

# DeviceNet Network Adapter C-Series

## CT-C1xx User Manual



Version 1.02

2013 CREVIS Co.,Ltd

DOCUMENT CHANGE SUMMARY				
REV	PAGE	REMARKS	DATE	EDITOR
1.0	New Document		2011/11/4	JE KANG
1.01		Add Caution	2012/1/13	JE KANG
		Add the Certificate RoHS	2012/3/21	JE KANG
1.02		Changed Crevis TEL	2013/4/4	JE KANG

## Table of Contents

<b>1. Important Notes .....</b>	<b>6</b>
<b>1.1. Safety Instruction.....</b>	<b>7</b>
<b>1.1.1. Symbols .....</b>	<b>7</b>
<b>1.1.2. Safety Notes .....</b>	<b>7</b>
<b>1.1.3. Certification .....</b>	<b>7</b>
<b>2. C-series DEVICENET MODULE LIST .....</b>	<b>8</b>
<b>3. Specification of DeviceNet C-Series.....</b>	<b>9</b>
<b>3.1. LED Indicator .....</b>	<b>10</b>
<b>3.1.1. Module Status LED (MS).....</b>	<b>10</b>
<b>3.1.2. Network Status LED (NS).....</b>	<b>10</b>
<b>3.1.3. Termination Resistor On/Off LED (TER.).....</b>	<b>10</b>
<b>3.2. The Interface .....</b>	<b>11</b>
<b>3.2.1. CT-C111.....</b>	<b>11</b>
<b>3.2.2. CT-C112.....</b>	<b>12</b>
<b>3.2.3. CT-C121.....</b>	<b>13</b>
<b>3.2.4. CT-C122.....</b>	<b>14</b>
<b>3.2.5. CT-C133.....</b>	<b>15</b>
<b>3.2.6. CT-C134.....</b>	<b>16</b>
<b>3.2.7. CT-C138.....</b>	<b>17</b>
<b>3.2.8. CT-C139.....</b>	<b>18</b>
<b>3.3. Environment &amp; Interface, General Specification .....</b>	<b>19</b>
<b>3.4. Specification .....</b>	<b>20</b>

3.4.1.	CT-C111 .....	20
3.4.2.	CT-C112 .....	21
3.4.3.	CT-C121 .....	22
3.4.4.	CT-C122 .....	23
3.4.5.	CT-C133 .....	24
3.4.6.	CT-C134 .....	25
3.4.7.	CT-C138 .....	26
3.4.8.	CT-C139 .....	27
4.	Dimension .....	28
4.1.	CT-C1xx .....	28
4.2.	CT-BRACKET (mm) .....	29
5.	Mechanical Set Up .....	30
5.1.	Plugging and Removal of the Components .....	30
6.	DVICENET OBJECT MODELS .....	31
6.1.	Supported Objects .....	31
6.2.	Objects Behavior, Interface .....	32
6.3.	Identity Object .....	33
6.4.	Message Router Object .....	34
6.5.	DeviceNet Object .....	35
6.6.	Assembly Object .....	36
6.7.	Connection Object .....	37
6.8.	Acknowledge Handler Object .....	40
6.9.	Discrete Input Point Object .....	41

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6.10.	Discrete Output Point Object.....	42
6.11.	Discrete Output Group Object.....	43
7.	Configuration and Operation .....	44
7.1.	DeviceNet Composition.....	44
7.2.	DeviceNet Module(CT-C1xx) Installation.....	45
7.2.1.	DeviceNet Cable Specification.....	45
7.3.	DeviceNet Module(CT-C1xx)Configuration .....	47
7.3.1.	Terminator Resistor Specification .....	47
7.3.2.	MAC ID and Baudrate Setup .....	48
8.	Trouble Shooting .....	49

## 1. Important Notes

Solid state equipment has operational characteristics differing from those of electromechanical equipment.

Safety Guidelines for the Application, Installation and Maintenance of Solid State Controls describes some important differences between solid state equipment and hard-wired electromechanical devices.

Because of this difference, and also because of the wide variety of uses for solid state equipment, all persons responsible for applying this equipment must satisfy themselves that each intended application of this equipment is acceptable.

In no event will CREVIS be responsible or liable for indirect or consequential damages resulting from the use or application of this equipment.

The examples and diagrams in this manual are included solely for illustrative purposes. Because of the many variables and requirements associated with any particular installation, CREVIS cannot assume responsibility or liability for actual use based on the examples and diagrams.

### Warning!



- ✓ **If you don't follow the directions, it could cause a personal injury, damage to the equipment or explosion**
- Do not assemble the products and wire with power applied to the system. Else it may cause an electric arc, which can result into unexpected and potentially dangerous action by field devices. Arching is explosion risk in hazardous locations. Be sure that the area is non-hazardous or remove system power appropriately before assembling or wiring the modules.
- Do not touch any terminal blocks or IO modules when system is running. Else it may cause the unit to an electric shock or malfunction.
- Keep away from the strange metallic materials not related to the unit and wiring works should be controlled by the electric expert engineer. Else it may cause the unit to a fire, electric shock or malfunction.

### Caution!


- ✓ **If you disobey the instructions, there may be possibility of personal injury, damage to equipment or explosion. Please follow below Instructions.**
- Check the rated voltage and terminal array before wiring. Avoid the circumstances over 60°C of temperature. Avoid placing it directly in the sunlight.
- Avoid the place under circumstances over 85% of humidity.
- Do not place Modules near by the inflammable material. Else it may cause a fire.
- Do not permit any vibration approaching it directly.
- Go through module specification carefully, ensure inputs, output connections are made with the specifications. Use standard cables for wiring.
- Use Product under pollution degree 2 environment.

## 1.1. Safety Instruction

### 1.1.1. Symbols

<p><b>DANGER</b></p> 	<p>Identifies information about practices or circumstances that can cause an explosion in a hazardous environment, which may lead to personal injury or death property damage, or economic loss.</p>
<p><b>IMPORTANT</b></p>	<p>Identifies information that is critical for successful application and understanding of the product</p>
<p><b>ATTENTION</b></p> 	<p>Identifies information about practices or circumstances that can lead to personal injury, property damage, or economic loss.</p> <p>Attentions help you to identity a hazard, avoid a hazard, and recognize the consequences.</p>

### 1.1.2. Safety Notes

<p><b>DANGER</b></p> 	<p>The modules are equipped with electronic components that may be destroyed by electrostatic discharge. When handling the modules, ensure that the environment (persons, workplace and packing) is well grounded. Avoid touching conductive components, e.g. FnBUS Pin.</p>
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### 1.1.3. Certification

CE Certificate

EN 61000-6-2; Industrial Immunity

EN 61000-6-4; Industrial Emissions

RoHS (EU, CHINA)

## 2. C-series DEVICENET MODULE LIST

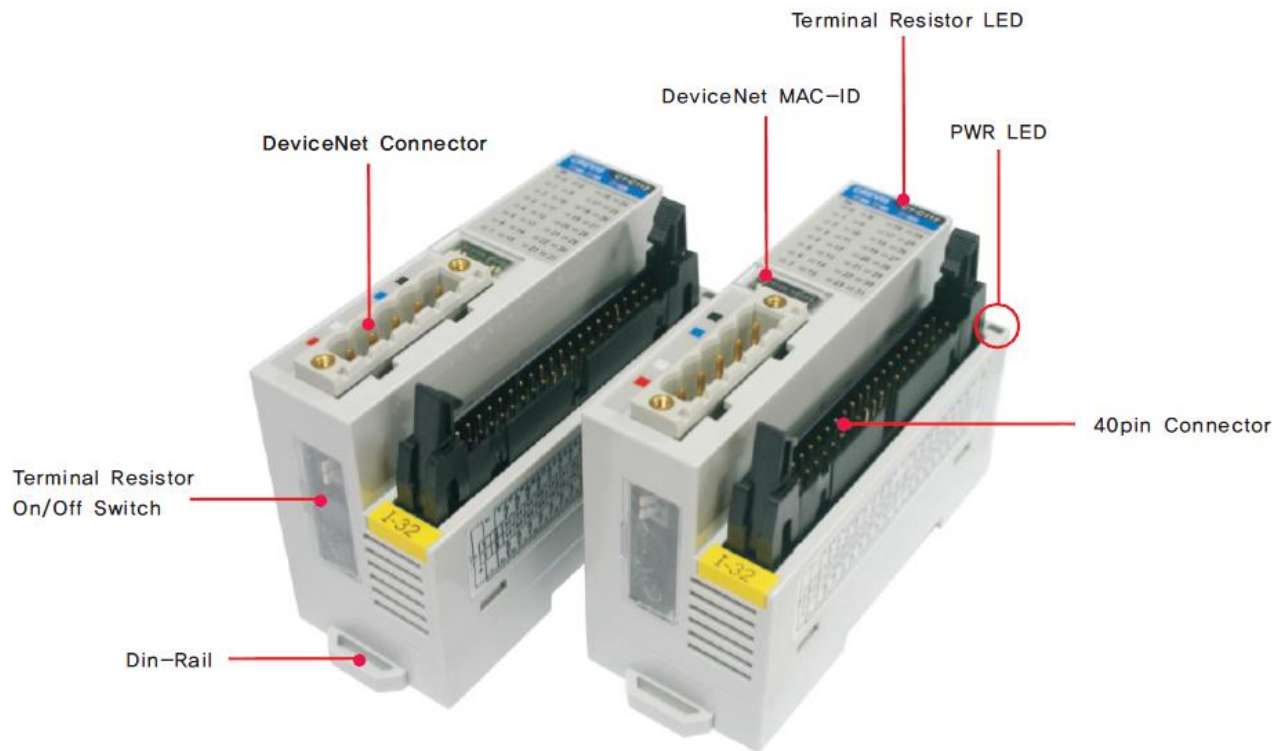
CT-C1xx	Description	Product Code	Input/output Size (Byte)
CT-C111	Input, 32 Points, Sink, 24Vdc	0x4111	In: 4
CT-C112	Input, 32 Points, Source, 24Vdc	0x4112	In: 4
CT-C121	Output, 32 Points, Sink, 24Vdc	0x4121	Out: 4
CT-C122	Output, 32 Points, Source, 24Vdc	0x4122	Out: 4
CT-C133	Input, 16 Points, Sink, 24Vdc Output, 16 Points, Source, 24Vdc	0x4133	In: 2, Out: 2
CT-C134	Input, 16 Points, Source, 24Vdc Output, 16 Points, Sink, 24Vdc	0x4134	In: 2, Out: 2
CT-C138*	Input, 16 Points, Sink, 24Vdc Output, 16 Points, Sink, 24Vdc	0x4138	In: 2, Out: 2
CT-C139*	Input, 16 Points, Source, 24Vdc Output, 16 Points, Source, 24Vdc	0x4139	In: 2, Out: 2

\* Contact us

- Sink Output(MOSFET N-ch) is similar to TR's NPN Output.
- Source Output(MOSFET P-ch) is similar to TR's PNP Output.



