

DELTA ELECTRONICS, INC.  
 252, SHANG YING ROAD, KUEI SAN  
 TAOYUAN HSIEN 333, TAIWAN, R. O. C.

TEL : 886-(0)3-3591968  
 FAX : 886-(0)3-3591991

SPECIFICATION FOR APPROVAL  
 \*\*\*\*\*

Customer: \_\_\_\_\_  
 Description: DC FAN \_\_\_\_\_  
 Customer P/N: \_\_\_\_\_ REV: \_\_\_\_\_  
 Delta Model NO.: AFB0612H-AR00 \_\_\_\_\_  
 Sample Rev: 02 \_\_\_\_\_ Issue NO: \_\_\_\_\_  
 Sample Issue Date: APR.26.2005. \_\_\_\_\_ Quantity: \_\_\_\_\_

1. SCOPE:

THIS SPECIFICATION DEFINES THE ELECTRICAL AND MECHANICAL CHARACTERISTICS OF THE DC BRUSHLESS AXIAL FLOW FAN. THE FAN MOTOR IS WITH TWO PHASES AND FOUR POLES.

2. CHARACTERS:

| ITEM  | DESCRIPTION  |
|---|--|
| RATED VOLTAGE   | 12 VDC   |
| OPERATION VOLTAGE                                     | 4.0 - 13.8 VDC   |
| START VOLTAGE<br>(ENVIRONMENT TEMPERATURE<br>AT 25°C) | ≤ 4.0 VDC.   |
| INPUT CURRENT   | 0.14 (MAX. 0.17) A   |
| INPUT POWER   | 1.68 (MAX. 2.04) W   |
| SPEED   | 4250 R.P.M. (REF.)   |
| MAX. AIR FLOW<br>(AT ZERO STATIC PRESSURE)            | 0.662 (MIN. 0.596 ) M <sup>3</sup> /MIN.<br>23.38 (MIN. 21.05 ) CFM              |
| MAX. AIR PRESSURE<br>(AT ZERO AIRFLOW)                | 5.35 (MIN. 4.33 ) mmH <sub>2</sub> O<br>0.211 (MIN. 0.170 ) inchH <sub>2</sub> O |
| ACOUSTICAL NOISE (AVG.)                               | 34.0 (MAX. 38.0) dB-A  |
| INSULATION TYPE                                       | UL: CLASS A  |

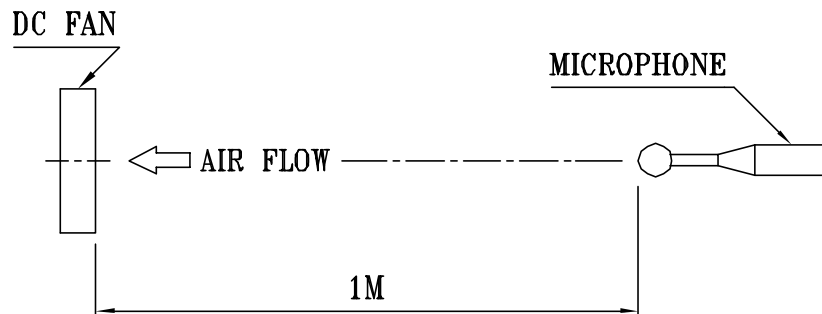
(continued)

PART NO:

DELTA MODEL: AFB0612H-AR00

|                        |  |
|------------------------|--|
| INSULATION STRENGTH    | 10 MEG OHM MIN. AT 500 VDC<br>(BETWEEN FRAME AND (+) TERMINAL)                                       |
| DIELECTRIC STRENGTH    | 5 mA MAX. AT 500 VAC 60 Hz<br>ONE MINUTE, (BETWEEN FRAME AND<br>(+) TERMINAL)                        |
| EXTERNAL COVER         | OPEN TYPE  |
| LIFE EXPECTANCE        | 70,000 HOURS CONTINUOUS OPERATION<br>AT 40 °C WITH 15 ~ 65 %RH.                                      |
| ROTATION               | CLOCKWISE VIEW<br>FROM NAME PLATE SIDE   |
| OVER CURRENT SHUT DOWN | THE CURRENT WILL SHUT DOWN WHEN<br>LOCKING ROTOR.  |
| LEAD WIRE              | UL 1007 -F- AWG #24<br>BLACK WIRE NEGATIVE(-)<br>RED WIRE POSITIVE(+)<br>BLUE WIRE LOCK SIGNAL(-R00) |

