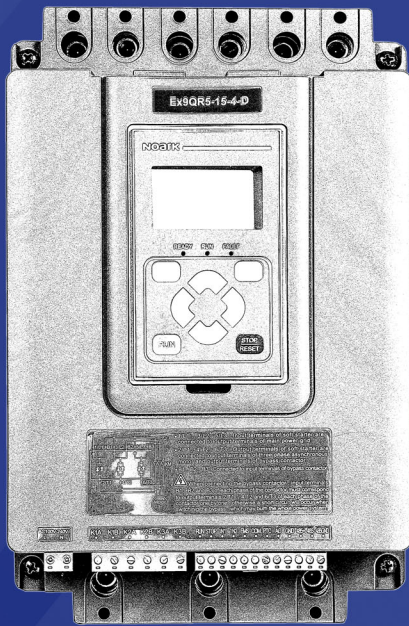




**ELECTRICAL
COMPONENTS**

NOARK[®]

**Soft Starters
(Solid State Reduced
Voltage Motor
Starters)**



Ex9QR5 Soft Starters (Solid State Reduced Voltage Motor Starters) Product Overview

Noark's Ex9QR5 Soft Starters combine basic and advanced protection functions including programmable current modes, automatic light-load energy savings and low speed forward and reverse rotation function.

Features:

The Ex9QR5 soft starter series is used for soft start and soft stop of 3-phase motors, by reducing the starting voltage and current. At the same time, the soft starter is also used for motor protection. Typical applications include fans, water pumps, compressors, crushers, etc.

Ex9QR5 Soft Starters are programmable, offering:

- Normal current mode
- Normal voltage mode
- Linear torque mode
- Frequency division mode
- Enhanced current mode
- Enhanced voltage mode
- Square torque mode

Various protection functions:

- Input phase loss
- Three-phase unbalance
- Starting current limit timeout
- Main circuit undervoltage
- Prolonged starting time
- Output phase loss
- Operation overload
- Main circuit overvoltage
- Load locked/short circuit
- Multiple starting times

Other features:

- Suitable for the applications of one-for-two, one-for-three and two-speed motors
- Automatic light-load energy saving
- Low-speed forward and reverse rotation function by thyristor adjustment
- Braking and stopping function
- Wide input frequency ranges from 35 Hz to 60 Hz
- Built-in RS-485 communication interface and standard Modbus protocol
- Easy operability: LCD display, friendly interface and convenient operation



Ex9QR5 Soft Starters Specifications

Ex9QR5 Technical Data

Description		Ex9QR5	
Main power voltage		AC200V- AC690V (-10%-+10%)	
Main power frequency		When the starting mode is current mode (suitable for generator power supply): 35Hz-60Hz	
		When the starting mode is not current mode: 50Hz ± 2Hz and 60Hz ± 2Hz	
Control Voltage		AC100V-AC240V (-10%-+10%)	
Control frequency		50Hz ± 2Hz、 60Hz ± 2Hz	
Class of pollution		Level 3	
Rated insulation voltage		AC 800V	
Starting frequency		It is recommended that the hourly start up frequency should not exceed 10 times/hour (the heavier the load, the less the starting frequency should be. If frequent starting is necessary, the temperature of the motor and the soft starter should be kept at a lower temperature). Note: When starting current limit timeout protection or running overload protection is reported, it can be restarted after 30 minutes	
Shock resistance		The vibration is less than 0.5g	
EMC equipment level		Class A (industrial grade) Level 3	
initial voltage		30%Ue-70%Ue	
Limiting starting current		50%Ie-500%Ie	
Overload protection level		Level 2, 10A, 10, 20 and 30	
Relay output		Three relay outputs, Bypass relay K1, programmable status relay K2 and programmable fault relay K3	
Number input		Two programmable digital inputs: programmable input terminal IN1 and programmable input terminal IN2. Three digital inputs: start signal RUN, STOP signal stop and instant stop signal EMS	
Analog output		Four output types: 4mA-20mA, 0mA-20mA, 2mA-10mA and 0mA-10mA	
Analog input		One analog input: PTC* temperature input	
Environmental Temperature	Storage	-25 °C to +70 °C	
	Working at	-10 °C to +40 °C	full performance
		40 °C to +50 °C	the current derates 2% for every 1 °C
Relative humidity	Not exceed 95%(+20 °C to +65 °C)		
Altitude ft (m)	<1,000m	full performance	
	1,000m - 3000m	the current derated 0.5% for every 100m	
	>3,000m	contact ITC for customization	
Storage conditions	No condensation, inflammable and explosive gas, conductive dust and good ventilation		
	Should be stored in an environment not prone to vibrations		
	When the soft starter is stored below -10 °C or never powered on in the previous 18 months, allow device to start without load for 30mins and then reconnect to load for standard usage		

