



symbol picture

EN

1/4 turn actuators for hazardous areas

EASY - SAFE – SMART

- Explosion proof certified for gases and dusts
- ATEX / IECEx / UKEX / KC / INMETRO
- Easy plug-in mounting
- Quick and safe installation
- Axis mount 12 x 12 mm
- Terminal box Ex e integrated
- Temperature range -40 ... +70 ° C
- Suitable for In- and Outdoor use
- Heating including thermostat integrated
- Protection class IP66
- Blocking resistant by electronic disconnection
- Low power consumption in holding mode
- High corrosion resistance by using high tech polymer and stainless steel
- Long life by using brushless motors
- Maintenance-free
- Optional Y-modulating version (analog inputs and outputs mA and V short-circuit-proof)
- Electrically isolated circuits for optimum interference immunity

QT.Ex Manual

Assembly and installation instructions for safe use of explosion-proof actuator QT.Ex-M... with / without spring return Fail Safe function



BA.0003.07.EN

ATEX Documentation

D Alle Betriebsanleitungen für ATEX Ex bezogene Produkte stehen in den Sprachen Englisch, Deutsch und Französisch zur Verfügung. Sollten Sie die Betriebsanleitungen für Ex-Produkte in Ihrer Landessprache benötigen, setzen Sie sich bitte mit Ihrem örtlichen Vertreter in Verbindung.

GB All instruction manuals for ATEX Ex related products are available in English, German and French. Should you require Ex related instructions in your local language, you are to contact your nearest office or representative.

F Tous les manuels d'instruction des produits ATEX Ex sont disponibles en langue anglaise, allemande et française. Si vous nécessitez des instructions relatives aux produits Ex dans votre langue, veuillez bien contacter votre représentant le plus proche.

P Todos os manuais de instruções referentes aos produtos Ex da ATEX estão disponíveis em Inglês, Alemão e Francês. Se necessitar de instruções na sua língua relacionadas com produtos Ex, deverá entrar em contacto com a delegação mais próxima ou com um representante.

DK Alle brugervejledninger for produkter relateret til ATEX Ex er tilgængelige på engelsk, tysk og fransk. Skulle De ønske yderligere oplysninger om håndtering af Ex produkter på eget sprog, kan De rette henvendelse herom til den nærmeste afdeling eller forhandler.

SF Kaikkien ATEX Ex -tyyppisten tuotteiden käyttöohjeet ovat saatavilla englannin-, saksan- ja ranskankielisinä. Mikäli tarvitsette Ex -tyyppisten tuotteiden ohjeita omalla paikallisella kielellänne, ottakaa yhteyttä lähimpään toimistoon tai edustajaan.

I Tutti i manuali operativi di prodotti ATEX contrassegnati con Ex sono disponibili in inglese, tedesco e francese. Se si desidera ricevere i manuali operativi di prodotti Ex in lingua locale, mettersi in contatto con l'ufficio più vicino o con un rappresentante.

E Todos los manuales de instrucciones para los productos antiexplosivos de ATEX están disponibles en inglés, alemán y francés. Si desea solicitar las instrucciones de estos artículos antiexplosivos en su idioma local, deberá ponerse en contacto con la oficina o el representante de más cercano.

S Alla instruktionsböcker för ATEX Ex (explosionssäkra) produkter är tillgängliga på engelska, tyska och franska. Om Ni behöver instruktioner för dessa explosionssäkra produkter på annat språk, skall Ni kontakta närmaste eller representant.

NL Alle handleidingen voor producten die te maken hebben met ATEX explosiebeveiliging (Ex) zijn verkrijgbaar in het Engels, Duits en Frans. Neem, indien u aanwijzingen op het gebied van explosiebeveiliging nodig hebt in uw eigen taal, contact op met de dichtstbijzijnde vestiging van of met een vertegenwoordiger

GR Όλα τα εγχειρίδια λειτουργίας των προϊόντων με ATEX Ex διατίθενται στα Αγγλικά, Γερμανικά και Γαλλικά. Σε περίπτωση που χρειάζεστε οδηγίες σχετικά με Ex στην τοπική γλώσσα παρακαλούμε επικοινωνήστε με το πλησιέστερο γραφείο της ή αντιπροσωπείο της

PL Wszystkie instrukcje obsługi dla urządzeń w wykonaniu przeciwwybuchowym Ex, zgodnych z wymaganiami ATEX, dostępne są w języku angielskim, niemieckim i francuskim. Jeżeli wymagana jest instrukcja obsługi w Państwa lokalnym języku, prosimy o kontakt z lokalnym przedstawicielem.

SK Všetky návody na obsluhu pre prístroje s ATEX Ex sú k dispozícii v jazyku anglickom, nemeckom a francúzskom. V prípade potreby návodu pre Ex- prístroje vo Vašom národnom jazyku, skontaktujte prosím miestnu kanceláriu firmy.

SLO Vsi predpisi in navodila za ATEX Ex sorodni pridelki so pri roki v angleščini, nemščini ter francoščini. Če so Ex sorodna navodila potrebna v vašem tujejnem jeziku, kontaktirajte vaš najbližji office ili predstavnika.

CZ Všechny uživatelské příručky pro výrobky, na něž se vztahuje nevybušné schválení ATEX Ex, jsou dostupné v angličtině, němčině a francouzštině. Požadujete-li pokyny týkající se výrobků s nevybušným schválením ve vašem lokálním jazyku, kontaktujte prosím vaši nejbližší reprezentační kancelář

H Az ATEX Ex műszerek gépkönyveit angol, német és francia nyelven adjuk ki. Amennyiben helyi nyelven kérik az Ex eszközök leírását, kérjük keressék fel a legközelebbi irodát, vagy képviselőt.

BG Всички упътвания за продукти от серията ATEX Ex се предлагат на английски, немски и френски език. Ако се нуждаете от упътвания за продукти от серията Ex на родния ви език, се свържете с най-близкия офис или представителство на фирма

LT Visos gaminių ATEX Ex kategorijos Eksploatavimo instrukcijos teikiami anglų, vokiečių ir prancūzų kalbomis. Norėdami gauti prietaisų Ex dokumentaciją kitomis kalbomis susisiekite su artimiausiu bendrovės biuru arba atstovu.

