Description

CZC Series digital servo drives are designed to drive brushed and brushless servo motors, stepper motors and AC induction motors. These all-digital drives operate in torque, speed or position mode and use space vector modulation (SVM) technology. Compared with traditional PWM, it can improve bus voltage utilization and reduce heat dissipation. The drive can be configured to use various external command signals, or the drive's built-in motion engine (internal motion controller for distributed motion applications) can be used to configure commands. In addition to motor control, these drives also have dedicated programmable digital and analog inputs and outputs to enhance the interface with external controllers and devices.

CZC series drives have CANopen network communication function, they can all be connected to DriveWare®7 software through RS232 to complete drive debugging and configuration.

Peak Current	12A(8.5Arms)
Continuos Current	6A(6Arms)
Supply Voltage	20-80 VDC

Features

- Follows the CAN in Automation (CiA) 301 Communications Profile and 402 Device Profile

- Four Quadrant Regenerative Operation

- Space Vector Modulation (SVM) Technology

- Fully Digital State-of-the-art Design

- Programmable Gain Settings

- Fully Configurable Current, Voltage, Velocity and Position Limits

- PIDF Velocity Loop

- PID + FF Position Loop

- 12-bit Analog to Digital Hardware

- On-the-Fly Mode Switching

- On-the-Fly Gain Set Switching

- UL

- cUL

- CE Class A(LVD)

- CE Class A(EMDS)

- RoSH

Note: The certifications and approvals included in the above features are applicable to the internal core drive assembly.

MODES OF OPERATION

- Profile Modes
- Cyclic Synchronous Modes
- Current
- Velocity
- Position
- Interpolated Position Mode (PVT)

COMMAND SOURCE

- ±10 V Analog
- PWM and Direction
- Encoder Following
- Over the Network
- Sequencing
- Indexing
- Jogging

FEEDBACK SUPPORTED

- ±10 VDC Position
- Halls
- Incremental Encoder
- Auxiliary Incremental Encoder
- Tachometer (±10 VDC)

INPUTS/OUTPUTS

- 3 High Speed Captures
- 1 Programmable Analog Input (12-bit Resolution)
- 2 Programmable Digital Inputs (Differential)
- 3 Programmable Digital Inputs (Single-Ended)
- 3 Programmable Digital Outputs (Single-Ended)

SPECIFICATIONS

Power Specifications		
Description	Units	Value
DC Supply Voltage Range	VDC	20-80
DC Bus Over Voltage Limit	VDC	88
DC Bus Under Voltage Limit	VDC	17
Logic Supply Voltage	VDC	18-75(User-supplied or internal to the drive)
Maximum Peak Output Current[1]	A(Arms)	12（8.5）
Maximum Continuous Output Current[2]	A(Arms)	6（6）
Maximum Continuous Output Power	W	456
Maximum Power Dissipation at Continuous Current	W	24
Internal Bus Capacitance	μF	470
Minimum Load Inductance (Line-To-Line) [3]	μH	250(80 V supply); 150(48 V supply); 75(24 V supply);
Switching Frequency	KHZ	20
Maximum Output PWM Duty Cycle	%	85
Control Specifications		
Description	Units	Value
Communication Interfaces	-	CANopen (RS-232 for configuration)
Command Sources	-	±10 V Analog, Encoder Following, Over the Network, PWM and Direction, Sequencing, Indexing, Jogging
Feedback Supported	-	±10 VDC Position, Auxiliary Incremental Encoder, Halls, Incremental Encoder, Tachometer (±10 VDC)

Commutation Methods	-	Sinusoidal, Trapezoidal
Modes of Operation	-	Profile Modes, Cyclic Synchronous Modes, Current, Velocity, Position, Interpolated Position Mode (PVT)
Motors Supported[4]	-	Three Phase (Brushless Servo), Single Phase (Brushed Servo, Voice Coil, Inductive Load), Stepper (2- or 3-Phase Closed Loop), AC Induction (Closed Loop Vector)
Hardware Protection	-	40+ Configurable Functions, Over Current, Over Temperature (Drive & Motor), Over Voltage, Short Circuit (Phase-Phase & Phase-Ground), Under Voltage
Programmable Digital Inputs/Outputs (PDIs/PDOs)	-	5/3
Programmable Analog Inputs/Outputs (PAIs/PAOs)	-	1/0
Primary I/O Logic Level	-	5V TTL
Current Loop Sample Time	µs	50
Velocity Loop Sample Time	µs	100
Position Loop Sample Time	µs	100
Maximum Encoder Frequency	MHz	20(5 pre-quadrature)

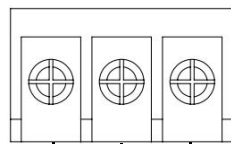| Mechanical Specifications		
Description	**Units**	**Value**
Size (H x W x D)	mm	119×100.5×43
Weight	g	425
Temperature Range[5]	℃	0-75
Storage Temperature Range	℃	-40-85
Cooling System	-	Natural Convection

Note：

1. Capable of supplying drive rated peak current for 2 seconds with 10 second foldback to continuous value.Longer times are possible with lower current limits.

