**FEATURES**

- Synchronous Reluctance assisted Permanent Magnet (SRPM) technology
- Extremely compact and robust structure
- Highest efficiency throughout the operation range on the market (~96 %)
- Liquid cooled with plain water or water/glycol mixture
- Low coolant flow required
- Allowed coolant temperature up to +65°C
- Up to IP65 enclosure class to maximize reliability
- Multiple mounting possibilities

**GENERAL**

The machine is developed especially for demanding applications. The design of these machines makes them smaller, lighter and more efficient than conventional products on the market.

The machine is designed to be shorter than normal motors for applications where axial length is crucial parameter. The machine is designed to be connected directly to the ICE flywheel housing with part of the motor being inside the flywheel housing further shortening the length of the motor.

**GENERATOR SPECIFIC FEATURES**

- Standard SAE flange mounting to match the diesel engine connection
- Wide selection of speed ratings allowing the generator to be selected to customer specific applications with various voltage requirements
- Can be also used as starter motor for the ICE

**MOTOR SPECIFIC FEATURES**

- Extended speed and torque capabilities compared to standard PM motors from Danfoss reluctance assisted permanent magnet motor technology
- Motor structure is designed to be able to produce high starting torque: EM-PME motor can produce instantly full torque to a non-rotating shaft
- Optimized speed range to meet the most common gear ratios used in heavy mobile machinery

**TYPICAL APPLICATIONS**

- Generator for diesel-electric/serial hybrid applications
- Traction/propulsion motor
- Generator/Motor for parallel hybrid applications
## SPECIFICATIONS

### General electrical properties

<table>
<thead>
<tr>
<th>Property</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nominal voltage (line to line)</td>
<td>500 V AC</td>
</tr>
<tr>
<td>Voltage stress</td>
<td>IEC 60034-25, Curve A: Without filters for motors up to 500 VAC</td>
</tr>
<tr>
<td>Nominal efficiency</td>
<td>96 %</td>
</tr>
<tr>
<td>Pole pair number</td>
<td>10</td>
</tr>
<tr>
<td>Power supply</td>
<td>Inverter fed.</td>
</tr>
<tr>
<td>Minimum inverter switching frequency</td>
<td>8 kHz</td>
</tr>
</tbody>
</table>

### Machine type

- Synchronous reluctance assisted permanent magnet
- Can be used in any direction, see user guide for details.

### Mounting (IEC 60034-7)

- IM 3001 (Flange)
- SAE 3, transmission housing
- SAE 3, flywheel housing

### Standard rotation direction

- Clockwise (both directions possible)

### Protection class (IEC 60034-5)

- Up to IP65

### Duty type (IEC 60034-1)

- S9

### Standard color

- Dark grey RAL7024 powder coating

### Mechanical

- Total weight: 85 kg (no options)
- Moment of inertia: 0.77 kgm²
- Rotating mass: 27 kg

### Dimensions

- Length (frame): 66 mm
- Diameter (frame): 451 mm
- Total length (frame + shaft): 215.6 mm

### Cooling

- Cooling liquid: Plain water with appropriate corrosive inhibitor (max. 50 % corrosive inhibitor)
- Cooling liquid corrosive inhibitor type: Ethylene glycol Glysantin G48 recommended
- Cooling method (IEC 60034-6): IC 71 W
- Minimum cooling liquid flow: 20 l/min
- Pressure loss: 0.3 bar with 20 l/min (+25°C coolant)
- Cooling liquid temperature max: +65°C (Derating required if exceeded)
- Temperature rating
  - Insulation class (IEC 60034-1): H (180°C)
  - Temperature rise (IEC 60034-1): 85°C
  - Maximum winding temperature: 150°C
  - Nominal ambient temperature (IEC 60034-1): 65°C
  - Min. ambient temperature: -40°C
  - Nominal altitude (IEC 60034-1): 1000 m