### 3. Specification of DeviceNet C-Series



### 3.1. LED Indicator

#### 3.1.1. Module Status LED (MS)

State	LED is :	To indicate :
No Power	Off	No power is supplied to the unit.
Device Operational	Green	The unit is operating in normal condition.
Device in Standby	Flashing Green	The EEPROM parameter is not initialized yet. Serial Number is zero value (0x00000000)
Minor Fault	Flashing Red	The unit has occurred recoverable fault in self-testing. - EEPROM checksum fault
Unrecoverable Fault	Red	The unit has occurred unrecoverable fault in self-testing. - Firmware fault

#### 3.1.2. Network Status LED (NS)

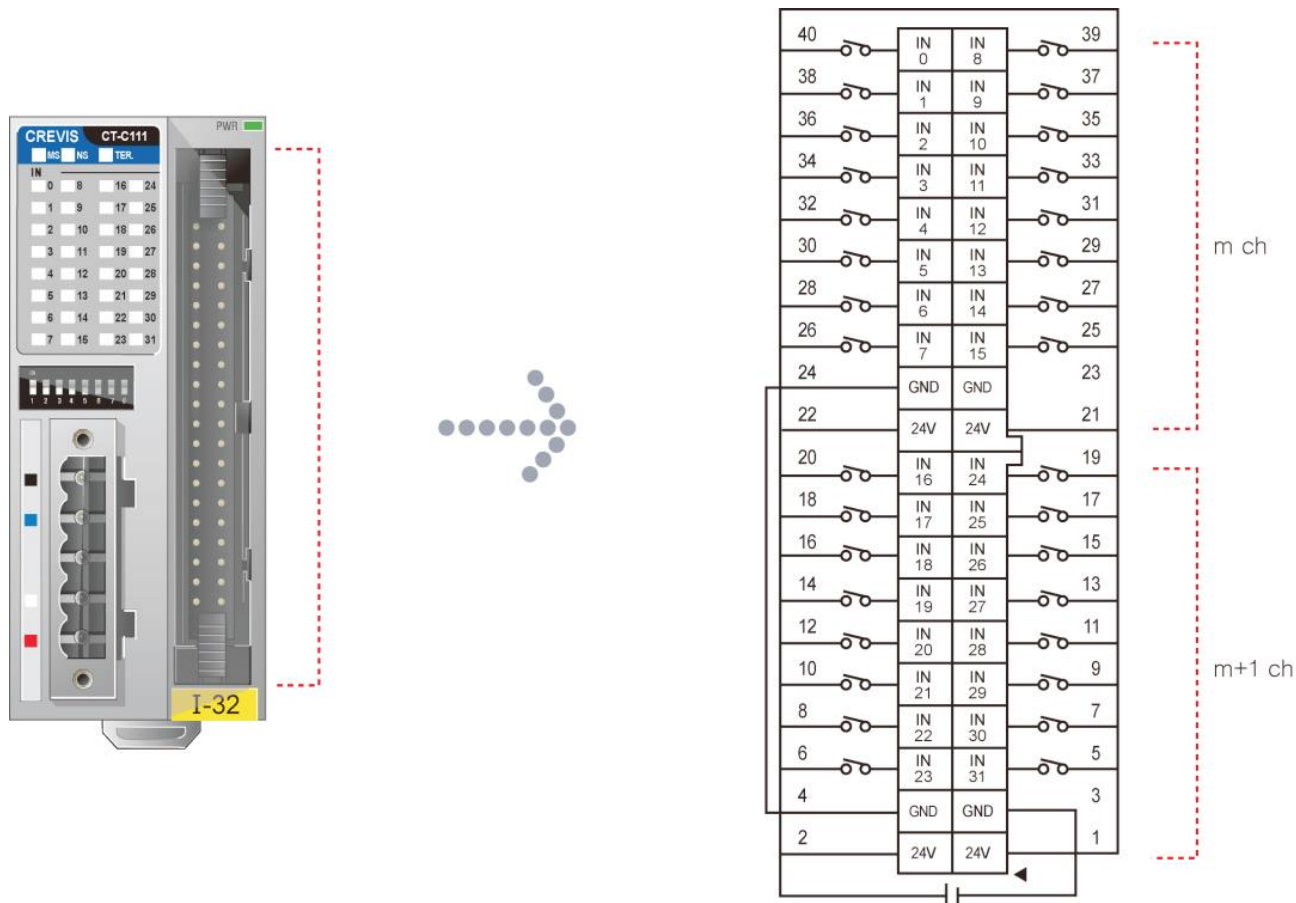
State	LED is :	To indicate :
Not Powered Not On-line	Off	Device is not on-line or may not be powered - Not completed the Dup-MAC_ID test yet
On-line, Not connected	Flashing Green	Device is on-line but has no connections in the established state. - Passed the Dup-MAC_ID test - Not allocated to a master
On-line, Connected	Green	Device is on-line and allocated to a master
Connection Time-out	Flashing Red	One or more I/O connections are in the time-out state.
Critical Communication Failure	Red	Failed communication - Duplicate MAC ID - Bus-off

#### 3.1.3. Termination Resistor On/Off LED (TER.)

State	LED is :	To indicate :
Not Powered Termination Off	Off	Device has no expansion module or may not be powered. Termination Switch is Off.
Termination On	Green	Termination Switch is On.

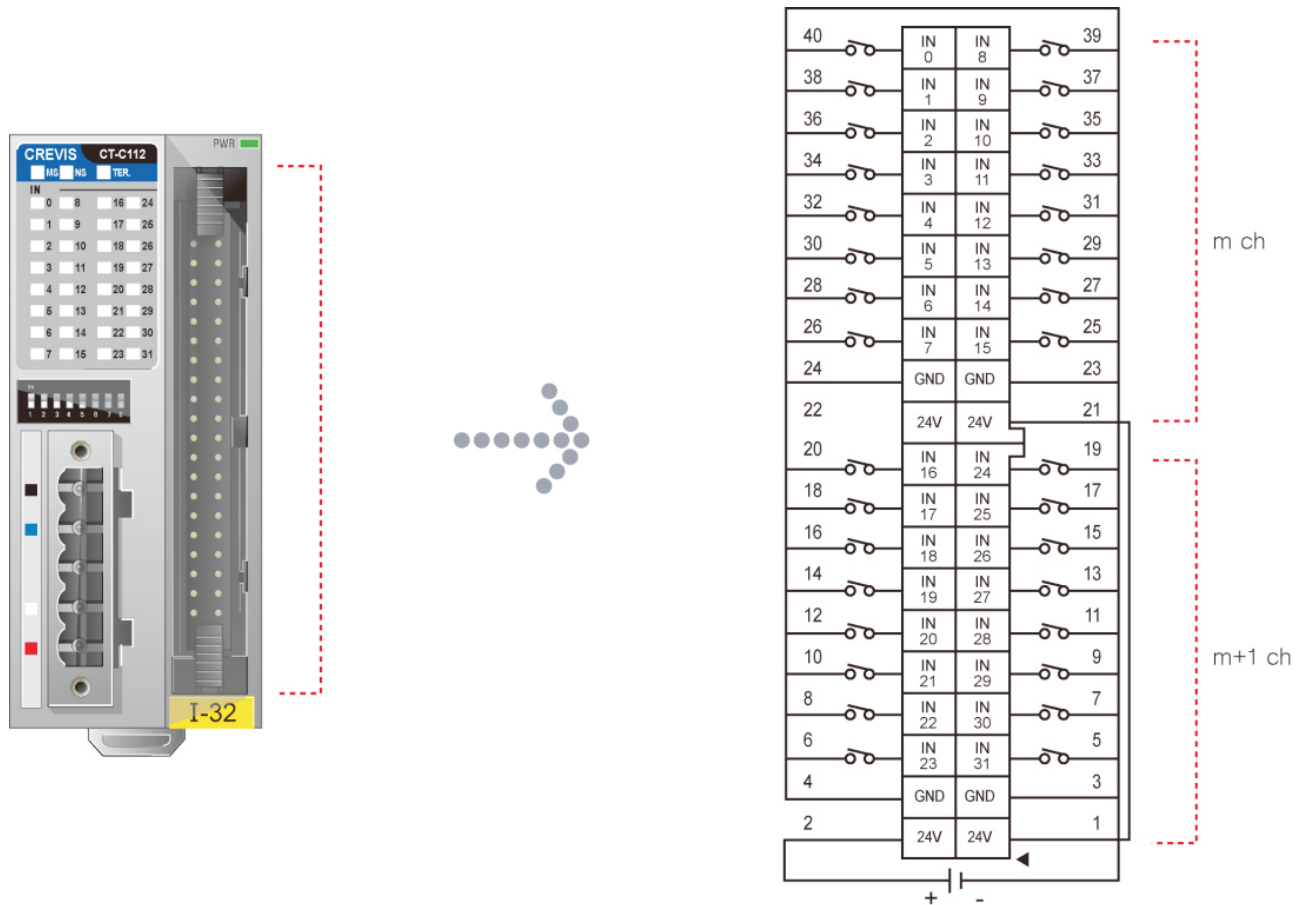
## 3.2. The Interface

### 3.2.1. CT-C111



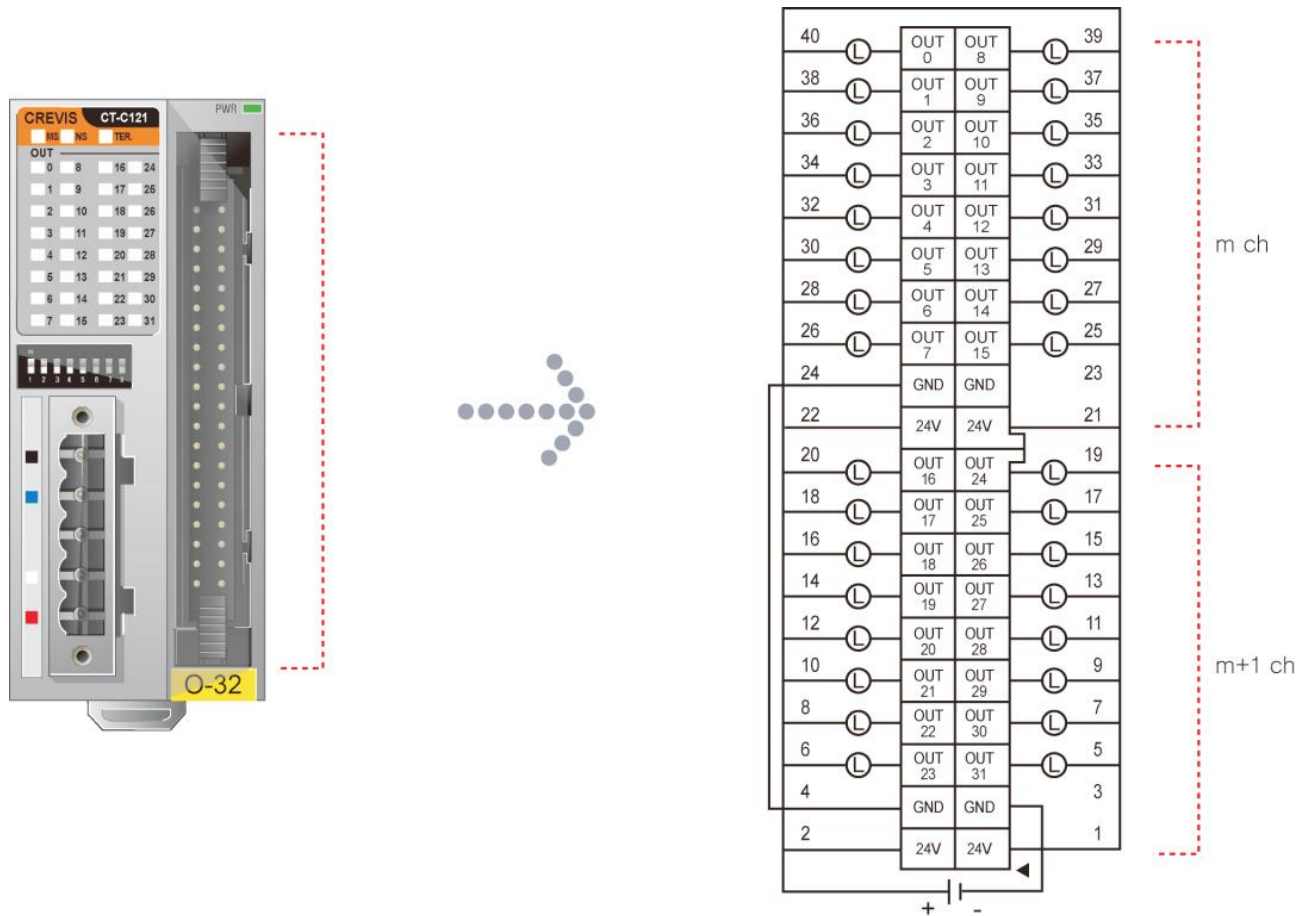
Pin No.	Description	Pin No.	Description	Pin No.	Description	Pin No.	Description
40	Input Channel 0	39	Input Channel 8	20	Input Channel 16	19	Input Channel 24
38	Input Channel 1	37	Input Channel 9	18	Input Channel 17	17	Input Channel 25
36	Input Channel 2	35	Input Channel 10	16	Input Channel 18	15	Input Channel 26
34	Input Channel 3	33	Input Channel 11	14	Input Channel 19	13	Input Channel 27
32	Input Channel 4	31	Input Channel 12	12	Input Channel 20	11	Input Channel 28
30	Input Channel 5	29	Input Channel 13	10	Input Channel 21	9	Input Channel 29
28	Input Channel 6	27	Input Channel 14	8	Input Channel 22	7	Input Channel 30
26	Input Channel 7	25	Input Channel 15	6	Input Channel 23	5	Input Channel 31
24	GND	23	GND	4	GND	3	GND
22	24Vdc	21	24Vdc	2	24Vdc	1	24Vdc

