

ECAT-2000 Series EtherCAT Slave I/O Modules User Manual

English

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SUPPORT

ECAT-2017

ECAT-2024/2028

ECAT-2045/2045-32/2050/2051/2051-32

ECAT-2052/2052-NPN

ECAT-2053/2055/2055-32

ECAT-2057/2057-NPN/2057-8P8N

ECAT-2060

ECAT-2061

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1. Introduction

The ECAT-2000 series are industrial EtherCAT slave remote I/O modules and equipped with the EtherCAT protocol and installed by daisy chain connection which permits the flexibility in devices installation and reduces infrastructure and operation costs. All the modules can be deployed in the network topologies such as star, line or ring. The isolated input and output design protects the ECAT-2000 against the harmful interference and environment.

The ECAT-2000 has passed and verified by the conformance test tool, therefore eligible EtherCAT Master or configurator can manipulate it simply and implement your various applications easily. Fig 1.1 is shown a typical EtherCAT application.

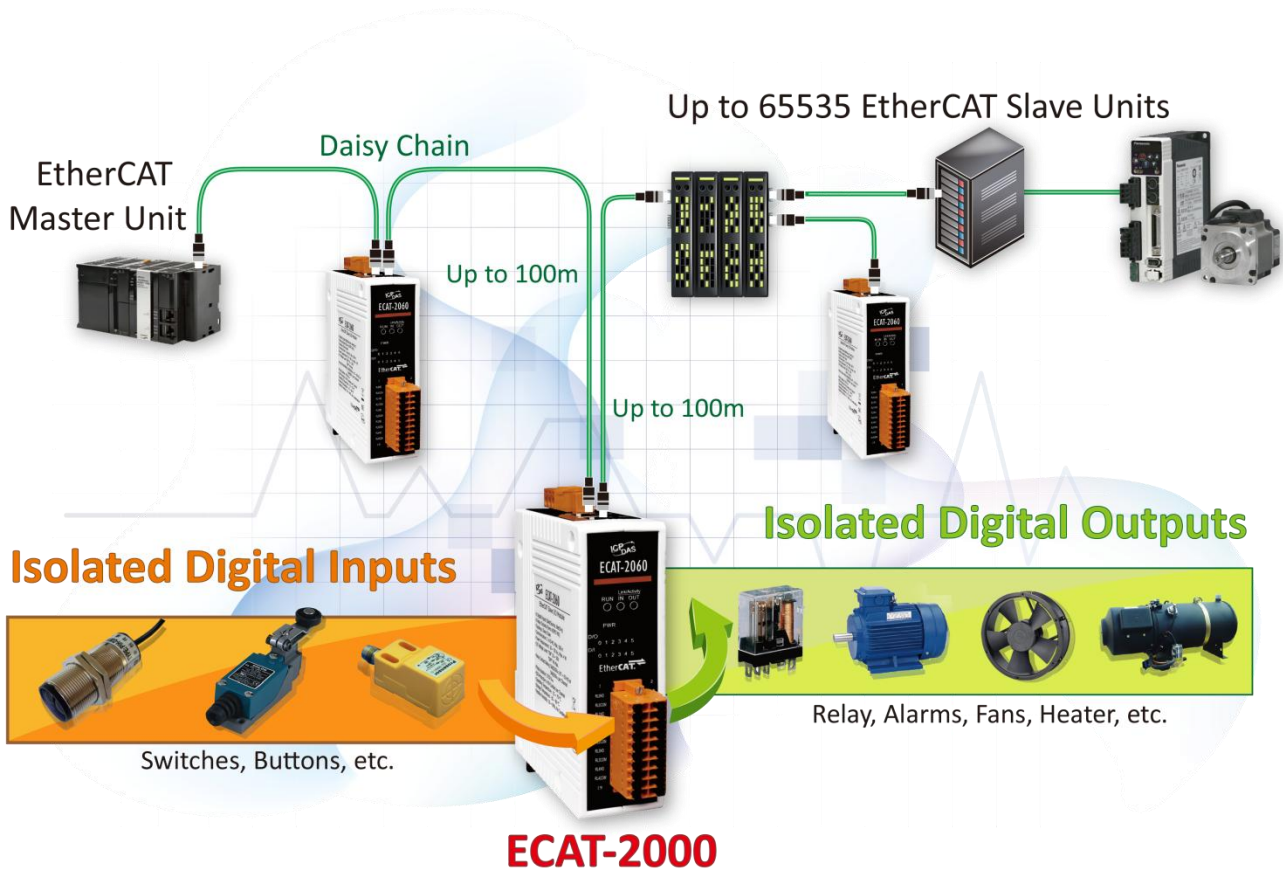


Figure 1.1 Typical Application of ECAT-2000

1.1 Package List

The shipping package includes the following items:



ECAT-2000



Quick Start



NOTE

If any of these items is missing or damaged, please contact your local distributor for more information. Keep the shipping materials and overall package in case you want to ship the module back in the future.

More Informaiton

- Manual/QuickStart/Datasheet:

http://ftp.icpdas.com/pub/cd/fieldbus_cd/ethercat/slave/ecat-2000/manual/

- XML Device Description(ESI):

http://ftp.icpdas.com/pub/cd/fieldbus_cd/ethercat/slave/ecat-2000/software/

- FAQ:

<http://www.icpdas.com/root/support/faq/faq.html>



1.2 Product Information

The ECAT-2000 series of EtherCAT slave modules support a range of I/O formats, such as photo-isolated digital input, relay contact ,and open-collector output, etc. The table below provides a description of each model.

Digital I/O

Model	Description
ECAT-2045	Isolated 16-ch Digital Outputs (Sink)
~Available soon~ ECAT-2045-32	Isolated 32-ch Digital Outputs (Sink)
ECAT-2050	Isolated 4-ch Digital Outputs (Sink/Source) and Isolated 13-ch Digital Inputs
ECAT-2051	Isolated 16-ch Digital Inputs (Wet/Dry)
ECAT-2051-32	Isolated 32-ch Digital Inputs (Wet/Dry)
ECAT-2052	Isolated 8-ch Digital Outputs (Source) and Isolated 8-ch Digital Inputs (Wet)
ECAT-2052-NPN	Isolated 8-ch Digital Outputs (Sink) and Isolated 8-ch Digital Inputs (Wet)
ECAT-2053	Isolated 16-ch Digital Inputs (Wet)
ECAT-2055	Isolated 8-ch Digital Outputs (Sink) and Isolated 8-ch Digital Inputs (Wet/Dry)
ECAT-2055-32	Isolated 16-ch Digital Outputs (Sink) and Isolated 16-ch Digital Inputs (Wet/Dry)
ECAT-2057	Isolated 16-ch Digital Outputs (Source)
ECAT-2057-NPN	Isolated 16-ch Digital Outputs (Sink)
ECAT-2057-8P8N	Isolated 8-ch Source Digital Outputs and 8-ch Sink Digital Outputs
ECAT-2060	Isolated 6-ch Relay Outputs and Isolated 6-ch Digital Inputs (Wet/Dry)
~Available soon~ ECAT-2061	Isolated 16-ch Relay Outputs

Analog Output

Model	Description
~Available soon~ ECAT-2024	Isolated 4-ch, 12-bit, Analog Outputs
~Available soon~ ECAT-2028	Isolated 8-ch, 12-bit, Analog Outputs

Analog Input

Model	Description
~Available soon~ ECAT-2017	Isolated 16-ch S.E./8-ch Diff. Analog Inputs

1.3 Selection Guide

DC Digital I/O					
Model	Digital Input		Digital Output		
	Channel	Type	Channel	Type	Max. Load Current
ECAT-2057	-	-	16	Open Emitter(Source)	100 mA/ch
ECAT-2057-NPN	-	-	16	Open Collector(Sink)	100 mA/ch
ECAT-2057-8P8N	-	-	8	Open Collector(Sink)	100 mA/ch
			8	Open Emitter(Source)	100 mA/ch
ECAT-2045	-	-	16	Open Collector(Sink)	700 mA/ch
ECAT-2045-32	-	-	32	Open Collector(Sink)	600 mA/ch
ECAT-2051	16	Dry (Source), Wet (Sink/Source)	-	-	-
ECAT-2051-32	32	Dry (Source), Wet (Sink/Source)	-	-	-
ECAT-2050	13	Dry (Source), Wet (Sink/Source)	4	Open Collector/Emitter (Jumper Selectable)	100 mA/ch
ECAT-2052	8	Wet (Sink/Source)	8	Open Emitter(Source)	100 mA/ch
ECAT-2052-NPN	8	Wet (Sink/Source)	8	Open Collector(Sink)	100 mA/ch
ECAT-2053	16	Wet (Sink/Source)	-	-	-
ECAT-2055	8	Dry (Source), Wet (Sink/Source)	8	Open Collector(Sink)	700 mA/ch
ECAT-2055-32	16	Dry (Source), Wet (Sink/Source)	16	Open Collector(Sink)	700 mA/ch
ECAT-2060	6	Dry (Source), Wet (Sink/Source)	6	Relay, Form A (SPST-NO)	5A/ch
ECAT-2061	-	-	16	Relay, Form A (SPST-NO)	5A/ch

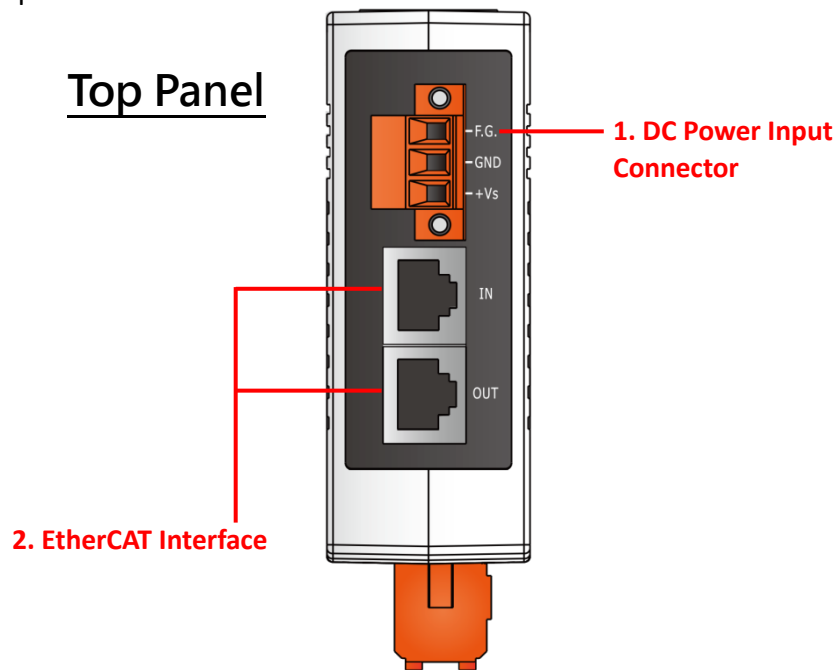
Analog Output						
Model	AO					
	Resolution	Channel	Voltage Output	Current Output	Accuracy	Output Capability
ECAT-2024	12-bit	4	0 ~ 5 V, +/- 5 V, 0 ~ 10 V, +/- 10 V	-	±2 LSB	10V @ 5mA
ECAT-2028	12-bit	8	0 ~ 5 V, +/- 5 V, 0 ~ 10 V, +/- 10 V	-	±2 LSB	10V @ 5mA

Analog Input						
Model	AI					
	Resolution	Channel	Input Range	Sensor Input	Accuracy	Output Capability
ECAT-2017	12-bit	8 Diff 16 S.E	0 ~ 10 V, +/- 2.5 V, +/- 5 V, +/- 10 V	-	0.2% of LSB	1k Hz per Channel

2. Hardware Information

2.1 Appearance

The front panel and top panel of the ECAT-2000 series module contain the I/O connector, LEDs, Ethernet Port and power connector.



