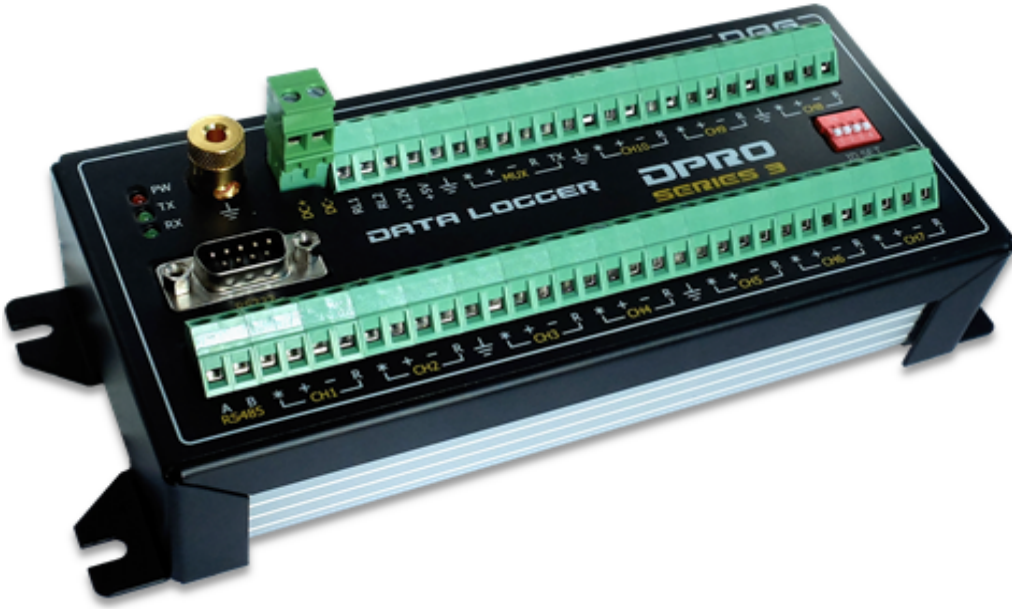
STATIC DATA LOGGER

DPRO Series 3

User's Manual



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< DPRO3 CONTENTS >

1. Quick Manual

1.1 General

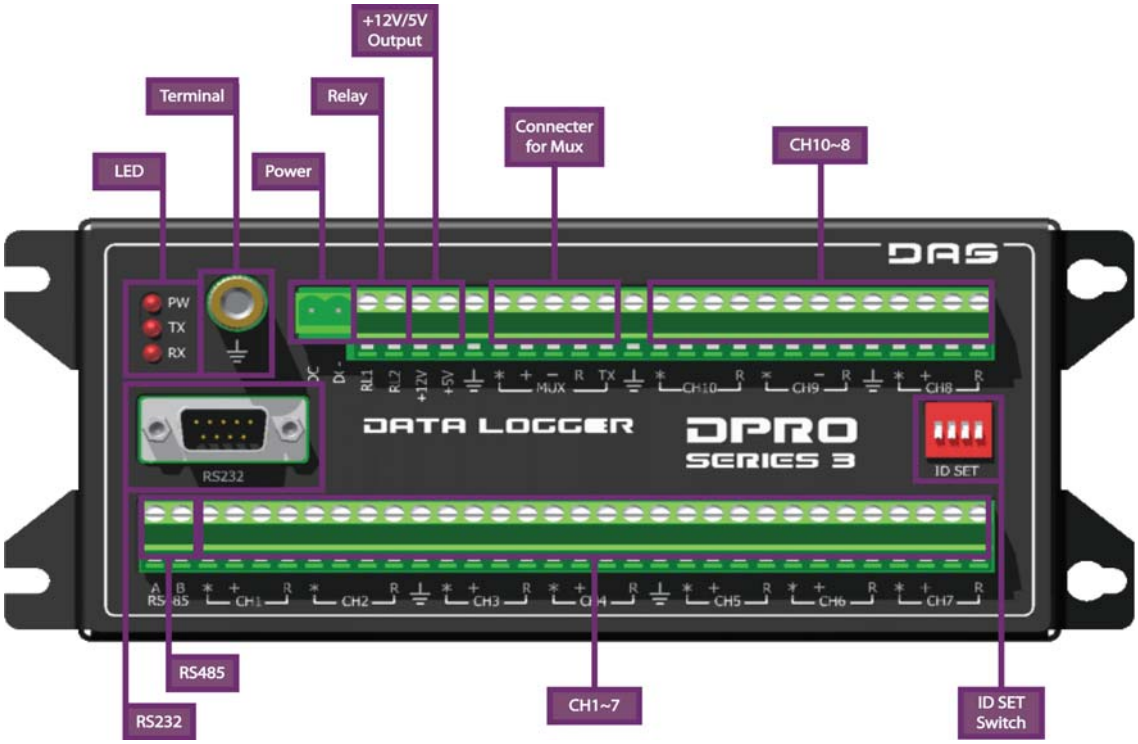
The Quick Tutorial is for easily start using DPRO3. It is basic information for using. If you want more detailed contents, refer to 'User Manual.

