

ROTEX EHF-COMPACT SERIES ACTUATOR



**SELF CONTAINED
COMPACT INTELLIGENT
ELECTRO HYDRAULIC ACTUATOR**

Trusted Tested Certified



ATEX

CE



**FIELD COMM
GROUP**



EAC

ROTEX

Engineering For The Future

In continuation with the tradition of constant innovation and virtue in engineering, Rotex, introduces the next generation compact, modular and for precise control,

PATENTED

SELF-CONTAINED COMPACT ELECTRO-HYDRAULIC ACTUATOR & INTELLIGENT FAIL-SAFE COMPACT ELECTRIC ACTUATOR, in ONE Modular Solution

Suitable for valve torques upto 3000 Nm



WHY ROTEX?



Does your system need expensive and difficult to maintain compressed air systems to operate?

Rotex EHF-COMPACT series eliminates the use of any such external systems owing to its self-contained operating principle.



Do you suffer from leakage issues due to too many tubings and cabling?

Rotex EHF-COMPACT series has zero tubing, zero exposed wiring. These completely eliminates problems due to tubing or cabling faults.



Does your valve or damper fail to reach FAIL SAFE Position due to-

- A. NO FAILSAFE Electrical actuators
 - B. Failure of external sources like batteries or capacitors
- Rotex EHF-COMPACT series is self contained.



Do you have space constraints due to extremely bulky actuators?

Rotex EHF-COMPACT series is compact, having the smallest footprint of Electrohydraulic actuators for a given application.



Does your plant suffer due to process inconsistencies, poor accuracy or slow closing time?

ROTEX EHF-COMPACT Series has unique Adaptive control loop, providing accuracy, dead band less than 0.2% using high performance proportional valves.

THE RELIABLE AND INNOVATIVE SIL 3 ROTEX EHF-COMPACT SERIES SOLVES ALL PROBLEMS AND ASSURES LONG TERM UNINTERRUPTED PERFORMANCE!

SEE HOW

EHF-COMPACT INTELLIGENT ACTUATOR



FEATURES

- Optional Bluetooth technology for local operation and data collection
- DTM for Master Control(Asset Management)
- GLOWDAPT Indicator
- Large colour LCD display
- Ergonomic Local controls on unit
- No EXPOSED wiring or tubing
- Easy to install and commission
- Integrated oil-level indicator

Meets all industry Standards, API6DX/IOGP/S-716/EN15714-2, ISO 12940 & Major End user specifications such as SAUDI ARAMCO, ADNOC, KOC, KNPC, IOCL, ONGC, EIL, etc.

Applications : ESD/BDV/HIPPS/ICSS/SIS/On-Off System

KEY FEATURES



- Truly self contained
- Smallest footprint among electrohydraulic actuator
- Scotch-Yoke design
- Fully integral body- Scotch-yoke, Hydraulic block, limit switch, motor, pump, etc. are integral.
- Longer operational life. In-compliance with EN15714
- Double acting as well as single acting
- Torque up to 3000 Nm
- High performance motor and pump
- Actuator spring chamber used has an oil reservoir.
- Over travel and under travel control ± 3 degrees

Hydraulic Manual Override

- Can be installed at a later stage
- Built in sensor available for position feedback (Auto/Manual)

Emergency Shutdown (ESD)

SPECIAL FEATURE

- ESD can be by passed by simply exchanging two screws. This violates SIL Certifications. However Ideal feature for commissioning.

SAVINGS

- Massive OPEX Cost Savings!
- Unit is fully sealed



The functionality of EHF-COMPACT can meet any technical specification for PNEUMATIC, ELECTRIC OR HYDRAULIC actuators.

“Accuracy, Dead band and Hysteresis less than 0.2%!”
Full Compliance to EN 15714-2 Class D

GRAPHIC DISPLAY

- Large TFT 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.

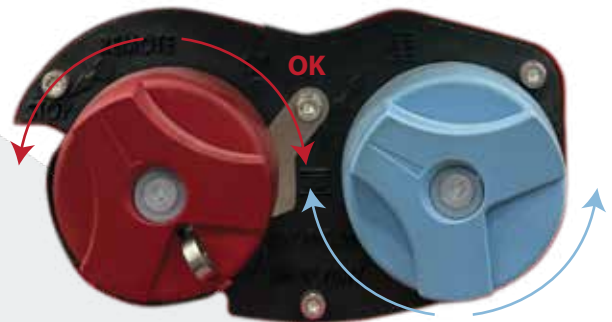
POSITION INDICATION LED'S

- On screen LEDs (red/green) indicate the position (close/open) at ends of travel, status of solenoid valve and motor.
- LED blinks during operation indicating direction, status messages or alarms.



