ROTEX ELECTRIC ACTUATOR

EHF-EQT Series
EHF-EMT Series

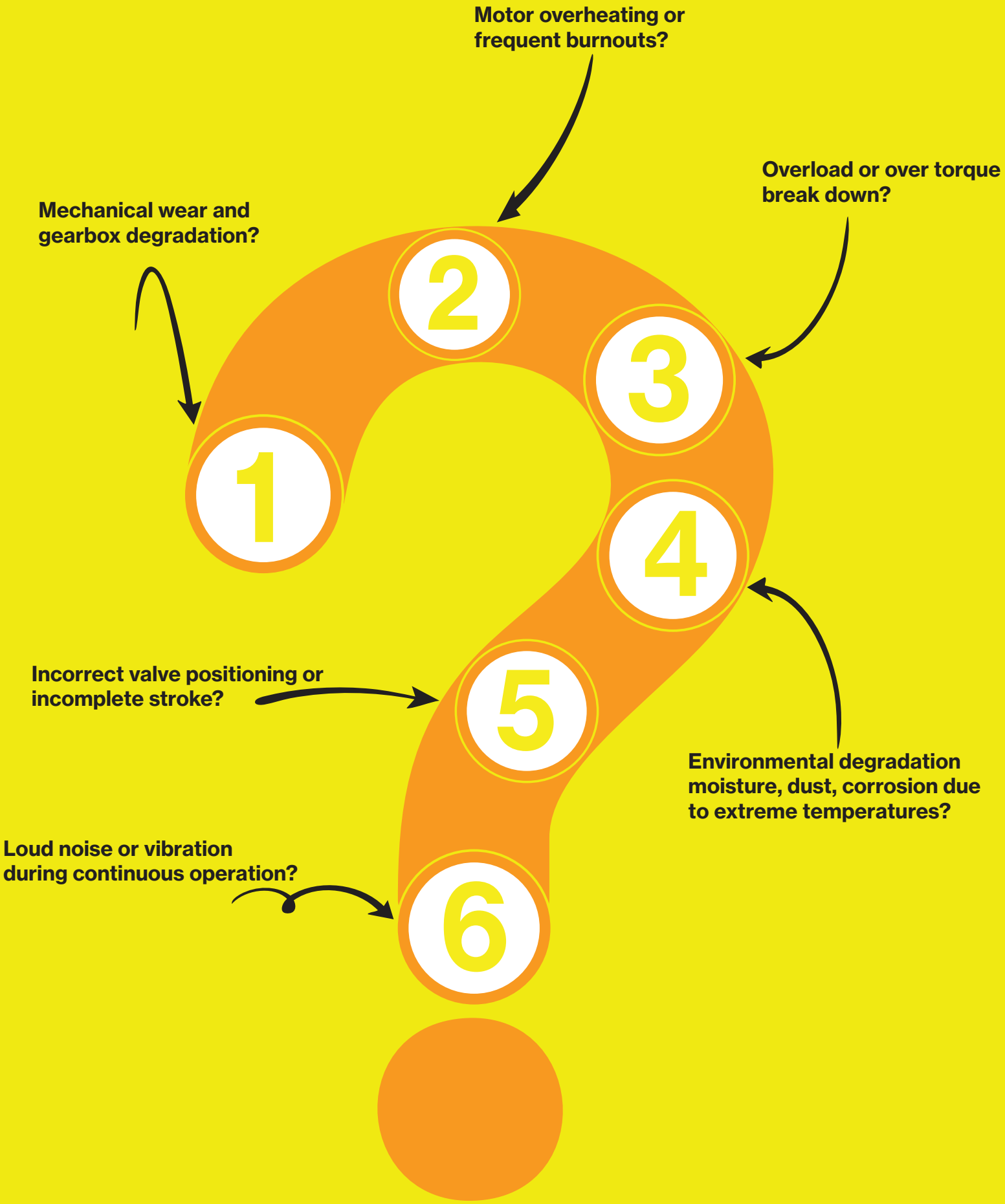
Trusted Tested Certified

IECEx ATEX CE PED CERTIFIED FIELDCOMM GROUP EAC

ROTEX

Engineering For The Future

Are you Encountering Setbacks With your Current Electric Actuator?


