



EN

symbol picture

1/4 turn actuators
for hazardous
locations, areas

EASY - SAFE – SMART

- Explosion proof certified for gases and dusts
- ATEX / IECEx / UKEX / KC / INMETRO / ECAS-Ex
- Easy plug-in mounting
- Quick and safe installation
- Axis mount 12 x 12 mm
- Terminal box Ex e integrated
- Temperature range -40°C... +70° C ...F02 Types -40°C...+60°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

BA.0003-08.EN

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



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 του προιουτπου με ATEX Ex διατιθενται στα Αγγλικά, Γερμανικά και Γαλλικά. Σε περίπτωση που χρειάζεστε οδηγίες σχετικά με Ex στην τοπική γλώσσα παρακαλούμε επικοινωνήστε με το πλησιέστερο γραφείο της ή αντιπροσωπο 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 nevýbušné schválení ATEX Ex, jsou dostupné v angličtině, němčině a francouzštině. Požadujete-li pokyny týkající se výrobků s nevýbušným 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 kéri 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 teikiama 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 ierīšu 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 bl-Ingliż, bil-Ġermaniż u bil-Franċiż. Jekk tkun tehtieg struzzjonijiet marbuta ma' Ex fil-lingwa lokali tiegħek, għandek tikkuntattja lill-eqreb rappreżentant jew uffiċċju 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

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SICHERHEITSHINWEISE / SAFETY NOTES / CONSIGNES DE SÉCURITÉ

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



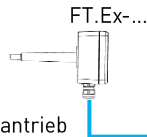
Sicherer Bereich
Safe area
Zone de sécurité



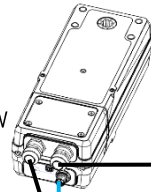
FT.Ex-...
Ta (T6) -40°C...+75°C
Ta (T5) -40°C...+90°C
Ta (T4-T1) -40°C...+125°C

QT.Ex
Ta (T4) -40°C ... +70°C

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



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



Netzteil / Powersupply / Alimenter 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.

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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.

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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 dismounting



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 clocked 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°. Note: Ta: max +60°C

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 industrial 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-MF... SPRING RETURN

	TYPES	VOLTAGE	SPRING	MOTOR	CONTRROLL	FEEDBACK
Universal spring return	QT.Ex-MF10-SL	20 - 70 VAC/DC	18Nm/10s	18 Nm/15s	On/Off/3Pos	Limit switch 5°/80°
10 s closing time	QT.Ex-MF10-SH	85 -250 VAC	18Nm/10s	18 Nm/15s	On/Off/3Pos	Limit switch 5°/80°
quick spring return	QT.Ex-MF03-SL	20 - 70 VAC/DC	15 Nm/3s	18 Nm/15s	On/Off/3Pos	Limit switch 5°/80°
3 s closing time	QT.Ex-MF03-SH	85 -250 VAC	15 Nm/3s	18 Nm/15s	On/Off/3Pos	Limit switch 5°/80°
Fast spring return	QT.Ex-MF02-SL	20 - 70 VAC/DC	12 Nm/2s	12 Nm/15s	On/Off	Limit switch 5°/80°
2 s closing time	QT.Ex-MF02-SH	85 -250 VAC	12 Nm/2s	12 Nm/15s	On/Off	Limit switch 5°/80°
Y-controll	QT.Ex-MF10Y-SL	20 - 70 VAC/DC	18 Nm/10s	18 Nm/15s	0-10V/4-20mA	Limit switch 5°/80°/0-10V/4-20mA
10 s closing time	QT.Ex-MF10Y-SH	85 -250 VAC	18 Nm/10s	18 Nm/15s	0-10V/4-20mA	Limit switch 5°/80°/0-10V/4-20mA
Fire Damper Actuator	QT.Ex-MFD10-SL	20 - 70 VAC/DC	18 Nm/10s	18 Nm/15s	On/Off Firetrigger	Limit switch 5°/80°
10 s closing time	QT.Ex-MFD10-SH	85 -250 VAC	18 Nm/10s	18 Nm/15s	On/Off Firetrigger	Limit switch 5°/80°
Fire Damper Actuator	QT.Ex-MFD03-SL	20 - 70 VAC/DC	15 Nm/3s	18 Nm/15s	On/Off Firetrigger	Limit switch 5°/80°
3 s closing time	QT.Ex-MFD03-SH	85 -250 VAC	15 Nm/3s	18 Nm/15s	On/Off Firetrigger	Limit switch 5°/80°
Fire Damper Actuator	QT.Ex-MFD02-SL	20 - 70 VAC/DC	12 Nm/2s	12 Nm/15s	On/Off Firetrigger	Limit switch 5°/80°
2 s closing time	QT.Ex-MFD02-SH	85 -250 VAC	12 Nm/2s	12 Nm/15 s	On/Off Firetrigger	Limit switch 5°/80°