In spite of that beginner uses easily, DPRO3 has many function powerfully. DPRO3 can measure almost sensor type for civil engineering and communicate with PC by CDMA and Blue tooth without any device. Also, It can save a large data by that SC Card memory is possible expansion.

This Quick Tutorial is described measuring method by only SD Card without software that is 'SLDATA v3.0' for control DPRO3 by PC.

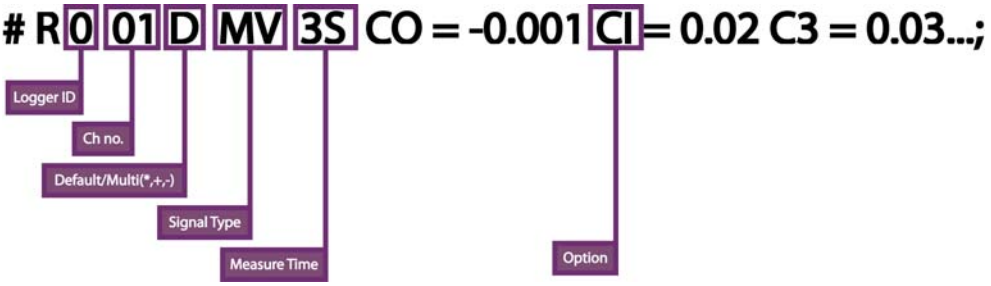
You should read carefully this document. We hope you feel powerful function of DPRO3.

1.2 Structure



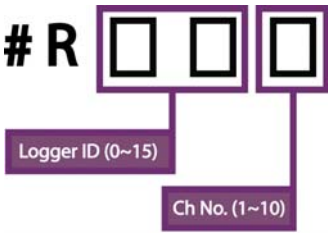
1.3 Measure Code

1.3.1 Code Format



This is general code format for DPRO3. If you want make code for different way, refer a manual of DPRO3. Also, review 'Connecting Sensors' that already explain.

1) Logger Channel

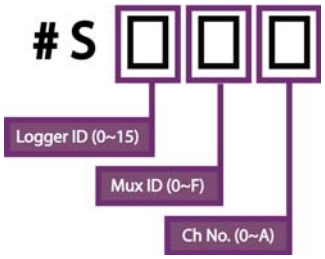


Item	Contents
R	Logger
Logger ID	Logger ID number
CH No	Chanel number
No	Decimal number

Ex)

Code	Explain
#R001	Logger ID 0 → CH 01
#R011	Logger ID 0 → CH 10
#R157	Logger ID 15 → CH 07

2) Mux channel



Item	Contents
S	Mux
Logger ID	Logger ID number connected to Mux
Mux ID	Mux ID number
CH No	Chanel number
No	Hex number

Ex)

