

EN

INSTRUCTION MANUAL

Data logger converter

DCL-CAN

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CONTENTS

1. Before Start	3
1-1 Symbols Used Description	
1-2 Basic Requirements	
1-3 Safety Guide	
2. Product Overview	3
3. Technical Specifications	4
4. Part and Function	5
4-1 Indicator LED	
4-2 Ground Connection Terminal	
4-3 ID Setting Switch	
4-4 RS232 D-SUB Connector	
4-5 MicroSD Slot	
4-6 Main Power Terminal	
4-7 RS485 Terminal	
4-8 CAN Terminal	
5. Connect bus Lines	6
5-1 RS-232 Bus	
5-2 RS-485 Bus	
5-3 CAN Bus	
6. Command	8
6-1 CAN Logger Basic Setting Command	
6-2 DCL-CAN Internal Temperature, Input Voltage Measurement Command	
6-3 3DSconverter Use Sensor Command (IPI, 3DS)	
6-4 Command to Read Sensor Value Directly (CUBE, VW-module etc.)	
6-5 Terminal Use Command	
6-6 Micro SD Control Command	
7. Warranty	14

1. Before Start

1-1 Symbol Used Description

The following symbols explain important information and safety symbols used in this manual.



Mark important information or mark what needs attention.



Information of caution about something very important.

Failure to pay attention to the indications may result in personal injury and software damage.



Indicates warnings that may result in electrical hazards of personal injury.

1-2 Basic Requirements

To understand this document, you must understand the CAN communication method and experience in electronics and electrical knowledge.

1-3 Safety Guide

Users should follow the general equipment guidelines outlined in this document.

1. Use the product properly after fully understanding the features and specifications of this product according to the usage.
2. When supplying power to this product, it is recommended to install a fuse externally.
3. Users of this product must be familiar with this document before use when wiring.

2. Product Overview

DAS DCL-CAN is a device that is specialized for DAS sensors operated by CAN Bus and can measure sensors at desired times to collect, store, and receive measurement values when desired.

• Features

W107 x H68 x D40 Small size

Wide operating voltage range : 9~30Vdc

RS232 enables smooth communication with LTE modem

15 logger ID methods can be extended by RS232

Allows easy setup with CAN2.0A

- **Main application**

CAN sensor logging for DAS civil metrology

- Support 3DS CAN
- Support IPI CAN
- Support CUBE-CAN

3. Technical Specifications

ITEM	Standard	Remark
Power Source	Recommended Voltage : +12Vdc / +24Vdc Operating Voltage : +9 Vdc / +30Vdc	
Current Consumption	12Vdc / MAX < 200mA	
RS232	Port : 1ea / Basic speed : 9600Bit/S Can be set [9600Bit/S ~ 115200Bit/S MAX Logger ID : 0xF (0~15)	
RS485	Port : 1ea / Basic speed: 9600Bit/S Can be set [9600Bit/S ~ 115200Bit/S	
CAN	Port : 1ea / Basic speed : 125kBit/S Can be set [125kBit/S ~ 500kBit/S Protocol : DAS protocol MAX Read ID : 0xC8 (Sensor 200ea)	Standard TypeCAN2.0A
Data Storage Method	Micro SD	MAX 64Gbit support
Real time clock save battery	3.3V / 5.5mAh (Rechargeable)	
Dimension	W107 x H68 x D40	
Weight	270g	
Operating Temp.	-20℃ ~ 75℃	
Storage Temp.	-40℃ ~ 80℃	