LOCAL CONTROL

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



GLOWDAPT

- Entire dome glows RED or GREEN based on actuator position
- High-luminosity LEDs visible from a distance.
- Shatterproof, milky white polycarbonate dome.
- Amber/White/Magenta colour for different status message/alarms/modes

Colour code for LED indicators are as follows:	
Colour	Meaning
Red / Green	Open Position / Close Position (Configurable)
Red / Green Blinking	Valve Opening or Closing (Configurable)
Purple	Valve Stop at intermediate position
Blue	Fault
White	Offline Mode - Selector Switch in Off/Local and/or Hand Pump Manual Override Engaged



POSITION MONITORING

ROTARY

- ROTEX EHF series actuator are equipped with contactless feedback sensor (optional)
- 360° with freely rotating contactless feedback shaft.
- No dead angle. Can start anywhere and end anywhere.
- Contactless, high resolution feedback.
- Position feedback of 4-20 mA output signal, 0-10V optional.

LINEAR

- Contactless feedback device.
- Stroke up to 1m.
- Speed up to 0.2 sec for 25mm..
- Position feedback of 4-20mA, 0-10V optional.

END POSITION FEEDBACK

ROTARY

- 2 or 4 SPDT contacts or Proximity switches
- Spring loaded cam for precise setting.
- Potential free controls available at built in junction box.
- SPDT Honeywell Microswitch (Standard)
- Inductive Proximity NJ2V3N Ex ia P&F switch
- Inductive Proximity NBB2V3 24VDC P&F switch
- High Current Mechanical Hermetically Sealed Switches

LINEAR

- External limit switches using linkages.
- Contact ROTEX for further clarification.



PRESSURE MONITORING

- Actuator torque/force is measured based on pressure.
- Pressure transducer is integrated inside the hydraulic control system.
- Real time feedback from the pressure transducer is recorded and diagnostics information is generated based on parameterisation.
- It can detect over pressure, low pressure, "valve stuck", hydraulic failure, etc if any.
- 4-20mA feedback signal proportional to actuator torque of the valve is available as an option.

ESD RESET

- ROTEX EHF COMPACT actuator has safety feature as built in priority.
- Once an ESD demand occurs, the actuator can reinstate only new command to operate or can be configured to manual reset through local controls via setting menu.
- This increases overall process and personal safety.

FAIL FREEZE OPTION

- Main power supply is unreliable and is not part of functional safety.
- On failure of main power supply the operation of the actuator or the valve position is unaffected.
- ESD Solenoid valve is separately powered through ESD input signal and is solely responsible for safety function.

EMERGENCY SHUTDOWN

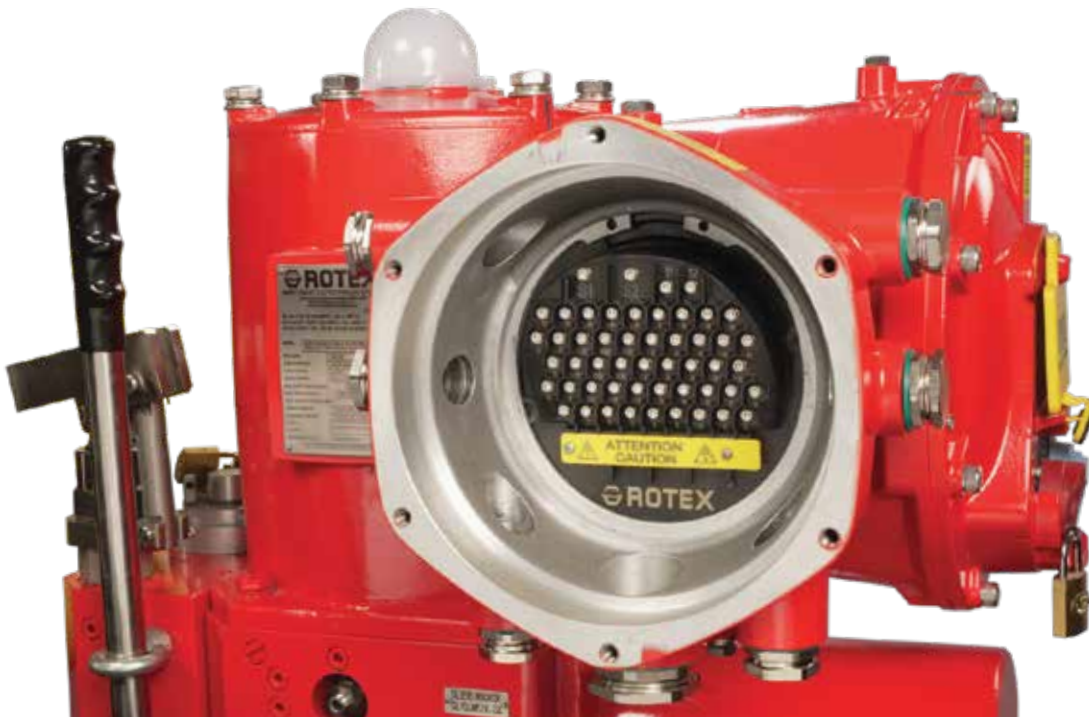
- On demand emergency shutdown is the primary feature.
- ROTEX Compact EHF system is suitable for use in SIS function in accordance to IEC 61508:2010.
- Suitable upto & including SIL 2 & SIL 3 capability.
- Can be configured through hardware for safety function or can be hardwired to perform fail-safe action.
- EHF can be configured to different failure requirements, please refer to the ordering code. Low Power ESD available.
- ESD Input Signal - 24V DC $\pm$ 10%, 110V AC $\pm$ 10%, 220V AC $\pm$ 10%

FAILSAFE OPTION

- Failsafe action can be performed based on following
 - On loss of ESD signal or ESD demand occurs
 - On loss of main power supply. In applications where main power is part of SIS.
- In both the above cases, the valve will be driven to its failsafe position in case of failure of main power supply or ESD demand.
- ESD Solenoid valve is separately powered through ESD input signal and is solely responsible for safety function.

