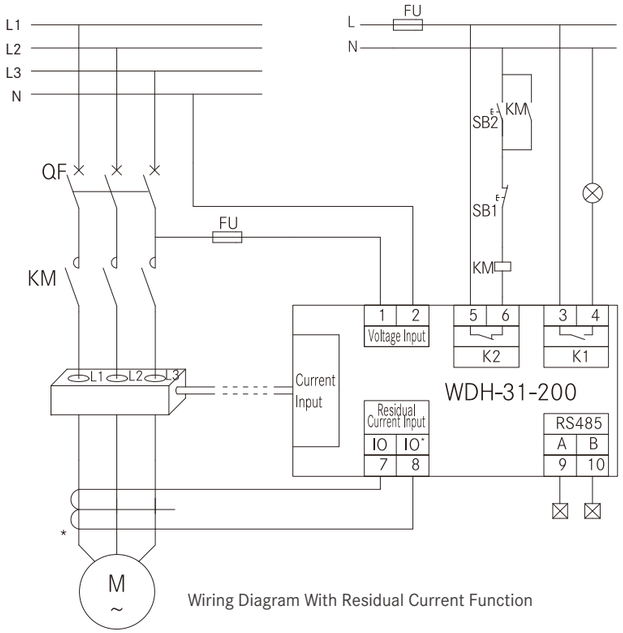
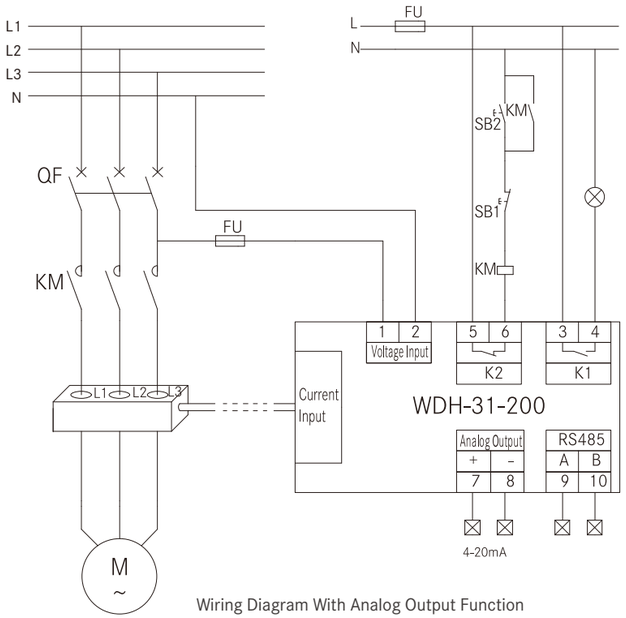
TYPICAL WIRING



Wiring Diagram With Residual Current Function



Wiring Diagram With Analog Output Function

WDH-31-530

LCD

16 protection functions
5 programmable digital inputs
4 programmable relay outputs
Intelligent Human-machine interface
SOE record
FSTN/TFT LCD display module optional

MODEL

WDH-31-53 □ □ – □ / □ □

Communication protocol	Control mode	Current specification of protection controller	Main circuit voltage	Optional functions
1(1 Modbus-RTU/Display integration)	A: Direct start	5A	AC400V	V: Anti voltage sag/ Low voltage restart
2(1 Profibus-DP+1 Modbus-RTU)	B: Bi-directional start	25A	AC660V	
3(1 Modbus-RTU)	C: Double speed start	100A	AC100V	
4(2 Modbus-RTU)	D: Resistor divider start	300A		
7(1 Modbus-RTU/1 Modbus-TCP/IP)	E: Y/ △start	500A		
9(1 Modbus-RTU/1 Profinet)	H: Autotransformer start	800A		
	K: Protection mode			
	R: Start with soft-starter			
	P: Start with inverter			

Adjustable range	Configurable Motor Power	Diameter
0.2A~5A	5A	Φ10.5mm
5A~25A	25A	Φ10.5mm
25A~100A	100A	Φ18mm
＞100A	5A	Φ10.5mm+3pcs of external CT XA:5A

