



Product Overview 2018

Sensors & Actuators





Nothing replaces quality ... and that for over 60 years.

Visions, guidelines and personal targets foster motivation and the feeling of responsibility in the petz industry team just as clear structures and a flat hierarchy do. The resulting total sum of innovative power, sector experience and technical knowledge proves itself day after day in the cost effective detailed solution or holistic concepts for our customers. petz industries is now in its third generation since 1957 and still managed by the founding family. Since then we have been designing and producing plastic parts, sub-assemblies, complete electro-technical products for various fields - e.g. medical, automotive, industrial electronics, building automation, photovoltaic, electronic equipment and household appliances.

With the opening of our plant in Hasslach in 1975, northern Bavaria, the path was laid for a successful company expansion. In 2007 this location was completely modernised within two years, and today is one of the most modern production plants in Europe. The target of the new concept was to optimise and rationalise the whole company organisation- starting with project management, intelligent-integrated processes in design and production to almost paperless operations, enterprise resource planning and logistics. This ensures that our teams and technologies are equally well prepared for top performance in the years to come. We are looking forward to your challenges.



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What are the Causes for an Explosion

Basically there are three factors that must be encountered when creating a potentially explosive area. Presence of oxygen, an explosive medium and an ignition source. The absence or avoidance of one of the three factors prevents an explosion.

Based on this fact, the three possible strategies to avoid an explosion:

Primary Explosion Protection

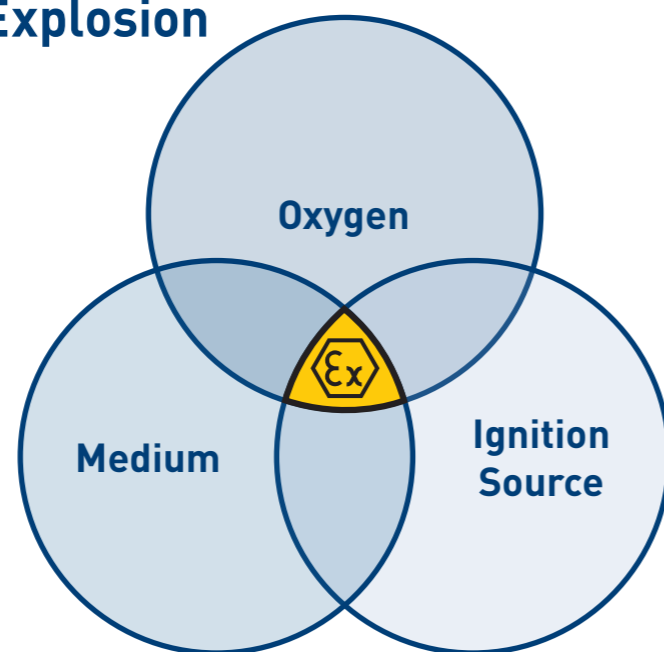
Measures which prevent or limit the formation of a potentially explosive atmosphere (avoiding explosive atmospheres).

Secondary Explosion Protection

Measures which prevent the ignition in a dangerous explosive atmosphere (avoiding of ignition sources).

Tertiary Explosion Protection

Measures limiting the effects of an explosion to a safe level (constructional explosion protection).



Thus, the components put on the market by **pi** are protected to be no sources of ignition and thus are a measure of secondary explosion protection.

Zones – Explanation and Classification

Hazardous areas in which potentially explosive environments can form are classified in zones according to the duration of the potential formation of a dangerous explosive environment

For gases, these are zones 0, 1 and 2.

In the case of dusts, a distinction is made between zones 20, 21 and 22.

Classification of Zones for Gases:

Zone 0

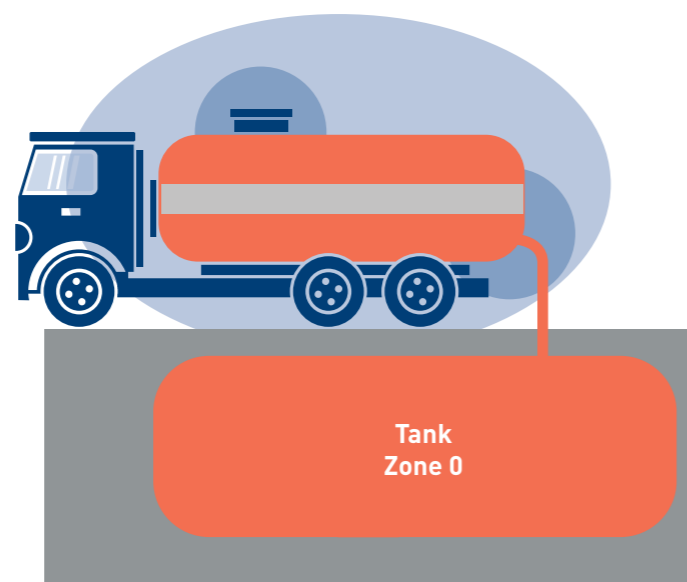
A dangerous, explosive atmosphere as a mixture of air, combustible gases, vapors or mists is constantly, for long periods of time or frequently present.

Zone 1

A hazardous, explosive atmosphere as a mixture of air, combustible gases, vapors or mists is occasionally present during normal operation.

Zone 2

A dangerous, explosive atmosphere as a mixture of air, flammable gases, vapors or mists is usually not available or only for a short time.



To clarify the principle gas station:

Division of danger zones into zones:
■ Zone 0: constant or frequent ...
■ Zone 1: occasional ...
■ Zone 2: rare ...
 ... presence of EX atmosphere

Classification of Zones for Dusts:

Zone 20

A dangerous, explosive atmosphere in the form of a cloud of combustible dust is constantly, for long periods or frequently present.

Zone 21

A dangerous, explosive atmosphere in the form of a cloud of combustible dust is occasionally present during normal operation.

Zone 22

A dangerous, explosive atmosphere in the form of a cloud of combustible dust is usually not available or only for a short time.