### 3.2.2. CT-C112



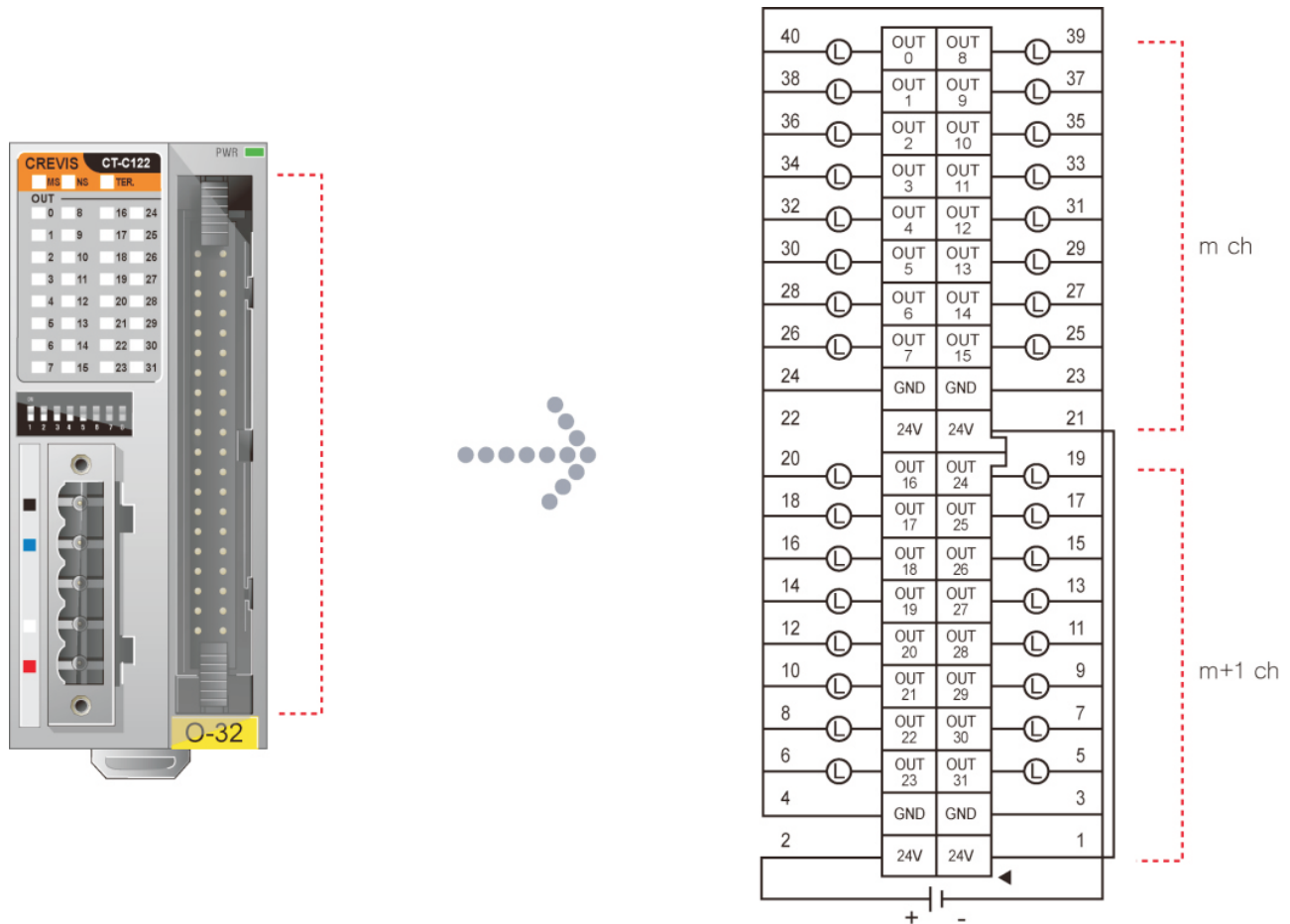
Pin No.	Description	Pin No.	Description	Pin No.	Description	Pin No.	Description
40	Input Channel 0	39	Input Channel 8	20	Input Channel 16	19	Input Channel 24
38	Input Channel 1	37	Input Channel 9	18	Input Channel 17	17	Input Channel 25
36	Input Channel 2	35	Input Channel 10	16	Input Channel 18	15	Input Channel 26
34	Input Channel 3	33	Input Channel 11	14	Input Channel 19	13	Input Channel 27
32	Input Channel 4	31	Input Channel 12	12	Input Channel 20	11	Input Channel 28
30	Input Channel 5	29	Input Channel 13	10	Input Channel 21	9	Input Channel 29
28	Input Channel 6	27	Input Channel 14	8	Input Channel 22	7	Input Channel 30
26	Input Channel 7	25	Input Channel 15	6	Input Channel 23	5	Input Channel 31
24	GND	23	GND	4	GND	3	GND
22	24Vdc	21	24Vdc	2	24Vdc	1	24Vdc

### 3.2.3. CT-C121



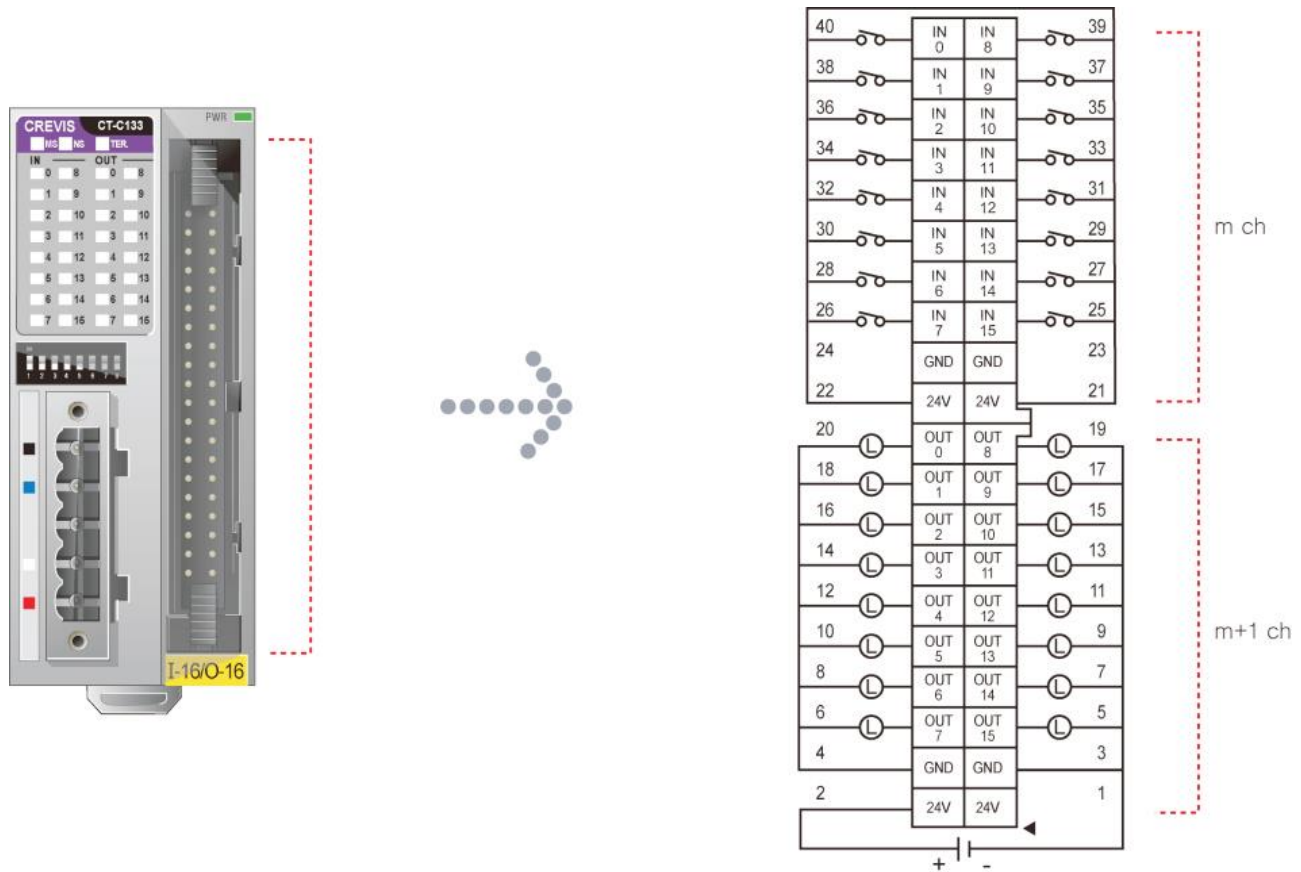
Pin No.	Description	Pin No.	Description	Pin No.	Description	Pin No.	Description
40	Output Channel 0	39	Output Channel 8	20	Output Channel 16	19	Output Channel 24
38	Output Channel 1	37	Output Channel 9	18	Output Channel 17	17	Output Channel 25
36	Output Channel 2	35	Output Channel 10	16	Output Channel 18	15	Output Channel 26
34	Output Channel 3	33	Output Channel 11	14	Output Channel 19	13	Output Channel 27
32	Output Channel 4	31	Output Channel 12	12	Output Channel 20	11	Output Channel 28
30	Output Channel 5	29	Output Channel 13	10	Output Channel 21	9	Output Channel 29
28	Output Channel 6	27	Output Channel 14	8	Output Channel 22	7	Output Channel 30
26	Output Channel 7	25	Output Channel 15	6	Output Channel 23	5	Output Channel 31
24	GND	23	GND	4	GND	3	GND
22	24Vdc	21	24Vdc	2	24Vdc	1	24Vdc

### 3.2.4. CT-C122



Pin No.	Description	Pin No.	Description	Pin No.	Description	Pin No.	Description
40	Output Channel 0	39	Output Channel 8	20	Output Channel 16	19	Output Channel 24
38	Output Channel 1	37	Output Channel 9	18	Output Channel 17	17	Output Channel 25
36	Output Channel 2	35	Output Channel 10	16	Output Channel 18	15	Output Channel 26
34	Output Channel 3	33	Output Channel 11	14	Output Channel 19	13	Output Channel 27
32	Output Channel 4	31	Output Channel 12	12	Output Channel 20	11	Output Channel 28
30	Output Channel 5	29	Output Channel 13	10	Output Channel 21	9	Output Channel 29
28	Output Channel 6	27	Output Channel 14	8	Output Channel 22	7	Output Channel 30
26	Output Channel 7	25	Output Channel 15	6	Output Channel 23	5	Output Channel 31
24	GND	23	GND	4	GND	3	GND
22	24Vdc	21	24Vdc	2	24Vdc	1	24Vdc

