

# EBN861 (Contrac) Power Electronic Unit



For continuous control of Contrac actuators  
RHD(E) ... and RSD(E) ... (high-performance end)

Microprocessor-controlled power electronic unit with  
integrated frequency converter

Voltage supply 230 V AC

Conventional signal interface (0 / 4 ... 20 mA / 24 V)

Digital communication via RS232 and HART

PROFIBUS DP

Additional functions such as process controller,  
maintenance computer, programmable characteristics

Field-mount housing in high protection class IP 66

Torque and speed variation

Continuous positioning

Simple installation and commissioning

Simple configuration and parameter setting via graphical  
user interface

High response sensitivity

Reliable for short positioning times

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## 1 Concept

Compact actuator for the operation of final control elements with preferably 90° rotary movement such as flaps, cocks, etc.

The torque is transferred via a lever / linkage bar assembly or the actuator is directly coupled to the cock flange.

A special power electronic unit controls the actuator. The electronic unit serves as the interface between actuator and control system.

During continuous positioning the power electronic unit varies the motor torque steplessly until the actuator force and the restoring

process forces are balanced. High response sensitivity and high positioning accuracy with short positioning time ensure an excellent control quality and a long actuator life.



### Note

The ANSI information appears in parentheses after the SI-information.

## 2 Technical data

### 2.1 General information

Power Electronic Unit EBN861 (Contrac)	
Protection Class	IP 66
Humidity	≤ 95% average; condensation not permitted
Ambient temperature	-25 ... 55 °C (-15 ... 130 °F)
Mounting position	at vertical support, cable gland at the bottom
Coating	2-layer component epoxy (RAL 9005, black)
Cable between actuator and electronic unit	optional 5 m (16 ft), 10 m (32 ft) or 20 m (65 ft) with plug for connection to the actuator; max. cable length between actuator and electronic unit: 100 m (328 ft) No plug connection with RSDE... / RHDE... actuators; optional, loose cable set supplied acc. to length requirements
Weight; approx.	40 kg (88 lbs)

### 2.2 Supply

Supply voltage (standard actuators)	230 V AC (190 ... 260 V); 47,5 ... 63 Hz; 1Ph		
Supply voltage (Ex actuators)	230 V AC (190 ... 253 V); 47,5 ... 63 Hz; 1Ph		
Current at electronic unit [A] (230 V AC)		$I_{max}$ at 230V	$I_{pos.}$ (230 V) approx. 40 ... 50% of $I_{max}$ .
	RHD(E)2500-10	5,3 A	
	RHD(E)4000-10	10,0 A	
	RHD8000- 12	8,0 A	
	RHDE8000-15	8,0 A	
	RHD(E)16000-30	12,5 A	
	RSD(E)50- 10	6,4 A	
	RSD100-10,0	12,5 A	
	RSD200-5.0	13,0 A	
External fuse	safety fuse 35 A (Lindner) + thermal circuit breaker 16 A (ETA) fuse and circuit breaker are part of shipment		

### 3 Communication

#### 3.1 Conventional communication

Analog input	0 / 4 ... 20 mA	
Analog output	0 / 4 ... 20 mA, galvanically isolated	
3 digital inputs, BE 1 ... BE 3 (DI 1 ... DI 3)	Digital 0: -3 ... 5 V or open, galvanically isolated Digital 1: 12 ... 35 V, galvanically isolated	
3 digital outputs, BA 1... BA 3 (DO 1 ... DO 3)	Potential free relay contact, max. 60 V, 150 mA	
Digital communication	RS 232 for commissioning and service, with optional FSK / HART® or PROFIBUS DP	
Default settings	Behavior in 0 / 100% end position: setpoint function: setpoint input: function selection: actual value: digital input:  digital output:  positioning time-out	Hold with rated torque / force linear, set point = position value 4 ... 20 mA positioner, parameter: setpoint 4 ... 20 mA BE 1 (DI 1) M/A selection; BE 2 / BE 3 (DI 2 / DI 3) manual intervention +/- BA 1 (DO 1) ready for operation; BA 2/3 (DO 2/3) end position signal 0 / 100% not activated for standard actuators always activated for actuators in explosion proof design
Voltage output $U_V$	24 V, 15 mA, galvanically isolated ; e.g., for scanning external contacts	
Transmitter (optional)	Supply for 2-wire transmitter with activated process controller in Contrac	
Individual settings	See data sheet 10/68-2.40 or upon request	

