

Command Library

sCAN V1.0 / uCAN V3.0

User Manual



Revision History

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Table of Contents

- 1. Preface.....4
 - About This Manual4
 - To Our Readers.....4
 - Manual Composition.....4
 - Command Library Related Documents.....5
 - Technical Support6
- 2. Commands and Modes7
 - Commands.....7
 - Modes.....8
 - 1. Active Mode.....8
 - 2. Setup Mode10
- 3. Appendix14
 - Mask14
 - ABOR (Automatic Bus-Off Recovery).....14
 - Switch Settings.....15

1. Preface

In this chapter, a command library for CAN communication is explained.

About This Manual

This manual explains the details related to command library commands, usage examples, data format structures and its usage.

To Our Readers

This manual was created to support users of sCAN V1.0 and uCAN V3.0. We recommend reading this manual before using the command library for programming. It is recommended to use CANView for controlling or managing devices.

Manual Composition

1. Preface: Contains the general information regarding the command library.
2. Commands and Modes: Contains the details on different commands, modes and examples.
3. C Source Code Files: Contains the details on C code files.
4. Appendix: Contains the details on mask and ABOR feature which is supported by the command library. Details on configuring switches for sCAN V1.0 and uCAN V3.0 are also included.

Command Library Related Documents

Document	Description
sCAN V1.0	Serial (RS-232) to CAN converter
uCAN V3.0	USB 2.0 to CAN converter
sCAN V1.0 User Manual	How to use sCAN V1.0
sCAN V1.0 Spec Sheet	sCAN V1.0 Specifications
uCAN V3.0 User Manual	How to use uCAN V3.0
uCAN V3.0 Spec Sheet	uCAN V3.0 Specifications

All documents in our website is up-to-date. Contents of the documents may change without notice.

Technical Support

SystemBase provides technical support through three methods below:

1. Visit our technical support website at <http://www.sysbas.com/>.
2. Send an e-mail to our technical support team at tech@sysbas.com to receive fast responses. Any questions, requests, suggestions or comments are welcomed.
3. For instant response, call us. Our technical team will always provide detailed consultation and guides through a simple phone call.

The phone number is: +82-2-855-0501

(Available from Monday to Friday, 9:00 ~ 18:00 KST. We are closed on weekends and holidays.)

2. Commands and Modes

In this chapter, command description, features, and recommended specifications is explained.

Commands

S: Setup Mode, A: Active Mode

Command Header	Description	S	A
t	Standard CAN data frame transmission		●
T	Standard CAN remote frame transmission		●
e	Extended CAN data frame transmission		●
E	Extended CAN remote frame transmission		●
RS	Load the serial communication configuration	●	
RC	Load CAN communication configuration	●	
RH	Load command option for active mode	●	
WC	CAN communication configuration settings	●	
WS	Serial communication configuration settings	●	
WH	Active mode command option settings	●	
SF	Set all settings to the factory default values	●	
SV	Save device settings	●	
SR	Reboot the device	●	
FV	Load the current firmware version	●	

Modes

※ All command lines end with 0x0D, which is a “Carriage Return”. In most cases, Acknowledgment or “ACK Return” exists for all setup mode commands.

1. Active Mode

1.1 Standard Data Frame Transmit

t(ID)(DLC)(DATA)<CR>	
Description	<ul style="list-style-type: none"> - t: Command header for transmitting a standard CAN data frame - (ID): CAN frame Message Identifier (composed of three hexadecimal digits in ASCII, range: 000~7FF) - (DLC): CAN frame data length (composed of one hex digit in ASCII letter, range: 0~8) - (DATA): CAN frame data (ASCII) - <CR>: 0x0D (Carriage Return)
Example	<p>[Example] t12356162636465<CR></p> <p>[Description] Sends CAN frame (ID=0x123, Data Length=5, Data1=0x61, Data2=0x62, Data3=0x63, Data4=0x64, Data5=0x65)</p>

1.2 Standard Remote Frame Transmit

T(ID)(DLC)<CR>	
Description	<ul style="list-style-type: none"> - T: Command header for transmitting CAN standard remote frame - (ID): CAN frame Message Identifier (composed of three hexadecimal digits in ASCII, range: 000~7FF) - (DLC): CAN frame data length (composed of one hex digit in ASCII letter, range: 0~8)
Example	<p>[Example] T1235<CR></p> <p>[Description] Sends remote CAN frame (ID=0x123, Data Length=5)</p>

