

Embedded DeviceNet Slave ASIC DN-1022

User Manual

V 1.6

REV A



SST Automation

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1 Introduction


1.1 About This Document

This document describes the parameters, functions, and considerations of the DN-1022, providing a detailed technical implementation guide for developers.

Before reading this document, we assume you have a good knowledge of the DeviceNet bus system and the communication system.

1.2 Important User Information

The data and examples in this document cannot be copied without authorization. SSTCOMM may upgrade the product without notifying users.

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The product has many applications. The users must make sure that all operations and results are in accordance with the safety of relevant field, and the safety includes laws, rules, codes and standards.

1.3 Related Products and Document

Related products :Embedded DeviceNet communication interface card

Related document:Embedded DeviceNet communication interface card manual

1.4 Terms

DeviceNet:DeviceNet protocol ,accord with GB/T188581.1,GB/T18858.3 and DeviceNet Protocol Release2.0

DN-1022:DeviceNet slave ASIC, built in DeviceNet Group 2 Only Slave protocol stack

2 Product Overview

Before reading this document, we assume you have a good knowledge of the DeviceNet ,and the rights of DeviceNet™ belongs to ODVA.

If your product needs to use the ODVA via identity, you should get a legal manufacturer device number from the ODVA,DN-1022 and The relevant technical implementation guidelines can help your product achieve the corresponding technical specifications of DeviceNet.But it does not mean that you can use the ODVA official certification mark.please refer to www.odva.org

We currently provide DN-1022 TQFP44 package.

2.1 Product Function

DN-1022 has Built-in CAN port and DeviceNet processing engine, high-speed serial, parallel and configuration port.

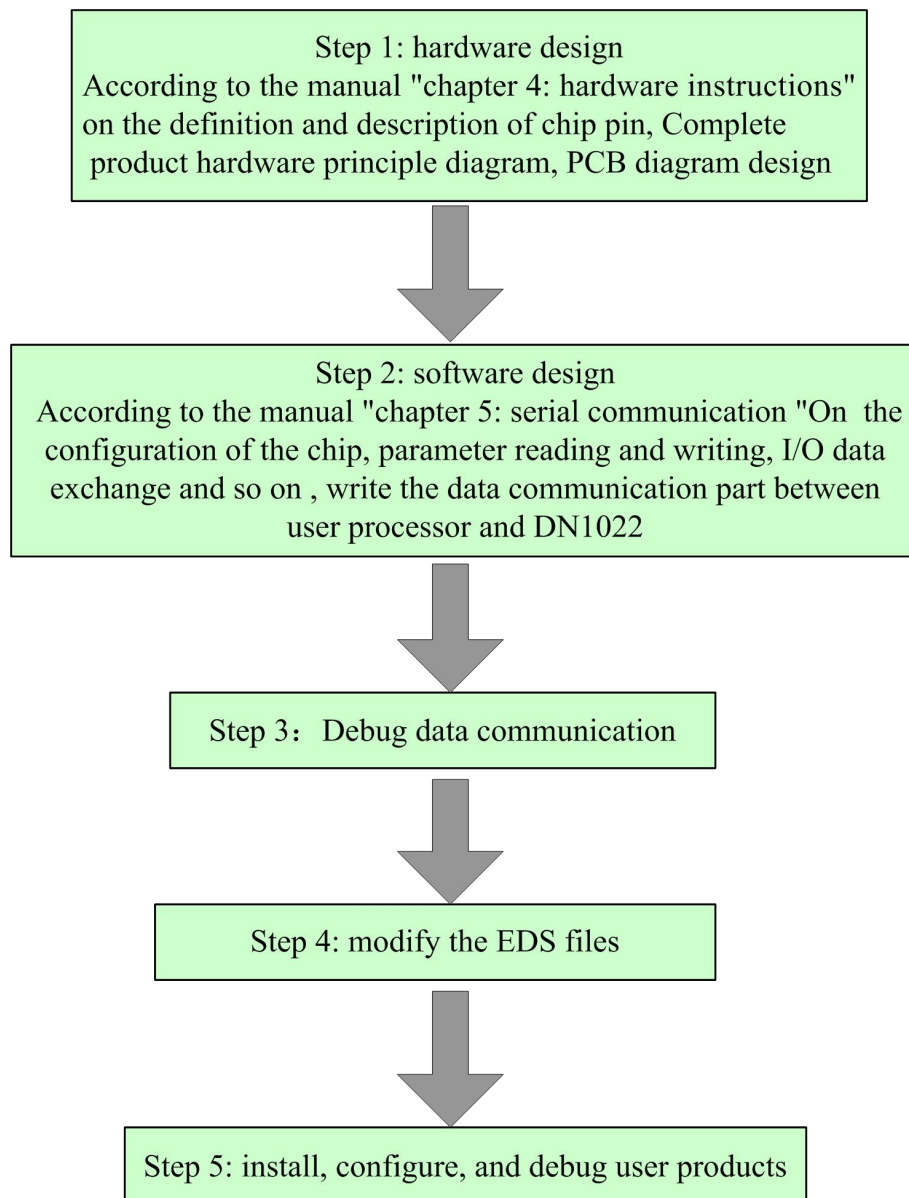
DN-1022 is a DeviceNet slave ASIC with built-in DeviceNet Group 2 Only Slave protocol stack. It can help users finish DeviceNet slave design quickly.

2.2 Technical Specification

- Support up to 64 bytes of DeviceNet Consumed I/O and Produced I/O;
- Support POLL, COS and CYCLIC I/O data trigger mode;
- Support DeviceNet parameter object;
- Buile-in CAN controller;
- Power supply: 3.0V-5.5 VDC;
- Operating Temp.: -40° F to 185° F (-40 °C to 85 °C).



