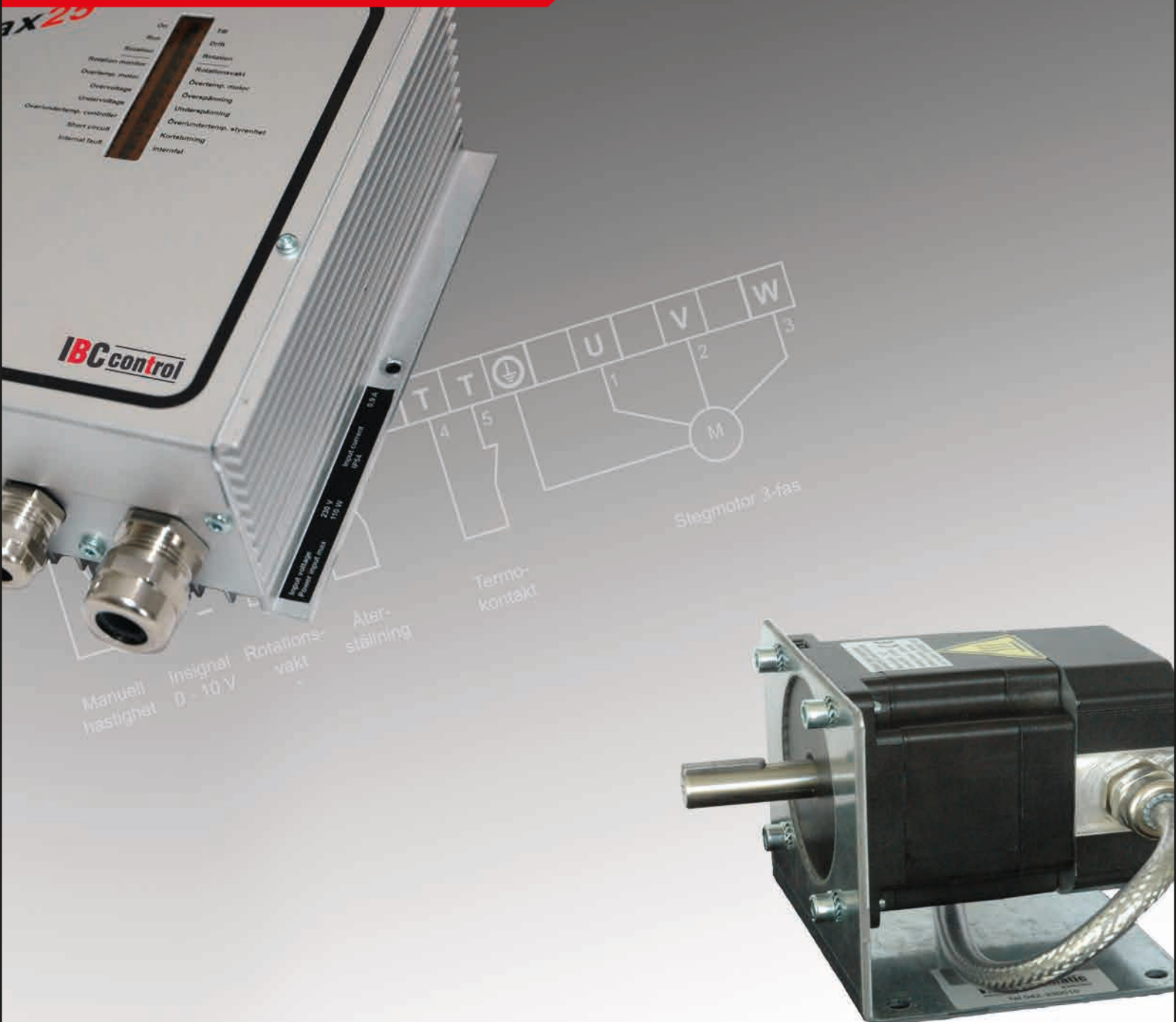


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**IBC control**

Made in Sweden

IBC control manufactures and stocks a complete program for controlling rotating heat exchangers. Keeping our promises and delivering on time is very important for us. We know from experience, this is appreciated by our customers.

MiniMax, MicroMax, VariMax and MicroStart

THE COMPLETE PRODUCT FAMILY FOR AN OPTIMAL RUN OF
ROTATING HEAT EXCHANGERS

Our control units have all the necessary functions for an optimal run of rotating heat exchangers. Additionable cards for docking such as difference temperature regulator with electric heat output, 2-rotor module are available as accessories to MiniMax.

MiniMax is intended for rotor diameters up to 3500 mm and manages all input signals existing on the market. All our additional cards suit the MiniMax, which makes it our most cost efficient control unit.

MicroMax is intended for rotor diameters up to 1500 mm. The control units are delivered in enclosed versions as standard, but may on demand be delivered in customer specific versions with an input signal of 0-10 V.

MicroMax180 is intended for rotor diameters up to 2500 mm. The control units are delivered in enclosed versions as standard, but may on demand be delivered in customer specific versions with an input signal of 0-10 V.

MicroMax370 is intended for rotor diameters up to 3500 mm. The control units are delivered in enclosed versions as standard, but may on demand be delivered in customer specific versions with an input signal of 0-10 V.

MicroMax750 is intended for rotor diameters up to 5000 mm. The control units are delivered in enclosed versions as standard, but may on demand be delivered in customer specific versions with an input signal of 0-10 V.

VariMax25 is intended for rotor diameters up to 1500 mm. The control units are delivered in enclosed versions and handle an input signal of 0-10 V. The control unit must be combined with our VariMax-motor25.

VariMax50 is intended for rotor diameters up to 2500 mm. The control units are delivered in enclosed versions and handle an input signal of 0-10 V. The control unit must be combined with our VariMax-motor50.

VariMax100 is intended for rotor diameters up to 3900 mm. The control units are delivered in enclosed versions and handle an input signal of 0-10 V. The control unit must be combined with our VariMax-motor100.

MicroStart is a "hybrid control unit" between the simple on/off control unit and the more advanced stepless control unit for rotating heat exchangers. MicroStart is intended for rotor diameters up to 1500 mm. MicroStart has a pause/running time function controlled by the input signal, with a total cycle time of 60 seconds. Depending on the level of the input signal, the proportion between pause and running time changes. MicroStart has a built-in shift of the input signal, which implies that the rotor becomes proportional to the input signal. The control units are delivered in enclosed versions as standard, but may on demand be delivered in customer specific versions.

CE

All control units are approved in accordance with the demands as specified in the EMC directive 2004/108/EG and are tested according to standard EN 61800-3:2004, Emission Category C1 and Immunity Category C2. All control units follow the low voltage directive 2006/95/EG, standard EN 61800-5-1.

UL/CSA

VariMax25-50-100 with respective VariMax-motor is approved for the north american market in accordance with UL 508C and CSA C22.2.No14

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The complete drive set

Covers all size of rotating heat exchangers



- Suits all rotating heat exchangers
- Safe operation, well tested system
- Control units, enclosed
- Cleaning function / Rotation monitor
- 3-phase motors, adjusted for speed regulation
- Five years product warranty
VariMax assortment
- Two years product warranty
other assortment

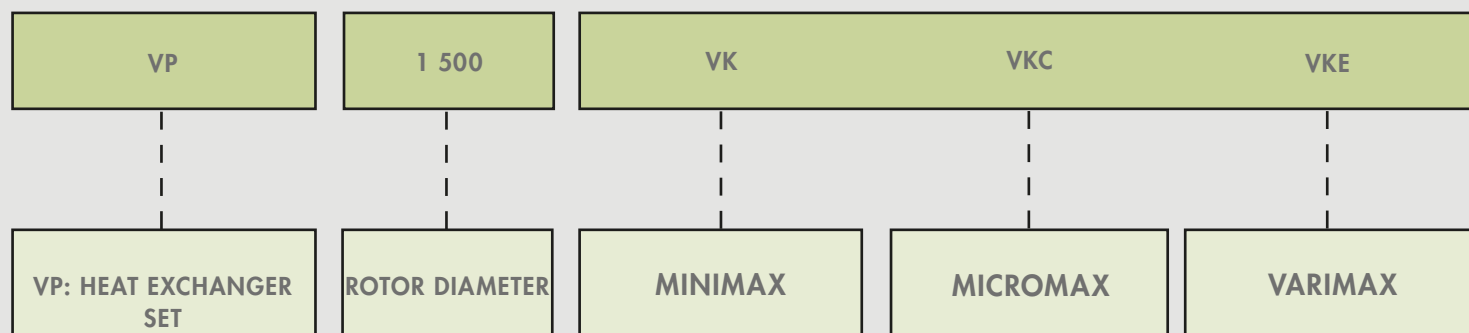
Complete with control unit, rotation monitor, motor and suited bush pulley.

All our control units are available as components in the drive set.

For further data see the product facts of each control unit and motor.

At order, please state real rotor diameter as below.

Example:



The control unit, rotation monitor, motor and bush pulley will be combined regarding to the information given.

Following accessories can also be delivered to drive set at inquiry:



EMC-set



Round belt



V-belt



Connected motor



Motor shelf, fixed



Motor shelf, spring-mounted

For further data see the product facts of each control unit, motor and accessories.

F21037501

MiniMax



- User friendly
- Stable aluminium enclosure
- Compact build dimensions
- All existing input signals
- Additional cards
- Remaining alarms
- CE-approved
- Two years product warranty

Set of EMC-glands as an option

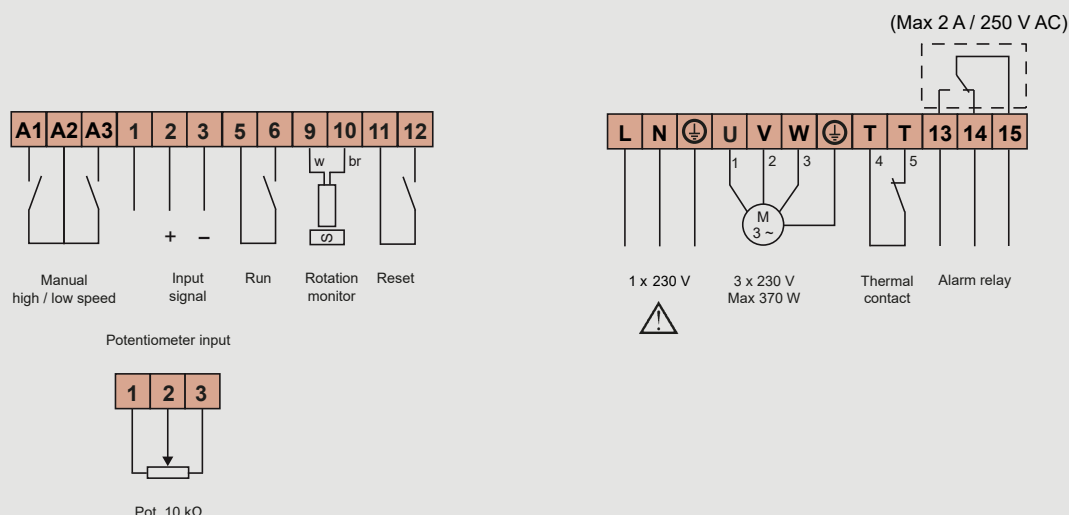
From March 1, 2016 MiniMax V/VK is no longer manufactured. It is replaced by adjoining MiniMax. The functions are the same.

