

# PRODUCT INFORMATION PACKET

**marathon®**  
Motors

Model No: TCA0221AF121GAC010

Catalog No: TCA0221AF121GAC010

TerraMAX® Cast Iron Motor, 30 HP, 3 Ph, 50 Hz, 380 V, 3000 RPM, 180M Frame, TEFC



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**RegalRexnord**

### Nameplate Specifications

|                        |               |                            |                             |
|------------------------|---------------|----------------------------|-----------------------------|
| Output HP              | 30 Hp         | Output KW                  | 22.0 kW                     |
| Frequency              | 50 Hz         | Voltage                    | 380 V                       |
| Current                | 41.5 A        | Speed                      | 2961 rpm                    |
| Service Factor         | 1             | Phase                      | 3                           |
| Efficiency             | 92.7 %        | Power Factor               | 0.87                        |
| Duty                   | S1            | Insulation Class           | F                           |
| Frame                  | 180M          | Enclosure                  | Totally Enclosed Fan Cooled |
| Thermal Protection     | No Protection | Ambient Temperature        | 40 °C                       |
| Drive End Bearing Size | 6311          | Opp Drive End Bearing Size | 6211                        |
| UL                     | No            | CSA                        | No                          |
| CE                     | Yes           | IP Code                    | 55                          |
| Number of Speeds       | 1             | Efficiency Class           | IE3                         |

### Technical Specifications

|                       |               |                       |                |
|-----------------------|---------------|-----------------------|----------------|
| Electrical Type       | Squirrel Cage | Starting Method       | Direct On Line |
| Poles                 | 2             | Rotation              | Bi-Directional |
| Mounting              | B5            | Motor Orientation     | Horizontal     |
| Drive End Bearing     | 2Z-C3         | Opp Drive End Bearing | 2Z-C3          |
| Frame Material        | Cast Iron     | Shaft Type            | Keyed          |
| Overall Length        | 712 mm        | Frame Length          | 328 mm         |
| Shaft Diameter        | 48 mm         | Shaft Extension       | 110 mm         |
| Assembly/Box Mounting | Top           |                       |                |
| Outline Drawing       | 0218000574    | Connection Drawing    | 8442000085     |

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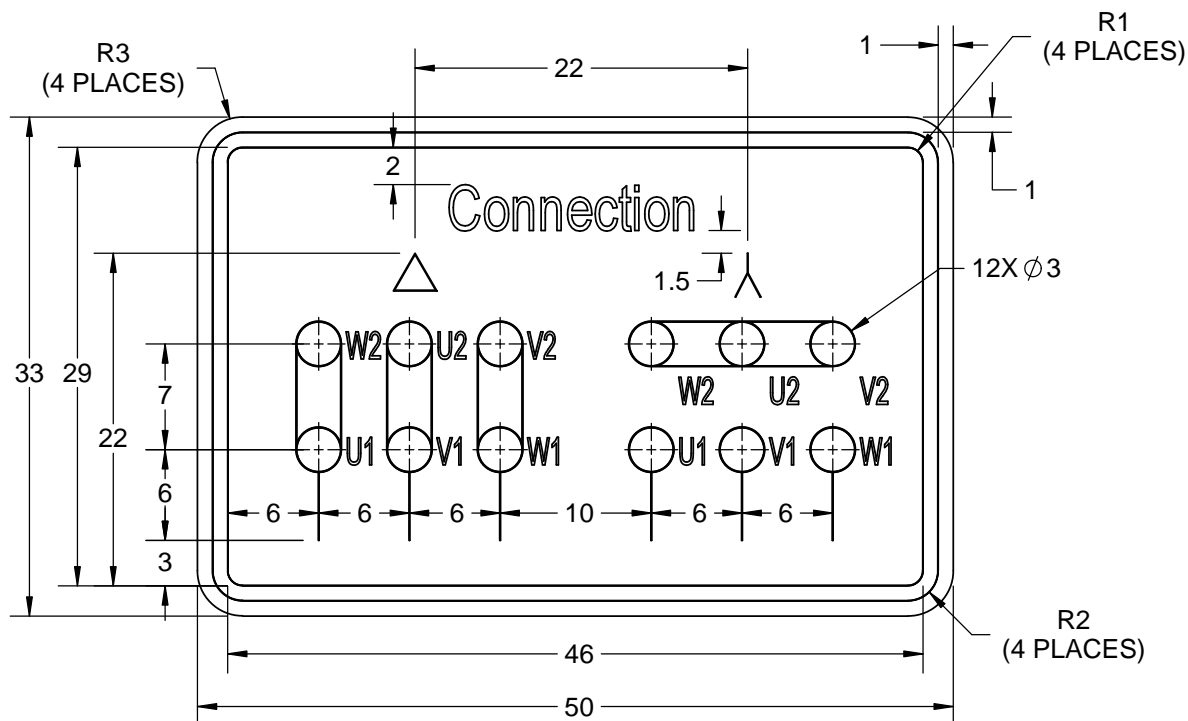
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### ECO DESCRIPTION