Motor overheating or frequent burnouts?
Overload or over torque break down?
Mechanical wear and gearbox degradation?
2
3
1
4
Incorrect valve positioning or incomplete stroke?
5
Environmental degradation moisture, dust, corrosion due to extreme temperatures?
Loud noise or vibration during continuous operation?
6

Excellent
Positioning accuracy

Energy Efficient

ELECTR

Clean & Quiet Operation

Digital feedback signals

Lower carbon footprint

IFYING

Smart features

High Reliability & Low Maintenance

ROTEX ELECTRIC ACTUATOR

ELM & ELQ SERIES
EQM & EQQ SERIES

Trusted Tested Certified

ATEX CE EAC

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MULTITURN ACTUATOR

UNIQUE FEATURES

- Position tracking even in case of power failure
- Lubricated mechanical drive always ensures smooth operation
- IP68 Protection
- Explosion proof to International standards
- Safe and reliable Manual over-ride available always
- Detachable thrust base enables easy installation and maintenance

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ROTEX ELECTRIC ACTUATOR

QUARTER TURN

UNIQUE FEATURES

- Position tracking even in case of power failure
- Lubricated mechanical drive always ensures smooth operation
- IP68 Protection
- Explosion proof to International standards
- Safe and reliable Manual over-ride available always

GRAPHICAL DISPLAY

- Large LCD display for better readability
- No abbreviation or short form used
- Operator may not need to refer manual for setting or calibration
- User friendly interface.
- On-screen display of diagnostics, alarms and error messages.
- Structured menu for parameters, setups and diagnostics

LOCAL CONTROL

- Lockable selector switches are provided on control module.
- The selector switch can be used for setting
- local/stop/remote selection and open/close.
- It can be used for configuration and for setting parameter
- Allows manual operation
- The red selector enables the operator to choose remote control, local control function and stop during operation

POSITION INDICATION LEDs

- 2 LEDs (red/green) indicate the position (close/open) at ends of travel
- Separate LED for indicating faults.
- During operation, LED blinks depending on open or close cycle
- Red and green LED can be freely assigned to open or closed positions

GLOWDAPT

- The entire dome lights up RED or GREEN, depending upon the position.
- The dome also glows WHITE for local control and BLUE for alarms.
- Shatter proof polycarbonate milky white dome.
- High luminous LED can be observed from a distance.

MULTI-TURN

- ROTEX EHF series actuators are equipped with encoder for position monitoring
- Operating times as per international standards, from 1 sec/inch up to 5 sec/inch

SAFETY

- ROTEX EHF series actuator has safety feature as built in priority.
- This increases overall process and personal safety.

TORQUE MEASUREMENT

- Actuator torque is measured based on torque sensor.
- It can detect over torque, low torque, "valve stuck" condition, etc if any.
- 4-20 mA feedback signal proportional to actual torque of the valve is available as an option.

POSITION MONITORING

- Potential free contacts available at built in separate Double Sealed Terminal Enclosure.
- Position feedback of 4-20 mA output signal

EMERGENCY SHUTDOWN

- On demand emergency shutdown is the primary feature.
- ROTEX EHF system is suitable for use in SIS function in accordance to IEC 61508:2010
- Suitable upto & including SIL 2 & SIL 3 capability.
- Can be configured through hardware for safety function or can be hardwired to perform fail-safe action.
- EHF can be configured to different failure requirements, please refer to the ordering code.
- On request, additional redundant solenoid valve can be provided.

QUARTER TURN

- ROTEX EHF series actuators are equipped with encoder for position monitoring
- 360° with freely rotating contactless feedback shaft.
- No dead angle. Can start anywhere and end anywhere.
- Contactless, high-resolution feedback

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DOUBLE SEAL COMPARTMENT

- Two barriers fitted with O-rings ensures optimum protection against water ingress into the electronic compartment.
- This protection remains effective even if the cover has not been closed properly or if the cable glands have not been tightened, due to the additional seal provided around the terminal box inside the cover.
- Protection is also ensured for the local control selectors thanks to internal reed switches which prevent moisture ingress.
- Designed as per IECEx 60079-7.