RO Toate manualele de instructiuni pentru produsele ATEX Ex sunt in limba engleza, germana si franceza. In cazul in care doriti instructiunile in limba locala, trebuie sa contactati cel mai apropiat birou sau reprezentant

LV Visas ATEX Ex kategorijas izstrādājumu Lietošanas instrukcijas tiek piegādātas angļu, vācu un franču valodās. Ja vēlaties saņemt Ex ierīču dokumentāciju citā valodā, Jums ir jāsazinās ar firmas Jokogava tuvāko ofisu vai pārstāvi

M Il-manwali kollha ta' l-istruzzjonijiet għal prodotti marbuta ma' ATEX Ex huma disponibbli bil-Ingliż, bil-Ġermaniż u bil-Franċiż. Jekk tkun tehtieg struzzjonijiet marbuta ma' Ex fil-lingwa lokali tiegħek, għandek tikkuntattja lill-eqreb rappreżentant jew ufficċju ta'

ESTKõik ATEX Ex toodete kasutamishendid on esitatud inglise, saksa ja prantsuse keeles. Ex seadmete muukeelse dokumentatsiooni saamiseks pöörduge lähima lokagava kontori või esindaja poole

EN

EN

SICHERHEITSHINWEISE / SAFETY NOTES / CONSIGNES DE SÉCURITÉ

Ex-Bereich
Hazardous area
Zone dangereuse
Zone 1,2,21,22



Sicherer Bereich
Safe area
Zone de sécurité



FT.Ex-...
Ta (T6) -40...+75°C
Ta (T5) -40...+90°C
Ta (T4) -40...+125°C
Ta (T3-1) -40...+125°C

QT.Ex
Ta (T4) -40 ... +70°C

$U_i = 10 \geq U_o < 10 \text{ V}$
 $I_i = 10 \geq I_o < 4,3 \text{ mA}$
 $P_i = 10 \text{ mW} \geq P_o < 4,5 \text{ mW}$
 $C_i, I_i = 0$

FT.Ex-...



Option QT.Ex-MFD-...
Brandschutzklappenantrieb
Fire Damper Actuator
Entraînement de clapet coupe-feu

Netzteil / Powersupply / Alimenteur Ex e
Klemmen / terminals / confiture 1, 2, 3, 4
QT.Ex-M...-SL 20 – 70 V AC/DC
QT.Ex-M...-SH 85 – 250 V AC

Klemmen / terminals / confiture 5, 6, 7
Endlagenschalter max. 250 V / 100 mA
Limit Switches min 5 V / 5 mA
fin de course

Klemmen / terminals / confiture 8,9,10,11,12
Option: QT.Ex-M...Y..
Analog Ein-/Ausgang 4 ... 20 mA
Analog in-/output 0 ... 10 V
Entrées / sorties analogiques

Ex i Anschluss / connection / connexion M12
Option: QT.Ex-MFD (FireTrigger F.Ex-..)

- Installieren Sie gemäß Herstellerangaben und für Sie gültigen Normen und Regeln.
- Das Entriegeln des Gerätes oder öffnen des Klemmkastens ist nur im spannungslosen Zustand gestattet.
- Beim Einbau des Gerätes ist darauf zu achten, dass die Gehäuseschutzart IP66 nach EN 60529 eingehalten wird.
- Dieses Betriebsmittel kann nach Herstellerangaben in der Zone 1, 21 (II 2GD) bzw. Zone 2, 22 (II 3GD) eingesetzt werden.
- Die Geräte dürfen nur in Messstoffen eingesetzt werden, gegen welche die prozessberührenden Materialien beständig sind.
- Das Gerät ist an den Potenzialausgleich (PA) anzuschließen, dazu steht ein äußerer Anschluss zu Verfügung.
- Das Gerät ist vor mechanischer Belastung zu schützen.

- Install in accordance with manufacturer's instructions and valid standards and rules.
- Unlocking the device or open the terminal box is only permitted with the power off.
- When installing the unit, make sure that the housing IP66 degree of protection is maintained in accordance with EN 60529.
- This equipment can be used according to manufacturers' instructions in Zone 1, 21 (II 2GD) and 2, 22. (II 3GD).
- The device may only be used in such conditions, against which the process-contacting materials are resistant.
- The unit must be connected to the potential equalization (PA), an external terminal is available.
- The unit must be protected against mechanical impact.

- Installer conformément aux instructions et aux normes et règles en vigueur du fabricant.
- Libérer l'appareil ou ouvrir la boîte à bornes ne est autorisée qu'avec l'appareil hors tension.
- Lors de l'installation, assurez-vous que le degré de protection IP66 boîtier est maintenu conformément à la norme EN 60529.
- Cet équipement peut être utilisé selon les instructions du fabricant dans la zone 1, 21 (II 2 GD) et 2, 22 (II 3GD).
- Le dispositif ne peut être utilisé dans de tels liquides, contre lequel les matériaux de traitement contact sont résistants.
- L'appareil est connecté à la liaison équipotentielle (PA) pour rejoindre, ceci est une borne externe à votre disposition.
- L'appareil doit être protégé contre les chocs mécaniques.

Content

ATEX Documentation	2
1. General	5
2. Product description	5
3. Technical data	6
4. Dimensions	8
5. Mounting / Installation	9
6. Commissioning	12
7. Manual operation	12
8. Internal auxiliary switch	12
9. Heating	12
10. Troubleshooting	12
11. Maintenance	13
12. Repair	13
13. Demounting	13
14. Disposal	13
15. Accessories	13
Revision	14
EU / UK Konformitätserklärung EU / UK Declaration of Conformity Déclaration de Conformité UE / UK	15
Contact Information	16
Company Information	16

EN

EN

1. General

The manual is included in the delivery and serves to ensure proper handling and optimum functioning of the device. The manufacturer offers no guarantee for this publication and is not liable for any improper handling of the products described. For this reason, the manual has to be read before operation. In addition, all personnel who are involved in the transport, setup, operation, maintenance and repair are to be familiar with this manual. This manual may not, without the prior written consent of the manufacturer be used for competition purposes and will not be passed on to third parties. Copies for personal use are permitted. This documentation may contain technical inaccuracies or typographical errors. The information contained is regularly revised, inform yourself about updates via our contact address. The manufacturer reserves the right to modify or alter the product described at any given time.

© copyright pi safety components GmbH & Co. KG
All rights reserved

SYMBOLS



This sign shows Safety notes.

Safety notes must be followed. Failure to observe may result in personal injury or property damage. The manufacturer assumes no liability.

SAFETY NOTES



Installation, electrical connection, maintenance and commissioning may only be performed by trained specialist.



Avoid excessive mechanical loads and improper use.



Switch off power when mounting and dismantling



The opening and closing times determined acc. to pi test cycle are approximate and may vary depending on the conditions of use. Always check your application fully to eliminate any risks.



The determination of the torque requirement requires information from the damper, valve manufacturers on the cross-section, type, location and technical conditions.



Depending on the external load and low temperatures, the spring return times may be extended.



The manual adjustment shaft must be used de-energized, only.



For outdoor applications, when cleaning work with water and/or heavy water, dirt or sunlight, a protective roof is strongly recommended, see accessories WS.Va-M.



Attachments parts may affect the function. Check always your fully application to eliminate any risks.



Every structural change leads to the expiry of the approval and means a considerable safety risk, further operation is prohibited.



Continuous operation is limited to 2 cycles / 10 minutes.



The maximum number of control cycles (< 1 million) must be observed. Therefore, pay attention to a stable control and avoid clogged signals.



If the equipment is used in a manner not specified by the manufacturer, the protection provided by the equipment may be impaired

2. Product description

The quarter turn actuator QT.Ex-M.. consists of a supply unit and a gear unit. Through the modular concept separation of electronics and transmission is a simple, safe assembly and commissioning. The integrated terminal box with type of protection Ex e ensures a direct electrical connection in the Ex zone.

