

# INDEX

## **A**

- absolute encoder 35, 44
- Absolute mode 42, 78
- AC power 30
- ACC 146
- accumulative error 122, 127
- accuracy 41
- advance 116, 120, 124
  - encoder sample rate 117
  - final following percentage 117
  - following acceleration constant 124
  - initial following percentage 117
  - phase relationship 116
  - positional relationship 116
- air flow 36
- Angular Misalignment 37
- AR-C
  - DIP switches 45
- AR-C Absolute Encoder 29
- AR-C absolute encoder 44
- AR-C Decoder Box 35
- AR-C decoder box 44
- Automatic Standby 19

## **B**

- backlash 52
  - compensation 52
- backlash compensation 52
- BASIC 67
- battery backed RAM 56
- battery-backed RAM 58
- baud rate 23
- BCD 85
- branching 70, 75
- breakpoints 121
- brownout protection 1

## **C**

- cam 127
- cam cycle 122
- cam following 127
- cam profile 127
- CE 176
- closed-loop operation 34
- closed-loop position correction 46
- coil winding 103
- communication parameters 22
- Compumotor motors 18
- Condition statements 71
- conditional branching 74
  - IF 75
  - input state 76
- Conditional Looping 73
  - NWHILE 73
  - REPEAT 73
  - UNTIL 73
  - WHILE 73
- conditional statements 72
  - Boolean Comparisons 73
  - error flag 72
  - Input State 72
  - user flag 72
- constant value 67
- Continuous mode 43, 44, 70
- copper losses 32
- Corcom® EP Series filter 10
- core losses 32
- current node 33
- current ratings 31

## **D**

- daisy chain 23
- daisy-chain 19
- Data Inputs 89
- data inputs 70
  - BCD 70
  - weighting 70
- data strobe rate 95
- data valid line 95
- data valid switch 92
- deadband window 47
- debounce time 51, 87

- debugging 165
  - I/O simulation 166
  - report back 166
  - Trace mode 165
- debugging tools 63
  - Single-Step mode 64
  - Trace mode 63
- deceleration 122
- device address 23
- Dimensions 149
- DIP switch settings
  - Automatic Test 5, 19
  - baud rate 19
  - device address 19
  - motor current 5
  - motor current settings 18
- DIP switches 4, 9, 152
  - SW1 4
  - SW2 4
- Direction+ 137
- Direction- 137
- distance point 77
- double-flexed coupling 37
- drive resolution 8

## **E**

- EARTH 17
- eddy current 32
- electrical noise 10, 162
- electronic cam 127
- ELSE 74
- enclosure 36
- Enclosures 161
- encoder 44, 146
  - current 146
  - reducer 45
  - resolutions 45
- encoder gear ratio 45
- Encoder Step mode 44, 45, 47
- End Float 37

end-of-travel limits 25  
energized state 33  
equations 138, 140, 141  
Error Flags 72  
Error Message mode 66  
Error Messages 66  
execution time 41

## **F**

failed drive 167  
fan kit 20, 30  
fault output 145  
FAULT sequence 59  
filter 10  
flange bolts 37  
Following Acceleration 106  
following acceleration 104  
following commands 137  
Following Encoder Absolute Point  
120  
Following mode 135  
registration 135  
following ratio  
on-the-fly 116  
Following Synchronized Acceleration  
104  
Fortran 67

## **G**

Gauging Motor Resonance 39  
tachometer 39  
GND 146

## **H**

handshake 96  
Handshaking 22  
hardware limits 8  
heatsink 161  
homing 53  
host computer 22  
How To Use This User Guide vi  
How to Use this User Guide  
Assumptions  
Contents of This Manual vi  
hysteresis 32

## **I**

I/O 20  
fault output 27  
Home Position input 25  
programmable outputs 27  
RS-232C 22  
IF statement 74  
immediate-status command 23

incremental encoder 29  
inputs 29  
incremental encoders 44  
single-ended outputs 44  
Incremental mode 42, 77  
Indexer mode 100  
INLK 17  
INLK jumper 9  
inputs 81, 144  
reverse voltage 145  
sink current 145  
voltage range 144  
internal thermostat 9  
internal timer 41

## **J**

Jogging 136  
FOL 136  
Following mode 136  
Jog Acceleration 136  
power-up sequence 136  
jogging 51  
CCW jog input 52  
CW jog input 52

## **L**

LEDs 162  
Overtemp LED 162  
Power LED 162  
Undervoltage LED 162  
load 37  
loop commands 71  
Looping 71

## **M**

math functions 69  
Addition 69  
Division 69  
Multiplication 69  
Subtraction 69  
mechanical slop 44  
metal fatigue 37  
Microstepping 47  
mid-range instability 38  
misalignments 37  
Motion Profiling 116, 120, 127  
Motion Profiling mode 43, 77, 80  
motor 155, 162  
4 lead motors 12  
4-Lead Motor 155  
6-Lead Motor 155  
8 lead motors 12  
8-Lead Motor 156  
Compumotor motors 12  
motor waveform 40  
motor case temperature 9  
motor connector 17

motor current 5  
Motor Mounting  
foot mount 37  
motor resolution 19  
Motor Step mode 45  
motor windage 49  
Motor Winding Inductance 147  
motor/driver wire size 17  
motors 31  
current 158  
heating 31  
inductance 31  
motor cables 17, 157  
Motor Specifications (57 & 83  
Series Motors) 148  
mounting 35  
clearance 36  
minimum width 35  
minimum-depth 35