3 User Product Development Process



4 Hardware Instructions

4.1 Pin Definition

TQFP pin configuration is shown as follows:

Pin	Code	Function	Pin	Code	Function
1	MSG	Output module status green signal	23	A8	Parallel address line
2	DI1	on-off input 1	24	I/O0	Data port zeroth bit
3	DI2	on-off input 2	25	I/O1	Data port first bit
4	ACK	Input signal	26	I/O2	Data port second tbit
5	TH	Pull through resistance	27	I/O3	Data port third bit
6	RXD	The serial port receives the TXD of the user	28	I/O4	Data port fourth bit
7	TXD	Serial port sends, receive user RXD	29	I/O5	Data port fifth bit
8	INT	Interrupt line	30	I/O6	Data port sixth bit
9	NSR	Output network status red signal	31	I/O7	Data port seventh bit
10	NSG	Output network status green signal	32	TL*1	The resistance is pulled down by the jumper
11	MSR	Output module status red signal	33	AL	Parallel address lock
12	WR	Parallel port writing	34	XTAL2	Connect pin 2 of the oscillator
13	RD	Parallel port reading	35	XTAL1	Connect pin 1 of the oscillator
14	CANTx	CAN send	36	VCC	Power VCC
15	CANRx	CAN recieve	37	VSS	GND
16	A_CS	Parallel address line	38	RESET	Reset line / high efficiency
17	NC		39	NC	
18	A13	Parallel address line	40	NC	
19	A12	Parallel address line	41	CFG1	Configure port 1

20	A11	Parallel address line	42	CFG2	Configure port 2
21	A10	Parallel address line	43	CFG3	Configure port 3
22	A9	Parallel address line	44	CFG4	Configure port 4

*1.For use in factory inspection, it is recommended that users use 680ohm resistor and jumpers to connect to the ground

2.In serial mode, the INT line is the DN-1022 output signal. When the DeviceNet accesses the device parameters, the DN-1022 draws and forwards parameters to the user processor.In parallel mode, the signal is DN-1022 input signal and receives the interrupt signal of double port RAM.

4.2 Pin Description

- **Module and network status signal pins**

DN-1022 chip MSG(1), NSR (9), NSG(10), MSR(11) correspond to: output module status green signal, network status red signal, network status green signal and module status red signal. DN-1022 chip current drive capability is not strong, I/O pin output current is less than 4mA, drive LED must use the Perfusion current mode, (because the LED signal is valid for low level), it is better to use three stage tube expansion.

Module status indicator light (MS)

Indicator Status	Description
off	It may not be powered or the indicator is broken
On(green)	Normal work
Blink (green)	Not configured properly
Blink (red)	Recoverable fault
On(red)	Unrecoverable fault
Blink(Red-green)	Self checking is under way

DeviceNet network status indicator (NS)

Indicator Status	Description
off	MAC ID detection not passed or DeviceNet circuit not powered
Blink (green)	The device is online but no established connection
On(green)	The device is online and established connection is ready
Blink (red)	One or more I/O connections have timed out
On(red)	The device detected an unrecoverable fault and could not communicate

- **Configure pins**

Configuration pins are those which can read configuration information when powering.

1. Work status configuration(pin 41)

When the DN-1022 chip is initialized, it will detect the state of the configuration line 1 (pin 41).

Depending on the state of the configuration line, determine the working status of the chip:

CFG1 = 0 The chip is in the configuration state;

CFG1 = 1 The chip is in the working state.

In the configuration state, the user's CPU can transmit the DeviceNet parameter information to the DN-1022, and the DN-1022 can store up to 30 parameter configuration information. Please note that your configuration of the chip needs to be consistent with the description of DeviceNet EDS.

You can also send commands through the serial port to transfer the configuration state to the work state,

In the working state, the user's CPU can perform I/O data exchange and parameter read-write with DN-1022.

2. work mode configuration (pin 42)

CFG2=1 or no connection: the chip is in the serial working state

CFG2=0:the chip is a parallel working state

3. Serial port communication baud rate configuration (pins 43, 44)

CFG3 and CFG4 are used to select baud rate for serial port communication

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CFG4	CFG3	Baud rate
1	1	115200
1	0	57600
0	1	19200
0	0	9600

Note: the DN-1022 read configuration pin status changes only in the instant after reset, and the configuration pin status will not change until the next reset.

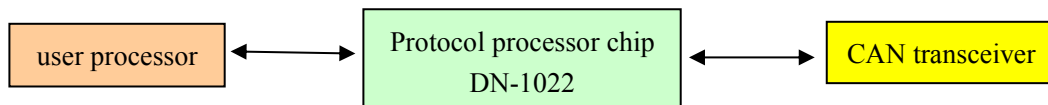
- **CAN signal send and receive pin**

CANTx (14) and CANRx (15) are CAN send and receive pins, respectively corresponding to the CAN transceiver pins TXD, RXD

- **Serial port pin**

The RXD (6) and TXD (7) are serial receive and send pins, respectively corresponding to the TXD and RXD of the user processor.

The application diagram of the serial port is as follows:



the highest baud rate is 115.2Kbps, which can meet the user and DeviceNet matching speed.

- **Reset pin**

The RESET (38) is the chip RESET pin, which is high level effective. Connect a dedicated reset chip, the reset time is greater than 1.2us (microsecond).

- **Parallel port pin**

WR (12) , RD(13) are the reading and writing pins of parallel ports. The parallel port of the chip is the main control port, which can connect with user's MPU connection through double port RAM. It can also be used with the parallel port expansion chip, and can also use the SSTCOMM reference circuit to recommend the parallel interface circuit.

5 Serial Communication

5.1 Summary

The user processor is the master mode, the DeviceNet protocol processor is the slave mode. The RXD of the user processor is connected to our protocol processor's TXD, and the TXD of the user's processor is connected to the RXD of the protocol processor DN-1022

User send frame format:

Byte 0	Byte 1	Byte 2...Byte K	Byte K+1
Command number	length	data	check

Length: From the first data byte to the last byte, including the checksum.

Check: the way of checksum - cumulative sum. Start from the command number to the end of the data

1. The interval between two characters in the frame must be less than 20ms. Otherwise it will be forced to end as a frame.
2. Waiting for reply time is not greater than 50ms. Greater than 50ms without reply is considered communication error.

5.2 Command

1. The command and response list is shown below:

Command - list

Command number	Function
0x1	Set identity information(configuration state)
0x2	Set connection information(configuration state)
0x5	I/O data transmission(run state)
0x6	I/O data transmission and read the DeviceNet network status(run state)
0xE	Read parameter(run state)

0x10	Set parameter(run state)
0x20	Set parameter information parameters(configuration state)

Response-list

Response number	Function
0x80+CMD ID	CMD ID represents the command number
0xE0	user set the error
0x94	Runtime data error

1.The most successful response command number is the command number of the request plus 0x80

2.The error response starts with 0xE0 in the set state and 0x94 in the run state

2.command detailed

1)set identity information

Command number: 1 Use: configuration state

The request data is arranged as follows:

Number	Description
Byte 0	Device manufacturer(low byte)
Byte 1	Device manufacturer(high byte)
Byte 2	Device type(low byte) Product Type
Byte 3	Device type(high byte)Product Type
Byte 4	Device number(low byte) Product Code
Byte 5	Device number(high byte) Product Code
Byte 6	Device license number(Lowest byte)
Byte 7	Device license number(second low byte)
Byte 8	Device license number(second high byte)
Byte 9	Device license number(Highest byte)
Byte 10	version number(low byte)

Byte 11	version number(high byte)
Byte 12	User product name length
Byte 13	ASCII code for the highest character of the user's product name
Byte N	...
Byte N+1	ASCII code for the lowest character of the user's product name
Byte N+2	check

Note:The product name must not be greater than 24 characters

Successful response: 0x81

Error response: 0xE0+error code

Error code meaning:

Error code	0x1	0xff	0x2	0x3	Other
Description	The data length is not in accordance with the setting	Check error	Device license number error	Device name is too long	Undefined

1.About device license number:

If you do not modify the DN-1022 device manufacturer (0x3f8), device type (0, general purpose device), product code (22), the license number is 0xE44F 700E.