1. DC Power Input Connector

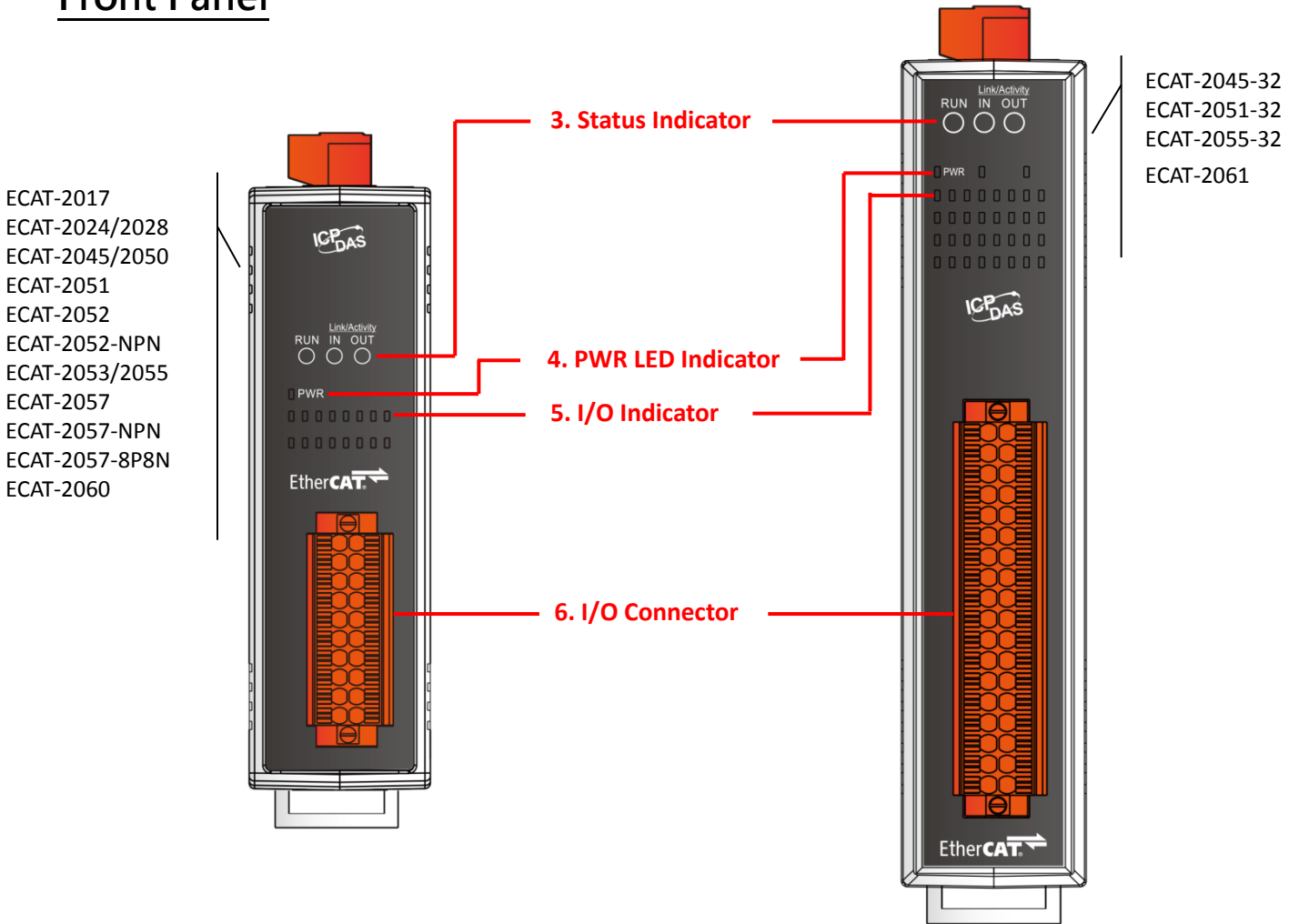
The definition for “+Vs” and “GND” for use as the power supply applies to all types of ECAT-2000 series module. The valid power voltage range is from **+10 to +30 V_{DC}**.

The definition for “**F.G.**” (**Frame Ground**): Electronic circuits are constantly vulnerable to Electrostatic Discharge (ESD), which becomes worse in a continental climate area. ECAT-2000 series module feature a new design for the frame ground, which provides a path that bypasses ESD, resulting in an enhanced ESD protection capability and ensuring that the module is more reliable.

2. EtherCAT Interface

ECAT-2000 series module are equipped with two RJ-45 EtherCAT Interface ports. IN is EtherCAT signal input port that connect EtherCAT Master or EtherCAT signal output of previous EtherCAT slave module. OUT is EtherCAT signal output that connect the next EtherCAT signal input of EtherCAT slave module.

Front Panel



3. Status Indicator

Notation	Color	States	Description
RUN	Green	Off	The device is in state INIT
		Blinkin	The device is in state PRE-OPERARIONAL
		Single Flash	The device is in state SAFE-OPERARIONAL
		On	The device is in state OPERARIONAL
Link Activity IN/OUT	Green	Off	No link
		Blinking	Link and activity
		On	Link without activity

4. PWR LED Indicator

Once power is supplied to the ECAT-2000 series module, the system LED indicator will illuminate.

5. I/O Indicator

The exact design and functionality depends on the module type which indicates the I/O status.

Notation	Color	States	Description
DI	Green	Off	Input voltage is below the lower switching threshold voltage
		On	Input voltage is higher than the upper switching threshold voltage
DO	Green	Off	Digital output status is "Off"
		On	Digital output status is "On"

6. I/O Connector

For more detailed information regarding the pin assignments for the I/O connector, refer to [Section 2.3 "Pin Assignments"](#).

2.2 Specification

2.2.1 System Specification

Item	Specification
Communication	
Ethernet Port	2 x RJ-45, 100 BASE-TX
Protocol	EtherCAT
Distance between Station	Max. 100 m (100 BASE-TX)
Data Transfer Medium	Ethernet/EtherCAT Cable (Min. CAT 5), Shielded
LED Indicators	
PWR	1
L/A IN (Link/Activity IN)	1
L/A OUT (Link/Activity OUT)	1
RUN	1
EMS Protection	
ESD (IEC 61000-4-2)	4 KV Contact for Each Channel
EFT (IEC 61000-4-4)	Power: 1 KV Class A; Signal: 1 KV Class A
Surge (IEC 61000-4-5)	1 KV Class A
Hi-Pot	1KV Class A
Power	
Powered from Terminal Block	+10 ~ +30 V _{DC}
Power Consumption	4 W (Max.)
Mechanical	
Installation	DIN-Rail Mounting
Environment	
Operating Temperature	-25 ~ +75°C
Storage Temperature	-30 ~ +80°C
Relative Humidity	10 ~ 90% RH, Non-condensing

Model	ECAT-2017 ECAT-2024/2028 ECAT-2045/2050/2051 ECAT-2052/2052-NPN ECAT-2053/2055 ECAT-2057/2057-NPN/2057-8P8N ECAT-2060	ECAT-2045-32 ECAT-2051-32 ECAT-2055-32 ECAT-2061
Dimensions (L x W x H)	110 mm x 90 mm x 33 mm	140 mm x 112.2 mm x 31 mm

2.2.2 I/O Specification

ECAT-2017

Model	ECT-2017
Analog Input	
Channels	8/16
Wire Connection	8 Differential or 16 Single-ended (Software Selectable)
Type	Voltage, Current
Range	0~10V, ±10 V, ±5 V, ±2.5 V, 0~ 20 mA, ±20 mA or 4~20mA (Software selectable)
Resolution	12-bit
Accuracy	0.2% of FSR
Individual Channel Configuration	Yes
Over Voltage Protection	±35 V _{DC}
Open Wire Detection for +4 ~ +20mA	Yes

ECAT-2024/2028

Model	ECT-2024	ECAT-2028
Analog Output		
Channels	4	8
Range	±5 V, ±10 V, 0~5V, 0~10V	
Resolution	12-bit	
Accuracy	+/- 0.1% of FSR	
Zero Drift	+/- 30 μV/°C	
Span Drift	+/- 25 ppm/°C	

ECAT-2045/2045-32

Model	ECT-2045	ECAT-2045-32
Digital Output		
Channels	16	32
Type	Open collector	
Sink/Source (NPN/PNP)	Sink	
Load Voltage	+3.5 V ~ +50 V	
Max. Load Current	700 mA/Channel	
Isolation Voltage	3750 Vrms	

ECAT-2051/2051-32

Model	ECAT-2051	ECAT-2051-32
Digital Input		
Channels	16	32
Contact	Dry/Wet	
Sink/Source (NPN/PNP)	Dry:Sink Wet:Sink/Source	
On Voltage Level	Dry:Close to GND Wet:+10 V _{DC} ~ +50 V _{DC}	
Off Voltage Level	Dry:Open Wet:+4 V _{DC} Max.	
Isolation Voltage	3750 V _{DC}	