Code	Explain
#S011	Mux ID 01 → CH01
#SFFA	Mux ID 15 → CH10

1.3.2 Default/Multi(*,+,-)

chanel	Contents
Default Mode	'D'
Multi Mode	'*', '+', '-'

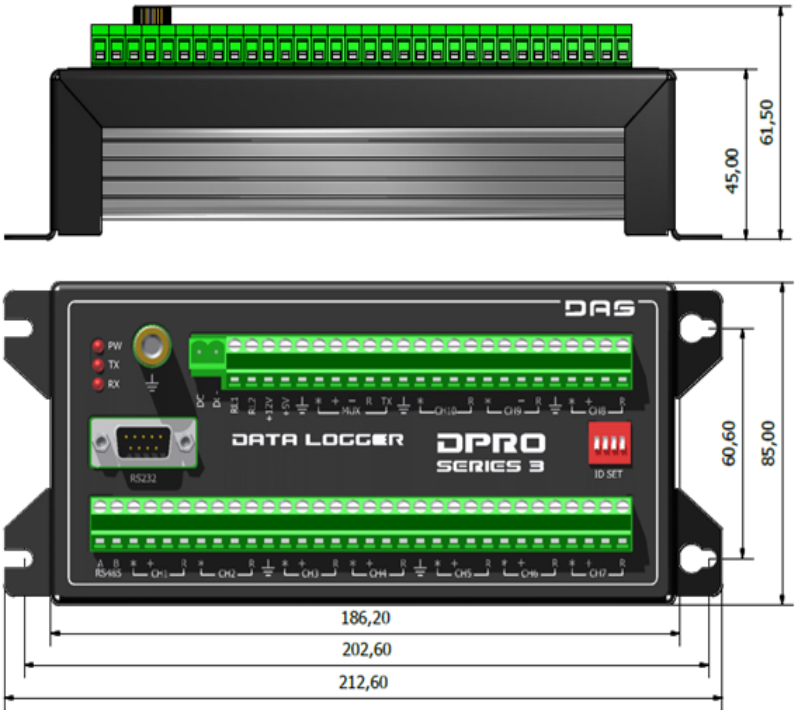
Ex)

Code	Explain
#R001 D MV 3S;	Default Mode
#R001 * MV 3S;	'*' Use terminal of Multi Mode ('R'= GND)

