

GSD1 Series DC Drives

GSD1 Introduction



GSD1-xx-xxC



GSD1-xx-10NRX

GSD1 Series DC Drives	
Motor Rating Range @ 12 VDC _{IN}	1/50 – 1/4 hp
Motor Rating Range @ 24/36 VDC _{IN}	1/50 – 1/2 hp

Overview

IronHorse GSD1 series DC drives are high-performance Pulse-Width-Modulated (PWM) controllers for 12 to 36 volt battery/solar-powered equipment providing smooth control with high-efficiency operation.

The advanced design permits a substantial increase in the equipment running time between charges over conventional techniques.

Features include adjustable maximum speed, minimum speed, current limit, I.R. compensation, and acceleration. The adjustable current-limit feature protects the control, battery, and motor from sustained overloads.

GSD1 series DC drives are available in open-frame and NEMA 4X enclosed styles, and all come standard with a speed pot, knob, and dial plate.

Features

- Provides smooth variable speed capability for mobile equipment
- Increases range or running time of battery operated equipment through high efficiency
- Allows reduction in battery size without loss of operating range
- Automatic compensation to allow for declining battery voltage
- Speed regulation is $\pm 1\%$ of base speed
- Adjustable maximum speed
- Adjustable minimum speed
- Adjustable IR compensation
- Adjustable current limit
- Adjustable acceleration speed
- Maintains variable speed control as batteries discharge
- 5k Ω speed pot with leads, knob and dial included
- Speed adjustment using 5k Ω speed pot or optional 0–10 VDC analog input signal
- Inhibit terminal permits optional start-stop without breaking battery line

Accessories

- Replacement speed potentiometer kit
- Digital speed potentiometer

Detailed descriptions and specifications for GSD accessories are available in the “GSD Series DC Drives Accessories” section.

Typical Applications

- Auger feeders
- Automated door actuators
- Commercial cooking equipment
- Commercial lift
- Food production
- Industrial pumping systems
- Measurement instruments
- Miniature lathes and mills
- Packaging / material-handling equipment
- Printing and labeling machines
- Small shop machine tools
- Spray / print reciprocating head