ECAT-2052/2052-NPN

Model	ECAT-2052	ECAT-2052-NPN
Digital Input		
Channels	8	
Contact	Wet	
Sink/Source (NPN/PNP)	Sink/Source	
On Voltage Level	+3.5 V _{DC} ~ +50 V _{DC}	
Off Voltage Level	+2 V _{DC} Max.	
Isolation Voltage	3750 V _{DC}	
Digital Output		
Channels	8	
Type	Open emitter	Open collector
Sink/Source (NPN/PNP)	Source	Sink
Load Voltage	+3.5 V ~ +50 V	
Max. Load Current	700 mA/Channel	
Isolation Voltage	3750 Vrms	

ECAT-2053

Model	ECAT-2053
Digital Input	
Channels	16
Contact	Wet
Sink/Source (NPN/PNP)	Sink/Source
On Voltage Level	Wet:+3.5 V _{DC} ~ +50 V _{DC}
Off Voltage Level	Wet:+2 V _{DC} Max.
Isolation Voltage	3750 V _{DC}

ECAT-2055/2055-32

Model	ECAT-2055	ECAT-2055-32
Digital Input		
Channels	8	16
Contact	Dry/Wet	
Sink/Source (NPN/PNP)	Dry:Sink Wet:Sink/Source	
On Voltage Level	Dry:Close to GND Wet:+10 V _{DC} ~ +50 V _{DC}	
Off Voltage Level	Dry:Open Wet:+4 V _{DC} Max.	
Isolation Voltage	3750 V _{DC}	
Digital Output		
Channels	8	16
Type	Open collector	
Sink/Source (NPN/PNP)	Sink	
Load Voltage	+3.5 V ~ +50 V	
Max. Load Current	700 mA/Channel	
Isolation Voltage	3750 Vrms	

ECAT-2057/2057-NPN/2057-8P8N

Model	ECT-2057	ECAT-2057-NPN	ECAT-2057-8P8N
Digital Output			
Channels	16	16	16(8 NPN,8 PNP)
Type	Open emitter	Open collector	Open collector/emitter
Sink/Source (NPN/PNP)	Source	Sink	Sink/Source
Load Voltage	+3.5 V ~ +50 V		
Max. Load Current	100 mA/Channel		
Isolation Voltage	3750 Vrms		

ECAT-2050



Model	ECAT-2050
Digital Input	
Channels	13
Contact	Wet(Sink/Source)
Sink/Source (NPN/PNP)	Sink/Source
On Voltage Level	+3.5 V _{DC} ~ +50 V _{DC}
Off Voltage Level	:+2 V _{DC} Max.
Isolation Voltage	3750 V _{DC}
Digital Output	
Channels	4
Type	Open collector/emitter
Sink/Source (NPN/PNP)	Sink/Source
Load Voltage	+3.5 V ~ +50 V
Max. Load Current	100 mA/Channel
Isolation Voltage	3750 Vrms

ECAT-2060/2061

Model	ECAT-2060	ECAT-2061
Digital Input		
Channels	6	-
Contact	Dry/Wet	
Sink/Source (NPN/PNP)	Dry:Sink Wet:Sink/Source	
On Voltage Level	Dry:Close to GND Wet:+10 V _{DC} ~ +50 V _{DC}	
Off Voltage Level	Dry:Open Wet:+4 V _{DC} Max.	
Isolation Voltage	3750 V _{DC}	
Digital Output		
Channels	6	16
Type	Form A (SPST-NO)	
Contact Rating (Resistive Load)	5 A @30 V _{DC} 5 A @ 125/250 V _{AC} (47 ~ 63 Hz)	3 A @30 V _{DC} 3 A @ 125/250 V _{AC} (47 ~ 63 Hz)
Operate Time	10 ms Max.	
Release Time	5 ms Max.	
Mechanical Endurance	2 x 10 ⁷ Ops.	
Electrical Endurance	10 ⁵ Ops.	


2.3 Pin Assignments

EtherCAT Interface


Terminal No.	Pin Assignment
PWR	F.G.
	GND
	+ Vs
IN	
OUT	

ECAT-2017


Terminal No.	Pin Assignment	Pin Assignment	Terminal No.
1	V0-	V0+	2
3	V1-	V1+	4
5	V2-	V2+	6
7	V3-	V3+	8
9	V4-	V4+	10
11	V5-	V5+	12
13	V6-	V6+	14
15	V7-	V7+	16
17	AGND	AGND	18
19	AGND	AGND	20




ECAT-2024

Terminal No.	Pin Assignment		Pin Assignment	Terminal No.
1	VOUT0		VOUT1	2
3	GND		GND	4
5	VOUT2		VOUT3	6
7	GND		GND	8
9	N/A		N/A	10
11	N/A		N/A	12
13	N/A		N/A	14
15	N/A		N/A	16
17	F.G.		F.G.	18
19	F.G.		F.G.	20

ECAT-2028

Terminal No.	Pin Assignment		Pin Assignment	Terminal No.
1	VOUT0		VOUT1	2
3	GND		GND	4
5	VOUT2		VOUT3	6
7	GND		GND	8
9	VOUT4		VOUT5	10
11	GND		GND	12
13	VOUT6		VOUT7	14
15	GND		GND	16
17	F.G.		F.G.	18
19	F.G.		F.G.	20

ECAT-2045/2057/2057-NPN/2057-8P8N

Terminal No.	Pin Assignment		Pin Assignment	Terminal No.
1	EXT.GND		EXT.GND	2
3	DO0		DO8	4
5	DO1		DO9	6
7	DO2		DO10	8
9	DO3		DO11	10
11	DO4		DO12	12
13	DO5		DO13	14
15	DO6		DO14	16
17	DO7		DO15	18
19	EXT.PWR		EXT.PWR	20

ECAT-2051

Terminal No.	Pin Assignment
1	GND
3	DI0
5	DI1
7	DI2
9	DI3
11	DI4
13	DI5
15	DI6
17	DI7
19	DI.COM



Pin Assignment	Terminal No.
GND	2
DI8	4
DI9	6
DI10	8
DI11	10
DI12	12
DI13	14
DI14	16
DI15	18
DI.COM	20

ECAT-2052/2052-NPN

Terminal No.	Pin Assignment
1	EXT.GND
3	DO0
5	DO1
7	DO2
9	DO3
11	DO4
13	DO5
15	DO6
17	DO7
19	EXT.PWR



Pin Assignment	Terminal No.
N.C.	2
DI0	4
DI1	6
DI2	8
DI3	10
DI4	12
DI5	14
DI6	16
DI7	18
DI.COM	20

ECAT-2053

Terminal No.	Pin Assignment
1	N.C.
3	DI0
5	DI1
7	DI2
9	DI3
11	DI4
13	DI5
15	DI6
17	DI7
19	DI.COM



Pin Assignment	Terminal No.
N.C.	2
DI8	4
DI9	6
DI10	8
DI11	10
DI12	12
DI13	14
DI14	16
DI15	18
DI.COM	20

ECAT-2055

Terminal No.	Pin Assignment
1	EXT.GND
3	DO0
5	DO1
7	DO2
9	DO3
11	DO4
13	DO5
15	DO6
17	DO7
19	EXT.PWR



Pin Assignment	Terminal No.
GND	2
DI0	4
DI1	6
DI2	8
DI3	10
DI4	12
DI5	14
DI6	16
DI7	18
DI.COM	20

ECAT-2060

Terminal No.	Pin Assignment
1	NO0
3	COM0
5	NO1
7	COM1
9	NO2
11	COM2
13	NO3
15	COM3
17	NO4
19	COM4



Pin Assignment	Terminal No.
GND	2
DI0	4
DI1	6
DI2	8
DI3	10
DI4	12
DI5	14
DI.COM	16
NO5	18
COM5	20


ECAT-2050

Terminal No.	Pin Assignment
1	DI.COM
3	DI1
5	DI3
7	DI5
9	DI7
11	DI9
13	DI11
15	DO3
17	DO1
19	EXT.PWR




Pin Assignment	Terminal No.
DI0	2
DI2	4
DI4	6
DI6	8
DI8	10
DI10	12
DI12	14
DO2	16
DO0	18
EXT.GND	20

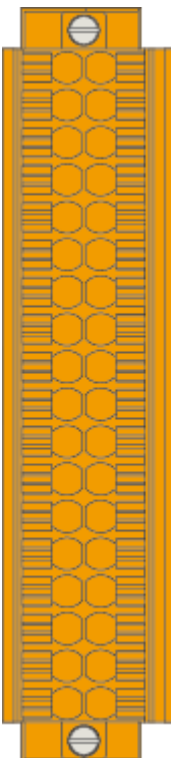
ECAT-2045-32

Terminal No.	Pin Assignment		Pin Assignment	Terminal No.
1	EXT.PWR		EXT.PWR	19
2	DO0		DO16	20
3	DO1		DO17	21
4	DO2		DO18	22
5	DO3		DO19	23
6	DO4		DO20	24
7	DO5		DO21	25
8	DO6		DO22	26
9	DO7		DO23	27
10	DO8		DO24	28
11	DO9		DO25	29
12	DO10		DO26	30
13	DO11		DO27	31
14	DO12		DO28	32
15	DO13		DO29	33
16	DO14		DO30	34
17	DO15		DO31	35
18	EXT.GND		EXT.GND	36


ECAT-2051-32

Terminal No.	Pin Assignment		Pin Assignment	Terminal No.
1	GND		GND	19
2	DI16		DI0	20
3	DI17		DI1	21
4	DI18		DI2	22
5	DI19		DI3	23
6	DI20		DI4	24
7	DI21		DI5	25
8	DI22		DI6	26
9	DI23		DI7	27
10	DI24		DI8	28
11	DI25		DI9	29
12	DI26		DI10	30
13	DI27		DI11	31
14	DI28		DI12	32
15	DI29		DI13	33
16	DI30		DI14	34
17	DI31		DI15	35
18	DI.COM		DI.COM	36

ECAT-2055-32

Terminal No.	Pin Assignment		Pin Assignment	Terminal No.
1	EXT.GND		GND	19
2	DO0		DI0	20
3	DO1		DI1	21
4	DO2		DI2	22
5	DO3		DI3	23
6	DO4		DI4	24
7	DO5		DI5	25
8	DO6		DI6	26
9	DO7		DI7	27
10	DO8		DI8	28
11	DO9		DI9	29
12	DO10		DI10	30
13	DO11		DI11	31
14	DO12		DI12	32
15	DO13		DI13	33
16	DO14		DI14	34
17	DO15		DI15	35
18	EXT.PWR		DI.COM	36