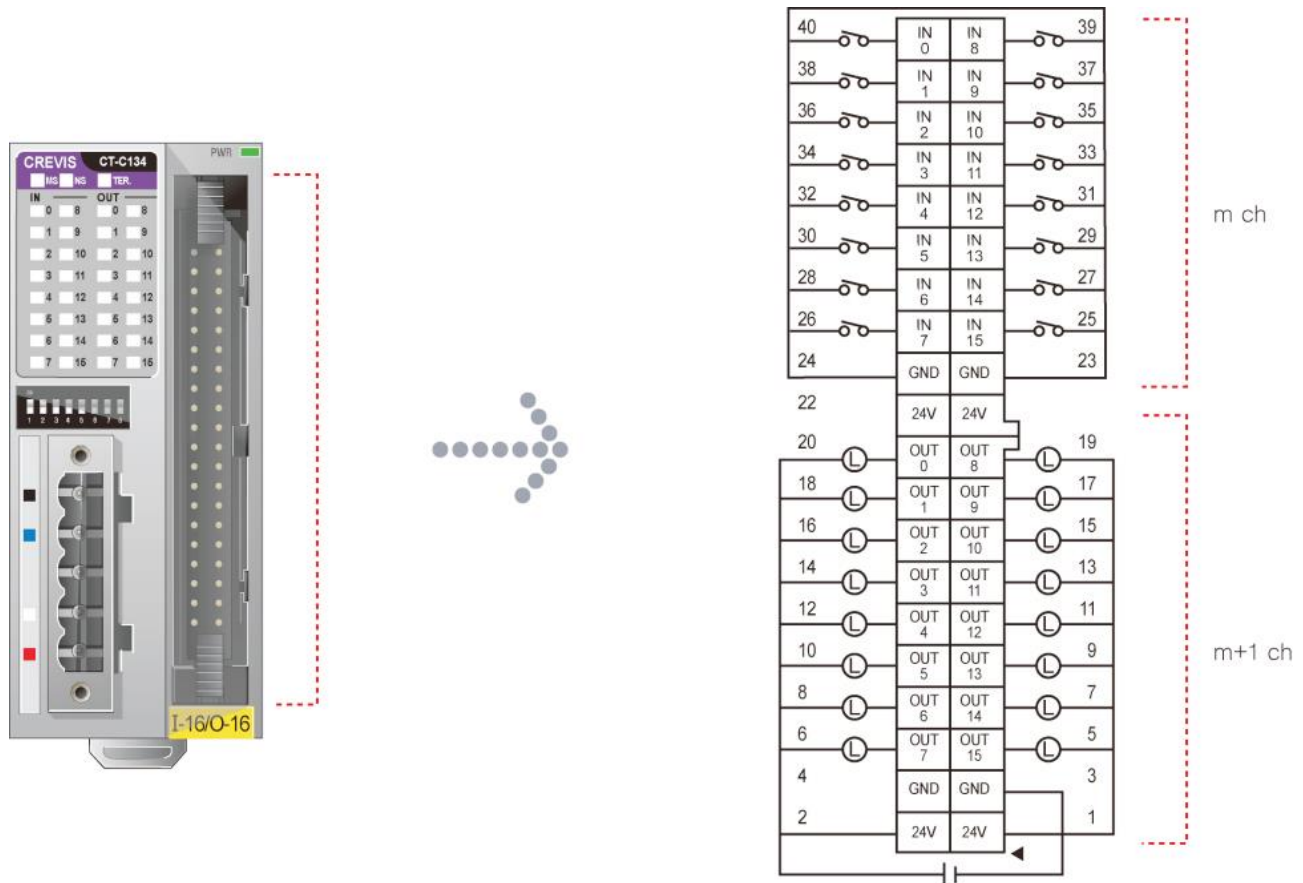
## 3.2.5. CT-C133



Pin No.	Description	Pin No.	Description	Pin No.	Description	Pin No.	Description
40	Input Channel 0	39	Input Channel 8	20	Output Channel 0	19	Output Channel 8
38	Input Channel 1	37	Input Channel 9	18	Output Channel 1	17	Output Channel 9
36	Input Channel 2	35	Input Channel 10	16	Output Channel 2	15	Output Channel 10
34	Input Channel 3	33	Input Channel 11	14	Output Channel 3	13	Output Channel 11
32	Input Channel 4	31	Input Channel 12	12	Output Channel 4	11	Output Channel 12
30	Input Channel 5	29	Input Channel 13	10	Output Channel 5	9	Output Channel 13
28	Input Channel 6	27	Input Channel 14	8	Output Channel 6	7	Output Channel 14
26	Input Channel 7	25	Input Channel 15	6	Output Channel 7	5	Output Channel 15
24	GND	23	GND	4	GND	3	GND
22	24Vdc	21	24Vdc	2	24Vdc	1	24Vdc



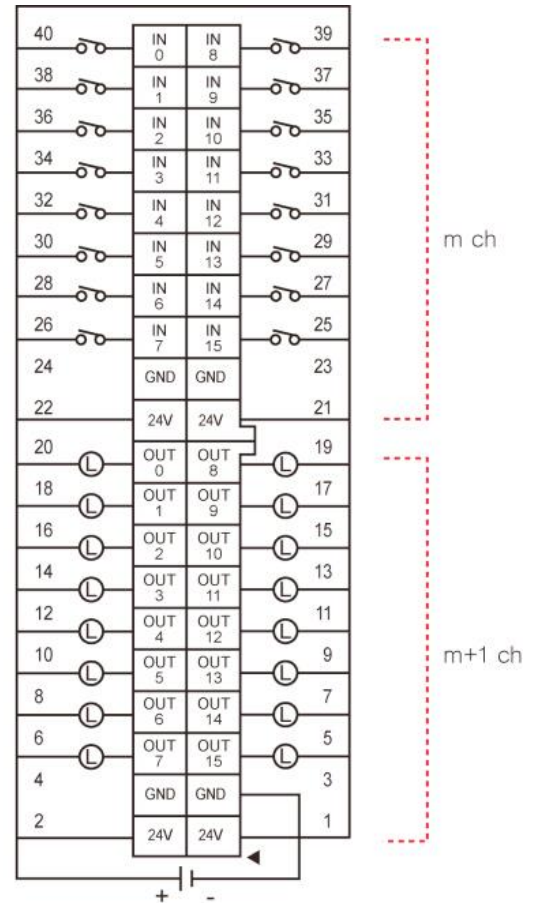
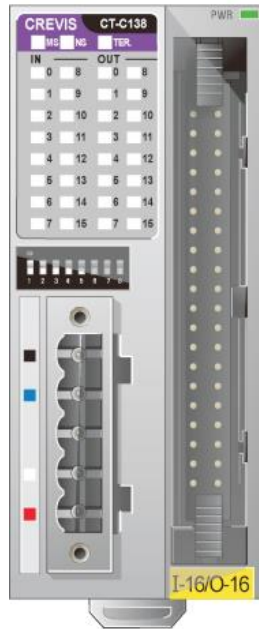
### 3.2.6. CT-C134



Pin No.	Description	Pin No.	Description	Pin No.	Description	Pin No.	Description
40	Input Channel 0	39	Input Channel 8	20	Output Channel 0	19	Output Channel 8
38	Input Channel 1	37	Input Channel 9	18	Output Channel 1	17	Output Channel 9
36	Input Channel 2	35	Input Channel 10	16	Output Channel 2	15	Output Channel 10
34	Input Channel 3	33	Input Channel 11	14	Output Channel 3	13	Output Channel 11
32	Input Channel 4	31	Input Channel 12	12	Output Channel 4	11	Output Channel 12
30	Input Channel 5	29	Input Channel 13	10	Output Channel 5	9	Output Channel 13
28	Input Channel 6	27	Input Channel 14	8	Output Channel 6	7	Output Channel 14
26	Input Channel 7	25	Input Channel 15	6	Output Channel 7	5	Output Channel 15
24	GND	23	GND	4	GND	3	GND
22	24Vdc	21	24Vdc	2	24Vdc	1	24Vdc

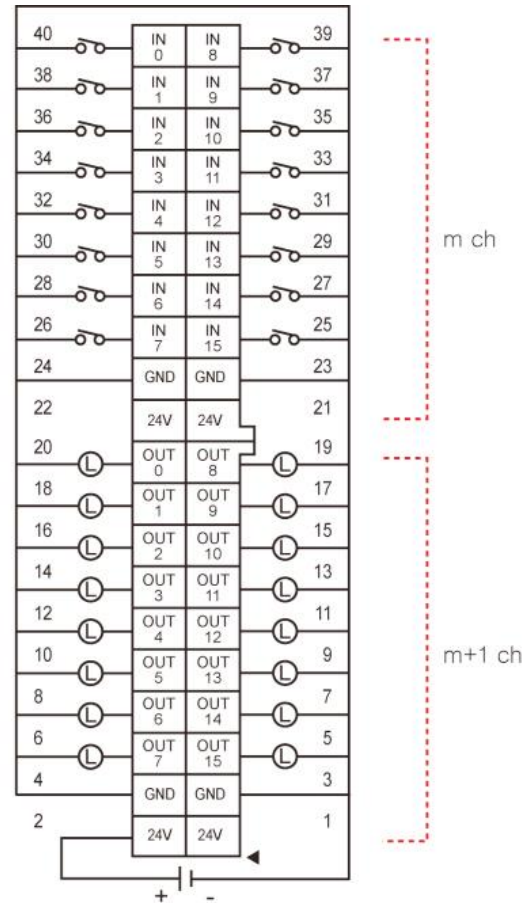
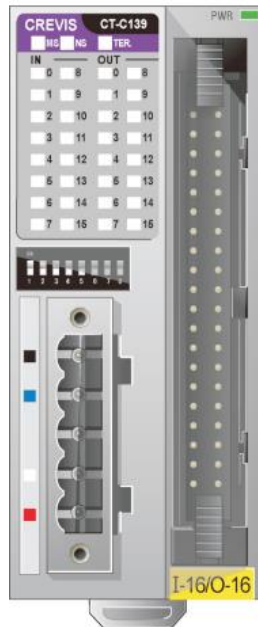


## 3.2.7. CT-C138



Pin No.	Description	Pin No.	Description	Pin No.	Description	Pin No.	Description
40	Input Channel 0	39	Input Channel 8	20	Output Channel 0	19	Output Channel 8
38	Input Channel 1	37	Input Channel 9	18	Output Channel 1	17	Output Channel 9
36	Input Channel 2	35	Input Channel 10	16	Output Channel 2	15	Output Channel 10
34	Input Channel 3	33	Input Channel 11	14	Output Channel 3	13	Output Channel 11
32	Input Channel 4	31	Input Channel 12	12	Output Channel 4	11	Output Channel 12
30	Input Channel 5	29	Input Channel 13	10	Output Channel 5	9	Output Channel 13
28	Input Channel 6	27	Input Channel 14	8	Output Channel 6	7	Output Channel 14
26	Input Channel 7	25	Input Channel 15	6	Output Channel 7	5	Output Channel 15
24	GND	23	GND	4	GND	3	GND
22	24Vdc	21	24Vdc	2	24Vdc	1	24Vdc

## 3.2.8. CT-C139



Pin No.	Description	Pin No.	Description	Pin No.	Description	Pin No.	Description
40	Input Channel 0	39	Input Channel 8	20	Output Channel 0	19	Output Channel 8
38	Input Channel 1	37	Input Channel 9	18	Output Channel 1	17	Output Channel 9
36	Input Channel 2	35	Input Channel 10	16	Output Channel 2	15	Output Channel 10
34	Input Channel 3	33	Input Channel 11	14	Output Channel 3	13	Output Channel 11
32	Input Channel 4	31	Input Channel 12	12	Output Channel 4	11	Output Channel 12
30	Input Channel 5	29	Input Channel 13	10	Output Channel 5	9	Output Channel 13
28	Input Channel 6	27	Input Channel 14	8	Output Channel 6	7	Output Channel 14
26	Input Channel 7	25	Input Channel 15	6	Output Channel 7	5	Output Channel 15
24	GND	23	GND	4	GND	3	GND
22	24Vdc	21	24Vdc	2	24Vdc	1	24Vdc

### 3.3. Environment & Interface, General Specification

Environmental Specifications	
Operating Temperature	-20 to 60 °C
Non-Operating Temperature	-40 °C to 85 °C
Relative Humidity	5%~90% non-condensing
Operating Altitude	2000m
Mounting	DIN rail
General Specifications	
System Power	Supply Voltage : 24Vdc nominal Supply Voltage Range : 11~28.8Vdc Protection : Current limit, Reverse polarity protection
Power Dissipation	Max. 80mA@24Vdc
Isolation	DeviceNet to internal logic : Non-isolation Internal logic to IO driver : Isolation
IO Power	Supply Voltage : 24Vdc nominal Supply Voltage Range : 11~28.8Vdc
Module Size	35mm x 80mm x 55mm
Module Weight	200g, TBD
Module Mount	DIN Rail or Bracket(CT-BRACKET, Optional), TBD
Mates to IO Connectors	Hirose,HIF3A-40D-2.54R(Ribbon Connector) 1A/pin Hirose,HIF3C-40D-2.54C(Crimp Connector),HIF3C-2226SCFA(Crimp Pin), 3A/pin Many vendors are available. TBD
Common Type	4pt-24Vdc, 4pt-0Vdc
Interface Specifications	
Adapter Type	Group 2 Only Slave
Max. Input Size	Base IO (max 4bytes)
Max. Output Size	Base IO (max 4bytes)
Max. Length Bus Line	Max.100m@500Kbps, Max. 250m@250Kbps, Max. 500m@125Kbps
Communication Speed	125Kbps, 250Kbps, 500Kbps, auto baud supported, DIP Switch
Network Protocol	Poll, Bit-Strobe, Cyclic, COS
Interface Connector	5pin Open male connector
Max. Nodes	64 nodes
Node MAC ID setup	DIP Switch
Indicators	3 LEDs 1 Green/Red, Module Status ( MOD ) 1 Green, Network Status ( NET ) 1 Green/Red Expansion I/O Module Status (I/O)
Termination Method	Bottom DIP switch can set Internal Termination Resistor On/Off