Information subject to change without notice

* PTC: Positive Temperature Coefficient thermistor

Ex9QR5 - UL Motor Power Ratings & Product Selection Guide

UL motor power ratings & product selection guide (Order by Part No.)

			Maximum Motor Ratings (UL)										Protection and Bypass Components		
Part Number	Rated Amps	Short Circuit Withstand (kA)	200Vac		208Vac		240Vac		480Vac		600Vac		Circuit Protection		Bypass Contactor *
			FLA	HP	FLA	HP	FLA	HP	FLA	HP	FLA	HP	MCCB *	Fuse	
Ex9QR50156D	15	5	11	3	11	3	9.6	3	14	10	10	11	M1S40T3L	60A,600V, K5	Ex9C18F11K
Ex9QR50226D	22	5	18	5	17	5	22	7.5	21	15	20	22	M1S60T3L	80A,600V, K5	Ex9C25F11K
Ex9QR50306D	30	5	25	7.5	24	7.5	28	10	27	20	25	27	M1S80T3L	100A,600V, K5	Ex9C32F11K
Ex9QR50376D	37	5	32	10	31	10	28	10	34	25	30	32	M1S100T3L	125A,600V, K5	Ex9C40F11K
Ex9QR50446D	44	5	32	10	31	10	42	15	40	30	40	41	M1S125T3L	150A,600V, K5	Ex9C50F11K
Ex9QR50606D	60	5	48	15	59	20	54	20	52	40	50	52	M1S150T3L	150A,600V, K5	Ex9C65F11K
Ex9QR50746D	74	10	62	20	59	20	68	25	65	50	60	62	M2S250T3L	250A,600V, K5	Ex9C80F11K
Ex9QR50906D	90	10	78	25	88	30	80	30	77	60	75	77	M2S250T3L	250A,600V, K5	Ex9C115F22K
Ex9QR51106D	110	10	92	30	88	30	104	40	96	75	100	99	M2S250T3L	350A,600V, K5	Ex9C115F22K
Ex9QR51506D	150	10	150	50	143	50	130	50	124	100	150	144	M2S250T3L	350A,600V, K5	Ex9C150F22K
Ex9QR51806D	180	10	177	60	169	60	154	60	180	150	150	144	M3S400T3L	400A,600V, K5	Ex9C185F22K
Ex9QR52206D	220	10	177	60	169	60	192	75	180	150	200	192	M3S400T3L	400A,600V, K5	Ex9C225F22K
Ex9QR52646D	264	18	221	75	211	75	248	100	240	200	250	242	M3S400T3L	601A, 600V	Ex9C265F22K
Ex9QR53206D	320	18	285	100	273	100	312	125	302	250	300	289	M4S600T3L	750A, 600V	Ex9C300F22K
Ex9QR53706D	370	18	359	125	343	125	360	150	361	300	350	336	M4S600T3L	800A, 600V	Ex9C400F22K
Ex9QR54406D	440	18	414	150	396	150	360	150	414	350	450	412	M5S800T3L	1000A, 600V	Ex9C500F22K
Ex9QR55006D	500	30	414	150	396	150	480	200	477	400	500	472	M5S800T3L	1200A, 600V	Ex9C500F22K
Ex9QR55606D	560	30	552	200	528	200	480	200	515	450	550	529	M6N1200E3L	1400A, 600V	Ex9C630F22K
Ex9QR56306D	630	30	552	200	528	200	604	250	590	500	600	577	M6N1200E3L	1600A, 600V	Ex9C630F22K
Ex9QR57106D	710	42	690	250	667	250	604	250	660	550	650	625	M6N1200E3L	1600A, 600V	Ex9C800F22K
Ex9QR58006D	800	42	794	300	766	300	722	300	780	650	750	722	M6N1200E3L	2000A, 600V	Ex9C1000F22K
Ex9QR59006D	900	42	892	350	866	350	828	350	900	750	850	817	M6N1200E3L	2000A, 600V	2 * Ex9C1000F22K
Ex9QR510006D	1000	42	892	350	866	350	954	400	960	800	900	866	M6N1200E3L	2000A, 600V	2 * Ex9C1000F22K