Legal Basis

As a legal basis for the area of explosion protection, the following norms and regulations apply in addition to the usual standards:

ATEX Directive 2014/34/EU

EU Explosion Protection Ordinance ExVo

Ordinance on Industrial Health and Safety

Also, a distinction is made between operator and manufacturer. Accordingly, the different labeling:



Operator Identification Ex-Area

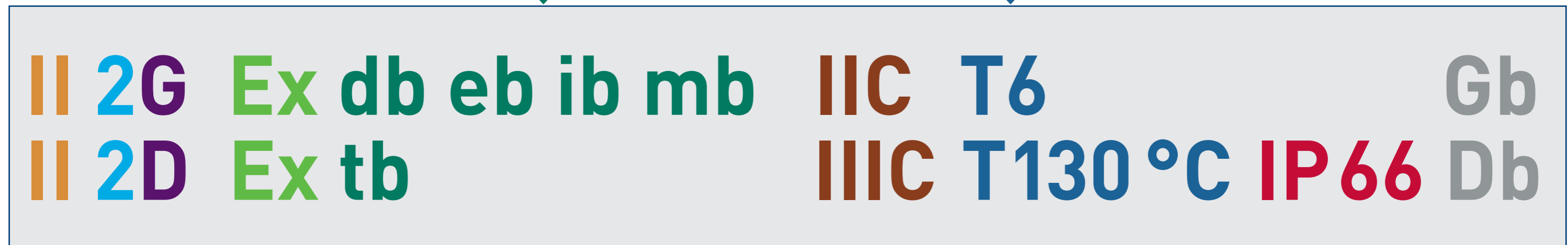


Manufacturer Identification Ex-device

Marking of explosion-proof electrical devices

Type of protection				
	Legal basis			EN 60079-0
"e"	Increased safety	eb, ec	Zone 1, 2	EN 60079-7
"d"	Flameproof enclosure	da, db, dc	Zone 0, 1, 2	EN 60079-1
"m"	Encapsulation	ma, mb, mc	Zone 0, 1, 2, 20, 21, 22	EN 60079-18
"i"	Intrinsic safety	ia, ib, ic	Zone 0, 1, 2, 20, 21, 22	EN 60079-11
"n"	Protection (non incendive)	nA, nC, nR	Zone 2	EN 60079-15
"t"	Protected by housing	ta, tb, tc	Zone 20, 21, 22	EN 60079-31

Temperatur class		
T6	85 °C	Sulfur hydrocarbon
T5	100 °C	None
T4	135 °C	E.g. Ethyl ether
T3	200 °C	E.g. Diesel, Hydrogen sulfide
T2	300 °C	E.g. Butane, Butyl alcohol
T1	450 °C	E.g. Hydrogen, Ammonia
T	XXX °C	Max. surface temperature dust explosion hazardous areas



Equipment group
I Mining
II Other industries

Explosion protection
db, eb, tb

Category
Hazardous explosive atmosphere
1 Constantly, frequently or long-term
2 Occasionally
3 Seldom and short-term

Atmosphere
G Gas
D Dust

Explosion group
I Mining
I Methane
II Other industries
IIA Propane
IIB Ethylene
IIC Hydrogen
III Dusts
IIIA Combustible lint
IIIB Non-conductive dust
IIIC Conductive dust

IP Protection – protected against:	
Fig. 1 (ingress solid objects)	Fig. 2 (ingress liquids)
0 No protection	0 No protection
1 Solid objects over 50 mm	1 Vertically falling drops of water
2 Solid objects over 12.5 mm	2 Falling drops of water
3 Solid objects over 2.5 mm	3 Sprays of water
4 Solid objects over 1.0 mm	4 Splash water
5 Limited protection against dust ingress.	5 Low pressure water jets
6 Totally protected against dust ingress.	6 High pressure water jets
	7 Short periods of immersion in water
	8 Long periods of immersion in water

Equipment protection level EPL	
Ga	Gas: Constantly, frequently or long-term zone 0
Gb	Gas: Occasionally zone 1
Gc	Gas: Seldom and short-term zone 2
Da	Dust: Constantly, frequently or long-term zone 20
Db	Dust: Occasionally zone 21
Dc	Dust: Seldom and short-term zone 22
Ma	Mining: Operation in the event of an explosion hazard
Mb	Mining: Shutdown in the event of an explosion hazard



TR.Ex Transducer

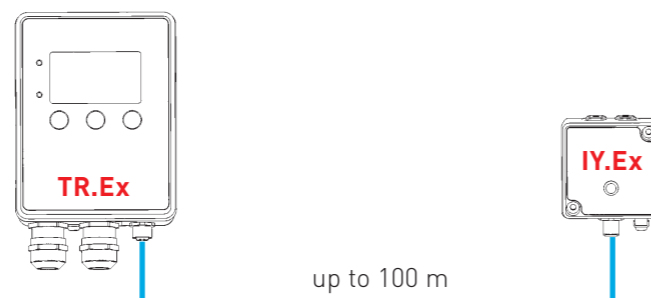
- Specification:
II2(1)G Ex eb mb ib [ia Ga] IIC T4 Gb
II2(1)D Ex tb ib [ia Da] IIIC T130°C Db
- Universal Transducer for mounting in zone 1 / 2 / 21 / 22
- Ambient temperature -40...+70 °C
- Protection class IP66
- Temperature class T4 for all gases and dusts
- Adjustable on site; display

- Stainless steel / polymer compound material for maximum corrosion resistance
- 0...10 V or 4...20 mA feedback
- No further barrier required in the control cabinet
- LED status indication
- Smart installation
- 24 VAC / DC
- For use with IR.Ex-Sensors

IY.Ex-Sensor Range

- Specification:
II 1/2G Ex ia IIC T6/T5/T4 Ga/Gb
II 1/2D Ex ia IIIC T130°C Da/Db
- Intelligent sensor concept for connection (M12 connector) to TR.Ex universal Ex-transducer
- Stainless steel / polymer compound material for maximum corrosion resistance
- Fast sampling rate up to 125 ms for pressure sensors
- Room sensor for direct connection

- For measuring in zone 0, 1, 2, 21, 22
- Other sensors with M12 sensor cable (1 Meter included, other lengths available)
- For use with Tr.Ex Transducer



TR.Ex

PRODUCT	DESCRIPTION
TR.Ex Id. no 01020001	Ex-Transducer 0...10 V Ex-Transducer 4...20 mA

IY.Ex – Temperature / Temperature-Humidity-Dew Point

PRODUCT	DESCRIPTION
IY.Ex-RT Id. no 01020101	Ex-Sensor Room Temperature
IY.Ex-RTH Id. no 01020201	Ex-Sensor Room Temperature / Humidity
IY.Ex-DT-050 Id. no 01020301	Ex-Sensor Duct Temperature l = 50mm
IY.Ex-DTH-050 Id. no 01020401	Ex-Sensor Duct Temperature / Humidity l = 50mm
IY.Ex-DT-100 Id. no 01020302	Ex-Sensor Duct Temperature / Humidity l = 100mm
IY.Ex-DTH-100 Id. no 01020402	Ex-Sensor Duct Temperature / Humidity l = 100mm
IY.Ex-DT-200 Id. no 01020303	Ex-Sensor Duct Temperature l = 200mm
IY.Ex-DTH-200 Id. no 01020403	Ex-Sensor Duct Temperature / Humidity l = 200mm