- NOTES: 1. ALL READINGS ARE MEASURED AFTER STABLY WARMING UP THROUGH 10 MINUTES.  
2. THE VALUES WRITTEN IN PARENS , ( ), ARE LIMITED SPEC.  
3. ACOUSTICAL NOISE MEASURING CONDITION:



NOISE IS MEASURED AT RATED VOLTAGE IN FREE AIR IN ANECHOIC CHAMBER WITH B & K SOUND LEVEL METER WITH MICROPHONE AT A DISTANCE OF ONE METER FROM THE FAN INTAKE.

-----  
PART NO:  
-----

DELTA MODEL:           AFB0612H-AR00  
-----

3. MECHANICAL:

- 3-1. DIMENSIONS ----- SEE DIMENSIONS DRAWING
- 3-2. FRAME ----- PLASTIC UL: 94V-0
- 3-3. IMPELLER ----- PLASTIC UL: 94V-0
- 3-4. BEARING SYSTEM ----- TWO BALL BEARINGS
- 3-5. WEIGHT ----- 80 GRAMS

4. ENVIRONMENTAL:

- 4-1. OPERATING TEMPERATURE ----- -10 TO +70 DEGREE C
- 4-2. STORAGE TEMPERATURE ----- -40 TO +75 DEGREE C
- 4-3. OPERATING HUMIDITY ----- 5 TO 90 % RH
- 4-4. STORAGE HUMIDITY ----- 5 TO 95 % RH

5. PROTECTION:

5-1. LOCKED ROTOR PROTECTION

IMPEDANCE OF MOTOR WINDING PROTECTS MOTOR FROM FIRE IN 96 HOURS OF LOCKED ROTOR CONDITION AT THE RATED VOLTAGE.

5-2. POLARITY PROTECTION

BE CAPABLE OF WITHSTANDING IF REVERSE CONNECTION FOR POSITIVE AND NEGATIVE LEADS.

6. RE OZONE DEPLETING SUBSTANCES:

- 6-1. NO CONTAINING PBBs, PBBOs, CFCs, PBBEs, PBDPEs AND HCFCs.

7. PRODUCTION LOCATION

- 7-1. PRODUCTS WILL BE PRODUCED IN CHINA OR THAILAND OR TAIWAN.

-----  
PART NO:  
-----

DELTA MODEL:           AFB0612H-AR00  
-----

8. BASIC RELIABILITY REQUIREMENT :

8-1. THERMAL           LOW TEMPERATURE: -40°C  
CYCLING               HIGH TEMPERATURE: +80°C  
                          SOAK TIME: 30 MINUTES  
                          TRANSITION TIME < 5 MINUTES  
                          DUTY CYCLES: 5

8-2. HUMIDITY         TEMPERATURE: +25°C ~ +65°C  
EXPOSURE             HUMIDITY: 90-98% RH @ +65°C  
                          FOR 4 HOURS/CYCLE  
                          POWER: NON-OPERATING  
                          TEST TIME: 168 HOURS

8-3. VIBRATION        TEMPERATURE: +25°C  
                          ORIENTATION: X, Y, Z  
                          POWER: NON-OPERATING  
                          VIBRATION LEVEL: OVERALL gRMS=3.2

| FREQUENCY(Hz) | PSD(G <sup>2</sup> /Hz) |
|---------------|-------------------------|
| 10            | 0.040                   |
| 20            | 0.100                   |
| 40            | 0.100                   |
| 800           | 0.002                   |
| 1000          | 0.002                   |