If you want to modify the device manufacturer, device type, and product code , you need to obtain a corresponding license number from SSTCOMM.

If only the product name is modified,new license number is not required,You can use the original license number

2.The user's device name length must not exceed 24 bytes, more than the number of bytes, the chip will respond to errors, the error code is 0xE0 0x3.

3.If the license number is checked error , the error code is 0xE0 0x2

For example:

The user changes the product name to "abcdefg"

Send frame: 01 15 f8 03 00 00 16 00 0e 70 4f E4 01 01 07 61 62 63 64 65 66 67 9d

Response frame: 81

The above is a successful response indicating that the product name has been changed to "abcdefg".

2) set connection information

Command number: 2 Use: configuration state

The request data is arranged as follows:

Number	Description
Byte 0	DeviceNet address
Byte 1	Set the Baud rate
Byte 2	Network Input Connection length
Byte 3	Network Output Connection length

DeviceNet address setting range:0~63

Baud rate setting byte meaning:

Data	Description
0	Baud rate 125K
1	Baud rate 250K
2	Baud rate 500K
>2	Automatic baud rate setting

Note:suggest to set the automatic baud rate: 0xFF

Network input connection length is up to 64 bytes

Network output connection length is up to 64 bytes

Successful response:0x82

Error response:0xE0+error code

Error code	0x1	0xff	Other
Description	The data length is not in accordance with the setting	Check error	Undefined

For example:

The connection information : address 17, baud rate is automatic baud rate, input /output byte is 64

Send frame: 02 05 11 03 40 40 9b

Response frame: 82

3) set parameter information

Command number: 0x20 Use: configuration state

The request data is arranged as follows:

Number	Description
Byte 0	DeviceNet parameter number
Byte 1	Parameter 1 type (same as EDS type)
Byte 2	Parameter 1 read/write (0 read-only, 1 read-write)
Byte 3	Parameter 2 type (same as EDS type)
Byte 4	Parameter 2 read/write (0 read-only, 1 read-write)
Byte 5	...
Byte N	Parameter x type (same as EDS type)
Byte N+1	Parameter x read/write (0 read-only, 1 read-write)

Successful response: 0xA0

Error response: 0xE0+error code

Error code	0x1	0xff	Other
Description	The data length is not in accordance with the setting	Check error	Undefined

Note: at most 32 parameters, once the parameter type is determined, the length is determined.

The basic data types supported by DN-1022 are as follows:

Type code	Type	Description	Byte length
1	WORD	16bits-word	2
2	UINT	16bits-unsigned integer	2
3	INT	16bits- integer	2
4	BOOL	BOOLEAN	1
5	SINT	Short integer	1
6	DINT	Double Integer	4
8	USINT	Unsigned Short Integer	1
9	UDINT	Unsigned Double Integer	4
11	REAL	Single Floating Point	4
13	ITIME	Duration (short)	2
14	TIME	Duration	4
17	DATE	Date	2
18	TIME_OF_DAY	Time of Day	4
24	BYTE	8-bit String (BYTE)	1
25	DWORD	32-bit String (DWORD)	4

1. Composite data type is not supported.
2. The maximum parameter byte length is 4

For example:

Set 3 parameters: 20 08 03 02 01 08 01 0b 00 42

Set 4 parameters: 20 0a 04 02 01 08 01 02 01 02 01 40

4) start the extended parameter command

Command number: 0x21 Use: configuration state

The extended parameters range from 32 to 253, excluding the input bytes (Param1), output bytes (Param2).

Request:

Byte 0	Byte 1	Byte 2	Byte K+1
0x21	length=2	The maximum number of parameters	check

Successful response:0xA1

Error response:0xE0+error code

Error code	0x1	0xff	Other
Description	The data length is not in accordance with the setting	Check error	Undefined

Note:If the user needs to exit the extended parameter mode, just send the 0x20 reset.The number of parameters at this time is the number of parameters which is set in the 0x20 command, and the parameter information can also be set in this command.

5) use existing configuration information and go to run mode

Command number: 3 Use: configuration state

Data length:0

Frame format: 0x3 0x0 0x3

Response 0x83 to run mode

6) I/O data transmission

Network input / output command number:5 Use:run state

Request:

Byte 0	Byte 1	Byte 2...Byte K	Byte K+1
0x5	length	data	Check

Successful response:

Byte 0	Byte 1	Byte 2...Byte K	Byte K+1
0x85	length	data	Check

Error response:

Byte 0	Byte 1	Byte 2
0x94	error code	Check

Error code meaning:

Error code	0x1	0xff	Other
Description	The data length is not in accordance with the setting	Check error	Undefined

For example:

Input 32 bytes ,Output 32 bytes

User processor send:05 21 02 05 00 01 02 30

DeviceNet processor response:85 21 00 A6

7) I/O data transmission and read the DeviceNet network status

Command number :6 Use: run state

Request:

Byte 0	Byte 1	Byte 2...Byte K	Byte K+1
0x6	length	data	Check

Successful response:

Byte 0	Byte 1	Byte 2...Byte K	Byte K+1, K+2	Byte K+3
0x86	length	data	network status	Check

Error response:

Byte 0	Byte 1	Byte 2
0x94	error code	Check

Error code meaning:

Error code	0x1	0xff	Other
Description	The data length is not in accordance with the setting	Check error	Undefined

Network status:

Byte	0	1
Bit7		---
Bit6	Polling connection Idle	---
Bit5	COS connection error	---
Bit4	IO Polling connection error	---
Bit3	Explicit message connection error	---
Bit2	COS connection has been established	---
Bit1	IO Polling connection has been established	---
Bit0	Explicit message connection has been established	Network serious error

1.COS refers to change Of state connection

2. Network serious errors include CAN Bus Off and DeviceNet node address conflicts, DeviceNet bus nodes will be detected node address before on-line, if there is a repeat, it cannot be on-line.

