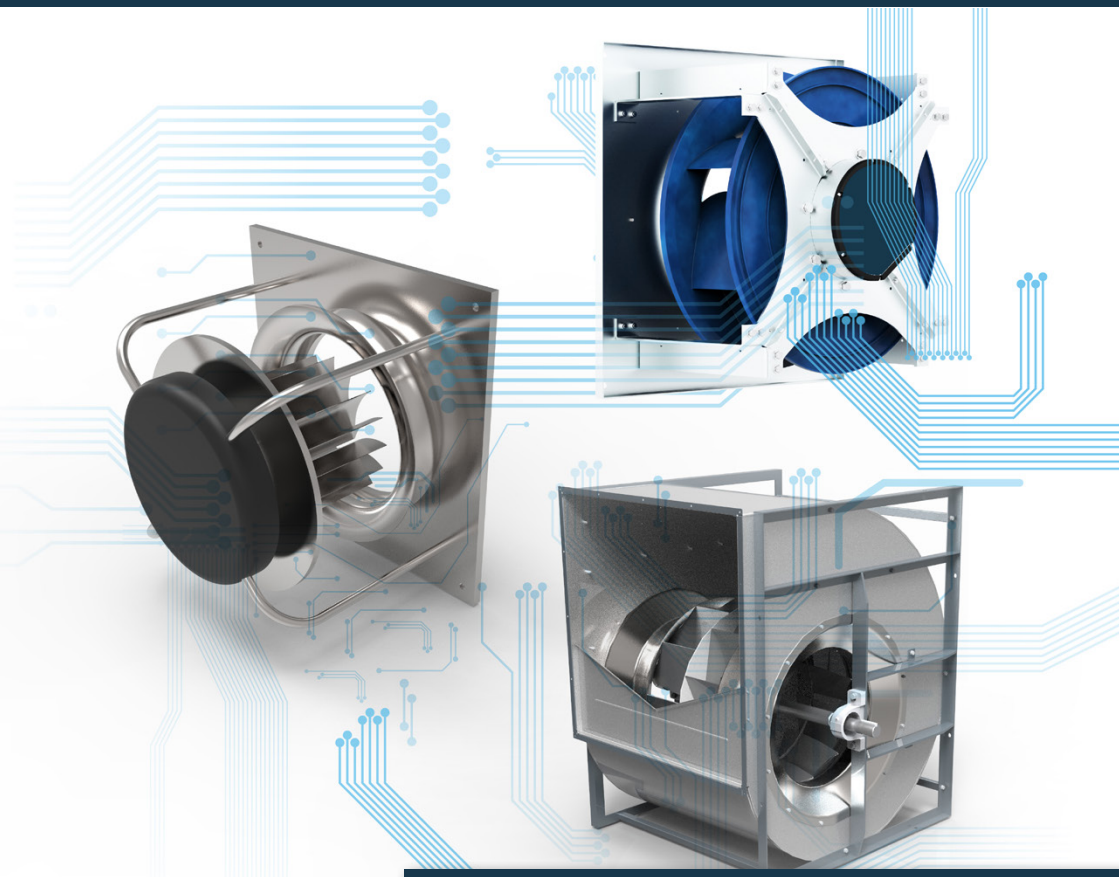
EVAIR

SMART AIR SOLUTIONS



Esquema Conexiones

Wiring Diagram

ESQUEMAS ELÉCTRICOS/*WIRING DIAGRAMS*: ebmpapst

RODETE	VENTILADOR	K	ESQUEMA
133	K3G133-RA01-03	15	H4
175	K3G175-RC05-03	31	H4
	K3G175-RD53-03	31	H4
190	K3G190-RC05-03	31	H4
	K3G190-RD45-03	31	H4
	K3G190-RG19-01	31	H5
220	K3G220-RC05-03	54	H4
	K3G220-RD53-03	54	H4
	K3G220-RG19-01	54	H5
225	K3G225-RD05-03	52	H4
	K3G225-RE07-03	52	H4
	K3G225-RH19-01	52	H5
250	K3G250-PR02-J2	76	RP3
	K3G250-PR04-H2	76	RP3
	K3G250-PR17-I2	76	RP3
	K3G250-RD17-03	76	H4
	K3G250-RE07-07	76	H4
	K3G250-RR01-H2	76	RP3
	K3G250-RR02-I2	76	RP3
280	K3G280-PR03-H2	77	RP3
	K3G280-PR04-I2	77	RP3
	K3G280-PS10-J2	77	RP3
	K3G280-RB02-03	77	H4
	K3G280-RR03-H2	77	RP3
	K3G280-RR04-I2	77	RP3
310	K3G310-PH38-02	116	RP1
	K3G310-PH58-02	116	RP1
	K3G310-PT08-J2	116	RP4
	K3G310-RB01-03	116	H4
	K3G310-RR05-H2	116	RP3
	K3G310-RS01-I2	116	RP3
	K3G310-RS05-J2	116	RP3
355	K3G355-AY43-22	148	RP7
	K3G355-PH49-02	148	RP1
	K3G355-PI93-02	148	RP1
	K3G355-PJ75-01	148	RP4

RODETE	VENTILADOR	K	ESQUEMA
355	K3G355-RB03-03	148	H4
	K3G355-RJ75-01	148	RP3
	K3G355-RR06-G2	148	RP3
	K3G355-RS02-H2	148	RP3
	K3G355-RT01-I2	148	RP3
400	K3G400-AY87-02	188	RP1
	K3G400-PA27-03	188	RP5
	K3G400-PI92-02	188	RP1
	K3G400-RJ75-01	188	RP3
	K3G400-RR07-G2	188	RP3
	K3G400-RS03-H2	188	RP3
	K3G400-RT02-I2	188	RP3
450	K3G450-PA31-03	240	RP5
	K3G450-PB24-01	240	RP1
	K3G450-PI86-02	240	RP1
	K3G450-RJ74-21	240	RP3
	K3G450-RK56-01	240	RP3
	K3G450-RS04-G2	240	RP3
	K3G450-RT03-H2	240	RP3
500	K3G500-PA28-03	281	RP5
	K3G500-PB33-01	281	RP1
	K3G500-RA24-71	281	RP2
	K3G500-RK55-21	281	RP3
	K3G500-RL96-01	281	RP3
	K3G500-RS06-G2	281	RP3
	K3G500-RT04-H2	281	RP3
560	K3G560-PB31-03	348	RP5
	K3G560-PB31-71	348	RP2
	K3G560-PC04-01	348	RP1
	K3G560-PC04-01	348	RP1
	K3G560-RA25-21	348	RP7
	K3G560-RA25-21	405	M4
	K3G560-RA25-71	348	RP1
	K3G560-RA25-71	405	M5
	K3G560-RB31-71	348	RP2
	K3G560-RB31-71	405	M5

RODETE	VENTILADOR	K	ESQUEMA
630	K3G630-AR02-01	438	RP1
	K3G630-AR02-01	438	M3
	K3G630-AS05-01	438	RP1
	K3G630-AS05-01	438	M3
	K3G630-PB32-71	438	RP2
	K3G630-PC08-01	438	RP1
	K3G630-RA21-71	515	M5
	K3G630-RA38-21	438	RP1
	K3G630-RA38-21	515	M4
	K3G630-RB32-71	438	RP2
	K3G630-RB32-71	515	M5
	K3G630-RK57-31	438	RP3
	K3G630-RK57-31	515	P5
	K3G630-RL94-21	438	RP3
	K3G630-RL94-21	515	P5
	K3G630-RL95-01	515	P6
710	K3G710-AR03-01	545	RP1
	K3G710-AR03-01	545	M3
	K3G710-AS06-01	545	RP1
	K3G710-AS06-01	545	M3
	K3G710-PC05-71	545	RP2
800	K3G800-AR08-01	695	RP1
	K3G800-AR08-01	695	M3
	K3G800-AS07-01	695	RP1
	K3G800-AS07-01	695	M3
	K3G800-PC12-71	695	RP2
900	K3G900-AR10-01	900	RP1
	K3G900-AR10-01	900	M3
	K3G900-AS08-01	900	RP1
	K3G900-AS08-01	900	M3

TABLA RESUMEN
SUMMARY TABLE

RODETE	K
250	76
280	77
310	116
355	148
400	188
450	240
500	281
560	348
630	438
710	545
800	695
1000	1200

ZIELH ABEGG

La constante K del ventilador se relaciona con el tamaño del rodete y la serie del ventilador. El accesorio de rejilla para atenuación sonora (Guard Grille) provoca una ligera disminución en el factor K.