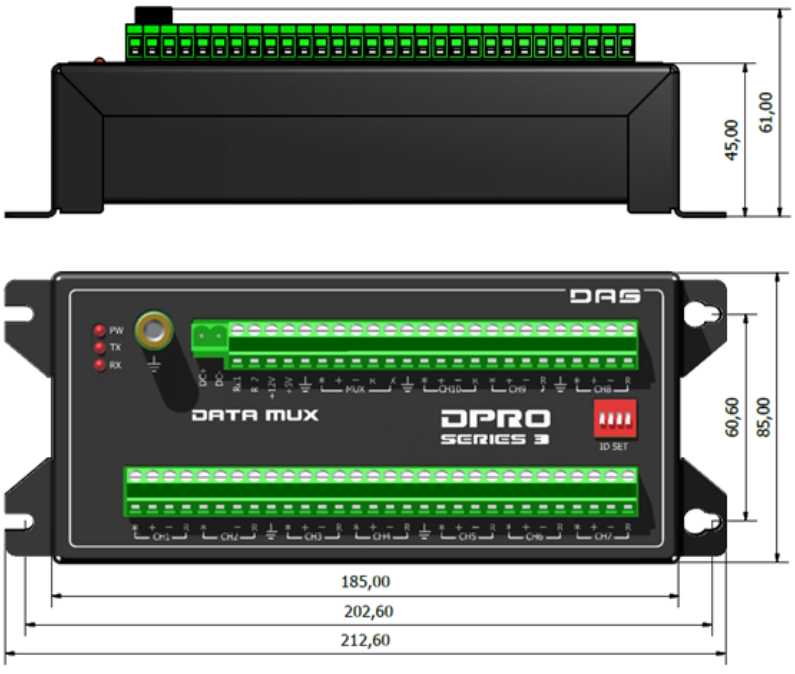
2. Dimension and Specification

2.1 Dimension

2.1.1 Data Logger



2.1.2 Mux



2.2 Specification

2.2.1 Signal Input

- Default Mode : 10 ch
- Multi Mode : 30 ch

2.2.2 Measurement sensor

1) Differential mV

Range	Resolution
±2.5Vdc	80μV

- Accuracy : 0.15 % at 25 °C

2) 4-20mA Current loop

Range	Resolution
±25mA	2μV

- Shunt value : 100W to a shared common
- Accuracy : 0.25 % at 25 °C

3) 0~5V

Range	Resolution
0~5Vdc	80μV

4) Vibrating Wire

Range	Resolution
6000Hz	0.01%

- Frequency range : 450 to 6000 Hz
- Coil resistance : 50 to 200 W
- Stimulation method : single pulse pluck

5) Thermister

- Types : YSI 400xx Series
- Resistance range : 3kΩ

6) Full Bridge

Range	Resolution
±2.0Vdc	1μV

- 4 Wire
- Excitation Voltage : 2Vdc or 5Vdc

7) RTD

- Types : Pt, Ni, Cu
- Resistance range : 10Ω to 2Ωk
- Measurement accuracy : 4 wire: 0.15% of resistance
- value 3 wire : 0.25% of resistance value

8) Resistance

- Accuracy : 0.20 % at 25 °C

2.2.3 Permit Power

1) Sensor Excitation

- Per channel : DPRO3 power , 5V or 5.00V
- DC voltage : 5V at 100mA switched or DPRO3 power
- Full Bridge : 5.00V or 2.00V

2.2.4 Extansion Power

- DPRO3 power, 5V output power terminal and 2 GND terminal

2.2.5 Sampling

- Maximum sample speed : 0.5Hz
- Effective resolution : 15bit
- Linearity : 0.01%
- Common mode rejection 25mV range : > 90dB
- Line (50/60Hz) series mode rejection : > 35dB

2.2.6 Save

- Types : SD-Card>1GB, FAT16/32
- Capacity : up to 31,700,000 data points (1GB)
- Data format : proprietary
- Format : ASCII floating point, fixed point or exponential formats
- Compatibility : spread sheets, word processors
- Ch No. : 120 Channel

2.2.7 Serial Interface(RS232)

- The DPRO is programmed and data extracted via the RS232 serial interface.
  - Speed : 9600 baud rate
  - Handshake : NONE
  - Isolation : 500V

2.2.8 Network Interface(RS485)

- Standard : RS485
- Protocal : proprietary with error correnction
- Speed : 9600 Baud
- Distance : 1000 meter maximum

2.2.9 Reley Port

- 2 Port : RL1-5V, RL2-12V

2.2.10 System

1) Real Time Clock

For time stamping of data, scheduling and timers

- Normal resolution : 1 second
- Accuracy : 1 second per hour (25°C)

2) Power Supply

- Voltage range : 9 to 18V dc

3) Power Supply

- In normal mode : 0.83W
- Typical power operation : 150mA

4) Internal Backup Battery

For real time clock and internal data storage backup

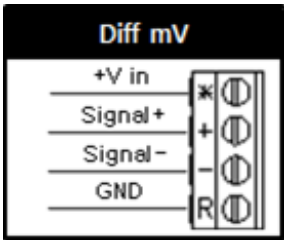
- Type : 3V Lithium (150mA)

2.2.10 Physical and Environment

- Construction : Steel
- Physical dimensions : 212.6 x 85 x 61.5mm
- Weight : 760 g
- Environment Temperature : -40°C to 70 °C
- Humidity : 85%, non-condensing

3. Measurement

3.1 Differential MV



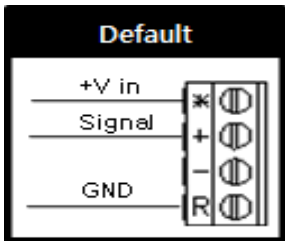
Sign	Contents
*	'*' terminal come out power supply for sensor operating.
+	'+' terminal is connected + signal of sensor.
-	'-' terminal is connected - signal of sensor.
R	'R' terminal is connected ground of sensor.