GSD1 Series DC Drives

GSD1 Selection and Specifications

Company Information

Drives

Soft Starters

Motors

Power Transmission

Motion: Servos and Steppers

Motor Controls

Sensors: Proximity

Sensors: Photoelectric

Sensors: Encoders

Sensors: Limit Switches

Sensors: Current

Sensors: Pressure

Sensors: Temperature

Sensors: Level

Sensors: Flow Switches

Pushbuttons and Lights

Stacklights

Signal Devices

Process

Relays and Timers

Pneumatics: Air Prep

Pneumatics: Directional Control Valves

Pneumatics: Cylinders

Pneumatics: Tubing

Pneumatics: Air Fittings

Appendix Book 2

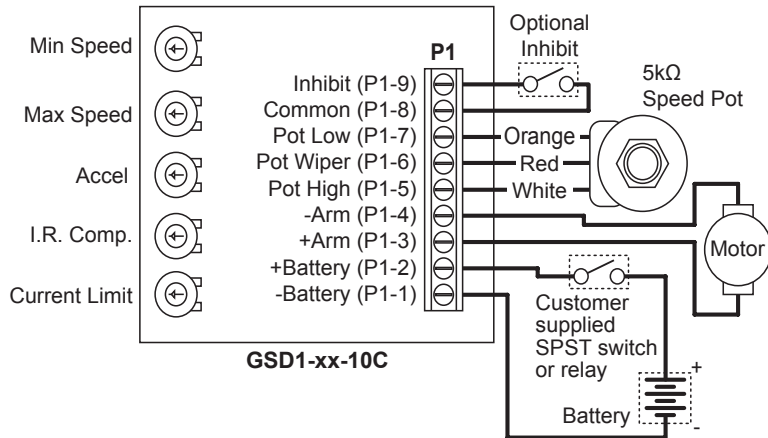
Terms and Conditions

GSD1 Series DC Drives – Selection & Specifications						
Model	GSD1-12-10C	GSD1-12-10N4X	GSD1-12-20C	GSD1-24-10C	GSD1-24-10N4X	GSD1-24-20C
Price						
Package Configuration	open frame	NEMA 4X	open frame	open frame	NEMA 4X	open frame
Power Quality Form Factor	1.05					
Input Voltage **	12 VDC ±15%			24/36 VDC ±15%		
Output Voltage	0–12 VDC			0–24/36 VDC		
Motor Rating (hp)	1/50 – 1/8		1/25 – 1/4	1/50 – 1/4		1/25 – 1/2
Output Current (continuous)	10A (DC)		20A (DC)	10A (DC)		20A (DC)
Current Overload Capacity	200% for 10s; 150% for 60s					
Current Limit	adjustable to 200% of motor Full Load Current (up to the Continuous Output Current rating of the drive)					
I.R. Compensation	adjustable					
Speed Adjustment	5kΩ potentiometer or 0–10 VDC input signal					
Speed Range	30:1					
Speed Regulation	1% of base speed					
Maximum Speed	adjustable from 50% to 100% of base speed					
Minimum Speed	30% of adjustable maximum speed					
Acceleration	adjustable from 0–10s					
Deceleration	0.5s (non-adjustable)					
Dynamic Braking	no					
Plugging Capability ***	no					
Internal Operating Frequency	18 kHz		approx 800 Hz	18 kHz		approx 800 Hz
Electrical Connections	barrier terminal block; accepts 12–6 AWG					
External Fusing Required	Bussman ABC or Littlefuse 314 series ceramic fuses or equivalent DC rated @ 150% motor Full Load Current (up to 200% Continuous Output Current rating of drive)					
Operating Temperature	-10 to 45 °C [14 to 113 °F]					
Thermal Protection	none					
Mounting Orientation	can be mounted in any orientation					
Corrosive Gases	NOT compatible with any corrosive gases					
Weight	6oz [170g]	37 oz [1049g]	10.5 oz [297g]	6oz [170g]	37 oz [1049g]	10.5 oz [297g]
Agency Approvals	RoHS					
Optional Accessories *						
Replacement Potentiometer	GSDA-5K					
Digital Potentiometer	GSDA-DP					
<p>* For accessories details, refer to the "GSD Series DC Drives Accessories" section.</p> <p>** Input power supply must not exceed recommended voltage, or it may damage the GSD1 drive. Linear power supply can be sized per drive voltage and motor full load current. Switched power supply should be sized per drive voltage and double the motor full load current.</p> <p>*** Plugging is a method of rapidly changing motor direction by reversing motor armature polarity, while the motor is still running.</p>						

