

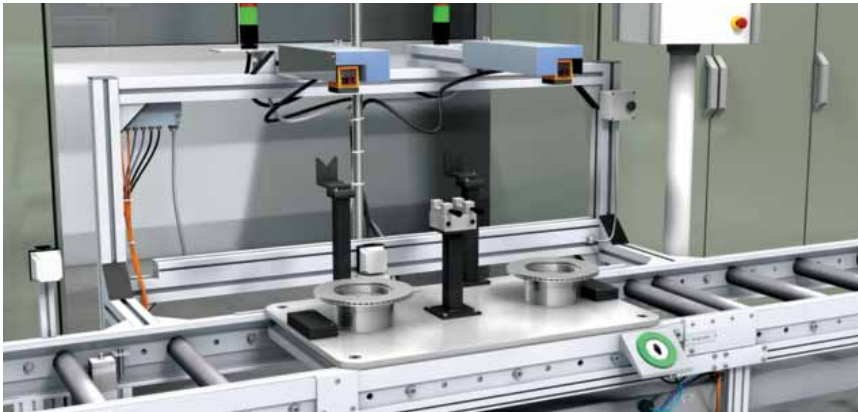
**Detection of water**

The SM flow meter detects flow and temperature. Alarm signals can be given and the quantity can be counted via pulses (water meter) using the pre-set counter.

Flow meters for consumption measurement

Type	Process connection	Setting range [Nm ³ /h]	Pressure rating [bar]	Response time [s]	U _b [V]	Order no.
	G2 flat seal	6.5...300	16	< 0.35	18...32	SM9000
	G2 flat seal	8...600	16	< 0.35	18...32	SM2000


Part detection / quality control




Quality inspection of components

ifm vision sensors monitor if all holes to be bored are present in the component. The next machining step is only enabled if this is correct.

Vision sensors in quality assurance

Type	Operating principle	Max. field of view size [mm]	Resolution [mm]	Detection rate [Hz]	Type of light	Ambient temperature [°C]	Order no.
	CMOS image sensor B/W, VGA resolution 640 x 480	1320 x 945	0.3	10	Infrared	-10...60	O2D222

Touch sensor


Type	U _b [V]	I _{load} [mA]	Current consumption [mA]	Ambient temperature [°C]	Protection	Order no.
	24	500	30	-40...85	IP 67 / IP 69K	KT5002



Identification of components

Components are coded with a production date and batch information to ensure traceability. This information is then read and verified by the O2I code reader.

Multi-code reader for identifying codes

Type	Dimensions [mm]	Max. field of view size [mm]	Type of light LED	Motion speed int. / ext. lighting [m/s]	Process interface	Order no.
	60 x 42 x 53.5	132 x 94	red light	3 / 5	Ethernet TCP/IP, EtherNet/IP, RS-232	O2I102


Signal transmission

**Controllers and gateways**

The controller controls the communication in AS-i networks.

Gateways provide a connection from the AS-i to the higher-level bus system.


Controllers, gateways

Type	Number of AS-i masters	Description	Order no.
	1	AS-i Ethernet / IP Controller E · Full master functions · Graphic display · Housing materials: aluminium / steel sheet galvanised	AC1327
	2	AS-i Ethernet / IP Controller E · Full master functions · Graphic display · Housing materials: aluminium / steel sheet galvanised	AC1337

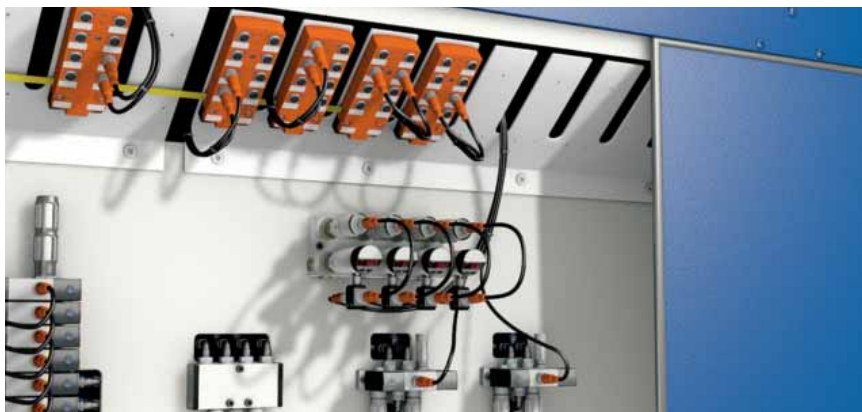
**Access protection on rotating parts**

Using sensor inputs the DA101S safety relay detects if rotating machine parts have actually stopped after a braking process.