**3.2 PROFIBUS DP communication**

PNO ID no.	0x9655 Actuators with DP/V0 communication (cyclical data traffic) 0x09EC Actuators with DP/V1 communication (cyclical and acyclical data traffic)
Communications protocol	Profibus PA profile V3.0 Class B acc. to IEC 50170 / EN 50170 (DIN 19245)
Bus cable	Twisted, shielded copper wire acc. to IEC 50170 / EN 50170
Interface	EIA-485 (RS485) acc. to IEC 50170 / EN 50170
Permissible baud rates	- 93.75 kbit/s - 187,5 kbit/s - 500 kbit/s - 1500 kbit/s Automatic baud rate detection
Bus address	0 ... 126, default address 126 Set Slave Address service is supported
Bus termination	Connectable active bus termination. Voltage supply from power electronic unit
Block types	1 AO Functional block 1 Transducer block 1 Physical block
Fail Save	Failsafe function is supported. Configurable function for downtime of bus communication - Lock in last position - Drive to safety position - Rules with last effective setpoint Adjustable time delay.
Modules for cyclical communication	8 standards-compliant modules and 2 manufacturer-specific modules are available.* SP (Short) SP (Long) RCAS_IN+RCAS_OUT SP+READBACK+POS_D SP+CHECKBACK SP+READBACK+POS_D+CHECKBACK RCAS_IN+RCAS_OUT+CHECKBACK SP+RCAS_IN+READBACK+RCAS_OUT+POS_D+ CHECKBACK STANDARD SP+RB+MESSEING
Acyclical communication	Full parametrization and configurability via Master Class 2 and DTM
Default settings	Behavior in 0/100% end position: Hold with rated torque / force Setpoint function: Linear, setpoint = position value Setpoint input: Digital Function selection: Positioner, parameter: setpoint Actual value: Digital
Digital outputs, BA 1 and BA 2 (DO 1 and DO 2)	In addition to the Profibus communication, there are 2 digital outputs. Potential free relay contact, max. 60 V, 150 mA Default settings: BA 1 (DO1) end position signal 0% BA 2 (DO 2) ready for operation 100%
Individual settings	See data sheet 10/68-2.40 or upon request

\*Full description of communication modules, see parametrization and configuration instructions 45/68-10 DE

**3.3 24-pole plug on the actuator**

Max. cable gauge		
mains; motor	fixed:	6 mm <sup>2</sup> (10 AWG)
	flexible	4 mm <sup>2</sup> (12 AWG)
signal	fixed:	4 mm <sup>2</sup> (12 AWG)
	flexible:	2,5 mm <sup>2</sup> (14 AWG)

**3.4 Tapped holes for cable glands**

Tap holes for cable glands			
	metric	optional adapters for*	
mains	M20 x 1.5 (1 x)	PG 16 (1 x)	NPT 1/2" (1 x)
signal	M20 x 1.5 (3 x)	PG 16 (3 x)	NPT 1/2" (3 x)
motor	M25 x 1.5 (1 x)	PG 21 (1 x)	NPT 1/4" (1 x)