The K-factor of the fan is related to the impeller size and fan series. The Guard Grille accessory causes a slight decrease in the K-factor.

	ZAbluefin		C/Cpro	
RODETE	K (ESTÁNDAR)	K (GUARD GRILLE)	K (ESTÁNDAR)	K (GUARD GRILLE)
225	-	-	47	46
250	67	63	60	58
280	85	80	75	72
315	106	100	95	91
355	140	130	121	116
400	180	170	154	148
450	220	210	197	189
500	280	265	252	242
560	355	335	308	295
630	-	-	381	365
710	-	-	490	470
800	-	-	620	594

La motorización del ventilador se identifica en su código como los dos caracteres situados entre puntos. Ejemplo:GR25I-6ID.BD.CR

The fan motorization is identified in its code as the two characters between dots. Example: GR25I-6ID.BD.CR

MOTOR	REF.:	ESQUEMA ELÉCTRICO DE	
BA	EC090	1360-384	
BD	EC090	1360-384	
DC	EC116	1360-403	AP00001A/AP00001C
DG	EC116	1360-403	AP00001A/AP00001C
GG	EC152	1360-403	AP00001A/AP00001C
GL	EC152	1360-403	AP00001A/AP00001C
GQ	EC152	1360-403	AP00001A/AP00001C

NICOTRA

GAMA ADH & RDH & RZR_CENTRIFUGAL FANS

RODETE	K
200	100
225	115
250	140
280	165
315	190
355	235
400	290
450	360
500	460
560	560
630	730
710	960
800	1180
900	1450
1000	1850
1120	2400
1250	3000
1400	3800
1600	4700

GAMA RLM (E6-/G6-/E3-)_ PLUG FANS

RODETE	K
2225 (G6)	73
2528	79
2831	94
3135	106
3540	128
4045	155
4550	190
5056	242
5663	310
6371	385
7180	490
8090	628
9010	794
1011	1017

GAMA MultiEvo RQM_FANS

RODETE	K
2528	--
2831	88
3135	99
3540	119
4045	148
4550	178
5056	233
5663	289
6371	372
7180	481
8090	--

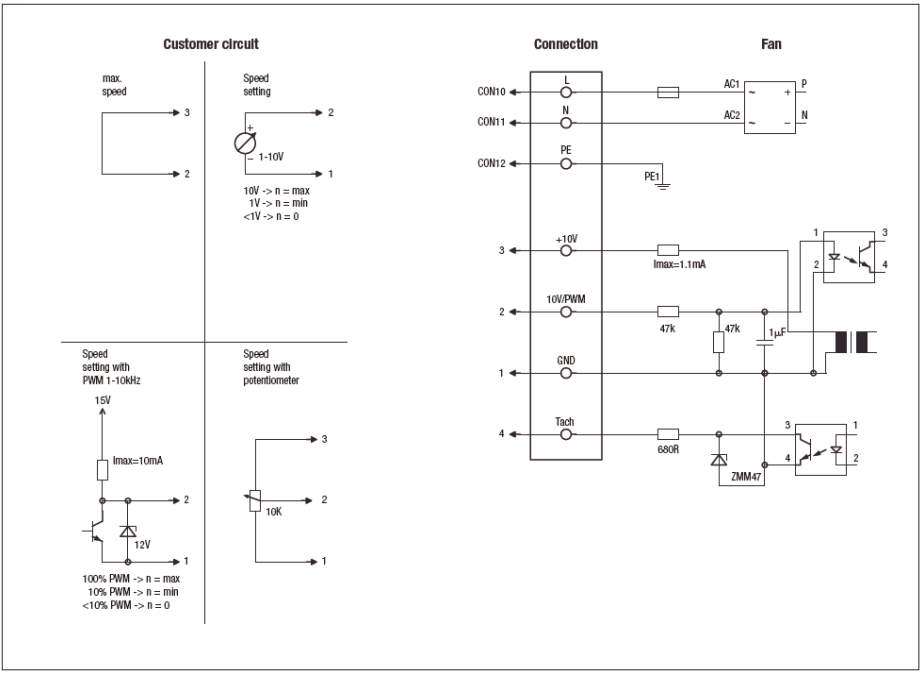
CAUDAL/*AIRFLOW*

Si queremos calcular el caudal proporcionado, debemos aplicar la siguiente fórmula:
If we want to calculate the airflow provided, we must apply the following formula:.

EBM
ZIELH ABEGG $\dot{v}=k\sqrt{\Delta p}$

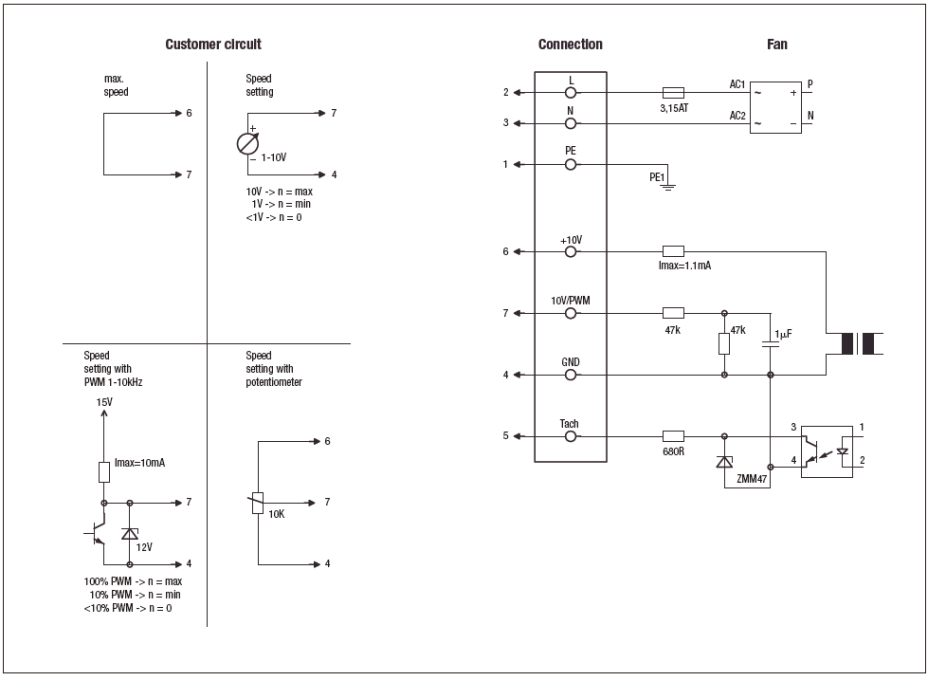
NICOTRA $\dot{v}=k\sqrt{(^2/\rho)\Delta p}$

EBM-EC_H4



Line	Connection	Colour	Assignment / function
CON10	L	black	Power supply 230 VAC, 50 - 60 Hz, see type plate for voltage range
CON11	N	blue	Neutral conductor
CON12	PE	green/yellow	Protective earth
1	GND	blue	GND - Connection for control interface
2	0-10V PWM	yellow	Control input 0 - 10 V or PWM, electrically isolated
3	10V/max.1.1mA	red	Voltage output 10 V / 1.1 mA, electrically isolated, not short-circuit-proof
4	Tach	white	Tach output: Open Collector, 1 pulse per revolution, electrically isolated