FUNCTION

The QT.Ex-M .. can be installed in hazardous areas of categories 2, 3, G (gas) and D (dust). The actuator performs a 90° (95°) rotation movement and opens / closes (fire protection) dampers and fittings. An optional spring moves the actuator into the safety position in the event of a power failure. An Ex e terminal box is integrated into the actuator.

APPLICATIONS

The QT.Ex-M.. can be installed in potentially explosive areas of categories 2, 3, G (gas) and D (dust). These actuators are used for air dampers, VAV units, louvre dampers and fire and smoke protection dampers, but also for shut-off and ball valves. With the appropriate accessories, linear movements such as valves, slide valves, etc. are also possible.

QT.Ex-MF.. Fail Safe actuator

The actuator has the control On / Off / 3Pos. In case of power fail the actuator moves into the safety position by an internal spring.

QT.Ex-MFD... Fire damper actuator

The actuator and associated thermal release FT.Ex- ... sensor. If the sensor is trips, the actuator moves into the safety position.

QT.MF-MF02 / QT... -MFD02.. actuators

are only to be installed in 90° applications with the function normally closed. The damper must be closed during assembly and the actuator must be. Due to the extremely fast running times of the spring, there is a risk of gear breakage if incorrectly installed. Installation is not permitted if the application has an angle of rotation of less than 90°.

QT.Ex-MY.. Modulating actuator

Modulating actuator with control 0-10 V or 4-20 mA and feedback 0-10 V and 4-20 mA.

QT.Ex-MYQ .. VAV actuator

Modulation actuator with 0-10 V or 4-20 mA control and 0-10 V and 4-20 mA feedback. Fast runtime 5 s / 90° for digestories / laboratory fume cupboard applications.

QT.Ex-MFY.. Modulating control with spring return

Modulating control 0-10 V or 4-20 mA and feedback signal 0-10 V and 4-20 mA. In case of power fail the actuator moves into the safety position by an internal spring.

INTENDED USE

The device is used in the HVAC industry for technical ventilation. The device is approved according to the explosion protection device group and category and in compliance with all manufacturer information that is necessary for the safe operation of the devices, protective systems and devices. Please note the legal requirements of engineering or professional practice. If instructions are not followed, the operating license will expire.

FORESEEABLE MISAPPLICATION

The manufacturer has integrated a maximum of safety to prevent property damage and personal injury. The limits and threats are mentioned. Use outside of the technical data formulated in the user manual is not permitted.

3. Technical data

QT.Ex-M SUPPLY-UNIT

TYPES		
QT.Ex-MSL	20 ... 70	V AC/DC
QT.Ex-MSH	85 ... 250	V AC

QT.Ex-M... GEAR-UNIT

SPRING RETURN (FAILSAFE) TYPES

QT.Ex-MF10	Motor	18 Nm	15 s	Spring	18 Nm	10 s	Nm/s/90°
QT.Ex-MF03	Motor	18 Nm	15 s	Spring	15 Nm	3 s	Nm/s/90°
QT.Ex-MF02	Motor	12 Nm	15 s	Spring	12 Nm	2 s	Nm/s/90°
QT.Ex-MF10Y	Motor	18 Nm	15 s	Spring	18 Nm	10 s	Nm/s/90°
QT.Ex-MFD10	Motor	18 Nm	15 s	Spring	15 Nm	10 s*	Nm/s/90°
QT.Ex-MFD03	Motor	18 Nm	15 s	Spring	15 Nm	3 s*	Nm/s/90°
QT.Ex-MFD02	Motor	12 Nm	15 s	Spring	12 Nm	2 s*	Nm/s/90°

*closing time by using thermal fire trigger

NON SPRING RETURN TYPES

QT.Ex-M	Motor	50 Nm	15 s	Nm/s/90°
QT.Ex-MY	Motor	40 Nm	15 s	Nm/s/90°
QT.Ex-MYQ	Motor	10 Nm	5 s	Nm/s/90°
QT.Ex-MYSQ	Motor	5 Nm	3 s	Nm/s/90°

SUPPLY

Voltage	See type list	
Frequency	50 – 60	Hz
Power consumption holding mode	5 / 7	W / VA
Power consumption motor mode	20 / 30	W / VA
Dimensioning @ 24 V supply	> 30 / 2	W / A
Protection class / over voltage category / pollution degree	II / II / 2	insulated

ELECTRICAL CONNECTION

Terminal clamps	without sleeve 0,08 – 2,5	mm
ATEX/IECEX Ex e	with sleeve 0,25 – 1,5	mm
Cable glands M20x1,5 ATEX/IECEX/UKEX Ex e	6 - 13	Ø mm

AUXILLERY SWITCHES

Voltage	5 ... 250	V
Current	5 ... 100	mA
Limit switches	5 / 80	°

IN-/OUTPUTS (MODULATION OPTION Y)

Voltage / Current	0 – 10 / 4 – 20	V DC / mA
Position accuracy	0,2	°
Control cycles	< 1 Mio.	Motor starts
Duty cycle	2/3P=2 cycles / 10 min – Y=S1 - 80	%

HOUSING

High Tech Polymer	Plastic PC, halogene-, silicone-	free
Housing protection	IP66	Indoor / Outdoor use

GENERAL

Dimensions H x B x T	320 x 120 x 85	mm
Weight	4,0 / 4,1 (without / with spring)	kg

MATERIAL

Housing	High Tech Polymer	conductive
Screws	stainless steel	
Seals	EPDM, TPU	
Cable glands	Brass plated	
Gear wheels	Steel / Sinter steel heat treatment	
Output shaft double square	12 x 12, Steel surface treatment	mm

APPLICATION AREA

Ambient temperature and storage	-40 ... +70	°C
Ambient temperature and storage F02 actuators	-40 ... +50	°C
Humidity, without condensation	0 ... 90	%RH
Mounting position, altitude	any, < 2000 m	
Maintenance	maintenance free, time lubrication	
Corrosion resistance	On-/offshore	

DELIVERY

QT.Ex-...	
Fastening screws 4 x M6x100 incl. nut M6 galvanized, Allen key SW3, pointer 12 mm	

FT.Ex-72-... THERMAL TRIGGER UNIT Accessory for QT.Ex-MF.. actuators

TYPES AND TEMPERATUR RELEASE

FT.Ex-72	Thermal Fire Trigger	72	°C
FT.Ex-95	Thermal Fire Trigger	95	°C

SUPPLY VIA ACTUATOR MFD

Voltage	Ui	10	V
Current	Ii	10	mA
Power	Pi	10	mW
Connection		M12	

MATERIAL

High Tech Polymer	Halogene free
Cable	FRNC
Seal	EPDM

GENERAL

Dimensions H x B x T	90 x 70 x 50	mm
Weight	100	g

APPLICATION AREA

Ambient temperature*	-40 ... +125	°C
Storage temperature	-40 ... +60	°C
Humidity, without condensation	0 ... 90	%RH
Mounting position	any	
Thermal release	certified acc. to ISO 10294-4	

DELIVERY

FT.Ex-..	
Self-tapping screws 2x M3.9x50	

* The ambient temperature refers to the application area. The temperature fuses can already trigger at >60°C.