MiniMax is the optimal control unit for all rotating heat exchangers. The popularity of the control unit has MiniMax won on its universal character, combining small dimensions with great capacity and flexibility.

MiniMax controls motors for rotor diameters up to 3500 mm with a rotor speed of max. 12 rpm. If the rotor requires a faster rotor speed, the rotor diameter should be reduced.

The control unit can handle all input signals currently used in the market. Having the MiniMax delivered as an included component in any of our popular drive set is a very cost efficient alternative.

CONNECTION DIAGRAM



Description of functions

The product series MiniMax is a modern control unit with specific additional functions for an optimal run of a rotating heat exchanger.

All existing input signals

The speed of the heat exchanger and with that its efficiency is regulated by the control unit so that the speed of the rotor is in proportion to the input signal from the central control. If the input signal is below the set up threshold value, the rotor will stop.

Cleaning function

When the rotor has been stopped for 30 minutes, the cleaning function is activated and the rotor rotates for 10 seconds at minimum speed.

Rotation monitor

The rotation monitor stops the control unit and alarms if the rotor stops rotating. The control unit trips if it does not receive pulses every 5 minutes.

Alarm

The control unit trips and alarms at over- or under voltage, short circuit or earth faulty as well as tripped thermal contact in the motor. All alarms are remaining.

Manual high / low speed

Possibility of externally controlling the minimum- and maximum speed, regardless of the value of the input signal.

Test

DIP-switches for manual run on low- or high speed.

Additional cards

MiniMax has several additional cards for complement.

Technical data

MiniMax

Motor output max	370 W
Motor current max	1,9 A
Overload 2 min/30 min	3,5 A
Connection voltage	1x230-240 V, +/-15%
Connection frequency	50-60 Hz
Output voltage	3x0-230 V
Output frequency	1-100 Hz
Min. frequency	1-20 Hz
Max. frequency	40-100 Hz

Acceleration time	0-30 sec
Retardation time	0-30 sec
Ambient temp. non condensing	-25 - +45 °C
Protection form	IP 54
Weight	1,2 kg
Dimensions, HxWxD	198x165x60 mm
Internal fuse	4 AT
External fuse max	10 A

Other data

Also available in 208 V-version

F21009301 MicroMax

F21018301 MicroMax180



- User friendly
- Stable aluminium enclosure
- Compact build dimensions
- Input signal 0-10 V
- Remaining alarms
- CE-approved
- Two years product warranty

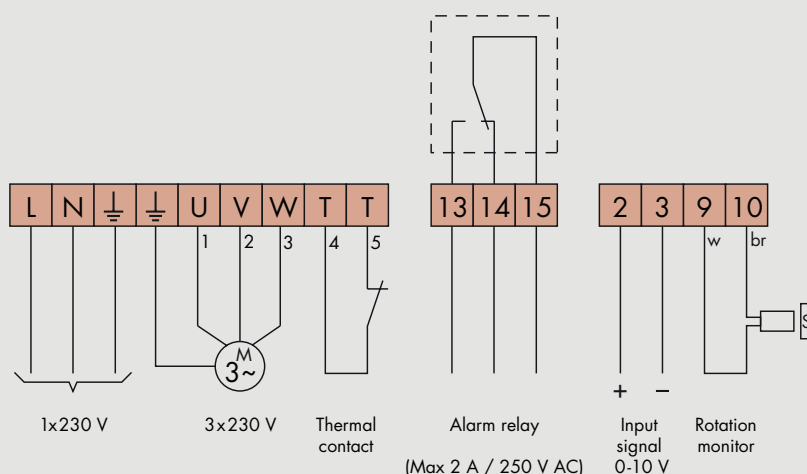
Set of EMC-glands as an option

MicroMax, a series of control units for rotating heat exchangers. The control units combine small dimensions with large capacity and are very easily mounted and run.

MicroMax is intended for rotor diameters up to 1500 mm and MicroMax180 for up to 2500 mm with a rotor speed of max 12 rpm. If the rotor requires a faster rotor speed, the rotor diameter should be reduced.

The control units are delivered in enclosed versions as standard, but may on demand be delivered in customer specific versions. All control units in the MicroMax-series are available as included components in any of our popular drive set.

CONNECTION DIAGRAM



Description of functions

MicroMax is a series of modern control units with specific additional functions for an optimal run of a rotating heat exchanger.

- Input signal 0 – 10 V** The speed of the heat exchanger and its efficiency is regulated steplessly by the control unit so that the speed of the rotor is in proportion to the input signal from the central control. If the input signal is below the set up threshold value, the rotor will stop.
- Cleaning function** When the rotor has been stopped for 30 minutes, the cleaning function is activated and the rotor rotates for 10 seconds at minimum speed.
- Rotation monitor** The rotation monitor stops the control unit and alarms if the rotor stops rotating. The control unit trips if it does not receive pulses every 5 minutes.
- Alarm** The control unit trips and alarms at over- or under voltage, short circuit or earth faulty as well as tripped thermal contact in the motor. All alarms are remaining.
- Test** DIP-switches for manual run on low- or high speed.

Technical data

	MicroMax	MicroMax180
Motor output max	90 W	180 W
Motor current max	0,7 A	1,3 A
Overload 2 min/30 min	1,3 A	2,1 A
Connection voltage	1x230-240 V, +/-15%	1x230-240 V, +/-15%
Connection frequency	50-60 Hz	50-60 Hz
Output voltage	3x0-230 V	3x0-230 V
Output frequency	5-100 Hz	5-100 Hz
Min. frequency	(Fixed) 5 Hz	(Fixed) 5 Hz
Max. frequency	40-100 Hz	40-100 Hz
Acceleration time	(Fixed) 30 sec	(Fixed) 30 sec
Retardation time	(Fixed) 30 sec	(Fixed) 30 sec
Ambient temp. non condensing	-25 - +45 °C	-25 - +45 °C
Protection form	IP54	IP54
Weight	0,9 kg	0,9 kg
Dimensions, HxWxD	158x165x60 mm	158x165x60 mm
Internal fuse	2 AT	2,5 AT
External fuse max	10 A	10 A

F21037301 MicroMax370

F21075401 MicroMax750



- User friendly
- Stable aluminium enclosure
- Compact build dimensions
- Input signal 0 - 10 V
- Remaining alarms
- CE-approved
- Two years product warranty

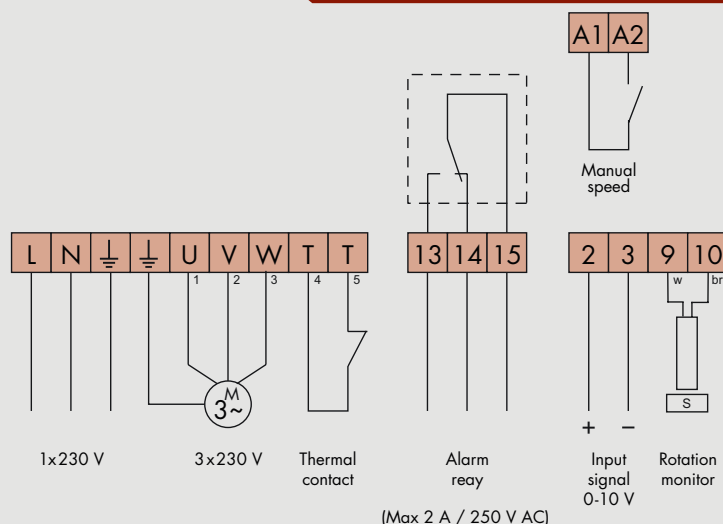
Set of EMC-glands as an option

MicroMax, a series of control units for rotating heat exchangers. The control units combine small dimensions with large capacity and are very easily mounted and run.

MicroMax370 is intended for rotor diameters up to 3500 mm and MicroMax750 for up to 5000 mm with a rotor speed of max 12 rpm. If the rotor requires a faster rotor speed, the rotor diameter should be reduced.

The control units are delivered in enclosed versions as standard, but may on demand be delivered in customer specific versions. All control units in the MicroMax-series are available as included components in any of our popular drive set.

CONNECTION DIAGRAM



Description of functions

MicroMax is a series of modern control units with specific additional functions for an optimal run of a rotating heat exchanger.

Input signal 0 – 10 V	The speed of the heat exchanger and its efficiency is regulated stepless by the control unit so that the speed of the rotor is in proportion to the input signal from the central control. If the input signal is below the set up threshold value, the rotor will stop.
Cleaning function	When the rotor has been stopped for 30 minutes, the cleaning function is activated and the rotor rotates for 10 seconds at minimum speed.
Rotation monitor	The rotation monitor stops the control unit and alarms if the rotor stops rotating. The control unit trips if it does not receive pulses every 5 minutes.
Alarm	The control unit trips and alarms at over- or under voltage, short circuit or earth faulty as well as tripped thermal contact in the motor. All alarms are remaining.
Manual speed	Possibility of externally controlling the maximum speed.
100 or 150 Hz	MicroMax750 is switchable to 150 Hz to achieve higher rotor speed.
Test	DIP-switches for manual run on low- or high speed.

