

***SENSING &  
CONTROL  
DAS.***

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**Business Field** **Construction machinery · Heavy equipment sensing control solution**

Crane/aerial lift truck overload protection device, angle sensor, length sensor, hydraulic/electric control controller, HMI, CANbus sensor, wireless remote controller, outrigger controller, vertical meter for heavy equipment, battery charger for high-voltage electric live-line vehicles, optical communication converter

**Civil engineering · Safety · Maintenance measurement solution**

Underground inclinometer, rail displacement gauge, 3D displacement gauge, internal displacement gauge, structure inclinometer, EL beam sensor, building inclinometer, data logger, multiplexer, VW measuring instrument, floodgate inclinometer, passive inclinometer

**General industrial sensing · Control solution**

Angle sensor, length sensor, gyro sensor, acceleration sensor, rotation angle sensor, monitor HMI, CANbus sensor, device control controller, medical control solution, sensing solution for semiconductor equipment

**Own Skills** **Control / Development**

- Developed hydraulic control (voltage, current, proportional control, etc.)
- Controller application development
- CodeSys · C# · Visual Studio · Delphi · Android OS · F/W, etc. Support for various types of software development
- Various development experiences and application cases

**Sensor / Hardware**

- Developed various sensors for all industries such as angle, length, turning, and load sensing, and provided a controller-integrated total solution such as electric field, harness, and H/W
- More than 20 years of development experience and know-how
- High-performance and high-reliability sensors with various specifications

**Wireless control development**

- Possession of high reliability and safety wireless control technology
- Development of new technologies such as distance detection using RF Beacon
- Response to development of customized wireless remote control
- Design, development, and supply of total systems such as sensors, harnesses, wireless communication, and controllers
- Securing quality through perfect reliability test

# 01

## Angle(Tilt) Sensor

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# JSENS-IN

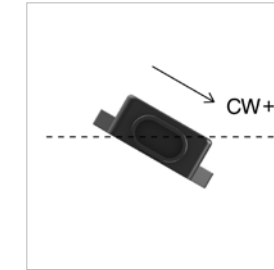
## JSENS-IN

High performance MSMS based CAN communication angle sensor  
 Q-mark | CE | ROHS  
 Applicable fields | Construction machinery · heavy equipment



Item	Specifications	Remarks
Measuring Range	Uniaxial ±180° (deg)	Settable
	Biaxial ±90° (deg)	
Resolution	0.1° (deg)	
Non-Linearity	0.25% FS	
Response	<0.3 sec	<10° (deg)/sec
Output Interval	more than 10msec	
Output	CANopen SAE-J1939	
Power Source	10 ~ 30Vdc	
Current	<60mA	@12Vdc
Consumption		
Operating Temp.	-20°C ~ +85°C	
Waterproof	IP66	
Dimensions	W40 × D40 × H16mm	without mounting
Weight	40g	

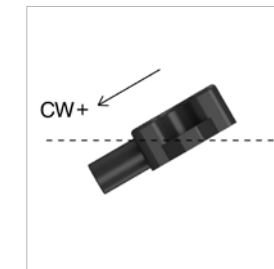
- **Measuring Range**  
e.g. -90° ~ +90° (deg) or -30° ~ +60° (deg) etc.
- The MIN/MAX angle must satisfy each axis' designated range.  
Please inquire separately for less than -3° ~ +3° (deg).
- For ±90° (deg), the error range increases at angles exceeding ±85° (deg).



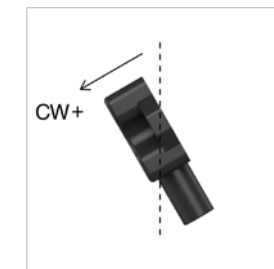
X-axis, Wall mount



X-axis, Floor mount



Y-axis, Wall mount



Y-axis, Floor mount

# AMS-IN

## AMS-IN

High performance MSMS based CAN communication angle sensor  
 Analog Input 1ch | Angular value integrated CAN output  
 Applicable fields | Construction machinery · heavy equipment ·  
 factory automation