DOUBLE SEAL COMPARTMENT

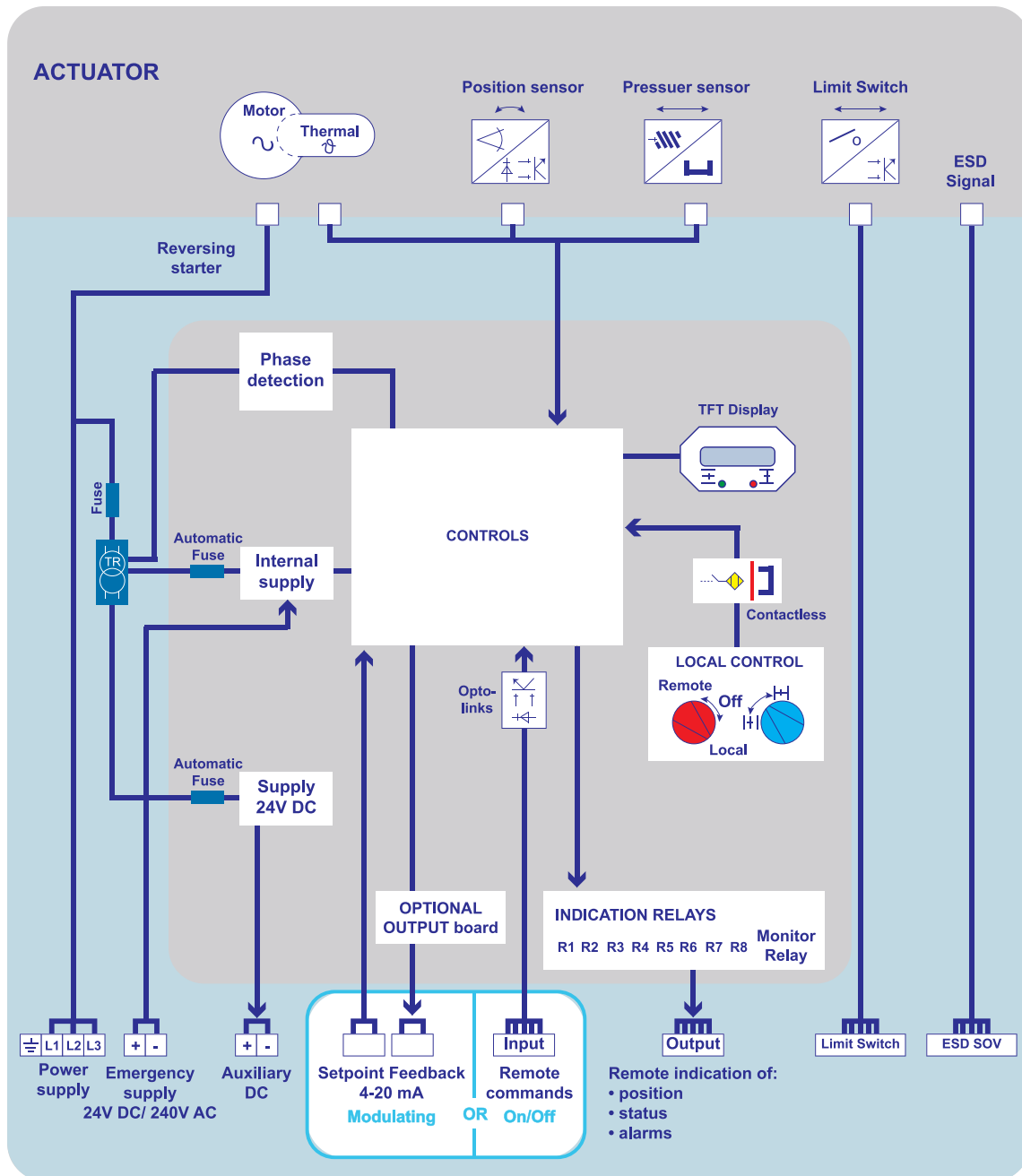
- Two barriers fitted with O-rings ensures optimum protection against water ingress into the electronic compartment.
- This protection remains effective even if the cover has not been closed properly or if the cable glands have not been tightened.
- Protection is also ensured for the local control selectors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



NON-INTRUSIVE

- Non-Intrusive actuator protects the system in two ways.
 1. The critical settings like max pressure on PRV, cannot be set without opening the covers, this prevents the customer changing the most critical devices.
 2. All other working parameters can be set electronically. The same can be made using the front panel knobs and menu. E.g. max. pressure limits, accumulator charging limits, alarm limits, assigning the relays to alarms. Color of Dome indicators, and etc. ”

CONTROL LAYOUT



- Strong and reliable electronics architecture.
- Epoxy painted to ensure long life against moisture ingress.
- 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.