CERTIFICATES



QT.Ex-M.... ATEX IECEx EPS 17 ATEX 1 020 X
IECEX EPS 17.0009X

FT.Ex-... ATEX IECEx EPS 17 ATEX 1 020 X
IECEX EPS 17.0009X

QT.Ex-M KTL 20-KA4B0-0343X

FT.Ex KTL 20-KA4B0-0344X

QT.Ex-M.... UKCA EPS 22 UKEX 1 225 X

FT.Ex-... UKCA EPS 22 UKEX 1 225 X

QT.Ex-M.... INMETRO DNV 21.0270 X

FT.Ex-... INMETRO DNV 21.0270 X

EAC
On request

II2(1)G Ex db eb ib mb [ia Ga] IIC T4 Gb
II2(1)D Ex tb [ia Da] IIIC T130°C Db
II2G Ex h IIC T4 Gb
II2G Ex h IIC T4 Gb
II1/2G Ex ia IIC T6..T1 Ga/Gb
II1/2D Ex ia IIIC T80-T130°C Da/Db

II2(1)G Ex db eb ib mb [ia Ga] IIC T4 Gb
II2(1)D Ex tb [ia Da] IIIC T130°C Db
II2G Ex h IIC T4 Gb
II2G Ex h IIC T4 Gb
II1/2G Ex ia IIC T6..T1 Ga/Gb
II1/2D Ex ia IIIC T80-T130°C Da/Db

Model	λsd	λsu	λdd	λdu	SFF	PFDavg	PFH	PFDavg (1oo2)	PFH (1oo2)
QT.Ex-M with Sensor FT.Ex	0 FIT	920 FIT	0 FIT	446 FIT	67,3%	1,96x10 ³	4,46x10 ⁻⁷	2,02x10 ⁻⁴	4,60x10 ⁻⁸

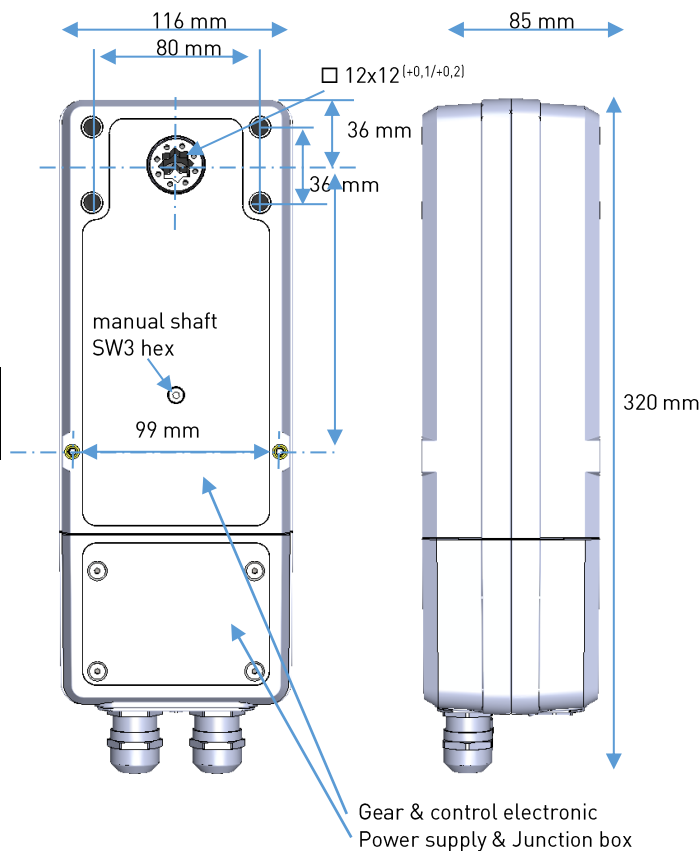
1) FIT = 1 failure/10⁹ hours is the unit of failure rate.

2) For 1oo2 architecture, common cause failure rate c = 10%.

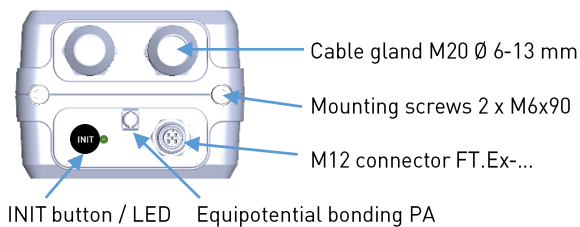
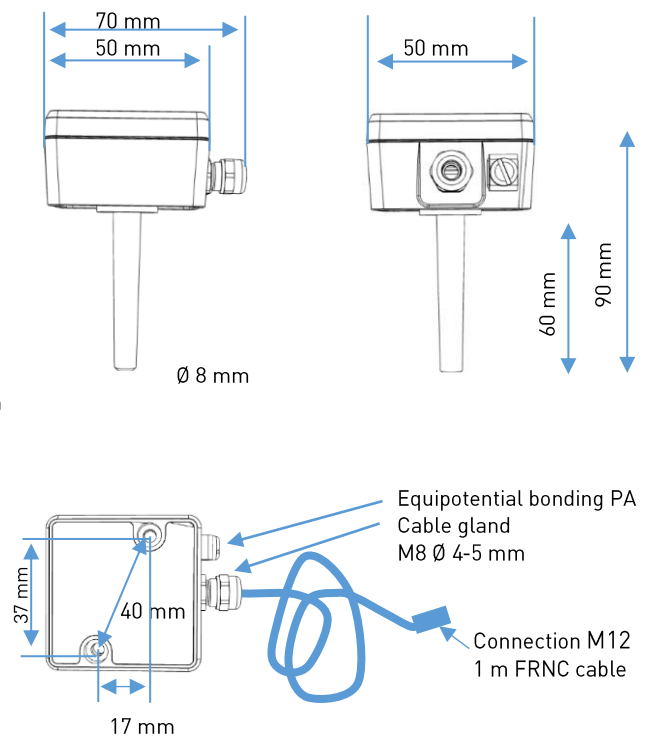
3) Tproof = 1 year.

