



Drive system for rotary heat exchangers

Emotron EMX-R



Efficient and reliable

- Robust motor without gear or fan.
- Integrated electronic rotation sensor – eliminates the need for mechanical sensors.
- High efficiency - No gearbox losses.
- A wide speed range for maximum usage of the high efficiency in the exchanger wheel.
- Easy handling since no adjustments or settings are required.
- Selectable direction of rotation.
- Integrated motor cable.
- Extensive protection against short circuit, overloading etc.
- Holding torque – prevents involuntary heat transference.

The EMX-R drive system is a range of speed controlled drive systems for rotary heat exchangers. A system consists of a motor and a corresponding electronic controller. Uniquely, EMX-R is equipped with an integrated electronic rotation sensor, RotoSens™, which eliminates the need for a mechanical sensor.

The system can also easily handle a conventional mechanical rotation sensor if so desired. The EMX-R drive systems are based on the switched reluctance (SR) motor technology. The SR technology allows the EMX-R motor to drive heat exchanger wheels with diameters up to 3.5 m without any need for a gearbox. The result is fewer mechanical wear parts and therefore a lower Life Cycle Cost (LCC). Also the efficiency is substantially increased while all gear losses are eliminated.

The motor can run in both directions and has a permanently attached motor cable for easier installation. To further support an easy installation, no adjustments and settings are required to get the drive system into operation.

For maximum performance and efficiency in a rotary heat exchanger, low speed as well as high speed is required.

The EMX-R system therefore offers full control over a wide speed range. To prevent involuntary heat transference, holding torque is activated in the motor to hold a rotor still. The drive system learns which rotor requires holding torque.

The EMX-R drive is available in three different sizes; 15, 25 and 35. The following table illustrates the maximum wheel diameters in decimeter with a maximum wheel speed of 10 to 12 rpm. The controller is available in two versions; S (Standard functionality) and E (Extended functionality). Model E has an extra circuit board for increased functionality.

Technical data

Motor	-15M		-25M		-35M	
Max diameter of exchanger wheel with max. 10-12 rpm ¹	1500 mm		2500 mm		3500 mm	
Speed	5 - 250 rpm (Speed range 1:50)					
Direction of rotation	Freely selectable.					
Torque	1.5 Nm		4 Nm		6 Nm	
Motor cable (Integrated)	2 m		2.5 m		2.5 m	
Weight	5 kg		8 kg		11 kg	
Dimensions (L x Diam.)	115 x 110 mm		115 x 160 mm		140 x 160 mm	
Controller	EMX-R -15S	-15E	-25S	-25E	-35S	-35E
Indication	Operation status, alarm	Wheel speed, operation status, alarm	Operation status, alarm	Wheel speed, operation status, alarm	Operation status, alarm	Wheel speed, operation status, alarm
Analogue output - proportional to speed	No	Yes	No	Yes	No	Yes
Summer/Winter switch ²⁾	No	Yes	No	Yes	No	Yes
Alarm relay	Max 5 A, 250 VAC					
Supply voltage	230 VAC +/-15% , 50/60 Hz					
Weight	1.7 kg					
Dimensions (H x Wx D)	150 x 200 x 60 mm					

1) Higher wheel speed or tight air sealings could result in a need for a larger drive system.

2) Two NTC resistors (2000 Ohm), one in the channel for incoming air and one in the channel for outgoing air, could be directly connected.

Common data for all models

Purging operation	Included
Motor protection	Included
Active holding torque	Included
Soft starting/stopping	Included
Rotation sensor, integrated electronic ³⁾	Included
Short circuit protection	Included
Selectable maximum speed	150 or 200 rpm
Speed control signal	0-10 V, 2-10 V, 0-20 V phase cut, 0-20 mA, 4-20 mA
Protection class, motor and controller	IP 54
Ambient temperature, motor and controller	-30 to +40°C

3) The system can also easily handle a conventional mechanical rotation sensor if so desired.