## GEOMETRIC TOLERANCE

|            |         |      |
|------------|---------|------|
| LINEAR DIM | >0~6    | ±0.1 |
|            | >6~30   | ±0.2 |
|            | >30~120 | ±0.3 |



1. PRESSURE-SENSITIVE ADHESIVE COATED PAPER ON THE BACK OF SELF-ADHESIVE.
2. AT THE END OF YELLOW, WORDS, SYMBOLS, LETTERS ARE BLACK, BORDER IS BLACK.
3. THE TOLERANCE OF THE LINEAR SIZE OF THE TOLERANCE WITHOUT THE TOLERANCE BY THE TABLE.

8WD.442.2017

|   |                        |   |                                     |  |
|---|------------------------|---|-------------------------------------|--|
|  | DRAWN BY<br>SN         |  Regal Beloit America, Inc. |                                     |  |
|   | DATE<br>16/12/2016     |   |                                     |  |
|   | APPROVED BY<br>SBD     | DESCRIPTION<br><b>CONN DIAGRAM-NAMEPLATE</b>  |                                     |  |
|   | DATE<br>16/12/2016     |   |                                     |  |
|   | REFERENCE              | MATERIAL  | PROCESS/FINISH                      |  |
|   | THIRD ANGLE PROJECTION | SIZE<br><b>A</b>  | DRAWING NUMBER<br><b>8442000085</b> |  |

**Model No.** TCA0221AF121GAC010

| U<br>(V) | Δ / Y<br>Conn | f<br>[Hz] | P<br>[kW] | P<br>[hp] | I<br>[A] | n<br>[RPM] | T<br>[Nm] | IE<br>Class | % EFF at __ load |    |       |       | PF at __ load |       |       | I <sub>A</sub> /I <sub>N</sub><br>[pu] | T <sub>A</sub> /T <sub>N</sub><br>[pu] | T <sub>K</sub> /T <sub>N</sub><br>[pu] |
|----------|---------------|-----------|-----------|-----------|----------|------------|-----------|-------------|------------------|----|-------|-------|---------------|-------|-------|--|--|--|
| 380      | Δ             | 50        | 22        | 30        | 41.45    | 2961       | 72.16     | IE3         | 5/4FL            | FL | 3/4FL | 1/2FL | FL            | 3/4FL | 1/2FL | 7.4                                    | 2.2                                    | 3.6                                    |
|          |               |           |           |           |          |            |           |             |                  |    |       |       |               |       |       |  |  |  |