Item	Specifications	Remarks
Measuring Axis	Uniaxial ±180° (deg)	Settable
	Biaxial ±90° (deg)	
Resolution	±0.1° (deg)	
Non-Linearity	1% FS	
Output	4 ~ 20mA	
	0.5 ~ 4.5Vdc	
	CANOpen	
	J1939	
Power Source	10 ~ 30Vdc	
Current	<60mA	@12Vdc
Consumption		
Operating Temp.	-20°C ~ +85°C	
Waterproof	IP65	
Dimensions	W95 × D30 × H27mm	
Weight	20g	

- **Measuring Range**  
 e.g. -90° ~ +90° (deg) or -30° ~ +60° (deg) etc.
- The MIN/MAX angle must satisfy each axis' designated range.  
 Please inquire separately for less than -3° ~ +3° (deg).
- For ±90° (deg), the error range increases at angles exceeding ±85° (deg).
- CANopen / SAE-J1939 fixed maximum measuring range
- CAN output value = angle + analog 1 channel value

# GSENS series

## GSENS-IN

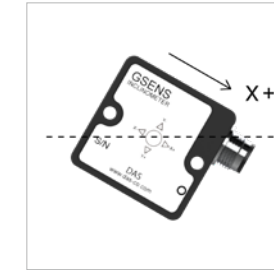
High-performance MEMS based angle sensor

Q-mark | CE

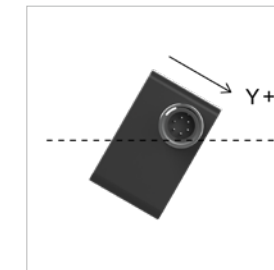
Applicable fields | Construction machinery · heavy equipment



Item	Specifications	Remarks
Measuring Axis	Uniaxial X-axis or Y-axis	
	Biaxial X+Y axis	
Measuring Range	±1.00° (deg)	
Resolution	0.001° (deg)	
Non-Linearity	±0.02° (deg)	
Response	<0.5 sec	
Output	RS485	
Power Source	10 ~ 30Vdc	
Operating Temp.	-20°C ~ +70°C	
Dimensions	W40 × D40 × H24mm	
Weight	65g	



X-axis +



Y-axis +

# SA1N / SA2

## SA1N / SA2

High-performance MSMS based compact angle sensor

CE | ROHS

Applicable fields | Construction machinery · heavy equipment



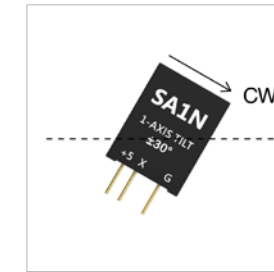
Item	Specifications	Remarks
Measuring Axis	Uniaxial X-axis fixed	SA1N
	Biaxial X+Y axis	SA2
Measuring Range	±30°, ±60°, ±90° (deg)	
Resolution	0.1° (deg)	
Non-Linearity	3% FS	
Temp. Drift	±0.15mg/°C	
Response	<0.3 sec	
Output Format	10 ~ 90% of power source	RATIO
Power Source	5.0Vdc	4.5 ~ 5.5Vdc
Current	10mA	@5Vdc
Consumption		
Operating Temp.	-20°C ~ +80°C	
Waterproof	IP65	
Dimensions	W14.8 × D19.9 × H11.8mm	without pins
Weight	10g	

### • Measuring Range

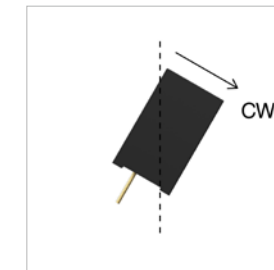
e.g. -90° ~ +90° (deg) or -30° ~ +60° (deg) etc.



+5	V+
X	X-axis
Y	Y-axis (SA2)
G	GND (COM)



X-axis



Y-axis (SA2)

# M3-S

## M3-S

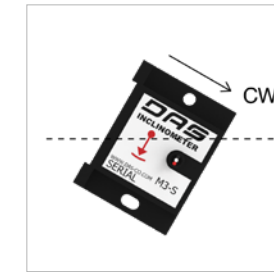
High-performance MEMS based angle sensor module  
 Applicable fields | Construction machinery · heavy equipment



Item	Specifications	Remarks
Measuring Axis	Uniaxial X-axis fixed	
Measuring Range	±30°, ±60°, ±90° (deg)	
Resolution	0.1° (deg)	
Non-Linearity	3% FS	
Response	<0.3 sec	
Output Format	10 ~ 90% of power source	RATIO
Power Source	5.0Vdc	4.5 ~ 5.5Vdc
Current	10mA	@5Vdc
Consumption		
Operating Temp.	-20°C ~ +80°C	
Waterproof	IP65	
Dimensions	W28 × D11.7 × H37mm	
Weight	13g	
Cable	300mm	

• **Measuring Range**

e.g. -90° ~ +90° (deg) or -30° ~ +60° (deg) etc.