IY.Ex – Differential Pressure / Flow Rate

PRODUCT	DESCRIPTION
IY.Ex-P-0100 Id. no 01020501	Ex-Differential Pressure Sensor – 100...+100 Pa
IY.Ex-P-0250 Id. no 01020502	Ex-Differential Pressure Sensor – 250...+250 Pa
IY.Ex-P-0600 Id. no 01020503	Ex-Differential Pressure Sensor – 600...+600 Pa
IY.Ex-P-1000 Id. no 01020504	Ex-Differential Pressure Sensor – 1000...+1000 Pa
IY.Ex-P-2500 Id. no 01020505	Ex-Differential Pressure Sensor – 2500...+2500 Pa

Other types available





SW.Ex Switching Relais

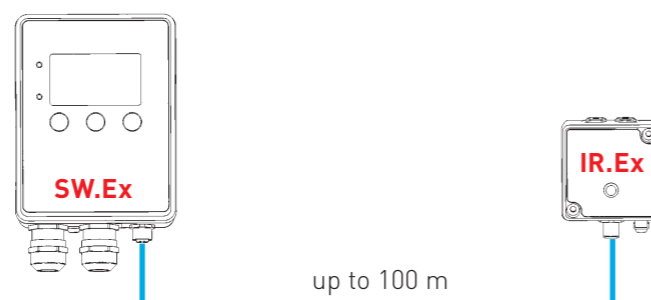
- Specification: II2(1)G Ex eb mb ib [ia Ga] IIC T4 Gb II2(1) D Ex tb ib [ia Da] IIIC T130°C Db
- Universal switching relay for mounting in zone 1 / 2 / 21 / 22
- Two adjustable, potential free relay outputs
- Ambient temperature -40...+70 °C
- Protection class IP66
- Temperature class T4 for all gases and dusts
- Adjustable hysteresis

- Adjustable on site; display
- Stainless steel / polymer compound material for maximum corrosion resistance
- No further barrier required in the control cabinet
- LED status indication
- Smart installation
- 24 VAC / DC
- For use with IR.Ex-Sensors

IR.Ex Sensor Range

- Specification: II 1/2G Ex ia IIC T6/T5/T4 Ga/Gb II 1/2D Ex ia IIIC T130°C Da/Db
- Intelligent sensor concept for connection (M12 connector) to SW.Ex universal Ex-switching relay
- Stainless steel / polymer compound material for maximum corrosion resistance
- Room sensor for direct connection
- For measuring in zone 0, 1, 2, 21, 22

- Other sensors with M12 sensor cable (1 Meter included, other lengths available)
- For use with SW.Ex universal Ex-switching relay



SW.Ex

PRODUCT	DESCRIPTION
SW.Ex Id. no 01010001	Ex-Switching Relais

IR.Ex – Temperature / Humidity

PRODUCT	DESCRIPTION
IR.Ex-RT Id. no 01010101	Ex-Room Sensor Temperature
IR.Ex-RH Id. no 01010201	Ex-Sensor Room Humidity
IR.Ex-DT-050 Id. no 01010301	Ex-Sensor Duct Temperature l = 50 mm
IR.Ex-DH-050 Id. no 01010401	Ex-Sensor Duct Humidity l = 50 mm
IR.Ex-DT-100 Id. no 01010302	Ex-Sensor Duct Temperature l = 100 mm
IR.Ex-DH-100 Id. no 01010402	Ex-Sensor Duct Humidity l = 100 mm
IR.Ex-DT-200 Id. no 01010303	Ex-Sensor Duct Temperature l = 200 mm
IR.Ex-DH-200 Id. no 01010403	Ex-Sensor Duct Humidity l = 200 mm

IR.Ex – Differential Pressure

PRODUCT	DESCRIPTION
IR.Ex-P-0100 Id. no 01010501	Ex-Differential Pressure Sensor – 100...+100 Pa
IR.Ex-P-0250 Id. no 01010502	Ex-Differential Pressure Sensor – 250...+250 Pa
IR.Ex-P-0600 Id. no 01010503	Ex-Differential Pressure Sensor – 600...+ 600 Pa
IR.Ex-P-1000 Id. no 01010504	Ex-Differential Pressure Sensor – 1000...+ 1000 Pa
IR.Ex-P-2500 Id. no 01010505	Ex-Differential Pressure Sensor – 2500...+ 2500 Pa

Other types available





QT.Ex-M, electric Actuator, explosion protected ATEX / IECEx

- ATEX / IECEx certified
- Integrated junction box
- Ambient temperature -40...+70 °C
- Optional fail safe / spring return
- Optional control / feedback 0...10 V; 4...20 mA
- IP66, maximum corrosion resistance, weatherproof
- For mounting in zone 1, 2, 21, 22

Technical Data

Specification: I12 G Ex db eb mb ib IIC T4 Gb
I12 D Ex tb IIIC T130 °C Db

Manufacturer: pi safety components

Auxiliary Switches: 5° / 80° Switching points max. 250 V / 1 A min. 5 V / 5 mA

Angle of rotation: 95° [5° Preload]

Hollow shaft: 12 x 12 mm (Double square)

Power consumption: 5 W / 7 VA In holding position
20 W / 30 VA Motor
30 VA / 2 A Layout

Permissible humidity: 0...95% r.F without condensation

Ambient temperature: -40...+70 °C

Housing material: High-tech polymer non-halogen, silicone-free

Protection class: IP66

Dimensions: Approx. 320 x 120 x 85 mm

Ex Actuators with Spring Return

3-Position / Open-Close Actuator; 20...70 VAC / DC

QT.Ex-MF10-SL Id. no 02011000	Supply Power: 20...70 VAC / DC 50-60 Hz Control: 3-Position / Open-Close Spring Return: approx. 10 s Torque: 18 Nm Motor: approx. 15 s / 90°
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3-Position / Open-Close Actuator; 10 Seconds Spring Return; 85...250 VAC

QT.Ex-MF10-SH Id. no 02011001	Supply Power: 85...250 VAC 50-60 Hz Control: 3-Position / Open-Close Spring Return: approx. 10 s Torque: 18 Nm Motor: approx. 15 s / 90°
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3-Position / Open-Close Actuator; 3 Seconds Spring Return; 20...70 VAC / DC