*Spring return by thermal fuse release FT.Ex...(FireTrigger)

QT.EX-M... NON SPRING RETURN

	TYPES	VOLTAGE	SPRING	MOTOR	CONTRROLL	FEEDBACK
Universal	QT.Ex-M-SL	20 - 70 VAC/DC	without	50 Nm/15s	On/Off/3Pos	Limit switch 5°/80°
	QT.Ex-M-SH	85 -250 VAC		50 Nm/15s	On/Off/3Pos	Limit switch 5°/80°
Y-controll	QT.Ex-MY-SL	20 - 70 VAC/DC	without	40 Nm/15s	0-10V/4-20mA	Limit switch 5°/80°/0-10V/4-20mA
	QT.Ex-MY-SH	85 -250 VAC		40 Nm/15s	0-10V/4-20mA	Limit switch 5°/80°/0-10V/4-20mA
Y-controll	QT.Ex-MYQ-SL	20 - 70 VAC/DC	without	10 Nm/5 s	0-10V/4-20mA	Limit switch 5°/80°/0-10V/4-20mA
quick	QT.Ex-MYQ-SH	85 -250 VAC		10 Nm/5 s	0-10V/4-20mA	Limit switch 5°/80°/0-10V/4-20mA
Y-Steuerung	QT.Ex-MYSQ-SL	20 - 70 VAC/DC	without	5 Nm/3 s	0-10V/4-20mA	Limit switch 5°/80°/0-10V/4-20mA
Super quick	QT.Ex-MYSQ-SH	85 -250 VAC		5 Nm/3 s	0-10V/4-20mA	Limit switch 5°/80°/0-10V/4-20mA

POWER SUPPLY

Voltage	See type list..... -SL	20...70 V AC/DC
	-SH	85...250 V AC
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	isolated

ELECTRICAL CONNECTION

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

LIMIT SWITCHES SPST (NORMAL OPEN)

Voltage	5 ... 250	V
Current	5 ... 1000	mA
Switch points approx.	5 / 80	°

INPUT / OUTPUT MODULATING CONTROLL (OPTION Y)

Voltage/Current	0 - 10 / 4 - 20	V DC / mA
Contrroll accuracy	0,2	°
Contrroll cycles	max.1 Mio.	Motor starts

CONTRROLL / DUTY CYCLE

ON/OFF/3p		2 cycles / 10 min	S1 - 20%
ON/OFF	F02 Types	@-40°C...+50°C @ +50°C...+60°C	2 cycles / 10 min 1 cycles / 1 hour
Y			S6 - 80%

HOUSING

High Tech Polymer	Plastic PC, halogene, silicone	frei
Housing protection	IP66 for outdoor application use weather shield	

GENERAL

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

MATERIALIEN

Housing	High Tech Polymer	conductive
Screws	Stainless steel	
Seals	EPDM, TPU	
Cable glands	Brass nickel-plated	
Gear wheels	steel / Sinterstahl vergütet	
Output shaft double square	12 x 12, steel	mm

APPLICATION AREA

Ambient temperature and storage	-40 ... +70	°C
Ambient temperature and storage F02 actuators	Regard duty cycle-40 ... +60	°C
Humidity, without condensation	0 ... 90	%r.F.