For example:

Input 32 bytes ,Output 32 bytes

[illegible]

```
DeviceNet processor response:86 23 00 00 00 00 00 00 12 41 00 00 00 00 00 00 00 00 00 00 00 00 00 00  
00 00 00 00 00 00 00 00 00 00 03 00 FF
```

Note:1.Blue italics are output data,Status byte *03 00* indicates that the DeviceNet explicit message connection and polling I/O connection have been established.

If the DeviceNet connection is broken at this time, the response data is as follows:

[illegible]

The status data is *10 00* , the polling connection error mark is set as 1, the connection mark bit has been cleared.

If the DeviceNet device is already in "online" state, but it has not received the valid data from the PLC output, the user can judge it from the status flag

Input 64 bytes ,Output 64 bytes

[illegible]

Command number: 0x0E Use:run state

When DN-1022 receives a frame of DeviceNet from the network, And the chip works in serial mode. The processor produces a low level effective interrupt to INT line (TQFP package eighth feet), The user processor can respond as quickly as possible based on this information. If the user processor is ready to receive the serial data, pull the ACK line (TQFP package fourth feet) low to confirm the DeviceNet processor which can pass parameters and ask for commands, After the DeviceNet processor receives the confirmation, reading the parameter/ setting the frame will be sent out. The protocol processor will cancel the INT signal after receiving the ACK signal, the INT will be set as 1. When the user processor receives the first serial byte, the ACK signal is cancelled and is set as 1.

Command number:0x10 Use:run state

Read Parameter and set request command format:

Read Parameter	Set parameters
0x0E	0x10
length	length
Parameter number	Parameter number
BCC	Data low byte
	...(if any)
	Data high byte
	BCC

Response command format:

Read the parameter successfully	Set the parameter successfully
0x8E	0x90
Data length	Data length
Parameter number	Parameter number
Data low byte	BCC
(if any)	
Data high byte	
BCC	

Error response format:

Read the parameter error	Set the parameter error
0x8E	0x90
Error code (defaults 0xff)	Error code (defaults 0xff)
check	check

Note: Reading the parameter or writing error code must be greater than 128

For example:

Read the DeviceNet parameter 3

After the protocol processor checks, the user processor will receive 0E 02 03 13

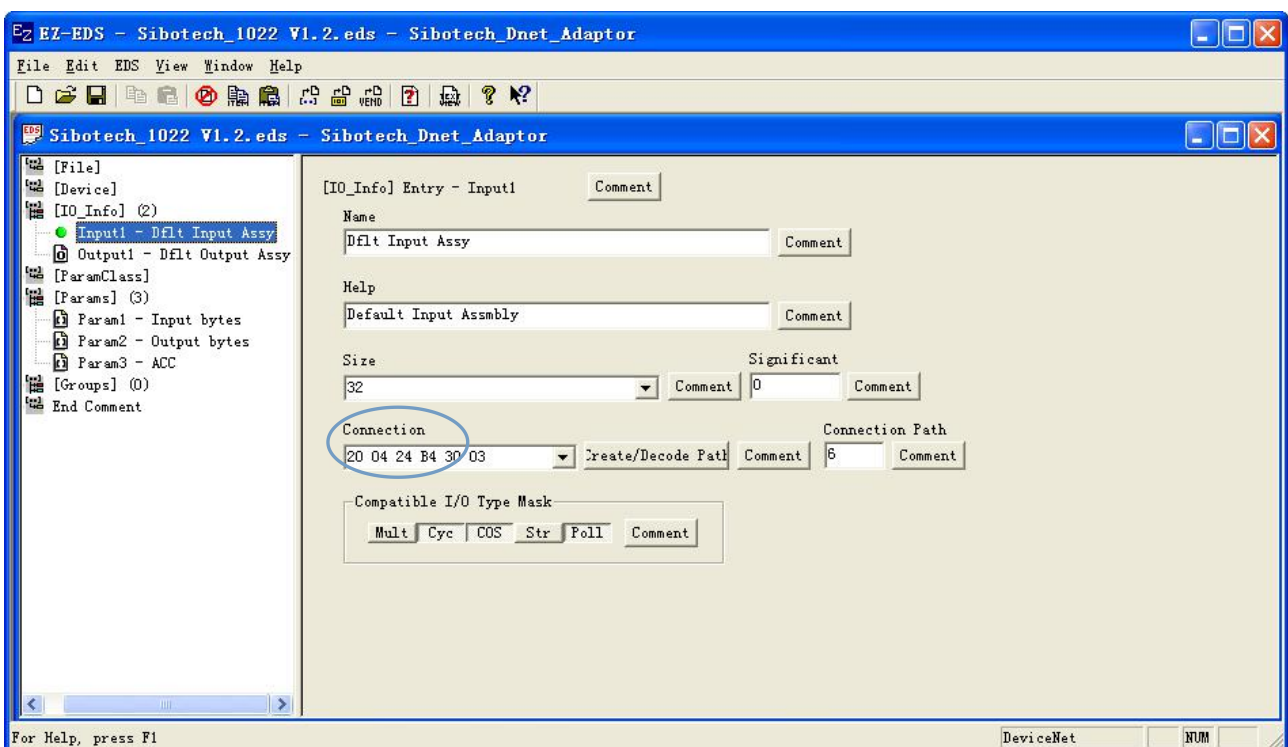
the user processor response 8E 04 03 01 02 98 ,means transfer data/ parameter data 513 (0x201)。

5.3 EDS File Modification

This article introduces the method of modifying EDS file with EZ-EDS tool as an example. Use this software to open the EDS file provided by SSTCOMM. If you do not have EZ-EDS tools, you can contact SSTCOMM technical support.

5.3.1 Number of Input and Output Bytes

When you use the 0x02 command to set the Network Input connection length(DeviceNet input bytes) and the Network Output connection length (DeviceNet output bytes), you need to make the corresponding changes in the EDS file.



5.3.2 Parameter

The parameter path supported by DN-1022 is fixed to 0xA2 0x01 0xxx. It means that the class is fixed to 0xA2, the instance is fixed to 0x1, and the attribute xx needs to use 66 (decimal: 102) and above.