\* adapter for PG or NPT thread must be ordered separately

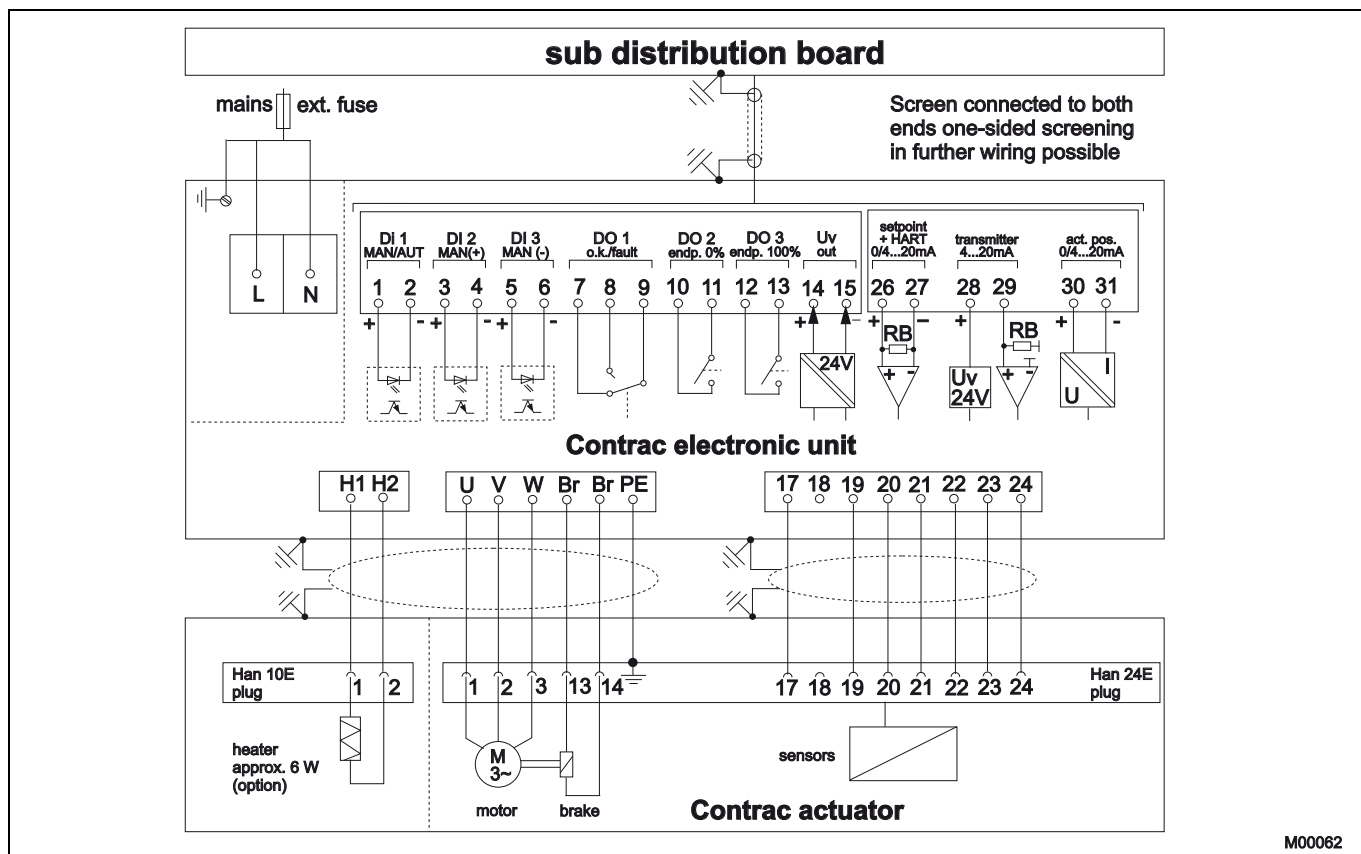
## 4 Electrical connection

### 4.1 Analog / digital



**Note**

The electrical connection is provided by a plug on the actuator and the terminals on the electronic unit.



M00062

Fig. 1: Electrical connection: Standard analog / digital

4.2 PROFIBUS DP

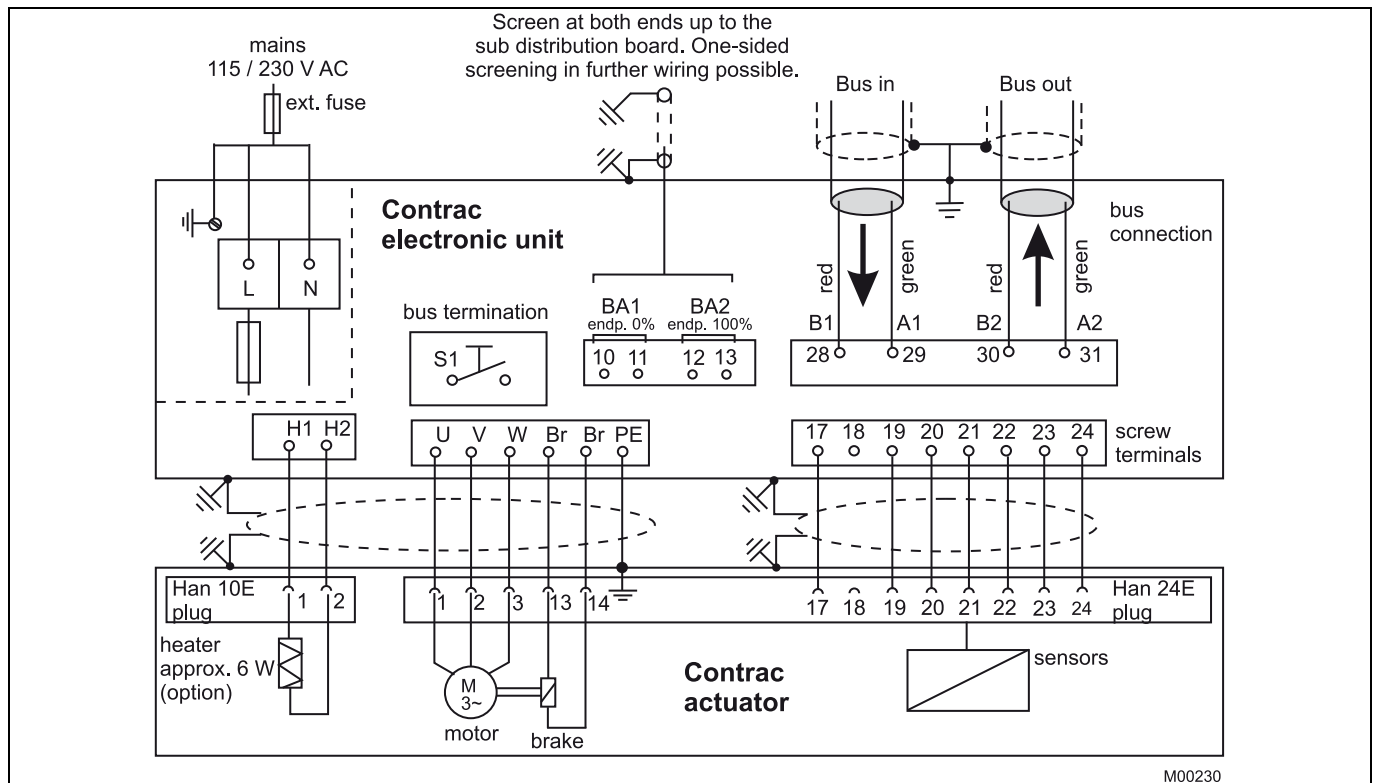


Fig. 2 Electrical connection: PROFIBUS DP option

### 4.3 Ex actuator analog / digital



**Note**

The electrical connection is provided by terminals on the actuator and on the electronic unit.