2. Continuous Arms value attainable when RMS Charge-Based Limiting is used.

3. Lower inductance is acceptable for bus voltages well below maximum. Use external inductance to meet requirements.

4. Maximum motor speed for stepper motors is 600 RPM. Consult the hardware installation manual for 2-phase stepper wiring configuration.

5. Thermal shutdown when PCB temperature reaches 75°C. The base plate temperature at this point may be between 60°C and 75°C depending on rate of base plate cooling (additional heat sinking), ambient temperature, and output current.
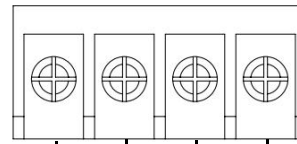
PIN FUNCTIONS

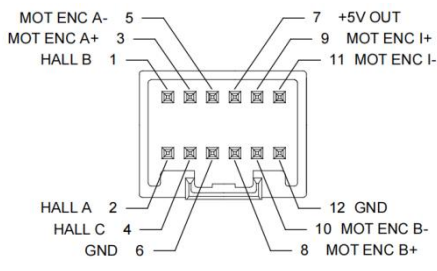| POWER AND MOTOR POWER - Power Connector		
Pin	**Name**	**Description / Notes**
1	HV	DC Power Input
2	GND	Power Ground (Common With Signal Ground)
3	LV	Logic Supply Input
4	PE	Protective Earth Ground (motor cable shield)
5	MC	Motor Phase C
6	MB	Motor Phase B
7	MA	Motor Phase A
Connector Information		3+4-port, 9.5 mm spaced, screw terminal
Mating Connector	Model	/
	Included with Drive	No
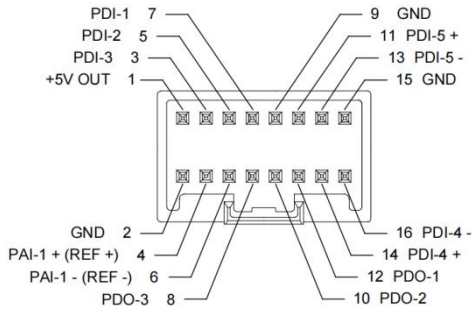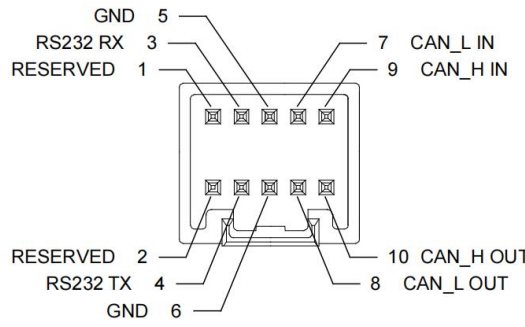
1HV   2GND   3LV   4PE   5MC   6MB   7MA

Feedback- Feedback Connector		
Pin	**Name**	**Description / Notes**
1	HALL B	Commutation Sensor Inputs
2	HALL A	Commutation Sensor Inputs
3	MOT ENC A+	Differential Encoder A Channel Input
4	HALL C	Commutation Sensor Inputs
5	MOT ENC A-	Differential Encoder A Channel Input (for single-ended signals use only the positive input)
6	GND	Ground
7	+5V OUTPUT	+5V Encoder Supply Output
8	MOT ENC B+	Differential Encoder B Channel Input
9	MOT ENC I+	Differential Encoder Index Input
10	MOT ENC B-	Differential Encoder B Channel Input (for single-ended signals use only the positive input)
11	MOT ENC I-	Differential Encoder Index Input (for single-ended signals use only the positive input)
12	GND	Ground
Connector Information		12-port, dual-row, 2.00 mm spaced plug terminal, vertical mount
Mating Connector	Model	Molex: P/N 51353-1200 (housing); 56134-9100 (contacts)
	Included with Drive	No

I/O- Signal Connector		
Pin	**Name**	**Description / Notes**
1	+5V OUT	+5V Encoder Supply Output
2	GND	Ground
3	PDI-3	Programmable digital input 3, or High Speed Capture A, or Aux Enc I
4	PAI-1 + (REF +)	Differential reference signal input, 12-bit resolution. Can also be used as programmable analog input 1.
5	PDI-2	Programmable digital input 2
6	PAI-1 - (REF -)	Differential reference signal input, 12-bit resolution. Can also be used as programmable analog input 1.
7	PDI-1	Programmable digital input 1
8	PDO-3	Programmable Digital Input
9	GND	Ground
10	PDO-2	Programmable digital output 2
11	PDI-5 +	Programmable, differential digital input or Direction+ or Aux Enc B+ or Capture C+
12	PDO-1	Programmable digital output 1