Evaluation systems for safe standstill monitoring


Type	U _b [V]	In-puts	Input function	Setting range [puls. / min.]	Setting range [Hz]	Out-puts analog	Out-puts relays	Out-puts transist.	Order no.
	24 DC	1	PNP	—	0.2 / 0.5 / 1.0 / 2.0	—	2	1	DA101S
	24 DC	1	PNP	—	0.2 / 0.5 / 1.0 / 2.0	—	2	1	DA102S

Signal transmission

**Intelligent wiring of machines and systems**

AS-Interface simplifies the electrical installation, reducing the amount of parallel wiring traditionally used for sensors and actuators.


AS-Interface E/A Module

Type	Description	Order no.
	Active CompactLine module · 60 x 152 x 27 · IR addressing possible · Sockets M12 x 1 · Housing materials: PA / socket: Brass nickel-plated / threaded inserts in the lower part: Brass nickel-plated / O-Ring : FKM / Piercing contacts: CuSn6 surface nickel and tin-plated	AC2412
	Active CompactLine module · IR addressing possible · External sensor supply PELV · Sockets M12 x 1 · Housing materials: PA / socket: Brass nickel-plated / threaded inserts in the lower part: Brass nickel-plated / O-Ring : FKM / Piercing contacts: CuSn6 surface nickel and tin-plated	AC2466


**Sensors with IO-Link functionality**

The data and parameters are saved to the memory plug. If sensors are replaced, the parameters of the new device do not have to be reset.

IO-Link memory plug – data storage in miniature format

Type	Description	Order no.
	Memory plug · Parameter memory for IO-Link sensors · Storage capacity: 2 Kbytes · Housing materials: PA PACM 12 / PET / sealing: FPM / nut: stainless steel 316L / 1.4404 / connector: TPU	E30398

AS-Interface E/A Module

Type	Description	Order no.
	Active ClassicLine module · 2 IO-Link ports · For the connection of IO-Link sensors and actuators, binary sensors and binary actuators · Addressing socket · Three orientations of the flat cable are possible · Only for operation with AS-i masters with the profile M4 · Housing materials: PA / Piercing contacts: CuSn6 surface nickel and tin-plated	AC5225

Algeria

**Sarl AMS Algérie - Automatismes
Motorisation & Services**
Lotissement C, lot n°190 B
Draria - 16000 ALGER
Tél: +213 (0)5 59 43 45 22
+213 (0) 23 26 41 45
Fax: +213 (0)23 26 42 58
contact@amsalgérie.com
www.amsalgerie.com/

Argentina

ifm electronic s.r.l.
Lola Mora 421
10° piso, oficina 3
1107 - Puerto Madero
Ciudad Aut. Buenos Aires, Argentina
Teléfono/Fax: +54 (011) 5353-3436
Interior del país: 0810-345-3436
info.ar@ifm.com
www.ifm.com/ar

Australia

ifm efector pty ltd.
PO Box 479
Suite 3, 745 Springvale Road
Mulgrave VIC 3170
Tel. 1300 365 088
Fax 1300 365 070
sales.au@ifm.com
www.ifmefector.com.au

Austria

ifm electronic gmbh
Wienerbergstraße 41
Gebäude E
1120 Vienna
Tel. +43 / 1 / 617 45 00
Fax +43 / 1 / 617 45 00 10
info.at@ifm.com
www.ifm.com/at

Bangladesh

Sensotec Automation
Red Crescent Chamber
87, Motijheel Commercial Area
Dhaka 1000
Bangladesh
Tel. +880 171 546 890
sensotec@agni.com