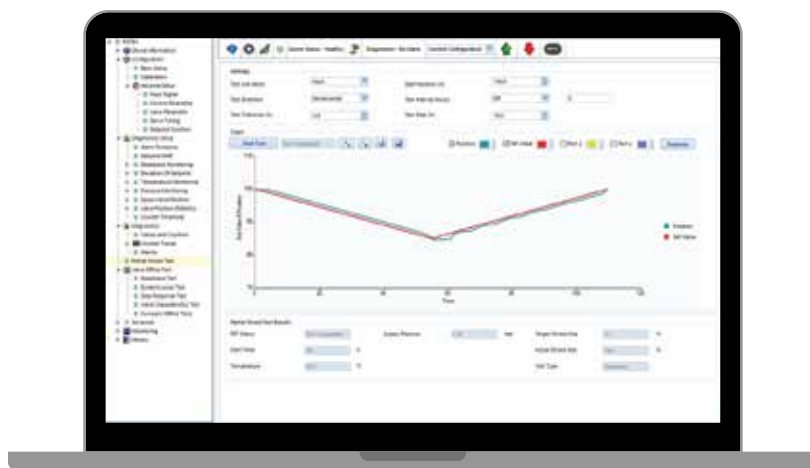
ROTEX EHF-COMPACT SERIES ACTUATOR

PARTIAL STROKE TEST

Partial stroke test (PST) is a method to check, detect and ensure availability of safety function on demand. PST physically moves the valve to a predefined position, without affecting or disturbing the current process requirement.

Partial stroke test can prevent unexpected failure of safety function and provides information on current health status of valve and actuator.

- Multiple records are maintained
- Can be conducted using local command switches
- ROTEX provides service to study the results and provide diagnosis



Partial stroke test can be initiated through

- Handheld
- Remote push button or remote command.
- DTM / EDD using asset management system
- Pre-defined configured time interval

ROTEX EHF series actuator has safety or demand as priority. Any other demands override the test.

Test will be aborted and returned to normal operation in case of

- Partial stroke fails
- Push button is held >5 seconds
- Safety DEMAND occurs

Partial stroke test results can be saved and compared over the course of time

DIAGNOSTICS

- Logical trend and histogram.
- Diagnostics with errors and recommendation.
- Alarm based on different threshold.
- On screen notification up to last 3 alarms or errors.
- Online monitoring.

DIAGNOSTICS CAN IDENTIFY THE FOLLOWING ISSUES -

Valve Faults

- Valve Clogging
- Valve seat or valve build-ups
- Seat erosion
- Increase in friction
- Valve tightness

Actuator Faults

- Friction
- Spring failure
- Leakage through bush, diaphragm, seals, covers, connections

Device Failure

- Electronics failure
- Pressure sensor failure
- Feedback sensor failure

External Faults

- Unexpected change in supply pressure, (sudden drop or increase)
- Change in rate of flow or change in ΔP across the valve

- Monitoring parameter can be configured with three different threshold levels.
- Each threshold level can be classified based on severity and generates a digital feedback signal, once triggered.
- Colour code represents nature of severity (can be communicated on HART to control system).
- This enables users to take necessary preventive action.



No Events



Primary - Maintenance Required



Secondary - Maintenance Demanded



Tertiary – immediate maintenance or repair needed

ROTEX EHF-COMPACT SERIES ACTUATOR

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 Communication Protocols 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.
- Bluetooth Communication (option) - Bluetooth technology which uses radio signals to communicate between the PC.



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

TECHNICAL DETAILS

TORQUE CHART FOR DOUBLE & SINGLE ACTING ACTUATOR

ACTUATOR MODEL	DOUBLE ACTING ACTUATOR TORQUE (Nm)			SINGLE ACTING ACTUATOR TORQUE					
				HYDRAULIC TORQUE (Nm)			SPRING TORQUE (Nm)		
	START	RUN	END	START	RUN	END	START	RUN	END
EHF-I-0075-C1	168	80	118	161	48	60	58	31	52
EHF-I-0075-C2	213	101	150	141	61	78	71	40	71
EHF-I-0230-C1	361	171	254	230	80	70	185	91	131
EHF-I-0230-C2	437	207	307	265	97	93	214	111	172
EHF-I-0230-C3	573	272	403	340	136	156	247	136	233
EHF-I-0400-C0	745	354	525	428	167	182	343	187	317
EHF-I-0400-C1	940	446	662	612	238	260	401	209	328
EHF-I-1245-C1	1954	928	1376	1280	535	661	714	393	674
EHF-I-2000-C1	2559	1215	1801	1400	596	746	1055	619	1159
EHF-I-2000-C2	3096	1470	2180	1792	782	1019	1161	688	1304

For Fail Close Actuators, Hydraulic torques acts as opening torque, while spring torques acts as closing torques for valve, Similarly For Fail Open Actuators, Hydraulic torques acts as closing torque, while spring torques acts as opening torques for valve.