### Connections

- Coolant connection: 2 x G1/2 bores
- HV cables: 3 x 50 mm² max.
- Cable direction: Cable direction radial with straight connector and towards N-end with standard angle connector
- HV cable connector: 3x AMPHENOL HVBI005R10AMHARD
- HV cable mating connector: 3 x AMPHENOL HVBI-7-05R10-XFC-XXXX-FG/PC (straight plug)
  3 x AMPHENOL HVBI-9-05R10-XFC-XXXX-FG/PC (right angle plug)
  (check the exact codes form connector manufacturer)
- HV cable: Recommended H+S Radox screened cable
- LV connector: 12 pin TE HDSCS
- LV connector type: TE 1-1564520-1
- LV connector pin type: Gold plated
- LV mating connector type: TE 1-1703639-1
- LV mating connector pin type: TE 1241380-2 (Gold plated)
- LV connector pin configuration: See Table below
**PIN** | **Description**
---|---
1 | Resolver, RES_COSN
2 | Resolver, RES_SINN
3 | Resolver, EXCN
4 | Temperature, PT100, windings
5 | Temperature, PT100, windings
6 | Temperature, PT100, windings
7 | Resolver, RES_COSP
8 | Resolver, RES_SINP
9 | Resolver, EXCP
10 | Temperature, PT100, windings GND
11 | Temperature, PT100, windings GND
12 | Temperature, PT100, windings GND

Table 1 Pin configuration of LV-connector

**PRESSURE LOSS VS COOLANT FLOW**

![Pressure loss vs coolant flow](image)

Picture 1 Pressure loss vs coolant flow

**MOTORS**

<table>
<thead>
<tr>
<th>Type</th>
<th>Coolant temperature +65°C</th>
<th>Coolant temperature +40°C</th>
<th>Coolant temperature +40 / +65°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM-PME375-T200-1500</td>
<td>191</td>
<td>30</td>
<td>37.5</td>
</tr>
<tr>
<td>EM-PME375-T200-1800</td>
<td>180</td>
<td>36</td>
<td>45</td>
</tr>
<tr>
<td>EM-PME375-T200-2300</td>
<td>184</td>
<td>48</td>
<td>60</td>
</tr>
<tr>
<td>EM-PME375-T200-2600</td>
<td>172</td>
<td>50</td>
<td>63</td>
</tr>
</tbody>
</table>

(*) Peak torque achieved with one (350A) inverter
(**) Peak torque achieved with two (350A) inverter

**GENERATORS**

<table>
<thead>
<tr>
<th>Type</th>
<th>Coolant temperature +65°C</th>
<th>Coolant temperature +40°C</th>
<th>Coolant temperature +40 / +65°C</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM-PME375-T200-1500</td>
<td>32</td>
<td>31</td>
<td>36.5</td>
</tr>
<tr>
<td>EM-PME375-T200-1800</td>
<td>38</td>
<td>37</td>
<td>44</td>
</tr>
<tr>
<td>EM-PME375-T200-2300</td>
<td>50</td>
<td>49</td>
<td>58</td>
</tr>
<tr>
<td>EM-PME375-T200-2600</td>
<td>53</td>
<td>52</td>
<td>62</td>
</tr>
</tbody>
</table>

(*** Back EMF for cold (20°C) generator

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AI312651107941en-000103
Integrated machine is commonly connected directly to the diesel engine flywheel housing. In such application, part of the motor is inside the diesel engine. Exploded view of this kind of application is shown below.

Picture 2 Integrated machine connected to diesel engine flywheel housing
PRODUCT CODE AND OPTIONS
Use product code including all needed options for ordering. Standard options do not need to be listed in the code as they are selected by default if a non-standard option is not selected. Standard options are indicated by a star (*).

<table>
<thead>
<tr>
<th>Product code</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>EM-PME375-T200-1800</td>
<td>Standard unit with standard options</td>
</tr>
<tr>
<td>EM-PME375-T200-1800+RES1</td>
<td>Standard unit otherwise but with resolver angle sensor</td>
</tr>
</tbody>
</table>

Table 2 Product code examples

<table>
<thead>
<tr>
<th>Variant</th>
<th>Code</th>
<th>Description</th>
<th>Additional information</th>
</tr>
</thead>
<tbody>
<tr>
<td>High voltage connector</td>
<td>*</td>
<td>High voltage plug-in connectors for 50 mm² cables</td>
<td>One plug-in connector per phase for 50 mm² cable</td>
</tr>
<tr>
<td></td>
<td>+HVC1</td>
<td>High voltage plug-in connectors for 35 mm² cables</td>
<td>One plug-in connector per phase for 35 mm² cable</td>
</tr>
<tr>
<td>Rotation sensor</td>
<td>*</td>
<td>None</td>
<td>No resolver</td>
</tr>
<tr>
<td></td>
<td>+RES1</td>
<td>Resolver</td>
<td>In-built non contacting resolver, 5-pole pair</td>
</tr>
</tbody>
</table>

*Standard option

Table 3 Option list

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