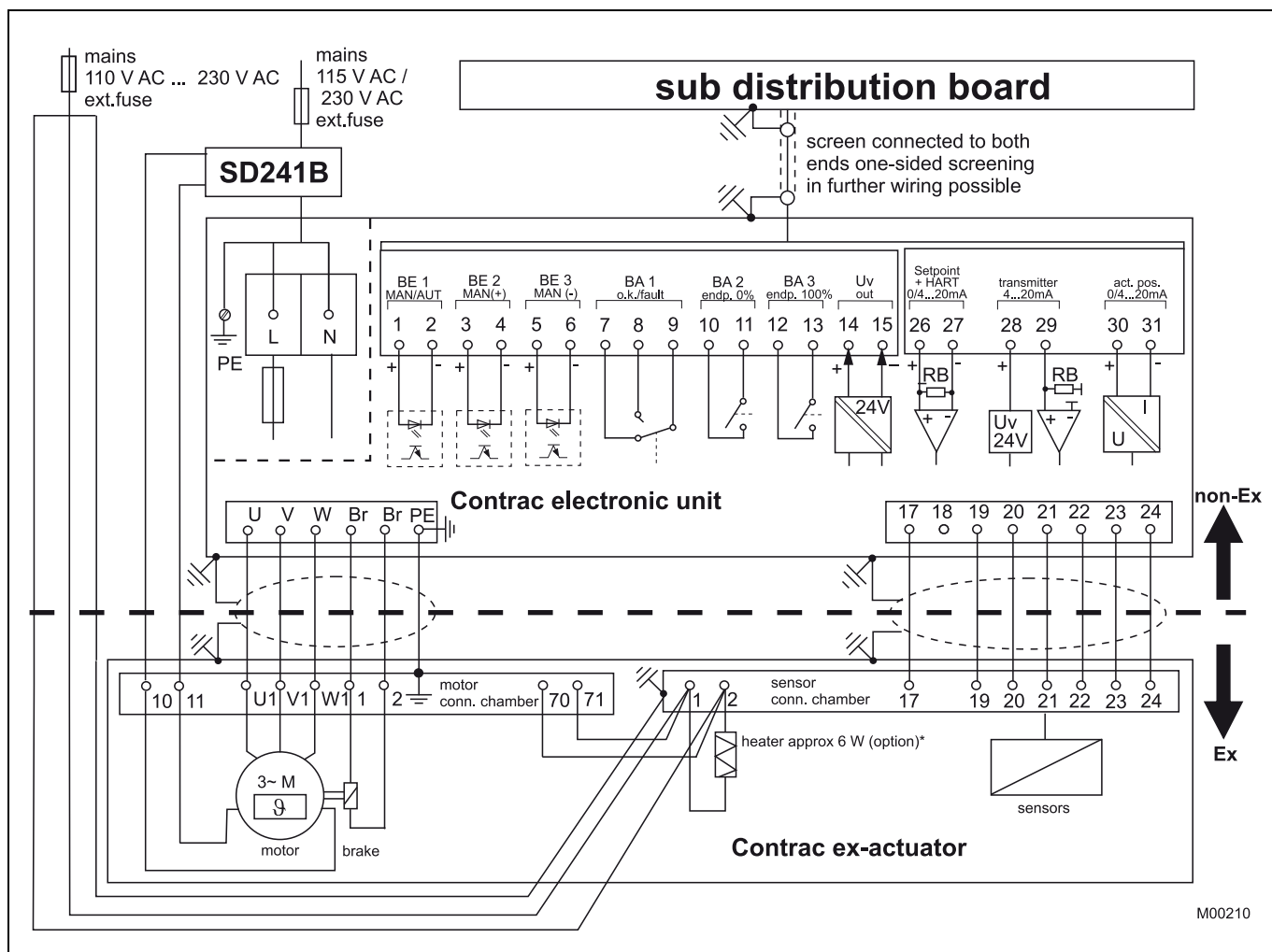


Fig. 3 Electrical connection: Ex actuator analog / digital



**Note**

\* For separate heat supply, protect the heater with 2 ... max. 6 A medium time-lag fuses (e.g., Neozed D01CE14).



**Installation information on the cable harness for actuators in Ex design**

The electrical connection between the Contrac electronic unit and the Contrac actuator can be established using the cable set (order code 695). The cable harness is not part of the Ex prototype test certificate and must therefore be tested for safety-relevant functionality within the complete installation by the installer or operator.

If the specified cable harness does not meet all safety-relevant requirements, the proper installation material must be used.