OPERATING PARAMETERS

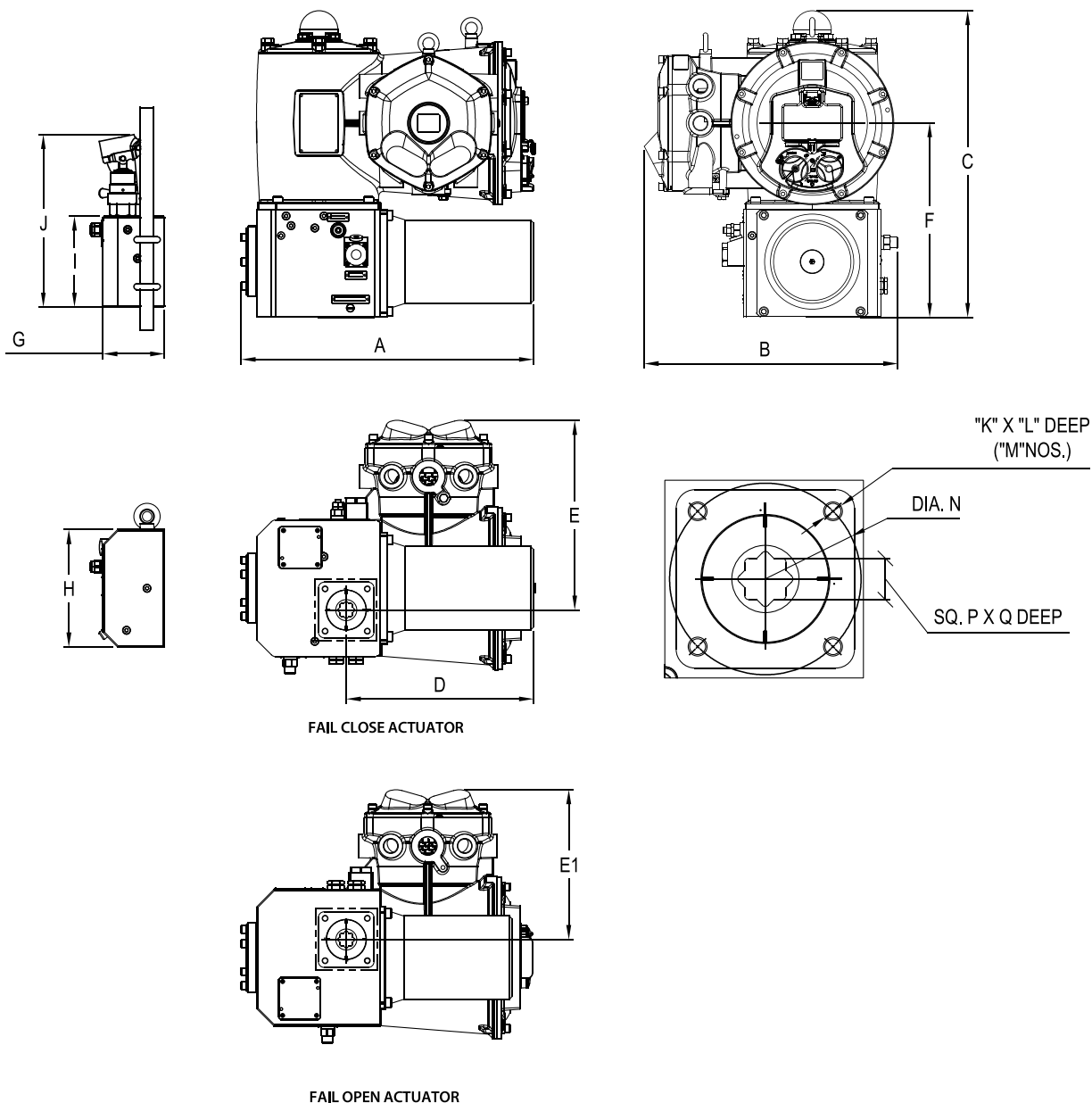
ACTUATOR MODEL	FAIL CLOSE ACTUATOR		FAIL OPEN ACTUATOR		ESD TIME (sec)	POWER	WEIGHT
	OPEN TIME (sec)	CLOSE TIME (sec) ⁽¹⁾	OPEN TIME (sec)	CLOSE TIME (sec) ⁽²⁾			
EHF-I-0075	6	>2	>2	6	<2	90W	60 Kg
EHF-I-0230	13	>2	>2	13	<2	90W	73 Kg
EHF-I-0400	21	>3	>3	21	<3	150W	80 Kg
EHF-I-1245	45	>3	>3	45	<3	150W	105 Kg
EHF-I-2000	75	>5	>5	75	<5	200W	135 Kg

Note : (1) For Fail Close Actuator, Minimum Close time given in table, which is adjusted to increase as per the requirement of operation.