Mounting position, altitude	any, < 2000 m
Maintenance	maintenance free, time lubrication
Corrosion resistance	On-/offshore
DELIVERY	
QT.Ex-..	
Fastening screws 2 x M6x100 incl. nut stainless steel, Allen key SW3, pointer 12 mm	

FT.Ex-72-... THERMAL TRIGGER UNIT

Accessory for QT.Ex-MFD.. actuators

TYPES AND TEMPERATURE 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
SHORT CIRCUIT MONITORING			
Cable		shielded	
Electronic		Voltage monitoring	
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	I12(1)G Ex db eb ib mb [ia Ga] IIC T4 Gb I12(1)D Ex tb [ia Da] IIIC T130°C Db I12G Ex h IIC T4 Gb I12G Ex h IIC T4 Gb I11/2G Ex ia IIC T6..T1 Ga/Gb I11/2D Ex ia IIIC T80-T130°C Da/Db
	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	I12(1)G Ex db eb ib mb [ia Ga] IIC T4 Gb I12(1)D Ex tb [ia Da] IIIC T130°C Db I12G Ex h IIC T4 Gb I12G Ex h IIC T4 Gb I11/2G Ex ia IIC T6..T1 Ga/Gb I11/2D Ex ia IIIC T80-T130°C Da/Db
	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	
		ECAS-Ex		

SIL Ratings 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

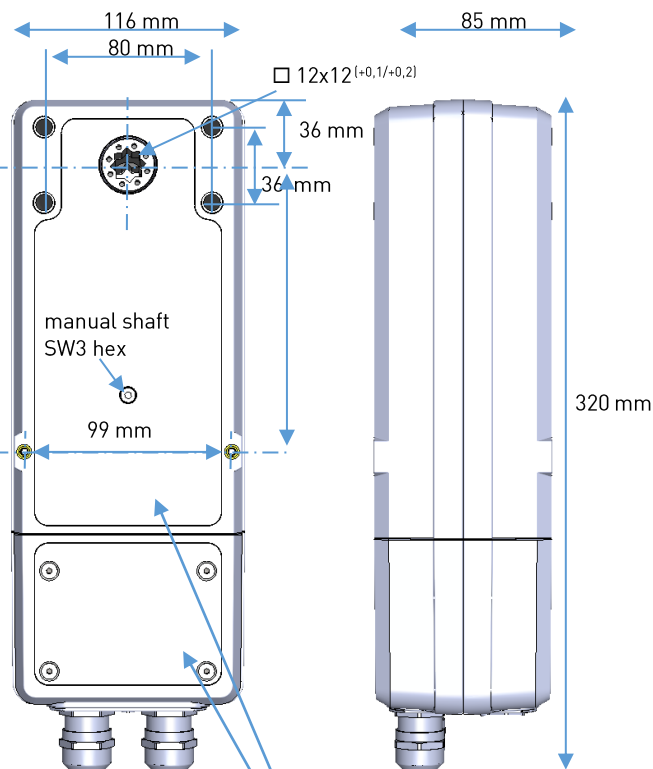
1) FIT = 1 failure/10⁹ hours is the unit of failure rate.

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

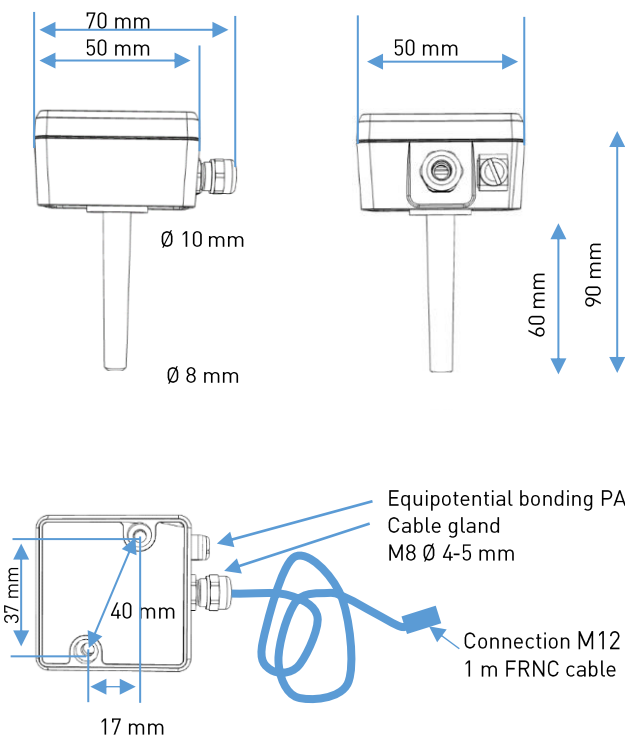
3) Tproof = 1 year.