4. Dimensions

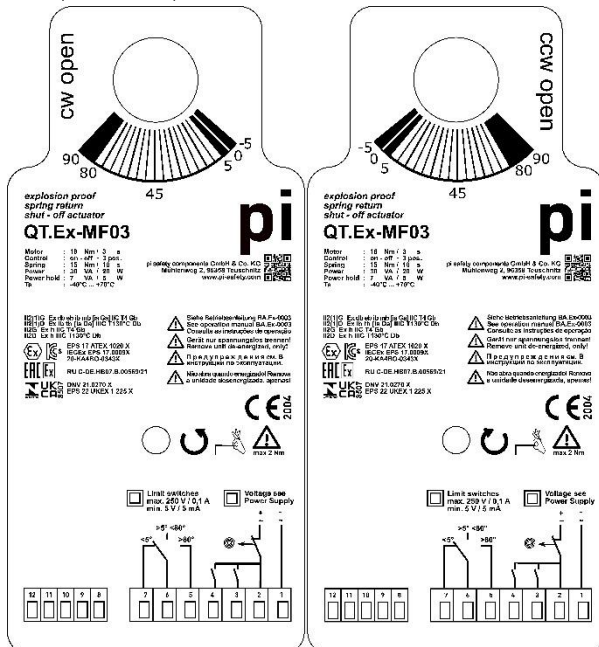
QT.Ex (ACTUATOR)



FT.Ex-.... (THERMAL FIRE TRIGGER)



Example of nameplate QT.Ex-MF03



Example of nameplate FT.Ex-72



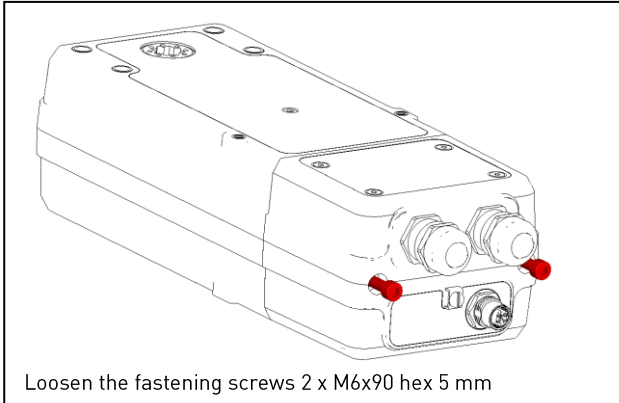
5. Mounting / Installation

In the delivery state, the power supply unit is installed (terminal box cover at the top), that the actuator runs clockwise UP and the counterclockwise CLOSE. By rotating the gear unit, the rotational direction / spring return direction of e.g. left (counterclockwise) to the right (clockwise). If this is necessary, proceed according to the next step, otherwise the installation follows.

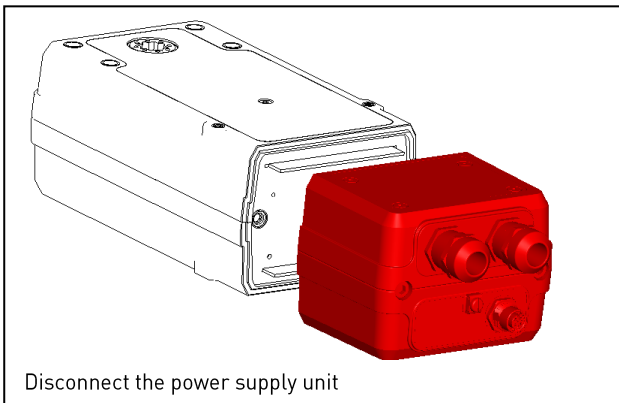
ELEKTRONIC UNLOC



Disconnect and check the voltage

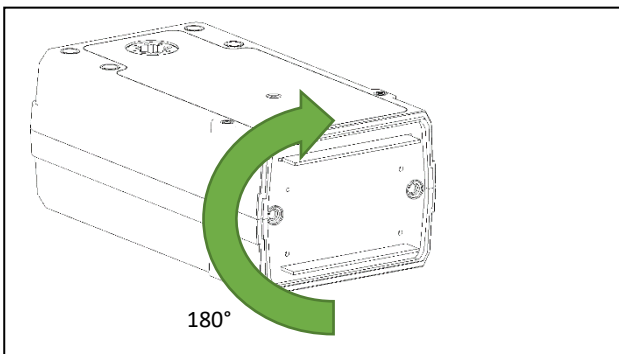


Loosen the fastening screws 2 x M6x90 hex 5 mm



Disconnect the power supply unit

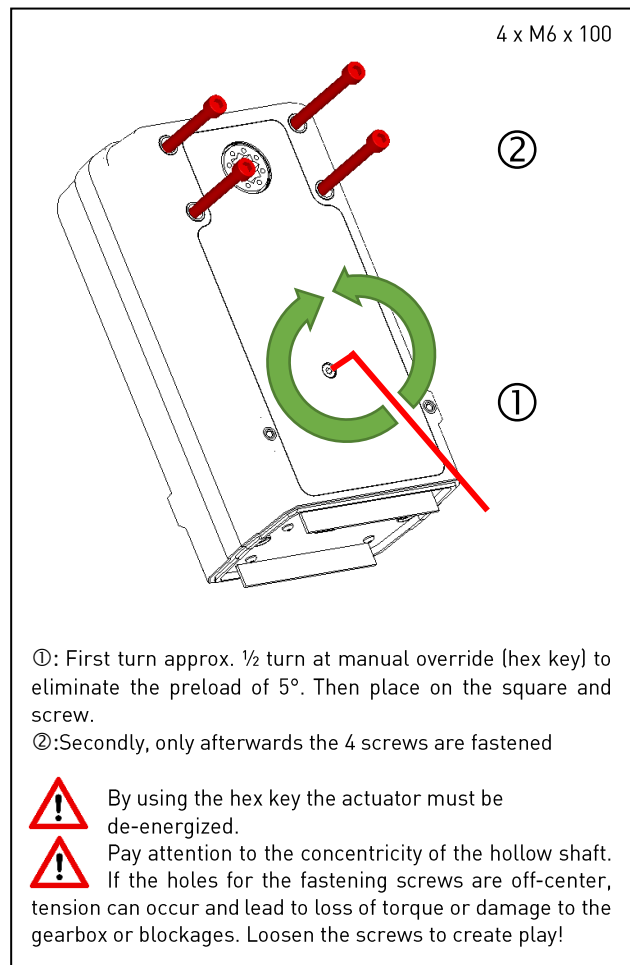
ROTATION OF ACTUATOR CW / CCW



180°

DIRECT MOUNTING

Regard the rotation of the actuator and the valve / valve during assembly.



①: First turn approx. 1/2 turn at manual override (hex key) to eliminate the preload of 5°. Then place on the square and screw.

②: Secondly, only afterwards the 4 screws are fastened

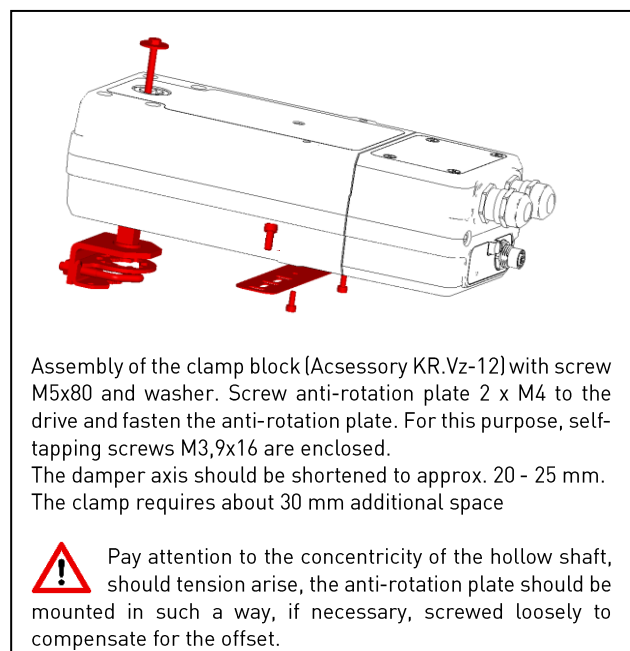


By using the hex key the actuator must be de-energized.