(2) For Fail Open Actuator, Minimum Open time given in table, which is adjusted to increase as per the requirement of operation.

DIMENSIONAL DETAILS

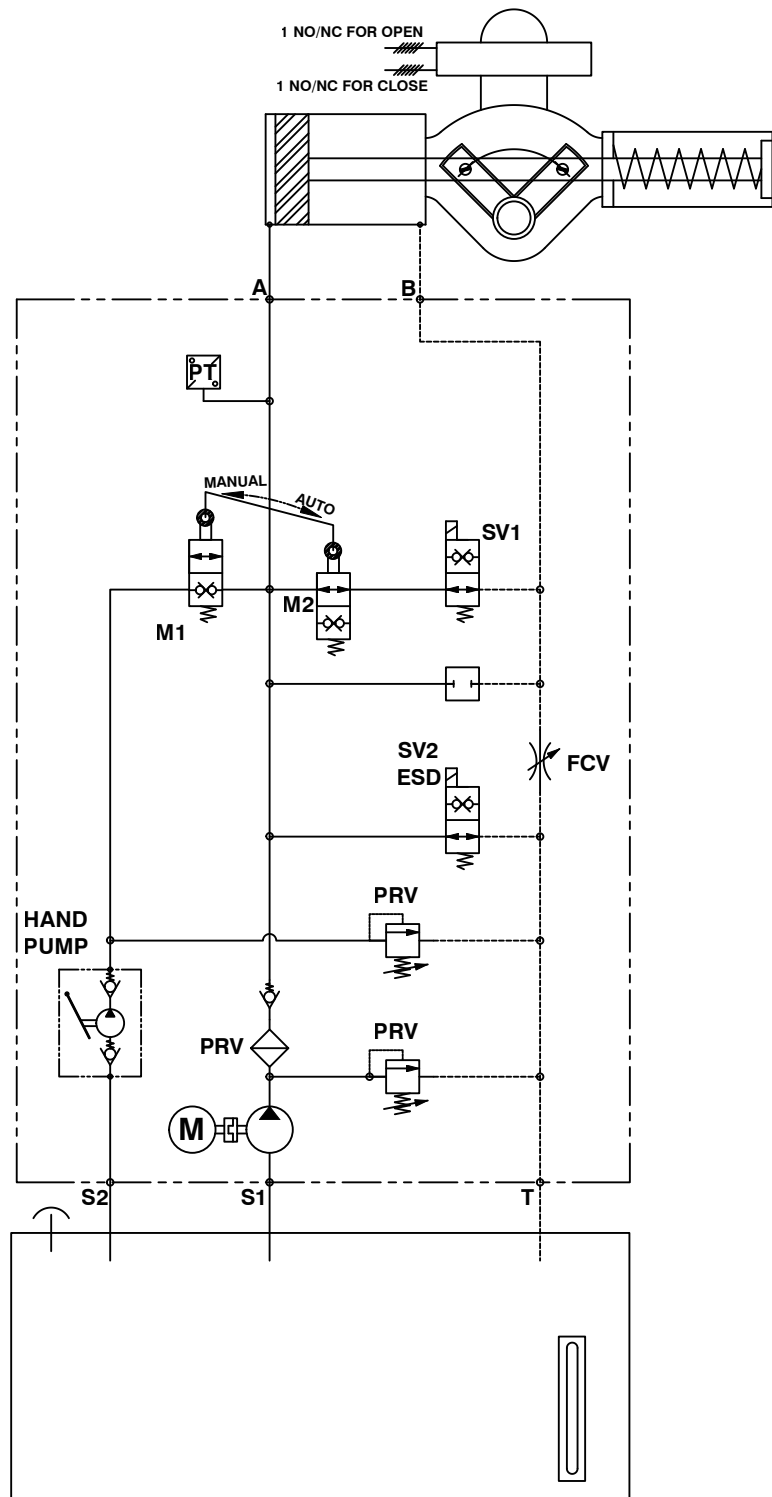
COMPACT EHF INTELLIGENT ACTUATOR



DIMENSIONAL DETAILS

MODEL	A	B	C	D	E	E1	F	G	H	I	J	K	L	M	N	P	Q
EHF-I-0075	418	432	522.5	247	311.5	261.5	332	105	200	155	295	M10	18	4 Nos	102	SQ. 22	25
EHF-I-0230	462	432	522.5	283	323.5	261.5	332	105	200	155	295	M10	18	4 Nos	102	SQ. 22	25
EHF-I-0400	505	432	522.5	320	323.5	249.5	332	105	200	155	295	M10	18	4 Nos	102	SQ. 22	25
EHF-I-1245	608	432	575	405	328.5	244.5	383.5	105	200	185	325	M10	18	4 Nos	102	SQ. 27	25
EHF-I-2000	750	432	675	525	328.5	244.5	358.5	105	200	225	355	M16	32	4 Nos	125	SQ. 27	25