Information subject to change without notice

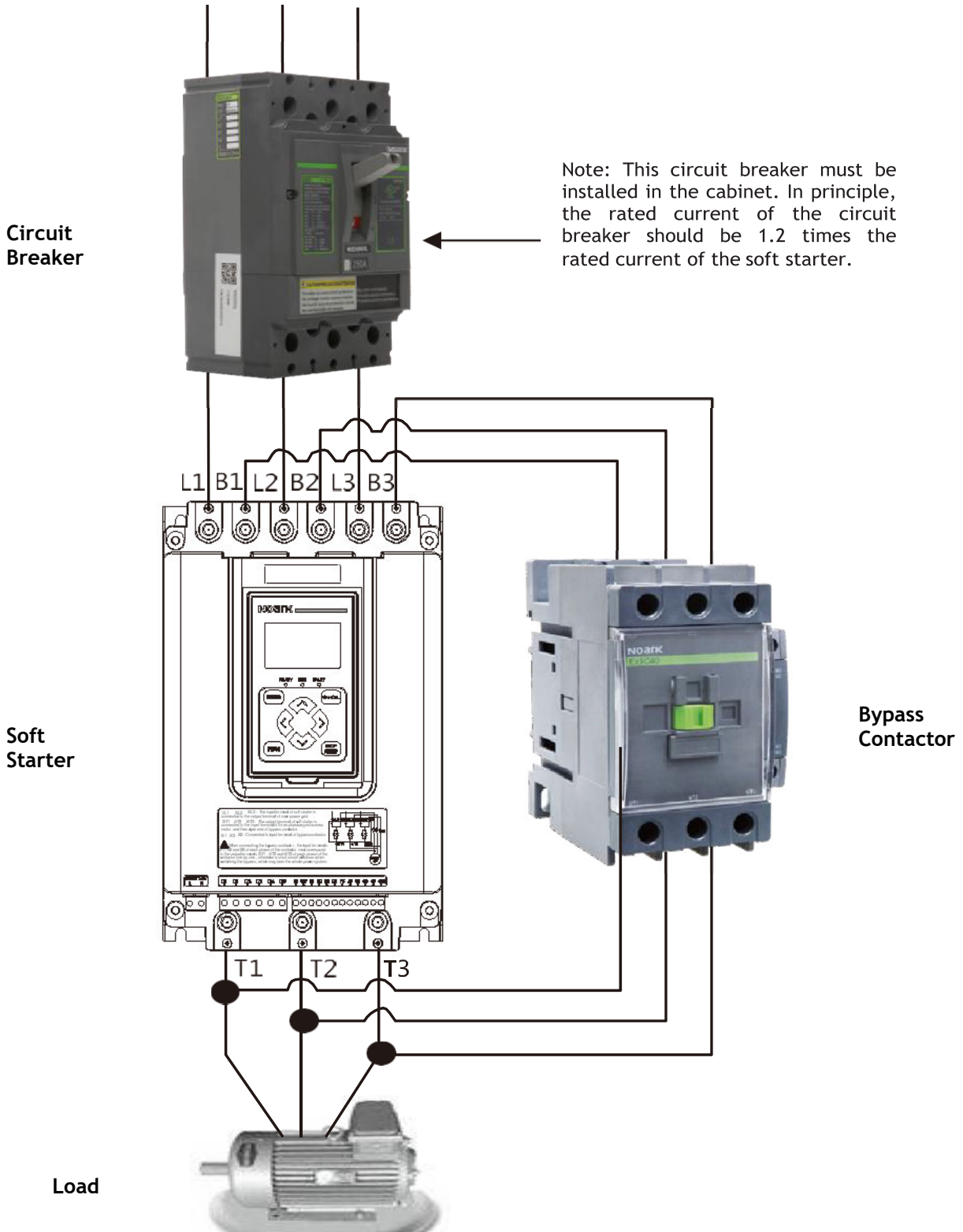
FLA = Full Load Amps

MCCB = Molded Case Circuit Breaker

* NOARK / ITC part numbers - contact ITC for more information

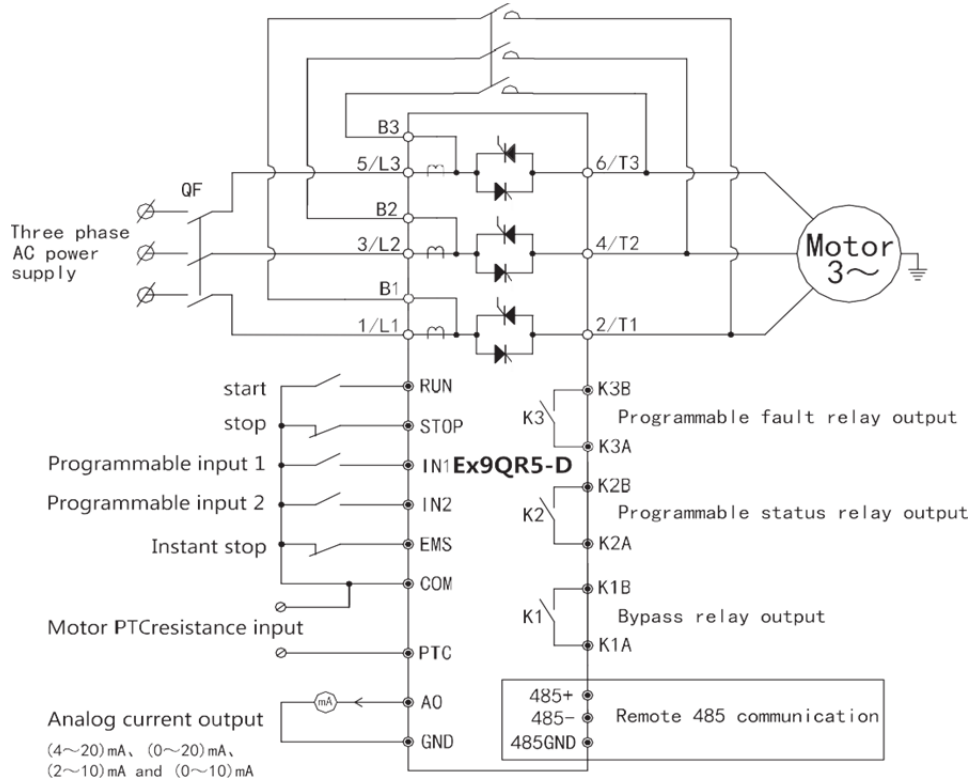
Ex9QR5 Typical Installation

This diagram shows a typical one-for-one application - one soft starter with one motor.



Ex9QR5 Wiring Diagram