|                                  |                    |   |  |
|----------------------------------|--------------------|---|--|
| Motor type                       | TCA                | Degree of protection                      | IP 55                                      |
| Enclosure                        | TEFC               | Mounting type                             | IM B5                                      |
| Frame Material                   | Cast Iron          | Cooling method                            | IC 411                                     |
| Frame size                       | 180M               | Motor weight - approx.                    | 217 kg                                     |
| Duty                             | S1                 | Gross weight - approx.                    | 237 kg                                     |
| Voltage variation *              | ± 10%              | Motor inertia                             | 0.1399 kgm <sup>2</sup>                    |
| Frequency variation *            | ± 5%               | Load inertia                              | Customer to Provide                        |
| Combined variation *             | 10%                | Vibration level                           | 2.2 mm/s                                   |
| Design                           | N                  | Noise level ( 1meter distance from motor) | 72 dB(A)                                   |
| Service factor                   | 1.0                | No. of starts hot/cold/Equally spread     | 2/3/4                                      |
| Insulation class                 | F                  | Starting method                           | DOL  |
| Ambient temperature              | -20 to +40 °C      | Type of coupling                          | Direct                                     |
| Temperature rise (by resistance) | 80 [ Class B ] K   | LR withstand time (hot/cold)              | 15/30 s                                    |
| Altitude above sea level         | 1000 meter         | Direction of rotation                     | Bi-directional                             |
| Hazardous area classification    | NA                 | Standard rotation                         | Clockwise form DE                          |
| Zone classification              | NA                 | Paint shade                               | RAL 5014                                   |
| Gas group                        | NA                 | Accessories                               |  |
| Temperature class                | NA                 | Accessory - 1                             | PTC 150°C                                  |
| Rotor type                       | Aluminum Die cast  | Accessory - 2                             | -  |
| Bearing type                     | Anti-friction ball | Accessory - 3                             | -  |
| DE / NDE bearing                 | 6311-2Z / 6211-2Z  | Terminal box position                     | TOP  |
| Lubrication method               | Greased for life   | Maximum cable size/conduit size           | 1R x 3C x 35mm <sup>2</sup> /2 X M32 x 1.5 |
| Type of grease                   | NA                 | Auxiliary terminal box                    | NA   |

 $I_A/I_N$  - Locked Rotor Current / Rated Current

 $T_K/T_N$  - Breakdown Torque / Rated Torque

 $T_A/T_N$  - Locked Rotor Torque / Rated Torque

**NOTE**

All performance values at rated voltage and frequency.

All performance parameters are subjected to standard tolerance as per IEC 60034-1

\* Voltage, Frequency and combine variation are as per IEC60034-1

Technical data are subject to change. There may be discrepancies between calculated and name plate values.

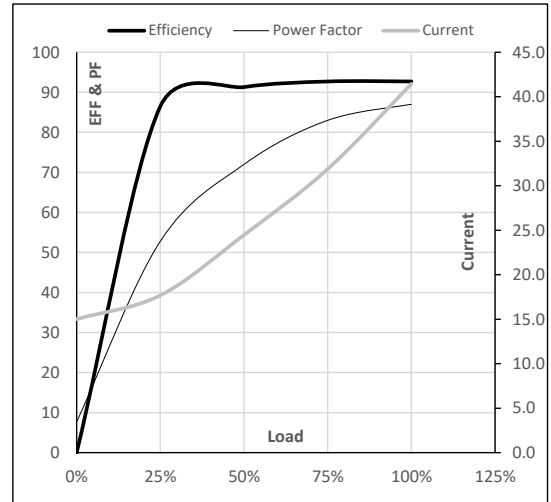
| Efficiency | Europe | China                 | India | Aus/Nz | Brazil | Global IEC    |
|------------|--------|-----------------------|-------|--------|--------|---------------|
| Standards  | -      | GB 18613-2012 Grade 2 | -     | -      | -      | IEC: 60034-30 |

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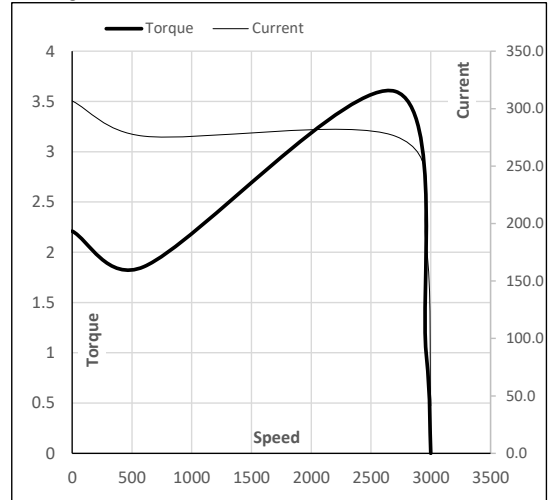
| Enclosure | U<br>(V) | $\Delta$ / Y<br>Conn | f<br>(Hz) | P<br>[kW] | P<br>[hp] | I<br>[A] | n<br>[RPM] | T<br>[kgm] | T<br>[Nm] | IE<br>Class | Amb<br>[°C] | Duty | Elevation<br>[m] | Inertia<br>[kg-m <sup>2</sup> ] | Weight<br>[kg] |
|-----------|----------|----------------------|-----------|-----------|-----------|----------|------------|------------|-----------|-------------|-------------|------|------------------|---------------------------------|----------------|
| TEFC      | 380      | $\Delta$             | 50        | 22        | 30.0      | 41.4     | 2961       | 7.36       | 72.16     | IE3         | 40          | S1   | 1000             | 0.1399                          | 217            |