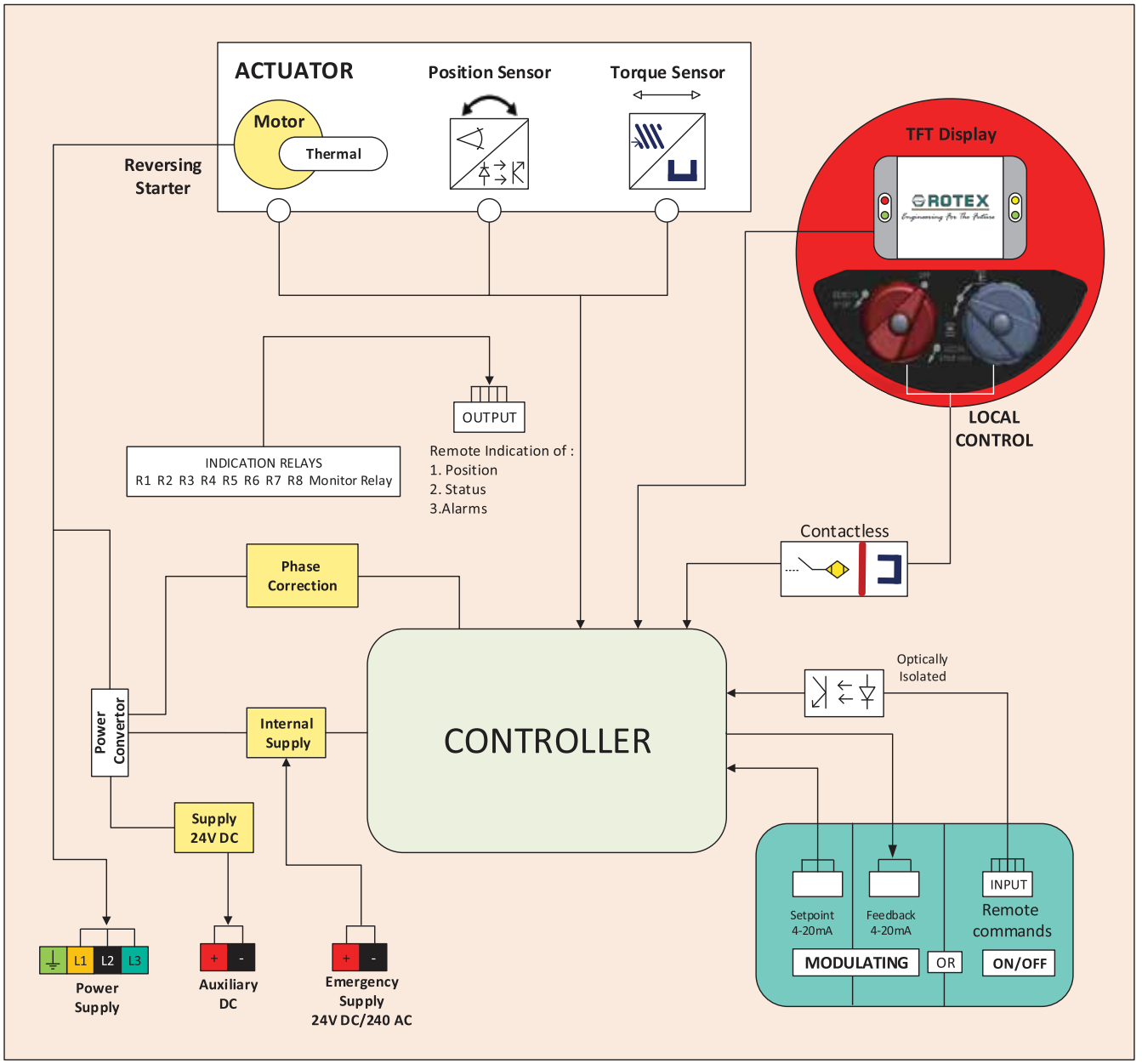
REMOTE MOUNT

- Remote mount distance up to 50 m.
- IP67 remote mount unit, IP68 available on request.
- Ideal for extreme environments and harsh conditions - high temperature, vibration, frequency and difficult to reach location.
- Shielded cable and circular connector ensure better connectivity and integrity.
- ROTEX remote mount unit is designed to move all electronics to remote location, ensuring correct functionality