Basic wiring diagram



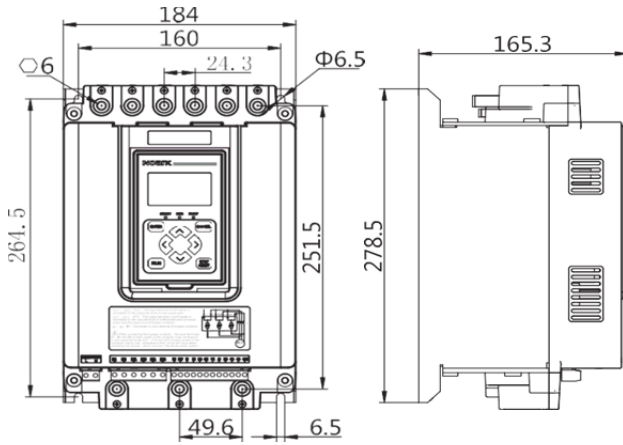
Terminal name	Terminal definition
L	Control power input L
N	Control power input N
K1A, K1B	Bypass relay K1 (default open)
K2A, K2B	Programmable state relay K2 (default open)
K3A, K3B	Programmable fault relay K3 (default open)
RUN	Starting terminal
STOP	Stop terminal
IN1	Programmable input terminal IN1
IN2	Programmable input terminal IN2