4. Dimensions

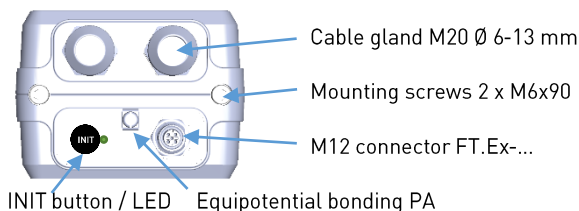
QT.Ex (ACTUATOR)



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

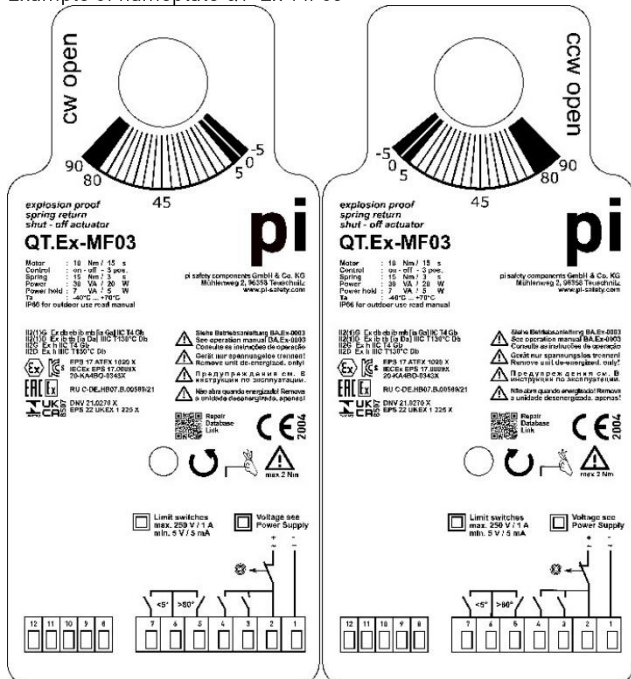


Gear & control electronic
Power supply & Junction box

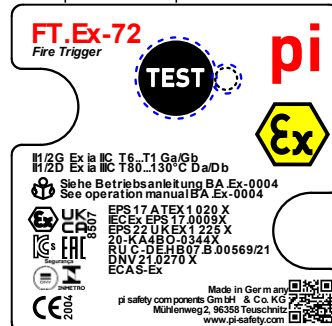


INIT button / LED Equipotential bonding PA

Example of nameplate QT.Ex-MF03



Example of nameplate FT.Ex-72



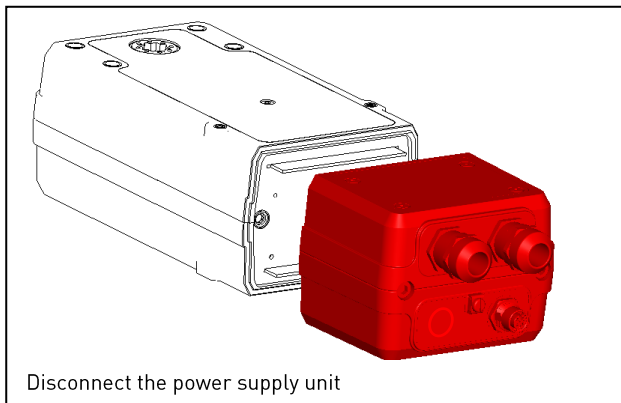
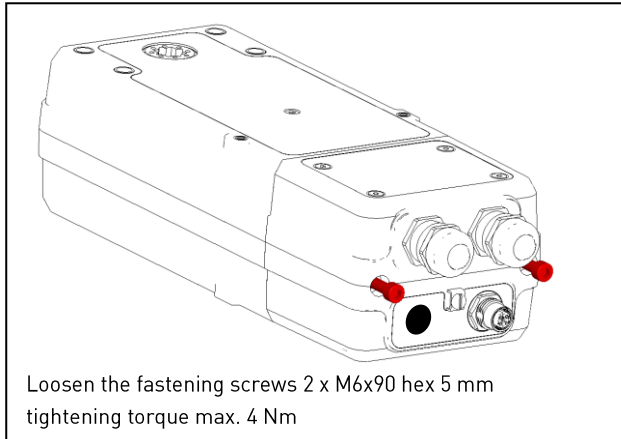
5. Mounting / Installation