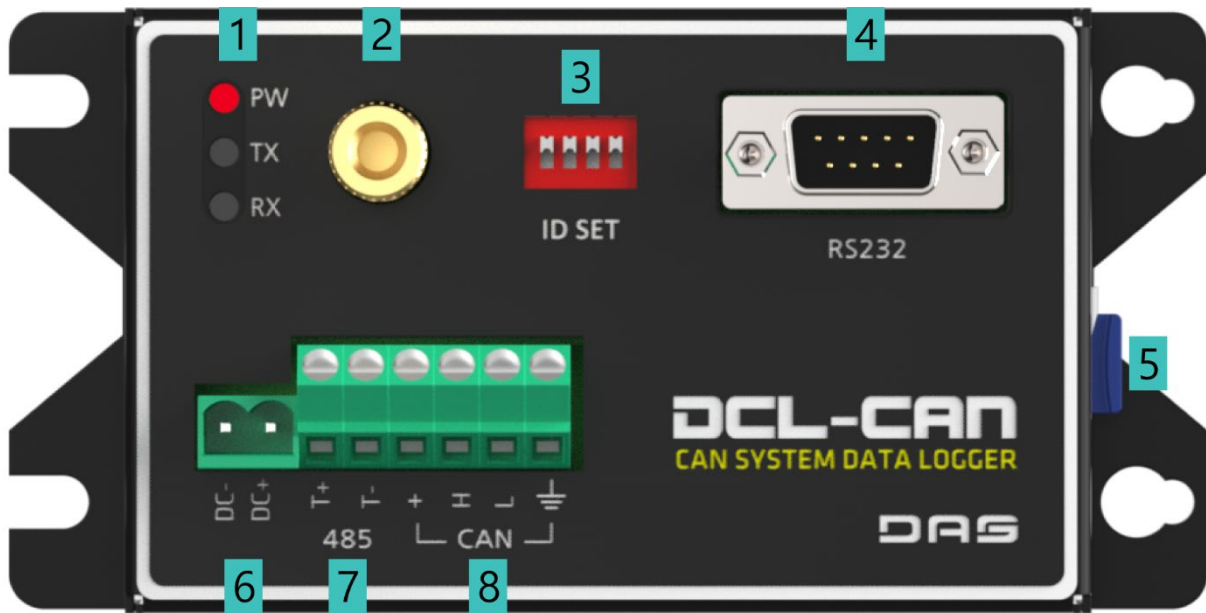
- **Real time clock operation period**

- 5500uAH (battery capacity) / 2.6uAH (current consumption) = about 2,115hours (discharge when left for about 2.9 months)

- **Real time clock Battery full charge time**

- 5500uAH (battery capacity) / 270uAH (charging current) = about 20 hours

4. Part and Function



4-1 Indicator LED

PW : Power LED, TX : RS232 TX, RX : RS232 RX Indicator



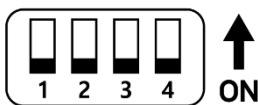
4-2 Ground Connection Terminal

Connect the ground to protect equipment from strong external voltages and currents such as lightning.



4-3 ID Setting Switch

ID SET Switch



- The ID setting method is as follows, and the principle is the same as the binary code.
- See it together with the ID SET Switch table

No.	ID SET Switch
0	
1	
2	
3	
	⋮
15	

ID No. (Decimal)	Binary
0	0000
1	0001
2	0010
3	0011
:	:
15	1111

4-4 RS232 D-SUB Connector

D-SUB capable of 1:1 communication with equipment that communicates with RS232 such as LTE and computer.

4-5 micro-SD Slot (MAX 64Gbit)

All data saved by PROG⁽¹⁾ are saved. (Can also be read with a separate reader, saved as a TXT file)

⁽¹⁾PROG is an abbreviation of Program, and when used in DAS, it collectively refers to the act of setting time setting values, etc.



4-6 MAIN Power Terminal

DC+: 12Vdc or 24Vdc, DC-: GND (There is a risk of equipment damage if connected with reverse voltage.)

4-7 RS485 Terminal

T+, T- terminal (RS485 communication port for Logger extension)



4-8 CAN Terminal

VCC Terminal : Sensor power terminal (Power ON/OFF output according to command)

GND Terminal : Sensor power terminal (There is a risk of sensor damage if connected with reverse voltage.)

CAN H, CAN L (CAN communication port that can be connected to the sensor)

5. Connect bus Lines

5-1 RS232 Bus



- Direct connection with DMS300



① RS232 cross cable



② RS232 to USB cable



③ PC

Connect to the RS232 D-BUS slot in turn. (①, ②, ③)

Download the DMS300 program from our website.