Technical data

	MicroMax370	MicroMax750
Motor output max	370 W	750 W
Motor current max	1,9 A	3,6 A
Overload 2 min/30 min	3,5 A	5,3 A
Connection voltage	1x230-240 V, +/-15%	1x230-240 V, +/-15%
Connection frequency	50-60 Hz	50-60 Hz
Output voltage	3x0-230 V	3x0-230 V
Output frequency	5-100 Hz	4-100/150 Hz
Min. frequency	(Fixed) 5 Hz	(Fixed) 4 Hz
Max. frequency	40-100	40-100/150 Hz
Acceleration time	(Fixed) 30 sec	(Fixed) 30 sec
Retardation time	(Fixed) 30 sec	(Fixed) 60 sec
Ambient temp. non condensing	-25 - +45 °C	-25 - +45 °C
Protection form	IP54	IP54
Weight	1,1 kg	1,2 kg
Dimensions, HxWxD	198x165x60 mm	225x165x60 mm
Internal fuse	4 AT	6,3 AT
External fuse max	10 A	10 A

F21025201

VariMax25

F21025303

VariMax25 UL/CSA

Also available in Modbus version



Set of EMC-glands as an option on VariMax25
Set of EMC-glands are included in VariMax25 UL/CSA

- User friendly
- Stable aluminium enclosure
- Compact build dimensions
- Input signal 0-10 V
- Remaining alarms
- CE-approved
- UL/CSA-approved
- Five years product warranty

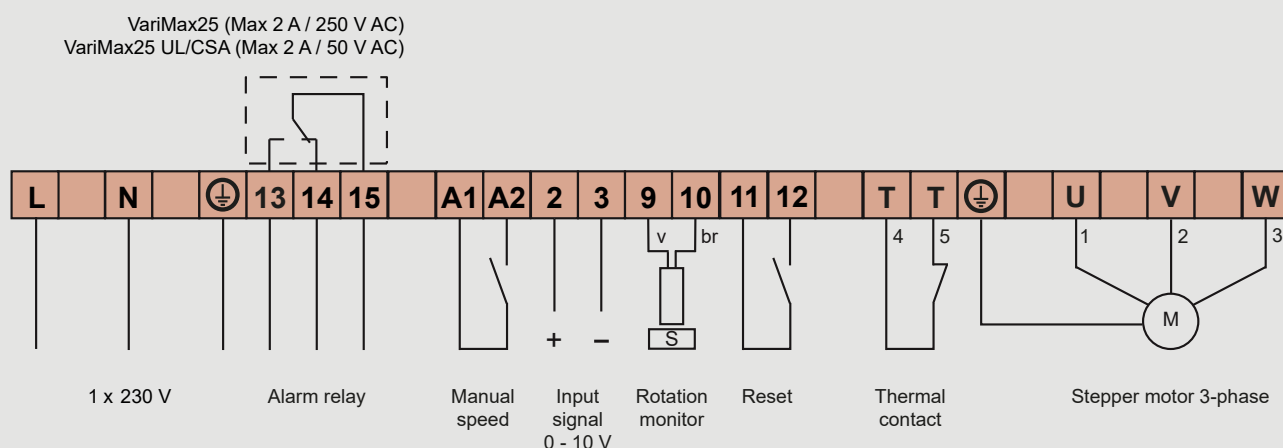
VariMax25 is our latest control unit and combines small dimensions with large capacity and is very easily mounted and run.

VariMax25 is intended for thermal rotor diameters up to 1500 mm with a rotor speed of max. 12 rpm. If the rotor requires a faster rotor speed, the rotor diameter should be reduced.

VariMax25 is an alternative to our control units MiniMax and MicroMax.

The control unit is delivered in enclosed version and should be combined with our VariMax-motor25.

CONNECTION DIAGRAM



Description of functions

Together with the VariMax-motor25, VariMax25 constitutes a modern combination of specific additional functions for an optimal run of a rotating heat exchanger. The VariMax-motor25 is a multipolar motor with a large torque within the complete speed area. This means that the speed of a thermal rotor is between 0,1-12 rpm and a hygroscopic between 0,2-20 rpm.

Input signal 0-10 V	The speed of the rotor is regulated by the control unit so that the efficiency of the heat exchanger is in proportion to the input signal from the central control.
Cleaning function	When the rotor has been stopped for 30 minutes, the cleaning function is activated and the rotor rotates for 20 seconds at 12 rpm on the motor. The function is disconnectable through DIP-switches.
Rotation monitor	Alarms and trips if pulse is not received every 30 minutes at minimum speed and every 20 seconds at maximum speed. The time between these speeds is linear. The function is disconnectable through DIP-switches. The alarm is remaining.
Other alarms	The control unit trips and alarms at over- or under voltage, overtemperature in the control unit, overtemperature in the motor, short circuit or earth faulty. All alarms are remaining.
Manual speed	Possibility of externally controlling the speed for cooling recycling. The speed is adjusted with a separate potentiometer.
Test	DIP-switches for manual run at low- or high speed.

Technical data

VariMax25			
Connection voltage	1x230-240 V +/-15% 50/60 Hz	Output frequency	0-290 Hz
Power input max	110 W	Acceleration- and retardation time	30 sec
Input current	0,9 A	Ambient temp.	-30 - +45 °C
External fuse max	10 A	not condensing	-40 - +45 °C***
Output voltage*)	3x0-280 V	Protection form	Type 1/IP54
Motor current/phase	0,7 A	Weight	1,1 kg
Internal fuse**)	2,5 AT	Dimensions, HxWxD	173x187x70 mm

*) Exact value can not be achieved with a digital measuring instrument

**) The fuse protects both motor and electronics

***) Note, The control unit must be connected to power all the time

F21050201

VariMax50

F21050303

VariMax50 UL/CSA

Also available in Modbus version



Set of EMC-glands as an option on VariMax50
Set of EMC-glands are included in VariMax50 UL/CSA

- User friendly
- Stable aluminium enclosure
- Compact build dimensions
- Input signal 0-10 V
- Remaining alarms
- CE-approved
- UL/CSA-approved
- Five years product warranty

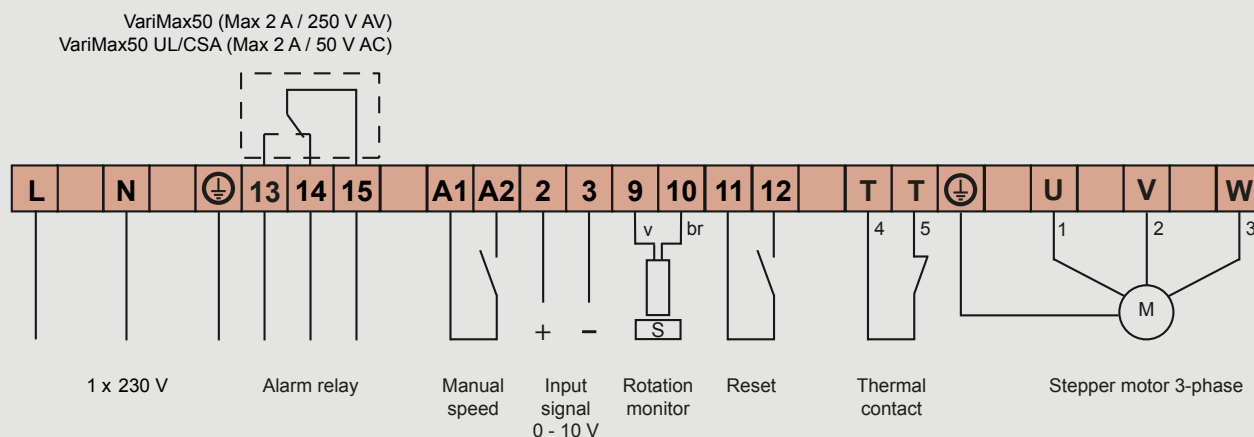
VariMax50 combines small dimensions with large capacity and is very easily mounted and run.

VariMax50 is intended for thermal rotor diameters up to 2500 mm with a rotor speed of max. 12 rpm. If the rotor requires a faster rotor speed, the rotor diameter should be reduced.

VariMax50 is an alternative to our control units MiniMax and MicroMax.

The control unit is delivered in enclosed version and should be combined with our VariMax-motor50.

CONNECTION DIAGRAM



Description of functions

Together with the VariMax-motor50, VariMax50 constitutes a modern combination of specific additional functions for an optimal run of a rotating heat exchanger. The VariMax-motor50 is a multipolar motor with a large torque within the complete speed area. This means that the speed of a thermal rotor is between 0,1-12 rpm and a hygroscopic between 0,2-20 rpm.

Input signal 0-10 V	The speed of the rotor is regulated by the control unit so that the efficiency of the heat exchanger is in proportion to the input signal from the central control.
Cleaning function	When the rotor has been stopped for 30 minutes, the cleaning function is activated and the rotor rotates for 20 seconds at 12 rpm on the motor. The function is disconnectable through DIP-switches.
Rotation monitor	Alarms and trips if pulse is not received every 30 minutes at minimum speed and every 20 seconds at maximum speed. The time between these speed is linear. The function is disconnectable through DIP-switches. The alarm is remaining.
Other alarms	The control unit trips and alarms at over- or under voltage, overtemperature in the control unit, overtemperature in the motor, short circuit or earth faulty. All alarms are remaining.
Manual speed	Possibility of externally controlling the speed for cooling recycling. The speed is adjusted with a separate potentiometer.
Test	DIP-switches for manual run at low- or high speed.

Technical data

VariMax50			
Connection voltage	1x230-240 V +/-15% 50/60 Hz	Output frequency	0-312 Hz
Power input max	240 W	Acceleration- and retardation time	30 sec
Input current	1,9 A	Ambient temp. not condensing	-30 - +45 °C -40 - +45 °C***
External fuse max	10 A	Protection form	Type 1/IP54
Output voltage*)	3x0-280 V	Weight	1,2 kg
Motor current/phase	2,0 A	Dimensions, HxWxD	203x187x70 mm
Internal fuse**)	2,5 AT		

*) Exact value can not be achieved with a digital measuring instrument.

**) The fuse protects both motor and electronics

***) Note, The control unit must be connected to power all the time

F21100201

VariMax100

F21100303

VariMax100 UL/CSA

Also available in Modbus version



Set of EMC-glands as an option on VariMax100
Set of EMC-glands are included in VariMax100 UL/CSA

- User friendly
- Stable aluminium enclosure
- Compact build dimensions
- Input signal 0-10 V
- Remaining alarms
- CE-approved
- UL/CSA-approved
- Five years product warranty

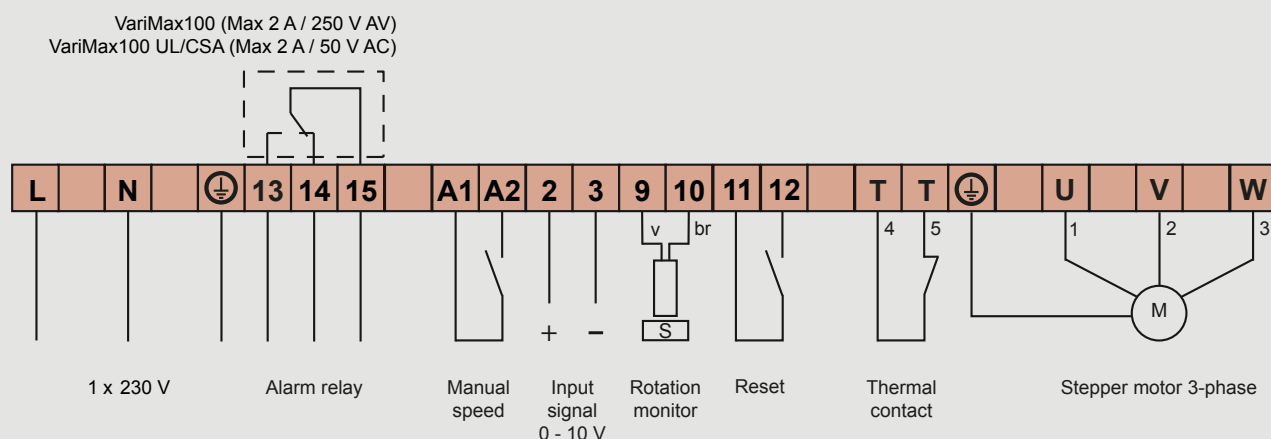
VariMax100 combines small dimensions with large capacity and is very easily mounted and run.

VariMax100 is intended for thermal rotor diameters up to 3900 mm with a rotor speed of max. 12 rpm. If the rotor requires a faster rotor speed, the rotor diameter should be reduced.