### 3.4. Specification

#### 3.4.1. CT-C111

Items	Specification
<b>Interface Specification</b>	
Number of Input	32 Points, Sink Type (GND Common internally shorted)
Indicates	1 LED/1Point
Input Voltage	Nominal 24Vdc, 11~28.8Vdc
Max. Off-State Voltage	5Vdc
Min. On-State Voltage	9Vdc
Input Signal Delay	< 0.5msec
Input Impedance	About 5.4K $\Omega$
<b>General Specification</b>	
Power Dissipation	Max. 110mA @ 5.0Vdc
Isolation	DeviceNet to internal logic : Non-isolation Internal logic to I/O driver : Isolation
System Power	Supply voltage : 24Vdc nominal Supply voltage range : 11~28.8Vdc Protection : Current Limit, Reverse polarity protection
IO Power	Supply voltage : 24Vdc nominal Supply voltage range : 11~28.8Vdc
Weight	Max. 200g
Module Size	35mm × 80mm × 55mm
Module Mount	DIN Rail or Bracket(CT-BRACKET, Optional), TBD
Mates to IO Connectors	Hirose,HIF3A-40D-2.54R(Ribbon Connector), 1A/pin Hirose,HIF3C-40D-2.54C(Crimp Connector),HIF3C-2226SCFA(Crimp Pin), 3A/pin Many vendors are available. TBD
Environment Condition	Refer to " 3.3. Environment & Communication Interface Specification"

### 3.4.2. CT-C112

Items	Specification
<b>Interface Specification</b>	
Number of Input	32 Points, Source Type (24Vdc Power internally shorted)
Indicates	1 LED/1Point
Input Voltage	Nominal 24Vdc, 11~28.8Vdc
Max. Off-State Voltage	5Vdc
Min. On-State Voltage	9Vdc
Input Signal Delay	< 0.5msec
Input Impedance	About 5.4KΩ
<b>General Specification</b>	
Power Dissipation	Max. 110mA @ 5.0Vdc
Isolation	DeviceNet to internal logic : Non-isolation Internal logic to I/O driver : Isolation
System Power	Supply voltage : 24Vdc nominal Supply voltage range : 11~28.8Vdc Protection : Current Limit, Reverse polarity protection
IO Power	Supply voltage : 24Vdc nominal Supply voltage range : 11~28.8Vdc
Weight	Max. 200g
Module Size	35mm × 80mm × 55mm
Module Mount	DIN Rail or Bracket(CT-BRACKET, Optional), TBD
Mates to IO Connectors	Hirose,HIF3A-40D-2.54R(Ribbon Connector), 1A/pin Hirose,HIF3C-40D-2.54C(Crimp Connector),HIF3C-2226SCFA(Crimp Pin), 3A/pin Many vendors are available. TBD
Environment Condition	Refer to " 3.3. Environment & Communication Interface Specification"

### 3.4.3. CT-C121

Items	Specification
<b>Interface Specification</b>	
Number of Output	32 Points, Sink Type (GND Common internally shorted, like to TR's NPN)
Indicates	1 LED/1Point
Output Current	Max. 0.5A/1Point, 8A/All
Output Voltage	Nominal 24Vdc, 11~28.8 Vdc
Drop Voltage(ON-state)	Max. 0.3Vdc
Leakage Current(OFF-state)	Max.50uA
Output Signal Delay	< 0.3msec
Protection	Short protection, Over Temperature protection, Over Current Limit
<b>General Specification</b>	
Power Dissipation	Max. 110mA @ 5.0Vdc
Isolation	DeviceNet to internal logic : Non-isolation Internal logic to I/O driver : Isolation
System Power	Supply voltage : 24Vdc nominal Supply voltage range : 11~28.8Vdc Protection : Current Limit, Reverse polarity protection
IO Power	Supply voltage : 24Vdc nominal Supply voltage range : 11~28.8Vdc
Weight	Max. 200g
Module Size	35mm × 80mm × 55mm
Module Mount	DIN Rail or Bracket(CT-BRACKET, Optional), TBD
Mates to IO Connectors	Hirose,HIF3A-40D-2.54R(Ribbon Connector), 1A/pin Hirose,HIF3C-40D-2.54C(Crimp Connector),HIF3C-2226SCFA(Crimp Pin), 3A/pin Many vendors are available. TBD
Environment Condition	Refer to " 3.3. Environment & Communication Interface Specification"

### 3.4.4. CT-C122

Items	Specification
<b>Interface Specification</b>	
Number of Output	32 Points, Source Type (24V Power internally shorted, like to TR's PNP)
Indicates	1 LED/1Point
Output Current	Max. 0.5A/1Point, 8A/All
Output Voltage	Nominal 24Vdc, 11~28.8 Vdc
Drop Voltage(ON-state)	Max. 0.3Vdc
Leakage Current(OFF-state)	Max.50uA
Output Signal Delay	< 0.3msec
Protection	Short protection, Over Temperature protection, Over Current Limit
<b>General Specification</b>	
Power Dissipation	Max. 110mA @ 5.0Vdc
Isolation	DeviceNet to internal logic : Non-isolation Internal logic to I/O driver : Isolation
System Power	Supply voltage : 24Vdc nominal Supply voltage range : 11~28.8Vdc Protection : Current Limit, Reverse polarity protection
IO Power	Supply voltage : 24Vdc nominal Supply voltage range : 11~28.8Vdc
Weight	Max. 200g
Module Size	35mm × 80mm × 55mm
Module Mount	DIN Rail or Bracket(CT-BRACKET, Optional), TBD
Mates to IO Connectors	Hirose,HIF3A-40D-2.54R(Ribbon Connector), 1A/pin Hirose,HIF3C-40D-2.54C(Crimp Connector),HIF3C-2226SCFA(Crimp Pin), 3A/pin Many vendors are available. TBD
Environment Condition	Refer to " 3.3. Environment & Communication Interface Specification"

### 3.4.5. CT-C133

Items	Specification
<b>Interface Specification</b>	
Number of Input	16 Points, Sink Type
Indicates	1 LED/1Point
Input Voltage	Nominal 24Vdc, 11~28.8Vdc
Max. Off-State Voltage	5Vdc
Min. On-State Voltage	9Vdc
Input Signal Delay	< 0.5msec
Input Impedance	About 5.4K $\Omega$
<b>Interface Specification</b>	
Number of Output	16 Points, Source Type
Indicates	1 LED/1Point
Output Load Current	Max. 0.5A/1pt, 8A/All
Output Voltage	Nominal 24Vdc, 11~28.8Vdc available
Drop Voltage(ON-state)	Max. 0.3Vdc
Leakage Current(OFF-state)	Max. 50uA
Output Signal Delay	< 0.3msec
Protection	Short protection, Over Temperature protection, Over Current Limit
<b>General Specification</b>	
Power Dissipation	Max. 110mA @ 5.0Vdc
Isolation	DeviceNet to internal logic : Non-isolation Internal logic to I/O driver : Isolation
System Power	Supply voltage : 24Vdc nominal Supply voltage range : 11~28.8Vdc Protection : Current Limit, Reverse polarity protection
IO Power	Supply voltage : 24Vdc nominal Supply voltage range : 11~28.8Vdc
Weight	Max. 200g
Module Size	35mm × 80mm × 55mm
Module Mount	DIN Rail or Bracket(CT-BRACKET, Optional), TBD
Mates to IO Connectors	Hirose,HIF3A-40D-2.54R(Ribbon Connector), 1A/pin Hirose,HIF3C-40D-2.54C(Crimp Connector),HIF3C-2226SCFA(Crimp Pin), 3A/pin Many vendors are available. TBD
Environment Condition	Refer to " 3.3. Environment & Communication Interface Specification"



### 3.4.6. CT-C134

Items	Specification
<b>Interface Specification</b>	
Number of Input	16 Points, Source Type
Indicates	1 LED/1Point
Input Voltage	Nominal 24Vdc, 11~28.8Vdc
Max. Off-State Voltage	5Vdc
Min. On-State Voltage	9Vdc
Input Signal Delay	< 0.5msec
Input Impedance	About 5.4KΩ
<b>Interface Specification</b>	
Number of Output	16 Points, Sink Type
Indicates	1 LED/1Point
Output Load Current	Max. 0.5A/1pt, 8A/All
Output Voltage	Nominal 24Vdc, 11~28.8Vdc available
Drop Voltage(ON-state)	Max. 0.3Vdc
Leakage Current(OFF-state)	Max. 50uA
Output Signal Delay	< 0.3msec
Protection	Short protection, Over Temperature protection, Over Current Limit
<b>General Specification</b>	
Power Dissipation	Max. 110mA @ 5.0Vdc
Isolation	DeviceNet to internal logic : Non-isolation Internal logic to I/O driver : Isolation
System Power	Supply voltage : 24Vdc nominal Supply voltage range : 11~28.8Vdc Protection : Current Limit, Reverse polarity protection
IO Power	Supply voltage : 24Vdc nominal Supply voltage range : 11~28.8Vdc
Weight	Max. 200g
Module Size	35mm × 80mm × 55mm
Module Mount	DIN Rail or Bracket(CT-BRACKET, Optional), TBD
Mates to IO Connectors	Hirose,HIF3A-40D-2.54R(Ribbon Connector), 1A/pin Hirose,HIF3C-40D-2.54C(Crimp Connector),HIF3C-2226SCFA(Crimp Pin), 3A/pin Many vendors are available. TBD
Environment Condition	Refer to " 3.3. Environment & Communication Interface Specification"

### 3.4.7. CT-C138

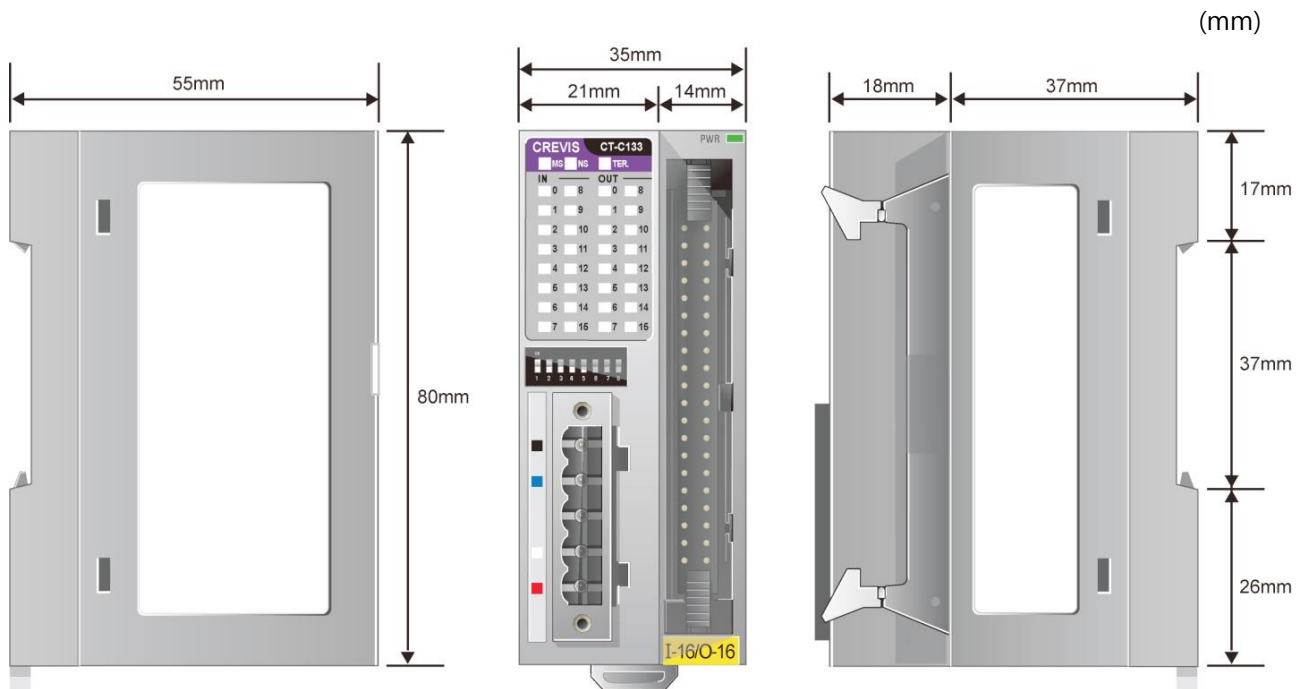
Items	Specification
<b>Interface Specification</b>	
Number of Input	16 Points, Sink Type
Indicates	1 LED/1Point
Input Voltage	Nominal 24Vdc, 11~28.8Vdc
Max. Off-State Voltage	5Vdc
Min. On-State Voltage	9Vdc
Input Signal Delay	< 0.5msec
Input Impedance	About 5.4K $\Omega$
<b>Interface Specification</b>	
Number of Output	16 Points, Sink Type
Indicates	1 LED/1Point
Output Load Current	Max. 0.5A/1pt, 8A/All
Output Voltage	Nominal 24Vdc, 11~28.8Vdc available
Drop Voltage(ON-state)	Max. 0.3Vdc
Leakage Current(OFF-state)	Max. 50uA
Output Signal Delay	< 0.3msec
Protection	Short protection, Over Temperature protection, Over Current Limit
<b>General Specification</b>	
Power Dissipation	Max. 110mA @ 5.0Vdc
Isolation	DeviceNet to internal logic : Non-isolation Internal logic to I/O driver : Isolation
System Power	Supply voltage : 24Vdc nominal Supply voltage range : 11~28.8Vdc Protection : Current Limit, Reverse polarity protection
IO Power	Supply voltage : 24Vdc nominal Supply voltage range : 11~28.8Vdc
Weight	Max. 200g
Module Size	35mm × 80mm × 55mm
Module Mount	DIN Rail or Bracket(CT-BRACKET, Optional), TBD
Mates to IO Connectors	Hirose,HIF3A-40D-2.54R(Ribbon Connector), 1A/pin Hirose,HIF3C-40D-2.54C(Crimp Connector),HIF3C-2226SCFA(Crimp Pin), 3A/pin Many vendors are available. TBD
Environment Condition	Refer to " 3.3. Environment & Communication Interface Specification"