EBM-EC_H5

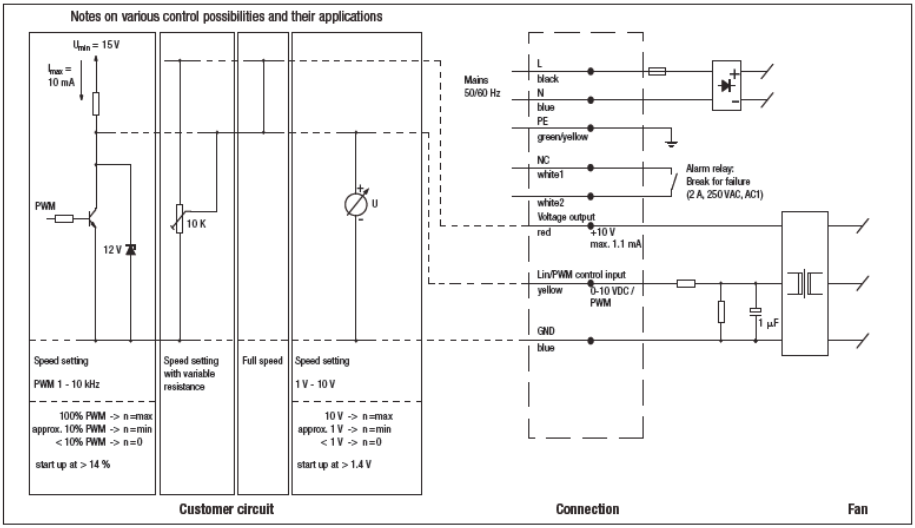


Line	Connection	Colour	Assignment / function
2	L	brown	Power supply 230 VAC, 50 - 60 Hz, see type plate for voltage range
3	N	blue	Neutral conductor
1	PE	green/yellow	Protective earth
7	0-10V PWM	yellow	Control input 0 - 10 V or PWM, electrically isolated
5	Tach	white	Tach output: Open Collector, 1 pulse per revolution, electrically isolated, Isink max=10mA
6	10V/max.1.1mA	red	Voltage output 10 V / 1.1 mA, electrically isolated
4	GND	blue	GND - Connection for control interface

EBM-EC_K1

Technical features:

- PFC (passive)
- Control input 0-10 VDC / PWM
- Output 10 VDC max. 1,1 mA
- Alarm relay
- Over-temperature protected electronics / motor



Line	Connection	Colour	Assignment / function
1	L	black	Mains 50/60 Hz, phase
	N	blue	Mains 50/60 Hz, neutral
	PE	green/yel	Protective earth
	NC	white1	Status relay, floating status contact, break with error
	COM	white2	Status relay, floating status contact, changeover contact, common connection (2 A, 250 V, min. 10 mA, AC1)

Line	Connection	Colour	Assignment / function
2	+10 V	red	Voltage output +10 V max. 1.1 mA
	0-10 V / PWM	yellow	Control input (Impedance 100 kΩ)
	GND	blue	GND

EBM-EC_L6

Terminal	Connection	Assignment/function
PE	PE	Protective earth
KL1	L3	Power supply, voltage range see nameplate, 50/60 Hz
	L2	Power supply, voltage range see nameplate, 50/60 Hz
	L1	Power supply, voltage range see nameplate, 50/60 Hz
KL2	NC	Status relay, floating status contact; break for failure
	COM	Status relay, floating status contact, common connection (2 A, 250 V, min. 10 mA, AC1)
	NO	Status relay, floating status contact; make for failure
KL3	OUT	Analogue output 0-10 VDC max. 3 mA, SELV; Output of the actual motor duty cycle (PWM): 1 V corresponds to 10 % PWM, 10 V correspond to 100 % PWM.
	GND	Reference ground for control interface, SELV
	0-10 V / PWM	Control input/current sensor value input 0-10 VDC, (impedance 100 kΩ), only for use as alternative to input 4-20 mA, SELV
	+10 V	Voltage output 10 VDC (±3 %), max. 10 mA, power supply for ext. devices (e.g. potentiometer), SELV
	+20 V	Voltage output 20 VDC (+25/-10 %), max. 50 mA, power supply for ext. devices (e.g. sensor), SELV
	4-20 mA	Control input/current sensor value input 4-20 mA, (Impedanz 100 Ω), only for use as alternative to input 0-10 V, SELV
	0-10 V / PWM	Control input/current sensor value input 0-10 VDC, (Impedanz 100 kΩ), only for use as alternative to input 4-20 mA, SELV
	GND	Reference ground for control interface, SELV
	RSB	RS485 interface for MODBUS RTU; RSB, SELV
	RSA	RS485 interface for MODBUS RTU; RSA, SELV
	RSB	RS485 interface for MODBUS RTU; RSB, SELV
	RSA	RS485 interface for MODBUS RTU; RSA, SELV

EBM-EC_L7

Technical features:

- PFC (active)
- Integrated PID controller
- Control input 0-10 VDC / PWM
- Input for sensor 0-10 V or 4-20 mA
- Slave output 0-10 V max. 3 mA
- Output 20 VDC (±20 %) max. 50 mA
- Output 10 VDC (+10 %) max. 10 mA
- RS485 MODBUS
- Alarm relay
- Line undervoltage detection
- Motor current limitation
- Over-temperature protected electronics / motor
- Locked-rotor protection
- Soft start

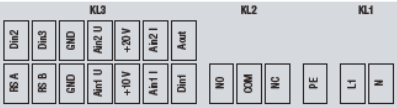
Connector	Connection	Assignment / function
PE	PE	Protective earth
KL1	N	Mains 50/60 Hz. neutral
	L	Mains 50/60 Hz, phase
KL2	NC	Status relay, floating status contact, break with error
	COM	Status relay, floating status contact, changeover contact, common connection (2 A, 250 V, min. 10 mA, AC1)
	NO	Status relay, floating status contact, close with error

Connector	Connection	Assignment / function
KL3	OUT	Master output 0-10 V max. 3 mA
	GND	GND
	0-10 V / PWM	Control / Actual value input (Impedance 100 kΩ)
	+10 V	Supply for external potentiometer,
		10 VDC (+10 %) max. 10 mA
	+20 V	Supply for external sensor,
		20 VDC (±20 %) max. 50 mA
	4-20 mA	Control / Actual value input
	0-10 V / PWM	Control / Actual value input
	GND	GND
	RSB	RS485 interface for MODBUS RTU; RSB
	RSA	RS485 interface for MODBUS RTU; RSA
	RSB	RS485 interface for MODBUS RTU; RSB
	RSA	RS485 interface for MODBUS RTU; RSA

EBM-EC_L9

Technical features:

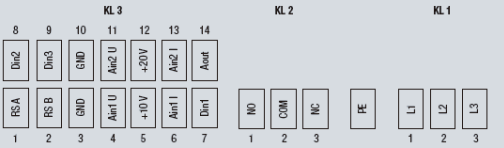
- PFC (active)
- Integrated PID controller
- Control input 0-10 VDC / PWM
- Input for sensor 0-10 V or 4-20 mA
- Slave output 0-10 V max. 3 mA
- Output 20 VDC (±20 %) max. 50 mA
- Output 10 VDC (+10 %) max. 10 mA
- RS485 MODBUS
- Alarm relay
- Line undervoltage detection
- Motor current limitation
- Over-temperature protected electronics / motor
- Locked-rotor protection
- Soft start



Connector	Connection	Assignment / function
KL1	N	Mains; neutral
	L1	Mains; L1
PE	PE	Protective earth
KL2	NC	Status relay, floating status contact, break with error
	COM	Status relay, floating status contact, changeover contact, common connection (2 A, 250 V, min. 10 mA, AC1)
	NO	Status relay, floating status contact, close with error