Pay attention to the concentricity of the hollow shaft. If the holes for the fastening screws are off-center, tension can occur and lead to loss of torque or damage to the gearbox or blockages. Loosen the screws to create play!

CLAMP ASSEMBLY



Assembly of the clamp block (Accessory KR.Vz-12) with screw M5x80 and washer. Screw anti-rotation plate 2 x M4 to the drive and fasten the anti-rotation plate. For this purpose, self-tapping screws M3,9x16 are enclosed.

The damper axis should be shortened to approx. 20 - 25 mm. The clamp requires about 30 mm additional space



Pay attention to the concentricity of the hollow shaft, should tension arise, the anti-rotation plate should be mounted in such a way, if necessary, screwed loosely to compensate for the offset.

ELECTRICAL CONNECTION

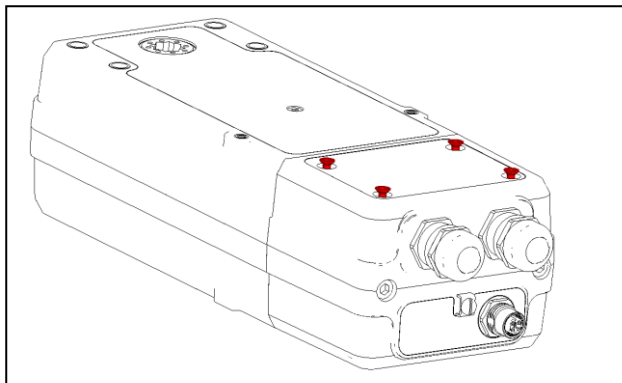
The integrated electrical connection compartment in type of protection Ex e enables direct contacting of the supply, internal auxiliary switches and the analog signals. Acc. to IEC 61010-1, in the event of a fault before an impermissibly high current consumption, the device is e.g. secured with a fuse (> 2 A slow blow). Protect all lines against overload, short-circuit or fault currents in order to achieve maximum safety. The device must be connected to the equipotential bonding (PA), an external connection is available for this. The gear unit is connected to the (PA) by means of fastening screws.

Regard the voltage drop in case of 24 VAC/DC supply
The line resistance of the supply and return lines must not exceed 3 Ohm. Example: 100 m cable length, cable cross-section 1.5 mm². Copper (0.01678 Ohm / mm² m),

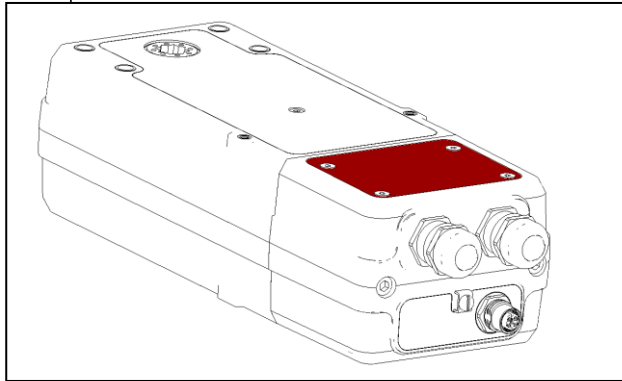
$$R = 2 \times \frac{L \times \rho}{A} = 2 \times \frac{100 \text{ m} \times 0,01678 \text{ Ohm/mm}^2}{1,5 \text{ mm}^2} = 2,24 \text{ Ohm} < 3 \text{ Ohm} \quad \text{OK}$$



- Disconnect and check the voltage
- Check the power supply voltage, which corresponds to the power supply label
- Loosen the screws M4 of the cover



- Open cover

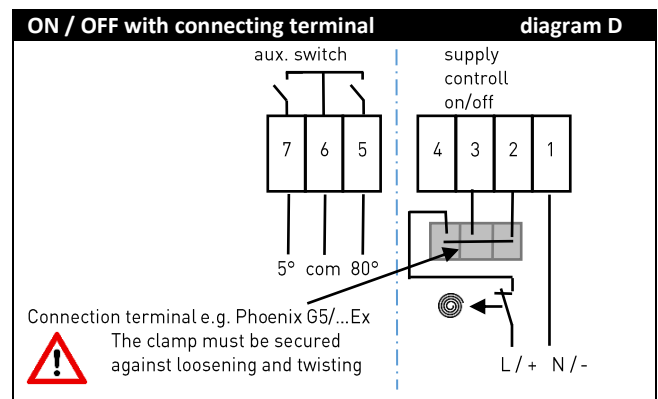
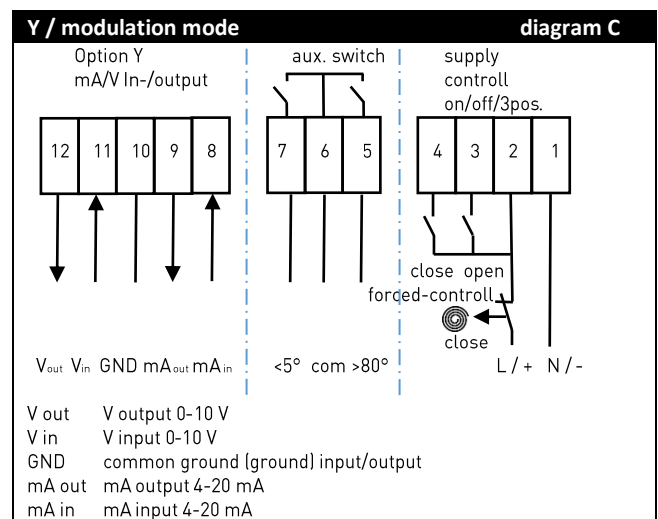
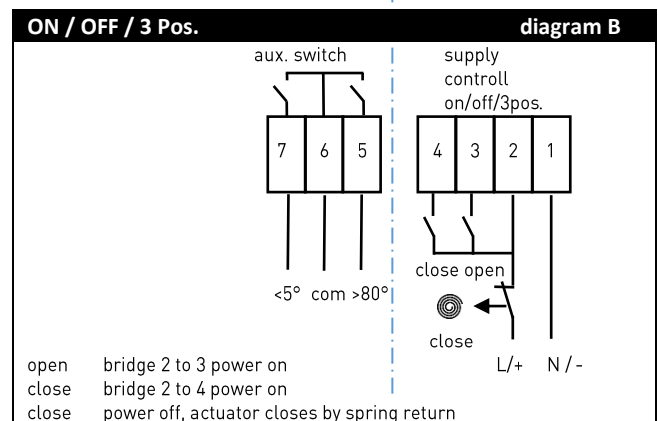
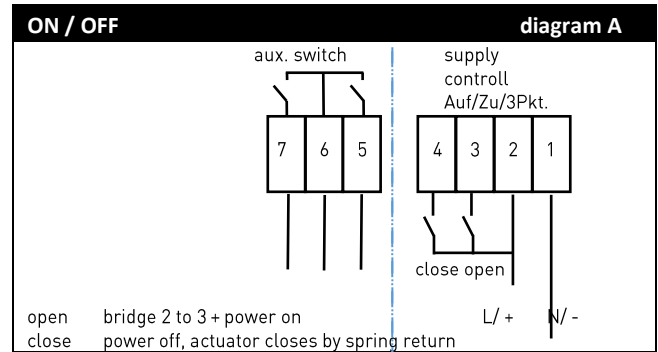