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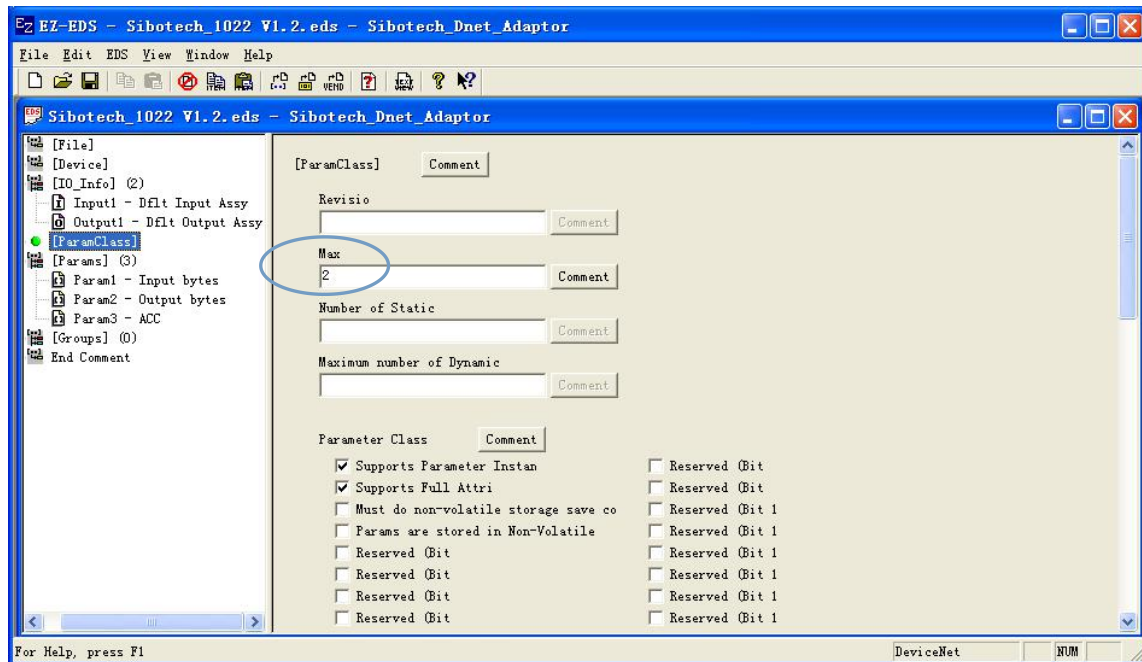
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DN-1022 factory default parameters, users please do not modify.

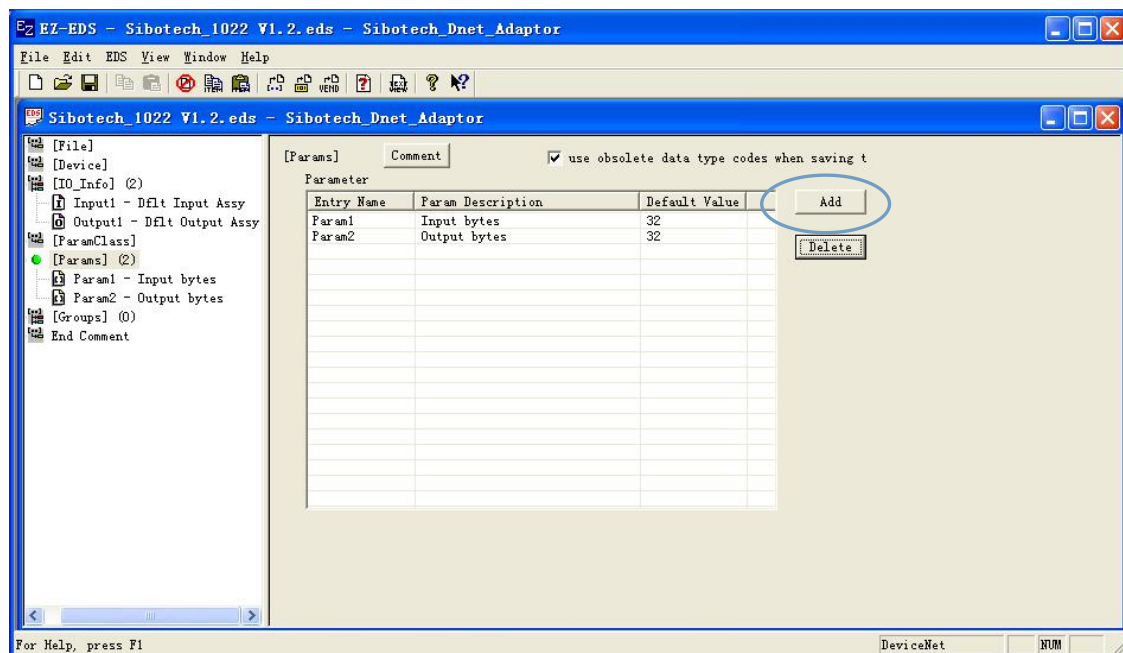
Param1 path: 0xA2 0x01 0x64

Param2 path: 0xA2 0x01 0x65

Set the number of valid parameters in "Max". The default is 2, which refers to the number of DeviceNet input bytes and the number of DeviceNet output bytes.



click "Add" to Add a new parameter:



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Set the new parameter information:

The screenshot shows the EZ-EDS software interface. The title bar reads 'EZ-EDS - Sibotech_1022 V1.2.eds - Sibotech_Dnet_Adaptor'. The left pane shows a tree view with the following structure:

- [File]
- [Device]
- [IO_Info] (2)
 - Input1 - Dflt Input Assy
 - Output1 - Dflt Output Assy
- [ParamClass]
- [Params] (3)
 - Param1 - Input bytes
 - Param2 - Output bytes
 - Param3 - New Parameter**
- [Groups] (0)
- End Comment

The main area shows the 'Param3' configuration form. The 'Name' field is 'Param3'. The 'Help' field is 'New Help String'. The 'Units' field is empty. The 'Link' field is checked, and the 'Link Path' field is empty. The 'Data Information' section shows 'Data' as '<Not Specified>', 'Data Size' as '0', and 'Decimal' as '0'. The 'Min' field is empty, 'Max' is empty, and 'Default' is '0'. The 'ProxyParamSizeAdd' checkbox is checked. The 'Enumerate' button is visible.