It is used after setting COM port in DMS300.



- LTE to LTE connection with DMS300

⑥ Wireless Connection

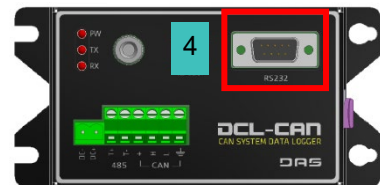


Optional

① LTE modem



② CDMA cable



Optional

① LTE modem



④ RS232 to USB cable



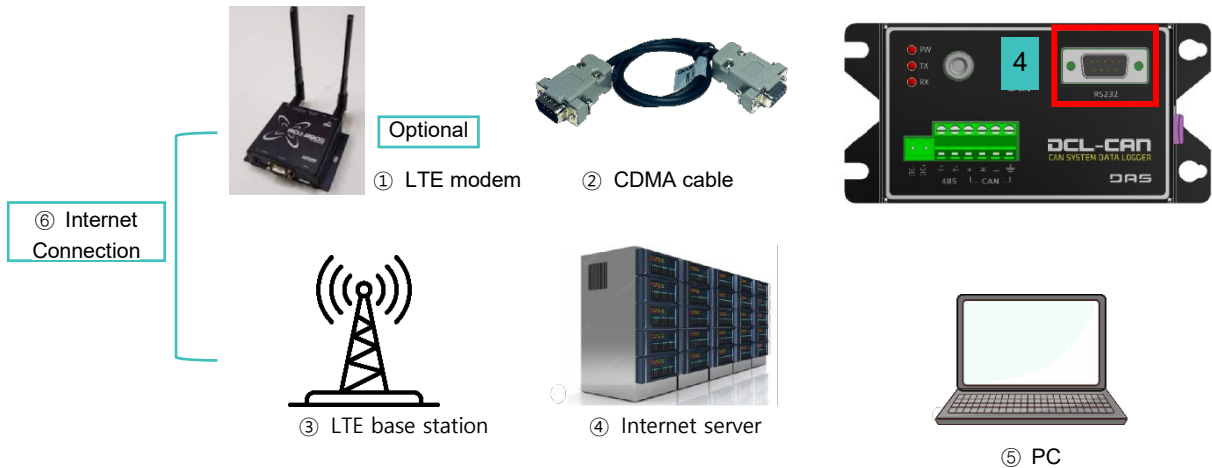
⑤ PC

Connect the equipment and the CDMA cable included with the equipment to the LTE modem. (①, ②)

Connect PC and USB, LTE modem and RS232. (③, ④)

It is used by connecting LTE wirelessly from PC to DMS300. (⑤, ⑥)

- DMS300 and LTE to TCP (LAN) connection.

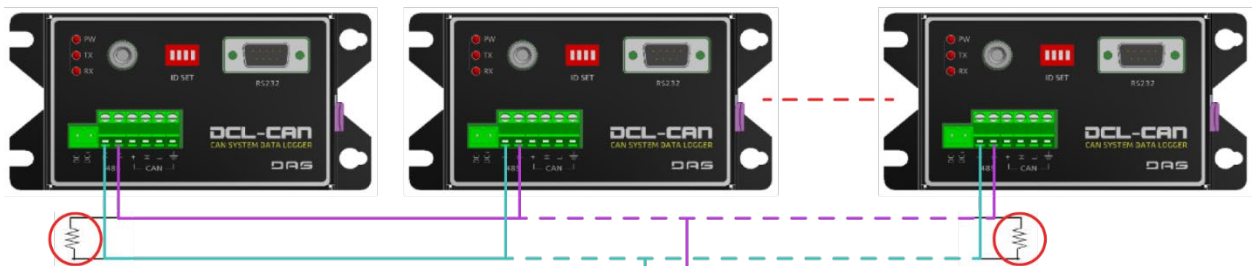


Connect the equipment and the CDMA cable included with the equipment to the LTE modem. (①, ②)

Connect your PC to the Internet network. (Fixed IP required) (③, ④)