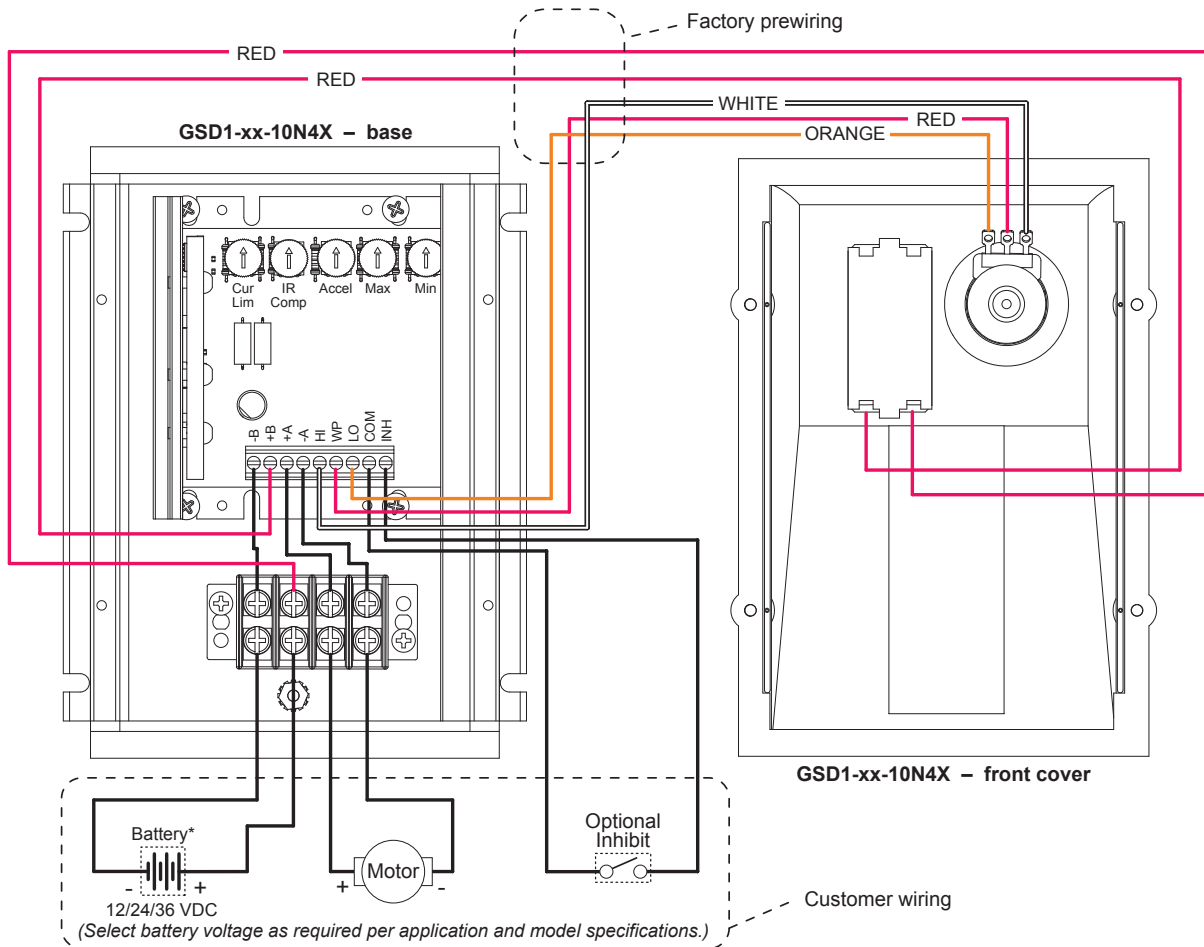
GSD1 Series DC Drives

GSD1 Wiring Diagrams

GSD1-xx-10C Basic Wiring Diagram – (refer to User Manual for more detailed wiring information)



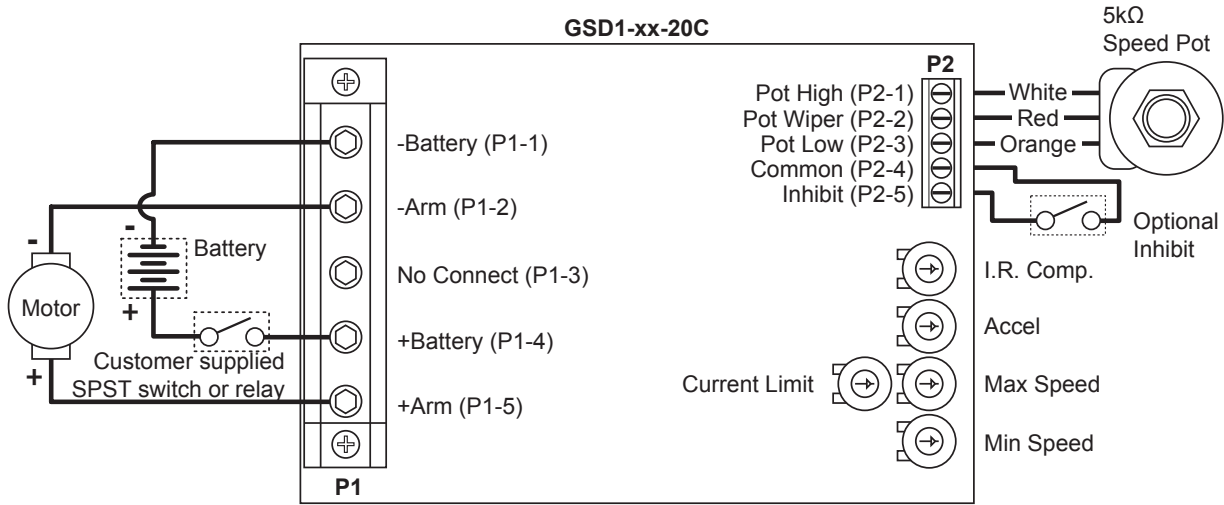
GSD1-xx-10N4X Basic Wiring Diagram – (refer to User Manual for more detailed wiring information)