1.3 Extended Data Frame Transmit

e(ID)(DLC)(DATA)<CR>	
Description	<ul style="list-style-type: none"> - e: Command header for transmitting CAN extended data frame - (ID): CAN frame Message Identifier (composed of eight hexadecimal digits in ASCII, range: 00000000~1FFFFFFF) - (DLC): CAN frame data length (composed of one hex digit in ASCII letter, range: 0~8) - (DATA): CAN frame data (ASCII) - <CR>: 0x0D (Carriage Return)
Example	<p>[Example] e1234567826162<CR></p> <p>[Description] Sends CAN frame (ID=0x12345678, Data Length=2, Data1=0x61, Data2=0x62)</p>

1.4 Extended Remote Frame Transmit

E(ID)(DLC)<CR>	
Description	<ul style="list-style-type: none"> - E: Command header for transmitting CAN extended remote frame - (ID): CAN frame Message Identifier (composed of eight hexadecimal digits in ASCII, range: 00000000~1FFFFFFF) - (DLC): CAN frame data length (composed of one hex digit in ASCII letter, range: 0~8) - <CR>: 0x0D (Carriage Return)
Example	<p>[Example] E123456782<CR></p> <p>[Description] Sends CAN frame (ID=0x12345678, Data Length=2)</p>

2. Setup Mode

2.1 Write Serial Setting

WS(Flow)(D)(P)(S)(Baud rate)<CR>	
Description	<ul style="list-style-type: none"> - WS: Command header for configuring serial communication - (Flow): Serial(RS-232) Flow Control (ASCII) <ul style="list-style-type: none"> N: no flow control H: hardware flow control - (D): Serial data bits (ASCII, fixed to 8 data bits) <ul style="list-style-type: none"> 8: 8 data bits - (P): Serial parity bit (ASCII) <ul style="list-style-type: none"> N: no parity O: odd parity E: even parity M: mark parity S: space parity - (S): Serial stop bit (ASCII) <ul style="list-style-type: none"> 1: 1 stop bit 2: 2 stop bits - (Baud rate): Serial baud rate (ASCII, range: 300 ~ 921600, unit: bps) - <CR>: 0x0D (Carriage Return)
Response	OK<CR>: No error
Example	[Example] WSN8N19600<CR> [Description] Configure the serial communication setting to no flow control, 8N1, 9600bps

2.2 Write CAN Setting

WC(Spec),(Baud rate),(ID)(MASK)(Option)<CR>	
Description	<ul style="list-style-type: none"> - WC: Command header for configuring CAN communication - (CAN Specification): CAN communication standard (ASCII) <ul style="list-style-type: none"> A: CAN 2.0 A (ID: 11 bits) B: CAN 2.0 B (ID: 29 bits) - (Baud rate): CAN baud rate (ASCII, range: 20 ~ 1000, unit: kbps) - (ID): CAN Mask ID (ASCII) <ul style="list-style-type: none"> CAN 2.0 A: 000~7FF CAN 2.0 B: 00000000~1FFFFFFF - (MASK): CAN Mask (ASCII) <ul style="list-style-type: none"> CAN 2.0 A: 000~7FF CAN 2.0 B: 00000000~1FFFFFFF - (Option): CAN communication option (ASCII)

	<pre> 0000 00XX +-- ABOR </pre> <p>0: No Option 2: ABOR enable</p> <p>- <CR>: 0x0D (Carriage Return)</p>
Response	OK<CR>: No error
Example	<p>[Example] WCA,500,123,7FF,2<CR></p> <p>[Description] Configure the CAN settings: CAN Spec=2.0A, Baud rate=500kbps, Mask ID=0x123, Mask=0x7FF, turn on ABOR</p>

2.3 Write Header Setting

WH(std_data)(std_remote)(ext_data)(ext_remote)<CR>	
Description	<ul style="list-style-type: none"> - WH: A command for changing a command header for the active mode - (std_data): Command Header for the standard data (ASCII 1 byte: a~z, A~Z, 0~9) - (std_remote): Command Header for the standard remote (ASCII 1 byte: a~z, A~Z, 0~9) - (ext_data): Command Header for the extended data (ASCII 1 byte: a~z, A~Z, 0~9) - (ext_remote): Command Header for the extended remote (ASCII 1 byte: a~z, A~Z, 0~9) - <CR>: 0x0D (Carriage Return) <p>Each of the four command headers cannot be identical.</p>
Response	<p>OK<CR>: No error</p> <p>ER:arg: Factor value error</p>
Example	<p>[Example] WHtTeE<CR></p> <p>[Description] Configuring the command headers for the active mode 't' for the standard CAN data frame 'T' for the standard CAN remote frame 'e' for the extended CAN data frame 'E' for the extended CAN remote frame</p>