It is used after connecting the LTE modem from the PC to the DMS300 through the Internet. (⑤, ⑥)

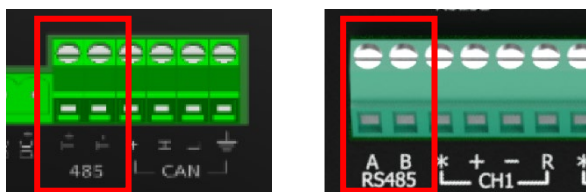
5-2 RS485 Bus



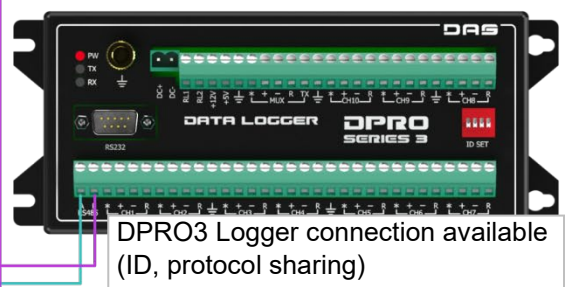
- Terminating resistance 120Ω
- For RS485 communication, insert 120Ω to the first communication point and the last communication point respectively.

DCL-CAN and our company's DPRO3 can be used together as long as the ID is not set redundantly by sharing the protocol.

- DCL-CAN, 'T+' > DPRO3 'A' connection.
- DCL-CAN, 'T-' > DPRO3 'B' connection.



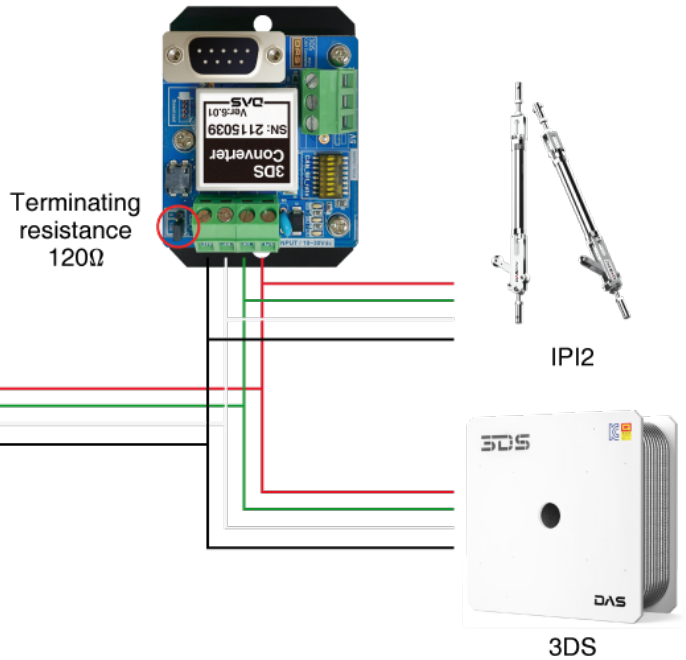
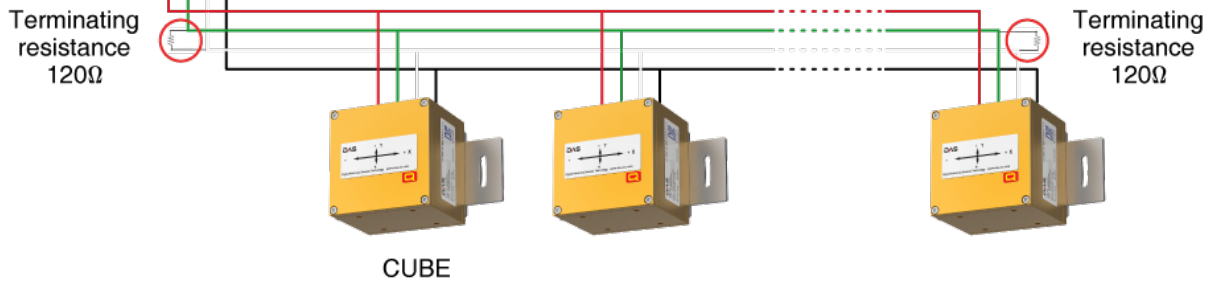
ID can be set from 0 to 15.
In case of 9600bps, maximum communication distance = 1km