SCHEMATICS



SPECIAL APPLICATION



COMPACT LINEAR EHF ACTUATOR

- Linear On-OFF Application
- Compact and Light weight Design
- Remote Mount Actuator
- Common control head can be used to operate multiple actuators
- Suitable for Applications with stringent space constraints.
- Precise stroke setting arrangement.
- Operating Time < 9 Sec

TECHNICAL SPECIFICATIONS

TORQUE RANGE	Torque	50 to 3,000 Nm
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ENCLOSURE PROTECTION	Construction	Std.: Extruded Aluminium, Die Cast Aluminium Alloy Optional: Stainless Steel SS316/CF8M
	Ingress Protection	Std.: Upto IP67 Optional: Upto IP68 10m/96h
	Controls Location	The controls are integral to the actuator.
	Explosion Proof ATEX	Atex Directive 2014/34/EU, EN IEC 60079-0, EN IEC 60079-1, EN IEC 60079-31, EN ISO 80079-36, EN ISO 80079-37 As Standard : Ex db h IIB T6 Gb and Ex h tb IIIC T85 °C Db (Tamb. -20 °C to +65 °C)
	Explosion Proof IEC Ex	IEC Ex-Standard IEC 60079-0, IEC 60079-1, IEC 60079-31, ISO 80079-36, ISO 80079-37 As Standard: Ex db h IIB T6 Gb and Ex h tb IIIC T85 °C Db (Tamb. -20 °C to +65 °C)
	Ambient Temperature Operating Range	- IIB standard: -20 °C to +65 °C - For other temperature options, consult Rotex
	External Corrosion Protection	Standard paint system: Polyurethane paint RAL3020 complying with ISO 12944 (C5) Optional special anti-corrosion protection for marine, aggressive or abrasive atmospheres All cover fasteners captive and stainless

MOTOR	Motor Technology	24V DC motor - Totally enclosed within the Main Housing
	Motor duty rating	S1 - Contentious duty (1200 Starts per hour) S4 - Intermittent Duty (60 Starts per hour)

TECHNICAL SPECIFICATIONS

MECHANICAL SPECIFICATIONS	Manual override	Hydraulic Handpump
	Vibration Resistance	1 g (9.8 m/s ²) at 10-500 Hz (Contact our marketing dept. for higher vibration levels)
	Lubrication	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 - 220V - 50/60 Hz • Three-phase: 380, 400, 415, 440, 480V - 50/60Hz • Voltage tolerance: $\pm 10\%$ • Frequency tolerance: $\pm 5\%$
	Cable Entries	Standard configuration: Standard NPT Cable entries 3/4" NPT X 6 Nos & 1 1/4" NPT X Nos Other Cable entries can be provided on request refer ordering code
POSITION AND PRESSURE SENSORS	Position	• Potentiometer • Contactless sensor (optional)
	Pressure	Pressure measured by pressure transducer
FEEDBACKS AND CONTROLS	Display	TFT display
	On-off remote Control (Hardwired Control)	Command by • Voltage: 10 to 220V DC/AC (current: 10 mA at 24V) • Dry contact (use Controller auxiliary 24V DC supply) Minimum pulse duration: 100ms
	Signaling relays	8 Relays each information can be freely selected • Contact configuration: normally open or normally closed • Maximum current 5A at 250V AC or 5A at 30V DC (resistive load)
	Fault relay	• Normally closed & energized SPDT contact • Maximum current 5A at 250V AC or 5A at 30V DC (resistive load)
	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 : 4-20 mA
	Position Transmitter	0-10 VDC, 4-20 mA
	Limit Switches	• 4 Mechanical Limit Switch (SPOT): 125/250V AC or 30V DC • Proximity Limit Switch NO/NC (Optional): 5-60V DC

TECHNICAL SPECIFICATIONS

SETTINGS	Settings	Non-Intrusive. All actuator settings and parameters are stored in a non-volatile EEPROM memory. Protection by password. Can be done by local command, optional bluetooth link.
	Local selectors	The Controller can be fully set via its local display and selectors. Does not require any specific setting too.
FIELDBUS CONTROLS	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)
FIELDBUS CONTROLS	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
	Foundation Fieldbus (option)	• H1 speed = 31.25kBit/s • Fully compliant with fieldbus standard IEC 61158 • Physical layer: IEC 61158-2, 2 wires communication • Current consumption: 20mA • Operating voltage: 9 to 32 VDC • Cable specification: Type A (for example: 3076F Belden) • Line connection - 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 • Technical approval: Foundation tested. Several DCS manufacturer operability checked.
	HART (option)	Interface: HART, 4-20mA current, FSK modulation Transfer speed: 1.2 kbit/s Protocol: HART 7.4 Impedance: 250 Ohms Actuator configuration: Available through EDD file / DTM