FUNCTION

Measurement function	Three-phase current	■
	Current unbalance	■
	Thermal capacity	■
	Residual current (grounding) 0.3Ie~8.0Ie	■
	Residual current (leakage) 50mA~5000mA	■
	Three-phase voltage	■
	Positive & negative sequence current	■
	Power and energy	■
Real-time clock	Year, month, day, hour, minute, second	■
Digital input	Dry contact (built-in DC 24V)	5 channels
Relay output	Control relay	3 channels
	Signal relay	1 channels
Analog output	1 channel of DC 4-20mA analog output, parameter programmable	■
Maintenance information	Alarm information/fault record	■
	Start/stop record, switch status changing record	■
	Operation times, total operation time and total shutdown time	■
Display mode	LED display (operate/fault indicate)	■
	LCD display (operation status, fault information, parameter setting, etc)	■
Installation mode	Controller main body	Mounted on 35mm DIN-rail
	Display module	Panel mounting, (92*55)mm
Communication function (Select any one)	1 (1 Modbus-RTU/Display integration)	□
	2 (1 Profibus-DP+1 Modbus-RTU)	□
	3 (1 Modbus-RTU)	□
	4 (2 Modbus-RTU)	□
	7 (1 Modbus-RTU/1 Modbus-TCP/IP)	□
	9 (1 Modbus-RTU/1 Profinet)	□

NOTE: "■": Yes "□": Optional

Protection function	Overload inverse time protection	■
	Start acceleration timeout protection	■
	Locked rotor (starting overcurrent) protection	■
	Blocking (operation overcurrent) protection	■
	Leakage protection	■
	Voltage/current unbalance/phase failure protection	■
	Underload/undercurrent protection	■
	Overvoltage protection	■
	Undervoltage protection	■
	Phase sequence protection	■
	PT disconnection protection	■
	Residual current (grounding)（0.3~8.0）Ie protection mode	■
	Residual current (leakage)(50~5000)mA	■
	External fault protection (process interlocking)	■
	tE time protection (increased safety motor)	□
Control protection	Protection mode	■
	Direct start	■
	Bi-directional start	■
	Double speed start	■
	Y/△start	■
	Resistor divider start	■
	Autotransformer start	■
	Start with soft-starter	■
	Start with inverter	■
	Anti voltage sag(low voltage restart)	□
	Power-on automatic start	■

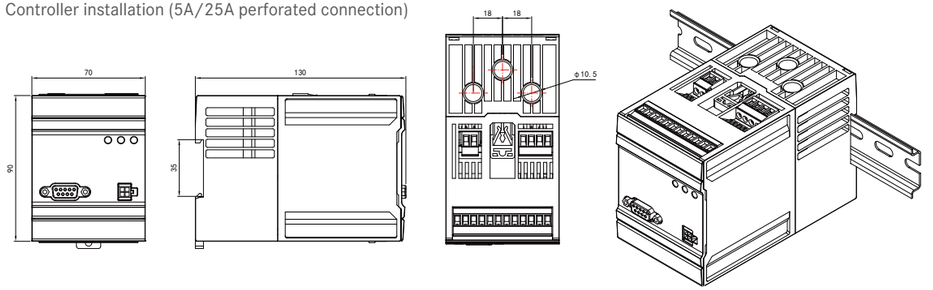
FUNCTION

System operating parameter	Motor rated voltage	AC400V, 50Hz
	Motor rated current	0.1A~800A
	Insulation resistance	＞100MΩ
Controller auxiliary power	Working range	AC/DC 80V~270V
Ambient condition	Operating temperature	-20℃~60℃
	Relative humidity	≤93%RH
	Protection degree (Panel)	IP64
	Notice	No explosive medium, metal corroding gas and conducting medium at site
Protection action accuracy	Current/voltage start value	±2% of the set value
	Accumulated value of thermal capacity	±1% of the set value
Action delayed time	Action delayed time set value＜2s	±100ms
	Action delayed time set value ≥2s	±5%
Relay output	Control relay output contact capacity	AC250V/5A
	Signal relay output contact capacity	AC250V/3A, DC30V/3A
	Service time of relay output	100000 times
EMC	Electrostatic discharge test	Severe degree: Class III
	Electrical fast transient burst immunity test (EF)	Severe degree: Class III
	Surge	Severe degree: Class III
	Oscillatory waves immunity	Severe degree: Class III
	Radiated radio-frequency electrom agnetic field immunity (RF -EMS)	Severe degree: Class III
	Radio frequency radiation immunity	Severe degree: Class III
	Power frequency immunity	Severe degree: Class A
	CE limit test	150kHz~30MHz
	Conducted emission limit test	30MHz~1000MHz
Withstand voltage	Between power supply and input	AC2kV/1 min
	Between power supply and output	AC2kV/1 min
	Between input and output	AC1kV/1 min