VariMax100 is an alternative to our control units MiniMax and MicroMax.

The control unit is delivered in enclosed version and should be combined with our VariMax-motor100.

CONNECTION DIAGRAM



Description of functions

Together with the VariMax-motor100, VariMax100 constitutes a modern combination of specific additional functions for an optimal run of a rotating heat exchanger. The VariMax-motor100 is a multipolar motor with a large torque within the complete speed area. This means that the speed of a thermal rotor is between 0,05-12 rpm and a hygroscopic between 0,2-20 rpm.

Input signal 0-10 V	The speed of the rotor is regulated by the control unit so that the efficiency of the heat exchanger is in proportion to the input signal from the central control.
Cleaning function	When the rotor has been stopped for 30 minutes, the cleaning function is activated and the rotor rotates for 20 seconds at 12 rpm on the motor. The function is disconnectable through DIP-switches.
Rotation monitor	Alarms and trips if pulse is not received every 30 minutes at minimum speed and every 20 seconds at maximum speed. The time between these speed is linear. The function is disconnectable through DIP-switches. The alarm is remaining.
Other alarms	The control unit trips and alarms at over- or under voltage, overtemperature in the control unit, overtemperature in the motor, short circuit or earth faulty. All alarms are remaining.
Manual speed	Possibility of externally controlling the speed for cooling recycling. The speed is adjusted with a separate potentiometer.
Test	DIP-switches for manual run at low- or high speed.

Technical data

VariMax100			
Connection voltage	1x230-240 V +/-15% 50/60 Hz	Output frequency	0-333 Hz
Power input max	500 W	Acceleration- and retardation time	30 sec
Input current	2,2 A	Ambient temp.	-30 - +45 °C
External fuse max	10 A	not condensing	-40 - +45 °C***
Output voltage*)	3x0-280 V	Protection form	Type 1/IP54
Motor current/phase	3,2 A	Weight	2,6 kg
Internal fuse**)	4 AT	Dimensions, HxWxD	233x205x104 mm

*) Exact value can not be achieved with a digital measuring instrument.

**) The fuse protects both motor and electronics

***) Note, The control unit must be connected to power all the time

F21008201

MicroStart



Set of EMC-glands as an option

- User friendly
- Stable aluminium enclosure
- Compact building dimensions
- Input signal 0-10 V
- Remaining alarms
- CE-approved
- Two years product warranty

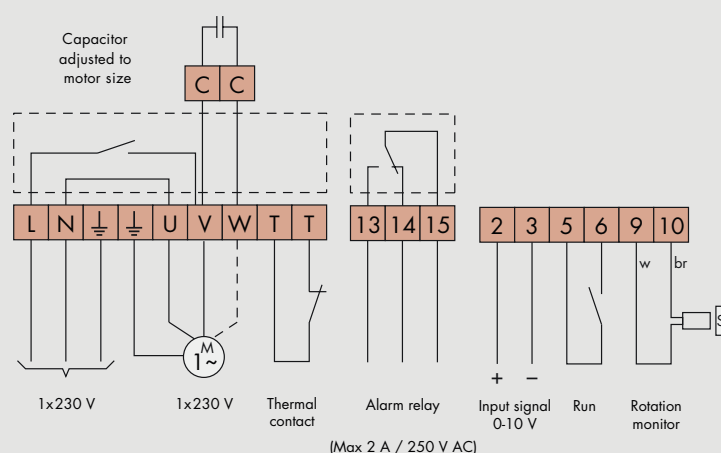
MicroStart is a hybrid control unit between the simple on/off-control unit and the more advanced stepless control unit for rotating heat exchangers.

The control unit combines small dimensions with large capacity and is very easily mounted and run.

MicroStart is intended for rotors up to diameter 1500 mm.

The control unit is delivered in an enclosed version, but may on demand be delivered in a customer specific version. MicroStart is available as an included component in any of our popular drive set.

CONNECTION DIAGRAM



Description of functions

MicroStart, enclosed IP54, is a control unit intended for single phase motors. The motor capacitor can be mounted in the control unit. MicroStart has a built-in soft start-/soft stop function to spare motor and gear. It also has the additional functions required for easily running a rotating heat exchanger.

Input signal 0 – 10 V MicroStart has a pause/running time function controlled by the input signal, with a total cycle time of 60 seconds. Depending on the level of the input signal, the proportion between pause and running time changes. If the input signal is below the threshold value 0,5 V, the rotor stops.

MicroStart has a built-in shift of the input signal, which implies that the efficiency of the rotor becomes proportional to the input signal.

Cleaning function MicroStart has a build-in cleaning function. When the rotor has been still for 45 minutes, the cleaning function is activated and the rotor rotates for 10 seconds.

Rotation monitor MicroStart has a built-in rotation monitor. A magnetic sensor is connected to the control unit with a built-in hall element and a magnet with it. The control unit trips if a pulse is not received every 5 minutes.

Alarm The control unit trips at tripped thermal contact in the motor.

Test DIP-switches for manual run.

Technical data

	MicroStart
Motor output max	90 W
Motor current max	1,0 A
Connection voltage	1x230-240 V, +/-15%
Connection frequency	50Hz
Output voltage	1x230 V
Internal fuse *	1 AT
External fuse max	10 A
Ambient temp. non condensing	-25 - +45 °C
Protection form	IP54
Weight	0,6 kg
Dimensions, HxWxD	110x165x60mm

*) The fuse protects both motor and electronics

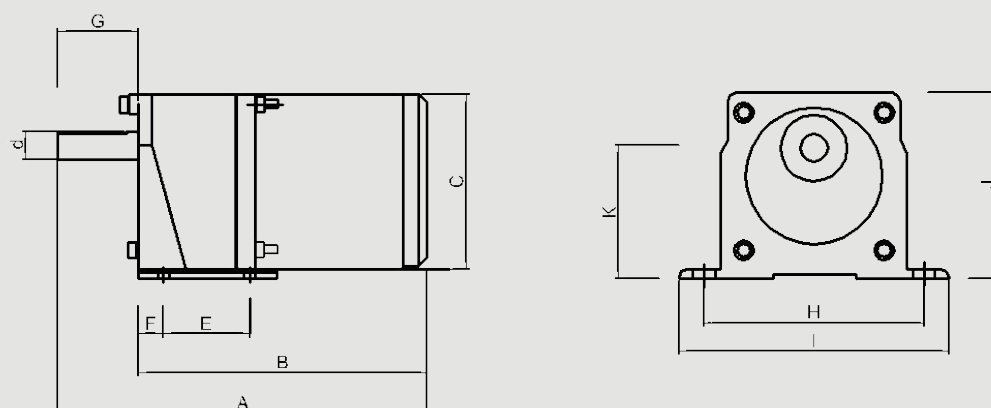
In line helical gear motor 1-phase 230 V

F22006055 6/55

F22006080 6/80



- Adapted for on/off run alternatively by MicroStart
- Built-in thermal contact, not drawn to terminal
- Compact built-in dimensions
- Two years product warranty



MOTOR	A	B	C	d	E	F	G	H	I	J	K
6/55	135	110	60	8	25	15	28	83	100	67,5	48
6/80	135	110	60	8	25	15	28	83	100	67,5	48

Technical data at 50 Hz

Motor	6/55	6/80
Rated output	6 W	6 W
Rated current at 230V	0,08 A	0,08 A
Rated speed	55 rpm	80 rpm
Gear	1:25	1:15
Rated torque	0,8 Nm	0,5 Nm
Protection form	IP23	IP23
Connection voltage	1x230 V	1x230 V
Weight	1,0 kg	1,0 kg
Motor capacitor	0,6 uF	0,6 uF

Max rotor diameter at rotor speed 12 rpm

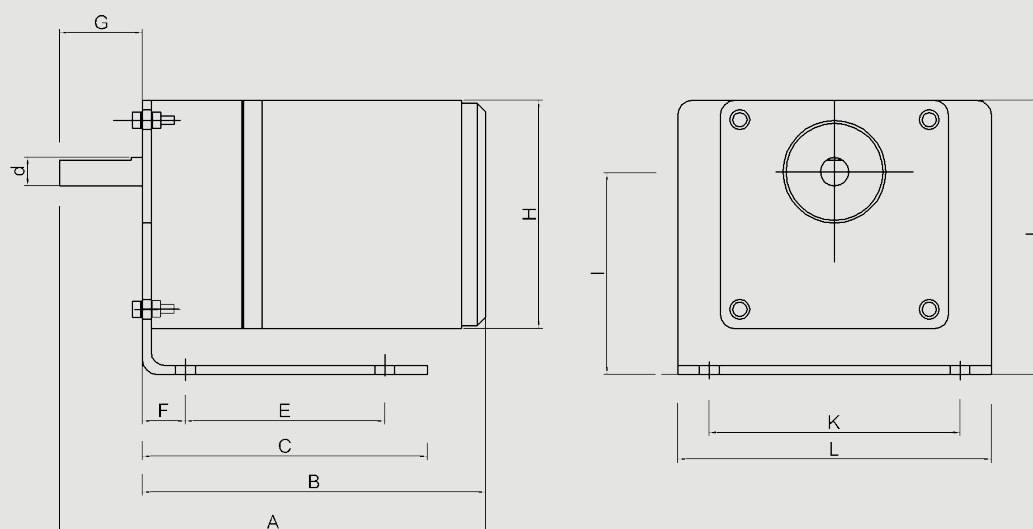
Motor	6/55	6/80
Rotor diameter	450 mm	450 mm

In line helical gear motor 1-phase 230 V

F22025096 25/96

F22040100 40/100





MOTOR	A	B	C	d	E	F	G	H	I	J	K	L
25/96	150	120	100	10	60	15	30	80	70	96	90	110
40/100	180	150	100	12	60	15	30	87	80	112	90	110

Technical data at 50 Hz

Motor	25/96	40/100
Rated output	25 W	40 W
Rated current at 230V	0,23 A	0,39 A
Rated speed	96 rpm	100 rpm
Gear	1:12,5	1:12,5
Rated torque	2,0 Nm	2,8 Nm
Protection form	IP23	IP23
Connection voltage	1x230 V	1x230 V
Weight including motor bracket	2,5 kg	3,6 kg
Motor capacitor	1,3 uF	2,0 uF

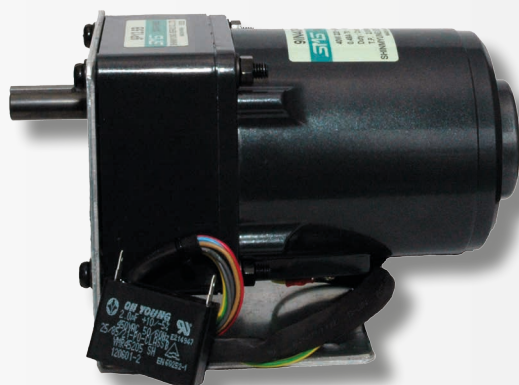
Max rotor diameter at rotor speed 12 rpm

