

A

- AC Drive
 - Cover, 1–4
 - Dimensions, 2–4
 - External Parts and Labels, 1–4
 - Heat Sink Fins, 1–4
 - Input Mode Switch (Sink/Source), 1–4
 - Keypad, 1–4
 - Model Explanation, 1–3
 - Mounting Screw Holes, 1–4
 - Nameplate Information, 1–3
 - Nameplate Label, 1–4
 - Package Contents, 1–3
 - Purpose, 1–3
 - Serial Communication Port, 1–4
 - Specifications, 1–5
 - Terminal Diagrams, 2–13
 - Terminals - braking, 1–4
 - Terminals - control, 1–4
 - Terminals - power, 1–4
 - Ventilation Slots, 1–4
- Accessories, 2–23
 - Braking Resistors, A–20, A–23
 - Fuse Kits & Fuses, A–38
 - Keypad Cables; GS-CBL2-_, A–47
 - Spare Keypad; GS3-KPD, A–47
- AFD, 1–3
- Air Flow and Minimum Clearances, 2–3
- Ambient Conditions, 1–8, 2–2
- Auto Restart after Fault, 4–56
- Auto-tune Procedure, 3–14

B

- Braking Resistor Dimensions, A–24
- Braking Resistors, A–20
- Braking Units, A–20

C

- Cable; Keypad GS-CBL2-_, A–47
- Canadian Electrical Code (CEC), 2–12
- Circuit Connections, 2–11
- Circuit Protection Devices, 2–11, 2–12
- Communicating with DirectLogic PLCs, 5–14
 - Block Transfer Parameters, 5–32
 - Configure the CPUs, 5–18
 - Drive Parameters, 5–18
 - Ethernet Connection, 5–17
 - GS-EDRV Ethernet Interface, 5–17
 - Modbus Ladder Programming, 5–21
 - PLC Wiring Connections, 5–14
- Communicating with Third-party Devices, 5–33
 - Communication Protocol, 5–35
 - Data Format, 5–34
 - Entivity Studio, 5–33
 - KEPSERVER, 5–33
 - MODSCAN, 5–33
 - Think & Do Live, 5–33
- Communications Parameters Summary, 5–2
- Contactors, 2–11, 2–23
- Control Circuit Terminals, 2–20
- Control Wiring Diagrams, 2–21
- Copy Keypad Function, 3–16
- cUL, 2–12

D

- DC Injection, 4–23
- Decrease Speed, 4–29, 4–33
- Default - Restore Parameters to Default, 4–72
- Digital Keypad, 3–2
- Dimensions, 2–4
- DirectLOGIC Modbus Ladder Programming, 5–21
- Display, 3–2

E

Electronic Motor Operated Potentiometer, 4-33
EMI (Electro Magnetic Interference), 2-12
Enclosure, 2-3
Encoders, A-42
Environment, 1-8, 2-2
Error Codes, 5-11
Errors - Keypad, 6-7
Errors - Serial Comm, 6-7
External Base Block, 4-29, 4-32
External Fault, 4-29, 4-30, 4-74
External Fault - Serial Comm, 4-74
External Reset, 4-29, 4-30

F

FA-ISOCAN, 5-16
Fail-safe, w-1
Fault Messages, 6-3
Fault Reset - External DI, 4-29
Fault Reset - Keypad, 3-3
Fault Reset - Serial Comm, 4-74
Fault-tolerant, w-1
Filter - EMI, 2-23
Filter - RF, 2-23
Firmware Version, 4-2, 4-74
Frequency Output, 2-20, 2-21, 4-38
Function Keys, 3-3
Fuses, 2-23, A-38

G

GFCI (Ground Fault Circuit Interrupt), 2-12
Grounding, w-3, 2-11
GS-CBL2-_ Keypad Cable, A-47
GS-EDRV, 5-17

H

Hazardous Voltage, 2-11
Heat, 2-3
High Risk Activities, w-1

I

Increase Speed, 4-29, 4-33
Input Disable, 4-29, 4-34
Inspection, 6-2
 Annual, 6-2
 Monthly, 6-2
Installation, 2-3
Inverter, 1-3