5-3CAN Bus



- CAN power (“+”) output can be controlled.
- On the DMS300, it is controlled by pressing the power key.
- Command #power01 on;
= Sensor power ON [01=DCL-CAN ID]
- Command #power01 off;
= Sensor power OFF [01=DCL-CAN ID]



DAS's CAN sensors are linked with protocols and can be connected to measure (however, the ID is must not be the same)

• CAN Bus communication distance

Communication speed	Standard communication distance (m)
500Kbps	100m
250Kbps	250m
125Kbps	500m

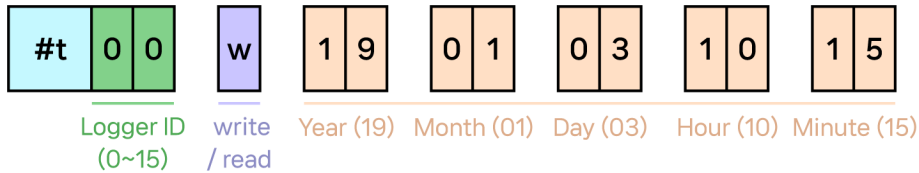
▲ It is a laboratory measurement. The distance may be reduced depending on the cable type and installation environment.

6. Command

6-1 CAN Logger Basic Setting Command.

[Enter DCL-CAN ID in 2 digits (DEC)]

- Time information (read/write)

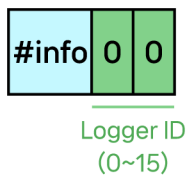


Change time : e.g. #t00

w 19 01 03 10 15 / [return] [auto save] Time Set 19-01-03, 10:15:00

Read time : e.g. #t00 r / [return] Time Read 9-01-03, 10:15:00

- DCL-CAN information [information]



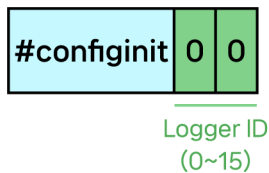
DCL -CAN Information

e.g. #info00

[return] DCL-CAN (ver07.10) ID:00 / Made by DAS Co.,Ltd

* The contents of the version may change due to DAS's circumstances.

- Factory reset logger setting



Initialization of internal parameters to factory default values

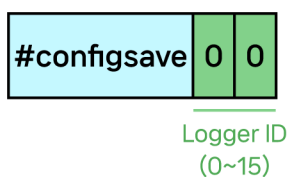
> All set values are cleared.

e.g. #configinit00

[return] Config Init Complete!

Note – factory default : Power off / RS232 (9600) / CAN (125)

- Save logger setting values

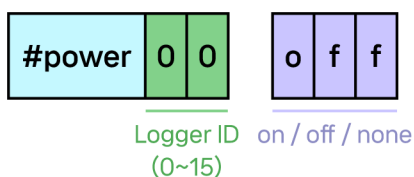


Save changed parameters

e.g. #configsave00

[return] Config Save Complete!

- Sensor power ON, OFF commands



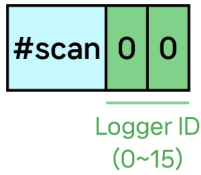
Power ON

e.g. #power00 on [+ = VCC output] > [no return]

Power OFF

e.g. #power00 off [+ = 0V output] > [no return]

- Check the sensors connected to the logger



Check the ID of all connected sensors

e.g. #scan00

[return]

3D CAN Logger ID:00 > ID

Find SENSOR Ch:2 > connected sensor

Sensor ID List > connected sensor ID list

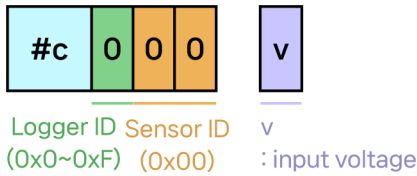
01, 02 > 0x01, 0x02

END List > end.