★ Shield cable is '⏚' connected.

Ex) Code format

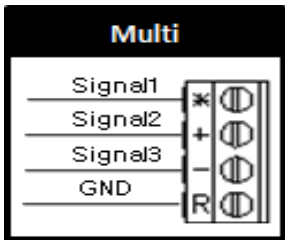
Code	Explain
Command : #R001 D MV 3S;	MV value of sensor output reading at Ch01.

3.2 Single ended 0~5V



Sign	Contents
*	'*' terminal come out 5Vdc for sensor operating.
+	'+' terminal is connected + signal of sensor.
-	'-' terminal is connected - signal of sensor.
R	'R' terminal is connected ground of sensor.

★ Shield cable is '⏚' connected.



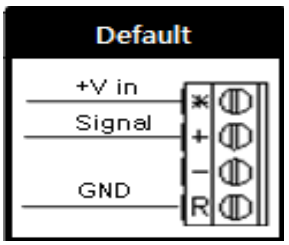
Sign	Contents
*	'*' terminal is connected +signal of first sensor.
+	'+' terminal is connected +signal of second sensor.
-	'-' terminal is connected -signal of third sensor.
R	'R' terminal is connected R signal of all sensor.
5V	The continuous power supply.

★ Shield cable is '⏚' connected.

Ex) Code format

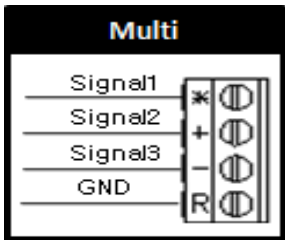
Code	Explain
Command : #R001 D 5V 3S;	MV value of sensor output reading at Ch01.

3.3 Single ended 0~10V



Sign	Contents
*	'*' terminal come out power supply for sensor operating.
+	'+' terminal is connected + signal of sensor.
-	'-' terminal is connected - signal of sensor.
R	'R' terminal is connected ground of sensor.

★ Shield cable is '⏚' connected.



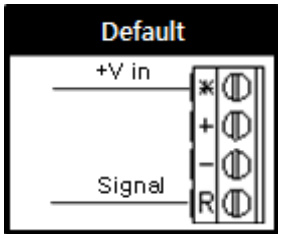
Sign	Contents
*	'*' terminal is connected +signal of first sensor.
+	'+' terminal is connected +signal of second sensor.
-	'-' terminal is connected -signal of third sensor.
R	'R' terminal is connected R signal of all sensor.
5V	The continuous power supply.

★ Shield cable is '⏚' connected.

Ex) Code format

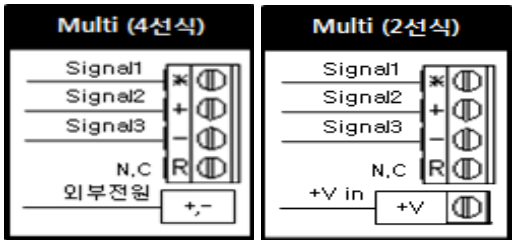
Code	Explain
Command : #R001 D 5V 3S;	MV value of sensor output reading at Ch01.

3.4 Single ended 4~20mA



Sign	Contents
*	'*' terminal come out +11~13Vdc for sensor operating.
+	'+' terminal is not connected.
-	'-' terminal is not connected.
R	'R' terminal is signal of sensor.

★ Shield cable is '⏚' connected.