Parameter: set the Parameter name

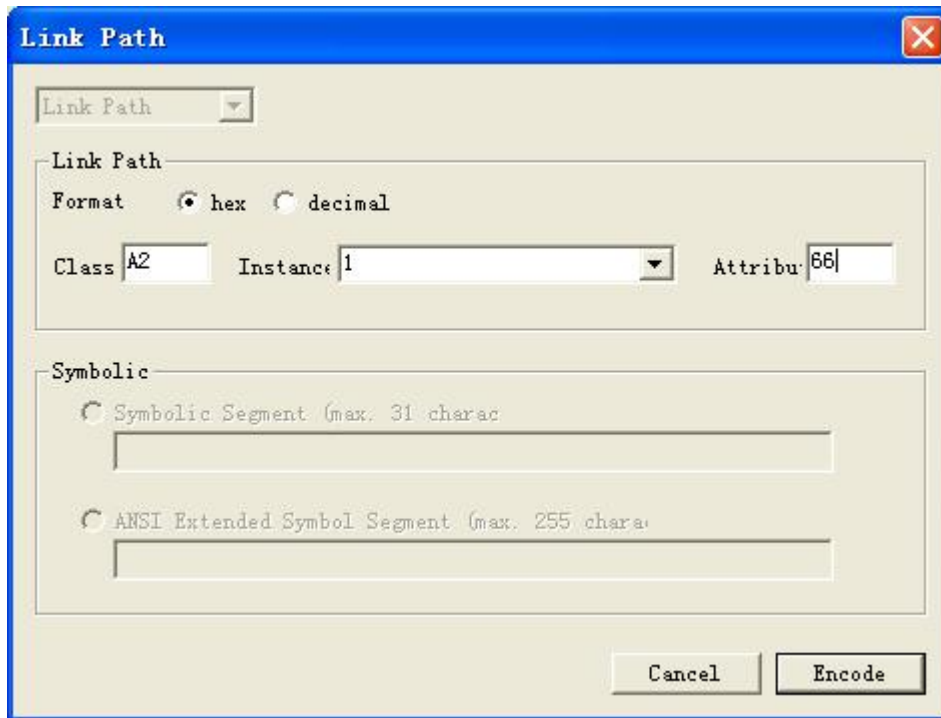
Help: set the description information of the parameters

Units: set the unit information for the parameters

Link: set and display the path information for the parameters. Click "Create/Decode Path" to enter the setup wizard interface.

Data Information-Data: set parameter data type. Please see P14 for data types supported by DN-1022.

Data Information-Min/Max/Default: set the min/ max/ default values of the parameters



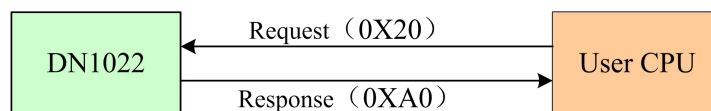
As shown above, Class: fixed to A2, Instance: fixed to 1, Attribute: set to 66 and above. Each parameter corresponds to a different Attribute.

5.4 Communication Process

5.4.1 Configuration Process

DN-1022 configuration commands in configuration status include: 0x1, 0x2 and 0x20

The user processor configures the DN-1022, as shown in the following figure:



Request command: 0x20, Response command :0xA0, set the command and response format for the three parameter:

Reques: 20 08 03 02 01 08 01 0b 00 42

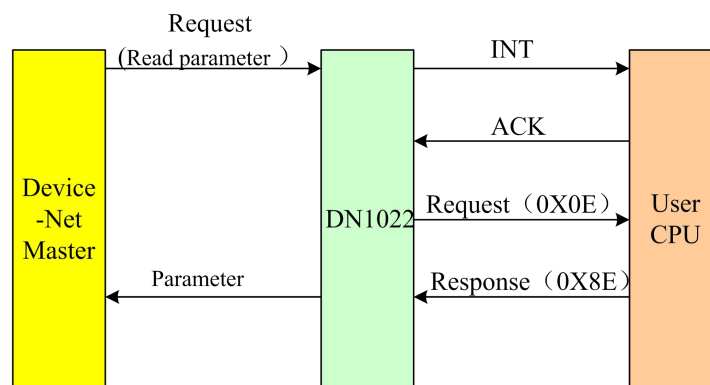
Response: A0

20 is command number, 08 is data length, 03 is parameter number, and 42 is check code

02 01:02 is the data type, 01 means parameter read-write(00 means parameter read-only)

5.4.2 Read and Write Parameters

1. When DN-1022 is in the run state, DeviceNet Master sends a read parameter request and receives a successful response, As shown in the following figure:

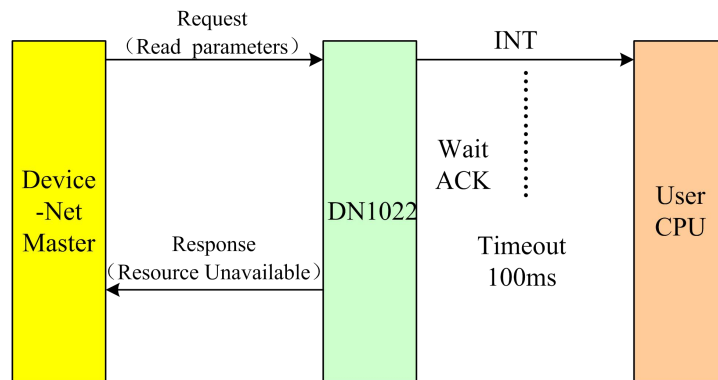


When the DN-1022 receives the command to read the parameter, and the chip works in serial mode. The processor produces a low level effective interrupt to INT line, the user processor can respond as quickly as possible based on this information. If the user processor is ready to receive the serial data, pull the ACK line low to confirm the DeviceNet processor which can pass parameters and ask for commands, After the DN-1022 receives the confirmation, reading the parameter/ setting the request(0x0E) will be sent out. Read the request and response of parameter 3 (parameter data: 513 (0x201))