6-2 DCL-CAN Internal Temperature, Input Voltage Measurement Command

[Input DCL-CAN ID in 1-digit HEX, enter 0x00 in sensor ID]

- Applied voltage measurement (Battery measurement possible)

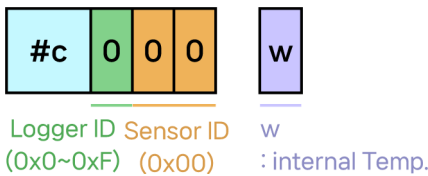


Check the input voltage.

e.g. #c000 v

[return] #c000 [V] 12.05 > 12.05Vdc

- DCL-CAN internal temperature measurement



DCL-CAN internal temperature measurement

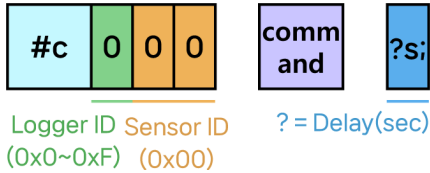
e.g. #c00 w

[return] #c00 [w] 17.7 > internal temperature 17.7°C

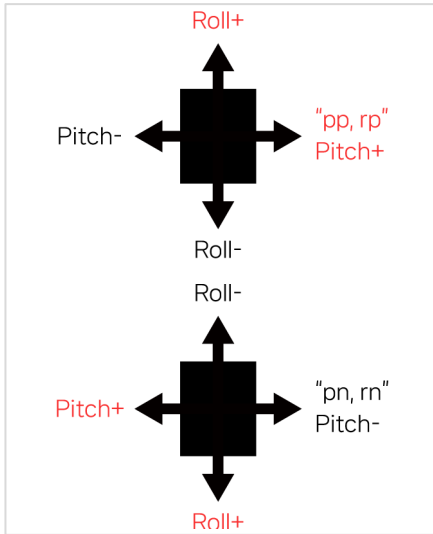
6-3 3DS-Converter Use Sensor Command (IPI, 3DS)

[Input DCL-CAN ID in 1-digit HEX, 200 sensor IDs available]

- Sensor read command

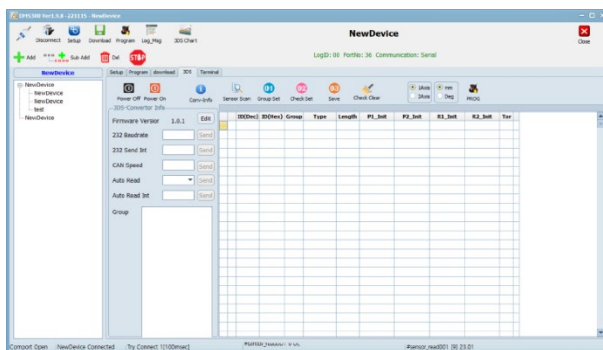


▲ Mems are contained in two



directions in opposite directions inside one sensor.

Command	Functions
3ds_te	Returns the internal temperature measurement of each sensor e.g. #c001 3ds_te 1s; [return] #c001 [3ds_te] 25.01
3ds_pp	Pitch+ measurement value (measured in + and – two directions per sensor) e.g.#c001 3ds_pp 1s; [return] #c001 [3ds_pp] 0.511
3ds_pn	Pitch- measurement value e.g. #c001 3ds_pn 1s; [return] #c001 [3ds_pn] -0.512
3ds_rp	Roll+ measurement value (measured in + and – two directions per sensor) e.g. #c001 3ds_rp 1s; [return] #c001 [3ds_rp] 1.011
3ds_rn	Roll- measurement value e.g. #c001 3ds_rn 1s; [return] #c001 [3ds_rn] -1.015
3ds_pa	Pitch measurement value “(pp-pn) / 2 = measurement value e.g. #c001 3ds_pa 1s; [return] #c001 [3ds_pa] 1.000
3ds_ra	Roll measurement value “(rp-rn) / 2 = measurement value e.g. #c001 3ds_ra 1s; [return] #c001 [3ds_ra] 1.000

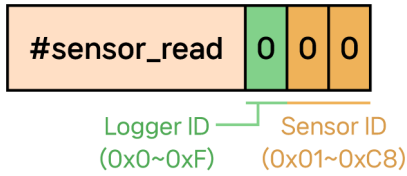


◀ It is recommended to set to DMS300.