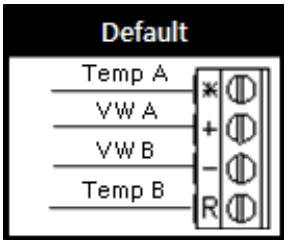


Sign	Contents
*	'*' terminal is connected +signal of first sensor.
+	'+' terminal is connected +signal of second sensor.
-	'-' terminal is connected -signal of third sensor.
R	'R' terminal is connected R signal of all sensor.

Ex) Code format

Code	Explain
Command : #R001 D MA 3S;	MV value of sensor output reading at Ch01.

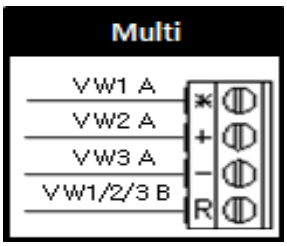
3.5 Vibrating Wire



Sign	Contents
*	'*' terminal is connected signal of temperature.
+	'+' terminal is connected signal of VW sensor.
-	'-' terminal is connected signal of VW sensor.
R	'R' terminal is connected signal of temperature.

★ VW and Temp signal has not +,- sign.

★ Shield cable is '⏚' connected.



Sign	Contents
*	'*' terminal is connected signal of first sensor.
+	'+' terminal is connected signal of second sensor.
-	'-' terminal is connected signal of third sensor.
R	'R' terminal is connected signal of all sensor.

★ Temp of sensor is no connected.

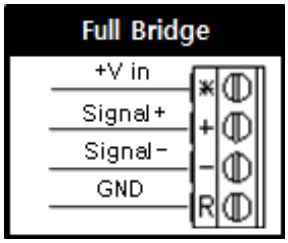
★ Shield cable is '⏚' connected.

Ex) Code format

Code	Explain
Command : #R001 D VW 3S;	Ch01에서 센서의 출력 VW와 Thermistor 3K 값을 읽음, 'A' mode(same function) The output is Hz and ℃, Temperature is not saved.

3.6 Full Bridge

- Used to be a Full Bridge signal input, Reference is 5V and 2V.



Sign	Contents
*	'*' terminal come out 5Vdc for sensor operating.[ST] '*' terminal come out 2Vdc for sensor operating.(SU]
+	'+' terminal is connected + signal of sensor.
-	'-' terminal is connected - signal of sensor.
R	'R' terminal is connected ground of sensor.

★ Sheild cable is '⏚' connected.

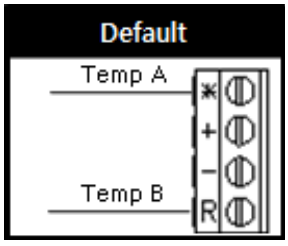
Ex1) ST(Excitation V = 5Vdc)

Code	Explain
Command : #R001 D ST 3S;	+5Vdc output at Ch01 Difference V value measurement Output : mV

Ex2) SU(Excitation V = 2.00Vdc)

Code	Explain
Command : #R002 D SU 3S;	+2.00Vdc output at Ch01 Difference V value Output : mV

3.7 Thermistor 3K



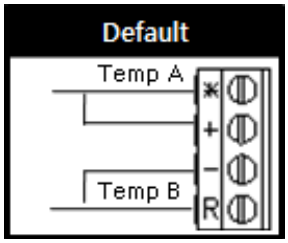
Sign	Contents
*	'*' terminal is connected signal of temperature.
+	N.C
-	N.C
R	'R' terminal is connected signal of temperature.

★Thermistor temp sensor has not +,- sign.

예1) Default Mode

Code	Explain
Command : #R001 D TH 3S;	Thermistor temperature measurement at Ch01, , Output : ℃

3.8 RTD(PT100)



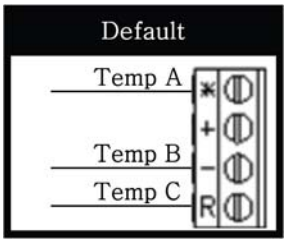
Sign	Contents
*	'*' terminal is connected signal of temperature.
+	'*' terminal short.
-	'R' terminal short.
R	'*' terminal is connected signal of temperature.