X-axis

# AT-200

## AT-200

Earth drill navigation system (verticality and inclination measurement)  
 Applicable fields | Civil engineering · safety · maintenance  
 measurement solution



### Monitor

Item	Specifications	Remarks
Display	5inch, TFT, LCD, 600cd	
Power Source	10 ~ 30Vdc	
Current	Max 300mA	
Consumption		
Display Resolution	WVGA (800 × 480, 5 : 3)	
Input Device	8buttons keypad	
Output Range	±5° (deg)	
Operating Temp.	-25°C ~ +65°C	
Dimensions	W170 × D47.7 × H96mm	

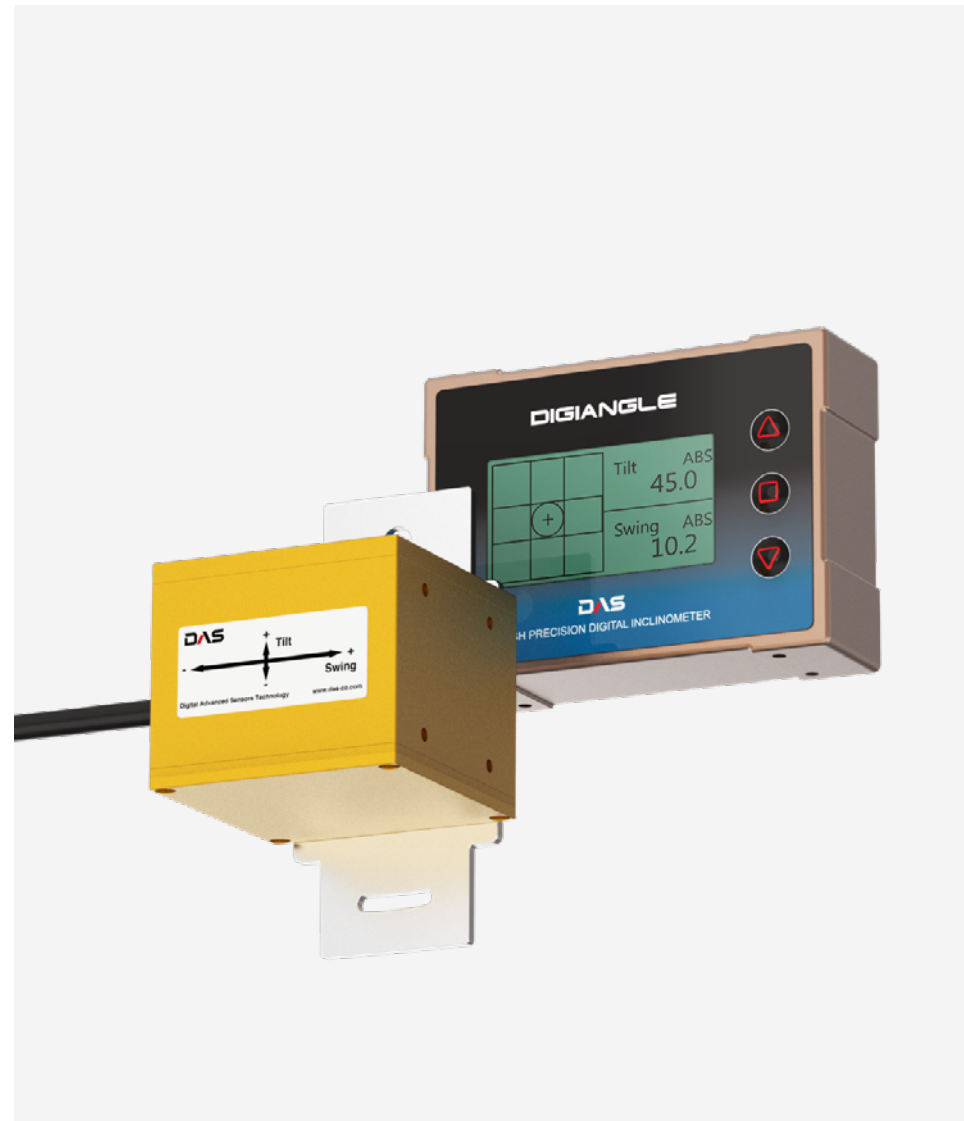
### Sensor

Item	Specifications	Remarks
Measuring Axis	Uniaxial or Biaxial	
Measuring Range	±5° (deg) (MAX 80° (deg))	
Resolution	0.1° (deg)	
Power Source	10 ~ 30Vdc	
Current	60mA	@12Vdc
Consumption		
Waterproof	IP67	
Operating Temp.	-20°C ~ +85°C	without bracket
Dimensions	W65 × D65 × H55mm	

# JM10000

## JM10000

High-performance MEMS-based angle indicator for hydraulic drills  
 Applicable fields | Hydraulic drills



### Indicator

Item	Specifications	Remarks
Display	Tilt / Swing value	
Unit	0.1° (deg)	
Communication	RS485	
Power Source	12 ~ 24Vdc	
Operating Temp.	-25°C ~ +85°C	