ECAT-2061

Terminal No.	Pin Assignment		Pin Assignment	Terminal No.
1	NO0		COM0	19
2	NO1		COM1	20
3	NO2		COM2	21
4	NO3		COM3	22
5	NO4		COM4	23
6	NO5		COM5	24
7	NO6		COM6	25
8	NO7		COM7	26
9	N/A		N/A	27
10	N/A		N/A	28
11	NO8		COM8	29
12	NO9		COM9	30
13	NO10		COM10	31
14	NO11		COM11	32
15	NO12		COM12	33
16	NO13		COM13	34
17	NO14		COM14	35
18	NO15		COM15	36

2.4 Wiring Connections

Input Wiring

Model	Digital Input/Counter	Readback as 1	Readback as 0
ECAT-2051 ECAT-2051-32 ECAT-2055 ECAT-2055-32 ECAT-2060	Dry Contact	Close to GND 	Open
		ECAT-2051 ECAT-2051-32 ECAT-2052 ECAT-2052-NPN ECAT-2055 ECAT-2055-32 ECAT-2060 ECAT-2053	Sink
Source	+10 ~ +50 VDC 		OPEN or <4 VDC

Output Wiring

Model	Output Type	ON State Readback as 1	OFF State Readback as 0
ECAT-2052-NPN ECAT-2055 ECAT-2055-32 ECAT-2045 ECAT-2045-32 ECAT-2057-NPN ECAT-2057-8P8N(DO8-15)	Driver Relay		
	Resistance Load		

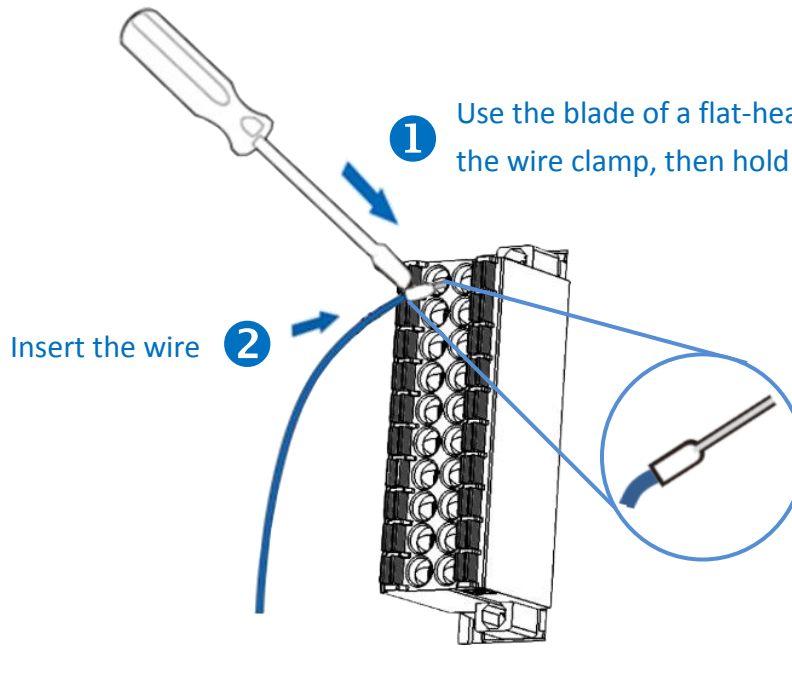
Model	Output Type	ON State Readback as 1	OFF State Readback as 0
ECAT-2052 ECAT-2057 ECAT-2057-8P8N(DO0-7)	Inductive Load		
	Resistance Load		

Model	Output Type	ON State Readback as 1	OFF State Readback as 0
ECAT-2060 ECAT-2061	Relay Output		

Model	Output Type	Voltage Output
ECAT-2024 ECAT-2028	Analog Output	

2.5 Wiring to the Connector

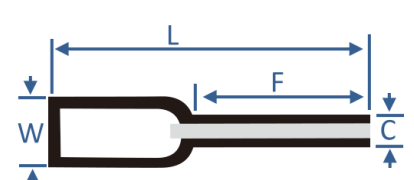
A tip for connection the wire to the connector



1 Use the blade of a flat-head screwdriver to push the wire clamp, then hold until step 2 complete.

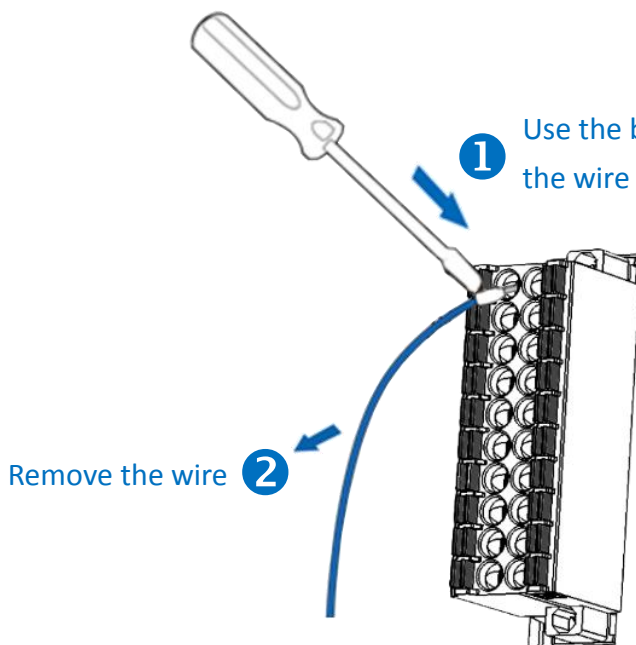
2 Insert the wire

Insulated Terminals Dimensions



Dimensions (Unit: mm)				
Item NO.	F	L	C	W
CE007512	12.0	18.0	1.2	2.8

A tip for removing the wire from the connector



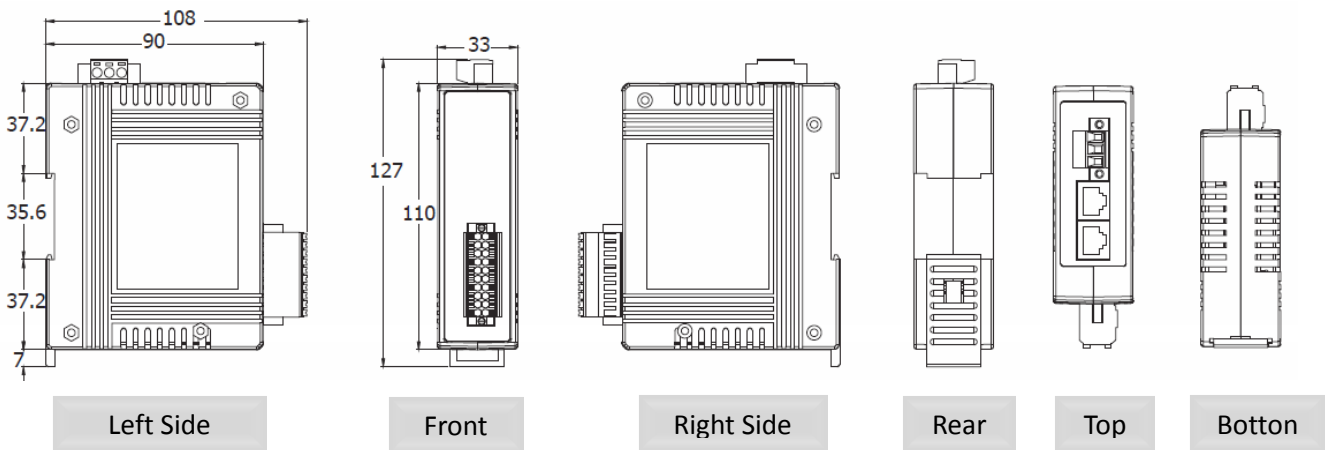
1 Use the blade of a flat-head screwdriver to push the wire clamp, then hold until step 2 complete.

2 Remove the wire

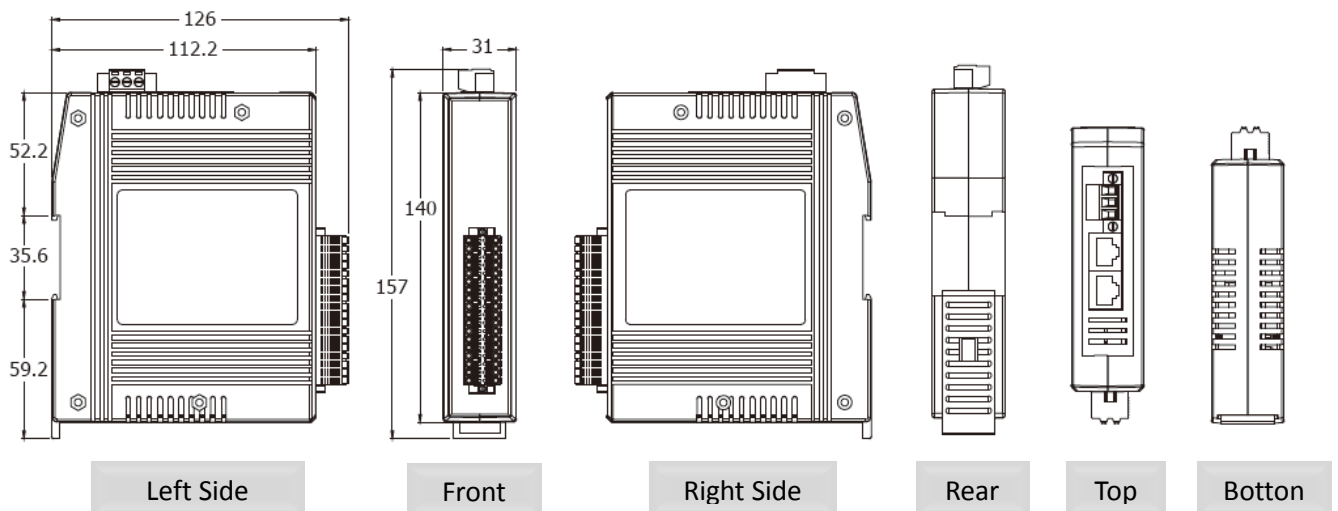
2.6 Dimensions

The following diagrams provide the dimensions of the ECAT-2000 series module and can be used as a reference when defining the specifications for any custom enclosures. All dimensions are in millimeters.