Request: 0E 02 03 13

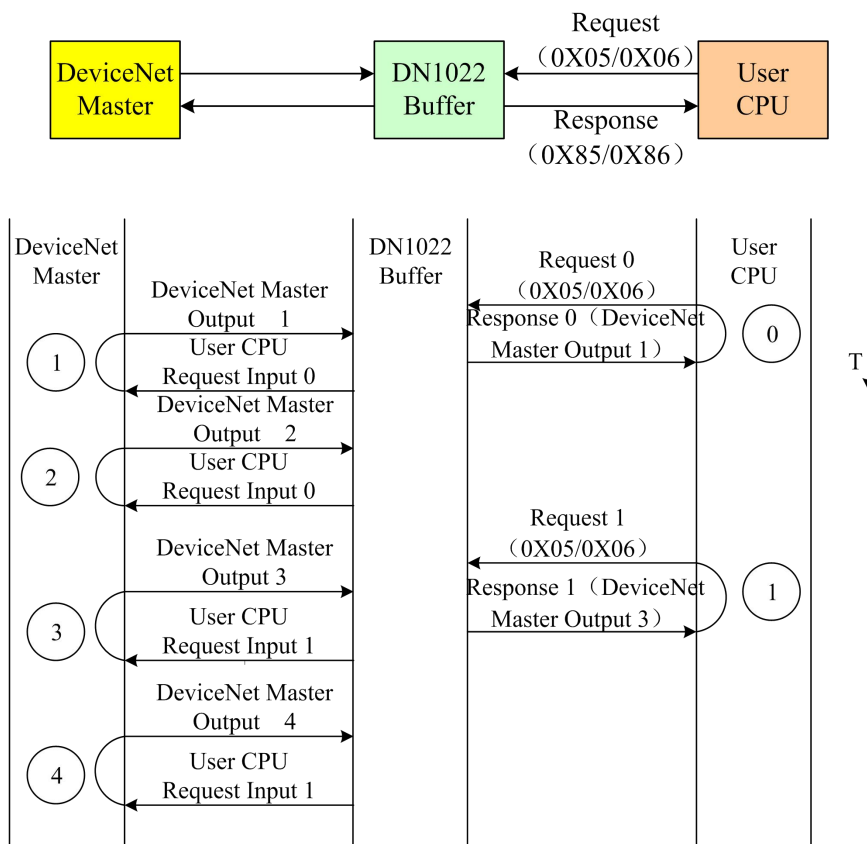
Response : 8E 04 03 01 02 98

2. When DN-1022 is in the run state, DeviceNet Master sends a read parameter request and doesn't receive a successful response, As shown in the following figure:



When the DN-1022 receives the command to read the parameter, it will produce a low level effective interrupt to INT line and wait for the ACK response from the user processor. When DN-1022 does not receive an ACK response from the user CPU, it will send a frame Resource Unavailable response to DeviceNet Master.

5.4.3 I/O Data Exchange

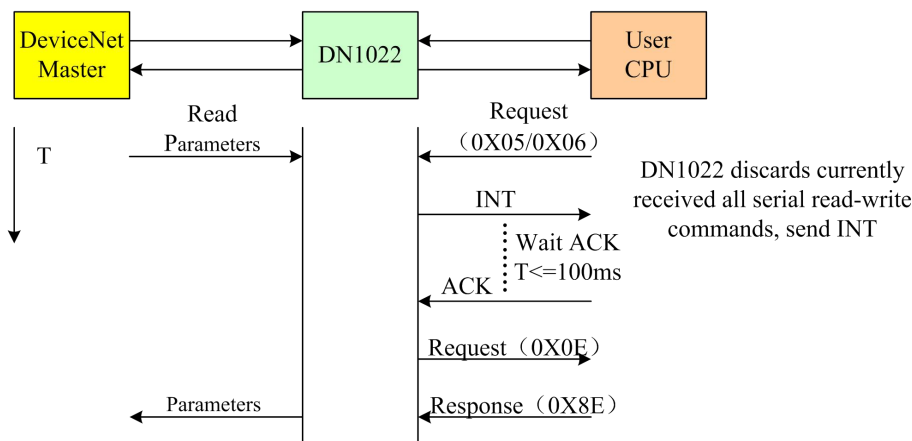


DN-1022 has a I/O data buffer, DeviceNet Master triggers DN-1022 data and Data exchange between user

CPU and DN-1022 are asynchronous. As shown in the figure above: When DeviceNet Master sends output requests to the slave(DeviceNet Master output 1 in the figure above),The data will be cached in the I/O data buffer of DN-1022,And output data from the data buffer as a response(The user CPU requests input 0 in the figure above).The user CPU to DN-1022 input request is the data stored in the I/O data buffer of DN-1022(As the DN-1022 response to the DeviceNet Master request input),And output data from the data buffer as a response(The response 0 in figure(DeviceNet Master output 1)).The response of the DeviceNet Master output request is the latest user CPU input request; The response of the user CPU's input request is the latest DeviceNet Master output request.

5.4.4 I/O Data Exchange/Read and Write Parameters

1.When the user CPU sends the I/O request, the DN-1022 receives the DeviceNet Master read parameter command:

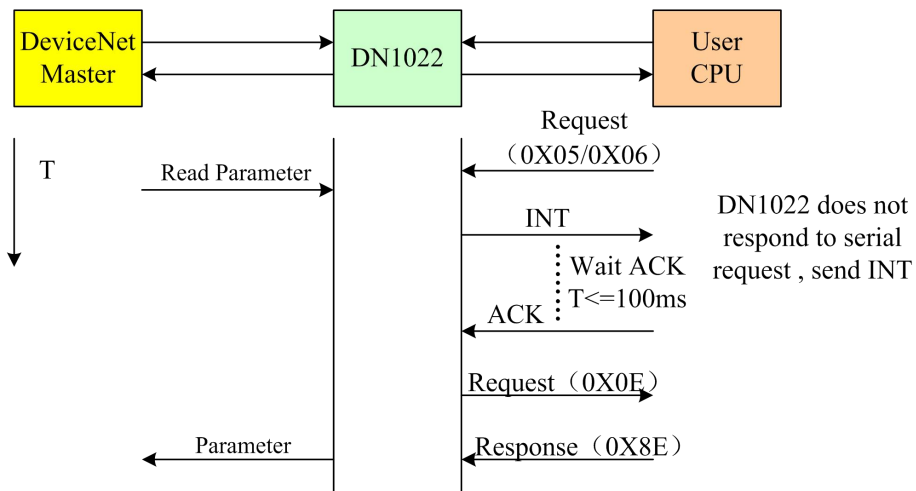


When the user CPU sends a request to the DN-1022, the DN-1022 receives the read parameter request sent by the DeviceNet Master,DN-1022 discards currently received all serial read-write commands, send INT, wait for user CPU's ACK, At this time, the user can send all the data or not, but DN-1022 cannot respond. The user CPU should begin the ACK signal as soon as possible. If the DN-1022 receives the ACK response within 100ms, it will send a read parameter command to the user CPU and send the data to the DeviceNet Master after the correct response .if DN-1022 does not receive the ACK response within 100ms, it will sent a frame Resource Unavailable response to DeviceNet Master.