13	PDI-5 -	Programmable, differential digital input or Direction- or Aux Enc B- or Capture C-
14	PDI-4 +	Programmable differential digital input, or PWM+ or Aux Enc A+ or Capture B+
15	GND	Ground
16	PDI-4 -	Programmable differential digital input, or PWM- or Aux Enc A- or Capture B-
Connector Information		16-port, dual-row, 2.00 mm spaced plug terminal, vertical mount
Mating Connector	Model	Molex: P/N 51353-1600 (housing); 56134-9100 (contacts)
	Included with Drive	No

```
PDI-1  7 ──┐                  ┌── 9   GND
PDI-2  5 ──┐│                ┌│── 11  PDI-5 +
PDI-3  3 ──┐││              ┌││── 13  PDI-5 -
+5V OUT 1 ─┐│││            ┌│││── 15  GND
           ┌─────────────────────┐
           │ ⊠ ⊠ ⊠ ⊠ ⊠ ⊠ │
           │                     │
           │ ⊠ ⊠ ⊠ ⊠ ⊠ │
           └─────────────────────┘
      GND  2 ──┘││              ││└── 16  PDI-4 -
PAI-1 + (REF +) 4 ─┘│          │└── 14  PDI-4 +
PAI-1 - (REF -) 6 ──┘          └── 12  PDO-1
          PDO-3  8 ──           ── 10  PDO-2
```

		Communication Connector	
Pin	**Name**	**Description / Notes**	
1	RESERVED	Reserved	
2	RESERVED		
3	RS232 RX	Receive Line (RS-232) – Connect to TX port on PC	
4	RS232 TX	Transmit Line (RS-232) – Connect to RX port on PC	
5	GND	Ground	
6	GND		
7	CAN_L IN	CAN _L bus line (dominant low)	
8	CAN_L OUT		
9	CAN_H IN	CAN_H bus line (dominant high)	
10	CAN_H OUT		
Connector Information		10-port, dual-row, 2.00 mm spaced plug terminal, vertical mount	
Mating Connector	Model	Molex: P/N 51353-1000 (housing); 56134-9100 (contacts)	
	Included with Drive	No	

DIP Switch Functions

	10 Switch Functions(ADD/BAUD)		
Switch	Description	ON	OFF
1	Bit 0 of binary CANopen node ID[1]. Does not affect RS-232 settings	1	0
2	Bit 1 of binary CANopen node ID. Does not affect RS-232 settings	1	0
3	Bit 2 of binary CANopen node ID. Does not affect RS-232 settings	1	0
4	Bit 3 of binary CANopen node ID. Does not affect RS-232 settings	1	0
5	Bit 4 of binary CANopen node ID. Does not affect RS-232 settings	1	0
6	Bit 5 of binary CANopen node ID. Does not affect RS-232 settings	1	0
7	CAN baud rate setting	125kbits/sec	Load from non-volatile memory
8	CAN bus terminal resistance	120Ω	Nonterminating Node
9	RESERVED	/	/
10	RESERVED	/	/

Note：

1. If all bits of the ID controlling CANopen are OFF, the ID is subject to the setting in the DriveWare software.

MOUNTING DIMENSIONS

PART NUMBERING INFORMATION

Example：C Z C A N T E － 0 1 2 B 0 8 0 －

Drive Series	
CZ	CZ series

Communication	
C	CANopen
E	EtherCAT
S	EtherCAT Sub-node
p	POWERLINK / Modbus
R	RS485 / Modbus RTU

Command Inputs	
AN	Analog (±10V)
	No Step & Direction (5V)
AL	Analog (±10V)
	Low Voltage Step & Direction (5V)

Digital I/O	
I	Isolated (24V)
T	TTL(5V) Non-Isolated

Motor Feedback	
E	Incremental Encoder
R	Resolver
A	Absolute sin/cos (Hiperface & Endat)
S	Sin/cos and/or Halls
U	Universal (Halls, Inc. Enc., Abs. Enc, 1Vp-p Sin/Cos Enc.)

Customization*	

Max DC Bus Voltage	
080	80
200	175

Power and Logic Supply	
B	DC Input
	Both Logic Supply Options (Internal or User)

Peak Current（A）	
008	8
012	12
015	15
020	20
025	25
040	40
060	60

∗：AMC China provides customized services for extended , please contact local distributors.