ECAT-2017/2024/2028/2045/2050/2051/2052/2053/2055/2057/2060 Series



ECAT-2045-32/2051-32/2055-32/2061 Series



3. Getting Started

This chapter provides a basic overview of how to configure and operate your ECAT-2000 series module.

3.1 Connecting the Power and the Host PC

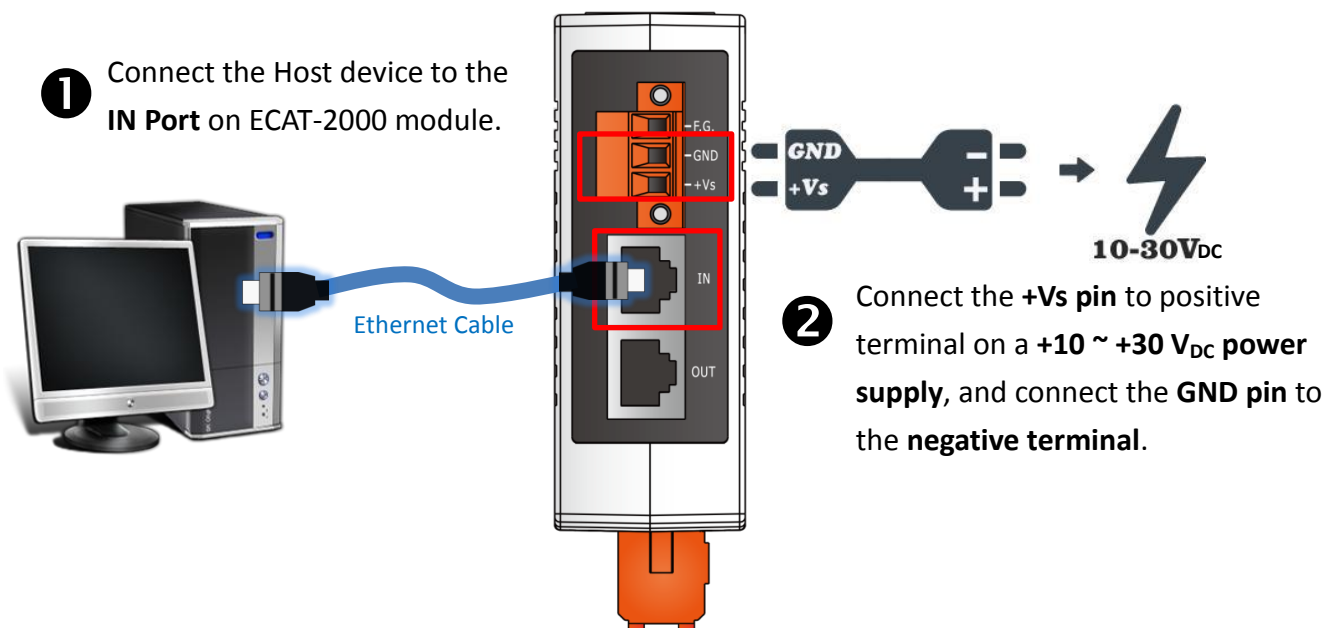
Step 1

Connect both the IN port of ECAT-2000 module and RJ-45 Ethernet port of Host PC.

Ensure that the network settings on the Host PC have been correctly configured and are functioning normally. Ensure that the Windows firewall or any Anti-Virus firewall is properly configured to allow incoming connections, or temporarily disable these functions.

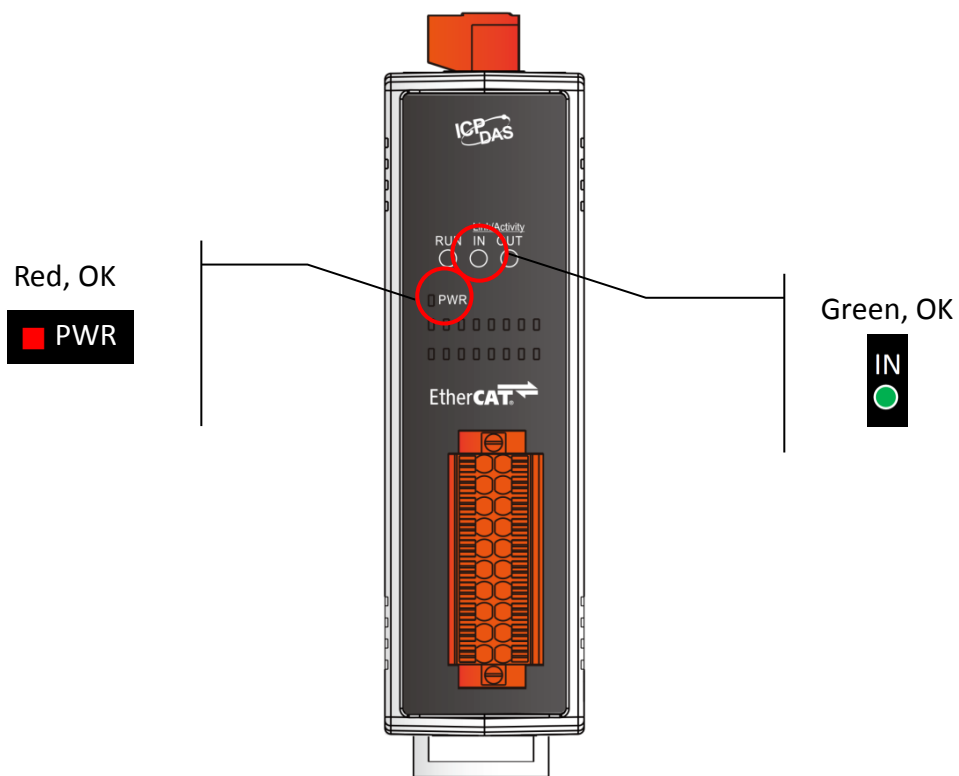
Step 2

Apply power to the ECAT-2000 module.



Step 3

Verify the “PWR” LED indicator on the ECAT-2000 modul is Red, “IN” LED indicator is Green.



3.2 Configuration and Operation

Beckhoff TwinCAT 2.X is most commonly used EtherCAT Master software to operate ECAT-2000 moduel.

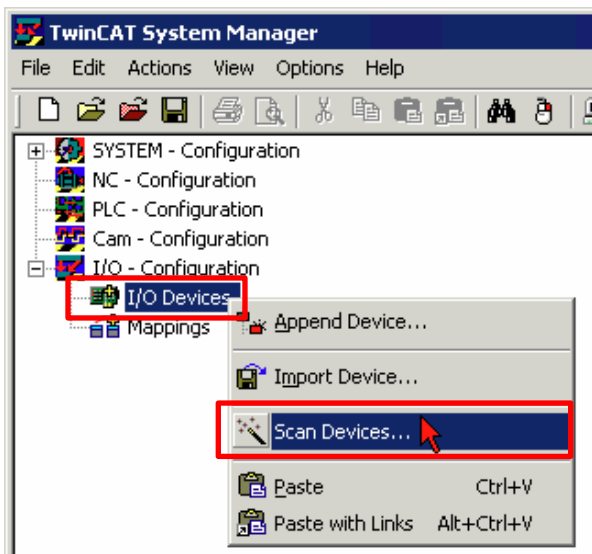
Inserting into the EtherCAT network

	Installation of the latest XML device description(ESI)
NOTE	Please ensure that you have installed the latest XML device description in TwinCAT. This can be downloaded from the ICP DAS website (http://ftp.icpdas.com/pub/cd/fieldbus_cd/ethercat/slave/ecat-2000/software/) and installed according to the installation instructions.

Step 1

Automatic Scanning

- The EtherCAT system must be in a safe, de-energized state before the ECAT-2000 module connected to EtherCAT network!
- Switch on the operating voltage, open the TwinCAT System Manager(Config mode), and scan in the devices(below the picture). Acknowledge all dialogs with “OK”, so that the configuration is in “FreeRun” mode.

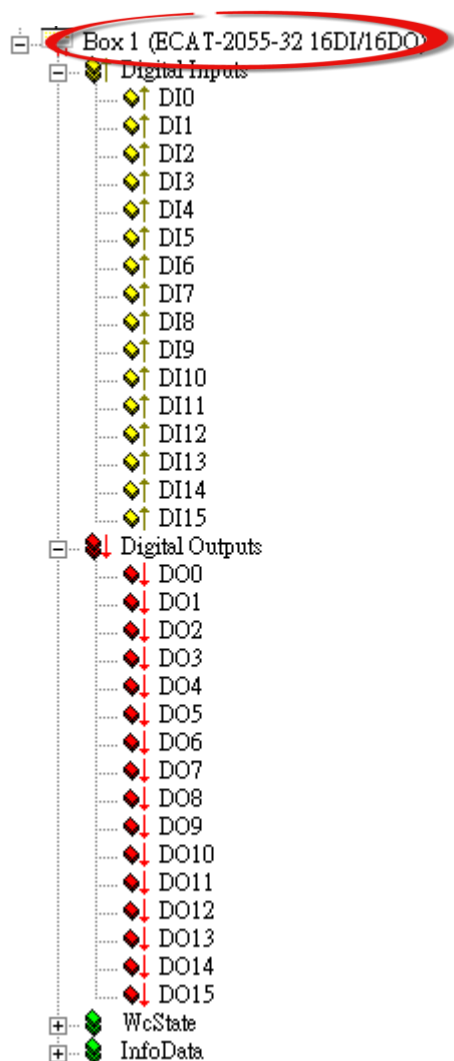


Scanning in the configuration
(I/O Devices-> right-click-> Scan Devices...)

Step 2

Configuration via TwinCAT

In the left-hand of the TwinCAT System Manager, click on the branch of the EtherCAT Box you wish to configure (ECAT-2055-32 in this example). Click DIx or DOx to get and configure state.