GSD1 Series DC Drives

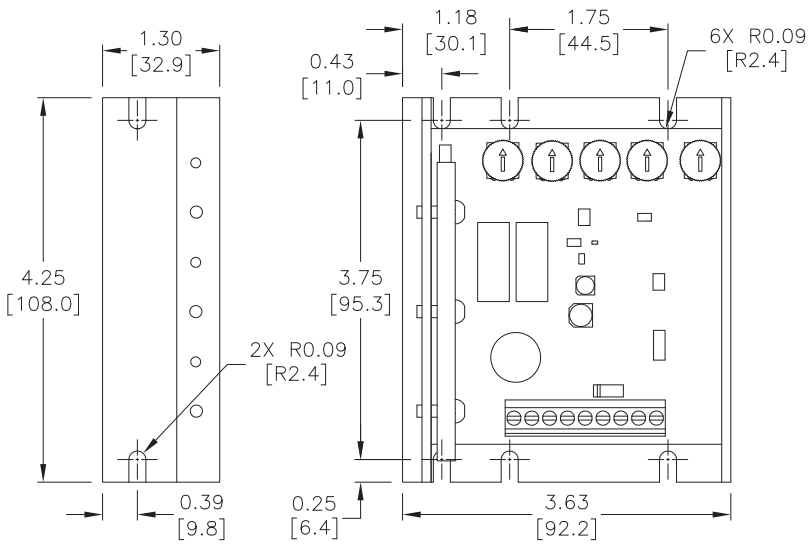
GSD1 Wiring Diagrams

GSD1-xx-20C Basic Wiring Diagram – (refer to User Manual for more detailed wiring information)



GSD1 Dimensions – dimensions = in [mm]

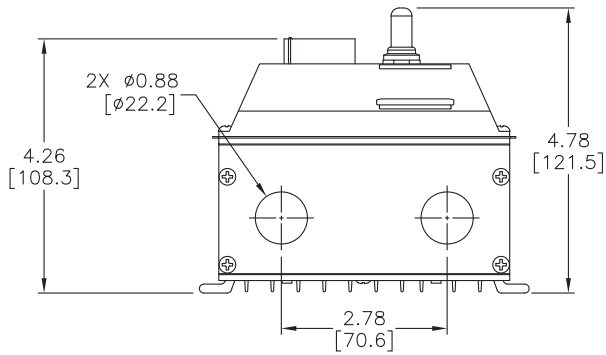
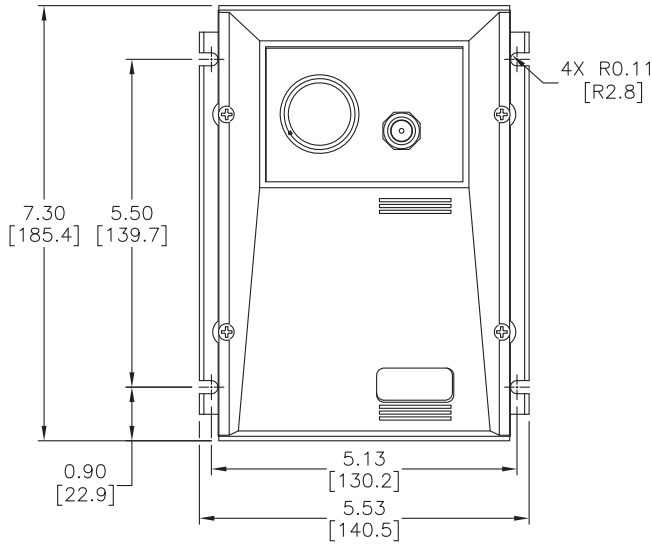
GSD1-xx-10C Dimensions



GSD1 Series DC Drives

GSD1 Dimensions – dimensions = in [mm]

GSD1-xx-10N4X Dimensions



GSD1-xx-20C Dimensions