Connector	Connection	Assignment / function
KL3	Din1	Digital input 1 (enabling / disabling of electronics), Enabling: Pin open or applied voltage 5 to 50 VDC Disabling: Bridge to GND or applied voltage < 1 VDC
	Ain1 I	Analogue set value input, 4-20 mA (impedance 100 Ω), only to be used as alternative to terminal Ain1 U
	+10 V	Supply for external potentiometer, 10 VDC (±3 %) max. 10 mA
	Ain1U	Analogue set value input, 0-10 V (impedance 100 kΩ), only to be used as alternative to terminal Ain1 I
	GND	GND
	RSB	RS485 interface for MODBUS RTU; RSB
	RSA	RS485 interface for MODBUS RTU; RSA
	Aout	Analogue output 0-10 V max. 5 mA, reading of current motor speed / current motor control factor
	Ain2 I	Analog. actual value input, 4-20mA (impedance 100Ω), only to be used as alternative to terminal Ain2 U
	+20 V	Supply for external sensor, 20 VDC (+25 % / -10%) max. 40 mA
	Ain2 U	Analog. actual value input, 0-10 V (impedance 100 kΩ), only to be used as alternative to terminal Ain2 I
	GND	GND
	Din3	Digital input 3 (switch Normal / Inverse), The preset effective direction of the integrated controller can be selected via BUS or via digital input Normal/Inverse. Normal: Pin open or applied voltage 5 to 50 VDC Inverse: Bridge to GND or applied voltage < 1 VDC
	Din2	Digital input 2 (switch Day / Night), The preset set of parameters can be selected via BUS or via digital input Day/Night. Day: Pin open or applied voltage 5 to 50 VDC Night: Bridge to GND or applied voltage < 1 VDC

EBM-EC_M3

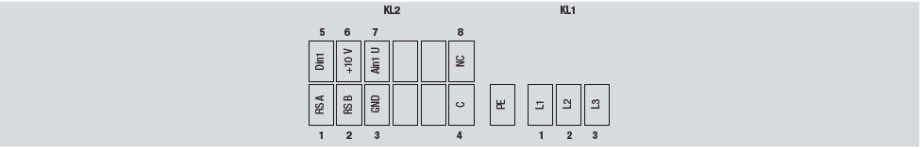


Terminal	Pin	Connection	Assignment/function
KL1	1	L1	Supply connection, power supply 3-phase 380-480 VAC, 50/60 Hz
	2	L2	Supply connection, power supply 3-phase 380-480 VAC, 50/60 Hz
	3	L3	Supply connection, power supply 3-phase 380-480 VAC, 50/60 Hz
PE		PE	Ground connection, PE connection
KL2	1	NO	Status relay, floating status contact, make for failure
	2	COM	Status relay, floating status contact, changeover contact, common connection! (2 A, 250 V, min. 10 mA, AC1)
	3	NC	Status relay, floating status contact, break for failure
KL3	1	RSA	Bus connection RS485; RSA; MODBUS RTU
	2	RSB	Bus connection RS485; RSB; MODBUS RTU
	3/10	GND	Reference ground for control interface, SELV
	4	Ain1 U /PWM	Analog input 1 (set value); 0-10 V; Ri= 100 kΩ; adjustable curve; only for use as alternative to input Ain1 I, SELV
	5	+10 V	Fixed voltage output 10 VDC; +10 V ±3 %; max. 10 mA; short-circuit-proof; power supply for external devices (e.g. potentiometer), SELV
	6	Ain1I	Analog input 1 (set value); 4-20 mA; Ri= 100 Ω; adjustable curve, only for use as alternative to input Ain1 U, SELV
	7	Din1	Digital input 1: Enable electronics; Enable: Pin open or applied voltage 5...50 VDC; Disable: Bridge to GND or applied voltage < 1 VDC; Reset function: Triggering of software reset after level change to < 1VDC, SELV
	8	Din2	Digital input 2: Switching parameter sets 1/2, according to EEPROM setting, the valid/used parameter set can be selected via bus or via digital input Din2. Parameter set 1: Pin open or applied voltage 5-50 VDC; Parameter set 2: Bridge to GND or applied voltage < 1 VDC, SELV
	9	Din3	Digital input 3: Direction of action of integrated controller; According to EEPROM setting, the direction of action of the integrated controller can be selected as normal/inverse via bus or digital input; Normal: Pin open or applied voltage 5...50 VDC; Inverse: Bridge or applied voltage < 1 VDC, SELV
	11	Ain2 U	Analog input 2; Measured value 0-10 V; Ri= 100 kΩ; adjustable curve; only for use as alternative to input 11 Ain2 I, SELV
	12	+20 V	Fixed voltage output 20 VDC; +20 V +25/-10 %; max. 50 mA; short-circuit-proof; power supply for external devices (e.g. sensor), SELV
	13	Ain2I	Analog input 2; Measured value 4-20 mA; Ri= 100 Ω; adjustable curve, only for use as alternative to input Ain2 U, SELV
	14	Aout	Analog output 0-10 V; max. 5 mA; output of current motor modulation level/current motor speed. Adjustable curve, SELV

EBM-EC_M4

Connector	Connection	Assignment / function
KL1	N	Mains supply connection, supply voltage 1~200-277 VAC, 50/60 Hz
	L1	Mains supply connection, supply voltage 1~200-277 VAC, 50/60 Hz
PE	PE	Earth connection, PE connection
KL2	NC	Status relay, floating status contact, option 1: break with error, option 2: break with error for run monitor error message
	COM	Status relay, floating status contact, changeover contact, common connection, contact rating 250 VAC / 2 A (AC1)
	NO	Status relay, floating status contact, option 1: close with error, option 2: close with run monitor error message
KL3	Din1	Digital input 1: enabling of electronics; enabling: open pin or applied voltage 5 to 50 VDC; disabling: bridge to GND or applied voltage < 0,8 VDC; reset function: triggers software reset after a level change to < 0,8 V
	Ain1 I	Analogue input 1 (set value); 4-20 mA; Ri= 100 Ω; parametrisable curve; only usable as alternative to input Ain1 U
	+10 V	Fixed voltage output 10 VDC; +10 V ±3 %; max. 10 mA; short circuit proof; power supply for ext. devices (e.g. potentiometer)
	Ain1U	Analogue input 1 (set value); 0-10 V; Ri= 100 kΩ; parametrisable curves; only usable as alternative to input Ain1 I
	GND	Signal ground for control interface
	RSB	Bus connection RS485; RSB; MODBUS RTU
	RSA	Bus connection RS485; RSA; MODBUS RTU
	Aout	Analogue output 0-10 V; max. 5 mA; output of the actual motor control factor (output voltage of electronics)/of the actual motor speed; parametrisable curve
	Ain2 I	Analogue input 2; actual sensor value 4-20 mA; Ri= 100 Ω; parametrisable curve; only useable as alternative to input Ain2 U
	+20 V	Fixed voltage output 20 VDC; +20 V +25/-10 %; max. 50 mA; short circuit proof; power supply for ext. devices (e.g. sensors)
	Ain2 U	Analogue input 2; actual sensor value 0-10 V; Ri= 100 kΩ; parametrisable curve; only useable as alternative to input Ain2 I
	GND	Signal ground for control interface
	Din3	Digital input 3: Control characteristic of the integrated controller; according to EEPROM setting, the control characteristic of the integrated controller is normally/inversely selectable per BUS or per digital input; normal: open pin or applied voltage 5 to 50 VDC; inverse: bridge to GND or applied voltage < 0,8 VDC
	Din2	Digital input 2: parameter set switch 1/2; according to EEPROM setting, thr valid/used parameter set is selectable per BUS or per digital input Din2. Parameter set 1: open pin or applied voltage 5 to 50 VDC; parameter set 2: bridge to GND or applied voltage < 0,8 VDC