4. Object Description and Parameterization

4.1 Standard Object(0x1000-0x1FFF)

➤ [ALL]Index 1000 Device Type

Index	Name	Meaning	Data type	Flags	Default
1000:00	Device type	Device type of the EtherCAT slave: the Lo-Word contains the CoE profile used (5001). The Hi-Word contains the module profile according to the modular device profile.	UINT32	RO	0x00000192 (402dec)

➤ [ALL]Index 1008 Device name

Index	Name	Meaning	Data type	Flags	Default
1008:00	Device name	EtherCAT Slave Device Name	String	RO	Refer to following table

Table 4-1: Device Name

Model	Device Name	Model	Device Name
ECAT-2017	ECAT-2017 16AI	ECAT-2053	ECAT-2053 16DI
ECAT-2024	ECAT-2024 4AO	ECAT-2055	ECAT-2055 8DI/8DO
ECAT-2028	ECAT-2028 8AO	ECAT-2055-32	ECAT-2055-32 16DI/16DO
ECAT-2045	ECAT-2045 16DO	ECAT-2057	ECAT-2057 16DO
ECAT-2045-32	ECAT-2045-32 32DO	ECAT-2057-NPN	ECAT-2057-NPN 16DO
ECAT-2050	ECAT-2050 13DI/4DO	ECAT-2057-8P8N	ECAT-2057-8P8N 16DO
ECAT-2051	ECAT-2051 16DI	ECAT-2060	ECAT-2060 6DO
ECAT-2051-32	ECAT-2051-32 32DI	ECAT-2061	ECAT-2061 16DO
ECAT-2052	ECAT-2052 8DI/8DO	ECAT-2092	ECAT-2092 2ENC
ECAT-2052-NPN	ECAT-2052-NPN 8DI/8DO	ECAT-2093	ECAT-2093 3ENC

➤ [ALL]Index 1009 Hardware version

Index	Name	Meaning	Data type	Flags	Default
1009:00	Hardware version	Hardware version of the EtherCAT slave	String	RO	0.7

➤ [ALL]Index 100A Software version

Index	Name	Meaning	Data type	Flags	Default
100A:00	Software version	Firmware version for EtherCAT slave	String	RO	1.4

➤ [ALL]Index 1018 Identity

Index	Name	Meaning	Data type	Flags	Default
1018:00	Identity	Information for identifying the slave	INT8	RO	0x04(4dec)
1018:01	Vendor ID	Vendor ID of the EtherCAT slave	UINT32	RO	0x00494350 (4801360dec)
1018:02	Product code	Product code of the EtherCAT slave	UINT32	RO	Refer to following table
1018:03	Revision	Revision number of the EtherCAT slave;	UINT32	RO	Depend on device
1018:04	Serial number	Serial number of the EtherCAT slave	UINT32	RO	Depend on device

Table 4-2: Product Code

Model	Product Code	Model	Product Code
ECAT-2017	0x7E1(2017dec)	ECAT-2053	0x805(2053dec)
ECAT-2024	0x7E8(2024dec)	ECAT-2055	0x807(2055dec)
ECAT-2028	0x7EC(2028dec)	ECAT-2055-32	0x807(2055dec)
ECAT-2045	0x7EC(2045dec)	ECAT-2057	0x809(2057dec)
ECAT-2045-32	0x7EC(2045dec)	ECAT-2057-NPN	0x809(2057dec)
ECAT-2050	0x802(2050dec)	ECAT-2057-8P8N	0x809(2057dec)
ECAT-2051	0x803(2051dec)	ECAT-2060	0x80C(2060dec)
ECAT-2051-32	0x803(2051dec)	ECAT-2061	0x80D(2061dec)
ECAT-2052	0x804(2052dec)	ECAT-2092	0x82C(2092dec)
ECAT-2052-NPN	0x804(2052dec)	ECAT-2093	0x82D(2093dec)

➤ [ECAT-2050]Index 160n(0<=n<=3) DO Outputs process data mapping

Index	Name	Meaning	Data type	Flags	Default
160n:00	DO Output process data mapping	PDO Mapping RxPDO n+1	UINT8	RO	0x02(2dec)
160n:01	SubIndex 001	PDO Mapping entry (object 0x70n0,entry 0x01)	UINT32	RO	0x70n0:01,1
160n:02	SubIndex 002	PDO Mapping entry (object 0x70n0,entry 0x02)	UINT32	RO	0x70n0:02,31

➤ [ECAT-2055-32]Index 1600 DO Outputs process data mapping

Index	Name	Meaning	Data type	Flags	Default
1600:00	DO Output process data mapping	PDO Mapping RxPDO 1	UINT8	RO	0x11(17dec)
1600:01	SubIndex 001	PDO Mapping entry (object 0x7000,entry 0x01)	UINT32	RO	0x7000:01,1
1600:02	SubIndex 002	PDO Mapping entry (object 0x7000,entry 0x02)	UINT32	RO	0x7000:02,1
1600:03	SubIndex 003	PDO Mapping entry (object 0x7000,entry 0x03)	UINT32	RO	0x7000:03,3
1600:04	SubIndex 004	PDO Mapping entry (object 0x7000,entry 0x04)	UINT32	RO	0x7000:04,1
1600:05	SubIndex 005	PDO Mapping entry (object 0x7000,entry 0x05)	UINT32	RO	0x7000:05,1
1600:06	SubIndex 006	PDO Mapping entry (object 0x7000,entry 0x06)	UINT32	RO	0x7000:06,1
1600:07	SubIndex 007	PDO Mapping entry (object 0x7000,entry 0x07)	UINT32	RO	0x7000:07,1
1600:08	SubIndex 008	PDO Mapping entry (object 0x7000,entry 0x08)	UINT32	RO	0x7000:08,1
1600:09	SubIndex 009	PDO Mapping entry (object 0x7000,entry 0x09)	UINT32	RO	0x7000:09,1
1600:0A	SubIndex 010	PDO Mapping entry (object 0x7000,entry 0x0A)	UINT32	RO	0x7000:0A,1
1600:0B	SubIndex 011	PDO Mapping entry (object 0x7000,entry 0x0B)	UINT32	RO	0x7000:0B,1
1600:0C	SubIndex 012	PDO Mapping entry (object 0x7000,entry 0x0C)	UINT32	RO	0x7000:0C,1
1600:0D	SubIndex 013	PDO Mapping entry (object 0x7000,entry 0x0D)	UINT32	RO	0x7000:0D,1
1600:0E	SubIndex 014	PDO Mapping entry (object 0x7000,entry 0x0E)	UINT32	RO	0x7000:0E,1
1600:0F	SubIndex 015	PDO Mapping entry (object 0x7000,entry 0x0F)	UINT32	RO	0x7000:0F,1
1600:10	SubIndex 016	PDO Mapping entry (object 0x7000,entry 0x10)	UINT32	RO	0x7000:10,1

➤ [ECAT-2045-32]Index 1600 DO Outputs process data mapping

Index	Name	Meaning	Data type	Flags	Default
1600:00	DO Output process data mapping	PDO Mapping RxPDO 1	UINT8	RO	0x21(33dec)
1600:01	SubIndex 001	PDO Mapping entry (object 0x7000,entry 0x01)	UINT32	RO	0x7000:01,1
1600:02	SubIndex 002	PDO Mapping entry (object 0x7000,entry 0x02)	UINT32	RO	0x7000:02,1
1600:03	SubIndex 003	PDO Mapping entry (object 0x7000,entry 0x03)	UINT32	RO	0x7000:03,3
1600:04	SubIndex 004	PDO Mapping entry (object 0x7000,entry 0x04)	UINT32	RO	0x7000:04,1
1600:05	SubIndex 005	PDO Mapping entry (object 0x7000,entry 0x05)	UINT32	RO	0x7000:05,1
1600:06	SubIndex 006	PDO Mapping entry (object 0x7000,entry 0x06)	UINT32	RO	0x7000:06,1
1600:07	SubIndex 007	PDO Mapping entry (object 0x7000,entry 0x07)	UINT32	RO	0x7000:07,1
1600:08	SubIndex 008	PDO Mapping entry (object 0x7000,entry 0x08)	UINT32	RO	0x7000:08,1
1600:09	SubIndex 009	PDO Mapping entry (object 0x7000,entry 0x09)	UINT32	RO	0x7000:09,1
1600:0A	SubIndex 010	PDO Mapping entry (object 0x7000,entry 0x0A)	UINT32	RO	0x7000:0A,1
1600:0B	SubIndex 011	PDO Mapping entry (object 0x7000,entry 0x0B)	UINT32	RO	0x7000:0B,1
1600:0C	SubIndex 012	PDO Mapping entry (object 0x7000,entry 0x0C)	UINT32	RO	0x7000:0C,1
1600:0D	SubIndex 013	PDO Mapping entry (object 0x7000,entry 0x0D)	UINT32	RO	0x7000:0D,1
1600:0E	SubIndex 014	PDO Mapping entry (object 0x7000,entry 0x0E)	UINT32	RO	0x7000:0E,1
1600:0F	SubIndex 015	PDO Mapping entry (object 0x7000,entry 0x0F)	UINT32	RO	0x7000:0F,1
1600:10	SubIndex 016	PDO Mapping entry (object 0x7000,entry 0x10)	UINT32	RO	0x7000:10,1
1600:11	SubIndex 017	PDO Mapping entry (object 0x7000,entry 0x11)	UINT32	RO	0x7000:11,1
1600:12	SubIndex 018	PDO Mapping entry (object 0x7000,entry 0x12)	UINT32	RO	0x7000:12,1
1600:13	SubIndex 019	PDO Mapping entry (object 0x7000,entry 0x13)	UINT32	RO	0x7000:13,3
1600:14	SubIndex 020	PDO Mapping entry (object 0x7000,entry 0x14)	UINT32	RO	0x7000:14,1
1600:15	SubIndex 021	PDO Mapping entry (object 0x7000,entry 0x15)	UINT32	RO	0x7000:15,1
1600:16	SubIndex 022	PDO Mapping entry (object 0x7000,entry 0x16)	UINT32	RO	0x7000:16,1
1600:17	SubIndex 023	PDO Mapping entry (object 0x7000,entry 0x17)	UINT32	RO	0x7000:17,1
1600:18	SubIndex 024	PDO Mapping entry (object 0x7000,entry 0x18)	UINT32	RO	0x7000:18,1
1600:19	SubIndex 025	PDO Mapping entry (object 0x7000,entry 0x19)	UINT32	RO	0x7000:19,1
1600:1A	SubIndex 026	PDO Mapping entry (object 0x7000,entry 0x1A)	UINT32	RO	0x7000:1A,1
1600:1B	SubIndex 027	PDO Mapping entry (object 0x7000,entry 0x1B)	UINT32	RO	0x7000:1B,1
1600:1C	SubIndex 028	PDO Mapping entry (object 0x7000,entry 0x1C)	UINT32	RO	0x7000:1C,1
1600:1D	SubIndex 029	PDO Mapping entry (object 0x7000,entry 0x1D)	UINT32	RO	0x7000:1D,1
1600:1E	SubIndex 030	PDO Mapping entry (object 0x7000,entry 0x1E)	UINT32	RO	0x7000:1E,1
1600:1F	SubIndex 031	PDO Mapping entry (object 0x7000,entry 0x1F)	UINT32	RO	0x7000:1F,1
1600:20	SubIndex 032	PDO Mapping entry (object 0x7000,entry 0x20)	UINT32	RO	0x7000:20,1