Motor	25/96	40/100
Rotor diameter	800 mm	1050 mm

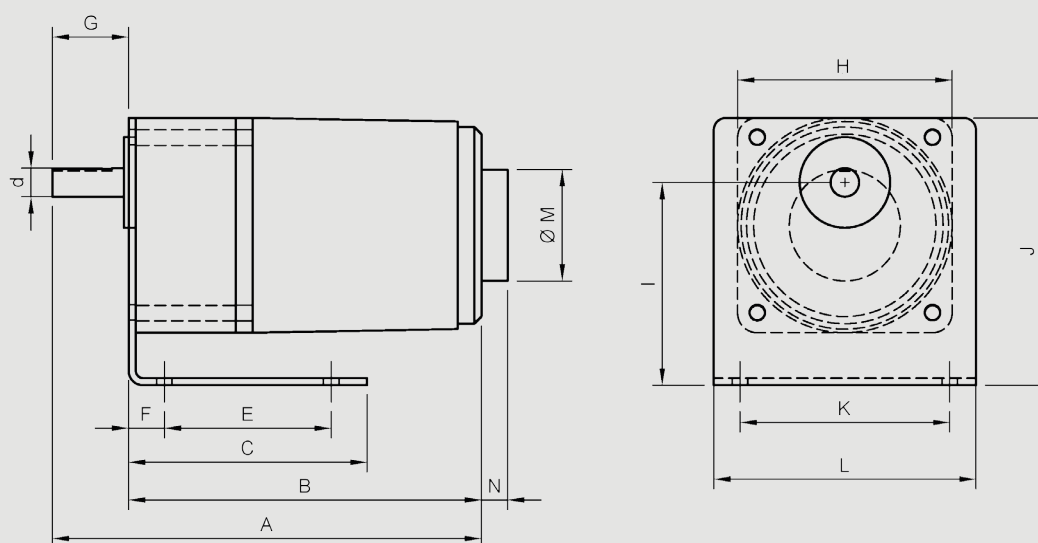
In line helical gear motors with tachometer feedback 1-phase 230 V

F22025100 25/100

F22040101 40/100



- Adapted for voltage regulation
- Built-in thermal contact, not drawn to terminal
- Compact built-in dimensions
- Two years product warranty



MOTOR	A	B	C	d	E	F	G	H	I	J	K	L	M	N
25/100	150	120	100	10	80	15	32	80	70	96	90	110	47	11
40/100	180	150	100	12	80	15	32	90	85	110	90	110	47	11

Technical data at 50 Hz

Motor	25/100	40/100
Rated output	25 W	40 W
Rated current	0,3 A	0,49 A
Rated speed	100 rpm	100 rpm
Gear	1:12,5	1:12,5
Rated torque	1,7 Nm	4 Nm
Protection form	IP20	IP20
Connection voltage	1x230 V	1x230 V
Weight incl. motor bracket	2,5 kg	3,7 kg
Motor capacitor	1,2 uF	2,0 uF

Max rotor diameter at rotor speed 12 rpm

Motor	25/100	40/100
Rotor diameter	800 mm	1050 mm

Other data

Tachometer feedback is 0-24 V DC.

Worm gear motor 1-phase 230 V

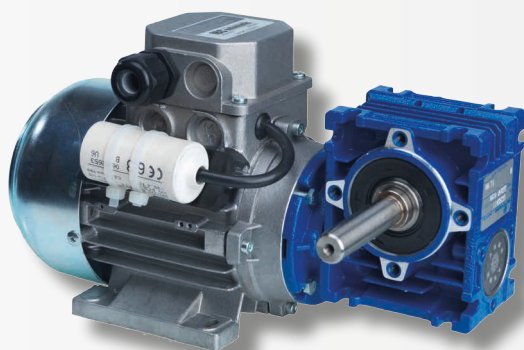
F22090090 90/90

F22090141 90/140

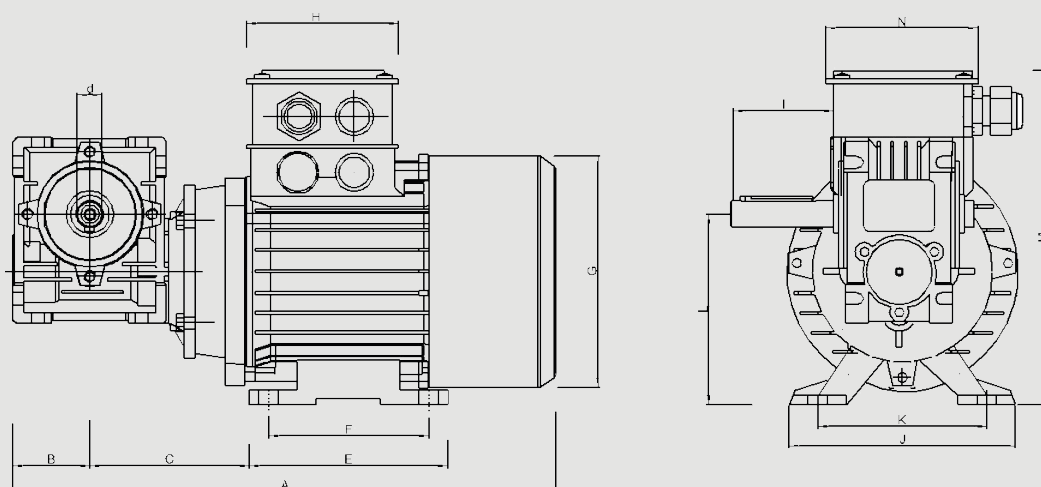
F22180141*) 180/140

F22250141*) 250/140

*) At run, using the MicroStart, a contactor must be used



- Adapted for on/off run alternatively by MicroStart
- Aluminium coating for better heat conducting
- Built-in thermal contact, drawn to terminal
- Compact built-in dimensions according to IEC-standards
- Extended output shaft
- Two years product warranty



MOTOR	A	B	C	d	E	F	G	H	I	J	K	L	M	N
90/90	262	40	90	14	91	71	110	75	61	108	91	86	150	75
90/140	262	40	90	14	91	71	110	75	61	108	91	86	150	75
180/140	286	40	103	14	105	81	122	75	61	120	100	93	163	75
250/140	338	50	119	18	108	90	137	75	70	136	113	110	180	75

Technical data at 50 Hz

Motor	90/90	90/140	180/140	250/140
Rated output	90 W	90 W	180 W	250 W
Rated current 230/400V	0,9 A	0,9 A	1,6 A	2,4 A
Rated speed	91 rpm	140 rpm	140 rpm	140 rpm
Gear	1:15	1:10	1:10	1:7
Rated torque	5,8 Nm	4,1 Nm	8,2 Nm	11,7 Nm
Protection form	IP55	IP55	IP55	IP55
Connection voltage	1x230 V	1x230 V	1x230 V	1x230 V
Weight	4,3 kg	4,3 kg	5,2 kg	8,5 kg
Motor capacitor	6,3 uF	6,3 uF	10,0 uF	12,5 uF

Max rotor diameter at rotor speed 12 rpm

Motor	90/90	90/140	180/140	250/140
Rotor diameter	1500 mm	1500 mm	2500 mm	3000 mm

Worm gear motor 1-phase 115 V UL

F22090144UL 90/140

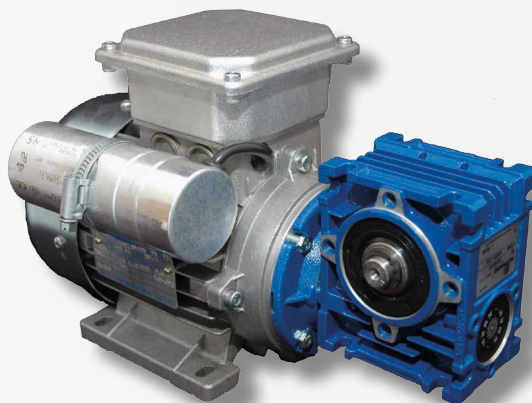
F22090204UL 90/200

F22180204UL 180/200

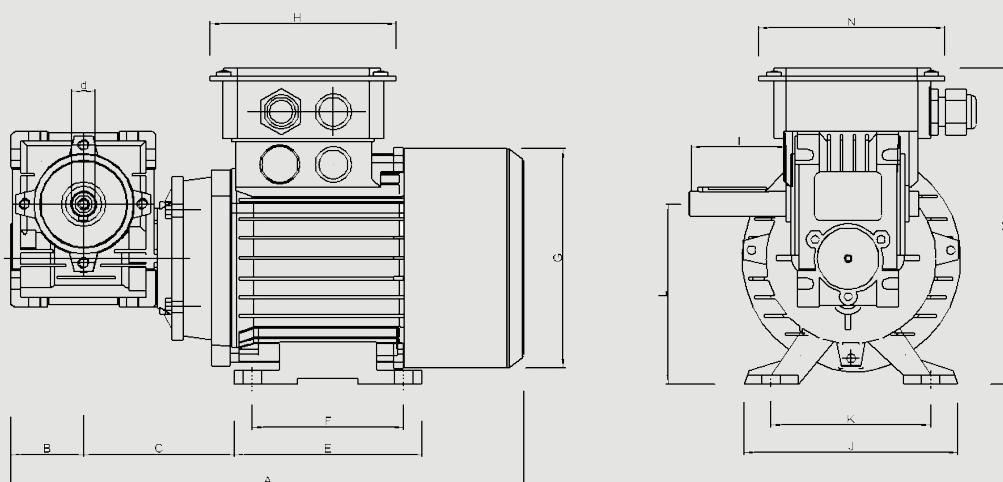
F22250204UL 250/200

F22370204UL 370/200

*) At run, using the MicroStart, a contactor must be used



- UL-approved
- Aluminium coating for heat conducting
- Suited for on/off drift
- Built-in thermal contact, drawn to terminal
- Compact built-in dimensions according to IEC-standards
- Extended output shaft
- Two years product warranty



MOTOR	A	B	C	d	E	F	G	H	I	J	K	L	M	N
90/140	262	40	90	14	91	71	110	100	61	108	91	86	165	100
90/200	262	40	90	14	91	71	110	100	61	108	91	86	165	100
180/200	286	40	103	14	105	81	122	100	61	120	100	93	175	100
250/200	338	50	119	18	108	90	137	100	70	136	113	110	195	100
370/200	340	50	123	18	108	90	138	100	70	136	113	110	195	100