QT.Ex-MF03-SL Id. no 02013000	Supply Power: 20...70 VAC / DC 50-60 Hz Control: 3-Position / Open-Close Spring Return: approx. 3 s Torque: 18 Nm Motor: approx. 15 s / 90°
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3-Position / Open-Close Actuator; 3 Seconds Spring Return; 85...250 VAC

QT.Ex-MF03-SH Id. no 02023001	Supply Power: 85...250 VAC 50-60 Hz Control: 3-Position / Open-Close Spring Return: approx. 3 s Torque: 18 Nm Motor: approx. 15 s / 90°
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RegelActuator; 10 Seconds Spring Return; 20...70 VAC / DC

QT.Ex-MF10Y-SL Id. no 02011010	Supply Power: 20...70 VAC / DC 50-60 Hz Control / Feedback: 0...10 V / 4...20 mA Spring Return: approx. 10 s Torque: 18 Nm Motor: approx. 15 s / 90°
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RegelActuator; 10 Seconds Spring Return; 85...250 VAC

QT.Ex-MF10Y-SH Id. no 02011011	Supply Power: 85...250 VAC 50-60 Hz Control / Feedback: 0...10 V / 4...20 mA Spring Return: approx. 10 s Torque: 18 Nm Motor: approx. 15 s / 90°
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QT.Ex-M, electric Actuator, explosion protected ATEX / IECEx

- ATEX / IECEx certified
- Integrated junction box
- Ambient temperature -40...+70 °C
- Optional fail safe / spring return
- Optional control / feedback 0...10 V; 4...20 mA
- IP66, maximum corrosion resistance, weatherproof
- For mounting in zone 1, 2, 21, 22

Technical Data

Specification: I12 G Ex eb db mb ib IIC T4 Gb
I12 D Ex tb IIIB T130 °C Db

Manufacturer: pi safety components

Auxiliary Switches: 5° / 80° Switching points max. 250 V / 1 A min. 5 V / 5 mA

Angle of rotation: 95° [5° Preload]

Hollow shaft: 12 x 12 mm (Double square)

Power consumption: 5 W / 7 VA In holding position
20 W / 30 VA Motor
30 VA / 2 A Layout

Permissible humidity: 0...95% r.F without condensation

Ambient temperature: -40...+70 °C

Housing material: High-tech polymer non-halogen, silicone-free

Protection class: IP66

Dimensions: Approx. 320 x 120 x 85 mm

Ex Actuators without Spring Return

3-Position / Open-Close Actuator; 20...70 VAC / DC

QT.Ex-M-SL Id. no 02010000	Supply Power: 20...70 VAC / DC 50-60 Hz Control: 3-Position / Open-Close Spring Return: none Torque: 50 Nm Motor: approx. 15 s / 90°
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3-Position / Open-Close Actuator; 85...250 VAC

QT.Ex-M-SH Id. no 02010001	Supply Power: 85...250 VAC 50-60 Hz Control: 3-Position / Open-Close Spring Return: none Torque: 50 Nm Motor: approx. 15 s / 90°
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RegelActuator; 20...70 VAC / DC

QT.Ex-MY-SL Id. no 02011000	Supply Power: 20...70 VAC / DC 50-60 Hz Control: 0...10 V / 4...20 mA Spring Return: none Torque: 40 Nm Motor: approx. 15 s / 90°
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RegelActuator; 85...250 VAC

QT.Ex-MY-SH Id. no 02011001	Supply Power: 85...250 VAC 50-60 Hz Control: 0...10 V / 4...20 mA Spring Return: none Torque: 40 Nm Motor: approx. 15 s / 90°
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Schneller RegelActuator; 20...70 VAC / DC

QT.Ex-MYQ-SL Id. no 02010110	Supply Power: 20...70 VAC / DC 50-60 Hz Control: 0...10 V / 4...20 mA Spring Return: none Torque: 15 Nm Motor: approx. 5 s / 90°
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Schneller RegelActuator; 85...250 VAC

QT.Ex-MYQ-SH Id. no 02010111	Supply Power: 85...250 VAC 50-60 Hz Control: 0...10V alt. 4...20 mA Spring Return: none Torque: 15 Nm Motor: approx. 5 s / 90°
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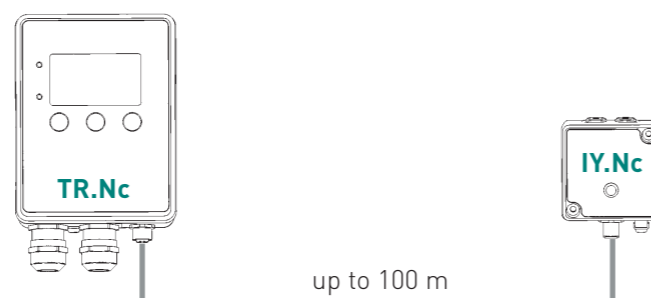


TR.Nc Transducer

- Universal Transducer
- Ambient temperature -40...+70°C
- Protection Class IP66
- Adjustable on site, display
- Stainless steel / polymer compound material for maximum corrosion resistance
- 0...10 V or 4...20 mA Feedback
- LED status indication
- Smart installation
- 24 VAC / DC
- For use with IY.NC-Sensors
- Integrated junction box

IY.Nc Sensor Range

- Intelligent sensor concept for connection (M12 connector) to SW.Nc universal switching relay
- Stainless steel / polymer compound material for maximum corrosion resistance
- Fast sampling rate up to 125 ms for pressure sensors
- Room sensor for direct connection
- Other sensors with M12 sensor cable (1 Meter included, other lengths available)
- For use with TR.Nc transducer



TR.Nc

PRODUCT	DESCRIPTION
TR.Nc Id. no 01120001	Transducer 0...10 V Transducer 4...20 mA

IY.Nc – Temperature / Temperature-Humidity-Dew Point

PRODUCT	DESCRIPTION
IY.Nc-RT Id. no 01120101	Sensor Room Temperature
IY.Nc-RTH Id. no 01120201	Sensor Room Temperature / Humidity
IY.Nc-DT-050 Id. no 01120301	Sensor Duct Temperature l = 50mm
IY.Nc-DTH-050 Id. no 01120401	Sensor Duct Temperature / Humidity l = 50mm
IY.Nc-DT-100 Id. no 01120302	Sensor Duct Temperature l = 100mm
IY.Nc-DTH-100 Id. no 01120402	Sensor Duct Temperature / Humidity l = 100mm
IY.Nc-DT-200 Id. no 01120303	Sensor Duct Temperature l = 200mm
IY.Nc-DTH-200 Id. no 01120403	Sensor Duct Temperature / Humidity l = 200mm