J

Jog, 4-29, 4-31, 4-74

K

Keypad, 3-2
 Copy Keypad Function, 3-16
 Manual Keypad Control, 4-29, 4-31
 Write Parameter Settings to Drive, 3-18
 Write Parameter Settings to Keypad, 3-17
Keypad, Spare, GS3-KPD, A-47

L

LCD Display, 3-2
LED Indicators, 3-2
Line Start Lockout, 4-62
Lock Parameters, 4-72

M

Maintenance, 6–2
 Manual Keypad Control, 4–29, 4–31
 Memory Addresses for Drive Status, 5–11
 Memory Addresses for Parameters, 5–4
 Minimum Clearances and Air Flow, 2–3
 Modbus Ladder Programming, 5–21
 Motors - Single-phase, 2–12
 Motors - Three-phase, 1–3, 2–12
 Mounting Enclosure, w–3
 Multi-Speed Bits, 4–29, 4–31

N

National Electrical Code (NEC), w–1, 2–12
 National Electrical Manufacturers Association (NEMA), w–1
 National Electrical Manufacturers Association (NEMA) , 1–2
 National Fire Code, w–1
 Network Adapter - FA-ISOCAN, 5–16
 Notes, 1–2

O

Overload Protection, 4–55

P

Parameters
 Parameters - Communications Parameters Summary, 5–2
 Parameters - Detailed Listings, 4–15
 2nd Analog Input Gain - P4.16, 4–43
 2nd Analog Input Offset - P4.15, 4–42
 2nd Analog Input Offset Polarity - P4.14, 4–42
 2nd Source of Frequency Command - P4.13, 4–41
 2nd Source of Operation Command - P3.31, 4–38
 Accel 1 to Accel 2 Frequency Transition - P1.08, 4–21
 Accel S-Curve - P1.03, 4–19
 Acceleration Time 1 - P1.01, 4–18
 Acceleration Time 2 - P1.05, 4–20
 Analog Input Gain - P4.03, 4–40
 Analog Input Offset - P4.02, 4–39
 Analog Input Offset Polarity - P4.01, 4–39
 Analog Input Reverse Motion Enable - P4.04, 4–40
 Analog Output Gain - P4.12, 4–41
 Analog Output Signal - P4.11, 4–40
 Auto Adjustable Accel/Decel - P6.06, 4–58
 Auto Restart after Fault - P6.01, 4–56
 Auto Voltage Regulation - P6.04, 4–57
 Auto-torque Boost - P2.02, 4–25
 Backlight Timer - P8.02, 4–70
 Base-Block Time for Speed Search - P6.13, 4–60
 Block Transfer Parameters - P9.11-P9.25, 4–73
 Braking Voltage Level - P6.18, 4–62
 Communication Address - P9.00, 4–71
 Communication Protocol - P9.02, 4–71
 Control Mode - P2.10, 4–27
 DC Injection Current Level - P1.18, 4–23
 DC Injection during Start-up - P1.20, 4–23
 DC Injection during Stopping - P1.21, 4–23
 Decel 2 to Decel 1 Frequency Transition -