## **N**

NEMA 23 Motor 150  
NEMA 34 Motor 150  
nesting 59  
NIF 74  
noise immunity 30  
non-Compumotor motors 158  
4-Lead Motors 158  
6-Lead Motors 158  
8-Lead Motors 158  
bipolar current 158  
unipolar current 158  
nonvolatile memory 58

## **O**

ohmmeter 155  
on-the-fly 77  
distance 77  
turn on outputs 77  
velocity 77  
Open-Loop mode 44  
OPTO1 144  
OPTO2 144  
OPTO2 input 25  
oscillation 39  
oscilloscope 39  
output functions 81  
Output-On-Stall 49  
outputs 33, 81, 145  
pull-up resistor 145  
pull-up voltage 145  
reverse voltage 145  
sink current 145  
over-temperature protection 1  
overheating 11

## P

- Panel Layout 36
- Parallel configurations 11
- parallel configurations 156
- parallel data 89
  - TW2 mode 90
- Parallel Misalignment 37
- parallel misalignment 37
- parametric oscillations 38
- Pascal 67
- peak motor loss 11
- Peak shaft power 32
- Peak total power 32
- Phase A 17, 137
- Phase B 17, 137
- PI type filter 10
- pitch 103
- PLC 26, 70, 94, 95
  - Miscellaneous Control 97
  - Parallel Data Read 95
  - Sequence Select 96
- Position and velocity following 103
  - acceleration ramp 105, 108
  - applications 103
  - deceleration 109
  - FOL 114
  - following percentage 114
  - trigger 110
  - variations 103
- Position Maintenance 46
- Position Maintenance mode 47
- Position Profile Mode 70
- Position Tracking 104, 136
- potentiometers 38
  - Phase A Offset 38
  - Phase B Offset 38
  - Phase Balance 38
- power 30, 146
- power supply 1
- power up 62
  - sequences 62
- power-up sequence 51, 52, 59
- precautions 9
- Preset mode 70
- preset move 42
  - absolute position 42
  - power-up position 42
- primary axis 100
- programmable outputs 81
  - inductive load 27
- programming 67
  - buffered commands 57
  - Immediate commands 57
  - nonvolatile memory 58
  - sequence 57
- Pulse and Direction mode 137
- Pulse Tracking 104

## Q

- quadrature signals 137

## R

- radial load 37
- Recede 125
  - distance 125
  - following acceleration constant 126
  - initial following percentage 126
- recede application 116
- Recede Profile 141
- Receding and advancing
  - following ratio 116
- recommended strobe time 91
- REG input 26
- Registration 50
- registration 51, 135
  - FOL 135
  - Following Synchronized Acceleration mode 135
- registration input 26, 51
- repair 167
- repeatability 41
- Reset 92
- Resonance 38, 49
- resonance speed 39
- Rigid coupling 38
- ringing 47
- Rotary stepper motors 37
- RS-232C 7, 22, 58, 85
  - Baud Rate 7, 22
  - daisy-chain 24
  - Data Bits 7, 22
  - Full Duplex mode 7, 22
  - ground 22
  - Parity 7, 22
  - Receive Data 22
  - Stop Bit 22
  - Stop Bits 7
  - Transmit Data 22
- RS-232C Baud Rate 154
- RSV+ and RSV- 147

## S

- schematic
  - CW, CCW, and Home Inputs 145
  - Incremental Encoder Schematic 146
  - Outputs and Fault 146
  - REG and I1 - I8 Inputs 26, 145
- secondary axis 100
- Self Learn mode 133, 134
- sequence
  - definition 58
  - power-up sequence 58
  - redefine 58
- Sequence Branching Commands 57
- sequence buffers 58
- Sequence Debugging Commands 57
- Sequence Execution Commands 57
- Sequence Interrupted Run mode 87
- Sequence Programming Commands 57
- Sequence Scan mode 79, 87
- Sequence Status Commands 57
- sequence-select input 79
- Sequences 56
- sequences
  - variables 68
- series configurations 11, 156
- shaft couplings 37
  - double-flex 37
  - rigid 37
  - single-flex 37
- short-circuit protection 1
- sign bit 96
- sine wave 40
- single-flex coupling 37
- sinusoidal current waveforms 40
- smoothness 39
- software limits 25
- Spare Parts List 161
- Speed/torque 148
- Stall Detect mode 47
- static loads 37
- status-request commands 23
- stepper motors 49
  - Resonance 49
- stop input 66, 78
- Stop-On-Stall 48
  - position error 48
- SX 3, 18
  - high-power 3, 18
  - low-power 3, 18
- synchronism 47
- Synchronization 104, 133
  - encoder pulses 133
  - latched count 133
  - primary axis 132
  - registration 132
  - secondary axis 133
  - sensor 133

synchronization 106, 135  
Synchronization mode 132

## **T**

Temperature 143  
  drive 143  
  motor case 143  
terminal 22  
terminal blocks 17  
thermal dissipation 32  
thermal interface 9  
thumbwheel switches 26  
thumbwheels 70  
time delay 70  
time-based motion 108  
TM8 Module 88, 91  
tools 4  
Trace mode 73, 74  
transformer 30  
  earth ground 30  
trigger 76, 79, 110  
trigger input 79  
Triggers 85  
tune 40  
tuning 38  
  potentiometers 38

## **U**

update rate 47  
User Flags 72

## **V**

variables 67  
  general-purpose 68  
  read-only 68  
Velocity following 101  
  applications 101  
  preset move 103  
velocity following 100, 101  
viscous damper 38  
viscous dampers 50  
volt-amp ratings 32

## **W**

waveform 50  
waveform matching 40  
waveforms 40  
WHEN sequence 59

## **Z**

Z channel 53