NON-INTRUSIVE

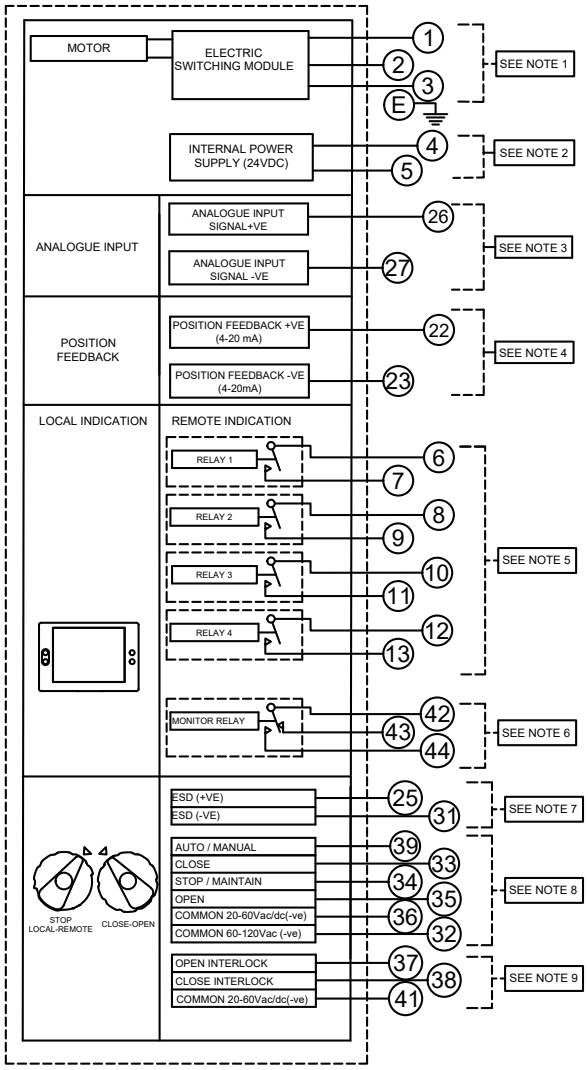
- ROTEX EHF series actuator can be setup non-intrusively; system settings and torque values can be set without opening any of the covers.
- Bluetooth communication (option) - Bluetooth technology which uses radio signals to communicate between the PC.

CONTROL LAYOUT



ROTEX ELECTRIC ACTUATOR

WIRING DIAGRAM



NOTE:-1

415 VAC 50/60Hz 3 Phase	PHASE U	TERMINAL-1
	PHASE V	TERMINAL-2
	PHASE W	TERMINAL-3

NOTE:-2

ISOLATED, NOMINAL 24VDC, POWER SUPPLY AVAILABLE FOR ACTUATOR FED REMOTE CONTROL

NOTE:-3

ANALOGUE INPUT 4-20mA

NOTE:-4

POSITION FEEDBACK 4-20mA

NOTE:-5

CONFIGURABLE RELAYS 230VAC / 30VDC 5A

NOTE:-6

MONITOR RELAY 230VAC / 30VDC 5A

NOTE:-7

EMERGENCY SHUTDOWN SIGNAL

NOTE:-8

DIGITAL CONTROL SIGNALS
20-60 Vac/dc OR 60-120 Vac

NOTE:-9

INTERLOCK CONTROL SIGNALS
20-60 Vac/dc

- Strong and reliable electronics architecture.
- Hardware, software are well proven using methodology softwares and validation softwares to avoid bugs and infinite loops.
- All integration goes through stringent quality checks to ensure long life.
- Potential free relays to support outputs and alarm configurations.

COMMUNICATION

The fieldbus, present on a large number of installations, is used more and more to communicate information and commands with multiple actuators and devices wired in series on a single pair of wires. Thus, the number of information available from each actuator can be multiplied while reducing the overall cost of wiring on the site.

ROTEX EHF series actuators can be connected to most of the standard fieldbus available on the market:

- PROFIBUS DP
- FOUNDATION FIELDBUS
- MODBUS RTU
- HART/WIRELESS HART
- OTHER FIELDBUS ON DEMAND

For more security, redundant fieldbus ensures continuous operation, even in case of a bus line disruption. Indeed, all elements of the bus line (bus controller, lines, actuators interfaces) are doubled.

OPEN VERSUS PROPRIETARY SYSTEMS:

Two physical concepts of fieldbus are available from various providers.

- The «Proprietary» so-called system: This is a technology designed by a device manufacturer for his own needs. A «Proprietary» system not only includes the actuators with the specific bus interface, but also the bus controller located at the line head-end. Only the products proposed by the bus controller manufacturer can be installed on the bus.

- «Open» systems: One using standard international fieldbuses so various manufacturers can supply compatible controllers and interfaces. This type of technology is proven, reliable and offers fast response time.