Terminal name	Terminal definition
EMS	Emergency stop EMS terminal
COM	Common terminal
PTC	Motor temperature input terminal
AO	Analog output terminal
GND	Internal chip ground
485+	RS485 communication terminal 485+
485-	RS485 communication terminal 485-
485GND	Communication terminal RS485 GND

Ex9QR5 Dimensions

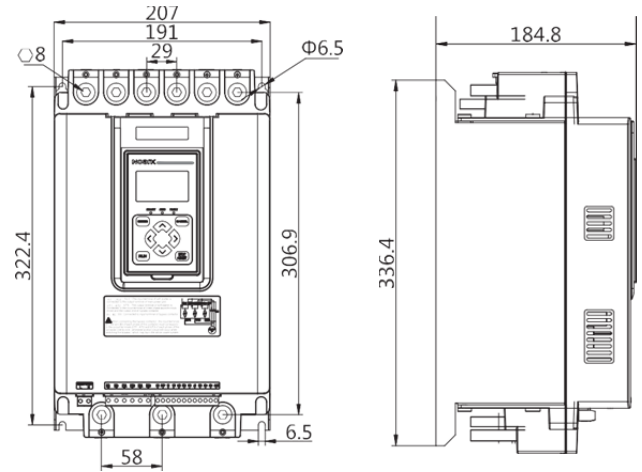
15A-90A

Weight - 6Kg



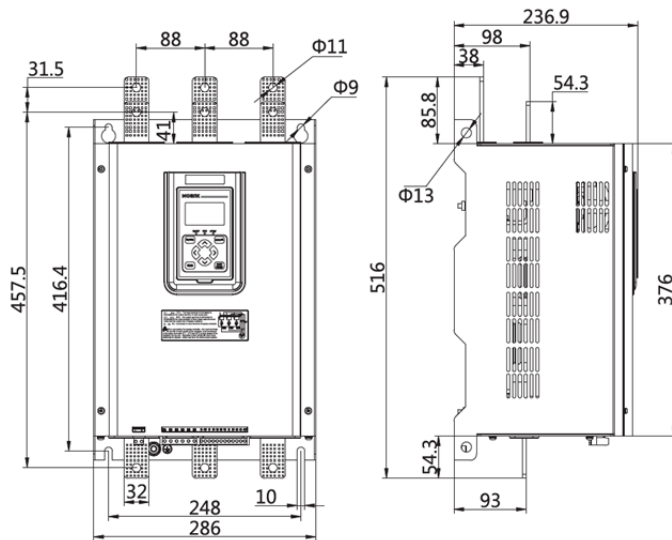