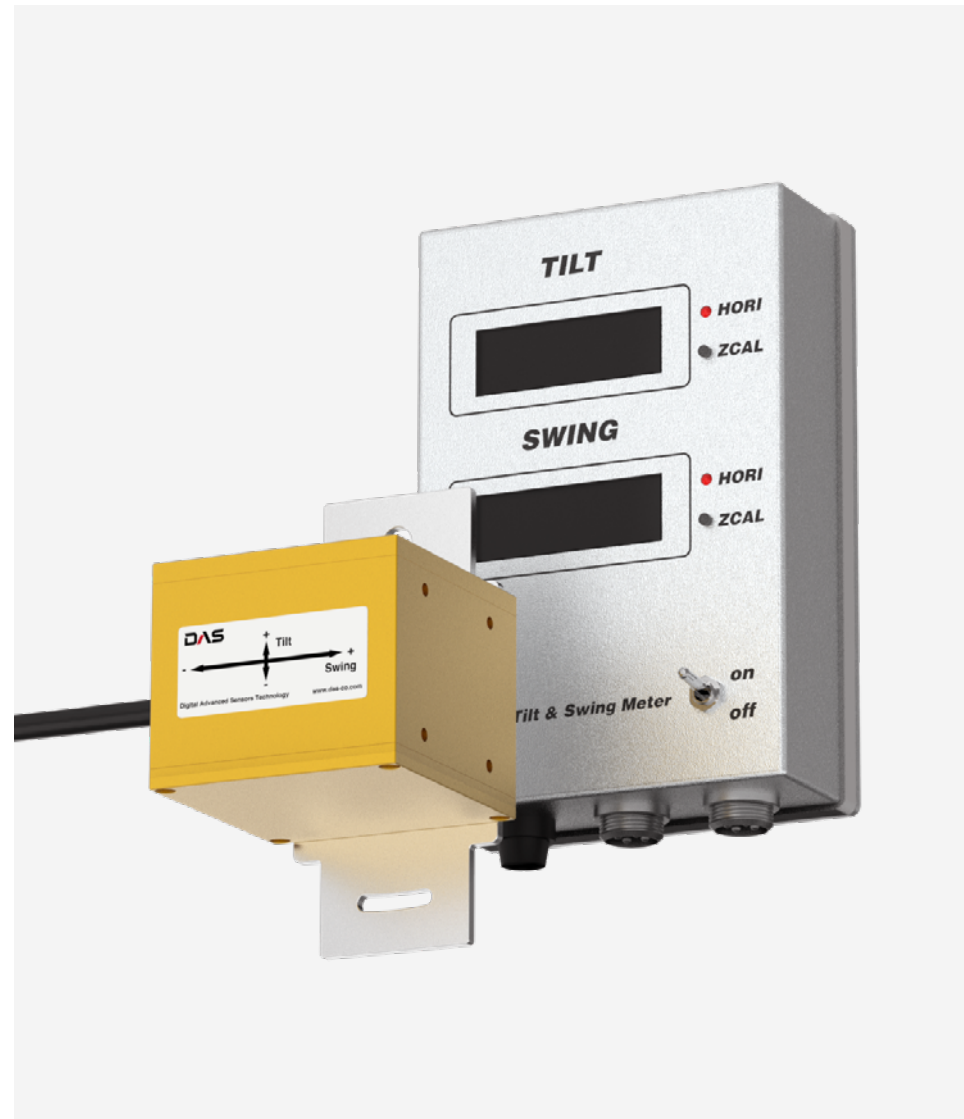
### Sensor

Item	Specifications	Remarks
Measuring Axis	Biaxial	
Measuring Range	Tilt ±180° (deg) Swing ±45° (deg)	
Resolution	<0.1° (deg)	
Non-Linearity	<0.3° (deg)	
Response	<0.2 sec	
Display	0.1° (deg)	
Output	RS485	
Power Source	12 ~ 24Vdc	
Operating Temp.	-25°C ~ +85°C	
Waterproof	IP65	

# EV100

## EV100

High-performance MEMS-based angle indicator for hydraulic drills  
 Applicable fields | Hydraulic drills



### Indicator

Item	Specifications	Remarks
Display	0.01° (deg) display panel(4 1/2 digit)	
Communication	RS485	
Power Source	12 ~ 30Vdc	
Operating Temp.	-30°C ~ +60°C	

### Sensor

Item	Specifications	Remarks
Measuring Range	±30° (deg)	
Resolution	<0.03	
Non-Linearity	<0.2% FS	
Response	<0.3 sec	
Output	RS485	
Power Source	12 ~ 30Vdc	
Operating Temp.	-30°C ~ +60°C	

### Cable



Terminal(F) Ø16 4P

Rubber coated cable Ø16  
(4C x 1.5mm)

# CUBE

## CUBE

High-precision, high-performance angle (tilt) sensor  
