



# MFC710/AcR

## Active Front-End Frequency Converter

### 11 – 500 kW

### 400 V / 500 V / 690 V

MFC710/AcR Active Front-End Frequency Converters are designed for induction motor control. MFC710 allows for power flow bidirectional (motoring and regenerating modes).

#### Main features:

- Input: 3 x 400 V / 3 x 500 V / 3 x 690 V, 45 – 66 Hz; other voltages on request
- Output: 0 – 400 Hz, 3 x 400 V / 3 x 500 V / 3 x 690 V
- **Bidirectional power flow (motoring and regenerating modes)**
- Operation modes: **U/f** (linear, exponential),  
**Vector** (sensor/sensorless)
- **Removable control panel** (LCD type with backlight and control adjustment)
- Build-in **PLC controller**
- Build-in **reeling calculator** and **pump/fan controller**
- Internal and user programmable **PID controller**
- Build-in communication module **RS-232/RS-485 (MODBUS)** - remote control and programming of all parameters of the frequency converter
- Programmable **constant speeds**
- **Incremental speed change function** (motopotentiometer)
- Build-in **incremental encoder interface** (for 5V "line driver" encoder output)
- Resonance **frequencies elimination**
- Definable type of **speed curves** (linear, "S" curve)
- **Direct Torque Control - SVM**
- **Motor parameters identification**
- **Programmable structure:**
  - **Selectable sources of reference control signal input** ("control places" A and B)
  - **Speed reference signal** from: control panel, analog inputs, PID controller, motopotentiometer, PLC, RS-232/RS-485
  - **Torque setting** from: analog inputs, PLC
  - **START/STOP & direction control** from: control panel, digital inputs, PLC, RS-232/RS-485
  - **Programmable digital inputs:** start, direction, external enable, external fault, external fault reset
  - **Programmable digital outputs** (3 relays and 1 open collector): ready, operating, fault, non-fault, user-defined warnings, heat sink overheating, speed reference value achieved, current limit, PLC
  - **Programmable analog outputs:** frequency, speed, output current, output voltage, load, PLC
- **Total worktime counter**
- **Access control** and **diagnostics system**
- User defined **security codes** for access control



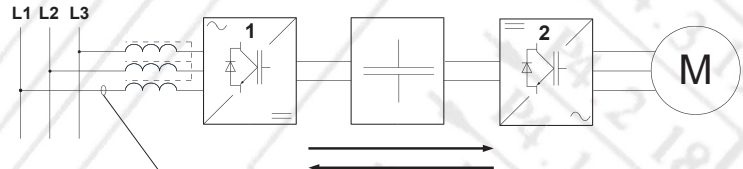
# DANE TECHNICZNE:

Power supply ( $U_{in}$ )	3-phase power: 400 V -15% +10% 45-66 Hz or <sup>*)</sup> 3-phase power: 500 V -15% +10% 45-66 Hz or <sup>*)</sup> 3-phase power: 690 V -15% +10% 45-66 Hz <sup>*)</sup> depending on the frequency converter type
Output	$3 \times 0 \dots U_{in} [V] / 0 \dots 400 \text{ Hz}$
Cooling	Air-cooling
Control mode	Scalar: linear U/f, exponential Vector DTC-SVM: (sensor/sensorless)
Switching frequency	2...15 kHz
Analog inputs	3 separated analog inputs: AI0: voltage mode 0(2)...10 V, AI1, AI2: voltage mode 0(2)...10 V or current mode 0(4)...20 mA. Operation mode and polarity are chosen by parameters and switches.
Digital inputs	6 digital separated inputs 0/(15...24) V
Analog outputs	2 separated analog outputs: AO1, AO2: voltage mode 0(2)...10V or current mode 0(4)...20 mA. Operation mode and polarity are chosen by parameters and switches.
Digital outputs	3 output relays K1, K2 and K3 – 250 V, 1 open collector output – 100 mA, 24 V. Fully programmable signal source.
Overcurrent protection	Instantaneous value $3.5 I_N$ Effective value $2.5 I_N$
Overvoltage DC protection	750V DC for MFC710/AcR/400 V 900V DC for MFC710/AcR/500 V 1200V DC for MFC710/AcR/690 V
Undervoltage protection	$0.65 U_{in}$
Device thermal protection	Build-in heat sensor
Motor thermal protection	I't limit, motor heat sensor
Communication with Control panel	Max. time lack of communication (definable)
RS communication	Max. time lack of communication (definable)
Analog outputs control	Control of "living zero" in modes 2...10 V & 4...20 mA
Load symmetry control	
PLC controller	Possibility of taking over converter's operation control, START / STOP system, direction of rotation and frequency, possibility of controlling any external process without connection of external PLC controller. 48 universal functional blocks, 43 functions: simple logic and arithmetic blocks; block of 8-state sequencer, 2 multiplexers with 8 inputs, curve shaping unit, maximum execution time of the PLC program: 10 ms.