### 3.4.8. CT-C139

Items	Specification
<b>Interface Specification</b>	
Number of Input	16 Points, Source Type
Indicates	1 LED/1Point
Input Voltage	Nominal 24Vdc, 11~28.8Vdc
Max. Off-State Voltage	5Vdc
Min. On-State Voltage	9Vdc
Input Signal Delay	< 0.5msec
Input Impedance	About 5.4KΩ
<b>Interface Specification</b>	
Number of Output	16 Points, Source Type
Indicates	1 LED/1Point
Output Load Current	Max. 0.5A/1pt, 8A/All
Output Voltage	Nominal 24Vdc, 11~28.8Vdc available
Drop Voltage(ON-state)	Max. 0.3Vdc
Leakage Current(OFF-state)	Max. 50uA
Output Signal Delay	< 0.3msec
Protection	Short protection, Over Temperature protection, Over Current Limit
<b>General Specification</b>	
Power Dissipation	Max. 110mA @ 5.0Vdc
Isolation	DeviceNet to internal logic : Non-isolation Internal logic to I/O driver : Isolation
System Power	Supply voltage : 24Vdc nominal Supply voltage range : 11~28.8Vdc Protection : Current Limit, Reverse polarity protection
IO Power	Supply voltage : 24Vdc nominal Supply voltage range : 11~28.8Vdc
Weight	Max. 200g
Module Size	35mm × 80mm × 55mm
Module Mount	DIN Rail or Bracket(CT-BRACKET, Optional), TBD
Mates to IO Connectors	Hirose,HIF3A-40D-2.54R(Ribbon Connector), 1A/pin Hirose,HIF3C-40D-2.54C(Crimp Connector),HIF3C-2226SCFA(Crimp Pin), 3A/pin Many vendors are available. TBD
Environment Condition	Refer to " 3.3. Environment & Communication Interface Specification"

## 4. Dimension

### 4.1. CT-C1xx





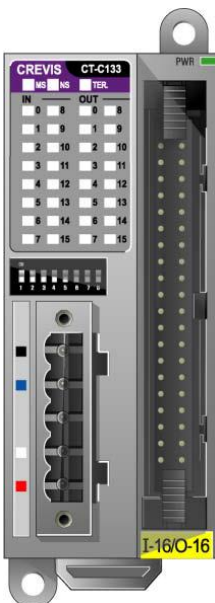
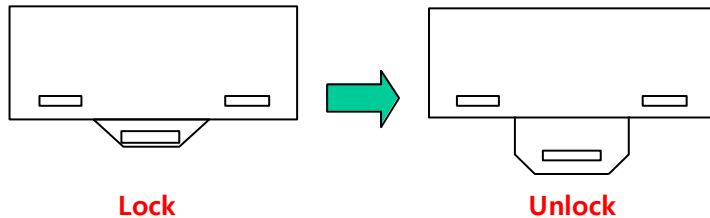
## 5. Mechanical Set Up

### 5.1. Plugging and Removal of the Components.



Before work is done on the components, the voltage supply must be turned off.

Make sure pull up the locker first as the picture above and then pull down after install the module on DIN rail.



Use a small-bladed screwdriver to lift up Locker. Install the Module on Din rail firmly. Lift down locker to lock. To remove the modules please repeat it in opposite sequence.

Bracket Mount, Thickness=2mm  
 - 2Holes, 3.4mm  
 - 24mm x 87mm

## 6. DVCENET OBJECT MODELS

A DeviceNet node is modeled as a collection of Objects. An Object provides an abstract representation of a particular component within a product. The realization of this abstract object model within a product is implementation dependent. In other words, a product internally maps this object model in a fashion specific to its implementation.

The objects and their components are addressed by a uniform addressing scheme consisting of :

- Media Access Control Identifier (MAC ID), an integer identification value assigned to each node on a DeviceNet network.
- Class Identifier (Class ID), an integer identification value assigned to each Object Class accessible from the network.
- Instance Identifier (Instance ID), an integer identification value assigned to an Object Instance that identifies it among all Instances of the same Class.
- Attribute Identifier (Attribute ID), an integer identification value assigned to a Class and/or Instance Attribute.
- Service Code, an integer identification value which denotes a particular Object Instance and/or Object Class function.

### 6.1. Supported Objects

- Device Type Number : 07<sub>HEX</sub> (General Purpose Discrete I/O)

Name of Object	Type	Number of Instances	Class Code
Identity	Required	1	01 <sub>HEX</sub>
Message Router	Required	1	02 <sub>HEX</sub>
DeviceNet	Required	1	03 <sub>HEX</sub>
Assembly	Required	2 ~ 4	04 <sub>HEX</sub>
Connection	Required	4	05 <sub>HEX</sub>
Acknowledge Handler	Required	1	2B <sub>HEX</sub>
Discrete Input Point	Required for Input	0 ~ 32	08 <sub>HEX</sub>
Discrete Output Point	Required for Output	0~ 32	09 <sub>HEX</sub>
Discrete Output Group	Optional	0 or 1	1E <sub>HEX</sub>

- Number of Instances depend on Module.

## 6.2. Objects Behavior, Interface

Object	Behavior	Interface
Identity	Device identification, reset service	Message Router
DeviceNet	Configures port attributes	Message Router
Assembly	Defines I/O data format and concatenates configuration data	I/O Connection or Message Router
Connection	Contains the number of logical ports into or out of the device	Message Router
Acknowledge Handler	Manage the reception of message acknowledgments	Message Router
Discrete Input Point	Defines behavior of the discrete input points for this device	Message Router
Discrete Output Point	Defines behavior of the discrete output points for this device	Message Router
Discrete Output Group	Defines the Idle and Fault actions of the discrete output points	Message Router



### 6.3. Identity Object

Class Code: 01<sub>HEX</sub>

#### 6.3.1. Common Services

Service Code	Implemented for		Service Name	Value
	Class	Instance		
0x05	No	Yes	Reset	0: Reset Only 1: Reset and Factory Default
0x0E	No	Yes	Get_Attribute_Single	

#### 6.3.2. Class Attributes

None

#### 6.3.3. Instance Attributes

Instance ID	Attribute ID	Access Rule	Name	Data Type	Value
1	1	Get	Vendor ID	UINT	741 (Crevis Co., Ltd)
	2	Get	Device Type	UINT	07 <sub>HEX</sub> (General Purpose Discrete I/O)
	3	Get	Product Code	UINT	
	4	Get	Revision - Major - Minor	Structure of: USINT USINT	1 ~ 9 1 ~ 255
	5	Get	Status	WORD	Defined in Spec
	6	Get	Serial Number	UDINT	Unique Number
	7	Get	Product Name - String Length - ASCII String	Structure of: USINT STRING	“CT-C1xx, xxxxxxxx”
	9	Get	CRC	UINT	EEPROM Checksum Code
	<b>Vendor-specific</b>				
	100(64h)	Get	Device Fault Code	USINT	00 <sub>HEX</sub> : Normal Operation Bit 4: EEPROM Checksum fault Bit 6: Invalid Module ID Bit 7: Firmware fault
	102(66h)	Get	Firmware Code	USINT	201: FnIO C-Series
	103(67h)	Get	ODVA Conformance Test Revision	UINT	0x0A17 → “A-17”
	104(68h)	Get	Firmware Release Date	UDINT	0xYYYYMMDD ex) 0x20030417 → 2003/04/17
	107(6Bh)	Get	Inspection Date	UDINT	0xYYYYMMDD
	120(78h)	Get	DIP Switch Value	USINT	
	192(C0h)	Get		UINT	
	193(C1h)	Get	Catalog Name String - String Length - ASCII String	Structure of: USINT STRING	7 “CT-C1xx”

## 6.4. Message Router Object

Class Code: 02<sub>HEX</sub>

### 6.4.1. Common Services

None

### 6.4.2. Class Attributes

None

### 6.4.3. Instance Attributes

None

## 6.5. DeviceNet Object

Class Code: 03<sub>HEX</sub>

### 6.5.1. Common Services

Service Code	Implemented for		Service Name
	Class	Instance	
0x0E	Yes	Yes	Get_Attribute_Single
0x10	No	Yes	Set_Attribute_Single
0x4B	No	Yes	Allocate_Master/Slave_Connection_Set
0x4C	No	Yes	Release_Master/Slave_Connection_Set

### 6.5.2. Class Attributes

Instance ID	Attribute ID	Access Rule	Name	Data Type	Value
0	1	Get	Revision	UINT	02, 00

### 6.5.3. Instance Attributes

Instance ID	Attribute ID	Access Rule	Name	Data Type	Value
1	1	Get	MAC ID	USINT	0 ~ 63
	2	Get	Baud Rate	USINT	0=125K, 1=250K, 2=500K
	3	Get/Set	BOI	BOOL	faulted node recovery
	4	Get	Bus-Off Counter	USINT	0 ~ 255
	5	Get	Allocation Information - Allocation Choice - Master's MAC ID	Structure of: BYTE USINT	0~63: Master MAC ID, 255: unallocated
	8	Get	MACID Switch Value	USINT	Actual value of DIP for MAC ID
	9	Get	Baud Rate Switch value	USINT	Actual value of DIP for Baud rate
	<b>Vendor-specific</b>				
	101(65h)	Get/Set	Quick Start	USINT	0: Normal Start-up (Default) 1: Quick Start-up - Without IO LED Test - Without Duplicate Mac 2: Quick Start-up - Without IO LED Test - Without Duplicate Mac - Without MS/NS/TER. LED
	111(6Fh)	Get	DIP Switch value	USINT	Actual value of DIP Switch

## 6.6. Assembly Object

Class Code: 04<sub>HEX</sub>

### 6.6.1. Common Services

Service Code	Implemented for		Service Name
	Class	Instance	
0x0E	No	Yes	Get_Attribute_Single
0x10	No	Yes	Set_Attribute_Single

### 6.6.2. Class Attributes

None

### 6.6.3. Input Instance Attributes

- Input/output Instance ID

Instance ID	Attribute ID	Access Rule	Name	Data Type	Value
100	3	Get	Input (Produced) Process Image Data	Array n BYTE	Input process current image data
150	3	Set/Get	Output (Consumed) Process Image Data	Array n BYTE	Output process current image data

- Supported Input / Output Instance Number

Module	Description	Input Size	Output Size	Input Instance No.	Output Instance No.
CT-C111	Sink Input 32pt	4	0	4, 100	-
CT-C112	Source Input 32pt	4	0	4, 100	-
CT-C121	Sink Output 32pt	0	4	-	36, 150
CT-C122	Source Output 32pt	0	4	-	36, 150
CT-C133	Sink Input 16pt/Source Output 16pt	2	2	5, 100	36, 150
CT-C134	Source Input 16pt/Sink Output 16pt	2	2	5, 100	36, 150
CT-C138*	Sink Input 16pt/Sink Output 16pt	2	2	5, 100	36, 150
CT-C139*	Source Input 16pt/Source Output 16pt	2	2	5, 100	36, 150

\* Contact us.