IY.Nc – Differential Pressure / Flow Rate

PRODUCT	DESCRIPTION
IY.Nc-P-0100 Id. no 01120501	Differential Pressure Sensor - 100...+100 Pa
IY.Nc-P-0250 Id. no 01120502	Differential Pressure Sensor - 250...+250 Pa
IY.Nc-P-0600 Id. no 01120503	Differential Pressure Sensor - 600...+600 Pa
IY.Nc-P-1000 Id. no 01120504	Differential Pressure Sensor - 1000...+1000 Pa
IY.Nc-P-2500 Id. no 01120505	Differential Pressure Sensor - 2500...+2500 Pa

Other types available

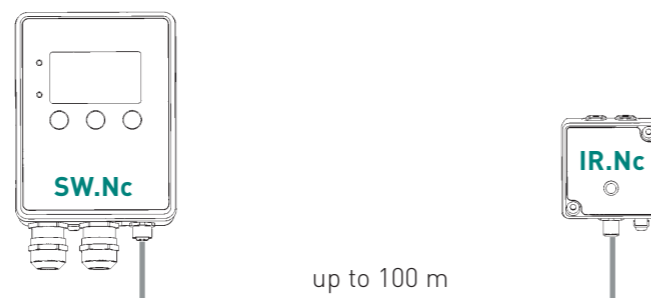


SW.Nc Switching Relais

- Universal Switching Relay
- Two adjustable potential free relay outputs
- Ambient temperature -40...+70 °C
- IP66
- Adjustable on site, display
- Stainless steel / polymer compound material for maximum corrosion resistance
- Adjustable hysteresis
- LED status indication
- Smart installation
- 24 VAC / DC
- For use with IR.Nc-Sensors

IR.Nc Sensor Range

- Intelligent sensor concept for connection (M12 connector) to SW.Nc universal switching relay
- Stainless steel / polymer compound material for maximum corrosion resistance
- Room sensor for direct connection
- Other sensors for M12 sensor cable (1 meter included, other lengths available)
- For use with SW.Nc universal switching relay



SW.Nc

PRODUCT	DESCRIPTION
SW.Nc Id. no 01110001	Switching relay

IR.Nc – Temperature / Humidity

PRODUCT	DESCRIPTION
IR.Nc-RT Id. no 01110101	Sensor Room Temperature
IR.Nc-RH Id. no 01110201	Sensor Room Humidity
IR.Nc-DT-050 Id. no 01110301	Sensor Duct Temperature l = 50 mm
IR.Nc-DH-050 Id. no 01110401	Sensor Duct Humidity l = 50 mm
IR.Nc-DT-100 Id. no 01110302	Sensor Duct Temperature l = 100 mm
IR.Nc-DH-100 Id. no 01110402	Sensor Duct Humidity l = 100 mm
IR.Nc-DT-200 Id. no 01110303	Sensor Duct Temperature l = 200 mm
IR.Nc-DH-200 Id. no 01110403	Sensor Duct Humidity l = 200 mm

IR.Nc – Differential Pressure

PRODUCT	DESCRIPTION
IR.Nc-P-0100 Id. no 01110501	Differential Pressure Sensor – 100...+ 100 Pa
IR.Nc-P-0250 Id. no 01110502	Differential Pressure Sensor – 250...+ 250 Pa
IR.Nc-P-0600 Id. no 01110503	Differential Pressure Sensor – 600...+ 600 Pa
IR.Nc-P-1000 Id. no 01110504	Differential Pressure Sensor – 1000...+ 1000 Pa
IR.Nc-P-2500 Id. no 01110505	Differential Pressure Sensor – 2500...+ 2500 Pa

Other types available





QT.Nc-M, Electric Actuator

- Integrated junction box
- Ambient temperature -40...+70 °C
- Optional fail safe / spring return
- Optional control / feedback 0...10 V; 4...20 mA
- IP66, maximum corrosion resistance, weatherproof

Technical Data

Manufacturer: pi safety components

Auxiliary Switches: 5° / 80° Switching points max. 250 V / 1 A min. 5 V / 5 mA

Angle of rotation: 95° [5° Preload]

Hollow shaft: 12 x 12 mm [Double square]

Power consumption: 5 W / 7 VA In holding position
20 W / 30 VA Motor
30 VA / 2 A Layout

Permissible humidity: 0...95% r.F without condensation

Ambient temperature: -40...+70 °C

Housing material: High-tech polymer non-halogen, silicone-free

Protection class: IP66

Dimensions: approx. 320 x 120 x 85 mm

Nc Actuators with Spring Return

3-Position / Open-Close Actuator; 10 Seconds Spring Return; 20...70 VAC / DC

QT.Nc-MF10-SL Id. no 02121000	Supply Power: 20...70 VAC / DC 50-60 Hz Control: 3-Position / Open-Close Spring Return: approx. 10 s Torque: 18 Nm Motor: approx. 15 s / 90°
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3-Position / Open-Close Actuator; 10 Seconds Spring Return; 85...250 VAC

QT.Nc-MF10-SH Id. no 02121001	Supply Power: 85...250 VAC 50-60 Hz Control: 3-Position / Open-Close Spring Return: approx. 10 s Torque: 18 Nm Motor: approx. 15 s / 90°
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3-Position / Open-Close Actuator; 3 Seconds Spring Return; 20...70 VAC / DC

QT.Nc-MF03-SL Id. no 02123000	Supply Power: 20...70 VAC / DC 50-60 Hz Control: 3-Position / Open-Close Spring Return: approx. 3 s Torque: 18 Nm Motor: approx. 15 s / 90°
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3-Position / Open-Close Actuator; 3 Seconds Spring Return; 85...250 VAC

QT.Nc-MF03-SH Id. no 02123001	Supply Power: 85...250 VAC 50-60 Hz Control: 3-Position / Open-Close Spring Return: approx. 3 s Torque: 18 Nm Motor: approx. 15 s / 90°
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Control Actuator; 10 Seconds Spring Return; 20...70 VAC / DC

QT.Nc-MF10Y-SL Id. no 02121010	Supply Power: 20...70 VAC / DC 50-60 Hz Control / Feedback: 0...10 V alt. 4...20 mA Spring Return: approx. 10 s Torque: 18 Nm Motor: approx. 15 s / 90°
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Control Actuator; 10 Seconds Spring Return; 85...250 VAC