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

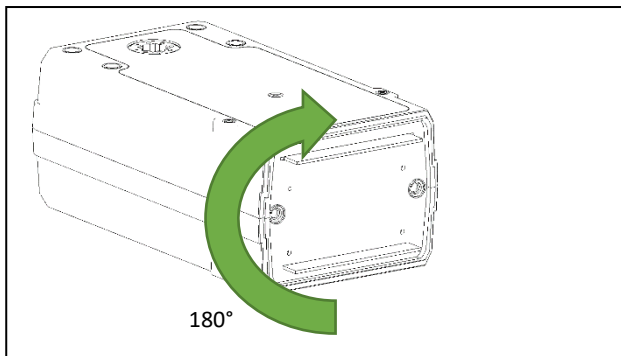
ELEKTRONIC UNLOC



Disconnect and check the voltage

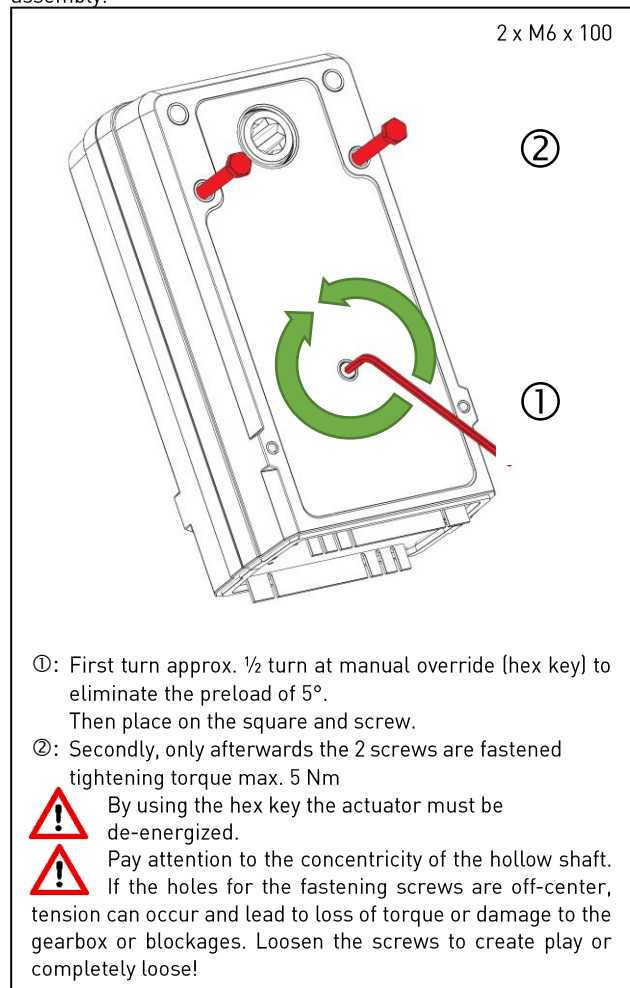


ROTATION OF ACTUATOR CW / CCW

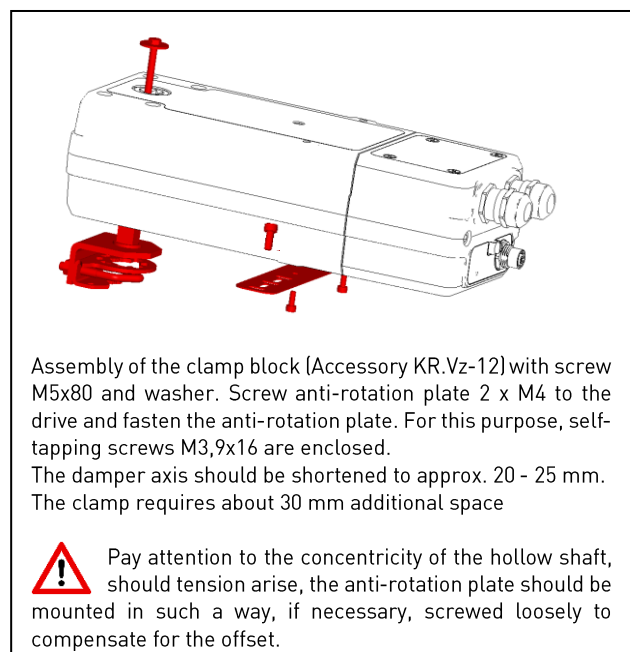


DIRECT MOUNTING

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



CLAMP ASSEMBLY



6. Electrical Connention

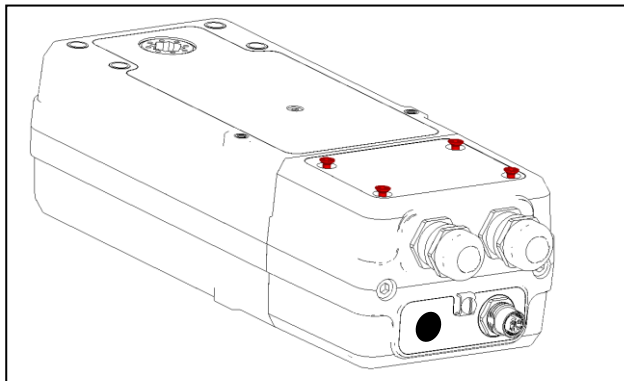