Belarus

ifm electronic spol.s.r.o.
U Křižku 571
252 43 Průhonice
Česká republika
Tel. +420 / 2 / 67 990 222
Fax +420 / 2 / 67 750 180
svetlana.stolnaja@ifm.com
www.ifm.com/cz

Belgium and Luxembourg

ifm electronic n.v./s.a.
Zuiderlaan 91 - B6
B - 1731 Zellik
Tel. +32 2 481 0220
Fax +32 2 463 1795
info.be@ifm.com
www.ifm.com/be

Bolivia

**BAVARIA S.R.L. Álvaro Baptista
Vargas**
Zona Morocollo, Urb. Santos Pariamo
C. Mario Diaz de medina (26-A), Nr. 32
La Paz - Bolivia
Tel.: 00-591-2-277 13 78
Mobile: 00-591-720-47 442
alvarobaptista@bavaria.bo
www.bavaria.bo

Brazil

ifm electronic Ltda.
Rua Eleonora Cintra, 140
Jardim Analia Franco
03337-000 São Paulo/SP
Tel. +55-11-2672-1730
Fax +55-11-2673-3501
info.br@ifm.com
www.ifm.com/br

Bulgaria

ifm electronic eood
1202 Sofia
ul. Klokotnica No 2A
Business Centre IVEL
fl.4, office 17
Tel. +359 2 807 59 69
Fax +359 2 807 59 60
info.bg@ifm.com

Canada

ifm efector Canada Inc.
2233 Argenta Road, Suite 104
Mississauga, ON L5N 2X7
Tel.: 905-412-6250
Fax: 905-363-0563
info.ca@ifm.com
www.ifm.com/ca

Chile

**Electronica Industrial
Schädler y Cia. Ltda.**
Av. Antonio Varas 1871
Providencia
6641545 Santiago
Tel. +56 / 2 / 274 74 30
Fax +56 / 2 / 204 93 38
info@schadler.com
www.schadler.com

China

ifm electronic (Shanghai) Co., Ltd
Building 15,
No. 1000, Zhangheng Road,
Pu Dong District.
201203 Shanghai, P.R.China
Tel.: +86 21 3813 4800
Fax.: +86 21 5027 8669
400 National Service Hotline:
400 880 6651
Involving: Contact quotation, Product
delivery, Technical support, etc
info.cn@ifm.com
www.ifm.com/cn
ifm electronic (HK) Ltd
Unit 2106, 21/F,
Tower 2, Metroplaza
No. 223 Hing Fong Road,
Kwai Chung,
N.T., Hong Kong.
info.hk@ifm.com
www.ifm.com/hk
ifm electronic (Taiwan) Limited
2C, Bao-Cheng Enterprise Tower,
No. 6 Mincyuan Second Road, Cianjhen
District, Kaohsiung City,
Postal Code 806, Taiwan, R.O.C.
Tel.: +886-7-335-7778
Fax: +886-7-335-6878
info.tw@ifm.com
www.ifm.com/tw

Columbia

SENSOMATIC Y CIA LTDA.
CALLE 1 C 25a - 50
BOGOTA D.C. COLOMBIA
Tel. +57 313 430 2264
Tel. +57 1 407 96 96
info@sensomatic-ltda.com
www.sensomatic-ltda.com

Costa Rica

Gen Bus S.A
Santa Rosa, Sto. Domingo, Heredia.
Bodegas Del Sol, Bodega No. 22
COSTA RICA
Tel. + (506) 25 60 39 58
Tel. + (506) 22 62 39 27
Fax + (506) 22 62 16 74

Croatia

ifm electronic gmbh
Wienerbergstr. 41
Gebäude E
A-1120 Wien
Tel. +43 / 1 / 617 45 00
Fax +43 / 1 / 617 45 00 10
info.hr@ifm.com
www.ifm.com/hr

Czech Republic

ifm electronic spol.s.r.o.
U Křižku 571
252 43 Prague
Tel. +420 / 2 / 67 990 211
Fax +420 / 2 / 67 750 180
info.cz@ifm.com
www.ifm.com/cz

Denmark

ifm electronic a/s
Ringager 4A, 1.sal tv.
2605 Brøndby
Tel. +45 70 20 11 08
Fax +45 70 20 11 09
info.dk@ifm.com
www.ifm.com/dk