For the specified motor connecting cable, the screen must be connected at both ends and grounded.

4.4 Ex actuators; PROFIBUS DP

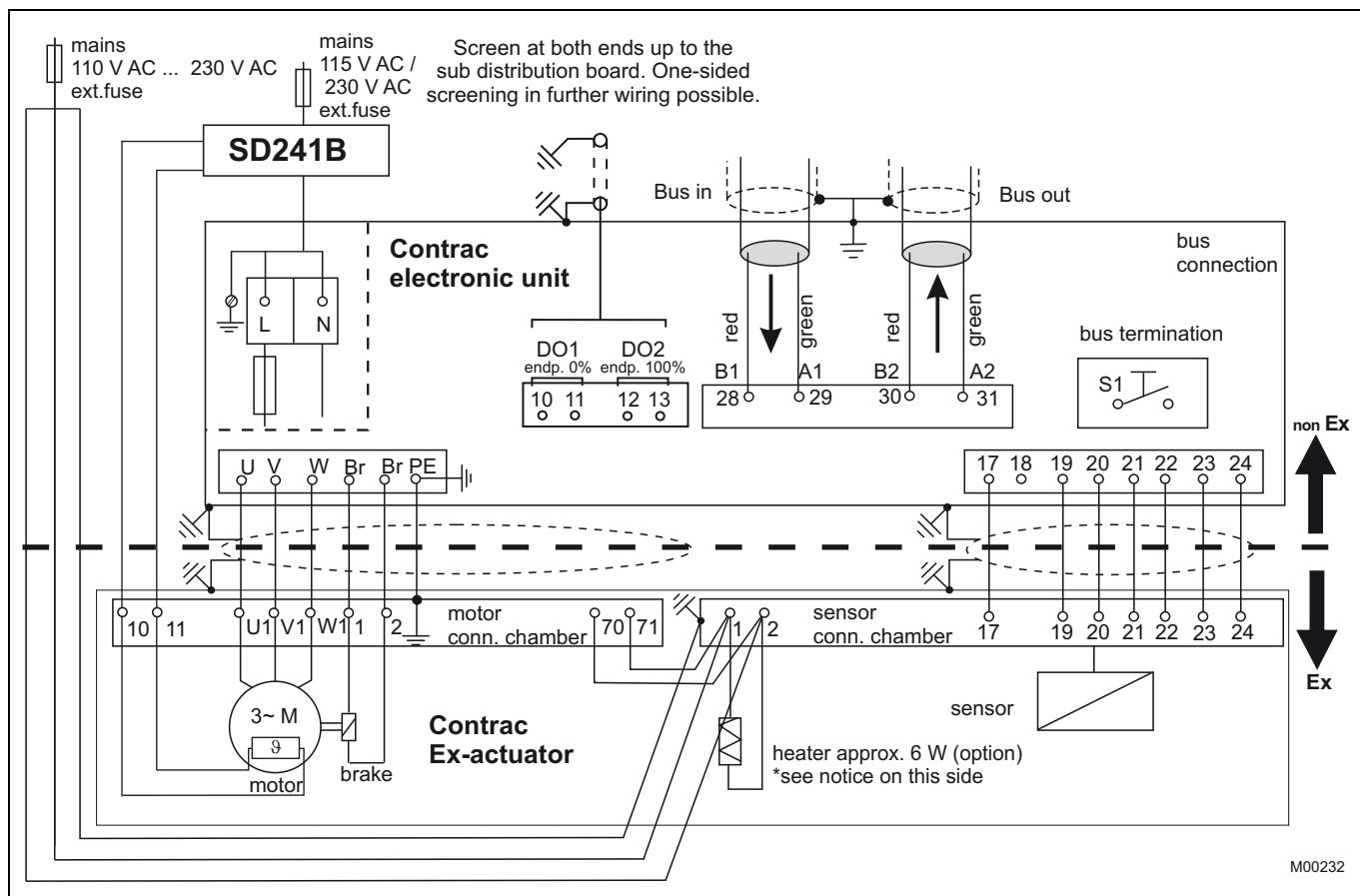


Fig. 4 Electrical connection: PROFIBUS DP option



**Note**

\* For separate heat supply, protect the heater with 2 ... max. 6 A medium time-lag fuses (e.g., Neozed D01CE14).



**Installation information on the cable harness for actuators in Ex design**

The electrical connection between the Contrac electronic unit and the Contrac actuator can be established using the cable set (order code 695). The cable harness is not part of the Ex prototype test certificate and must therefore be tested for safety-relevant functionality within the complete installation by the installer or operator.

If the specified cable harness does not meet all safety-relevant requirements, the proper installation material must be used.

For the specified motor connecting cable, the screen must be connected at both ends and grounded.