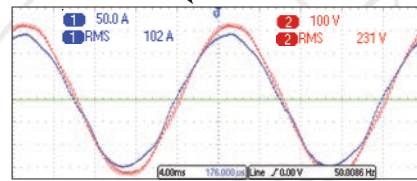
Type	Constant Torque Load		Pump & Fan Load		Overcurrent 60 s. every 10 min. [A]
	Rated motor power [kW]	Rated output current [A]	Rated motor power [kW]	Rated output current [A]	
MFC710/AcR-11kW 400V	11	24	15	29	36
MFC710/AcR-15kW 400V	15	30	18	37	45
MFC710/AcR-18kW 400V	18	39	22	45	60
MFC710/AcR-22kW 400V	22	45	30	60	69
MFC710/AcR-30kW 400V	30	60	37	75	90
MFC710/AcR-37kW 400V	37	75	45	90	112
MFC710/AcR-45kW 400V	45	90	55	110	135
MFC710/AcR-55kW 400V	55	110	75	150	165
MFC710/AcR-75kW 400V	75	150	90	180	225
MFC710/AcR-90kW 400V	90	180	110	210	270
MFC710/AcR-110kW 400V	110	210	132	250	315
MFC710/AcR-132kW 400V	132	250	160	310	375
MFC710/AcR-160kW 400V	160	310	180	380	465
MFC710/AcR-180kW 400V	180	350	200	420	520
MFC710/AcR-200kW 400V	200	380	250	460	570
MFC710/AcR-250kW 400V	250	460	315	570	690
MFC710/AcR-315kW 400V	315	570	355	680	850
MFC710/AcR-355kW 400V	355	650	400	730	940

Please feel free to contact us for more information about other types.

## Regenerative frequency converter MFC710/AcR



Full power flow both in motoring and generating modes



### Advantages:

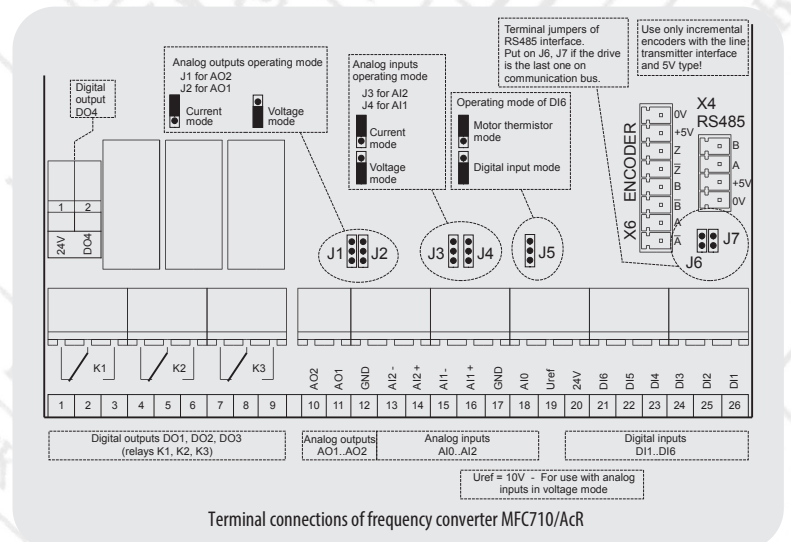
- Braking energy can be fed back into the grid
- Sinusoidal input current waveform
- Adjustable power factor  $\cos \varphi$



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Terminal connections of frequency converter MFC710/AcR