Dominican Republic

WECH AUTOCONTROLES S. A.
Ave. Romulo Betancourt 2158
Edificio Wech
Urb. Renacimiento
Santo Domingo
Dominican Republic
Tel.: + 1 809-531-0550
Fax: + 1 809-531-9175
wech@verizon.net.do
www.wechautocontroles.com.do

Ecuador

INSELEC CIA. LTDA.
Av. de los Arupos
E1-202 y Pan. Norte- Km 5 ½
Quito
Tel. +593 2 28074- 76 - 78
Fax +593 2 2807475
inselec@inselec.com.ec
www.inselec.com.ec

Egypt

**Egyptian Establishment
for Electromechanical Supplies**
Mr. Ahmed Gouda
27 Al-Salam Street
Al Arezona, Al Haram Road
Giza 12111, Cairo
Tel. +20 / 2 / 586 49 49
Fax +20 / 2 / 586 49 49
Mobile +20 10 10 61 791
ahmed_gouda97@yahoo.com

Estonia

Pesmel Estonia LTD
Segu 4
76505 Saue
Estonia
Tel.: +372 674 73 30
Fax: +372 674 73 31
pesmel@pesmel.ee
www.pesmel.ee

Finland

ifm electronic oy
Vaakatie 5
00440 Helsinki
Tel. +358 (0)75 329 5000
Fax +358 (0)75 329 5010
info.fi@ifm.com
www.ifm.com/fi

France

ifm electronic
Siège :
Savoie Technolac BP226
73374 Le Bourget du Lac
Agence commerciale :
Immeuble Uranus
1-3 rue Jean Richepin
93192 NOISY LE GRAND CEDEX
Tél: 0820 22 30 01
Fax: 0820 22 22 04
info.fr@ifm.com
www.ifm.com/fr

Germany

ifm electronic gmbh
Friedrichstr. 1
45128 Essen
Tel. +49 201 24 22 0
Fax +49 201 24 22 12 00
info@ifm.com
www.ifm.com/de

Greece

ifm electronic monoprosofi E.P.E.
27, Andrea Papandreou Street
15125 Amaroussi
Greece
Tel. +30 210 61 800 90
Fax +30 210 61 994 00
info.gr@ifm.com
www.ifm.com/gr

Guatemala

**Ingenieros Civiles Electromecánicos
Asociados, S.A. (IASA)**
20 Calle 25-55 Zona 12
Empresarial El Cortijo III
Bodega No. 907,
Guatemala City,
Guatemala
Tel: 502 - 24626636
info@iasa.com.gt

Honduras

R y D INDUSTRIAL
Bo. Paz Barahona
11 Ave. 14 y 15 Calle
S.O. #142
San Pedro Sula
(+504) 2550-3703
(+504) 2558-9313
ventas@rydindustrial.com

Hungary

ifm electronic kft.
Szent Imre út 59. I.em.
H-9028 Győr
Tel. +36-96 / 518-397
Fax +36-96 / 518-398
info.hu@ifm.com
www.ifm.com/hu

India

ifm electronic India Pvt. Ltd.
Plot No. P-39/1
MIDC Gokul Shirgaon
Kolhapur – 416234
Maharashtra State, India
Tel. +91 / 231 / 267 27 70
Fax +91 / 231 / 267 23 88
info@ifm-electronic.in
www.ifm.com/in

Indonesia

PT Indoserako Sejahtera
Jl. P. Jayakarta 121 No. 59
10730 Jakarta Pusat
Tel. +62 / 21 6 24 8923
Fax +62 / 21 6 24 8922
iso297@dnet.net.id

Ireland

ifm electronic (Ireland) Ltd.
No. 7, The Courtyard
Kilcarbery Business Park
New Nangor Road
Clondalkin
Dublin 22
Tel. +353 / 1 / 461 32 00
Fax +353 / 1 / 457 38 28
sales_ie@ifm.com
www.ifm.com/ie

Israel

Astragal Ltd.
3, Hashikma Str.
Azur 58001
P.O. Box 99
Azur 58190
Tel. +972 / 3 / 5 59 16 60
Fax +972 / 3 / 5 59 23 40
astragal@astragal.co.il
www.astragal.co.il