TEST TIME: 2 HOURS ON EACH ORIENTATION

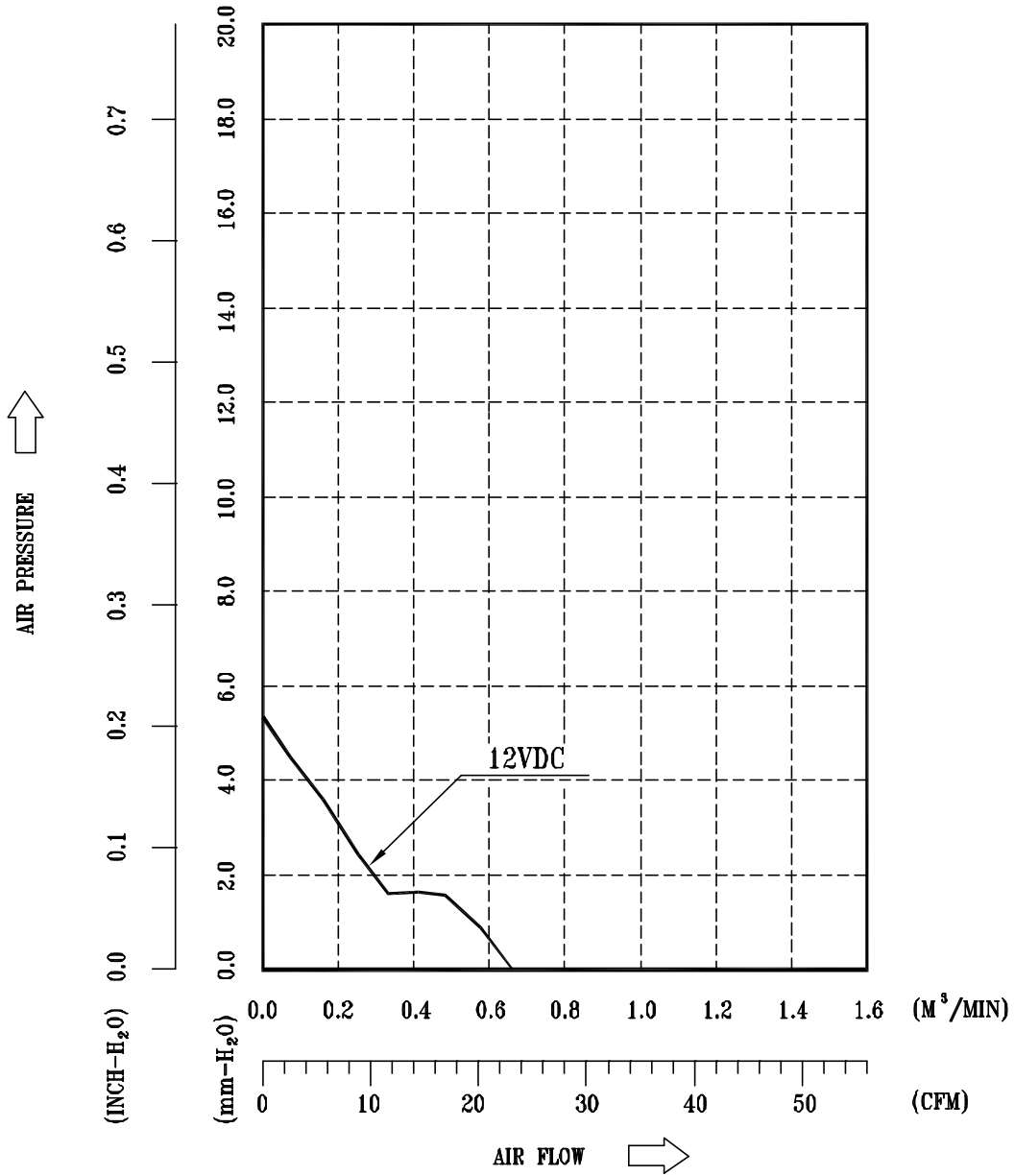
8-4. MECHANICAL      TEMPERATURE: +20°C  
SHOCK                 ORIENTATION: X, Y, Z  
                          POWER: NON-OPERATING  
                          ACCELERATION: 20 G MIN.  
                          PULSE: 11 ms HALF-SINE WAVE  
                          NUMBER OF SHOCKS: 5 SHOCKS  
  FOR EACH DIRECTION

8-5. LIFE             TEMPERATURE: MAX , OPERATING TEMPERATURE  
                          POWER: OPERATING  
                          DURATION: 1000 HOURS MIN.