➤ [ECAT-2050]Index 1A0n(0<=n<=C) DI Outputs process data mapping

Index	Name	Meaning	Data type	Flags	Default
16An:00	DI Output process data mapping	PDO Mapping TxPDO n+1	UINT8	RO	0x02(2dec)
1A0n:01	SubIndex 001	PDO Mapping entry (object 0x60n0,entry 0x01)	UINT32	RO	0x60n0:01,1
1A0n:02	SubIndex 002	PDO Mapping entry (object 0x60n0,entry 0x02)	UINT32	RO	0x60n0:02,31

➤ [ECAT-2055-32]Index 1A00 DI Outputs process data mapping

Index	Name	Meaning	Data type	Flags	Default
1A00:00	DI Output process data mapping	PDO Mapping TxPDO 1	UINT8	RO	0x11(17dec)
1A00:01	SubIndex 001	PDO Mapping entry (object 0x6000,entry 0x01)	UINT32	RO	0x6000:01,1
1A00:02	SubIndex 002	PDO Mapping entry (object 0x6000,entry 0x02)	UINT32	RO	0x6000:02,1
1A00:03	SubIndex 003	PDO Mapping entry (object 0x6000,entry 0x03)	UINT32	RO	0x6000:03,3
1A00:04	SubIndex 004	PDO Mapping entry (object 0x6000,entry 0x04)	UINT32	RO	0x6000:04,1
1A00:05	SubIndex 005	PDO Mapping entry (object 0x6000,entry 0x05)	UINT32	RO	0x6000:05,1
1A00:06	SubIndex 006	PDO Mapping entry (object 0x6000,entry 0x06)	UINT32	RO	0x6000:06,1
1A00:07	SubIndex 007	PDO Mapping entry (object 0x6000,entry 0x07)	UINT32	RO	0x6000:07,1
1A00:08	SubIndex 008	PDO Mapping entry (object 0x6000,entry 0x08)	UINT32	RO	0x6000:08,1
1A00:09	SubIndex 009	PDO Mapping entry (object 0x6000,entry 0x09)	UINT32	RO	0x6000:09,1
1A00:0A	SubIndex 010	PDO Mapping entry (object 0x6000,entry 0x0A)	UINT32	RO	0x6000:0A,1
1A00:0B	SubIndex 011	PDO Mapping entry (object 0x6000,entry 0x0B)	UINT32	RO	0x6000:0B,1
1A00:0C	SubIndex 012	PDO Mapping entry (object 0x6000,entry 0x0C)	UINT32	RO	0x6000:0C,1
1A00:0D	SubIndex 013	PDO Mapping entry (object 0x6000,entry 0x0D)	UINT32	RO	0x6000:0D,1
1A00:0E	SubIndex 014	PDO Mapping entry (object 0x6000,entry 0x0E)	UINT32	RO	0x6000:0E,1
1A00:0F	SubIndex 015	PDO Mapping entry (object 0x6000,entry 0x0F)	UINT32	RO	0x6000:0F,1
1A00:10	SubIndex 016	PDO Mapping entry (object 0x6000,entry 0x10)	UINT32	RO	0x6000:10,1

➤ [ECAT-2051-32]Index 1A00 DI Outputs process data mapping

Index	Name	Meaning	Data type	Flags	Default
1A00:00	DI Output process data mapping	PDO Mapping TxPDO 1	UINT8	RO	0x21(33dec)
1A00:01	SubIndex 001	PDO Mapping entry (object 0x6000,entry 0x01)	UINT32	RO	0x6000:01,1
1A00:02	SubIndex 002	PDO Mapping entry (object 0x6000,entry 0x02)	UINT32	RO	0x6000:02,1
1A00:03	SubIndex 003	PDO Mapping entry (object 0x6000,entry 0x03)	UINT32	RO	0x6000:03,3
1A00:04	SubIndex 004	PDO Mapping entry (object 0x6000,entry 0x04)	UINT32	RO	0x6000:04,1
1A00:05	SubIndex 005	PDO Mapping entry (object 0x6000,entry 0x05)	UINT32	RO	0x6000:05,1
1A00:06	SubIndex 006	PDO Mapping entry (object 0x6000,entry 0x06)	UINT32	RO	0x6000:06,1
1A00:07	SubIndex 007	PDO Mapping entry (object 0x6000,entry 0x07)	UINT32	RO	0x6000:07,1
1A00:08	SubIndex 008	PDO Mapping entry (object 0x6000,entry 0x08)	UINT32	RO	0x6000:08,1
1A00:09	SubIndex 009	PDO Mapping entry (object 0x6000,entry 0x09)	UINT32	RO	0x6000:09,1
1A00:0A	SubIndex 010	PDO Mapping entry (object 0x6000,entry 0x0A)	UINT32	RO	0x6000:0A,1
1A00:0B	SubIndex 011	PDO Mapping entry (object 0x6000,entry 0x0B)	UINT32	RO	0x6000:0B,1
1A00:0C	SubIndex 012	PDO Mapping entry (object 0x6000,entry 0x0C)	UINT32	RO	0x6000:0C,1
1A00:0D	SubIndex 013	PDO Mapping entry (object 0x6000,entry 0x0D)	UINT32	RO	0x6000:0D,1
1A00:0E	SubIndex 014	PDO Mapping entry (object 0x6000,entry 0x0E)	UINT32	RO	0x6000:0E,1
1A00:0F	SubIndex 015	PDO Mapping entry (object 0x6000,entry 0x0F)	UINT32	RO	0x6000:0F,1
1A00:10	SubIndex 016	PDO Mapping entry (object 0x6000,entry 0x10)	UINT32	RO	0x6000:10,1
1A00:11	SubIndex 017	PDO Mapping entry (object 0x6000,entry 0x11)	UINT32	RO	0x6000:11,1
1A00:12	SubIndex 018	PDO Mapping entry (object 0x6000,entry 0x12)	UINT32	RO	0x6000:12,1
1A00:13	SubIndex 019	PDO Mapping entry (object 0x6000,entry 0x13)	UINT32	RO	0x6000:13,3
1A00:14	SubIndex 020	PDO Mapping entry (object 0x6000,entry 0x14)	UINT32	RO	0x6000:14,1
1A00:15	SubIndex 021	PDO Mapping entry (object 0x6000,entry 0x15)	UINT32	RO	0x6000:15,1
1A00:16	SubIndex 022	PDO Mapping entry (object 0x6000,entry 0x16)	UINT32	RO	0x6000:16,1
1A00:17	SubIndex 023	PDO Mapping entry (object 0x6000,entry 0x17)	UINT32	RO	0x6000:17,1
1A00:18	SubIndex 024	PDO Mapping entry (object 0x6000,entry 0x18)	UINT32	RO	0x6000:18,1
1A00:19	SubIndex 025	PDO Mapping entry (object 0x6000,entry 0x19)	UINT32	RO	0x6000:19,1
1A00:1A	SubIndex 026	PDO Mapping entry (object 0x6000,entry 0x1A)	UINT32	RO	0x6000:1A,1
1A00:1B	SubIndex 027	PDO Mapping entry (object 0x6000,entry 0x1B)	UINT32	RO	0x6000:1B,1
1A00:1C	SubIndex 028	PDO Mapping entry (object 0x6000,entry 0x1C)	UINT32	RO	0x6000:1C,1
1A00:1D	SubIndex 029	PDO Mapping entry (object 0x6000,entry 0x1D)	UINT32	RO	0x6000:1D,1
1A00:1E	SubIndex 030	PDO Mapping entry (object 0x6000,entry 0x1E)	UINT32	RO	0x6000:1E,1
1A00:1F	SubIndex 031	PDO Mapping entry (object 0x6000,entry 0x1F)	UINT32	RO	0x6000:1F,1
1A00:20	SubIndex 032	PDO Mapping entry (object 0x6000,entry 0x20)	UINT32	RO	0x6000:20,1

➤ [ALL]Index 1C00 Sync manager type

Index	Name	Meaning	Data type	Flags	Default
1C00:00	Sync manager type	Using the sync managers	UINT8	RO	0x04(4dec)
1C00:01	SubIndex 001	Sync-Manager Channel 1:Mailbox write	UINT8	RO	0x01(1dec)
1C00:02	SubIndex 002	Sync-Manager Channel 2:Mailbox read	UINT8	RO	0x02(2dec)
1C00:03	SubIndex 003	Sync-Manager Channel 3:Process data write	UINT8	RO	0x03(3dec)
1C00:04	SubIndex 004	Sync-Manager Channel 4:Process data read	UINT8	RO	0x04(4dec)

➤ [ECAT-2050]Index 1C12 SyncManager 2 assignment

Index	Name	Meaning	Data type	Flags	Default
1C12:00	Sync-Manager 2 assignment	Sync manager assign outputs	UINT8	RO	0x04(4dec)
1C12:01	SubIndex 001	1st allocated RxPDO	UINT16	RO	0x1600(5632dec)
1C12:02	SubIndex 002	2nd allocated RxPDO	UINT16	RO	0x1601(5633dec)
1C12:03	SubIndex 003	3rd allocated RxPDO	UINT16	RO	0x1602(5634dec)
1C12:04	SubIndex 004	4th allocated RxPDO	UINT16	RO	0x1603(5635dec)

➤ [ECAT-2055-32/ECAT-2045-32]Index 1C12 SyncManager 2 assignment

Index	Name	Meaning	Data type	Flags	Default
1C12:00	Sync-Manager 2 assignment	Sync manager assign outputs	UINT8	RO	0x01(1dec)
1C12:01	SubIndex 001	1st allocated RxPDO	UINT16	RO	0x1600(5632dec)