The Functionality of EHF-COMPACT can meet any technical specifications for PNEUMATIC, ELECTRIC OR HYDRAULIC Actuators.

COMMUNICATION

ROTEX chooses the «open» system for its fieldbus solutions.

- Based on robust PLC technology and open fieldbus protocol.
- Upto 250 actuators and 10 km distance.
- Fast response time.Standard scan time 1 to 3 s whatever the distance and number of actuators connected.
- Multiple redundant networks from ONE single Master station
- Simple or redundant configurations.
- Overall startup time reduced to the minimum.

TECHNICAL SPECIFICATIONS

TORQUE RANGE	Torque	Up to 2000 Nm for Quarter turn and up to 1500 Nm for multi-turn actuators
ENCLOSURE PROTECTION	Construction	Casting: Cast Aluminium, Aluminium Alloy, etc.
	Ingress Protection	IP66, IP67, IP68
	Controls Location	As a standard, the controls are integral to the actuator head. Optionally, the head can be mounted at a separate location (maximum distance between actuator and controls = 50m and needs electrical wiring).
	Explosion Proof ATEX	As standard: Ex d II B T4 (option T5 or T6) and Ex tb IIIC T135°C (option T100°C, T85°C)
	Explosion Proof IEC Ex	IEC Ex - standard IEC 60079-0, IEC60079-1, EN13463 As standard: Ex d II B T4 (option T5 or T6) and Ex tb IIIC T135 °C (optional T100 °C, T85 °C) On request: Ex d II C T4 (option T5 or T6)
	AmbientTemperature OperatingRange	▪ IIB standard: - 20 °C **...** +70 °C ▪ IIB low temperature option: - 60 °C **...** +70 °C ▪ IIC option: - 20 °C **...** +70 °C
	External Corrosion Protection	Standard paint system: Polyurethane paint RAL3020 complying with ISO 12944 up to C5M
	Double Sealing Protection	The control section of the actuator is totally isolated from the terminal compartment to protect electronic components

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TECHNICAL SPECIFICATIONS

MOTOR	Motor Technology	▪ AC motor, single or three-phase TENV type, completely enclosed, non-ventilated squirrel cage motors, Class F insulated with integral thermal overload protection ▪ AC motor, Class F insulated, integral thermal overload protection ▪ 24V DC and other voltages available optionally
MECHANICAL SPECIFICATIONS	Manual override	Handwheel with sophisticated clutch/declutch mechanism available
	Vibration Resistance Lubrication	1g (9.8 m/s²) at 10-500 Hz Actuators are lubricated for product lifetime and do not require any specific periodic maintenance
ELECTRICAL SPECIFICATIONS	Power Supply	The actuators can operate on a wide variety of power supplies: ▪ Single-phase: 110, 120 & 230 V - 50/60 Hz ▪ Three-phase: 380, 400, 415, 440, 480, 575, 690 V - 50/60 Hz ▪ DC: 24 V, optionally other voltages available ▪ Voltage tolerance: ±10%; Applies for rated torque performance; duty cycle and speed is not guaranteed ▪ Frequency tolerance: ±5%; Applies for rated torque performance; duty cycle and speed is not guaranteed ▪ Maximum starting volt drop: -15%; Actuators capable of starting and running up to speed
	Cable Entries	▪ 1 x 1.5" NPT + 3 x 1"NPT ▪ 1 x M32 + 3 x M25
	Electrical Connection	▪ Ring tongue terminals ▪ Internal and external ground points
POSITION AND TORQUE SENSORS	Position	▪ Encoder for position sensing
	Torque	▪ Torque sensor connected to controller for feedback and logic.
	Power Circuit	▪ Built-in phase reversal and failure detection