PART NO:

DELTA MODEL: AFB0612H-AR00

8. P & Q CURVE:



\* TEST CONDITION: INPUT VOLTAGE ----- OPERATION VOLTAGE  
TEMPERATURE ----- ROOM TEMPERATURE  
HUMIDITY ----- 65%RH

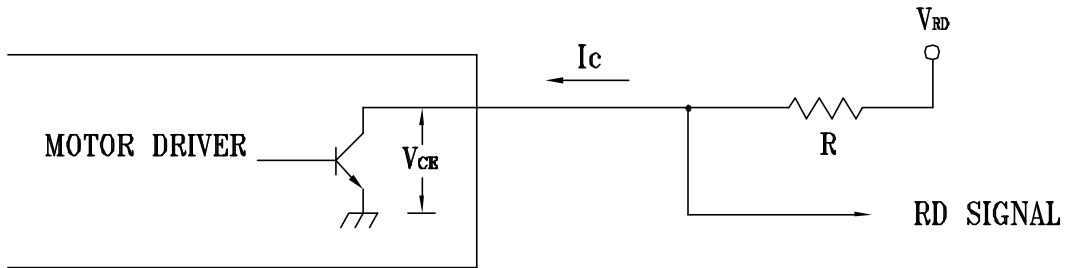


-----  
PART NO:  
-----

DELTA MODEL:           AFB0612H-AR00  
-----

10. ROTATION DETECT (RD) SIGNAL:

1. OUTPUT CIRCUIT - OPEN COLLECTOR MODE:



CAUTION:

THE LEAD WIRE OF RD SIGNAL CAN NOT TOUCH  
THE LEAD WIRE OF POSITIVE OR NEGATIVE.

2. SPECIFICATION:

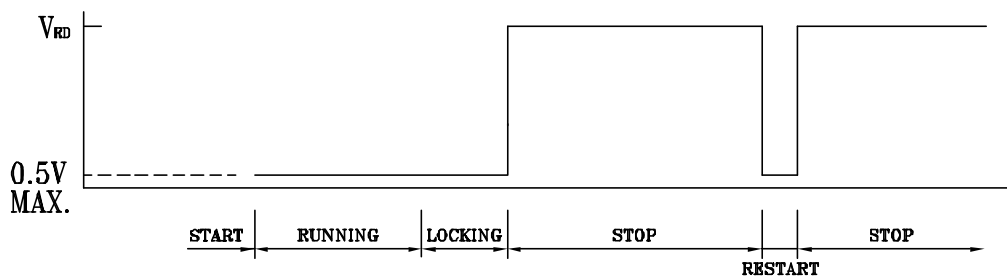
$$V_{CE(sat)} = 0.5V \text{ MAX}$$

$$V_{RD} = 13.8V \text{ MAX}$$

$$I_c = 5mA \text{ MAX.}$$

$$R \geq V_{RD} / I_c$$

3. ROTATION DETECT WAVEFORM:





## **Descriptions:**

- 1. Delta will not guarantee the performance of the products if the application condition falls outside the parameters set forth in the specification.**
- 2. A written request should be submitted to Delta prior to approval if deviation from this specification is required.**
- 3. Please exercise caution when handling fans. Damage may be caused when pressure is applied to the impeller, if the fans are handled by the lead wires, or if the fans are hard-dropped to the production floor.**
- 4. Except as pertains to some special designs, there is no guarantee that the products will be free from any such safety problems or failures as caused by the introduction of powder, droplets of water or encroachment of insect into the hub.**
- 5. The above-mentioned conditions are representative of some unique examples and viewed as the first point of reference prior to all other information.**
- 6. It is very important to establish the correct polarity before connecting the fan to the power source. Positive (+) and Negative (-). Damage may be caused to the fans if connection is with reverse polarity, as there is no foolproof method to protect against such error.**
- 7. Delta fans are not suitable where any corrosive fluids are introduced to their environment.**
- 8. Please ensure all fans are stored according to the storage temperature limits specified. Do not store fans in a high humidity environment. We highly recommend performance testing is conducted before shipping, if the fans have been stored over 6 months.**
- 9. Not all fans are provided with the Lock Rotor Protection feature. If you impair the rotation of the impeller for the fans that do not have this function, the performance of those fans will lead to failure.**
- 10. Please be cautious when mounting the fan. Incorrect mounting of fans may cause excess resonance, vibration and subsequent noise.**
- 11. It is important to consider safety when testing the fans. A suitable fan guard should be fitted to the fan to guard against any potential for personal injury.**
- 12. Except where specifically stated, all tests are carried out at relative (ambient) temperature and humidity conditions of 25°C, 65%. The test value is only for fan performance itself.**
- 13. Be certain to connect an “over 4.7µF” capacitor to the fan externally when the application calls for using multiple fans in parallel, to avoid any unstable power.**