- P1.09, 4–21
- Decel S-Curve - P1.04, 4–20
- Deceleration Time 1 - P1.02, 4–18
- Deceleration Time 2 - P1.06, 4–20
- Derivative Control (D) - P7.22, 4–67
- Derivative Filter Time Constant - P7.24, 4–68
- Desired Current - P3.17, 4–37
- Desired Frequency - P3.16, 4–37
- Desired Frequency 2 - P3.20, 4–37
- Electronic Thermal Overload Relay - P6.00, 4–55
- Encoder Control Output Limit - P10.04, 4–77
- Encoder Loss Detection - P10.05, 4–77
- Encoder Pulses Per Revolution - P10.00, 4–76
- Encoder Type Input - P10.01, 4–76
- Fault Records - P6.31-P6.36, 4–63
- Feedback Signal Loss Detection Time - P7.26, 4–68
- Firmware Version - P9.39, 4–74
- Frequency Output (FO) Scaling Factor - P3.30, 4–38
- Frequency Scale Factor - P8.01, 4–70
- GS Series Number - P9.41, 4–75
- Input Terminal for PID Feedback - P7.00, 4–64
- Integral Control - P10.03, 4–76
- Integral Control (I) - P7.21, 4–67
- Jog Speed, 4–53
- Keypad PID Setpoint - P7.10, 4–66
- Line Start Lockout - P6.30, 4–62
- Loss of AI2 Signal (4-20mA) - P4.05, 4–40
- Lower Bound of Output Frequency - P6.16, 4–61
- Manufacturer Model Information - P9.42, 4–75
- Maximum Allowable Power Loss Time - P6.12, 4–60
- Maximum Speed Search Current Level - P6.14, 4–60
- Mid-point Frequency - P2.04, 4–26
- Mid-point Voltage - P2.05, 4–26
- Minimum Output Frequency - P2.06, 4–26
- Minimum Output Voltage - P2.07, 4–26
- Momentary Power Loss - P6.02, 4–56
- Motor Auto Tune - P0.05, 4–16
- Motor Base Frequency - P0.02, 4–15
- Motor Base RPM - P0.03, 4–16
- Motor Line-to-Line Resistance R1 - P0.06, 4–17
- Motor Maximum RPM - P0.04, 4–16
- Motor Nameplate Amps - P0.01, 4–15
- Motor Nameplate Voltage - P0.00, 4–15
- Motor No-Load Current - P0.07, 4–17
- Multi-Function Inputs (DI) - P3.01-P3.10, 4–28
- Multi-Function Output (RO) - P3.11, 4–35
- Multi-Function Outputs (DO) - P3.11-P3.14, 4–35
- Multi-Speeds - P5.01-P5.15, 4–54
- Over-current Stall Prevention during Accel - P6.10, 4–59
- Over-current Stall Prevention during Operation - P6.11, 4–59
- Over-Torque Detection Level - P6.08, 4–58
- Over-Torque Detection Mode - P6.07, 4–58
- Over-Torque Detection Time - P6.09, 4–58
- Over-Voltage Stall Prevention - P6.05, 4–57
- Over-Voltage Stall Prevention Level - P6.17, 4–61
- Parameter Copy - P9.40, 4–75
- Parameter Lock - P9.07, 4–72
- PID Deviation Level - P3.18, 4–37
- PID Deviation Time - P3.19, 4–37
- PID Feedback Gain - P7.03, 4–65
- PID Feedback Loss Operation - P7.27, 4–69
- PID Feedback Loss Preset Speed - P7.28, 4–69
- PID Multi-setpoints - P7.11-P7.17, 4–66
- PID Output Frequency Limit - P7.25, 4–68
- PID Setpoint Offset Polarity - P7.04, 4–65
- PID Setpoint Gain - P7.06, 4–65
- PID Setpoint Offset - P7.05, 4–65
- PID Setpoint Source - P7.02, 4–65
- Proportional Control - P10.02, 4–76