TECHNICAL SPECIFICATIONS

	Display	Modern LCD display
	On-off Remote Control (Hardwired Control)	Command by On-off Remote Control (Hardwired Control) ▪ Voltage: 10 to 220V DC/AC (current: 10mA at 24V) ▪ Dry contact (use controller auxiliary 24 VDC supply) isolated by opto-couplers ▪ Auto latching minimum pulse duration: 100ms
CONTROLS	Monitor Relay	▪ Monitor Relay – Monitor relay will be activated on any of the following faults – 4.1 EEPROM Error 4.2 Main Failure 4.3 Phase Loss 4.4 Phase Reversal 4.5 Over torque 4.6 Motor Thermostat Monitor Relay 4.7 PST Fail 4.8 Valve Stall 4.9 Max Limit Not Reached 4.10 Temperature Overrange 4.11 Position Out Of Range CONTROLS (Note:- SPDT relay rated at 8A / 230VAC / 30 VDC)
	Fault Relay	▪ 4 relays, each can be freely configured ▪ Normally closed & energized SPDT contact ▪ Rated for 5A at 230V AC or 5A at 30VDC (resistive load) ▪ Configurable Relays- Configurable relays can be configured for any one of the following points – 1. Open Limit Relay 2. Close Limit Relay 3. Motor Running 4. Motor thermostat 7. Manual Operation 8. Closing 9. Opening 10. Torque over range 11. Stall 12. PST Pass 13. ESD active 14. Stop Selected 15. Local Selected 16. Remote Selected 17. Alarm Active Fault Relay 18. PST Active 19. PST Fail 20. EEPROM Error (Note:- All configurable relays rated at 5A / 230 VAC / 30 VDC)

TECHNICAL SPECIFICATIONS

SETTINGS	Analogue Control	Input (setpoint) and output (feedback) signals are fully isolated from each other Signal configurations (selectable): ▪ Input signal: 4-20 mA / 0-20 mA - output signal: 4-20mA ▪ Input signal: 0-10 V - output signal: 4-20mA
	Transmitter (Option)	▪ Position (4-20 mA) ▪ Torque (4-20 mA) as optional ▪ Temperature (4-20 mA) as optional
	Fire Protection (Option)	▪ 30 minutes at 1,000 °C ▪ Tested to UL1709 criteria
	Settings	Non-Intrusive. All actuator settings and parameters are stored in a non-volatile EEPROM memory. Protection by password: can be done by local keys, infrared link or optional Bluetooth link (For operational and functional safety, Bluetooth link is limited to 10m)
	Local Selectors	The Controller can be fully set via its local keys and display, and does not require any specific setting tool
FIELDBUS CONTROL	Profibus DPV1 (Option)	▪ PROFIBUS-DPV1 - RS 485 ▪ Baud rate: 9.6 kbit/s up to 1.5 Mbit/s (autodetection) ▪ Communication protocol: PROFIBUS DPV1 slave-cyclic & acyclic ▪ Type of connection: single line (standard) or redundant line (option) ▪ Cable specification: Profibus certified cable only ▪ Line connection without repeater - Actuators per line: 31 max. - Line length: 1.2 km max. (0.75 mi) ▪ Line connection with repeaters - Number of repeaters per line: 9 max - 30 actuators and 1 Km max. per segment . - Number of actuators per line with repeater: 124 maximum - Line length with 9 repeaters: 10.2 km max. (6.2 mi) ▪ Scan speed (30 units & 1.2 km): 0.1s (at a baud rate of 93.75 Kbit/s) ▪ Power supply: internal and isolated via INTELLI+®. Optional signalling battery or 24VDC external backup supply update the open and closed position information in case of loss of power supply ▪ Technical approval: operability approved by PNO (Profibus Nutzer Organisation)

TECHNICAL SPECIFICATIONS

	Modbus (Option)	▪ MODBUS RTU - RS 485 ▪ Transmission medium: 1 shielded pair cable ▪ Functions: Half Duplex, asynchronous mode, multidrop ▪ Baud rate: 1.2k to 115 Kbit/s ▪ Format: 8 data bits, 1 stop bit, no parity ▪ Communication protocol: Modbus (slave) ▪ Modbus address: configurable by the actuator menu ▪ H1 speed = 31.25kBit/s
	Foundation Fieldbus (Option)	▪ Fully compliant with fieldbus standard IEC 61158 ▪ Physical layer: IEC 61158-2, 2 wires communication ▪ Current consumption: 20mA - Actuators per line without repeater: 31 max. - Line length without repeater: 1.9 km max. (1.2 mi) - Number of repeaters per line: 4 max. - Maximum number of actuators and line length depends on consumption available
	Wireless Hart (Option)	▪ Technical approval: Foundation tested. Several DCS manufacturer operability checked. ▪ Interface: HART, 4-20mA current, FSK modulation ▪ Transfer speed: 1.2 kbit/s ▪ Impedance: 250 Ohms ▪ Power consumption: Internal by Intelli+ transformer, External power supply for 4-20mA loop only ▪ Actuator configuration: Available through EDD file ▪ Connection line: Point-to-Point or Multi-drop ▪ Technical approval: approved by Hart Communication Foundation