6-4 Command to Read Sensor Value Directly (CUBE, VW-module etc.)

[Input DCL-CAN ID in 1-digit HEX, 200 sensor IDs available]

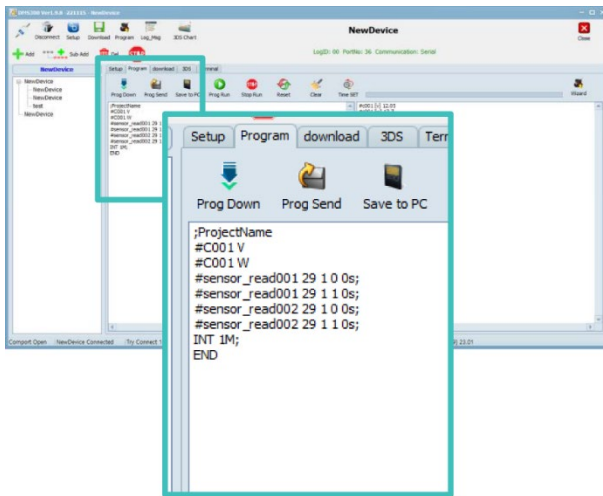
- Read sensor



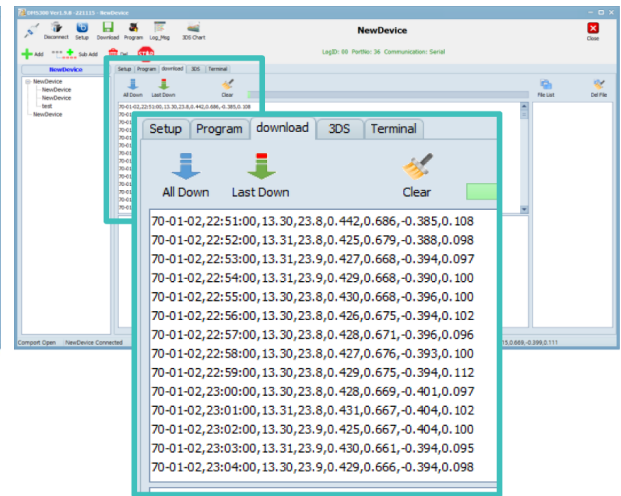
Input digit	Details
#sensor_read	Sensor read command
Logger ID (0x0~0xF)	Logger ID to read (16 readable)
Sensor ID (0x01~0xC8)	Sensor ID to read (200 readable)

Refer to each sensor manual or manual for the protocol.

Function	Input	Return	Details
Read sensor temp.	#sensor_read001 9 1s;	#sensor_read001 [9] 23.01	23.01 °C
Read sensor X-axis	#sensor_read001 29 1 0 1s;	#sensor_read001 [29, 1, 0] 0.30	0.300 degree
Read sensor Y-axis	#sensor_read001 29 1 1 1s;	#sensor_read001 [29, 1, 1] 0.40	0.400 degree

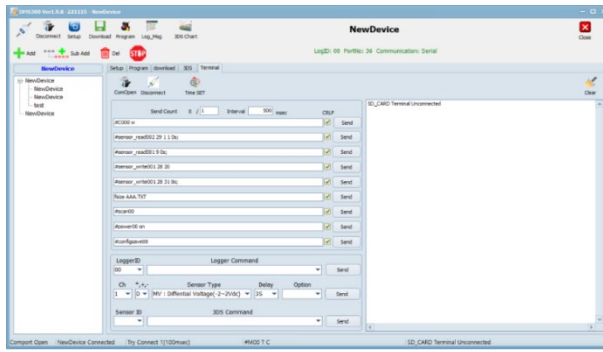


▲ Save PROG



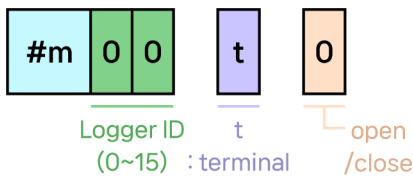
▲ Downloaded from microSD

6-5 Terminal Use Command



◀ Available in terminal mode.