2.4 Read Serial Setting

RS<CR>	
Description	- RS: Command header for reading serial communication configuration - <CR>: 0x0D (Carriage Return)
Response	(Flow)(D)(P)(S)(Baud rate)<CR>
Example	<div>[Example] N8N19600<CR></div> <div>[Description] Above return value means that the serial configuration for the device is set to: None Flow Control, 8N1, 9600bps</div>

2.5 Read CAN Setting

RC<CR>	
Description	- RC: Command header for restoring CAN communication configuration - <CR>: 0x0D (Carriage Return)
Response	(Spec),(Baud rate),(ID)(MASK)(Option)<CR>
Example	<div>[Example] A,500,123,7FF,2<CR></div> <div>[Description] Above return value means that the CAN configuration for the device is set to: CAN Spec=2.0A, Baud rate=500kbps, Mask ID=0x123, Mask=0x7FF, turn on ABOR</div>

2.6 Read Header Setting

RH<CR>	
Description	- RH: A command for changing the command header for the active mode - <CR>: 0x0D (Carriage Return)
Response	(std_data)(std_remote)(ext_data)(ext_remote)<CR>
Example	<div>[Example] tTeE<CR></div> <div>[Description] Configuration for active mode command headers are set to: 't' for the standard CAN data frame 'T' for the standard CAN remote frame 'e' for the extended CAN data frame 'E' for the extended CAN remote frame</div>

2.7 Factory Default

SF<CR>	
Description	- SF: A command for initializing all settings to the factory default settings - <CR>: 0x0D (Carriage Return)
Response	OK<CR>
Example	<div>[Example] SF<CR></div> <div>[Description] Resets all settings back to the factory default settings.</div> <div>* Do not forget to save after "factory default" command to save the settings.</div>

2.8 System Reset

SR<CR>	
Description	- SR: Command header for a warm reboot - <CR>: 0x0D (Carriage Return)
Response	No response
Example	<div>[Example] SR<CR></div> <div>[Description] Reboot the device</div>

2.9 Save Settings

SV<CR>	
Description	- SV: Command header for saving settings to the memory in the device - <CR>: 0x0D (Carriage Return)
Response	OK<CR>: No error
Example	<div>[Example] SV<CR></div> <div>[Description] Save settings for serial and CAN options</div>

2.10 Firmware Version

FV<CR>	
Description	- FV: Command header for reading current firmware version - <CR>: 0x0D (Carriage Return)
Response	[Firmware version]<CR>
Example	<div>[Example] 2.00<CR></div> <div>[Description] Firmware version 2.00</div>

3. Appendix

Mask

Typically, a CAN communication uses a combination of a reception ID and a mask ID to filter the received CAN data from the network to lessen the data processing.

A reception ID is a CAN data frame ID. The received mask ID is used for cross referencing received data IDs to specific bits in field. If it matches, the data is received, and if it does not match, the data is not received.

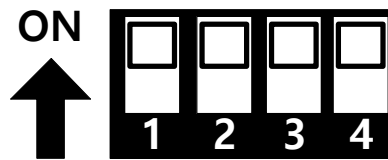
ABOR (Automatic Bus-Off Recovery)

If a device causes too much errors, the overall CAN network becomes unstable, thereby causing the communication to be ineffective and data transmission to be delayed. To prevent such phenomenon from happening, the TEC (Transmit Error Count) and the REC (Receive Error Count) are counted during data reception to automatically separate excessive errors from the network. By doing this, communication efficiency is raised. After the errors get solved, the device can be rebooted to return the network to its normal state. However, by using the ABOR (Automatic Bus-Off Recovery) feature, the network can be recovered without needing to reboot the device.

Switch Settings

By using the switch on the bottom of sCAN V1.0 and uCAN V3.0, power supply availability and operational mode can be selected, and terminating resistors can be turned on or off.

※ To change settings for sCAN and uCAN, you need to change the third switch on the bottom of the product to off or 'Setup' mode. After configuration is done, click the [Apply] button, then change the switch to on or 'Active' mode to apply the configuration.



Number	Status	Description	
		uCAN V3.0	sCAN V1.0
Switch 1	ON	Use CAN side VDD for power (Default)	
	OFF	VDD is disconnected	
Switch 2	ON	Use USB VBUS for power (Default)	Use pin#9 (RS-232) for power (Default)
	OFF	USB VBUS is disconnected	Pin#9 is disconnected
Switch 3	ON	Active Mode (Default)	
	OFF	Setup Mode	
Switch 4	ON	Enable terminating resistor (120Ω) (Default)	
	OFF	Disable terminating resistor	



If you have any inconvenience while using the product, please contact us.

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