QT.Nc-MF10Y-SH Id. no 02121011	Supply Power: 85...250 VAC 50-60 Hz Control / Feedback: 0...10 V alt. 4...20 mA Spring Return: approx. 10 s Torque: 18 Nm Motor: approx. 15 s / 90°
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QT.Nc-M, Electric Actuator

- Integrated junction box
- Ambient temperature -40...+70 °C
- Optional fail safe / spring return
- Optional control / feedback 0...10 V; 4...20 mA
- IP66, maximum corrosion resistance, weatherproof

Technical Data

Manufacturer: pi safety components

Auxiliary Switches: 5° / 80° Switching points max.250 V / 1 A min. 5 V / 5 mA

Angle of rotation: 95° [5° Preload]

Hollow shaft: 12 x 12 mm [Double square]

Power consumption: 5 W / 7 VA In holding position
20 W / 30 VA Motor
30 VA / 2 A Layout

Permissible humidity: 0...95% r.F without condensation

Ambient temperature: -40...+70°C

Housing material: High-tech polymer non-halogen, silicone-free

Protection class: IP66

Dimensions: Approx. 320 x 120 x 85 mm

Nc Actuators without Spring Return

3-Position / Open-Close Actuator; 20...70 VAC / DC

QT.Nc-M-SL Id. no 02120000	Supply Power: 20...70 VAC / DC 50-60 Hz Control: 3-Position / Open-Close Spring Return: none Torque: 50 Nm Motor: approx. 15 s / 90°
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3-Position / Open-Close Actuator; 85...250 VAC

QT.Nc-M-SH Id. no 02120001	Supply Power: 85...250 VAC 50-60 Hz Control: 3-Position / Open-Close Spring Return: none Torque: 50 Nm Motor: approx. 15 s / 90°
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Control Actuator; 20...70 VAC / DC

QT.Nc-MY-SL Id. no 02121000	Supply Power: 20...70 VAC / DC 50-60 Hz Control: 0...10 V / 4...20 mA Spring Return: none Torque: 40 Nm Motor: approx. 15 s / 90°
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Control Actuator; 85...250 VAC

QT.Nc-MY-SH Id. no 02121001	Supply Power: 85...250 VAC 50-60 Hz Control: 0...10 V / 4...20 mA Spring Return: none Torque: 40 Nm Motor: approx. 15 s / 90°
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Control Actuator Quick; 20...70 VAC / DC

QT.Nc-MYQ-SL Id. no 02120110	Supply Power: 20...70 VAC / DC 50-60 Hz Control: 0...10 V / 4...20 mA Spring Return: none Torque: 15 Nm Motor: approx. 5 s / 90°
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Control Actuator Quick; 85...250 VAC

QT.Nc-MYQ-SH Id. no 02120111	Supply Power: 85...250 VAC 50-60 Hz Control: 0...10 V / 4...20 mA Spring Return: none Torque: 15 Nm Motor: approx. 5 s / 90°
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Accessories Actuators

FT.Ex-72	
Id. no 02001000	Explosion-proof, intrinsically safe fire damper thermal trigger 72 °C for QT.Ex-MFD actuators (other types available)

FT.Nc-72	
Id. no 02101000	Fire damper thermal trigger 72 °C for QT.Nc-MFD actuators (other types available)

WS.Va-M	
Id. no 02001020	Stainless steel protection against harsh ambient conditions, vandalism etc.

KR.Vz-12	
Id. no 02001010	Clamping adapter and anti-rotation device for mounting on round shafts (10-20 mm) and square square (VK 10-16 mm), galvanized

LV.Qt-...	
On request	Linkage to quarter turn valves

Accessories Sensors

MA.Pa-06	
Id. no 01001000	Installation set for pressure sensors, incl. Duct connectors, pressure hose and fixing screws for IY.Nc-P..., IY.Ex-P..., IR.Nc-P... und IR.Ex-P...

TH.Va-...	
On request	Thermowell, stainless steel, G ½"

SC.Pu-...	
On request	M12 sensor cable, different lengths available

Calibration Service

KA.Pi	
On request	Calibration of humidity, temperature, pressure sensors in our in-house calibration laboratory including factory certificate

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in
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BE SAFE.



GENERAL BUSINESS TERMS OF TRADE

Scope

The following terms are applicable only to business persons, legal entities under public law or of public utilities or separate public legal assets.

I. Application

- Orders become binding only after the supplier has confirmed the order. If the customer does not disagree with the content of the order confirmation within 7 days, the contract shall become binding under the conditions listed in the confirmation, even if due to a transmission, communication or clerical error the conditions differ from the original agreement. Variations and additions to the tender shall be made in writing. All offers and tenders are subject to alterations, unless they are explicitly marked as fixed. Quantities or sizes are, unless expressiv specified as binding, non-binding approximate values.
- These terms are valid in respect to on-going business and also future business, even if not expressiv stated, as long as these terms have been referred to at the occasion of a previous supplier confirmed order.
- Business terms of the customer do not apply, even if not expressiv disagreed with by the supplier, unless the supplier has expressiv agreed to them in writing. The regulations governing distance selling to customers are not transferable to commercial business relationships, not even in corresponding situations.
- Should anv one clause be or become void, the validity of the remaining clauses is not affected.

II. Prices

- Prices shall be considered to be ex works, excluding freight, customs or import duties or ancillary export charges and packing, plus VAT, applied at the legally proscribed rate.
- Should after submission of the offer or after confirmation of the order prior to delivery a major cost factor, such as the cost of materials, energy, or labour vary by more than 5 %, either party may request a price adjustment. The adjustment shall be determined according to the applicable cost factor in respect of the total price.
- Previous prices do not bind the supplier in subsequent orders.