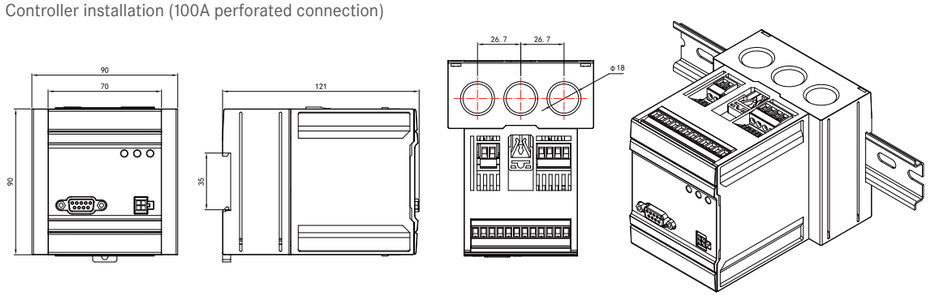
NOTE: "■": Yes "□": Optional

DIMENSIONS

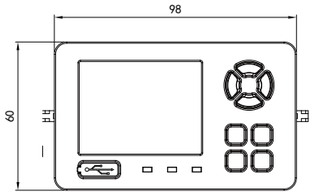
Controller installation (5A/25A perforated connection)



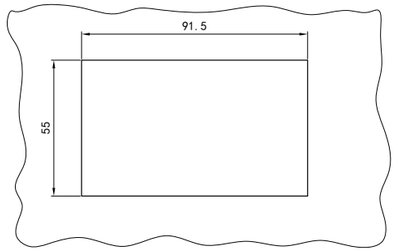
Controller installation (100A perforated connection)

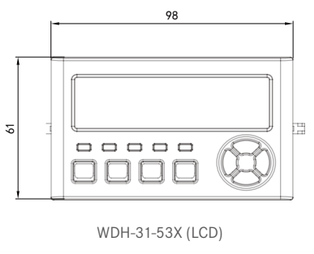


Display panel installation

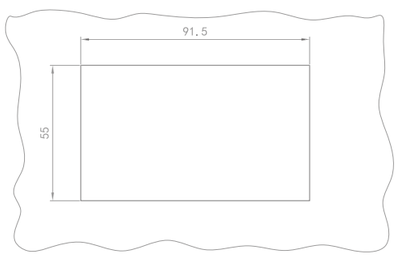


WDH-31-53XC (TFT)