The integrated electrical connection compartment in type of protection Ex e enables direct contacting of the supply, internal auxiliary switches and the analog signals. Acc. to IEC / EN / UL 61010-1, in the event of a fault before an impermissibly high current consumption, the device is e.g. secured 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],

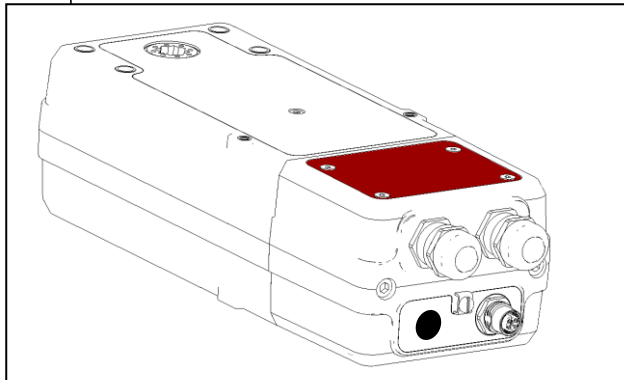
$$R = 2 \times \frac{l \times \rho}{A} = 2 \times \frac{100 \text{ m} \times 0,01678 \text{ Ohm/mm}^2}{1,5 \text{ mm}^2} = 2,24 \text{ Ohm} < 3 \text{ Ohm} \quad \text{OK}$$