➤ [ECAT-2055-32/ECAT-2051-32]Index 1C13 SyncManager 3 assignment

Index	Name	Meaning	Data type	Flags	Default
1C13:00	Sync-Manager 3 assignment	Sync manager assign outputs	UINT8	RO	0x01(1dec)
1C13:01	SubIndex 001	1st allocated TxPDO	UINT16	RO	0x1A00(6656dec)

➤ [ECAT-2050]Index 1C13 SyncManager 3 assignment

Index	Name	Meaning	Data type	Flags	Default
1C13:00	Sync-Manager 3 assignment	Sync manager assign outputs	UINT8	RO	0x01(1dec)
1C13:01	SubIndex 001	1st allocated TxPDO	UINT16	RO	0x1A00(6656dec)
1C13:02	SubIndex 002	2nd allocated TxPDO	UINT16	RO	0x1A01(6657dec)
1C13:03	SubIndex 003	3rd allocated TxPDO	UINT16	RO	0x1A02(6658dec)
1C13:04	SubIndex 004	4th allocated TxPDO	UINT16	RO	0x1A03(6659dec)
1C13:05	SubIndex 005	5th allocated TxPDO	UINT16	RO	0x1A04(6660dec)
1C13:06	SubIndex 006	6th allocated TxPDO	UINT16	RO	0x1A05(6661dec)
1C13:07	SubIndex 007	7th allocated TxPDO	UINT16	RO	0x1A06(6662dec)
1C13:08	SubIndex 008	8th allocated TxPDO	UINT16	RO	0x1A07(6663dec)
1C13:09	SubIndex 009	9th allocated TxPDO	UINT16	RO	0x1A08(6664dec)
1C13:0A	SubIndex 010	10th allocated TxPDO	UINT16	RO	0x1A09(6665dec)
1C13:0B	SubIndex 011	11th allocated TxPDO	UINT16	RO	0x1A0A(6666dec)
1C13:0C	SubIndex 012	12th allocated TxPDO	UINT16	RO	0x1A0B(6667dec)
1C13:0D	SubIndex 013	13th allocated TxPDO	UINT16	RO	0x1A0C(6668dec)

4.2 Profile Specific Objects(0x6000-0x7FFF)

➤ [ECAT-2050]Index 60n0(0<=n<=C) Digital Inputs

Index	Name	Meaning	Data type	Flags	Default
60n0:00	DIn		UINT8	RO	0x2(2dec)
60n0:01	Inputs		BOOLEAN	RO	0x00(0dec)

➤ [ECAT-2055-32]Index 6000 Digital Inputs

Index	Name	Meaning	Data type	Flags	Default
6000:00	Digital Inputs		UINT8	RO	0x11(17dec)
6000:01	DI0		BOOLEAN	RO	0x00(0dec)
6000:02	DI1		BOOLEAN	RO	0x00(0dec)
6000:03	DI2		BOOLEAN	RO	0x00(0dec)
6000:04	DI3		BOOLEAN	RO	0x00(0dec)
6000:05	DI4		BOOLEAN	RO	0x00(0dec)
6000:06	DI5		BOOLEAN	RO	0x00(0dec)
6000:07	DI6		BOOLEAN	RO	0x00(0dec)
6000:08	DI7		BOOLEAN	RO	0x00(0dec)
6000:09	DI8		BOOLEAN	RO	0x00(0dec)
6000:0A	DI9		BOOLEAN	RO	0x00(0dec)
6000:0B	DI10		BOOLEAN	RO	0x00(0dec)
6000:0C	DI11		BOOLEAN	RO	0x00(0dec)
6000:0D	DI12		BOOLEAN	RO	0x00(0dec)
6000:0E	DI13		BOOLEAN	RO	0x00(0dec)
6000:0F	DI14		BOOLEAN	RO	0x00(0dec)
6000:10	DI15		BOOLEAN	RO	0x00(0dec)

➤ [ECAT-2051-32]Index 6000 Digital Inputs

Index	Name	Meaning	Data type	Flags	Default
6000:00	Digital Inputs		UINT8	RO	0x21(33dec)
6000:01	DI0		BOOLEAN	RO	0x00(0dec)
6000:02	DI1		BOOLEAN	RO	0x00(0dec)
6000:03	DI2		BOOLEAN	RO	0x00(0dec)
6000:04	DI3		BOOLEAN	RO	0x00(0dec)
6000:05	DI4		BOOLEAN	RO	0x00(0dec)
6000:06	DI5		BOOLEAN	RO	0x00(0dec)
6000:07	DI6		BOOLEAN	RO	0x00(0dec)
6000:08	DI7		BOOLEAN	RO	0x00(0dec)
6000:09	DI8		BOOLEAN	RO	0x00(0dec)
6000:0A	DI9		BOOLEAN	RO	0x00(0dec)
6000:0B	DI10		BOOLEAN	RO	0x00(0dec)
6000:0C	DI11		BOOLEAN	RO	0x00(0dec)
6000:0D	DI12		BOOLEAN	RO	0x00(0dec)
6000:0E	DI13		BOOLEAN	RO	0x00(0dec)
6000:0F	DI14		BOOLEAN	RO	0x00(0dec)
6000:10	DI15		BOOLEAN	RO	0x00(0dec)
6000:11	DI16		BOOLEAN	RO	0x00(0dec)
6000:12	DI17		BOOLEAN	RO	0x00(0dec)
6000:13	DI18		BOOLEAN	RO	0x00(0dec)
6000:14	DI19		BOOLEAN	RO	0x00(0dec)
6000:15	DI20		BOOLEAN	RO	0x00(0dec)
6000:16	DI21		BOOLEAN	RO	0x00(0dec)
6000:17	DI22		BOOLEAN	RO	0x00(0dec)
6000:18	DI23		BOOLEAN	RO	0x00(0dec)
6000:19	DI24		BOOLEAN	RO	0x00(0dec)
6000:1A	DI25		BOOLEAN	RO	0x00(0dec)
6000:1B	DI26		BOOLEAN	RO	0x00(0dec)
6000:1C	DI27		BOOLEAN	RO	0x00(0dec)
6000:1D	DI28		BOOLEAN	RO	0x00(0dec)
6000:1E	DI29		BOOLEAN	RO	0x00(0dec)
6000:1F	DI30		BOOLEAN	RO	0x00(0dec)
6000:20	DI31		BOOLEAN	RO	0x00(0dec)

➤ [ECAT-2050]Index 70n0(0<=n<=C) Digital Outputs

Index	Name	Meaning	Data type	Flags	Default
70n0:00	DO _n		UINT8	RO	0x2(2dec)
70n0:01	Outputs		BOOLEAN	RO	0x00(0dec)

➤ [ECAT-2055-32]Index 7000 Digital Outputs

Index	Name	Meaning	Data type	Flags	Default
7000:00	Digital Outputs		UINT8	RO	0x11(17dec)
7000:01	DO0		BOOLEAN	RW	0x00(0dec)
7000:02	DO1		BOOLEAN	RW	0x00(0dec)
7000:03	DO2		BOOLEAN	RW	0x00(0dec)
7000:04	DO3		BOOLEAN	RW	0x00(0dec)
7000:05	DO4		BOOLEAN	RW	0x00(0dec)
7000:06	DO5		BOOLEAN	RW	0x00(0dec)
7000:07	DO6		BOOLEAN	RW	0x00(0dec)
7000:08	DO7		BOOLEAN	RW	0x00(0dec)
7000:09	DO8		BOOLEAN	RW	0x00(0dec)
7000:0A	DO9		BOOLEAN	RW	0x00(0dec)
7000:0B	DO10		BOOLEAN	RW	0x00(0dec)
7000:0C	DO11		BOOLEAN	RW	0x00(0dec)
7000:0D	DO12		BOOLEAN	RW	0x00(0dec)
7000:0E	DO13		BOOLEAN	RW	0x00(0dec)
7000:0F	DO14		BOOLEAN	RW	0x00(0dec)
7000:10	DO15		BOOLEAN	RW	0x00(0dec)

➤ [ECAT-2045-32]Index 7000 Digital Outputs

Index	Name	Meaning	Data type	Flags	Default
7000:00	Digital Outputs		UINT8	RO	0x21(33dec)
7000:01	DO0		BOOLEAN	RW	0x00(0dec)
7000:02	DO1		BOOLEAN	RW	0x00(0dec)
7000:03	DO2		BOOLEAN	RW	0x00(0dec)
7000:04	DO3		BOOLEAN	RW	0x00(0dec)
7000:05	DO4		BOOLEAN	RW	0x00(0dec)
7000:06	DO5		BOOLEAN	RW	0x00(0dec)
7000:07	DO6		BOOLEAN	RW	0x00(0dec)
7000:08	DO7		BOOLEAN	RW	0x00(0dec)
7000:09	DO8		BOOLEAN	RW	0x00(0dec)
7000:0A	DO9		BOOLEAN	RW	0x00(0dec)
7000:0B	DO10		BOOLEAN	RW	0x00(0dec)
7000:0C	DO11		BOOLEAN	RW	0x00(0dec)
7000:0D	DO12		BOOLEAN	RW	0x00(0dec)
7000:0E	DO13		BOOLEAN	RW	0x00(0dec)
7000:0F	DO14		BOOLEAN	RW	0x00(0dec)
7000:10	DO15		BOOLEAN	RW	0x00(0dec)
7000:11	DO16		BOOLEAN	RW	0x00(0dec)
7000:12	DO17		BOOLEAN	RW	0x00(0dec)
7000:13	DO18		BOOLEAN	RW	0x00(0dec)
7000:14	DO19		BOOLEAN	RW	0x00(0dec)
7000:15	DO20		BOOLEAN	RW	0x00(0dec)
7000:16	DO21		BOOLEAN	RW	0x00(0dec)
7000:17	DO22		BOOLEAN	RW	0x00(0dec)
7000:18	DO23		BOOLEAN	RW	0x00(0dec)
7000:19	DO24		BOOLEAN	RW	0x00(0dec)
7000:1A	DO25		BOOLEAN	RW	0x00(0dec)
7000:1B	DO26		BOOLEAN	RW	0x00(0dec)
7000:1C	DO27		BOOLEAN	RW	0x00(0dec)
7000:1D	DO28		BOOLEAN	RW	0x00(0dec)
7000:1E	DO29		BOOLEAN	RW	0x00(0dec)
7000:1F	DO30		BOOLEAN	RW	0x00(0dec)
7000:20	DO31		BOOLEAN	RW	0x00(0dec)