ORDERING CODE

Product Series

Description	Code
Electro-Hydraulic Systems	EHF

Operation Type

Description	Code
Quarter Turn	EQT
Multi Turn	EMT

Frame Size for EA

Description	Code
QT-1	01
QT-2	02
QT-3	03
QT-4	04
QT-5	05
MT-1	11
MT-2	12
MT-3	13
MT-4	14
MT-5	15

ORDERING CODE

Gearbox

Description	Code
QTB 220	B01
QTB 370	B02
QTB 600	B03
QTB 980	B04
QTB 1500	B05
QTB 2500	B06
QTB 3500	B07
QTB 5200	B08
QTB 7800	B09
QTB 13000	B10
QEBC 00	W01
QEBC 01	W02
QEBC 02	W03
QEBC 03	W04
QEBC 04	W05
QEBC 06	W06
QEBC 08	W07
QEBC 10	W08
QEBC 13	W09
QEBC 16	W10
QEBC 19	W11
QEBC 24	W12
QEBC 32	W13
QEBC 42	W14
QEBC 54	W15
QEBC 63	W16
QEBC 84	W17
QEBC 98	W18
QEBC 146	W19
Nil	*

Main Power Supply

Description	Code
24 VDC	A
110/120 VAC 50Hz	B
110/120 VAC 60Hz	C
220/240 VAC 50Hz	D
220/240 VAC 60Hz	E
220/240 VAC 50Hz, 3 Phase	F
220/240 VAC 60Hz, 3 Phase	G
380 VAC 50Hz, 3 Phase	H
380 VAC 60Hz, 3 Phase	I
400 VAC 50Hz, 3 Phase	J
400 VAC 60Hz, 3 Phase	K
415 VAC 50Hz, 3 Phase	L
415 VAC 60Hz, 3 Phase	M
440 VAC 50Hz, 3 Phase	N
440 VAC 60Hz, 3 Phase	O
480 VAC 50Hz, 3 Phase	P
480 VAC 60Hz, 3 Phase	Q
575 VAC 50Hz, 3 Phase	R
575 VAC 60Hz, 3 Phase	S
690 VAC 50Hz, 3 Phase	T
690 VAC 60Hz, 3 Phase	U
125 VDC	W
48 VDC	Z

Operating time /Operating Speed

Description	Code
Enter value 0.2 - 300	

ORDERING CODE

Manual Override

Description	Code
Hand wheel	W
Hand operated lever	L

Cable entries

Description	Code
M32 (F) X 1 No., M25 (F) X 2 Nos.	1M3
M32 (F) X 1 No., M25 (F) X 3 Nos.	1M4
1 1/2" NPT(F) X 1 No., 1" NPT(F) X 2 Nos.	TR3
1 1/2" NPT(F) X 1 No., 1" NPT(F) X 3 Nos.	TR4

Temperature

Description	Code
-20 °C to +60 °C	*
-20 °C to +70 °C	Ht1
-30 °C to +60 °C	Lt1
-30 °C to +70 °C	Ht2
-40 °C to +60 °C	Lt2
-40 °C to +70 °C	Ht3
-50 °C to +60 °C	Lt3
-50 °C to +70 °C	Lt4

Communication

Description	Code
None	*
Foundation Fieldbus	F
Hart	H
Modbus	M
Profibus	A

Certification

Description	Code
None / Weather Proof	*
Exd, IS 60079-1	C1
Exd, IS 60079-1 + PESO	C2
ExD, IS 60079-1 + SIL 3	C3
Exd, IS 60079-1 + PESO + SIL 3	C4
SIL 3	C5
ATEX IEC 60079-1	C6
IECEx IEC 60079-1	C7
ATEX IEC 60079-1 + SIL 3	C8
IECEx IEC 60079-1 + SIL 3	C9
FM	C10
CSA	C11
TR-CU	C12
FM + SIL3	C13
CSA + SIL3	C14
TR-CU+SIL3	C15
INMETRO	C16
INMETRO + SIL3	C17