- Remove the cable gland protection
- Insert the cable
- Strip insulation (6 mm)
- Open the clamp by pressing with a screwdriver
- Insert the wire (s)
- Remove the screwdriver
- Close the cover
- An Tighten the cable glands
- Close unused opening with blind plugs



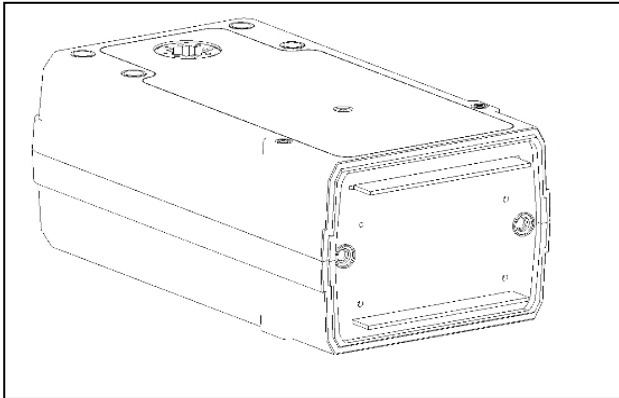
The supply, auxiliary switches and outputs are galvanically isolated, which offers a high degree of interference immunity. However, exchanging the connections can destroy the electronics.

WIRING DIAGRAMS

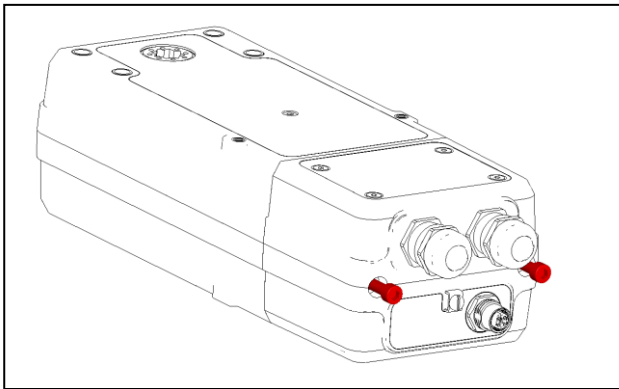


ELEKTRONIC LOOK

- attach the electronics carefully
- lock it together

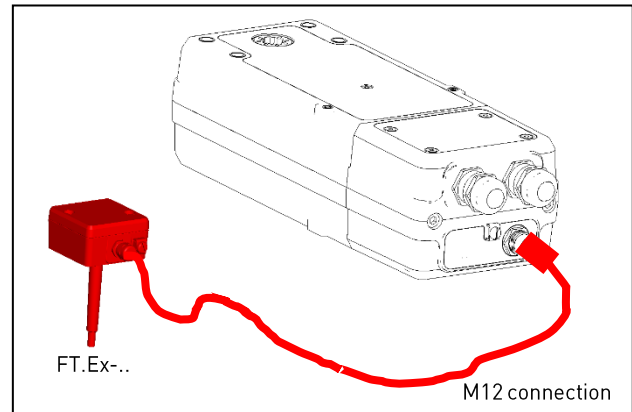


- Tighten the fastening screws. max. 3 Nm



Make sure that the gear unit and power supply unit are tightly closed when screwed together to prevent water or dust from entering.

MOUNTING THERMO TRIGGER FT.EX-...



The function of the thermal release takes place via the voltage of the actuator



If the "Test" button is pressed for longer than 3 s, the actuator moves to the safety position. A voltage reset (power off) must then be carried out in order to acknowledge the locking.



Only connect original parts from the manufacturer!

6. Commissioning

Ensure that the unit has been properly installed and connected in accordance with the chapters before, and that the voltage supply matches the specifications on the nameplate.

Switch on the power supply the device is ready for operation.

 When the damper/flap/valve is first commissioned, the setting angle must be set by pressing the (INIT) button for 3 seconds. The actuator does this in an OPEN and CLOSE cycle. This causes the motor to start gently or brake when the spring returns to the end positions. Failure to do this will lead to premature wear and possibly gear damage. With Y-actuator, the 0-10V/4-20mA inputs and outputs are also calibrated to the angle of rotation.

With control actuators, also pay attention to how often the actuator moves. Controlling for too short or too fast can also lead to premature wear.

7. Manual operation

The actuator can only be manually operated (3 mm hexagon) in the de-energized state and moved in any position. If the manual override is used when the supply voltage is applied, the motor will try to work against the force of the manual adjustment. Too large forces can be a mechanical destruction.

There is no automatic unlocking of the manual adjustment.

 The hexagon key is to be removed in motor / spring operation, otherwise there is a risk of injury

Use manual hex key only, do not use any electrically operated devices such as a cordless screwdriver.

8. Internal auxiliary switch

The actuator has two fixed microswitches for end position feedback. The electrical contacts of these microswitches have a special alloy that is suitable for lower (mA range) currents. When using, make sure that the contacts can no longer be used in the lower (mA range) after a single use with larger currents.

9. Heating

 When operating at low temperatures (-20°C ... -40°C), the actuator requires up to 30 minutes to heat up. If the actuator is then under continuous voltage, the heating automatically regulates the power. An integrated thermostat switches off the heating.

Please note that the actuator must not be operated below -40°C without power supply.

When used in extreme low temperatures, we recommend an additional housing, which additionally isolates the actuator and encases it even more robustly by using stainless steel. See accessories

 When using the thermal jacket (TJ.Va-M), make sure that it is an insulating housing and the heat by the self-heating convection no longer takes place. The permissible continuous operating temperature of the actuator is reduced to +40°C instead of +70°C. Duty cycle S6 10%.

10. Troubleshooting

No rotary movement of the output shaft

- Check power supply
- Check the power supply module with the gear module has been properly installed
- Check the direction of rotation of the valve / fitting and that of the actuator
- Check the wiring diagram. The actuator requires a contact for the run command.
Bridge from 2 to 3 OPEN
Bridge from 2 to 4 CLOSE

LED displays

- Duration green normal operation
- Blink 0.75 s on/off initialization run
- Blink 0.1 s on/off overtemperature electronics
- Blink 0.25 s 2x on/1 s off heating mode
- Blink 0.25 s 3x on/1 s off FT.Ex trigger triggered
- Blink 0.1 s on/1 s off Power supply reverse polarity with DC supply, terminals 1 and 2 are swapped
- Flash 0.1 s 2x on/1 s off Spring return
- Blink 0.1 s 3x on/1 s off FireTrigger locked Switch off power briefly
- Blink 0.25 s 4x on/1 s Blocked motor

11. Initialisierung

	ACTION	ACTUATOR	FUNCTION	DESCRIPTION
ADJUSTMENT				
	 3 s	QT.Ex-M...	INIT drive	Soft start , gentle block in end position
	 3 s	QT.Ex-M...Y	INIT drive	Soft start , gentle block in end position Calibrate outputs 0-10 V / 4-20 mA to angle of degree

12. Maintenance

The device is maintenance-free, a functional test and regular cleaning of dust and dirt with a damp cloth is recommended. The functional check (open-close) increases safety. A monthly functional check is to be carried out. The actuators are designed according to the specification for regular function checks. Notes on the regular function check can be found in the European Product Standard. Furthermore, other requirements such from the operating instructions of the damper/valve manufacturer are to be followed.