 Q-mark | KC | Certificate of State Registration (Russia)  
 Applicable fields | Civil engineering · safety · maintenance  
 measurement solution



Item	Specifications	Remarks
Measuring Axis	Uniaxial or Biaxial	
Measuring Range	Select within $\pm 30^\circ$ (deg)	Up to $\pm 90^\circ$ (deg)
Resolution	0.001° (deg)	
Non-Linearity	0.1% FS	
Temp. Drift	$<0.0056^\circ$ (deg)/°C	
Response	$<0.5$ sec	
Output	-2 ~ +2 Diff. Vdc 4 ~ 20mA (3-wire) CAN	Automatical
Power Source	10 ~ 30Vdc	
Current	$<20$ mA	@12Vdc
Consumption		
Operating Temp.	$-30^\circ\text{C} \sim +85^\circ\text{C}$	
Waterproof	IP67	without bracket
Dimensions	W65 × D65 × H55mm	
Weight	500g	
Cable	PU, 300cm	

- **Measuring Range**

e.g.  $-90^\circ \sim +90^\circ$  (deg) or  $-30^\circ \sim +60^\circ$  (deg) etc.

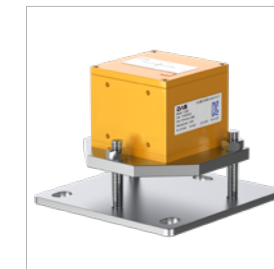
- For 2-axis specifications, individual measurement ranges can be specified for each axis.