- 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

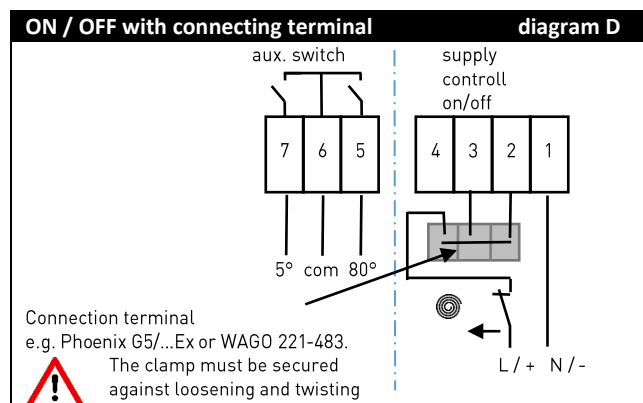
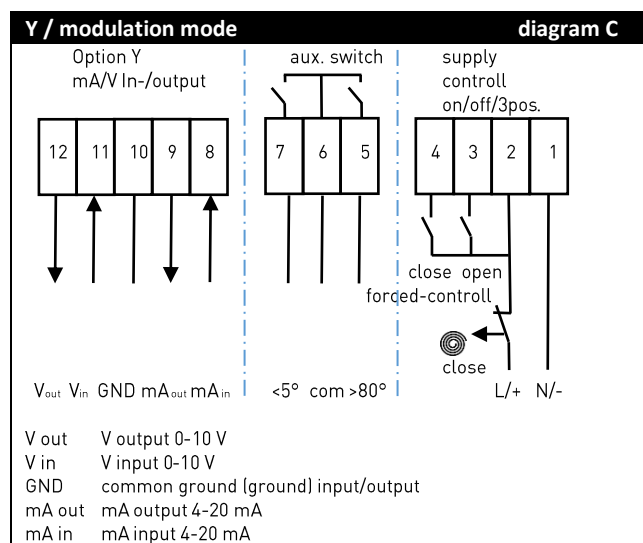
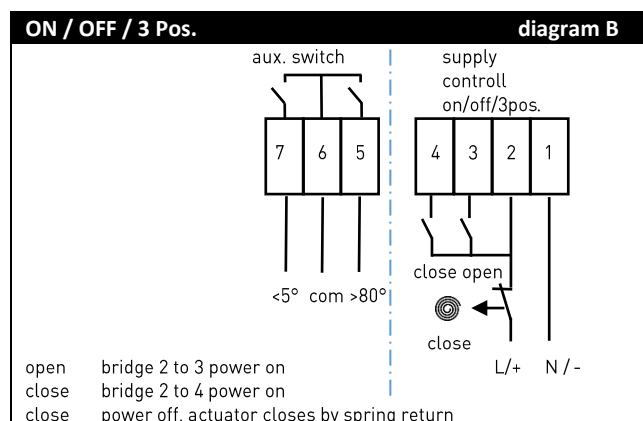
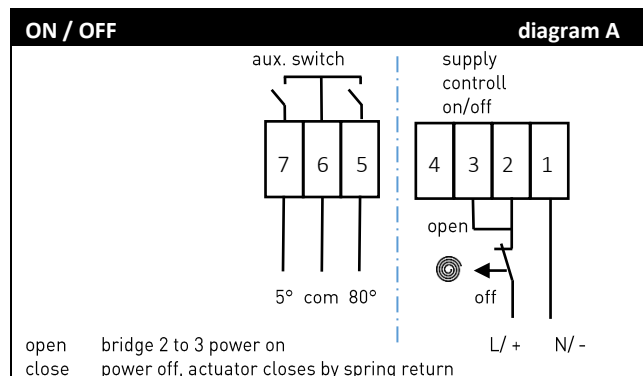


- Remove the cable gland protection
- Insert the cable
- Strip insulation (6 mm)
- Open the clamp by pressing with a screwdriver
- Insert the wire (s)
- Remove the screwdriver
- Close the cover
- An Tighten the cable glands
- Close unused opening with blind plugs



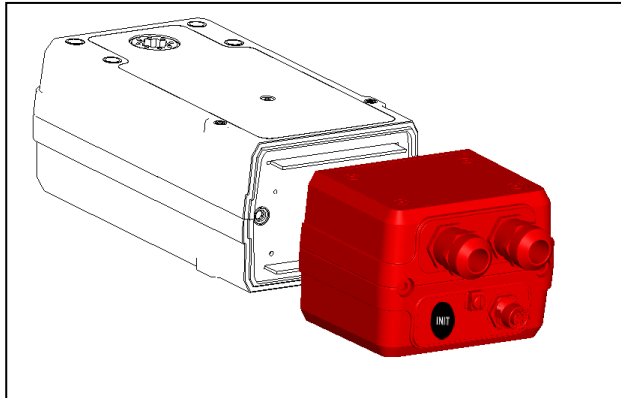
 The supply, auxiliary switches and outputs are galvanically isolated, which offers a high degree of interference immunity. However, exchanging the connections can destroy the electronics.