EBM-EC_M5

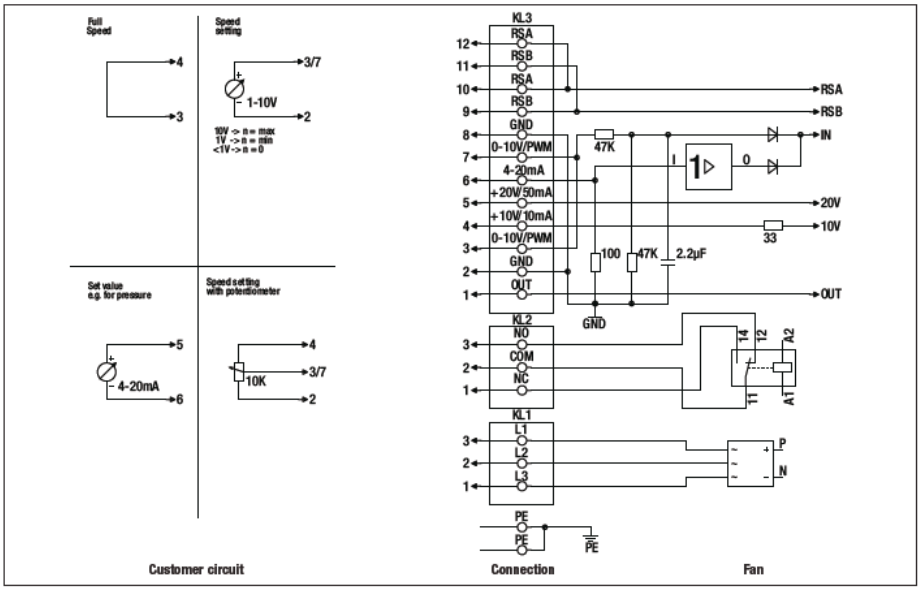


Connector	Pin	Connection	Assignment / function
KL1	1	L1	Mains supply connection, supply voltage 3~380-480 VAC; 50/60 Hz
	2	L2	Mains supply connection, supply voltage 3~380-480 VAC; 50/60 Hz
	3	L3	Mains supply connection, supply voltage 3~380-480 VAC; 50/60 Hz
PE		PE	Earth connection, PE connection
KL2	1	RSA	Bus connection RS485; RSA; MODBUS RTU
	2	RSB	Bus connection RS485; RSB; MODBUS RTU
	3	GND	Signal ground for control interface
	4	C	Status relay, floating status contact, changeover contact, common connection 250 VAC / 2 A (AC1)
	5	Din1	Digital input 1: enabling of electronics; enabling: open pin or applied voltage 5 to 50 VDC; disabling: bridge to GND or applied voltage < 1 VDC; reset function: triggers software reset after a level change to < 1V
	6	+10 V	Fixed voltage output 10 VDC; +10 V ±3 %; max. 10 mA; short circuit proof; power supply for ext. devices (e.g. potentiometer)
	7	Ain1 U	Analogue input 1 (set value); 0-10 V; Ri= 100 kΩ; parametrisable curves
	8	NC	Status relay, floating status contact, break with error

EBM-EC_P2

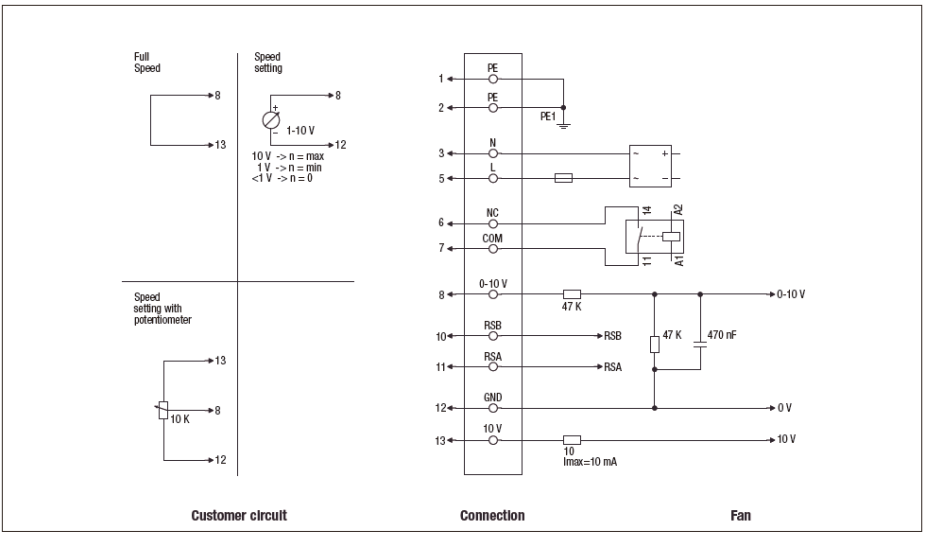
Technical features:

- PFC (passive)
- integrated PID controller
- Control input 0-10 VDC / PWM
- Input for sensor 0-10 V or 4-20 mA
- Slave output 0-10 V max. 5 mA
- Output 20 VDC (±25 % / -10 %) max. 50 mA
- Output 10 VDC (+3 %) max. 10 mA
- External 24 V input (programming)
- RS485 MODBUS RTU
- Motor current limitation, Alarm relay
- Line undervoltage / phase failure detection
- Over-temperature protected electronics / motor
- Locked-rotor protection, Soft start
- Control interface with SELV potential safely disconnected from the mains



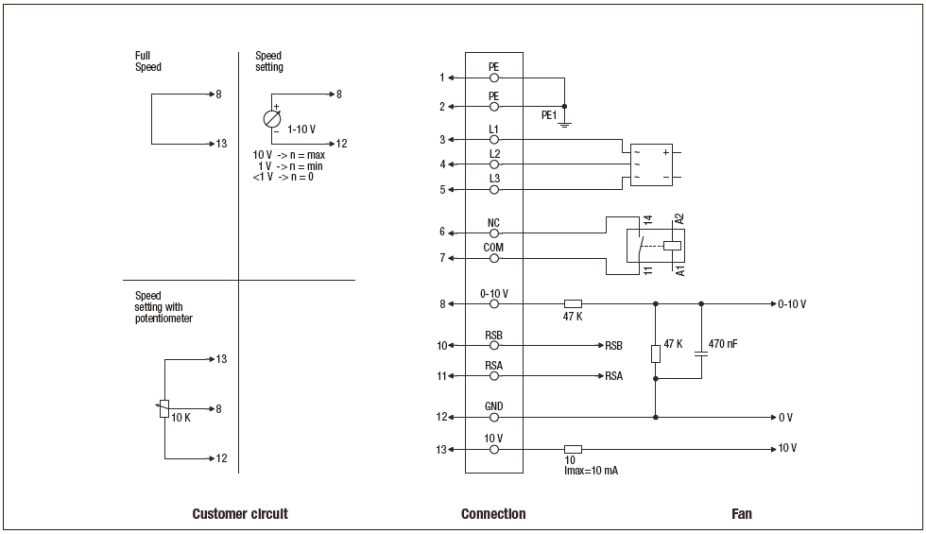
Connector	Pin	Connection	Assignment / function
PE		PE	Earth connection, PE connection
KL1	1/2/3	L1, L2, L3	Mains supply connection, supply voltage 3~380-480 VAC; 50/60 Hz
KL2	1	NC	Status relay, floating status contact; option 1: break with error; option 2: break with error for run monitor error message
	2	COM	Status relay, floating status contact; changeover contact; common connection (2 A, 250 V, min. 10 mA, AC1)
	3	NO	Status relay, floating status contact; option 1: close with error; option 2: close with run monitor error message
KL3	1	OUT	Analogue output 0-10 V; max. 3 mA, SELV, output of the actual motor duty cycle (PWM): 1 V corresponds to 10 % PWM, 10 V corresponds to 100 % PWM
	2/8	GND	Signal ground for control interface KL3; SELV
	3/7	0-10 V	Control input 0-10 VDC, impedance 100 kΩ; only usable as alternative to 4-20 mA input, SELV
	4	+10 V	Fixed voltage output 10 VDC (±3 %), max. 10 mA; power supply for ext. devices (e.g. potentiometer), SELV
	5	+20 V	Fixed voltage output 20 VDC (+25 % / -10 %), max. 50 mA; power supply for ext. devices (e.g. sensors), SELV
	6	4-20 mA	Control input 4-20 mA, impedance 100 Ω; only usable as alternative to 0-10 V input, SELV
	9/11	RSB	RS485 interface for MODBUS RTU; RSB
	10/12	RSA	RS485 interface for MODBUS RTU; RSA