Technical data at 60 Hz

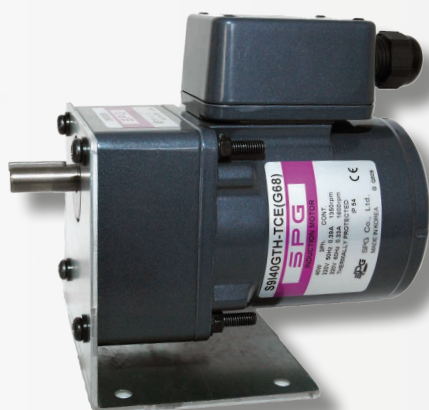
Motor	90/140	90/200	180/200	250/200	370/200
Rated output	90 W	90 W	180 W	250 W	370 W
Rated current 230/400V	2,2 A	2,2 A	3,6 A	5,8 A	6,6 A
Rated speed	140 rpm	200 rpm	200 rpm	200 rpm	200 rpm
Gear	1:10	1:7	1:7	1:7	1:7
Rated torque	4,9 Nm	4,1 Nm	6,0 Nm	8,5 Nm	12,7 Nm
Protection form	IP55	IP55	IP55	IP55	IP55
Connection voltage	1x115 V	1x115 V	1x115 V	1x115 V	1x115 V
Weight	4,6 kg	4,6 kg	6,2 kg	8,7 kg	9,7 kg
Motor capacitor	10 uF	10 uF	45 uF	30 uF	30 uF

Max rotor diameter at rotor speed 12 rpm

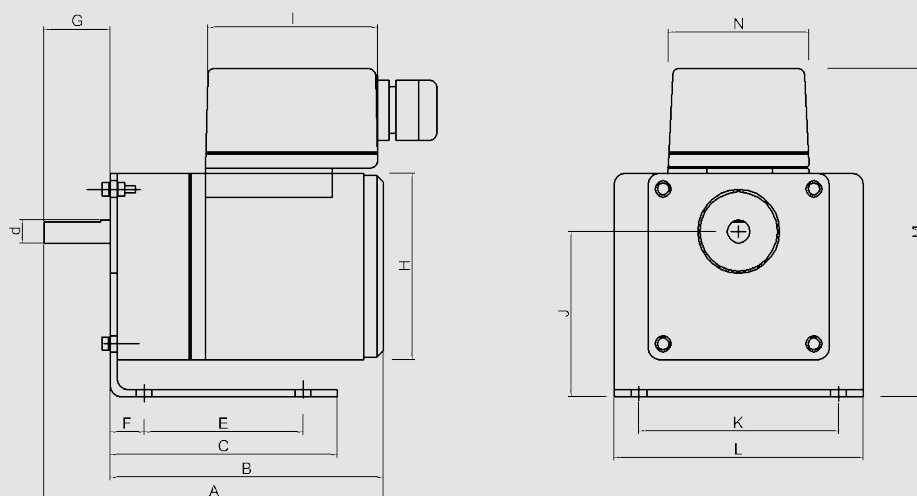
Motor	90/140	90/200	180/200	250/200	370/200
Rotor diameter	1500 mm	1500 mm	2500 mm	3000 mm	3500 mm

In line helical gear motor 3-phase 230 V

F22025075	25/75
F22040075	40/75
F22040075F	40/75F
F22060075	60/75



- Adapted for rotation speed
- Built-in thermal contact, drawn to terminal
- Compact built-in dimensions
- Motors are switchable for 1-phaserun with capacitor
- 40/75F has reinforced gearbox
- Motor length of 40/75F is critical for rotors having a width of 200 mm
- Two years product warranty



MOTOR	A	B	C	d	E	F	G	H	I	J	K	L	M	N
25/75	150	120	100	10	70	15	30	80	76	70	88	110	145	62
40/75	180	150	100	12	70	15	30	87	76	85	88	110	160	62
40/75F	215	185	100	15	70	15	30	87	76	85	88	110	160	62
60/75	230	200	100	15	70	15	30	87	76	85	88	110	160	62

Technical data at 50 Hz

Motor	25/75	40/75	40/75F	60/75
Rated output	25 W	40 W	40 W	60 W
Rated current	0,28 A	0,39 A	0,39 A	0,8 A
Rated speed	75 rpm	75 rpm	75 rpm	75 rpm
Gear	1:18	1:18	1:18	1:18
Rated torque	2,5 Nm	4,1 Nm	3,7 Nm	5,5 Nm
Protection form	IP54	IP54	IP54	IP54
Connection voltage	3x230 V	3x230 V	3x230 V	3x230 V
Weight incl. motor bracket	2,7 kg	3,9 kg	4,5 kg	4,6 kg

Max rotor diameter at rotor speed 12 rmp

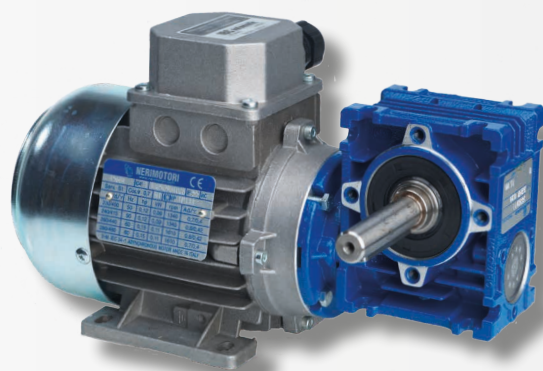
Motor	25/75	40/75	40/75F	60/75
Rotor diameter	800 mm	1400 mm	1400 mm	1800 mm

Other data

The motors can only be connected to 3 x 230 V alternatively 1 x 230 V with capacitor for 1-phase run.

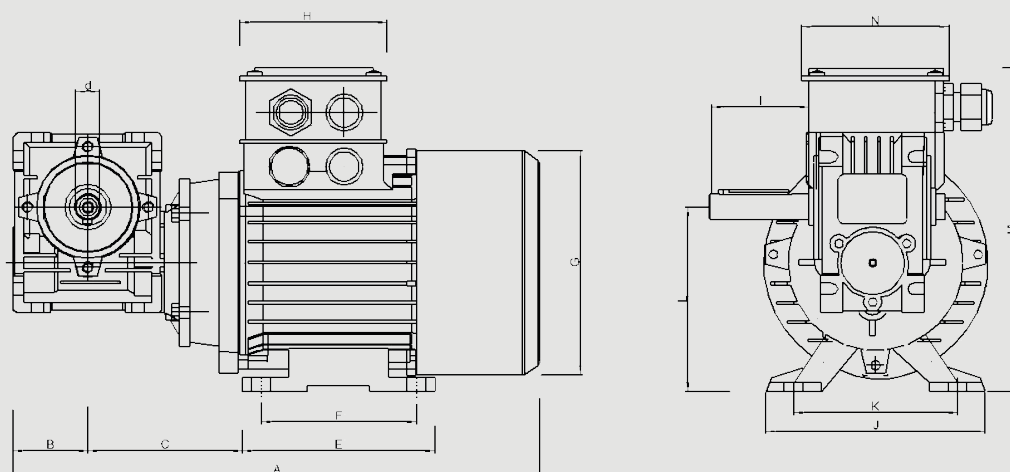
Worm gear motor 3-phase 230/400 V

F22090068	90/68
F22090091	90/91
F22090140	90/140
F22090200	90/200
F22180072	180/72
F22180140	180/140
F22180200	180/200



- Adapted for rotation speed
- Aluminium coating for better heat conducting
- Built-in thermal contact, drawn to terminal
- Compact built-in dimensions according to IEC-standards
- Extended output shaft
- Two years product warranty

DIMENSIONS



MOTOR	A	B	C	d	E	F	G	H	I	J	K	L	M	N
90/68	262	40	82	14	91	71	110	75	61	108	90	86	150	75
90/91	262	40	82	14	91	71	110	75	61	108	90	86	150	75
90/140	262	40	82	14	91	71	110	75	61	108	90	86	150	75
90/200	262	40	82	14	91	71	110	75	61	108	90	86	150	75
180/72	286	40	86	14	105	81	122	75	85	120	100	93	165	75
180/140	286	40	86	14	105	81	122	75	85	120	100	93	165	75
180/200	286	40	86	14	105	81	122	75	85	120	100	93	165	75

Technical data at 50 Hz

Motor	90/68	90/91	90/140	90/200	180/72	180/140	180/200
Rated output	90 W	90 W	90 W	90 W	180 W	180 W	180 W
Rated current 230/400 V	0,7/0,4 A	0,7/0,4 A	0,7/0,4 A	0,7/0,4 A	1,2/0,7 A	1,2/0,7 A	1,2/0,7 A
Rated speed	68 rpm	92 rpm	140 rpm	200 rpm	72 rpm	140 rpm	200 rpm
Gear	1:20	1:15	1:10	1:7	1:20	1:10	1:7
Rated torque	7,2 Nm	5,7 Nm	4,1 Nm	3,0 Nm	13,6 Nm	8,2 Nm	6,01 Nm
Protection form	IP55	IP55	IP55	IP55	IP55	IP55	IP55
Connection voltage	3x230/ 400 V	3x230/ 400 V	3x230/ 400 V	3x230/ 400 V	3x230/ 400 V	3x230/ 400 V	3x230/ 400 V
Weight	3,9 kg	3,9 kg	3,9 kg	3,9 kg	5,2 kg	5,2 kg	5,2 kg

Max rotor diameter at rotor speed 12 rpm

Motor	90/68	90/91	90/140	90/200	180/72	180/140	180/200
Rotor diameter	1500 mm	1500 mm	1500 mm	1500 mm	2500 mm	2500 mm	2500 mm

Other data

When run with our control units, the motor must be D-connected (3 x 230 V).

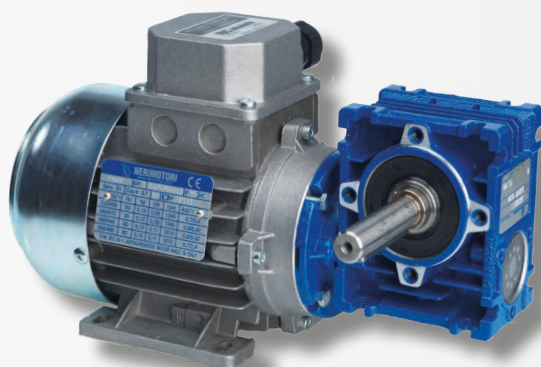
Worm gear motor 3-phase 230/400 V

F22370092 370/92

F22370140 370/140

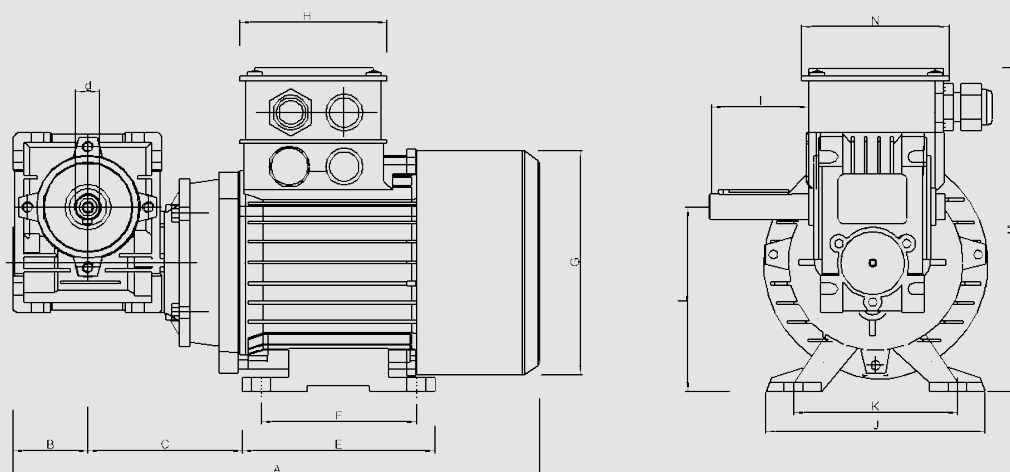
F22370200 370/200

F22750200 750/200



- Adapted for rotation speed
- Aluminium coating for better heat conducting
- Built-in thermal contact, drawn to terminal
- Compact built-in dimensions according to IEC-standards
- Extended output shaft
- Two years product warranty