- Terminal mode Open & Close



Use when enter or escape terminal mode.

e.g. #m00 t o (Enter terminal mode)

[return] SD_CARD Terminal Connected

e.g. #m00 t c (Escape terminal mode_Escape if there is no input for a certain period of time)

[return] SD_CARD Terminal Unconnected

- Terminal mode Open command [refer to [CMD] command prompt]

Command	Function and Name	Remark
mode	mode [/option] : t (terminal mode), m (MCU mode)	terminal mode = Output all commands MCU mode = Mode for PC auto-save
ver	ver : Version	Version output
init	init : initialize	SD reset
dir	dir : show directories and files	Short for DIRectory, used to check what files or folders exist in the current path
del	del [file]	Command for delete file
md	md [directory] : make directory	Make directory
rd	rd [directory] : remove directory	Used to delete the directory. (If there atr files in that directory, cannot delete)
cd	cd [directory] : change directory cd.. : previous directory	Used to change current path
rename	rename [original] [changed] : rename file	Change file name Rename file "test.txt" Enter change name "test2.txt"
card	card : status of card insert	Command to check microSD is inserted [Responds only to terminal mode]
fsize	fsize [file] : file size [siring + EOF 2bytes]	Read file size [in bytes]
dsize	dsize : disk size	Size of microSD [in bytes]
fcreate	fcreate [file] : create file	Create file When creating a file, the extension must be written like "test.txt"

fopen	fopen [file] [/option] : open file /r(READ), /w(WRITE), /a(APPEND)	Enter file read / file write / file append mode
fclose	fclose [file] : close file	Close file mode
fputc	fputc [file] [/option] [char] : write 1byte data /w(WRITE), /a(APPEND)	/w = 1byte Write contents (All erased, only input written) /a = 1byte Paste contents (Paste after current data)
fputs	fputs [file] [/option] [string] : write string /w(WRITE), /a(APPEND)	/w = string Write contents (All erased, only input written) /a = string Paste contents (Paste after current data)
fread	fread [file] : read file until EOF	Read file contents
format	format : format micro SD card	Delete all micro SD card
baud	baud [/speed] : /115200, /57600, /38400, /19200, /9600, /4800, /?	Change or check the baud rate of RS485, RS232
#can_speed00	can_speed [speed] : can speed 500000, 250000, 125000	Change and read CAN speed As a command added later, “#” and DCL-CAN ID must be entered.
reset	reset : micro SD reset	Reset microSD
reboot	reboot : system reboot	Reboot system
help	help	Output available commands with explanations

7. Warranty

- 12 months warranty is provided after released. Warranty provided only in case of using for designed purpose correctly.
- If the date of purchase is unclear, it is calculated as the remaining warranty period up to 15 months from the date of manufacture.
- Even in the case of a failure within the warranty period, free warranty benefits are not available in the following cases.
 - In case of failure due to customer's negligence
 - In the event of a breakdown due to natural disasters. fire, earthquake, flood, lightning, etc.)
 - If connected a power source other than electric power or a failure occurs due to an abnormal power supply.
 - In case of failure due to defective connection device (connected product).
 - If a customer (buyer or third party) fails to use it according to the manufacturer's user manual.
 - If a product malfunction occurs due to arbitrary change (H/W and S/W repair or modification) by the customer (purchaser or third party).
 - If there are signs of arbitrary disassembly when checking the received defective product.
- The manufacturer does not take any responsibility for the product if the customer uses it for a purpose other than specified in writing.
- Manufacturer provides a liability warranty against hardware defects arising from product defects, related firmware, materials, design or manufacturing reasons.
- The obligation of the manufacturer under this warranty is, at Manufacturer's option, to replace the product, update relevant firmware or repair any defective Product.
- The manufacturer is not pay for any costs incurred in the event of a defect, and does not any responsibility for damage of the product or device.