## 5 Dimensions

### 5.1 Power Electronic Unit EBN861 (Contrac)

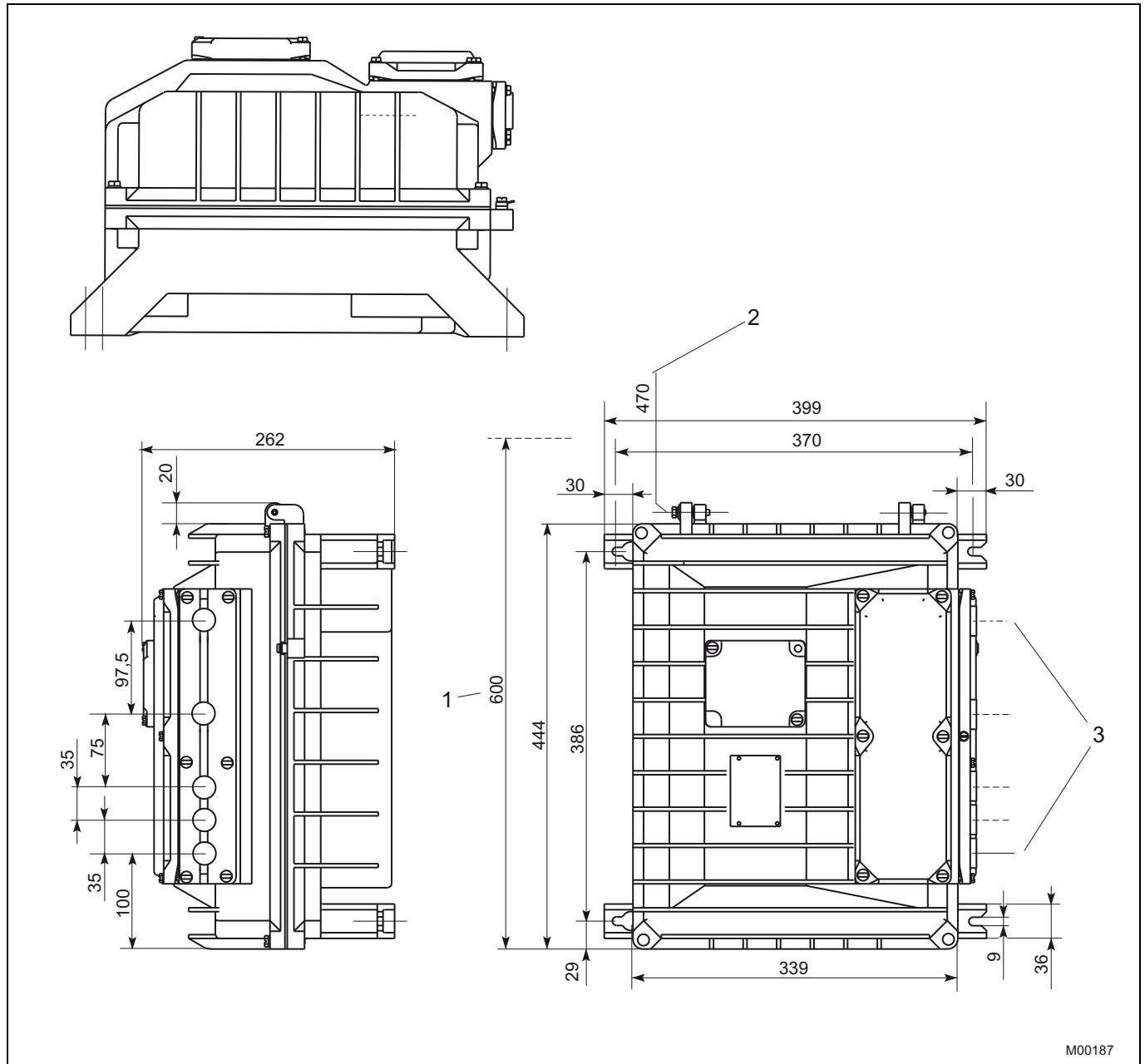


Fig. 5: Dimensions in mm

- 1 front section open, rotated 90°
- 2 rotational radius

- 3 cable entry thread

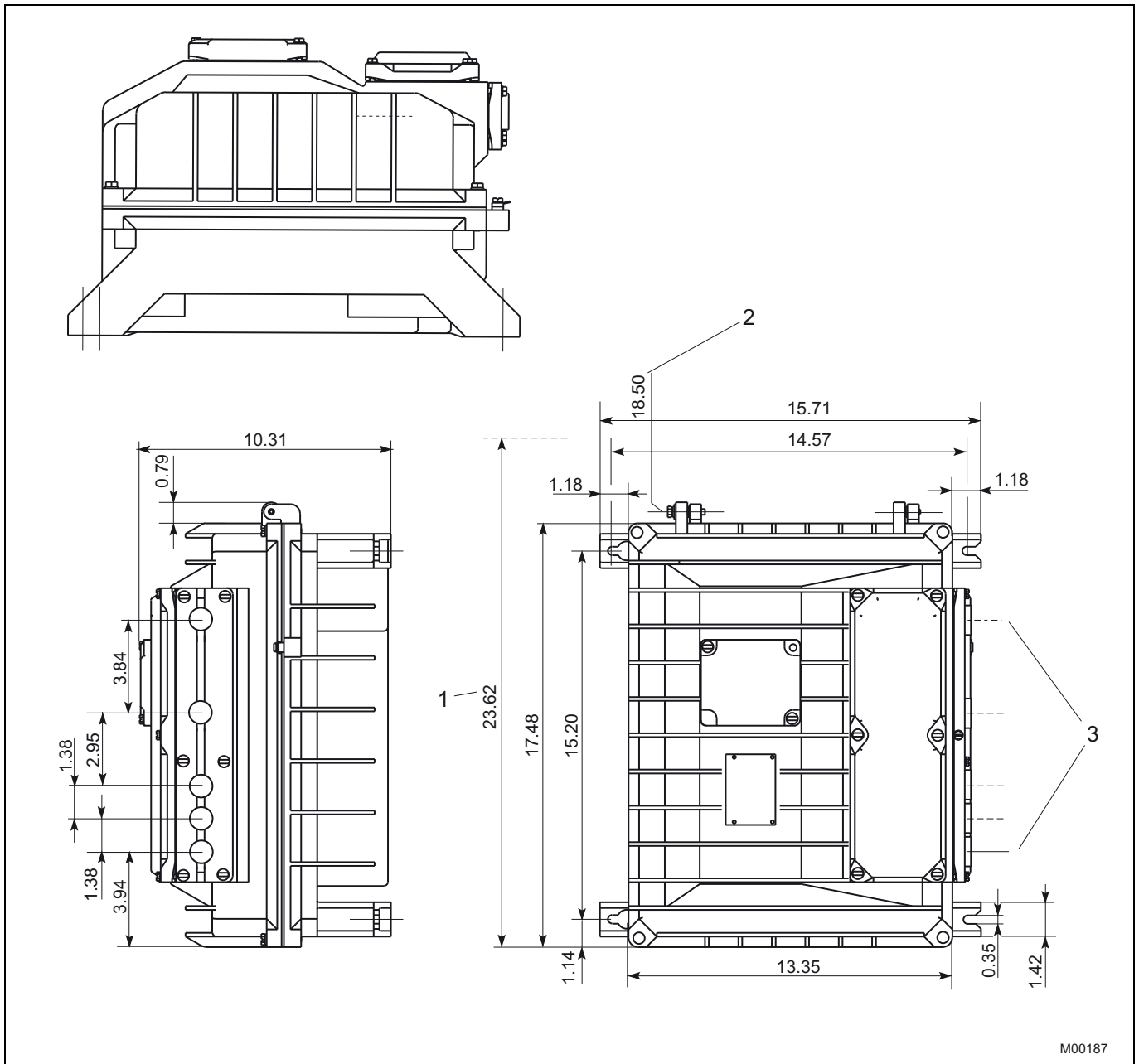


Fig. 6: Dimensions in inches

- 1 front section open, rotated 90°
- 2 rotational radius

- 3 cable entry thread

## 6 Ordering information

### 6.1 Power Electronic Unit EBN861 (Contrac)

Electronic Unit		Variant digit No.		1	8	9	10	11	12	Code			
EBN861		Catalog No.		V68861A-									
<b>Suitable for</b>													
<b>Linear Actuator</b>	Force	Speed		Stroke									
RSD50-10,0/120	50 kN (11240 lbs)	10.0 mm/s	(2.5 s/in)	120 mm	(4.7 in)	3	0	7	3				
RSD50-10,0/300	50 kN (11240 lbs)	10.0 mm/s	(2.5 s/in)	300 mm	(11.8 in)	9	1	7	3				
RSD100-10,0/150	100 kN (22500 lbs)	10.0 mm/s	(2.5 s/in)	150 mm	(5.9 in)	2	1	7	4				
RSD100-10,0/300	100 kN (22500 lbs)	10.0 mm/s	(2.5 s/in)	300 mm	(11.8 in)	9	1	7	4				
RSD200-5,0/180	200 kN (45000 lbs)	5.0 mm/s	(5.0 s/in)	180 mm	(7.08 in)	5	4	7	5				
RSD200-5,0/300	200 kN (45000 lbs)	5.0 mm/s	(5.0 s/in)	300 mm	(11.8 in)	9	1	7	5				
<b>Part-Turn Actuator</b>	Torque	Speed											
