

Electromotive Systems

Part Number: 140-10288(24VAC), 140-10466(48VAC), 140-10262 (120VAC)

Applicability: G+/VG+ Series 3 Drives

Introduction: The GIF7 Interface option card mounts directly to the control board CN8 connector on the drive and allows the use of 24, 48, or 120VAC control logic circuits to eight digital inputs (S1 - S8), analog input/output signals, digital output signals, pulse input/output signals and RS-485/422 communication signals.

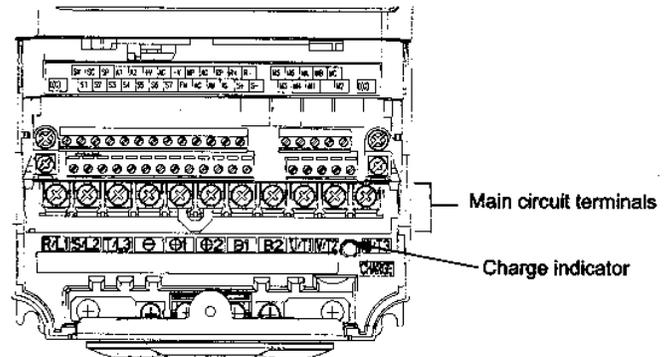
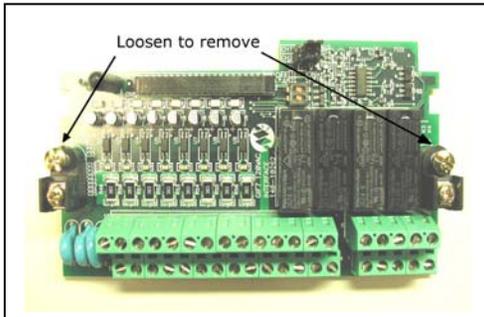
Receiving: All equipment is tested against defect at the factory. Report any damages or shortages evident when the equipment is received to the commercial carrier who transported the equipment.

Warning: Hazardous voltage can cause severe injury or death. Lock all power sources feeding the drive and the option card's wiring in the "OFF" position.

Important: When handling boards always use electro static discharge protection. Keep the boards in the ESD bag as long as you can. Do not lay the board on any surfaces without ESD protection. When handling, always hold the board from the edges and do not touch the components. Before installing this option card, a technically qualified individual, who is familiar with this type of equipment and the hazards involved, should read this entire installation guide.

Installation and Wiring:

1. Disconnect all electrical power to the drive.
2. Remove the drive's front cover.
3. Verify that the "CHARGE" indicator lamp inside the drive is off.
4. Use a voltmeter to verify that the voltage at the incoming power terminals (L1, L2, L3) has been disconnected.
5. Connect the ESD wrist wrap.



6. Loosen the two retaining screws located at TB3 and TB4 with a Phillips screwdriver.
7. Disconnect the blue FE wire from CN9 connector located on the upper left of the board.
8. Remove existing low voltage I/O board by grasping each corner at TB3 and TB4 and slide down until free.
9. Return I/O board to ESD bag
10. Complete all main circuit terminal connections as the installation of the GIF7 board may block wiring access.

Important: Wires to the option card should be stripped 0.2" ±20% for maximum system safety. Solder dipping or ferrules are also highly recommended.

11. Insert the GIF7 option board by sliding it onto the side guides until it mates tightly into CN8 connector.
12. Connect the blue FE wire to connector CN9.
13. Connect the command signals to the desired inputs of the option card. (See table on page 2)
14. Complete all field wiring to the option card after mounting the card to the drive. Follow this procedure to prevent damage to the male pins on CN8 connector.
15. Refer to the IMPULSE G+ or VG+ instruction manual for additional information for the S1 and CN15 settings (basic information is provided on pages 2 and 3 of this document).
16. Reinstall and secure the drive's front cover.

Terminal Symbol	Terminal Screw	Clamping Torque Lb-in (N-m)	Wire Range AWG (mm ²)
J1	M3	4.2 to 5.3 (0.5 to 0.6)	26 to 16 (Stranded: 0.14 to 1.5) (Solid: 0.14 to 1.5)

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17. Place this instruction sheet with the drive's technical manual.

24, 48, 120VAC Interface Specifications (for 24VDC, see Addendum 144-42471)

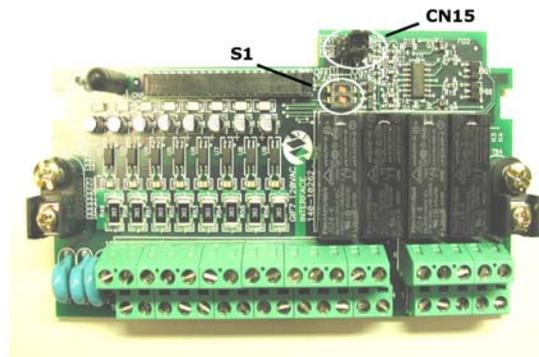
IMPULSE-G+/VG+ Series 3 is designed to interface with 120VAC user input and output devices through the GIF7 interface board. This eliminates the need for an additional interface relay or isolation circuitry.

The GIF7 has eight optically isolated input terminals which can be used to connect with the user input device. Terminals S1 and S2 are always used for the directional run commands (Forward and Reverse, Up and Down). The remaining six terminals are multi-function terminals, and are used for speed control and other characteristics. With multi-function terminals you can assign various functions and performance characteristics without having to rewire the drive.