EBM-EC_P5



Line	No.	Connection	Colour	Assignment / function
1	1, 2	PE	green/yellow	Protective earth
1	3	N	blue	Supply voltage, neutral conductor, see type plate for voltage range, 50/60 Hz
1	5	L	black	Supply voltage, phase, see type plate for voltage range, 50/60 Hz
1	6	NC	white 1	Status relay, floating status contact, break for failure, contact rating 250 VAC / 2 A (AC1) min. 10 mA, basic insulation on mains side and reinforced insulation on control interface side
1	7	COM	white 2	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) min. 10 mA, basic insulation on mains side and reinforced insulation on control interface side
2	8	0-10 V	yellow	Analogue input (set value), SELV 0-10 V, Impedance 100 kΩ, parametrisable curve
2	10	RSB	brown	RS485 interface for MODBUS, RSB, SELV
2	11	RSA	white	RS485 interface for MODBUS, RSA, SELV
2	12	GND	blue	Reference ground for control interface, SELV
2	13	+10 V	red	Fixed voltage output 10 VDC, SELV +10 V +/- 3%), max. 10 mA, short-circuit-proof, Power supply for external devices (e.g. potentiometer)

EBM-EC_P6

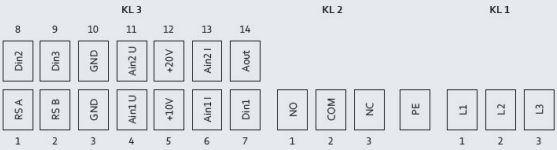


Line	No.	Connection	Colour	Assignment / function
1	1, 2	PE	green/yellow	Protective earth
1	3, 4, 5	L1, L2, L3	black	Supply voltage, see type plate for voltage range, 50/60 Hz
1	6	NC	white 1	Status relay, floating status contact, break for failure, contact rating 250 VAC / 2 A (AC1) min. 10 mA, basic insulation on mains side and reinforced insulation on control interface side
1	7	COM	white 2	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) min. 10 mA, basic insulation on mains side and reinforced insulation on control interface side
2	8	0-10 V	yellow	Analogue input (set value), SELV 0-10 V, Impedance 100 kΩ, parametrisable curve
2	10	RSB	brown	RS485 interface for MODBUS, RSB, SELV
2	11	RSA	white	RS485 interface for MODBUS, RSA, SELV
2	12	GND	blue	Reference ground for control interface, SELV
2	13	+10 V	red	Fixed voltage output 10 VDC, SELV +10 V +/- 3%), max. 10 mA, short-circuit-proof, Power supply for external devices (e.g. potentiometer)

EBM-EC_RP1

Technical features:

- Control input 0-10 VDC / PWM
- Output 10 VDC (+10 %) max. 10 mA
- Output 20 VDC (+/-20 %) max. 50 mA
- Output for slave 0-10 V max. 5 mA
- Input for sensor 0-10 V or 4-20 mA
- Operation and fault indicator
- Integrated PI controller
- Locked-rotor protection / Soft start / Motor current limitation
- RS 485 MODBUS-RTU / Alarm relay
- PFC, passive (standard) or PFC, active (see product-specific catalog page)
- Thermal overload protection for electronics/motor
- Undervoltage/phase failure detection
- Control interface with SELV potential safely disconnected from supply
- External enable input/External 24 V input (parameterization)

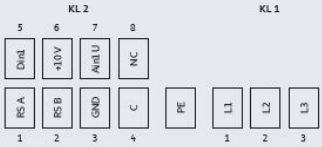


Terminal	Pin	Designation	Assignment/function
KL1	1	L1	Power supply, phase, see nameplate for voltage range
	2	L2	Power supply, phase, see nameplate for voltage range
	3	L3	Power supply, phase, see nameplate for voltage range
PE		PE	Protective earth
KL2	1	NO	Status relay, floating status contact, option 1: break for failure, option 2: break for run monitoring error message
	2	COM	Status relay, floating status contact, common connection, contact rating 250 VAC / 2 A (AC1) min. 10 mA, reinforced insulation on supply side and on control interface side
	3	NC	Status relay, floating status contact, option 1: make for failure, option 2: make for run monitoring error message
KL3	1	RSA	RS485 interface for MODBUS RSA, SELV
	2	RSB	RS485 interface for MODBUS RSB, SELV
	3/10	GND	Reference ground for control interface, SELV
	4	Ain1 U / PWM	Analog input 1 (set value); 0-10 V; Ri= 100 kΩ; adjustable curve; only for use as alternative to input Ain1 I, SELV
	5	+10V	Voltage output, power supply for external devices (e.g. potentiometers), SELV
	6	Ain1 I	Analog input 1 (set value); 4-20 mA; Ri= 100 Ω; adjustable curve, only for use as alternative to input Ain1 U, SELV
	7	Din1	Digital input 1: Enable electronics; Enable: Pin open or applied voltage 5...50 VDC; Disable: Bridge to GND or applied voltage < 1 VDC; Reset function: Triggering of software reset after level change to < 1VDC, SELV
	8	Din2	Digital input 2: Switching parameter sets 1/2, according to EEPROM setting, the valid/used parameter set can be selected via bus or via digital input Din2. Parameter set 1: Pin open or voltage 5-50 VDC; Parameter set 2: Bridge to GND or applied voltage < 1 VDC, SELV
KL3	9	Din3	Digital input 3: Direction of action of integrated controller; According to EEPROM setting, the direction of action of the integrated controller can be selected as normal/inverse via bus or digital input; Normal: Pin open or applied voltage 5...50 VDC; Inverse: Bridge or applied voltage < 1 VDC, SELV
	11	Ain2 U	Analog input 2; Measured value 0-10 V; Ri= 100 kΩ; adjustable curve; only for use as alternative to input Ain2 I, SELV
	12	+20V	Voltage output, power supply for external devices (e.g. sensors), SELV
	13	Ain2 I	Analog input 2; Measured value 4-20 mA; Ri= 100 Ω; adjustable curve, only for use as alternative to input Ain2 U, SELV
	14	Aout	Analog output 0-10 V; max. 5 mA; output of current motor modulation level/current motor speed. Adjustable curve, SELV

EBM-EC_RP2

Technical features:

- Control input 0-10 VDC / PWM
- Output 10 VDC max. 10 mA
- RS 485 MODBUS-RTU / PFC, passive
- Locked-rotor protection / Soft start
- Operation and fault indicator
- Integrated PI controller
- Thermal overload protection for electronics/motor
- Motor current limitation / Alarm relay
- Undervoltage/phase failure detection
- Control interface with SELV potential safely disconnected from supply
- External enable input/External 24 V input (parameterization)



Terminal	Pin	Designation	Assignment/function
KL1	1	L1	Power supply, phase, see nameplate for voltage range
	2	L2	Power supply, phase, see nameplate for voltage range
	3	L3	Power supply, phase, see nameplate for voltage range
PE		PE	Protective earth
KL2	1	RSA	RS485 interface for MODBUS RSA, SELV
	2	RSB	RS485 interface for MODBUS RSB, SELV
	3	GND	Reference ground for control interface; SELV
	4	C	Status relay, floating status contact, contact rating 250 VAC / 2 A (AC1) min. 10 mA, reinforced insulation on supply side and on control interface side
	5	Din1	Digital input 1 enable electronics, enable: pin open or applied voltage 5-50 VDC disable: bridge to GND or applied voltage < 1 VDC reset function: triggers software reset after a level change to < 1 V; SELV
	6	+10V	Voltage output, power supply for external devices (e.g. potentiometers), SELV or: +24 VDC input for parameter setting via MODBUS without line voltage
	7	Ain1 U	Analog input 1 (set value) 0-10 V, Ri = 100 kΩ, adjustable curve; SELV
	8	NC	Status relay, floating status contact, break for failure