RHD2500-10	2500 Nm (1900 ft-lbs)	9.0 °/s				0	1	1	5				
RHD4000-10	4000 Nm (3000 ft-lbs)	9.0 °/s				0	1	1	6				
RHD8000-12	8000 Nm (6000 ft-lbs)	7.5 °/s				0	1	7	0				
RHD16000-30	16000 Nm (12000 ft-lbs)	3.0 °/s				0	1	1	8				
<b>Special features of Electronic Unit</b>													
Select at least one feature per group													
<b>Supply voltage</b>	230 V AC 1 Ph									380			
<b>Frequency</b>	50 Hz									382			
	60 Hz									383			
<b>Digital communication</b>	RS 232									384			
	RS 232 + HART									385			
	PROFIBUS DP (cyclic communication)									386			
	PROFIBUS DPV1 (cyclic and acyclic communication)									387			
<b>Electrical connection to actuator</b>	without cable (plug at actuator)									335			
	with 5 m (16 ft) cable end and 24-pole plug									690			
	with 10 m (32 ft) cable end and 24-pole plug									691			
	with 20 m (65 ft) cable end and 24-pole plug									692			
<b>Ambient temperature range of actuator</b>	-30 ... 50 °C (-20 ... 130 °F)									341			
	-10 ... 65 °C (15 ... 150 °F)									344			
<b>Settings of electronic unit</b>	Standard settings (see techn. data)									390			
	Customer specific settings (see data sheet 10/68-2.40 EN)									391			