**Motor Load Data**

| Load Point   |       | NL   | 1/4FL | 1/2FL | 3/4FL | FL   | 5/4FL |
|--------------|-------|------|-------|-------|-------|------|-------|
| Current      | A     | 15.0 | 17.7  | 24.5  | 31.9  | 41.4 |       |
| Torque       | Nm    | 0.0  | 17.9  | 35.8  | 53.9  | 72.2 |       |
| Speed        | r/min | 3000 | 2990  | 2981  | 2971  | 2961 |       |
| Efficiency   | %     | 0.0  | 86.5  | 91.3  | 92.7  | 92.7 |       |
| Power Factor | %     | 7.7  | 52.8  | 72.0  | 83.0  | 87.0 |       |

**Performance vs Load Chart**

**Motor Speed Torque Data**

| Load Point |       | LR    | P-Up  | BD    | Rated | NL   |
|------------|-------|-------|-------|-------|-------|------|
| Speed      | r/min | 0     | 600   | 2703  | 2961  | 3000 |
| Current    | A     | 306.7 | 276.0 | 181.6 | 41.4  | 15.0 |
| Torque     | pu    | 2.2   | 1.9   | 3.6   | 1     | 0    |

**Starting Characteristics Chart**

**NOTE** Refer data sheet for applicable standard and tolerances on performance parameters

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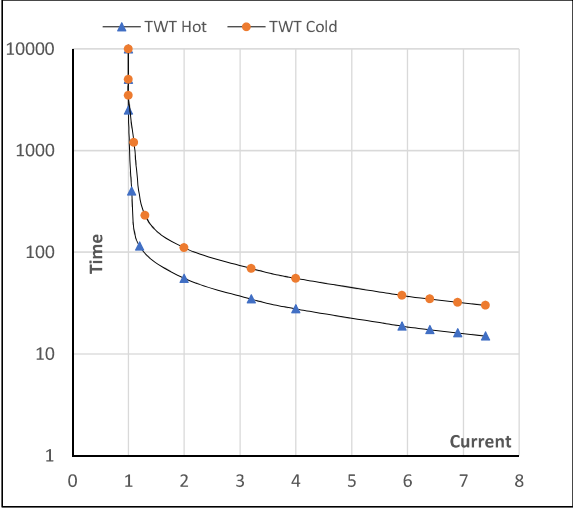
Model No. TCA0221AF121GAC010

| Enclosure | U<br>(V) | Δ / Y<br>Conn | f<br>[Hz] | P<br>[kW] | P<br>[hp] | I<br>[A] | n<br>[rpm] | T<br>[kgm] | T<br>[Nm] | IE<br>Class | Amb<br>[°C] | Duty | Elevation<br>[m] | Inertia<br>[kg-m <sup>2</sup> ] | Weight<br>[kg] |
|-----------|----------|---------------|-----------|-----------|-----------|----------|------------|------------|-----------|-------------|-------------|------|------------------|---------------------------------|----------------|
| TEFC      | 380      | Δ             | 50        | 22        | 30.0      | 41.4     | 2961       | 7.36       | 72.16     | IE3         | 40          | S1   | 1000             | 0.1399                          | 217            |

Motor Speed Torque Data

| Load     | FL      | I <sub>1</sub> | I <sub>2</sub> | I <sub>3</sub> | I <sub>4</sub> | I <sub>5</sub> | LR  |
|----------|---------|----------------|----------------|----------------|----------------|----------------|-----|
| TWT Hot  | s 10000 | 56             | 40             | 28             | 25             | 22             | 15  |
| TWT Cold | s 10000 | 111            | 80             | 56             | 45             | 40             | 30  |
| Current  | pu 1    | 2              | 3              | 4              | 5              | 5.5            | 7.4 |

Thermal Characteristics Chart



NOTE Refer data sheet for applicable standard and tolerances on performance parameters

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