DIMENSIONS



MOTOR	A	B	C	d	E	F	G	H	I	J	K	L	M	N
370/92	340	50	123	18	108	90	138	75	70	136	113	110	180	75
370/140	340	50	123	18	108	90	138	75	70	136	113	110	180	75
370/200	340	50	123	18	108	90	138	75	70	136	113	110	180	75
750/200	381	60	132	25	125	100	155	90	89	154	125	125	202	90

Technical data at 50 Hz

Motor	370/92	370/140	370/200	750/200
Rated output	370 W	370 W	370 W	750 W
Rated current 230/400 V	1,7/1,0 A	1,7/1,0 A	1,7/1,0 A	3,5/2,0 A
Rated speed	92 rpm	140 rpm	200 rpm	200 rpm
Gear	1:15	1:10	1:7	1:7
Rated torque	23,8 Nm	17,4 Nm	12,7 Nm	26,1 Nm
Protection form	IP55	IP55	IP55	IP55
Connection voltage	3x230/400 V	3x230/400 V	3x230/400 V	3x230/400 V
Weight	8,4 kg	8,4 kg	8,4 kg	13,9 kg

Max rotor diameter at rotor speed 12 rpm

Motor	370/92	370/140	370/200	750/200
Rotor diameter	3500 mm	3500 mm	3500 mm	5000 mm

Other data

When run with our control units, the motor must be D-connected (3 x 230 V).

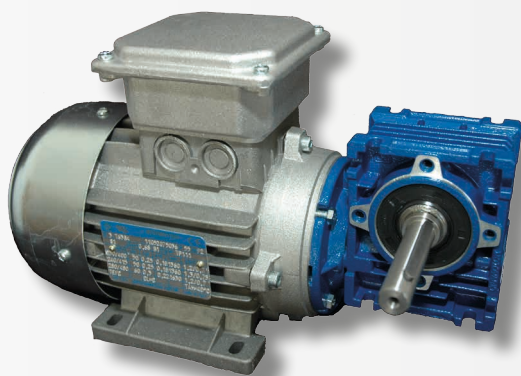
Worm gear motor 3-phase 208/360 V UL

F22090142UL2 90/140

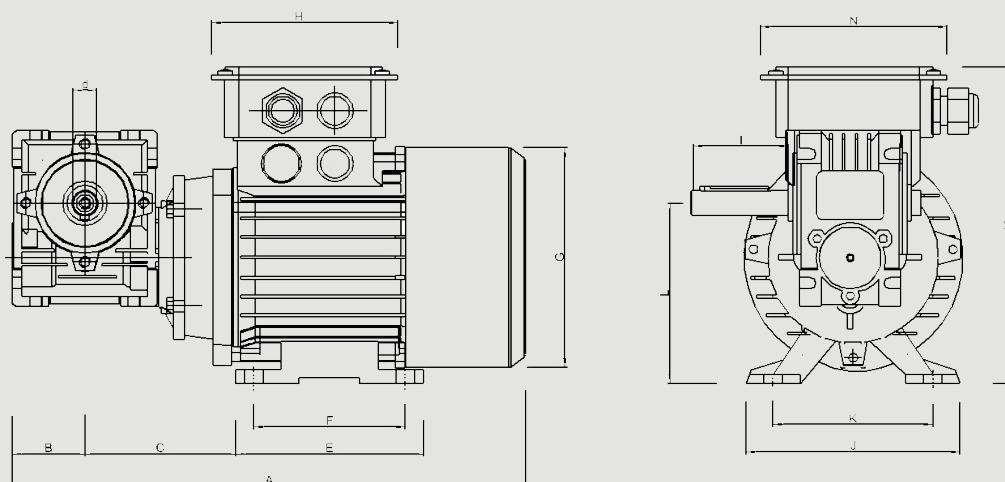
F22180202UL2 180/200

F22250202UL2 250/200

F22370202UL2 370/200



- UL-approved
- Adapted for rotation speed
- Aluminium coating for better heat conducting
- Built-in thermal contact, drawn to terminal
- Compact built-in dimensions according to IEC-standards
- Extended output shaft
- Two years product warranty



MOTOR	A	B	C	d	E	F	G	H	I	J	K	L	M	N
90/140	262	40	90	14	91	71	110	100	61	108	91	86	165	100
180/200	286	40	103	14	105	81	122	100	61	120	100	93	175	100
250/200	338	50	119	18	108	90	137	100	70	136	113	110	195	100
370/200	340	50	123	18	108	90	138	100	70	136	113	110	195	100

Technical data at 60 Hz

Motor	90/140	180/200	250/200	370/200
Rated output	90 W	180 W	250 W	370 W
Rated current 208/360 V	1,0/0,6 A	1,6/0,9 A	1,9/1,1 A	2,7/1,6 A
Rated speed	140 rpm	200 rpm	200 rpm	200 rpm
Gear	1:10	1:7	1:7	1:7
Rated torque	4,1 Nm	6,0 Nm	8,5 Nm	12,7 Nm
Protection form	IP55	IP55	IP55	IP55
Connection voltage	3x208/360 V	3x208/360 V	3x208/360 V	3x208/360 V
Weight	4,5 kg	5,5 kg	7,9 kg	10,3 kg

Max rotor diameter at rotor speed 12 rpm

Motor	90/140	180/200	250/200	370/200
Rotor diameter	1500 mm	2500 mm	3000 mm	3500 mm

Other data

This motor must be connected to our MiniMax 208 V, the motor must be D-connected (3 x 208 V).

Worm gear motor 3-phase 230/400 V UL

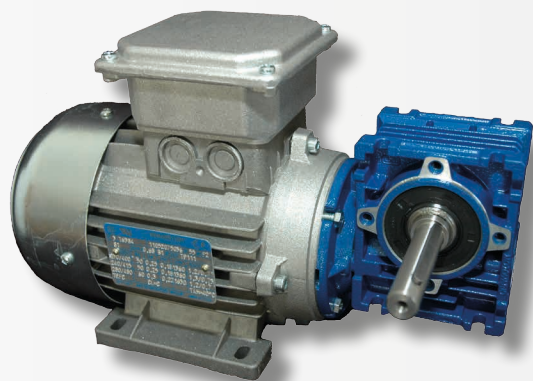
F22090142UL 90/140

F22180202UL 180/200

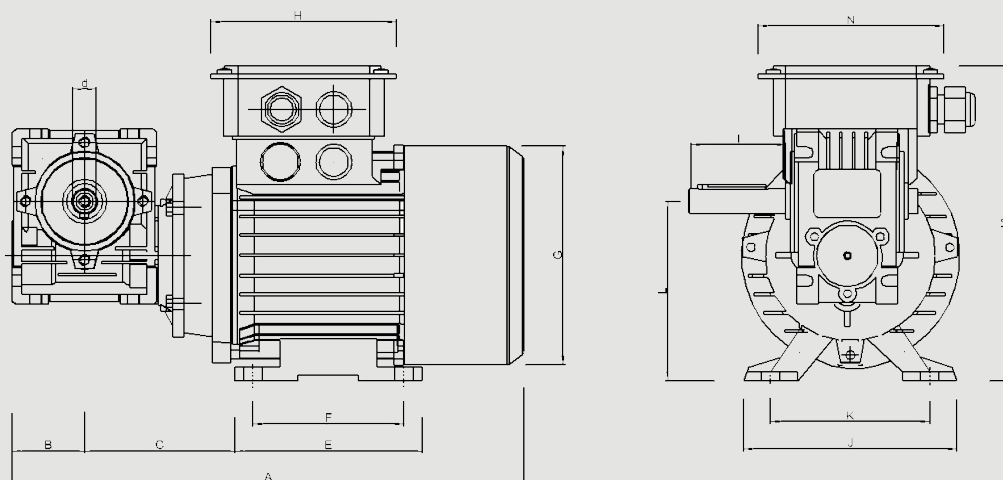
F22250202UL 250/200

F22370202UL 370/200

F22750202UL 750/200



- UL-approved
- Adapted for rotation speed
- Aluminium coating for better heat conducting
- Built-in thermal contact, drawn to terminal
- Compact built-in dimensions according to IEC-standards
- Extended output shaft
- Two years product warranty



MOTOR	A	B	C	d	E	F	G	H	I	J	K	L	M	N
90/140	262	40	90	14	91	71	110	100	61	108	91	86	165	100
180/200	286	40	103	14	105	81	122	100	61	120	100	93	175	100
250/200	338	50	119	18	108	90	137	100	70	136	113	110	195	100
370/200	340	50	123	18	108	90	138	100	70	136	113	110	195	100
750/200	381	60	132	25	125	100	155	100	89	154	125	125	202	100

Technical data at 60 Hz

Motor	90/140	180/200	250/200	370/200	750/200
Rated output	90 W	180 W	250 W	370 W	750 W
Rated current 230/400 V	0,7/0,4 A	1,2/0,7 A	1,4/0,8 A	1,7/1,0 A	3,5/2,0 A
Rated speed	140 rpm	200 rpm	200 rpm	200 rpm	200 rpm
Gear	1:10	1:7	1:7	1:7	1:7
Rated torque	4,1 Nm	6,01 Nm	8,5 Nm	12,7 Nm	26,1 Nm
Protection form	IP55	IP55	IP55	IP55	IP55
Connection voltage	3x230/400 V	3x230/400 V	3x230/400 V	3x230/400 V	3x230/400 V
Weight	4,2 kg	5,4 kg	7,9 kg	8,5 kg	14,1 kg

Max rotor diameter at rotor speed 12 rpm

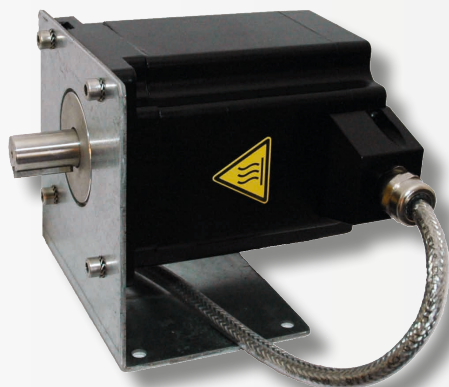
Motor	90/140	180/200	250/200	370/200	750/200
Rotor diameter	1500 mm	2500 mm	3000 mm	3500 mm	5000 mm

Other data

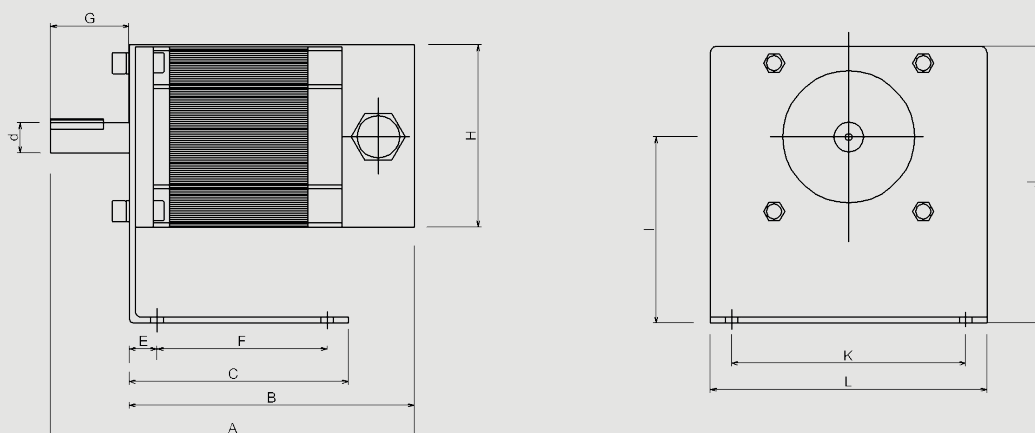
When run with our control units, the motor must be D-connected (3 x 230 V).