Italy

ifm electronic
Centro Direzionale Colleoni
Palazzo Andromeda 2
Via Paracelso n. 18
20864 Agrate Brianza (MB)
Tel. +39 (0)39-6899982
Fax +39 (0)39-6899995
info.it@ifm.com
www.ifm.com/it

Japan

efector co. ltd.
18F WBG Marive-west
2-6-1 Nakase, Mihama-ku
Chiba-shi, Chiba 261-7118
info.jp@ifm.com
www.ifm.com/jp

Jordan

Al Mashreqan Trading Supplies
P.O.Box.851054
11185 Swaifieh
Amman - Jordan.
Tel. +962 6 581 8841
Fax +962 6 581 8892
info@mashreqan.com

Korea

ifm electronic Ltd.
Hyundai Liberty House 201
Dokseodang-ro Yongsan-Gu
140-884 Seoul
Tel. +82 2-790-5610
Fax +82 2-790-5613
info.kr@ifm.com
www.ifm.com/kr

Korea

Kana Controls
2nd Floor Khalid Fauzan Building
Building No. 1670
Street No. 7, Block No. 1
Al-Rai Industrial Area,
P.O. Box - 25593,
13116 Safat,
Kuwait
Tel.: +965-24741537
Fax:+965-24741537
info@kanacontrols.com
www.kanacontrols.com

Latvia

EC Systems
Katlakalna Str. 4A
1073 Riga
Latvia
Tel.: +371 724 1231
Fax: +371 724 8478
aln@ecsystems.lv
www.ecsystems.lv

Lebanon

**Middle East Development Co. SAL
(MEDEVCO)**
Medevco Building
Jeita Main Road
Jeita - Kesrouan
Lebanon
Mail address :
P.O.Box 67
Jounieh
Lebanon
Tel. +961-9-233550
Fax +961-9-233554
info@medevco-lebanon.com

Lithuania

Elinta UAB
Terminalo g. 3, Biruliškių k.,
Karmėlavos sen.
LT-54469 Kauno raj. (Kauno LEZ)
Lithuania
Tel.: +370 37 351 999
Fax: +370 37 452 780
sales@elinta.lt
www.elintosprekya.lt

Malaysia

ifm electronic Pte. Ltd
Malaysian Branch Office
No. 2-4-2, Fourth Floor
Tower 2 @ PFCC, Jalan Puteri 1/2
Bandar Puteri Puchong,
47100 Puchong, Selangor
Tel. +603 - 8063 9522
Fax +603 - 8063 9524
sales.my@ifm.com
www.ifm.com/my
ifm electronic
Asia Regional Office
21, Jalan Kemuning
Taman Kebun The
80250 Johor Bahru
Johor, West Malaysia
Tel. +607 - 332 5022
Fax +607 - 332 1577
sales.my@ifm.com

Mexico

ifm efector S. de R.L. de C.V.
Ave. Arq. Pedro Ramírez Vázquez 200-4
Planta Baja, Col. Valle Oriente.
San Pedro Garza García, N.L. 66269
Tel. +52-81-8040-3535
Fax +52-81-8040-2343
clientes.mx@ifm.com
www.ifm.com/mx

Morocco

SOFIMED
137, Boulevard Moulay Ismail -
Roches Noires
20290 - Casablanca - MAROC
Tel : +212 522 240 101
Fax : +212 522 240 100
www.sofimed.ma

Netherlands

ifm electronic b.v.
Deventerweg 1 E
3843 GA Harderwijk
Tel. +31 / 341 438 438
Fax +31 / 341 438 430
info.nl@ifm.com
www.ifm.com/nl

New Zealand

ifm efector pty ltd.
Unit 13, 930 Great South Road
Penrose, Auckland
Tel. +64 / 95 79 69 91
Fax +64 / 95 79 92 82
sales.nz@ifm.com
www.ifm.com/nz

Nigeria

Automated Process Ltd
3rd Floor, 32 Lagos Abeokuta
Expressway
Near Cement Bus Stop
Dopemu, Agege
Lagos State, Nigeria
Tel. + 234 / 01 / 4729 967
Fax + 234 / 01 / 4925 865
sales@automated-process.com
www.automated-process.com