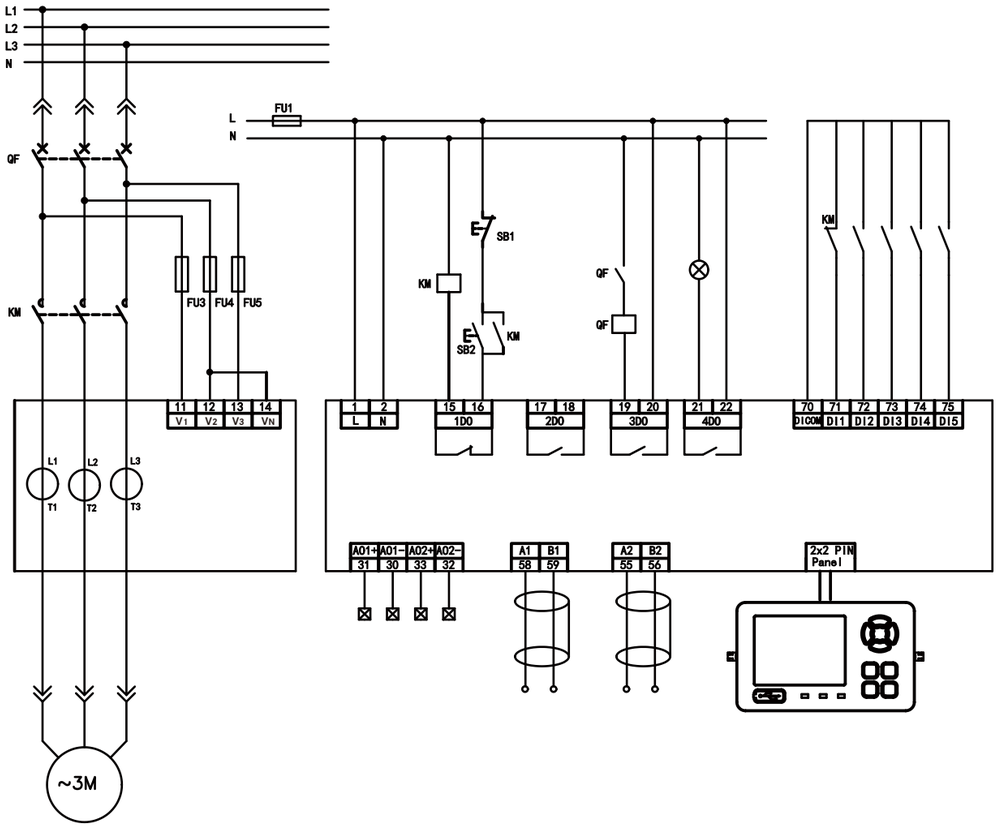




WDH-31-53X (LCD)



Thermal relay



Under the thermal relay mode, WDH does not participate in the start and stop operation of motor (DI terminal and panel control are invalid).

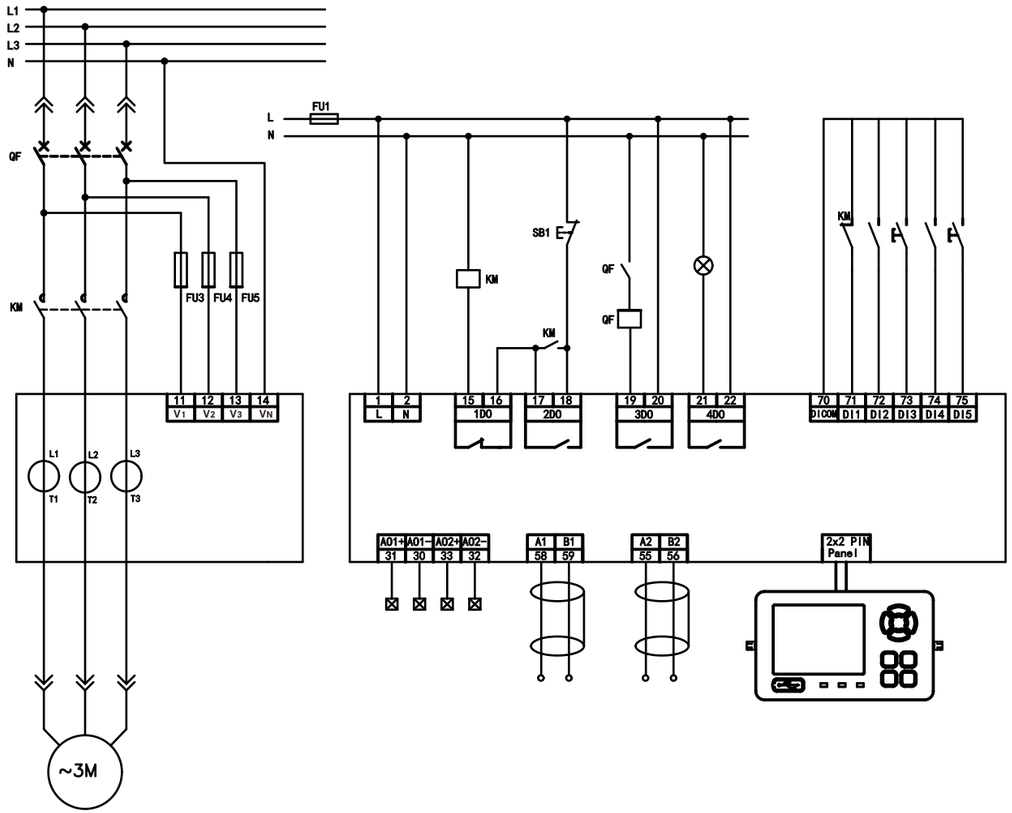
– The start/stop running of the motor must implement by the Start/Stop external button

– As drawing shown, press the start button SB2, motor start, press stop button SB1, motor stop

– Protection trip relay 1DO is NC contract, when fault was detected, 1DO open, contactor(KM) off, motor will stop

– After fault reset, 1DO closed, allow the motor start again.

Direct start



– Under the direct start mode, WDH controls the motor start/stop by relay 1DO(NC)/2DO(NO).

– As drawing shown, when the controller receive the start command(such as 3DI terminal or display interface), 2DO closed(pulse), contactor(KM) power on, motor start

– When the controller receives the stop command(such as 5DI terminal or display interface),1DO open(pulse), contractor KM power off, motor stop.

– When faults were detected,1DO open(level), contractor KM power off, motor stop.

– After reset, IDO closed, controller allows the motor restart again.