## Online Certifications Directory

### GPWV2.E132003 Fans, Electric - Component

[Page Bottom](#)[Notice of Disclaimer](#)[Questions?](#)[Previous Page](#)

---

### Fans, Electric - Component

#### [Guide Information](#)

**DELTA ELECTRONICS INC**

E132003

14TH FL

266 2ND WEN-HWA RD, SEC 1

LINKOU

TAIPEI HSIEN 244, TAIWAN

Model AFB followed by 0405, 0412, followed by HA, HHA, LA or MA; Model AFB followed by 0505, followed by HB, LB or MB; Model AFB followed by 0512, followed by HB, HHB, LB or MB; Model AFB followed by 0605, followed by H, L or M, followed by R00, R05, RR0 or RR05; Model AFB followed by 0605 or 0805, followed by H, L or M; Model AFB followed by 0612, 0624, followed by EH, SH VH; Model AFB0612LB; Model AFB followed by 0612, 0624, 0812, 0824, 0912 or 0924, followed by H, HB, HH, HHB, LB, LLB, MB, SHB or VHB; Models ASB0412MA, ASB0412LA, ASB0405MA; Model ASB followed by 0405, 0412, followed by HA, HHA, LA or MA; Model ASB followed by 0505, followed by HB, LB or MB; Model ASB followed by 0512, 0524, followed by HB, HHB, LB or MB; Model ASB followed by 0812, 0824, followed by HB, HHB, LB, LLB, MB, SHB or VHB; Model ASB followed by 0612 or 0624, followed by H, HH, L or M; Model ASB followed by 0812, followed by L or M; Model ASB followed by 0912 or 0924, followed by H, L or M; Model AUB followed by 0505, 0512 or 0524, followed by HB, HHB, LB or MB; Model AUB followed by 0612, 0624, followed by H, HH, L or M; Model AUB followed by 0912, 0924, followed by H, HH, L, M or VH; Model AUB followed by 0612 or 0624, followed by L, M, H or HH; Model AUB followed by 0812 or 0824, followed by HB, HHB, LB, LLB, MB, SHB or VHB; Model AUB followed by 0924, followed by L, M, H, HH or VH; Model BFB followed by 1212, followed by H, HH, L, LL, M or VH; Model BFB followed by 1224, followed by H, HH, L, LL, M or VH; Model BFB followed by 1248, followed by H, HH, L, LL, M; Model BFC followed by 1012, followed by A, B or C; Model DFB followed by 0405 or 0412, followed by H, L, LL, M; Model DFB followed by 0612, 0812, 0912, 0824 or 0924 followed by H, L or M; Model DFB followed by 0612, 0812, 0824, 0912 or 0924, followed by HH; Model DFB followed by 0424,



|              |    |            |                             |
|--------------|----|------------|-----------------------------|
| AFB0605L     | 5  | 230        | STD F00 R00 R05 RR0<br>RR05 |
| AFB0605LA    | 5  | 250        | -                           |
| *AFB0605LB   | 5  | 200        | STD F00                     |
| AFB0605LD    | 5  | 210        | -                           |
| AFB0605LLD   | 5  | 170        | -                           |
| AFB0605M     | 5  | 330        | STD F00 R00 R05 RR0<br>RR05 |
| AFB0605MA    | 5  | 350        | -                           |
| *AFB0605MB   | 5  | 300        | STD F00                     |
| AFB0605MD    | 5  | 290        | -                           |
| AFB0612EH    | 12 | 480        | STD R00 F00                 |
| AFB0612H     | 12 | 150        | STD R00 RR0 F00             |
| AFB0612H-SB  | 12 | 150        | STD                         |
| AFB0612HA    | 12 | 220        | -                           |
| *AFB0612HB   | 12 | 150        | STD R00 F00 R05 F05         |
| AFB0612HH    | 12 | 400 or 250 | STD R00 RR0 F00             |
| AFB0612HH-SB | 12 | 250        | STD                         |
| *AFB0612HHB  | 12 | 180        | STD R00 F00 R05 F05         |
| AFB0612HD    | 12 | 170        | -                           |
| AFB0612HHD   | 12 | 230        | -                           |
| AFB0612L     | 12 | 90         | STD R00 RR0 F00             |
| AFB0612L-SB  | 12 | 90         | STD                         |
| AFB0612LA    | 12 | 120        | -                           |
| *AFB0612LB   | 12 | 100        | STD R00 F00 R05 F05         |
| AFB0612LD    | 12 | 110        | -                           |
| AFB0612LLD   | 12 | 90         | -                           |
| AFB0612M     | 12 | 120        | STD R00 RR0 F00             |
| AFB0612M-SB  | 12 | 120        | STD                         |
| AFB0612MA    | 12 | 150        | -                           |