Norway

Siv.Ing. J.F.Knudtzen AS
Billingstadsletta 97
1396 Billingstad
Postboks 160
1378 Nesbru
Tel. +47 / 66 98 33 50
Fax +47 / 66 98 09 55
firmapost@jfkknudtzen.no
www.jfkknudtzen.no

Oman

**Technical Engineering Company
LLC.**
P.O. Box 59
Madinat Al Sultan Qaboos
Postal Code 115
Sultanate of Oman
Tel. +968 24503593
Fax +968 24503573
tecoman@omantel.net.om

Panama

RyD Industrial Panamá
Av. Ricarco J. Alfaro,
Villa de las Fuentes 2,
Calle Principal, Casa C5
Panamá
PANAMÁ
Tel. (507) 236-9121
Tel. (507) 236-8639
Tel. (507) 236-8640
ventaspn@rydindustrial.com

Peru

dekatec s.a.c.
Los Calderos 188
Urb. Vulcano, Ate
Lima / Peru
Tel. +511 / 348 0293
Tel. +511 / 348 0458
Tel. +511 / 348 2269
Fax +511 / 349 0110
dkleffmann@dekatec.com.pe
www.dekatec.com.pe

Philippines

Gram Industrial, Inc.
Bldg. 9 Don Mariano Lim
Industrial Complex,
Alabang Zapote Road
corner Concha Cruz Drive,
Brgy. Almanza 1 Las Piñas City
Tel. 632-8502218 / 8508496
Fax. 632-8077173 / 8503055
efector@gram.com.ph

Poland

ifm electronic Sp.z o.o.
ul. Kosciuszki 175
PL 40-524 Katowice
Tel. +48 / 32 / 60 87 454
Tel. +48 / 32 / 60 87 480
Fax +48 / 32 / 60 87 455
info.pl@ifm.com
www.ifm.com/pl

Portugal

ifm electronic s.a.
Parque Tecnológico S. Félix da Marinha
Avenida Manuel Violas, 476
4410-137 São Félix da Marinha
Tel. +351 / 22 / 37 17 108
Fax +351 / 22 / 37 17 110
info.pt@ifm.com
www.ifm.com/pt

Romania

ifm electronic s.r.l.
Mihai Viteazu Str. Nr. 1
Selimbar, Sibiu
557260
Rumänien
Tel.: 0040 269 224550
Fax: 0040 269 224766
info.ro@ifm.com

Russia

ifm electronic
lbragimova, 31, k.50
office 808
105318 Moscow
Tel.: +7 (495) 921-44-14
Fax: +7 (495) 651-82-97
info.ru@ifm.com
www.ifm.com/ru

Saudi Arabia

**Noor Al-Shomoe
for Electric & Maintenance**
King Khalid Street, Cross 5
P.O. Box 2571
Al-Khobar 31952
Kingdom of Saudi Arabia
Tel. +9 663 864 49 58
Fax +9 663 894 63 41
h.o.info@nooralshomoe.com

Singapore

ifm electronic Pte. Ltd.
25, International Business Park
#03-26/29 German Center
609916 Singapore
Tel. +6565628661
Fax +6565628660
sales.sg@ifm.com
www.ifm.com/sg

Slovakia

ifm electronic spol. s.r.o.
Rybnicna 40
831 06 Bratislava
Tel. +421 / 2 / 44 87 23 29
Fax +421 / 2 / 44 64 60 42
info.sk@ifm.com
www.ifm.com/sk

South Africa

ifm electronic (pty) Ltd
Shorrok House
Route 21 Corporate Park
Nellmapius Drive,
Irene Ext. 30,
Centurion 0157,
Pretoria
Postnet Suite 279
Private bag X8
Elardus Park
0047
Tel. +27 (0) 861 IFM RSA / 436 772
Fax +27(0)12 450 0322
info.za@ifm.com
www.ifm.com/za

Spain

ifm electronic s.l.
Parc Mas Blau
Edificio Inbisa
c/ Garrotxa 6-8
08820 El Prat de Llobregat
tel: 0034 93 479 30 80
fax: 0034 93 479 30 86
info.es@ifm.com
www.ifm.com/es