Stepping motor 3-phase 325 V DC

F22025301	VariMax-motor 25
F22050301	VariMax-motor 50
F22100301	VariMax-motor 100
F22025303	VariMax-motor 25 UL/CSA
F22050303	VariMax-motor 50 UL/CSA
F22100303	VariMax-motor 100 UL/CSA



- Adapted for rotation speed
- Built-in thermal contact, drawn to terminal
- Compact built-in dimensions
- UL/CSA-approved
- Five years product warranty



MOTOR	A	B	C	d	E	F	G	H	I	J	K	L
25	141	70	103	14	13	80	40	85	67	110	110	130
50	171	131	103	14	13	80	40	85	87	130	110	130
100	177	145	103	19	13	80	35	110	87	142	130	150

Technical data

VariMax-motor	25	50	100
Max torque	2 Nm	4 Nm	10 Nm
Min rotation speed	1 rpm	1 rpm	1 rpm
Max rotation speed	350 rpm	375 rpm	400 rpm
Motor temp. mantle max	110 °C	110 °C	110 °C
Ambient temperature	-30 - +45 °C	-30 - +45 °C	-30 - +45 °C
Protection form	IP54	IP54	IP54
Weight incl. motor bracket	2,6 kg	4 kg	8,4 kg

Max rotor diameter at rotor speed 12 rpm

Motor	25	50	100
Rotor diameter	1500 mm	2500 mm	3900 mm



EMC-set for enclosed control units

Set of glands for mounting according to the EMC-directive, intended for enclosed control units.

Available for the control units MiniMax, MicroMax, VariMax and MicroStart.

F29801314	MiniMax, MicroMax and VariMax, M-thread
F29804301	MicroStart. Set of glands plastic, M-thread, non EMC



Rotation monitor with magnet

Rotation monitor including magnet and bracket for easy mounting.

Standard cable length is 2 m.

Also available with cable length 3 m, 5 m or 10 m.

F29510101	Length of cable 2 meters
F29510107	Length of cable 3 meters
F29510106	Length of cable 5 meters
F29510109	Length of cable 10 meters



Rotation monitor with magnet and bracket

Rotation monitor including magnet and bracket for easy mounting.

Standard cable length is 2 m.

Also available with cable length 3 m, 5 m or 10 m.

F29510102	Length of cable 2 meters
F29510104	Length of cable 3 meters
F29510105	Length of cable 5 meters
F29510110	Length of cable 10 meters



V-belt and belt clip

V-belt, 13 x 8 mm, joined by a belt splice, jointed or firm.

F29130800	V-belt A-profile, 13 x 8 mm
F29130801	Clip for V-belt, fixed
F29130802	Clip for V-belt, flexible



Round belt and splice pin

Elastic roundbelt joined by a pin.

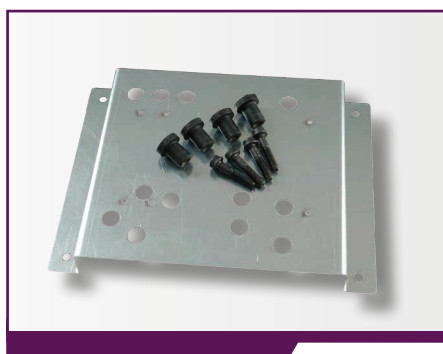
Available in diameters:

F29000600	6 mm for max rotor diameters of 600 mm
F29000800	8 mm for max rotor diameters of 1700 mm
F29001000	10 mm for max rotor diameters of 2200 mm
F29001200	12 mm for max rotor diameters of 2500 mm

Minimum recommended pulley size:

6 mm round belt: 56 mm	10 mm round belt: 75 mm
8 mm round belt: 63 mm	12 mm round belt: 85 mm

F29000603	Splice pin, 6 mm
F29000803	Splice pin, 8 mm
F29001003	Splice pin, 10 mm
F29001203	Splice pin, 12 mm



Motor shelf, fixed

Used with round belt

F29910113	Motor shelf, fixed
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Motor shelf, spring-mounted

Used with V-belt

F29910114	Motor shelf, spring-mounted
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Bush pulley SPA

Bush pulleys type SPA/SPZ in different diameters adapted to rotor size and gear on motor.

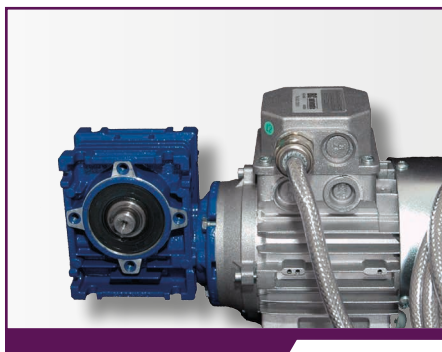
Delivered with bushing adapted to diameter of the gear shaft.

F23063003	SPA 63	Bushing 1008
F23067003	SPA 67	Bushing 1108
F23071003	SPA 71	Bushing 1108
F23075003	SPA 75	Bushing 1108
F23080003	SPA 80	Bushing 1210
F23085003	SPA 85	Bushing 1210
F23090003	SPA 90	Bushing 1210
F23095003	SPA 95	Bushing 1210
F23100003	SPA 100	Bushing 1610
F23106003	SPA 106	Bushing 1610
F23112003	SPA 112	Bushing 1610
F23118003	SPA 118	Bushing 1610
F23125003	SPA 125	Bushing 1610
F23132003	SPA 132	Bushing 1610
F23140003	SPA 140	Bushing 1610
F23150003	SPA 150	Bushing 1610
F23160003	SPA 160	Bushing 1610
F23170003	SPA 170	Bushing 1610



Bushing for SPA-pulley

F23630000	Bushing 1008	shaft hole 10 mm
F23630002	Bushing 1008	shaft hole 12 mm
F23630004	Bushing 1008	shaft hole 14 mm
F23630750	Bushing 1108	shaft hole 10 mm
F23630752	Bushing 1108	shaft hole 12 mm
F23630754	Bushing 1108	shaft hole 14 mm
F23800950	Bushing 1210	shaft hole 10 mm
F23800952	Bushing 1210	shaft hole 12 mm
F23800954	Bushing 1210	shaft hole 14 mm
F23800955	Bushing 1210	shaft hole 15 mm
F23800958	Bushing 1210	shaft hole 18 mm
F23001500	Bushing 1610	shaft hole 10 mm
F23001502	Bushing 1610	shaft hole 12 mm
F23001504	Bushing 1610	shaft hole 14 mm
F23001505	Bushing 1610	shaft hole 15 mm
F23001508	Bushing 1610	shaft hole 18 mm
F23001509	Bushing 1610	shaft hole 19 mm
F23001525	Bushing 1610	shaft hole 25 mm



Connected motor according to EMC-directives

Motor connected according to the EMC-directive with shielded motor cable.

EMC-cabling for motor 25 W, 40 W and 60 W

F29807215 Length of cable 1,5 meters

F29807220 Length of cable 2 meters

EMC-cabling for motor 90 W

F29807420 Length of cable 2 meters

EMC-cabling for motor 180 W, 370 W and 750 W

F29807430 Length of cable 3 meters



Motor capacitor for 1-phase motors

The motor capacitor is normally supplied with the motor, but can also be purchased as a spare part.

F29920111 Motor capacitor 0,6 μ F

F29920105 Motor capacitor 1 μ F

F29920106 Motor capacitor 1,5 μ F

F29920104 Motor capacitor 2 μ F

F29920101 Motor capacitor 6 μ F

F29920102 Motor capacitor 8 μ F

F29920103 Motor capacitor 15 μ F



Additional cards

Additional cards are adapted to the MiniMax and are available as:

F29110107 Diff temperature regulator with electric heat output

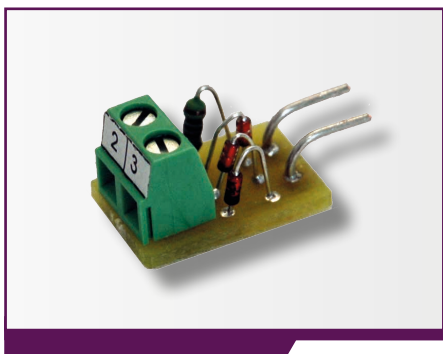
F29316101 2-rotor module



Duct sensor PTC

Temperature sensor is used with the diff teperature regulator above.

F29520101 Duct sensor



Increased input signal

Used when the residual value of the regulator exceeds the threshold value (0.1 V). Used for MicroMax series.

F29315101 Increased input signal



Reset module

Mounted in the bottom flange when wanting to reset without dismounting the cap. Used for VariMax and MiniMax.

F29320101 Reset module



Testbox for setup

Used for temporary runs/tests. Suitable for all our control units.

F29314101 Testbox for setup of control units

DISTRIBUTORS

Sweden

Ekström & Söner AB
Storsätragränd 6
127 39 Skärholmen
Tel +46 8 72 69 550
info@ekstrom-soner.se
www.ekstrom-soner.se

ÖsTek AB
Box 45
Kvarngatan 5
748 21 Österbybruk
Tel +46 295 211 15
info@ostek.se
www.ostek.se

Norway

Parlock A/S
PB. 196
Ringeriksveien 171
NO-3300 Hokksund
Tel +47 32 75 44 77
parlock@online.no
www.parlock.no

Germany

Rototeam GmbH
Bahnhofstrasse 4
DE-55576 Welgesheim
Tel +49 67 01 20 50 170
kontakt@rototeam.de
www.rototeam.de

IBCcontrol

IBC control AB
Brännerigatan 5 A
263 37 Höganäs
Sweden
Tel +46 42-33 00 10
www.ibcccontrol.se
info@ibcccontrol.se