13. Repair

Return of a device to claim services. The installation and operation of the QT.Ex in accordance with this manual are very unproblematic. Should the unlikely event occur that a device has to be returned for repair or testing to our service department, a return form is provided under "service address" on the last page.

14. Demounting

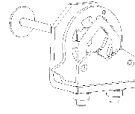
- Disconnect and check the voltage
- Open the screw terminal box cover 4x
- Remove the cable
- Loosen screws of gear unit
- Pull out the electronics module
- Loosen the screws of the gear unit
- Remove the gearbox assembly

15. Disposal

Every year, thousands of tons of polluting electronic components land on landfills around the world. To ensure the best possible disposal or recovery of electronic components, the European Union has adopted the WEEE Directive. (Waste Electrical and Electronic Equipment) Please return these products directly to us at the end of their lifecycle so that we can dispose of them properly. The WEEE is an important contribution to the environment and we are happy to help protect the environment with this disposal concept.

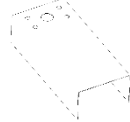
16. Accessories

KR.Vz-12



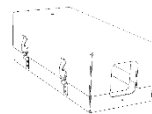
clamping block for axles Ø 10-20 mm,
□ 10-16 mm incl. anti-twist lock plate steel
galvanized

WS.Va-M



Weather shield as additional protection under
wet or adverse conditions made of stainless
steel

TJ.Va-M



Thermo jacket as additional protection under
cold conditions made of stainless steel



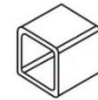
Note
chapter 9 Heating

FT.Ex-72/ -95



Thermal Fire Trigger 72°C resp. 95°C
for Fire Damper Actuators QT.Ex-MFD..

AH-12-08
AH-12-10



Reducing adapter 12 mm to 8
resp. 10 mm

Revision

VERSION	DATE	SUPPLEMENT / CHANGE / REMARK
01	09.12.2017	first edition
02	02.01.2019	accessories, corrections
03	12.12.2019	name
04	14.08.2020	QT rev. 02
05	29.01.2021	QT.Ex-M operating concept/trigger solution
06	08.05.2023	Certification update INMETRO, KTL, UKCA
07	18.04.2024	QT-M operating concept/trigger solution

EN

EN

EU / UK Konformitätserklärung

EU / UK Declaration of Conformity

Déclaration de Conformité UE / UK

pi safety components GmbH & Co. KG ▪ Mühlenweg 2 ▪ 96358 Teuschnitz / Haßlach ▪ Germany

erklärt als Hersteller in alleiniger Verantwortung, dass das Produkt
declares as manufacturer under sole responsibility, that the product
déclare sous sa seule responsabilité en qualité de fabricant que le produit

QT.Ex-M...

FT.Ex-...

den Vorschriften folgender Europäischer Richtlinien durch Anwendung harmonisierter Normen entspricht:
conforms with the provisions of the following European Directives by applying the harmonised standards:
est conforme aux prescriptions des Directives Européennes suivantes par l'application des normes harmonisées :

Richtlinien/Directives/Directives	Normen/Standards/Normes	Ex-Normen/Ex-Standards/Normes Ex
2014/35/EU (LVD)	EN 61010-1:2010+A1:2019	EN IEC 60079-0:2018
2014/30/EU (EMC)	EN 60529:1991+A1:2000+A2:2013	EN 60079-1:2014
2014/34/EU (ATEX)	EN 61326-1:2013	EN IEC 60079-7:2015+A1:2018
2012/19/EU (WEEE)	EN 61326-2-3 :2013	EN 60079-11:2012
2011/65/EU (RoHS)	EN 55011:2016 Class A	EN 60079-18:2015+A1 2017
Regulation 2016 No. 1107 (Hazloc)	EN IEC 63000:2018	EN 60079-31:2014
Regulation 2016 No. 1091 (EMC)	ISO 10294-4:2001	EN 80079-36:2016
Regulation 2019 No. 696 (Safety)		EN 80079-37:2016

EU / UK-Baumusterprüfbescheinigung Nr:
EC / UK-Type Examination Certificate No:
Numéro de l'attestation d'examen CE / UK de type:

EPS 17 ATEX 1 020 X
EPS 22 UKEX 1 255 X

Kennzeichnung Identification Marquage	QT.Ex-M...	II 2(1)G Ex db eb ib mb [ia Ga] IIC T4 (Gb) II 2(1)D Ex tb IIIC 130°C (Db) II 2G Ex h IIC T4 (Gb) II 2D Ex h IIIC 130°C (Db)
	FT.Ex-...	II 1/2G Ex ia IIC T6...T1 (Ga/Gb) II 1/2D Ex ia IIIC T75...T130°C (Da/Db)
Kennzeichnung Identification Marquage	QT.Ex-M... GEN.2	II 2G Ex db eb mb IIC T4 (Gb) II 2D Ex tb IIIC 130°C (Db) II 2G Ex h IIC T4 (Gb) II 2D Ex h IIIC 130°C (Db)
	FT.Ex-... GEN.2	II 2G Ex mb IIC T6...T1 (Gb) II 2D Ex mb IIIC T75...T130°C (Db)

Benannte Stelle Qualitätssicherung
Notified Body Quality assurance
Organisme Notifié Système d'assurance qualité

Bureau Veritas / 2004 (ATEX)
Bureau Veritas / 8507 (UKEX)

pi safety components GmbH & Co. KG
Nürnberg, den 18.04.2024

Rolf Petz
Geschäftsführer / Managing director / Le Directeur

Contact Information

EN

EN

Company Information

FERTIGUNG / PRODUCTION

pi safety components GmbH & Co. KG
Mühlenweg 2
96358 Teuschnitz / Hasslach
Germany
Phone +49 9268 971 0
Email info@pi-safety.com
Internet www.pi-safety.com

VERTRIEB / SALES

pi safety components GmbH & Co. KG
Flachslander Straße 8
90431 Nürnberg
Germany
Phone +49 911 658 18 83
Email sales@pi-safety.com
Internet www.pi-safety.com

AUFTRAGSABWICKLUNG / ORDERING

pi safety components GmbH & Co. KG
Mühlenweg 2
96358 Teuschnitz / Hasslach
Germany
Phone +49 9268 971 14
Email order@pi-safety.com
Internet www.pi-safety.com

SERVICE / SUPPORT

Phone +49 911 658 18 82
Phone +49 911 658 18 83
Email service@pi-safety.com