EBM-EC_RP3

Technical features:

- Control input 0-10 VDC / PWM
- Output 10 VDC max. 10 mA
- RS 485 MODBUS-RTU / PFC, active
- Locked-rotor protection / Soft start
- Operation and fault indicator
- Power limiter
- Alarm relay
- Thermal overload protection for electronics/motor
- Motor current limitation
- Undervoltage detection
- Control interface with SELV potential safely disconnected from supply

Wire	Designation	Color	Assignment/function
1	PE	green/yellow	Protective earth
	N	blue	Power supply, neutral conductor, voltage range see nameplate
	L	black	Power supply, phase, voltage range see nameplate
	NC	white 1	Status relay, floating status contact, break for failure
	COM	white 2	Status relay, floating status contact, contact rating 250 VAC / 2 A (AC1) min. 10 mA, basic insulation on supply side and reinforced insulation on control interface side
2	0-10 V / PWM	yellow	Control input 0-10 V or PWM, impedance 100 kΩ, SELV, adjustable curve
	RSB	brown	RS485 interface for MODBUS, RSB, SELV
	RSA	white	RS485 interface for für MODBUS, RSA, SELV
	GND	blue	Reference ground for control interface, SELV
	+10 V (max. 10 mA)	red	Voltage output, power supply for ext. devices (e.g. potentiometer), SELV

EBM-EC_RP4

Technical features:

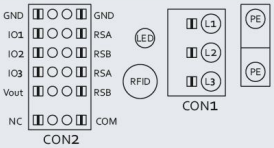
- Control input 0-10 VDC / PWM
- Output 10 VDC max. 10 mA
- RS 485 MODBUS-RTU / PFC, passive
- Locked-rotor protection / Soft start
- Operation and fault indicator
- Integrated PI controller
- Thermal overload protection for electronics/motor
- Motor current limitation / Alarm relay
- Undervoltage/phase failure detection
- Control interface with SELV potential safely disconnected from supply
- External 24 V input (parameterization)

Wire	Designation	Color	Assignment/function
1	PE	green/yellow	Protective earth
	L1	black	Power supply, phase, see nameplate for voltage range
	L2	black	Power supply, phase, see nameplate for voltage range
	L3	black	Power supply, phase, see nameplate for voltage range
	NC	white 1	Status relay, floating status contact, break for failure
	COM	white 2	Status relay, floating status contact, contact rating 250 VAC / 2 A (AC1) min. 10 mA, basic insulation on supply side and reinforced insulation on control interface side
2	GND	blue	basic insulation on supply side and reinforced insulation on control interface side
	RSA	white	RS485 interface for MODBUS, RSA, SELV
	RSB	brown	RS485 interface for MODBUS, RSB, SELV
	0-10 V / PWM	yellow	Control input 0-10 V or PWM, impedance 100 kΩ, SELV, adjustable curve
	+10 V	red	Voltage output, power supply for external devices (e.g. potentiometers), SELV or: +24 VDC input for parameter setting via MODBUS without line voltage

EBM-EC_RP5

Technical features:

- Configurable inputs/outputs (I/O)
- RFID - ISO 15693 compatible
- Operation and fault indicator with LED
- Integrated PI controller
- Locked-rotor protection
- Soft start / Alarm relay
- Motor current limitation
- Voltage output 3,3-24 VDC, Pmax = 800 mW
- RS 485 MODBUS-RTU / MODBUS V6
- Thermal overload protection for electronics/motor
- Undervoltage/phase failure detection
- Control interface with SELV potential safely disconnected from supply
- External 15-50 VDC input (parameterization)

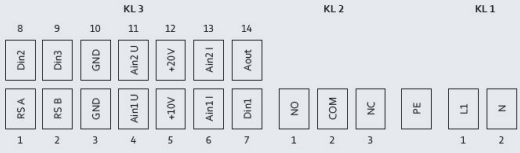


Terminal	Designation	Assignment/function
CON1	L1, L2, L3	Power supply, phase, see nameplate for voltage range
PE	PE	Protective earth
CON2	RSA	RS485 interface for MODBUS, RSA, SELV
	RSB	RS485 interface for MODBUS, RSB, SELV
	GND	Reference ground for control interface, SELV
	IO1	IN2: Digital input - positive logic (factory setting: Enable) function parameterizable, SELV - normal: Pin open or applied voltage < 1,5 VDC - inverse: applied voltage 3,5-50 VDC
	IO2	IN1: Analog input 0-10 V; 0-10 V, Ri=100 K, parameterizable as set value or measured value (factory setting: set value), characteristic curve parameterizable, SELV
	IO3	OUT1: Analog output 0-10 V; 0-10 V, max 5 mA, function parameterizable (factory setting: modulation lrvel) max output frequency 300 Hz, SELV
	Vout	Voltage output 3,3-24 VDC +/-5 %, Pmax=800 mW, voltage parameterizable (factory setting: 10 VDC) short-circuitproof, supply for external devices, SELV alternatively: 15-50 VDC input for parameterization via Modbus without line voltage
	COM	Status relay, floating status contact, contact rating 250 VAC / 2 A (AC1) min. 10 mA reinforced insulation on supply side and on control interface side
	NC	Status relay, floating status contact, option 1: break for failure, option 2: break for run monitoring error message

EBM-EC_RP7

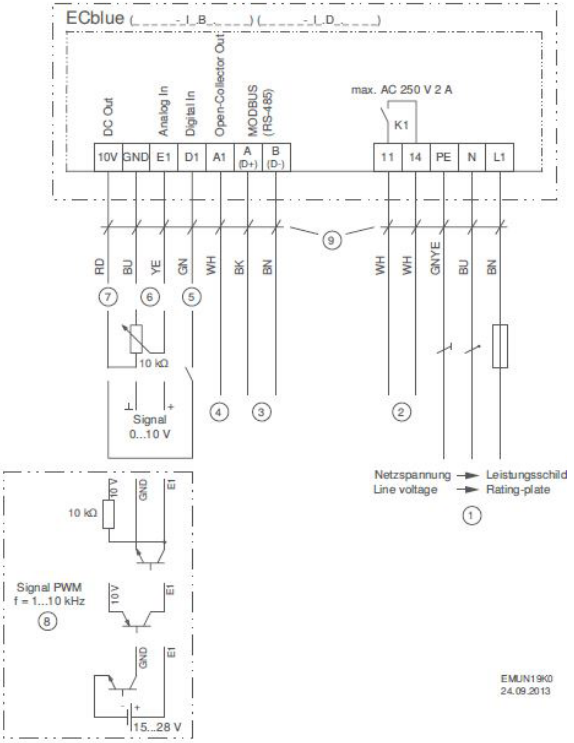
Technical features:

- Control input 0-10 VDC / PWM
- Output 10 VDC (+10 %) max. 10 mA
- Output 20 VDC (+/-20 %) max. 50 mA
- Output for slave 0-10 V max. 5 mA
- Input for sensor 0-10 V or 4-20 mA
- Tach output
- Integrated PI controller
- Soft start / Motor current limitation
- RS 485 MODBUS-RTU / Alarm relay
- PFC, active / Power limiter
- Thermal overload protection for electronics/motor
- Undervoltage/phase failure detection
- Control interface with SELV potential safely disconnected from supply
- External enable input/External 24 V input (parameterization)