★RTD temp sensor has not +,- sign.

Ex1) Default Mode

Code	Explain
Command : #R001 D RT 3S;	RTD Temp measurement at Ch01, Output : ℃

- RTD(PT100) connection method (3-wire)



Sign	Contents
*	'*' terminal is connected signal of temperature.
+	
-	'*' terminal is connected signal of temperature.
R	'*' terminal is connected signal of temperature.

★RTD temp sensor has not +,- sign.

Ex1) Default Mode

Code	Explain
Command : #R001 D RT 3S;	RTD Temp measurement at Ch01, Output : ℃

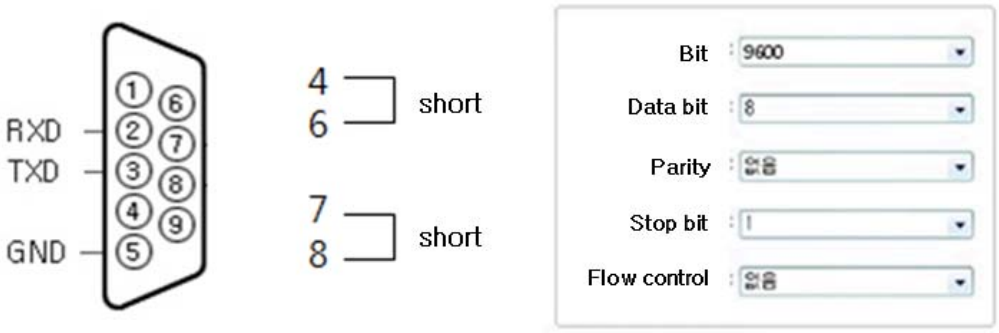
4. Communication

4.1 RS-232

DPRO3 supports the RS232. Data logger and PC connects using cross serial cable. Dedicated cable is recommended.

The following is setting port.

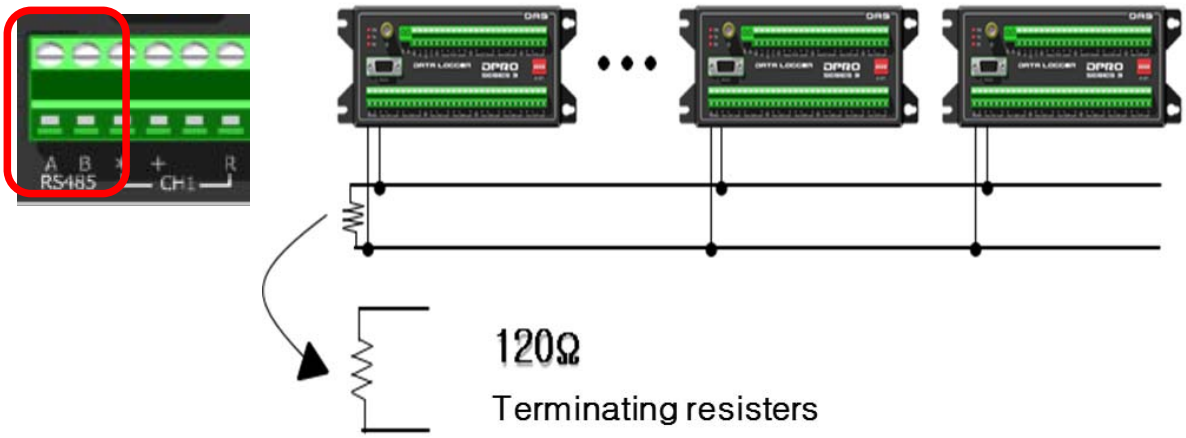
Bit: 9600, Data Bit: 8, Parity : nothing , Stop bit : 1, Flow control : nothing



4.2 RS-485

DPRO3 supports the RS485. It is located beside the power of data logger, Can be connected in parallel through RS485.