A maximum of 3 inputs shall be capable of continuously remaining in the on state, as is the case with normally closed fail-safe limit switches and overload type devices. It is recommended wherever possible that these inputs be spaced out in such a way that two or more N.C. inputs are not right next to each other. For four position geared limit switches, a G5IN4 option card is recommended.

The drive has four 250VAC, 1.0 Amp relays for output devices. It includes three programmable multi-function output terminals.

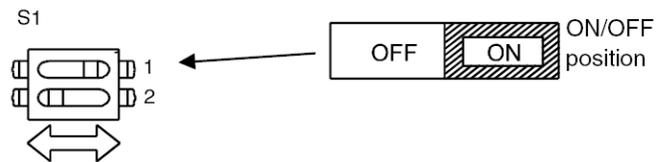
The G5IN4 card has four additional input terminals, which can have a total of 14 sets of input selections. The individual terminals can be enabled/disabled within a set, or can be programmed individually.



DIP Switch S1 and Jumper CN15 Location

DIP Switch S1

DIP Switch S1 is described in this section. The functions of DIP Switch S1 are shown in the following table.

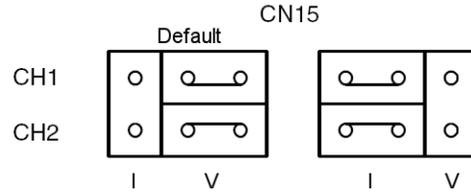


DIP Switch 1		
Name	Function	Setting
S1-1	RS-485 and RS-422 terminating resistance	OFF: No terminating resistance (Default) ON: Terminating resistance of 110 Ohm
S1-2	Input method for analog input A2	OFF: 0 to 10VDC or -10 to 10VDC (internal resistance: 20K) (Default) ON: 4-20mA (internal resistance: 250 Ohm)

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Jumper CN15

Jumper CN15 is described in this section. The jumper position of CH1 and CH2 determines the signal level of the multi-function analog output FM and AM, respectively. The functions and positions of CN15 are shown in the following table.



Jumper CN15		
Name	Multi-function Analog Output	Output Range
CH1	FM	V: 0 to 10V or -10V to 10V (default) I: 4 to 20mA
CH2	AM	V: 0 to 10V or -10V to 10V (default) I: 4 to 20mA

The table below outlines the functions of the option card terminals.

Classification	Terminal	Signal Function	Description		Signal Level
Sequence Input Signal	S1	Forward run/stop	Forward run when closed, stop when open		24 VAC ± 10%* 48 VAC ± 10%* 20 VAC ± 10%*
	S2	Reverse run/stop	Reverse run when closed, stop when open		
	S3	Speed 2*	Multi-function contact inputs (H1-01 to H1-06) *Programmable Input		
	S4	Speed 3*			
	S5	Speed 4*			
	S6	Speed 5*			
	S7	External Fault*			
	S8	M-Speed Gain 1*			
SN	Control Input Common				
Analog Input Signal	+V	+15V Power supply output	For analog command +15V power supply		+15V (Allowable current 20 mA max.)
	-V	-15V Power supply output	For analog command -15V power supply		-15V (Allowable current 20 mA max.)
	A1	Master frequency reference	-10 to +10V/-100% to 100% 0 to +10V/0 to 100%		-10 to +10V (20k Ohm), 0 to +10V/(20k Ohm)
	A2	Multi-function analog reference	4 to 20 mA/0 to 100% -10 to +10V/-100% to 100% 0 to 10V/0 to 100%	Multi-function analog reference (H3-05)	4 to 20mA (250 Ohm) -10 to +10V (20k Ohm), 0 to +10V/(20k Ohm)
	A3	Multi-function analog reference	-10 to +10V/-100% to +100% 0 to +10V/0 to 100%	Auxiliary analog input (H3-05)	-10 to +10V (20k Ohm), 0 to +10V/(20k Ohm)
	AC	Common terminal for control circuit	0V		-
E(G)	Connection to shield sheath of signal lead			-	
Relay Output Signal	M0	Brake Output	Multi-function output (H2-01 to H2-03)		Dry Contact Contact capacity: 250VAC, 1A or less 30VDC, 1A or less
	M1	N.O. Contact			
	M2	N.O./N.C. Contact			
	M3				
	M4	Fault annunciate			
	M5				
	MA	Fault contact output (N.O./N.C. Contact)	Terminals MA & MC N/O; closed at major faults Terminals MB & MC N/C; open at major faults		
	MB				
MC					
Analog Output Signal	FM	Multi-Function Analog Output 1	0 to ± 10V	Multi-function analog monitor (H4-01 to H4-03)	0 to ± 10V Max. ±5% 2mA or less
	AC	Common			
	AM	Multi-Function Analog Output 2	0 to ± 10V	Multi-function analog monitor 2 (H4-04 to H4-06)	0 to ± 10V Max. ±5% 2mA or less
Pulse I/O Signal	RP	Pulse Input	Pulse input frequency reference	Function set by H6-01	0 to 32kHz (3k) ± 5% High level voltages 3.5 to 13.2 Low level voltages 0.0 to 0.8 Duty cycle (on/off) 30% to 70%
	MP	Pulse Monitor	Pulse output frequency	Function set by H6-06	0 to 32kHz ± 5% output (load: 1.5k)
RS-485/422	R+	Modbus communication input	For 2-wire RS-485, jumper R+ and S+ and jumper R- and S-		Differential input, PHC isolation
	R-				
	S+	Modbus communication output			Differential output, PHC isolation
	S-				
IG	Signal Common				

* Signal level depends on which card is being used.

