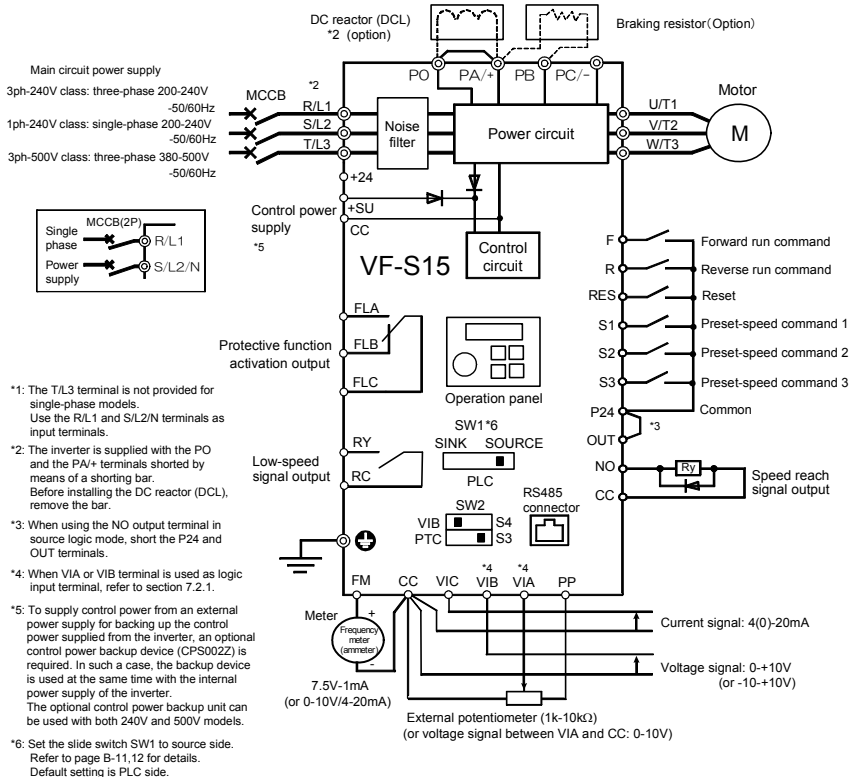


2.2.2 Standard connection diagram 2

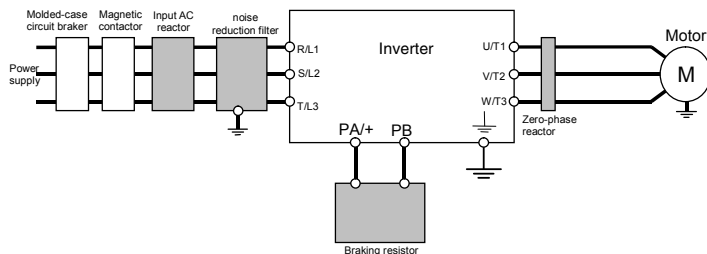
Standard connection diagram - SOURCE (Positive) (common:P24)



2.3 Description of terminals

2.3.1 Power circuit terminals

■ Connections with peripheral equipment



Note 1: The T/L3 terminal is not provided for any single-phase models. So if you are using single-phase models, use the R/L1 and S/L2/N terminals to connect power cables.

■ Power circuit

Terminal symbol	Terminal function
	Grounding terminal for connecting inverter. There are 3 terminals in cooling fin or mounting part of EMC plate.
R/L1,S/L2,T/L3	240V class : Three-phase 200 to 240V-50/60Hz : Single-phase 200 to 240V-50/60Hz 500V class : Three-phase 380 to 500V-50/60Hz * Single-phase inputs are R/L1 and S/L2/N terminals.
U/T1,V/T2,W/T3	Connect to three-phase motor.
PA+, PB	Connect to braking resistors. Change parameters <i>F304</i> , <i>F305</i> , <i>F308</i> , <i>F309</i> if necessary.
PA+	This is a positive potential terminal in the internal DC main circuit. DC common power can be input with PC/- terminal.
PC/-	This is a negative potential terminal in the internal DC main circuit. DC common power can be input with PA/+ terminal.
PO, PA+	Terminals for connecting a DC reactor (DCL: optional external device). Shorted by a short bar when shipped from the factory. Before installing DCL, remove the short bar.

The arrangements of power circuit terminals are different from each range.

Refer to section 1.3.3.1) for details.

2.3.2 Control circuit terminals

The control circuit terminal block is common to all equipment.

Regarding to the function and specification of each terminal, please refer to the following table.

Refer to section 1.3.3.3) about the arrangement of control circuit terminals.

Control circuit terminals

Terminal symbol	Input / output	Function	Electrical specifications	Inverter internal circuits
F	Input	Shorting across F-CC or P24-F causes forward rotation; open causes deceleration stop. (When Standby ST is always ON) 3 different functions can be assigned.	No voltage logic input 24Vdc-5mA or less	
R	Input	Shorting across R-CC or P24-R causes reverse rotation; open causes deceleration stop. (When Standby ST is always ON) 3 different functions can be assigned.		
RES	Input	This inverter protective function is reset if RES-CC or P24-RES is connected. Shorting RES-CC or P24-RES has no effect when the inverter is in a normal condition. 2 different functions can be assigned.		
S1	Input	Shorting across S1-CC or P24-S1 causes preset speed operation. 2 different functions can be assigned.		
S2	Input	Shorting across S2-CC or P24-S2 causes preset speed operation. By changing parameter $F145$ setting, this terminal can also be used as a pulse train input terminal.		
S3	Input	Shorting across S3-CC or P24-S3 causes preset speed operation. By changing slide switch SW2 and parameter $F147$ setting, this terminal can also be used as a PTC input terminal.		