110A-150A

Weight - 11Kg



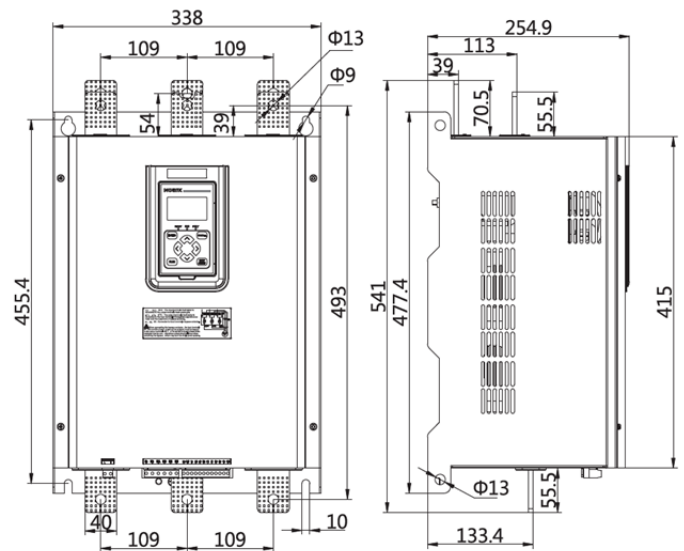
180A-370A

Weight - 23Kg



440A-630A

Weight - 32Kg

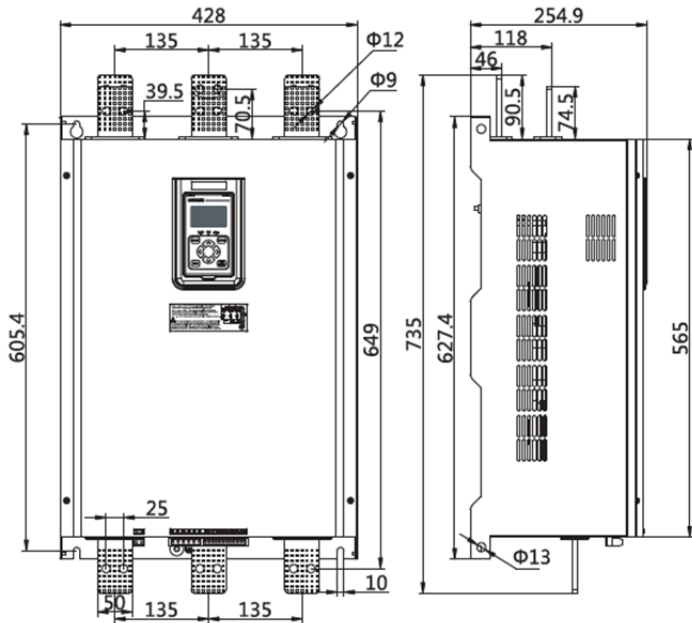


All dimensions in mm

Ex9QR5 Dimensions

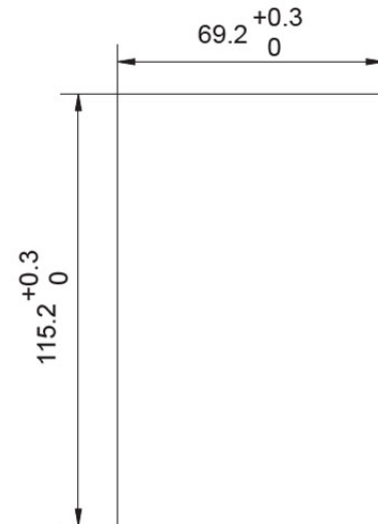
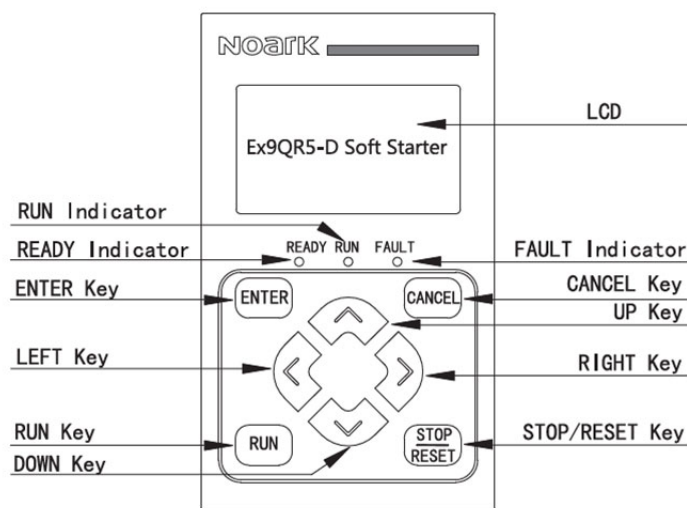
710A-1000A

Weight - 52Kg



All dimensions in mm

Ex9QR5 Operation panel



All dimensions in mm