ORDERING CODE

Mounting

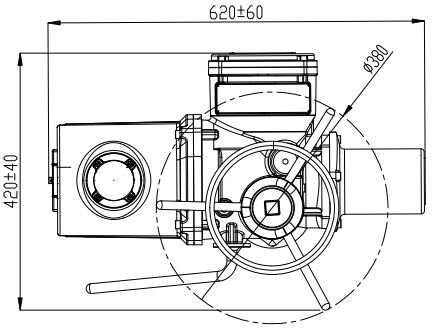
Description	Code
Vertical stem, Horizontal Pipeline, Actuator Parallel to Pipeline	*
Vertical stem, Horizontal Pipeline, Actuator Perpendicular to Pipeline	M1
Horizontal stem, Horizontal Pipeline, Actuator Parallel to Pipeline	M2
Horizontal stem, Horizontal Pipeline, Actuator Perpendicular to Pipeline	M3
Horizontal stem, Vertical Pipeline, Actuator Parallel to Pipeline	M4
Horizontal stem, Vertical Pipeline, Actuator Perpendicular to Pipeline For	M5

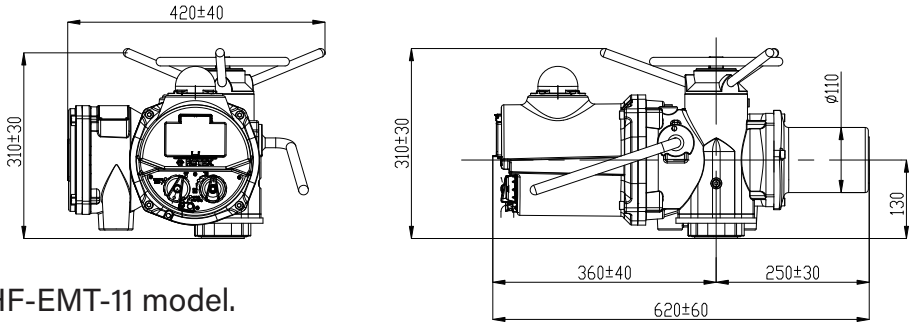
Special Version

Description	Code
None	*
Remote Mount 50 Metres	RM50

G A D

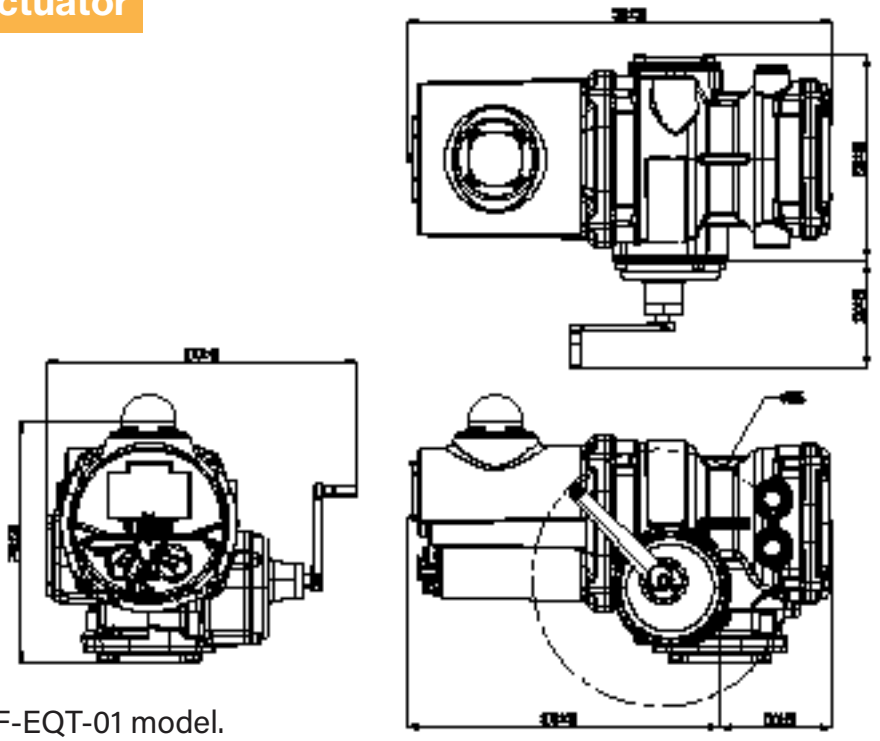
Multi-turn Actuator





Dimensions for EHF-EMT-11 model.

Quarter-turn Actuator



Dimensions for EHF-EQT-01 model.

NOTES

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