WIRING DIAGRAMS

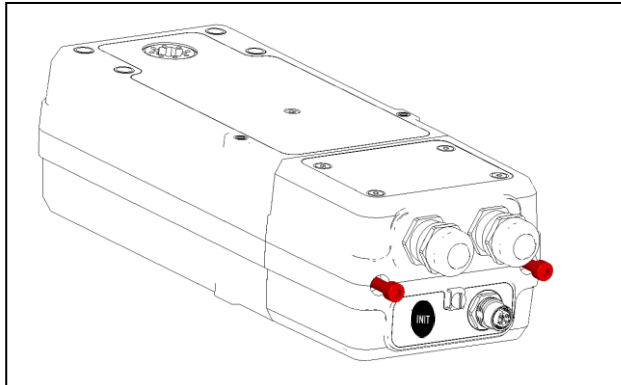


ELEKTRONIC LOOK

- attach the electronics carefully
- lock it together

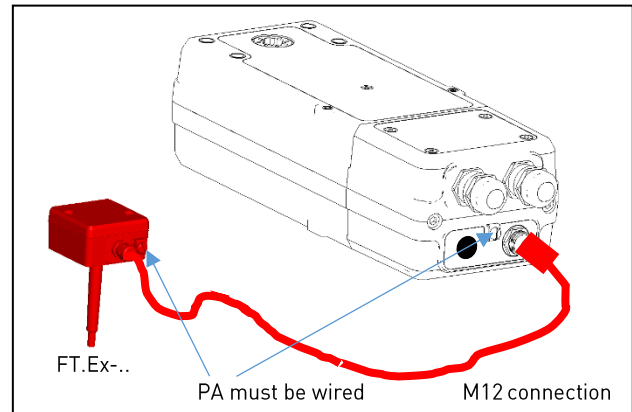


- Tighten the fastening screws. max. 3 Nm



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



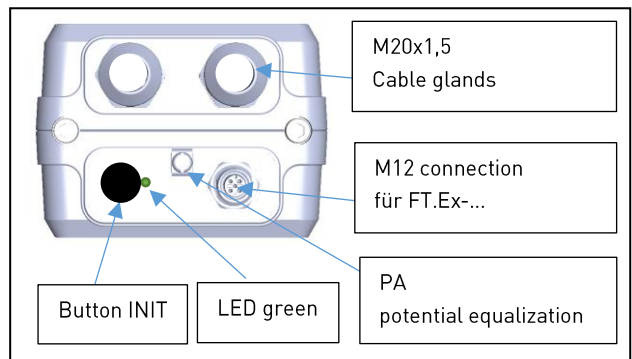
PA (potential equalization) must be connected



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 (>2 Nm) can be a mechanical destruction.

! The manual adjustment is not automatically unlocked.

! The hexagon key must be removed when the motor/spring is in operation, otherwise there is a risk of injury.

! Only use hexagon keys and no electrically operated devices such as cordless screwdrivers

8. Internal auxiliary switch

The actuator has two fixed microswitches for end position feedback. The contacts are used in NO (normally open). Means the aux. switch lower limit (-5° to 5°) closes at this angle and higher limit close at 80° to 90° and

The electrical contacts works from 5 to 1000 mA and 5 to 250 V. Furthermore 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% (1 on/off cycle within 10 min).

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

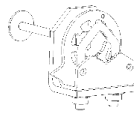
- Disconnect and check the voltage
- Open the screw terminal box cover 4x
- Remove the cable
- Loosen screws of gear unit
- Pull out the electronics module
- Loosen the screws of the gear unit
- Remove the gearbox assembly

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.

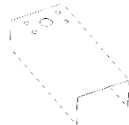
16. Accessories

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
08	25.07.2025	Elec. Diagrams, delivery state, F02 +60°C

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

EPS 17 ATEX 1 020 X
EPS 22 UKEX 1 255 X
DNV 21.0270 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 ib tb [ia Da] IIC 130°C (Db)
II 2G Ex h IIC T4 (Gb)
II 2D Ex h IIC 130°C (Db)

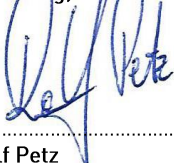
FT.Ex-...

II 1/2G Ex ia IIC T6...T1 (Ga/Gb)
II 1/2D Ex ia IIC T80...T130°C (Da/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

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