- Proportional Control (P) - P7.20, 4-67
 - PV 100% Value - P7.01, 4-65
 - PWM Carrier Frequency - P2.08, 4-27
 - Restore to Default - P9.08, 4-72
 - Reverse Operation Inhibit - P6.03, 4-56
 - Select Method for 2nd Accel/Decel - P1.07, 4-21
 - Serial Comm Direction Command - P9.28, 4-74
 - Serial Comm External Fault - P9.29, 4-74
 - Serial Comm Fault Reset - P9.30, 4-74
 - Serial Comm JOG Command - P9.31, 4-74
 - Serial Comm RUN Command - P9.27, 4-74
 - Serial Comm Speed Reference - P9.26, 4-74
 - Skip Frequency 1 - P1.10, 4-22
 - Skip Frequency 2 - P1.11, 4-22
 - Skip Frequency 3 - P1.12, 4-22
 - Skip Frequency 4 - P1.13, 4-22
 - Skip Frequency 5 - P1.14, 4-22
 - Skip Frequency Band - P1.17, 4-22
 - Slip Compensation - P2.01, 4-25
 - Source of Frequency Command - P4.00, 4-39
 - Source of Operation Command - P3.00, 4-28
 - Start-point for DC Injection - P1.22, 4-23
 - Stop Methods - P1.00, 4-18
 - Time Out Detection - P9.04, 4-72
 - Time Out Duration - P9.05, 4-72
 - Torque Compensation Time Constant - P2.03, 4-25
 - Transmission Speed - P9.01, 4-71
 - Trim Mode Select - P4.18, 4-44
 - Trim Reference Frequency - P4.17, 4-43
 - Upper Bound for Integral Control - P7.23, 4-68
 - Upper Bound of Output Frequency - P6.15, 4-61
 - User Defined Display Function - P8.00, 4-70
 - Volts/Hertz Settings - P2.00, 4-24
 - Parameters - Lock, 4-72
 - Parameters - Memory Addresses, 5-4
 - Parameters - Restore to Default Settings, 4-72
 - Parameters - Summary, 4-2
 - Analog Parameters, 4-7
 - Communications Parameters, 4-12
 - Digital Parameters, 4-5
 - Display Parameters, 4-12
 - Encoder Feedback Parameters, 4-14
 - Motor Parameters, 4-2
 - PID Parameters, 4-11
 - Presets Parameters, 4-8
 - Protection Parameters, 4-9
 - Ramp Parameters, 4-3
 - Volts/Hertz Parameters, 4-4
 - Parameters available in firmware versions, 4-2
 - PID Disable, 4-29, 4-34
 - PID Parameters, 4-64
 - PID Setpoint Bits, 4-29, 4-31
 - Power Circuit Terminals, 2-13
 - Power Supply, 2-23
 - Power Wiring Diagrams, 2-18
 - Programming the AC Drive, 3-5
- ## Q
- Quickstart, 3-6
- ## R
- Reactor, 2-23
 - Reset Speed to Zero, 4-29, 4-34
 - Resistor - braking, 2-23

S

Safety Codes, w-1, 2-12
Canadian Electrical Code (CEC), 2-12
cUL, 2-12
National Electrical Code (NEC), w-1, 2-12
National Electrical Manufacturers Association (NEMA), w-1
National Fire Code, w-1
UL, 2-11, 2-12

Safety Information, w-1, w-3, 1-2
National Electrical Manufacturers Association (NEMA), 1-2

Second Accel/Decel Time, 4-29, 4-32

Serial Communication Port, 1-4, 4-74, 5-14, 5-33

Short Circuit Withstand, 1-5, 2-12

Source Select, 4-29, 4-34

Spare Keypad; GS3-KPD, A-47

Special Symbols, 1-2
Notes, 1-2
Warnings, 1-2

Specifications, 1-5
Control Circuit Terminals, 2-20
Main Circuit Wiring Terminals, 2-17

Speed Hold, 4-29, 4-33

Status Addresses, 5-11

Status Monitor, 5-11

Status of the Drive - Keypad Display, 3-4

Supplemental Publications, 1-2
National Electrical Manufacturers Association (NEMA), 1-2

T

Technical Support, 1-2

Terminal Diagrams, 2-13

Troubleshooting, 6-3

U

UL, 2-11, 2-12

V

VFD, 1-3

W

Warning Messages, 6-7

Warnings, w-1, w-3, 1-2, 2-11

Warranty Information, w-1

Wiring Diagrams - control circuit, 2-21

Wiring Diagrams - power circuit, 2-18

Wiring Specifications, 2-17

Wiring Warnings, w-3, 2-11

Wiring; 1st/2nd Source Select, 4-34

Wiring; Braking Resistors, 2-18

Wiring; Braking Units, 2-18

Wiring; Digital Output, 4-35

Wiring; External Fault, 4-30

Wiring; GS-RS485- Comm Distribution Blocks, A-49

Wiring; Multi-Speed / PID SP, 4-31

Wiring; Relay Output, 4-35

Wiring; RS-232C to RS-485 to DL PLCs, 5-16

Wiring; RS-485 to DL06/DL260, 5-15

Wiring; Start/Stop/Direction, 4-28

Write Parameter Settings to Drive, 3-18

Write Parameter Settings to Keypad, 3-17