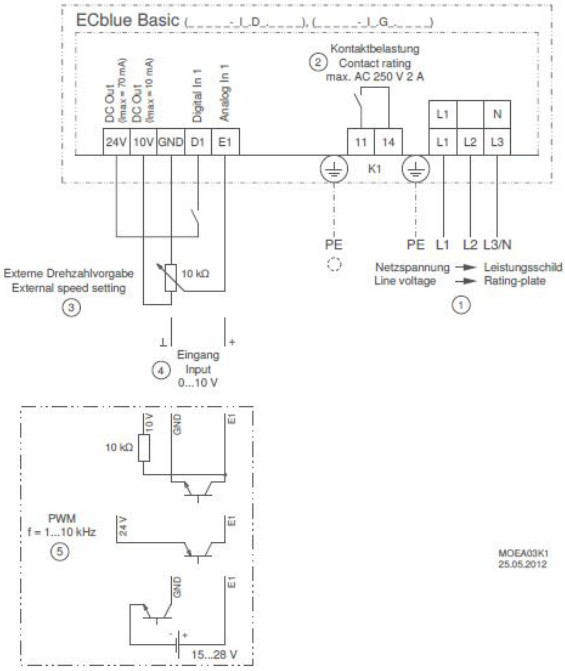
Terminal	Pin	Designation	Assignment/function
KL1	1	L1	Power supply, phase, see nameplate for voltage range
	2	N	Power supply, neutral conductor, see nameplate for voltage range
PE		PE	Protective earth
KL2	1	NO	Status relay, floating status contact, make for failure
	2	COM	Status relay, floating status contact, changeover contact, common connection, contact rating, max. 250 VAC / 2 A (AC1) min. 10 mA
	3	NC	Status relay, floating status contact, break for failure
KL3	1	RSA	Bus connection RS485, RSA, MODBUS-RTU; SELV
	2	RSB	Bus connection RS485, RSB, MODBUS-RTU; SELV
	3/10	GND	Reference ground for control interface, SELV
	4	Ain1 U / PWM	Analog input 1, set value: 0-10 V, Ri = 100 kΩ, adjustable curve, only usable as alternative to input Ain1 I, SELV
	5	+10V	Voltage output 10 VDC,+10 V ± 3%,max.10 mA, power supply for external devices (e.g. pot), SELV
	6	Ain1 I	Analog input 1, set value: 4-20 mA, Ri = 100 Ω, adjustable curve, only usable as alternative to input Ain1 U, SELV
	7	Din1	Digital input 1: enable electronics, enable: pin open or applied voltage 5-50 VDC, disable: bridge to GND or applied voltage < 1 VDC reset function: triggers software reset after a level change to < 1 VDC; SELV
	8	Din2	Digital input 2: Switching parameter sets 1/2, according to EEPROM setting, the valid or used parameter set can be selected via bus or via digital input DIN2. Parameter set 1: pin open or applied voltage 5-50 VDC Parameter set 2: bridge to GND or applied voltage < 1 VDC; SELV
KL3	9	Din3	Digital input 3: according to EEPROM setting, the integrated controller's direction of action can be selected via bus or digital input Din3; normal: pin open or applied voltage 5-50 VDC inverse: bridge to GND or applied voltage < 1 VDC; SELV
	11	Ain2 U	Analog input 2, measured value: 0-10 V, Ri = 100 kΩ, adjustable curve, only usable as alternative to input Ain2 I; SELV
	12	+20V	Voltage output 20 VDC,+20 V +25/-10%,max.50 mA, p. supply for ext.devices (e.g. sens.), SELV
	13	Ain2 I	Analog input 2, measured value: 4-20 mA, Ri = 100 Ω, adjustable curve, only usable as alternative to input Ain2 U; SELV
	14	Aout	Analog output 0-10 VDC, max. 5 mA, output of current motor modulation level / motor speed adjustable curve; SELV

1360-384 (EC090 IP54)



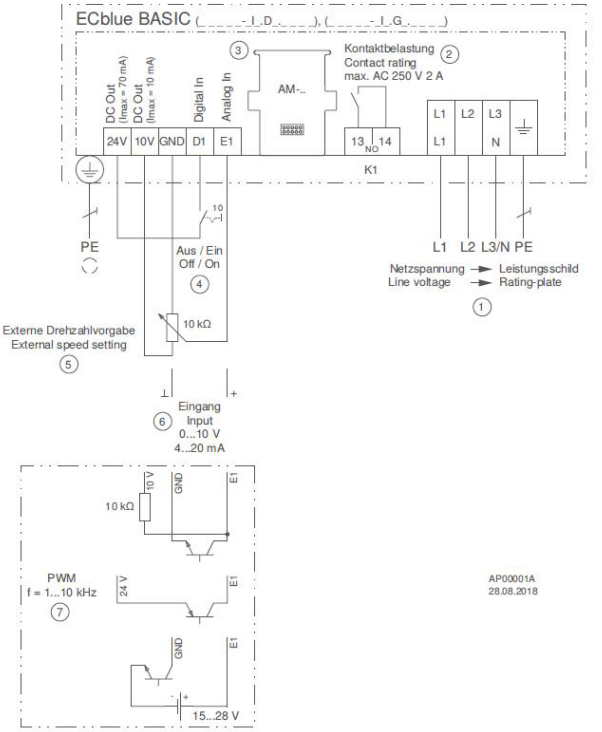
① Line voltage see rating-plate
② Relay output for fault indication (max. contact rating AC 250 V 2 A)
③ MODBUS (RS-485) interface
④ Open-Collector output status / tacho
⑤ Digital input for enable
⑥ Input for setting speed by 0...10 V signal / potentiometer (R_i > 100 kΩ)
⑦ Voltage supply 10 V DC (I_{max} 50 mA)
⑧ Setting speed by PWM signal (f = 1...10 kHz)
⑨ Version with connection cables

1360-403 (EC116 / EC152)



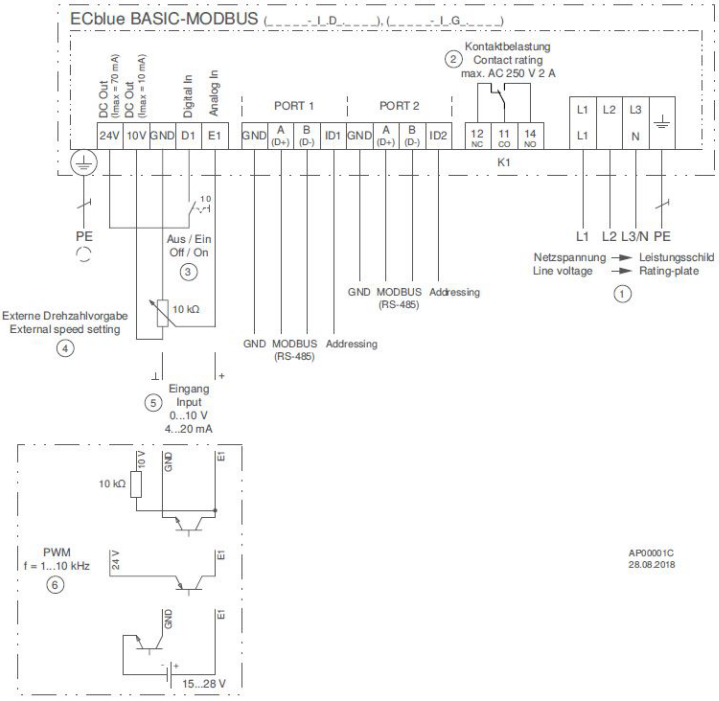
① line voltage
② contact load
③ external speed setting
④ input
⑤ PWM

AP00001A (EC116 / EC152) 2ND GENERATION ECBLUE



① line voltage
② contact load
③ add-on module
④ off / on
⑤ external speed setting
⑥ input
⑦ PWM

AP00001C (EC116 / EC152) 2ND GENERATION ECBLUE



① line voltage
② contact load
③ off / on
④ external speed setting
⑤ input
⑥ PWM

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