2.When the user CPU waits for the response, DN-1022 receives the DeviceNet Master read parameter

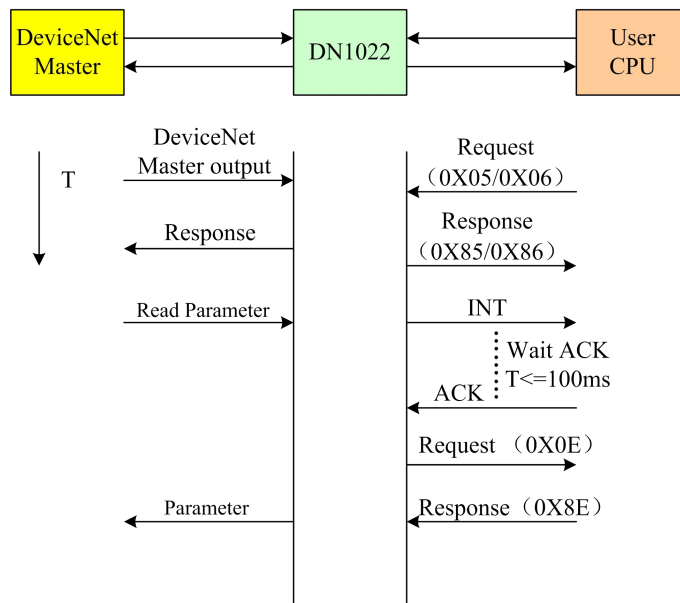


command:



When the user CPU sends the I/O request and waits for the DN-1022 response, the DN-1022 receives the read parameter request sent by the DeviceNet Master. At this time, DN-1022 does not respond to a serial request and only sends an INT signal to the user CPU, waits for user CPU's ACK response. The user CPU should begin the ACK signal as soon as possible. If the DN-1022 receives the ACK response within 100ms, it will send a read parameter command to the user CPU and send the data to the DeviceNet Master after the correct response. If DN-1022 does not receive the ACK response within 100ms, it will send a frame Resource Unavailable response to DeviceNet Master.

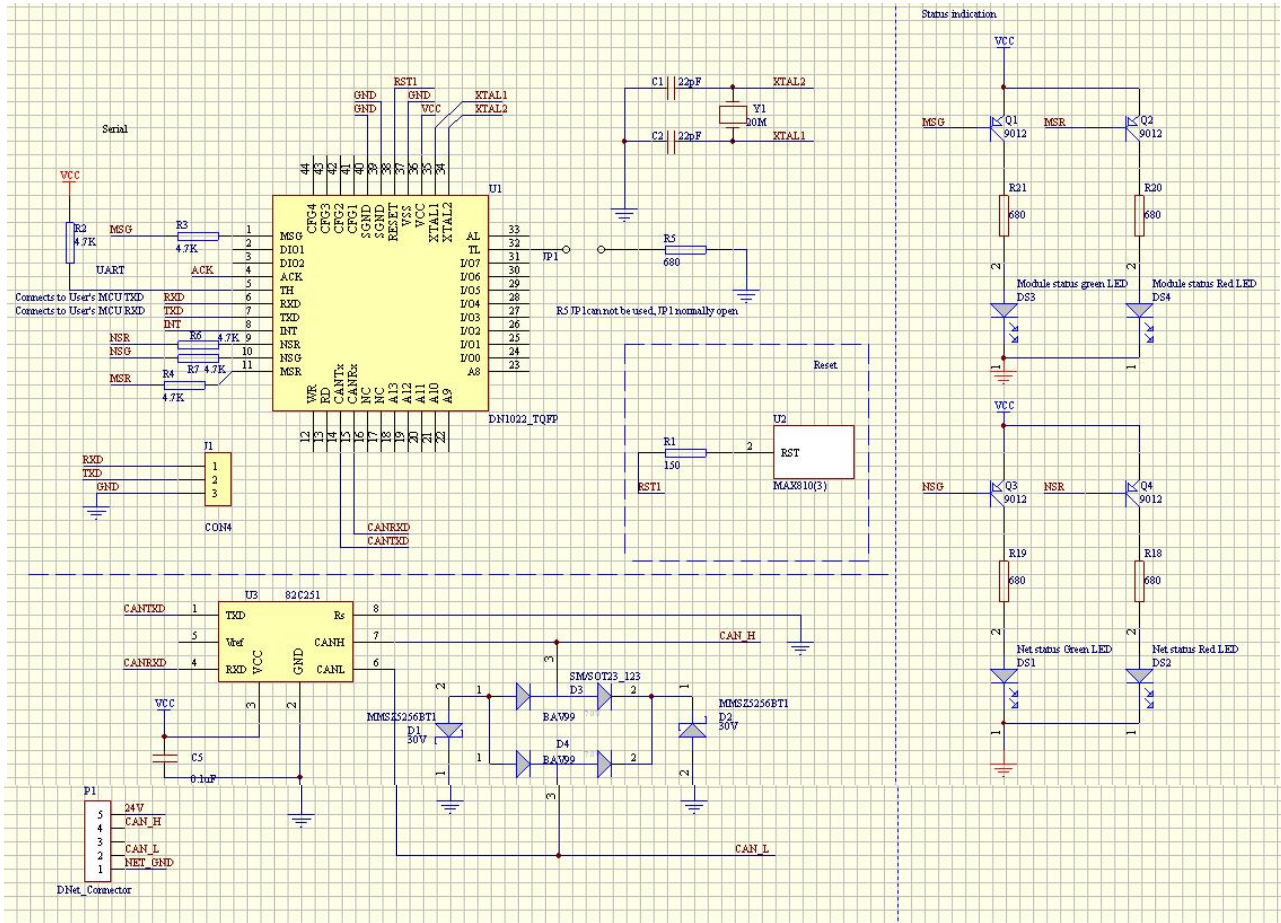
3. When the user CPU receives the response and Before the request is not sent, DN-1022 receives the DeviceNet Master read parameter command:



When the user CPU sends the I/O request, receives the DN-1022 response and Before the next request is not sent, DN-1022 receives the read parameter request sent by the DeviceNet Master, then sends an INT signal to the user CPU, waits for user CPU's ACK response. If the DN-1022 receives the ACK response within 100ms, it will send a read parameter command to the user CPU and send the data to the DeviceNet Master after the correct response. If DN-1022 does not receive the ACK response within 100ms, it will sent a frame Resource Unavailable response to DeviceNet Master.

Note: a resistor of 100~300 ohms is generally connected Between the DN-1022's ACK line and the output line of the user CPU

Appendix A: PCB diagram





Appendix B: FAQ

1. Why does my processor send a serial command, DN-1022 does not respond?

Answer: there are many possibilities. First of all, hardware, whether the TX/RX connection is correct, the baud rate is correct, the parity bit is used (should not be used).

Note: if the user sets the status of the DN-1022 to automatically monitor the baud rate, if there is no data on the CAN bus. The DN-1022 will always be in the listening mode and cannot respond to the serial command.

2. Why the network light is the red light according to the reference design when my DeviceNet node is online?

Answer: usually the most possible case is node address conflict, before DeviceNet node is online, repeated address will be tested, if my address is set to 5, CAN bus has been set to 5 of the node, then the node will be not able to online, the red light is on. Another possibility is that the baud rate does not work with the existing baud rate of the BUS and goes into the Bus-Off state.