III. Deliver and Acceptance Obligations, Force Majeure

- Delivery schedules commence with the receipt of documentation, necessary for the execution of the order, down payment or the timely provision of materials, if such were agreed. The supply deadline is considered fulfilled upon receipt of the delivery advice note, even when the actual delivery is delayed or has become impossible, provided the supplier did not cause the delay.
- If an agreed delivery was not completed on time due to the direct fault of the supplier, the customer must in each case allow an appropriate period of grace.
- Reasonable partial delivery is deemed acceptable.
- The supplier may demand a firm commitment to on-call contact periods, manufacturing quantities and delivery schedules three months after receipt of an order at the latest. If the customer is unwilling to make such a commitment within three weeks, the supplier is entitled, after further extension of two weeks, to withdraw from the contract after expiration of the latest deadline and/or demand compensation.
- If the customer fails to duly accept a delivery, the supplier is not bound by any regulation regarding re-sale and may freely dispose of any delivery items after prior notification of the customer, regardless of any other rights or regulations governing disposal sales.
- The supplier may delay delivery because of force majeure for the duration of the difficulties, including an appropriate time for a return to normalcy, or in the case of noncompletion of a delivery rescinds the contract wholly or in part. As force majeure qualify strikes, lockouts or unforeseeable and unavoidable situations, such as breakdowns or transport delays or interruptions, lack of raw materials or energy through no fault of the supplier, which, notwithstanding all reasonable efforts, render on-time delivery by the supplier impossible. This also is the case when the aforementioned delays occur after previous delays or when delays occur with a subcontractor.

The customer may request the supplier to declare within two weeks, whether a cancellation of the contract or a late delivery within a suitable period of grace is appropriate. If the supplier does not respond to the request, the customer may rescind not yet completed parts of the contract.

The supplier shall inform the customer without delay when force majeure, as defined in clause 1 has occurred. The Supplier is obliged to minimize the inconvenience to the customer; if necessary, he may have to hand over the forms for the duration of the obstruction.

IV. Terms of Payment

- All payments are to be made in € (EURO) and shall go solely to the supplier. In the absence of a different arrangement the purchase price for supplies or other services is to be paid net within 30 days from the billing date.
- Payments made on accounts in arrears attract interest at the legal interest rate charge of 8 percentage points over and above the applicable base rate as per § 247 BGB (Common Law Code), unless the supplier proves higher damages.

- Cheques or bills of exchange are only acceptable with the expressly written agreement and only to discharge existing obligations. All costs, associated with these forms of payment, shall be born by the customer.
- The customer may offset an account or exercise his right to withhold payment only if his claims are indisputable or established in law.
- Sustained non-compliance with the terms of payment or circumstances that raise serious doubts as to the creditworthiness of the customer will result in claims for all payments becoming due immediately. Moreover the supplier is also entitled to demand prepayment for all outstanding deliveries and even to cancel the contract if an appropriate deadline has not been kept.

V. Packaging, Despatch, Risk Transfer and Acceptance Delays

- Unless agreed to differently, the supplier chooses the packaging, mode of transport and transport route. The supplier is entitled to conduct his shipping business by commissioning his selected dispatcher under the customary agreed conditions.
- The transport risk transfers to the customer upon goods leaving the works, even if delivery is free ex works. If the customer delays a delivery the risk transfers to the customer as soon as the dispatch advice note has been issued.
- If requested in writing by the customer, goods shall be insured at cost to the customer for the risk coverage requested.
- If the customer delays acceptance of the delivery the supplier shall be entitled to store the goods with cost to the customer. Should the supplier facilitate the storage of the goods, storage costs to the value of 0.5 % of the account value of the stored goods for each commenced storage week shall fall due. Higher storage costs must be proven to be applicable.

VI. Reservation of Property Rights

- Deliveries remain the property of the supplier until all claims of the supplier on the customer have been met, even when the purchase price for specially marked claims has been met. For account customers the reserved property rights to the delivered goods (reserved ownership of goods) are in force as security for the supplier until the balance has been paid in full. If payments are made by means of a bill of exchange, then reserved ownership is not transferred until the bill of exchange has been cleared.
- Further processing or treatment of goods supplied by the customer may only be carried out by excluding the ownership rights of the customer according to § 950 BGB (Common Law Code) as contracted by the supplier. The supplier becomes co-owner of the thus produced goods to the proportional value of the net sale price to the net postmanufacturing processed cost of the thus produced goods, which serve as reserved ownership goods to secure the property claims of the supplier as per clause 1.
- For further processing by the customer (in combination or addition) with other goods not owned by the supplier, § 947, 948 BGB (Common Law Code) are applicable, resulting in proportional co-ownership by the supplier in the resulting goods, which are now considered reserved ownership goods.
- The re-sale of reserved ownership goods by the customer is only permissible as part of normal commercial practise and on condition that the customer reaches an agreement with the supplier regarding reserved ownership goods as defined in clauses 1 to 3. The customer is not entitled to take any other action in respect of reserved ownership goods, in particular pawning, or using the goods as security.
- The customer relinquishes herewith already now all claims to the supplier, which may result from the re-sale of goods and all other justifiable claims, including associated rights to his customers. The customer is duty-bound upon request to inform the supplier immediately and supply all necessary documentation to secure the rights of the supplier against the customers of the customer.
- When reserved property is re-sold by the customer after further processing action in combination or addition with other goods, not owned by the supplier, as outlined in clause 2 and/or 3 above, the customer cedes all purchase price claims according to clause 5 to the account value of the reserved ownership goods of the supplier.
- Should the value of the securities held by the supplier exceed the total billed value of the goods by more than 10 % the supplier must release such securities to a commensurate value; the supplier may nominate the securities to be released.
- The supplier must be notified without delay of any confiscation or seizure of reserved ownership goods by a third party. All associated costs due to such intervention are to be born by the customer to the extent that costs are not born by third parties.
- Should the supplier, taking action according to the above clauses, make use of his right to take back the reserved ownership goods, the supplier is entitled to an unencumbered sale or auction of said goods. The value of the returned reserved ownership goods shall be as sold or auctioned and no higher than the agreed supply price. Further claims for compensation, in particular compensation for loss of earnings, are reserved.

VII. Warranty for Material Defects

- The product description defines the quality and design of the products or the implementation in the case of an agreed product sample, which the supplier at his discretion shall submit to the customer for evaluation. Apart from that No. XII clause 1 applies. Any reference to technical standards is an aid to define product quality and is not to be interpreted as a definition of product integrity. The usual industry standard tolerances apply. In the absence of a written agreement, the production shall be executed with standard industry materials and according to agreed, and in the absence of an agreement, according to generally accepted production processes. Minor variations from the original in the reproduction of colour do not constitute a defect; this also applies to variations in the final proof and the print run.
- The supplier, after advising the customer beyond his contractual obligation, is liable to warrant the functionality and suitability of the supplied goods only after expressed prior assurance.
- Defects are to be notified in writing without delay. Hidden defects are to be notified immediately after discovery. In either case the warranty only extends to twelve months after risk transfer, unless agreed to differently.
- If defects are proven the supplier is obliged to make good (at his discretion either by rectifying or replacing the faulty product). The customer is entitled to reduce the purchase price or rescind the contract, if the supplier does not fulfil his obligation to replace goods within a reasonable period, or after replacements fail repeatedly. Further claims, especially reimbursement of incurred costs or compensation and damages due to the faults are covered under warranty liability limitations according to No. VIII. Replaced parts are to be returned to the supplier at his request and cost.
- Unauthorized re-working and improper handling of parts result in the loss of any right to claim compensation for defective parts. The customer is entitled, after prior consultation with the supplier, to repair defective parts to avoid excessive damage or if the supplier fails to make good the defects, and as a consequence to demand reimbursement of appropriate costs.
- Normal wear and tear caused by normal usage does not provide the right to make warranty claims.
- A right to referred warranty provision according to §§ 478, 479 BGB (Common Law Code) exists only to the extent of a rightful claim by the consumer and to the limit of statutory provisions, but not for any arrangement of goodwill made with the supplier and supposes the exercise of the obligation of the party holding the rights to referred warranty provisions to report any deficiencies.