Terminal symbol	Input / output	Function	Electrical specifications	Inverter internal circuits
CC	Common to Input / output	Control circuit's equipotential terminal (3 terminals)		
PP	Output	Analog power supply output	10Vdc (permissible load current: 10mA _{dc})	
VIA Note 1)	Input	Multifunction programmable analog input. Default setting: 0-10Vdc (1/1000 resolution) and 0-60Hz (0-50Hz) frequency input (1/2000 resolution). By changing parameter $F109$, this terminal can also be used as a multifunction programmable logic input terminal.	10Vdc (internal impedance: 30k Ω)	
VIB Note 1)	Input	Multifunction programmable analog input. Default setting: 0-10Vdc (1/1000 resolution) and 0-60Hz (0-50Hz) frequency input. The function can be changed to -10-+10V input by parameter $F109 = 1$ setting. By switching slide switch SW2 and changing parameter $F109$ setting, this terminal can also be used as a multifunction programmable logic input terminal.	10Vdc (internal impedance: 30k Ω)	
VIC	Input	Multifunction programmable analog input. 4-20mA (0-20mA) input.	4-20mA (internal impedance: 250 Ω)	

Terminal symbol	Input / output	Function	Electrical specifications	Inverter internal circuits
FM	Output	Multifunction programmable analog output. Default setting: output frequency. The function can be changed to ammeter, 0-10Vdc voltage or 0-20mAdc (4-20mA) current output by parameter $F5B1$ setting. Resolution Max. 1/1000.	1mAdc full-scale ammeter or QS60T(option) 0-20mA (4-20mA) DC ammeter Permissible load resistance: 600Ω or less 0-10V DC volt meter Permissible load resistance: 1kΩ or more	<p>The diagram shows two parallel paths from the FM terminal. The top path is labeled 'Voltage' and includes a resistor labeled '121' and an operational amplifier. The bottom path is labeled 'Current' and includes a resistor labeled '68' and an operational amplifier. Both paths are connected to a +24V supply through a diode and a common ground.</p>
P24	Output	24Vdc power output	24Vdc-100mA Note 2)	<p>The diagram shows the P24 terminal connected to a switch labeled 'SW1'. The switch can connect to an 'EXT' terminal or a common ground. The 'EXT' terminal is connected to a 'Current limiter' block, which is then connected to a +24V supply through a diode and a common ground.</p>
	Input	This terminal can be used as a common terminal when an external power supply is used by changing SW1 to PLC side.	-	
+24	Output	24Vdc power output	24Vdc-100mA Note 2)	<p>The diagram shows the +SU terminal connected to a resistor labeled '1'. The other end of the resistor is connected to a diode, which is then connected to a +24V supply through a common ground.</p>
+SU	Input	DC power input terminal for operating the control circuit. Connect a control power backup device (option or 24Vdc power supply) between +SU and CC.	Voltage: 24Vdc±10% Current: 1A or more	

Terminal symbol	Input / output	Function	Electrical specifications	Inverter internal circuits
OUT NO	Output	Multifunction programmable open collector output. Default setting detect and output speed reach signal. Multifunction output terminals to which two different functions can be assigned. The NO terminal is an equipotential terminal. It is isolated from the CC terminal. By changing parameter <i>F559</i> settings, these terminals can also be used as multifunction programmable pulse train output terminals.	Open collector output 24Vdc-100mA To output pulse trains, a current of 10mA or more needs to be passed. Pulse frequency range: 10~2kpps	
FLA FLB FLC Note 3)	Output	Multifunction programmable relay contact output. Detects the operation of the inverter's protection function. (Default setting) Contact across FLA-FLC is closed and FLB-FLC is opened during protection function operation.	Max. switching capacity 250Vac-2A 30Vdc-2A ($\cos\phi=1$) : at resistive load 250Vac-1A ($\cos\phi=0.4$) 30Vdc-1A ($L/R=7ms$) Min. permissible load 5Vdc-100mA 24Vdc-5mA	
RY RC Note 3)	Output	Multifunction programmable relay contact output. Default settings detect and output low-speed signal output frequencies. Multifunction output terminals to which two different functions can be assigned.	Max. switching capacity 250Vac-2A ($\cos\phi=1$) : at resistive load 30Vdc-1A 250Vac-1A ($\cos\phi=0.4$) Min. permissible load 5Vdc-100mA 24Vdc-5mA	

Note 1) When VIA terminal is used as logic input terminal, be sure to connect a resistor between P24 and VIA in case of sink logic, between VIA and CC in case of source logic. (Recommended resistance: 4.7kΩ-1/2W)
It is not needed for VIB terminal.

Note 2) 100mA is the sum of P24 and +24.

Note 3) A chattering (momentary ON/OFF of contact) is generated by external factors of the vibration and the impact, etc. In particular, please set the filter of 10ms or more, or timer for measures when connecting it directly with input unit terminal of programmable controller. Please use the OUT terminal as much as possible when the programmable controller is connected.