ORDERING CODE

1		2		3	
PRODUCT SERIES		ACTUATOR SIZE		OPERATION	
CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION
EHF-B	BASIC VERSION	0075C1, 0075C2, 0230C1, 0230C2, 0230C3, 0400C0, 0400C1, 1245C0, 1245C1, 2000C1, 2000C2	SIZE	OO	ON-OFF
EHF-I	INTELLIGENT VERSION			MO	MODULATING
4		5		6	
ACTION		MOUNTING POSITION		ROTATION DIRECTION	
CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION
E	SINGLE ACTING	S	HORIZONTAL	CC	SPRING TO ROTATE CLOCKWISE (FAIL SAFE CLOSE)
D	DOUBLE ACTING	V	VERTICAL	CW	SPRING TO ROTATE COUNTER- CLOCKWISE (FAIL SAFE OPEN)
7		8		9	
TEMPERATURE		BODY / COVER MATERIAL		HANDPUMP	
CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION
NB	-20 °C TO +65 °C	AL	ALUMINIUM ENCLOSURE	HN	NONE
FS	-50 °C TO +70 °C	8M	STAINLESS STEEL SS316/CF8M	HB	HYD. HAND PUMP WITH FEEDBACK
AV	-20 °C TO +85 °C	WC	WCB/SG IRON ENCLOSURE		
For other Temperature range consult Rotex					
10		11		12	
INPUT POWER SUPPLY		ESD POWER SUPPLY		TRANSMITTER	
CODE	DESCRIPTION	CODE	DESCRIPTION	CODE	DESCRIPTION
A	24V DC	NE	NO ESD	NT	NONE
B	1PH 110 - 220V AC 50/60Hz	AA	24V DV	PT	POSITION
F	3PH 220V AC 50/60Hz	CC	1PH 110V AC 50/60Hz	RT	PRESSURE
N	3PH 415V 50Hz	EE	1PH 220V AC 50/60Hz	BT	POSITION + PRESSURE
Q	3PH 380-480V 50/60Hz	AF	24 VDC WITH FLOW CONTROL		
Z	48 V DC	CF	110 VAC 50/60 Hz WITH FLOW CONTROL		
		EF	220 VAC 50/60 Hz WITH FLOW CONTROL		

ORDERING CODE

13

CABLE ENTRIES - JUNCTION BOX

CODE	DESCRIPTION
TR0	1,1/4"NPT(F) X 1 NOS, 3/4"NPT(F) X 6NOS NOS
TR1	1,1/4"NPT(F) X 1 NOS, 3/4"NPT ADAPTED TO 1/2"NPT(F) X 6 NOS
TR2	1,1/4"NPT(F) X 1 NOS, 1"NPT ADAPTED TO 1/2"NPT(F) X 6 NOS
TR3	1,1/4"NPT(F) ADAPTED TO 1"NPT(F) X 1 NOS, 3/4"NPT ADAPTED TO 1/2"NPT(F) X 6 NOS
TR4	1,1/4"NPT(F) X 1 NOS, 3/4"NPT ADAPTED TO 1"NPT(F) X 6 NOS
TR5	1,1/4"NPT(F) ADAPTED TO 3/4"NPT(F) X 1 NOS, 3/4"NPT ADAPTED TO 1/2"NPT(F) X 6 NOS
TR6	1,1/4"NPT(F) ADAPTED TO 1/2"NPT(F) X 1 NOS, 3/4"NPT ADAPTED TO 1/2"NPT(F) X 6 NOS
2M0	M25(F) X 1 NOS, M20(F) X 6 NOS
4M0	M25(F) X 2 NOS, M20(F) X 4 NOS
4M1	M25(F) X 3 NOS, M20(F) X 4 NOS
6M0	M32(F) X 1 NOS, M25(F) X 6 NOS
6M1	M32(F) X 1 NOS, M25(F) ADAPTED TO M20(F) X 6 NOS

14

LIMIT SWITCH

CODE	DESCRIPTION
1A*	HONEYWELL SWITCH
3A*	P&F NJ2V3N
13A*	P&F NBB3V3Z4
6A*	Hermetically Sealed Switch

NOTE: * DENOTES NUMBER OF SWITCHES (MAX. 4 NOS.)

15

COMMUNICATION

CODE	DESCRIPTION
NC	NONE
FF	FOUNDATION FIELDBUS
HA	HART
MB	MODBUS
PB	PROFIBUS

16

ADDITIONAL COMMUNICATION

CODE	DESCRIPTION
NN	NONE
BX	BLUETOOTH

17

CERTIFICATION

CODE	DESCRIPTION
C0	WEATHER PROOF
C1	Ex d, IEC-60079-1
C2	Ex d, IS/IEC-60079-1 + PESO
C3	Ex d ATEX
C4	IECEX, IEC-60079-1
C5	Ex d, IS/IEC-60079-1 + PESO + SIL3
C6	IECEX, IEC-60079-1 + PESO + SIL3
C7	Ex d ATEX + SIL3

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SPECIAL VERSION

CODE	DESCRIPTION
*	NONE
SUXX	SPECIAL CUSTOMIZATION
SU001	WITH ACCUMULATOR

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