VIII. General Limitations of Liability

- The supplier's liability is limited only to cases in which he, his leading employees or Subcontractors are guilty of culpable intent, gross negligence or injury to life, limb and health.
- The statutory product warranty is unaffected independent of any blame as well as any liability in respect of the legal fulfilment in regard of any product integrity warranty.
- Unaffected also is the liability in the case of culpable neglect of major contractual obligations; however, the liability is restricted in cases of No. 1 to foreseeable direct damages commonly encountered in contracts. Major contractual obligations shall be understood to cover fundamental, elementary obligations resulting from the contract relationship, which are important to the orderly and proper execution of the contract and substantially influence the relationship of trust between the contract partners, especially the supply and important reporting obligations.
- However, this implies no change in the requirement of proof to the disadvantage of the purchaser.

IX. Forms (Tooling)

- The price for forms also contains the once-off costs for the making of patterns, but does not contain the costs for test and processing procedures, nor costs incurred by customer initiated alterations. Any further patterns required by the supplier are at his own costs.
- The supplier has and retains ownership of all forms made by the supplier for the customer or by a contracted third party, unless agreed to differently. Forms shall be used only for customer orders as expressiv agreed, for as long as the customer continues payment and acceptance obligations. The supplier is obliged to replace the forms free of charge only when the required production quantity necessitates its replacement. The supplier's requirement to store the forms is extinguished two years after the last delivery of parts produced with the forms. The customer shall be notified before their disposal.
- If the forms have not been fully paid for at the completion of a contract, the supplier may claim in total the remaining amount still owed on the forms.
- If so contractually agreed, the property of the forms shall transfer to the customer after full payment of their purchase price has been made. The actual transfer of forms to the customer is replaced by the storage of the said forms to the benefit of the customer. Irrespective of the legal right of surrender the customer and the life of the forms, the supplier is

entitled to exclusive possession of same until the end of the contract period. The supplier shall mark the forms as outside property and insure said property at the customer's request and expense.

- The liability of the supplier in respect of storage, care and maintenance of forms owned by the customer as per clause No. 4 and/or forms loaned by the customer to the supplier is subject to like treatment of proprietary property. Costs for maintenance and insurance are born by the customer. The obligations of the supplier cease when, after completion of the contract and a corresponding request, the customer fails to collect the forms within an appropriate period. The supplier has the right to withhold the forms as long as the customer has not complied with the full extent of contractual obligation.

X. Design/Mock-up/Documentation

- The supplier retains the sole ownership rights and copyrights of the drafts, documentation, sketches, drawings and sundry other documents. Inasmuch as the customer provides patterns and ideas, the supplier receives a co-copyright to the extent to which the pattern or concept was fashioned by the supplier.
- If no order results, the customer is obliged to return to the supplier without delay all provided documentation, including any copies made. Digital copies are to be permanently destroyed.
- The supplier is released from any possible claims of third parties during the provision of models and ideas.
- Any produced drafts, drawings, mock-ups and similar by the supplier remain the property of the supplier, even if the customer was charged production costs.

XI. Provision of Materials

- If the customer supplies production materials, said materials are to be delivered at the customer's own cost and risk, on time and in good order and a quantity premium of at least 5 %.
- If the above provision is not complied with, the delivery deadline shall slip accordingly. The customer has to bear any additional costs, including extra costs incurred due to breaks in production, except in the case of force majeure.

XII. Rights to Commercial Protection and Legal Limitation

- For all deliveries based on drawings, models, patterns or parts supplied by the customer, the customer warrants that the commercial rights of third parties in the country for which the goods are being manufactured are not injured. The supplier may draw the customer's attention to known laws, but is not obliged to undertake investigations. The customer shall release the supplier from any claims of a third party at first request and pay compensation for any resulting damage. The supplier is entitled to stop all work – without any examination of the legal position – until the legal position has been clarified by the customer after an injunction by the third party to protect the commercial rights of the third party has been issued. If the continuation of the contract should become untenable to the supplier, the supplier may rescind the contract.
- Any drawings and patterns that were made available to the supplier, but did not result in a contract, shall be returned when requested; eise the supplier is entitled to destroy the same three month after the issue of the quote or tender. The same obligation applies also to the customer. The party entitled to dispose shall inform the other party of the intention prior to doing so and in good time.
- The supplier retains all property rights, copyrights and, if applicable, rights to commercial protection, in particular the rights of utilization and exploitation of models, forms, facilities, designs and drawings made by him or for him under contract by a third party. If requested, the customer shall return all records, documentation, forms, patterns or models, including all copies made thereof, to the supplier without delay.
- For all other legal product limitations No. VII respectively applies.

XIII. Pure Food Manufacturing Practices and Recycling Materials

- If a product is intended to come into contact with food stuffs, the customer shall be responsible for ascertaining in advance the suitability of the used materials for specific foods.
- Raw materials shall be carefully selected by the supplier to be recyclable. Regenerative plastics may, however, exhibit greater variation of surface characteristics from one charge to another, such as colour, purity, odour and physical or chemical properties, which the customer may not claim as a fault. However, the supplier, if requested, shall relinquish possible claims of sub-suppliers to the customer; but the supplier does not guarantee the continuance of these claims.

XIV. Production and Legal Venue

- The production venue is the works of the supplier.
- Legal venue at the supplier's discretion is the principal office of the supplier or the customer.
- German law applies exclusively, excluding the UN Law on Trade.



Your **pi**-Partner in Baltic countries



Wermundsen OÜ
Pärnu mnt. 142
11317 Tallinn

Tel. (+372) 601 4202
wexon(at)wexon.ee