## 6.7. Connection Object

Class Code: 05<sub>HEX</sub>

### 6.7.1. Common Services

Service Code	Implemented for		Service Name
	Class	Instance	
0x0E	No	Yes	Get_Attribute_Single
0x10	No	No	Set_Attribute_Single

### 6.7.2. Class Attributes

None

### 6.7.3. Instance Attributes for Explicit Messaging Connection

Instance ID	Attribute ID	Access Rule	Name	Data Type	Value
1	1	Get	state	USINT	Defined in Spec
	2	Get	instance_type	USINT	0: Explicit Message
	3	Get	transportClass_trigger	BYTE	83 <sub>HEX</sub>
	4	Get	produced_connection_id	UINT	
	5	Get	consumed_connection_id	UINT	
	6	Get	initial_comm_characteristics	BYTE	21 <sub>HEX</sub>
	7	Get	produced_connection_size	UINT	38
	8	Get	consumed_connection_size	UINT	38
	9	Get/Set	expacted_packet_rate	UINT	2500 (default) Timer Resolution of 8msec
	12	Get/Set	watchdog_timeout_action	USINT	1: Auto Delete (default)
	13	Get	produced_connection_path_length	UINT	00, 00
	14	Get	produced_connection_path	Array of USINT	Empty
	15	Get	consumed_connection_path_length	UINT	00, 00
	16	Get	consumed_connection_path	Array of USINT	Empty

#### 6.7.4. Instance Attributes for Poll I/O Connection

Instance ID	Attribute ID	Access Rule	Name	Data Type	Value
2	1	Get	State	USINT	Defined in Spec
	2	Get	instance_type	USINT	1: I/O Message
	3	Get	transportClass_trigger	BYTE	82 <sub>HEX</sub>
	4	Get	produced_connection_id	UINT	
	5	Get	consumed_connection_id	UINT	
	6	Get	initial_comm_characteristics	BYTE	01 <sub>HEX</sub>
	7	Get	produced_connection_size	UINT	0 to 4
	8	Get	consumed_connection_size	UINT	0 to 4
	9	Get/Set	expacted_packet_rate	UINT	Timer Resolution of 8msec
	12	Get	watchdog_timeout_action	USINT	0: Time Out (default)
	13	Get	produced_connection_path_length	UINT	0 or 6
	14	Get	produced_connection_path	Array of USINT	
	15	Get	consumed_connection_path_length	UINT	0 or 6
	16	Get	consumed_connection_path	Array of USINT	

#### 6.7.5. Instance Attributes for Bit-Strobe I/O Connection

Instance ID	Attribute ID	Access Rule	Name	Data Type	Value
3	1	Get	state	USINT	Defined in Spec
	2	Get	instance_type	USINT	1: I/O Message
	3	Get	transportClass_trigger	BYTE	82 <sub>HEX</sub>
	4	Get	produced_connection_id	UINT	
	5	Get	consumed_connection_id	UINT	
	6	Get	initial_comm_characteristics	BYTE	02 <sub>HEX</sub>
	7	Get	produced_connection_size	UINT	0 to 8
	8	Get	consumed_connection_size	UINT	8
	9	Get/Set	expacted_packet_rate	UINT	Timer Resolution of 8msec
	12	Get	watchdog_timeout_action	USINT	0: Time Out (default)
	13	Get	produced_connection_path_length	UINT	0 or 6
	14	Get	produced_connection_path	Array of USINT	
	15	Get	consumed_connection_path_length	UINT	0 or 6
	16	Get	consumed_connection_path	Array of USINT	

### 6.7.6. Instance Attributes for COS I/O Connection (Acknowledged)

Instance ID	Attribute ID	Access Rule	Name	Data Type	Value
4	1	Get	State	USINT	Defined in Spec
	2	Get	instance_type	USINT	1: I/O Message
	3	Get	transportClass_trigger	BYTE	12 <sub>HEX</sub>
	4	Get	produced_connection_id	UINT	
	5	Get	consumed_connection_id	UINT	
	6	Get	initial_comm_characteristics	BYTE	1
	7	Get	produced_connection_size	UINT	0 to 4
	8	Get	consumed_connection_size	UINT	0
	9	Get/Set	expacted_packet_rate	UINT	Timer Resolution of 8msec
	12	Get/Set	watchdog_timeout_action	USINT	0: Time Out (default)
	13	Get	produced_connection_path_length	UINT	0 or 6
	14	Get	produced_connection_path	Array of USINT	
	15	Get	consumed_connection_path_length	UINT	4
	16	Get	consumed_connection_path	Array of USINT	20 2B 24 01
	17	Get/Set	production_inhibit_time	UINT	00, 00

### 6.7.7. Instance Attributes for COS I/O Connection (Unacknowledged)

Instance ID	Attribute ID	Access Rule	Name	Data Type	Value
4	1	Get	State	USINT	Defined in Spec
	2	Get	instance_type	USINT	1: I/O Message
	3	Get	transportClass_trigger	BYTE	10 <sub>HEX</sub>
	4	Get	produced_connection_id	UINT	
	5	Get	consumed_connection_id	UINT	0FFFF <sub>HEX</sub>
	6	Get	initial_comm_characteristics	BYTE	0F <sub>HEX</sub>
	7	Get	produced_connection_size	UINT	0 to 4
	8	Get	consumed_connection_size	UINT	0
	9	Get/Set	expacted_packet_rate	UINT	Timer Resolution of 8msec
	12	Get/Set	watchdog_timeout_action	USINT	0: Time Out (default)
	13	Get	produced_connection_path_length	UINT	0 or 6
	14	Get	produced_connection_path	Array of USINT	
	15	Get	consumed_connection_path_length	UINT	0
	16	Get	consumed_connection_path	Array of USINT	Empty
	17	Get/Set	production_inhibit_time	UINT	00, 00

## 6.8. Acknowledge Handler Object

Class Code: 2B<sub>HEX</sub>

### 6.8.1. Common Services

Service Code	Implemented for		Service Name
	Class	Instance	
0x0E	Yes	Yes	Get_Attribute_Single

### 6.8.2. Class Attributes

None

### 6.8.3. Instance Attributes

Instance ID	Attribute ID	Access Rule	Name	Data Type	Value
1	1	Set	Acknowledge Timer	UNIT	Default: 16
	2	Get	Retry Limit	USINT	1
	3	Get	COS Producing Connection Instance	UINT	4



## 6.9. Discrete Input Point Object

Class Code: 08<sub>HEX</sub>

### 6.9.1. Common Services

Service Code	Implemented for		Service Name
	Class	Instance	
0x0E	Yes	Yes	Get_Attribute_Single
0x10	No	Yes	Set_Attribute_Single

### 6.9.2. Class Attributes

Instance ID	Attribute ID	Access Rule	Name	Data Type	Value
0	1	Get	Revision	UNIT	02h, 00

### 6.9.3. Instance Attributes

Instance ID	Attribute ID	Access Rule	Name	Data Type	Value
1 ~ 32	3	Get	Value	BOOL	0: Off, 1: On
	<i>Vendor Specific</i>				
	112(70h)	Get	Packed IO Data	Array BYTE	
	113(71h)	Get	Packed IO Size	UINT	

## 6.10. Discrete Output Point Object

Class Code: 09<sub>HEX</sub>

### 6.10.1. Common Services

Service Code	Implemented for		Service Name
	Class	Instance	
0x0E	No	Yes	Get_Attribute_Single
0x10	No	Yes	Set_Attribute_Single

### 6.10.2. Class Attributes

None

### 6.10.3. Instance Attributes

Instance ID	Attribute ID	Access Rule	Name	Data Type	Value
1 ~ 32	3	Get/Set	Value	BOOL	0: Off, 1: On
	5	Get/Set	Fault Action	BOOL	0: Fault Value Attribute 1: Hold last state
	6	Get/Set	Fault Value	BOOL	0: Off, 1: On
	7	Get/Set	Idle Action	BOOL	0: Idle Value Attribute 1: Hold last state
	8	Get/Set	Idle Value	BOOL	0: Off, 1: On
	12	Get	Object State	USINT	1: Non-Extent 2: Available 3: Idle 4: Ready 5: Run 6: Recoverable Fault 7: Unrecoverable Fault
	<b>Vendor Specific</b>				
	112(70h)	Get	Packed IO Data	Array BYTE	
	113(71h)	Get	Packed IO Size	UINT	

## 6.11. Discrete Output Group Object

Class Code: 1E<sub>HEX</sub>

### 6.11.1. Common Services

Service Code	Implemented for		Service Name
	Class	Instance	
0x0E	No	Yes	Get_Attribute_Single
0x10	No	Yes	Set_Attribute_Single

### 6.11.2. Class Attributes

None

### 6.11.3. Instance Attributes

Instance ID	Attribute ID	Access Rule	Name	Data Type	Value
1	6	Set	Idle Command	BOOL	0: Idle, 1: Run

## 7. Configuration and Operation

### 7.1. DeviceNet Composition

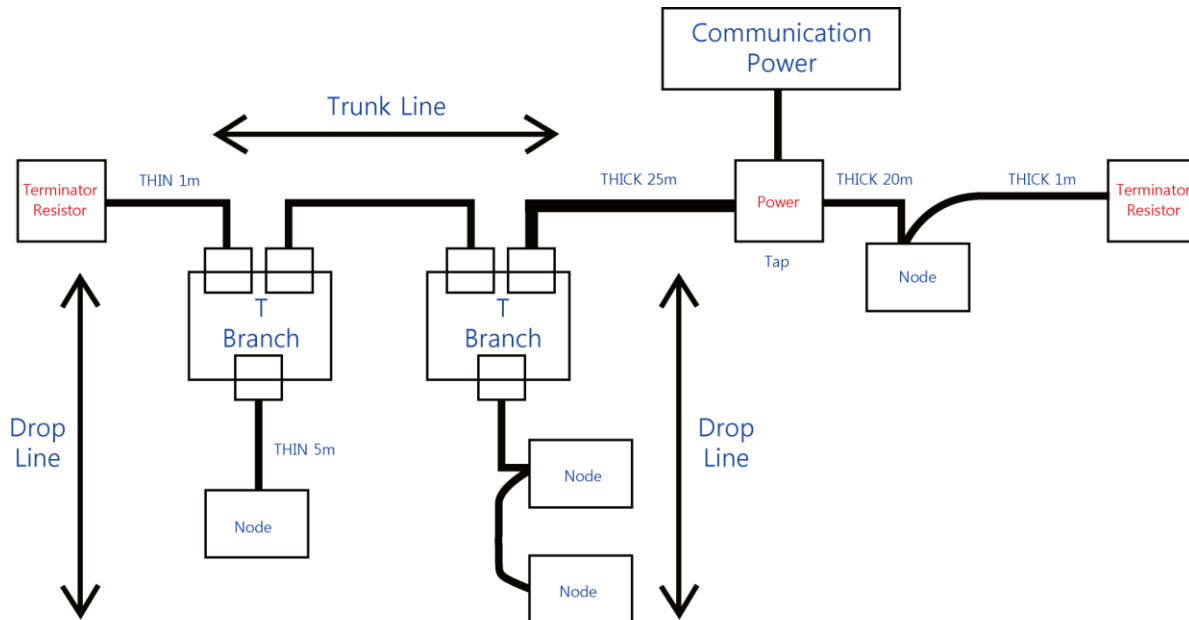


Figure 2. DeviceNet Network Example.

#### ● Network Composition

Name	Description
Node	Node is Slave that is charged each address number. DeviceNet is comprised of Master and Slave. Master manages DeviceNet and organizes external I/O in Slave. Slave contacts external I/O.
Trunk / Drop Line	Trunk line is cable that is installed terminator resistor. Drop line is cable that branch from trunk line In the DeviceNet, both trunk and drop line is used.
Connection Mode	Number of Connection mode for DeviceNet is 2 modes. First is T-branch and Second is multi-drop. T-branch is method that branches off drop-line by T-branch tap Multi drop is method what trunk and drop line contacts with node directly.
Terminator Resistor	Terminator resistor is that is installed for reduction a reflected wave in both ends trunk line.
Communication Power	For using DeviceNet, user must supply communication power to each node connector through the DeviceNet cable.