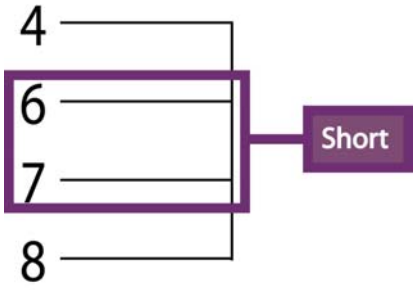
The communication speed is 9600, maximum communication range is 1Km.



4.3 CDMA

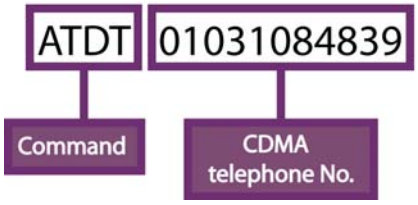
DPRO3 supports the wireless communication using CDMA. We products using Growell Co.,Ltd of E802, Ek01 and Infobank Co.,Ltd of M-Keeper.

4.3.1 Growell Co.,Ltd



6 pin and 7 pin should be short.

1) Command



Before connect	Connect	Release
AT+CRM=129	ATDT 01031084839	ATH
"OK" return	"CONNECT" return	

4.3.2 Inforbank Co.,Ltd

The cable and command is the same the Growell Co.,LTd. But release command is difference.

^]+++^[

- Must be sent character string.

5. Data Save

5.1 Storage memory

DPRO3 saved using a storage memory. The default format is FAT32.

- Save : Data folder of ID 00 data logger
- File : 'TXT' file

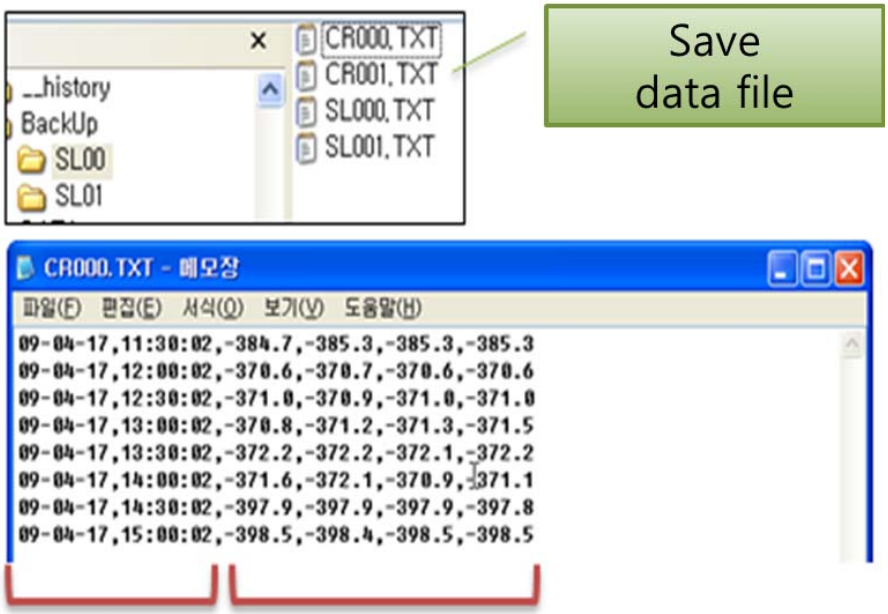
5.2 Auto Run

The file name is stored in 'PROG.TXT', first line is not wrote. must be wrote as below.

- 'PROG.TXT'

Code	Explain
;Project Name	Project name
#R001 D MV 3s;	Measurement command recording
:	
:	
INT 30M;	Measurement interval
END	Measuring end

Maximum 120 line



- Save : 'root₩SL00₩.. ' folder of ID 00 data logger
- 1~60 Channel : 'CR[ID]0.TXT' and 'SL[ID]0.TXT' file
- 61~120 Channel : 'CR[ID]1.TXT' and 'SL[ID]1.TXT' file