<b>Additional ordering information</b>													
										Code			
Electrical connection thread	Set NPT adapter (joint metric / NPT thread)									680			
	Set PG adapter (joint metric / PG thread)									681			
Anti-condensation heater in actuator "ON"										359			
Identification on data label	(alphanumeric, max. 32 characters)									295			
Data label with US units										253			
F. No. of associated actuator on data label of electronic unit										297			
Factory certificate 2.1 acc. to EN 10204										291			
Certificate B acc. to EN 10204										292			
<b>Operating instruction</b>	(specify total quantity required, 1 copy without extra charge)												
	German	(no specification for 1 copy)								Z1D			
	English	(always state Code-No.)								Z1E			

**Note:** Delivery time for max. 2 pcs. For 3 pcs. or more delivery time on request.

For continuous control of Contract actuators RHD(E) ... and RSD(E) ... (high-performance end)

Electronic Unit		Variant digit No.		Code			
EBN861		Catalog No.		1 - 8	9	10	11 12
		V68861A-					
<b>Suitable for</b>							
<b>Linear Actuator</b>	Force	Speed	Stroke				
RSDE50-10,0/120	50 kN (11000 lbs)	10.0 mm/s (2.5 s/in)	120 mm (4.7 in)	3	0	8	4
RSDE50-10,0/300	50 kN (11000 lbs)	10.0 mm/s (2.5 s/in)	300 mm (11.8 in)	9	1	8	4
RSDE100-10,0/150	100 kN (22000 lbs)	10.0 mm/s (2.5 s/in)	150 mm (5.9 in)	2	1	8	6
RSDE100-10,0/300	100 kN (22000 lbs)	10.0 mm/s (2.5 s/in)	300 mm (11.8 in)	9	1	8	6
<b>Part-Turn Actuator</b>							
	Torque	Speed					
RHDE2500-10	2500 Nm (1850 ft-lbs)	9.0 °/s		0	1	5	9
RHDE4000-10	4000 Nm (2950 ft-lbs)	9.0 °/s		0	1	6	0
RHDE8000-15	8000 Nm (5900 ft-lbs)	6.0 °/s		0	1	6	8
RHDE16000-30	16000 Nm (11800 ft-lbs)	3.0 °/s		0	1	6	9
<b>Special features of Electronic Unit</b>							
Select at least one feature per group							
<b>Supply voltage</b>	230 V AC 1 Ph			380			
<b>Frequency</b>	50 Hz			382			
	60 Hz			383			
<b>Digital communication</b>	RS 232			384			
	RS 232 + HART			385			
	PROFIBUS DP (cyclic communication)			386			
	PROFIBUS DPV1 (cyclic and acyclic communication)			387			
<b>Electrical connection to actuator</b>	without cable			335			
	with cable for motor and signals price per m ..... m cable length (max. 100 m; 328 ft)			695			
<b>Ambient temperature range of actuator</b>	-25 ... 60 °C (-13 ... 140 °F) (only for part turn actuators Ex)			346			
	-30 ... 40 °C (-22 ... 104 °F) (only for part turn actuators Ex)			347			
	-20 ... 60 °C (-4 ... 140 °F) (only for linear actuators Ex)			348			
<b>Settings of electronic unit</b>	Standard settings (see techn. data)			390			
	Customer specific settings (see data sheet 10/68-2.40 EN)			391			

**Additional ordering information**

		Code		
Electrical connection thread	Set NPT adapter (joint metric / NPT thread)	680		
	Set PG adapter (joint metric / PG thread)	681		
Anti-condensation heater in actuator "ON"		359		
Identification on data label (alphanumeric, max. 32 characters)		295		
Data label with US units		253		
F. No. of associated actuator on data label of electronic unit		297		
Factory certificate 2.1 acc. to EN 10204		291		
Certificate B acc. to EN 10204		292		
<b>Operating instruction</b>	(specify total quantity required, 1 copy without extra charge)			
	German (no specification for 1 copy)	Z1D		
	English (always state Code-No.)	Z1E		

**Note:** Delivery time for max. 2 pcs. For 3 pcs. or more delivery time on request.



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