## 7.2. DeviceNet Module(CT-C1xx) Installation

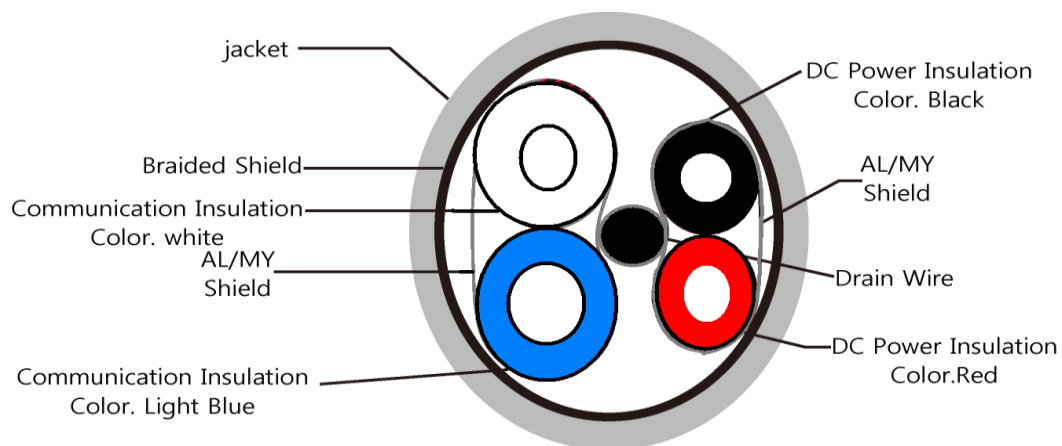
### 7.2.1. DeviceNet Cable Specification

- **Communication Cable Specification**

DeviceNet Cable Specification

In the DeviceNet Specification There is the exclusive cable below

(DeviceNet Specification Volume Release2.0 Errate2, FnIO\_Configuration\_Parameter\_....pdf)



Physical Characteristics	Thick Cable Spec	Thin Cable Spec
<b>Communication cable</b>		
Conductor pair size	#18 Copper (minimum) : 19 strand min (individually tinned)	#24 Copper (minimum) : 19 strand min (individually tinned)
Insulation diameter	0.150 inches	0.077 inches
Colors	Light blue White	Light blue White
Pair twist/ft	3 (approx.)	5 (approx.)
Impedance	120Ω ± 10% (at 1MHz)	
<b>Power pair</b>		
Conductor pair size	#15 Copper (minimum) : 19 strand min (individually tinned)	#22 Copper (minimum) : 19 strand min (individually tinned)
Insulation diameter	0.098 inches	0.055 inches
Color	Red Black	Red Black
Tape shield over pair	1.0mil/1mil,Al/Mylar Al side out w/shorting fold (pull-on applied)	1.0mil/1mil,Al/Mylar Al side out w/shorting fold (pull-on applied)
Drain wire	#18 Copper (minimum) : 19 strand min	#22 Copper (minimum) : 19 strand min
Roundness	Radius delta to be within 15% of 0.5 O.D	
Agency certification	NEC(UL) type CL2(min.)	
Jacket marker	Vender name & part#, and additional	

The maximum length of network for each cable type is as follows.

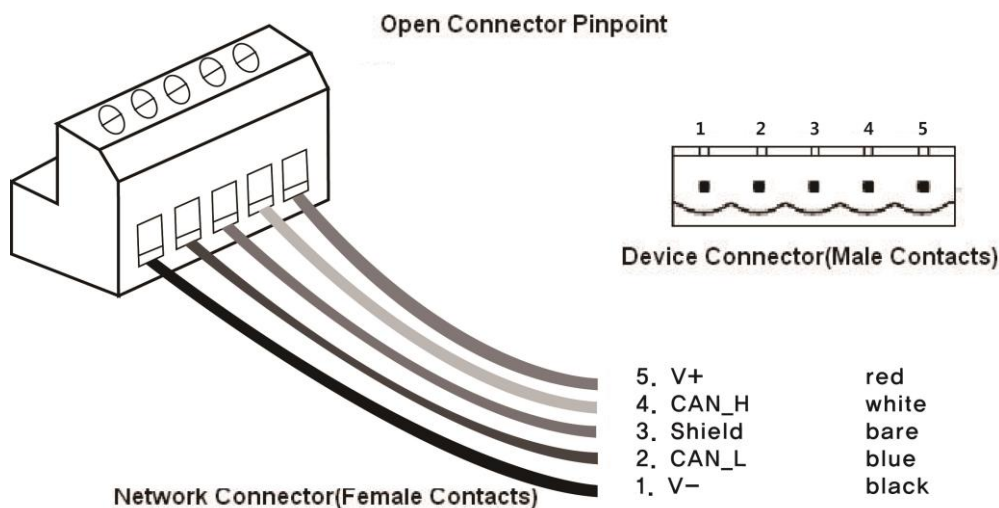
✓ **Thick Cable**

Communication rate	Trunk Length	Trunk Exchange (Thick Cable)	Cumulative drop	Maximum drop
<b>125Kbps</b>	500m(1640ft)	1.0	156m(512ft)	6m(20ft)
<b>250Kbps</b>	250m(820ft)	1.0	76m(256ft)	6m(20ft)
<b>500Kbps</b>	100m(328ft)	1.0	38m(128ft)	6m(20ft)

✓ **Thin Cable**

Communication rate	Trunk Length	Trunk Exchange (Thick Cable)	Cumulative drop	Maximum drop
<b>125Kbps</b>	100m(328ft)	5.0	156m(512ft)	6m(20ft)
<b>250Kbps</b>	100m(328ft)	2.5	76m(256ft)	6m(20ft)
<b>500Kbps</b>	100m(328ft)	1.0	38m(128ft)	6m(20ft)

● **Open Connector Pinpoint**



Device network power is 24V. Network and I/O field power must be separated. One power is provided per network

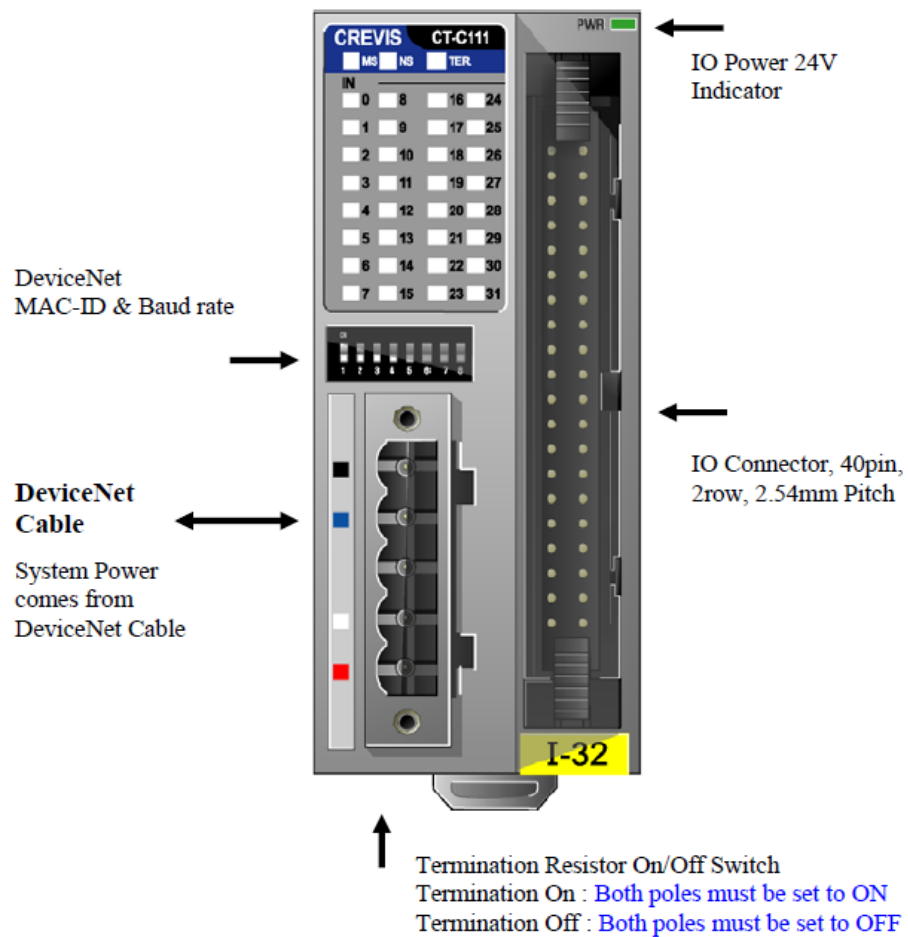
**ATTENTION**



The use of an incorrect supply voltage or frequency can cause severe damage to the component.

### 7.3. DeviceNet Module(CT-C1xx)Configuration

#### 7.3.1. Terminator Resistor Specification

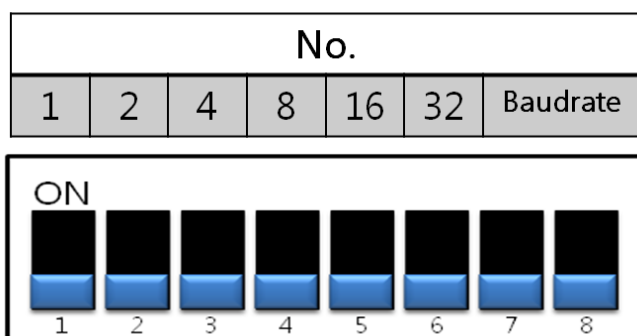


### 7.3.2. MAC ID and Baudrate Setup

#### ● MAC ID Setup

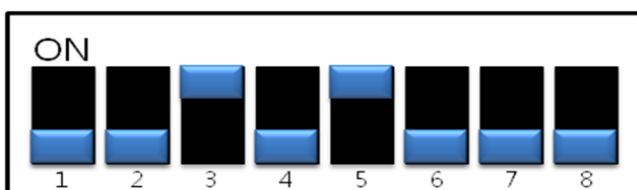
Each DeviceNet Adapter must have an unique MAC ID (from 0 to 63) so that it can be addressed independently from other nodes.

Dip Switch #1~6 setting.



#### ✓ MAC ID Setting Example

When setting MAC ID to No.20 (Bin.10100) No.3 & 5 Dip S/W On.



#### ● Baudrate Setup

DIP #7	DIP #8	Baudrate
OFF	OFF	125Kbps
OFF	ON	250Kbps
ON	OFF	500Kbps
ON	ON	Auto Baudrate

#### ATTENTION



#### \* Directions for setting Node No(Station No)

1. Please set it within the range of contactable Station number (Station no. 00~63)
2. Station number setting out of the range will cause Communication Error.
3. When double setting Station No., communication error occurred



## 8. Trouble Shooting

### ● How to diagnose by LED indicator

LED Status	Cause	Action
All LED turns off	-No power	-Check main power Cable
	-System power is not supplied.	-Contact Sales team and send module for repair.
MOD LED flashes green	-Failure of initialization EEPROM parameter.	-Contact Sales team and send module for repair.
MOD LED flashes red	-Excess of expansion slot - Excess of IO size - Wrong IO composition -Occurrence of EEPROM checksum error	-Use expansion slot up to 32. -Compose that IO total size is not excess. -Check composition I/O Module
MOD LED is red	-Wrong address ID -Occurrence critical error in firmware	-Contact Sales team and send module for repair.
I/O LED turns off	-Failure of realization expansion Module -None expansion Module	-Check connector status both NA series and expansion module.
I/O LED flashes red	Failure of configuration baud rate	-Check communication cable with Master -Check power for master.
	Failure of initialization I/O	-Use expansion slot up to 32. -Compose that IO total size is not excess.
		NA series notice unidentified expansion module ID. Check status of expansion module.
I/O LED is red	Failure of exchanging I/O data	Check status of expansion IO connection.
NET LED turns off	Failure of communication with Master	Check main power for master and communication cable.
NET LED flashed green	Failure of exchanging data with master	Check status in software for Master configuration.
NET LED is red	Communication connecting lost	Check BUS line cable for connection with master.
		Check duplication address.

## ● How to diagnose when device couldn't communicate network

### **Inspection of wrong or omission cable connection.**

- Check status of cable connection for each node.
- Check that all color matches between connector and cable.
- Check wire omission.

### **Terminator resistor**

- If terminator resistor is not installed, install terminator resistor
- Check location of terminator resistor

### **Configuration of Node address**

- Check duplication node address.

### **Configuration of Master**

- Check configuration of master
- Check whether to do download
- Check composition is right
  - Configuration of communication baud rate
  - I/O size
  - Configuration of each node

### **Ground and environment**

- Check ground is contacted
- Check environment factor (temperature, humidity, etc) is in less than regular limit