# VDE Prüf- und Zertifizierungsinstitut

## Gutachten mit Fertigungsüberwachung

Ausweis-Nr. /  
Licence No. 001764 ÜG

Blatt /  
page 3

Name und Sitz des Genehmigungs-Inhabers / Name and registered seat of the Licence holder

Delta Electronics Inc.  
186 Ruey Kuang Road  
NEIHU TAIPEI (114), Taiwan

Aktenzeichen / File ref.

11641-2611-0001 / 32Y3F F13 / SFK

letzte Änderung / updated

2001-06-05

Datum / Date

1994-06-08

Dieses Blatt gilt nur in Verbindung mit Blatt 1 des Gutachtens mit Fertigungsüberwachung Nr. 001764 ÜG.  
*This supplement is only valid in conjunction with page 1 of the Licence No. 001764 ÜG.*

Jahresgebühren-Einheiten /  
Annual fee units

|                 |                         |       |
|-----------------|-------------------------|-------|
| WFB1212HE       | DC 12 V                 | 1,00  |
| WFB1212LE       | DC 12 V                 | 1,00  |
| WFB1212ME       | DC 12 V                 | 1,00  |
| WFB1224H        | DC 24 V                 | 2,00  |
| WFB1224L        | DC 24 V                 | 1,00  |
| WFB1224M        | DC 24 V                 | 1,00  |
| WFB1224HE       | DC 24 V                 | 1,00  |
| WFB1224LE       | DC 24 V                 | 1,00  |
| WFB1224ME       | DC 24 V                 | 1,00  |
| SB0XY/ZZ        | DC 12 V oder/or DC 24 V | 40,00 |
| DFB0412MA/LA    | DC 12 V                 | 2,00  |
| DFB0424H/M/L/LL | DC 24 V                 | 4,00  |
| DFD0612HH       | DC 12 V                 | 2,00  |
| DFD0624HH       | DC 24 V                 | 2,00  |
| DFB0612HH       | DC 12 V                 | 2,00  |
| DFB0624HH       | DC 24 V                 | 2,00  |
| DFB0812HH       | DC 12 V                 | 2,00  |
| DFB0824HH       | DC 24 V                 | 2,00  |
| DFB0912HH       | DC 12 V                 | 2,00  |
| DFB0924HH       | DC 24 V                 | 2,00  |
| SB0612HH        | DC 12 V                 | 2,00  |
| SB0624HH        | DC 24 V                 | 2,00  |
| SB0812HH        | DC 12 V                 | 2,00  |
| SB0824HH        | DC 24 V                 | 2,00  |
| WFB1212HE       | DC 12 V                 | 2,00  |
| WFB1224HE       | DC 24 V                 | 2,00  |
| WFB1248HE/ME/LE | DC 48 V                 | 4,00  |
| WFC1212BE       | DC 12 V                 | 2,00  |
| WFC1212BE-R00   | DC 12 V                 | 1,00  |
| WFC1212BE-F00   | DC 12 V                 | 1,00  |
| DFC0612B(-X00)  | DC 12 V                 | 3,00  |
| DFC0812B(-X00)  | DC 12 V                 | 3,00  |
| DFC0912B(-X00)  | DC 12 V                 | 3,00  |
| AFB0612H/M/L/HH | DC 12 V                 | 4,00  |
| AFB0624H/M/L/HH | DC 24 V                 | 4,00  |
| AFB0812H/M/L/HH | DC 12 V                 | 4,00  |
| AFB0824H/M/L/HH | DC 24 V                 | 4,00  |
| ASB0612H/M/L/HH | DC 12 V                 | 4,00  |
| ASB0624H/M/L/HH | DC 24 V                 | 4,00  |
| AFB0412MA       | DC 12 V                 | 2,00  |

Fortsetzung siehe Blatt 4 /