Sri Lanka

Isaro Automation Systems Ltd.
First Floor,
400 Galle Road, Rawathawatta.
Moratuwa
Sri Lanka
Tel. +94 114 216 784
Fax. + 94 11 2644 224
isaro@sltnet.lk

Sweden

ifm electronic ab
Drakegatan 6
41250 Gothenburg
Tel. växel 031-750 23 00
Telefax 031-750 23 29
info.se@ifm.com
www.ifm.com/se

Switzerland

ifm electronic ag
Altgraben 27
4624 Härkingen
Tel. 0800 88 80 33
Fax 0800 88 80 39
info.ch@ifm.com
www.ifm.com/ch

Thailand

SCM ALLIANZE CO., LTD.
35/21 Soi Intamara 1
Sutthisanvinitchai Road
Samsennai Phayathai
BKK 10400 Thailand
Tel: +66 02 615 4888
contact@scma.co.th
www.scma.co.th

Tunesia

TECHNOPREST – Tunisia
GP1 – Km 5,5 Rte de Sousse –
Z.I 2013 Ben Arous – Tunisia
Tel : +216 71 389 203
Fax : + 216 71 389 215
technoprest@technoprest.com.tn

Turkey

**ifm electronic Elektrikli
ve Elektronik Aletler
İth.İhr.Paz.Tic.Ltd.Şti.**
Merkez Mah. Nadide Sok.
Anittepe Sitesi No:28
34381 Şişli / İstanbul
Tel. +90 / 212 / 210 5080
Fax +90 / 212 / 221 7159
info.tr@ifm.com
www.ifm.com/tr

Ukraine

ifm electronic
Mariny Raskovoj 11
02660 Kiev
Ukraine
Tel. +380 44 501 8543
Fax +380 44 501 8543
info.ua@ifm.com
www.ifm.com/ua

United Arab Emirates

United Arab Emirates
Al Injazat Technical Services Est.
P.O. Box 42895
Al Qubaisi bldg floor 0 flat # 4
Liwa street corner of corniche road,
Abu Dhabi,
United Arab Emirates
Tel.: +971-2-6585400
Fax: +971-2-6585401
Mob: +971-50-6811072
kamran@injazat.ae
www.injazat.ae

United Kingdom

ifm electronic Ltd.
efector House
Kingsway Business Park
Oldfield Road
Hampton
Middlesex TW12 2HD
Tel. +44 / 20 / 8213 0000
Fax +44 / 20 / 8213 0001
enquiry_gb@ifm.com
www.ifm.com/uk

USA

ifm efector, inc.
782 Springdale Drive
Exton, PA 19341
Tel. 800-441-8246
Fax 800-329-0436
info.us@ifm.com
www.ifm.com/us

Venezuela

Petrobornas, C.A.
C. C. Plaza Aeropuerto,
Galería piso 1, Local P1-B03,
Calle Neverí, Unare,
Puerto Ordaz 8050,
Estado Bolívar
Venezuela
Tel: + 58 286 9513382
info@petrobornas.net
www.petrobornas.net

Vietnam

**The Representative
Office of ifm electronic GmbH
in Ho Chi Minh City**
7A-7th Floor,
#467 Dien Bien Phu Street,
Ward 25, Binh Thanh District,
Ho Chi Minh City 700000,
Vietnam
Tel. +84-8-35125177
Fax +84-8-35125178
sales.vn@ifm.com



Visit our website:

www.ifm.com

Over 70 locations worldwide –
at a glance at www.ifm.com

ifm electronic gmbh
Friedrichstraße 1
45128 Essen
Tel. +49 / 201 / 24 22-0
Fax +49 / 201 / 24 22-1200
E-mail info@ifm.com



ifm – close to you!



Overview
ifm product range:



Position sensors



**Sensors for
motion control**



Industrial imaging



Safety technology



Process sensors



**Industrial
communication**



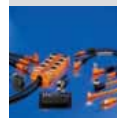
Identification systems



**Condition monitoring
systems**



**Systems for
mobile machines**



**Connection
technology**



Accessories