CUBE



Default



Tripod (optional)



EL-BEAM (optional)

# UWT2

## UWT2

High-performance MEMS-based fully waterproof angle (tilt) sensor  
 Q-mark  
 Applicable fields | Civil engineering · safety · maintenance  
 measurement solution



Item	Specifications	Remarks
Measuring Axis	Uniaxial ±180° (deg)	Settable
	Biaxial ±90° (deg)	
Resolution	0.1° (deg)	
Non-Linearity	0.25% FS	
Response	<0.1 sec	
Output	0.5 ~ 4.5Vdc	
	4.32 ~ 19.68mA	
	RS485	
Power Source	10 ~ 30Vdc	
Current	<60mA	@12Vdc
Consumption		
Operating Temp.	-20°C ~ +85°C	
Waterproof	IP68	
Dimensions	Ø79 × H20mm	without mount
Weight	600g	
Cable	PU, 300cm	

• **Measuring Range**

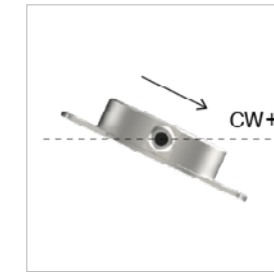
e.g. -90° ~ +90° (deg) or -30° ~ +60° (deg) etc.

• For ±90° (deg), the error range increases at angles exceeding ±85° (deg).

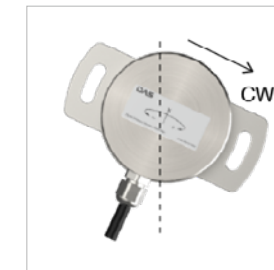
• The MIN/MAX angle must satisfy each axis' designated range.

**Uniaxial** Cannot specify less than ±1° (deg) such as -0.5° to +0.5° (deg)

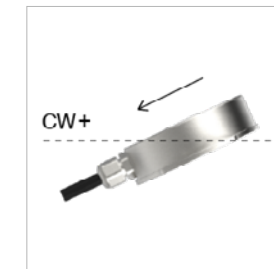
**Biaxial** Cannot specify less than ±5° (deg) such as -3° ~ +3° (deg)



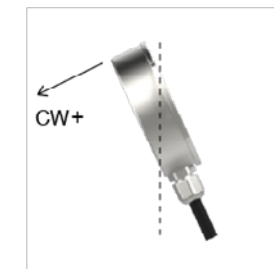
X-axis, Floor mount



X-axis, Wall mount



Y-axis, Floor mount



Y-axis, Wall mount

# SI-200

## SI-200

Passive underground inclinometer system

Q-mark

Applicable fields | Civil engineering · safety · maintenance measurement solution

**Registered patent** High-strength 2-core stainless steel cable without breakage



### Inclinometer Probe

Item	Specifications
Wheelbase	500mm
Inclinometer	2-axis MEMS
Range	±30° (deg)
Resolution	0.001° (deg)
Repeatability	±0.002° (deg)
Temperature	-20°C ~ +70°C

### Cable



Item	SI-200	Old Product
Wire Material	Stainless Steel	Copper
Inner Wire	2+Paper shield	6
Wire Strength	Very Strong	Weak
Diameter	Ø6.5	Ø10
Weight	Light	Heavy
Outer Covering	Polyurethane	
Marking Interval	every 0.5m	
Cable	50m or 100m	

### Cable Drum

Item	Specifications
Function	BLE, auto sleep, waterproof
Switch, Button	2 (Power, BLE reset)
LED Indicator	Power, charging, BLE status
Terminals	1 (Charging, debugging)
Usage Time	25h continuous use (5h charge)
Charger spec.	+19Vdc;2A / 100~260Vac 60Hz

### Data Reader, Application

- **OS** Android OS 5.0 +
- **Features** Touch screen interface, wireless BLE, 2-axis displacement measurement, voice guidance, data check, data storage, email transmission, etc.
- **Hands-free** Automatic data stability judgment and automatic measurement function.
- **Folding** Data storage and management by site.
- **Basic offer** 7 inch Tablet PC  
You can access the Das website through the QR code on the label attached to the cable drum.

### Components

Cable drum, inclinometer probe, cable, tablet, end-cap, charger, wireless remote control, cable drum bag, probe bag



# SI-300

## SI-300

2core sensor passive underground inclinometer system  
 Q-mark  
 Applicable fields | Civil engineering · safety · maintenance  
 measurement solution



### Inclinometer Probe

Item	Specifications
Wheelbase	500mm
Inclinometer	F/R 3-axis dual sensor
Range	±30° (deg)
Resolution	0.001° (deg)
Repeatability	±0.002° (deg)
Temperature	-20°C ~ +70°C

### Cable



Item	SI-300	Old Product
Wire Material	Stainless Steel	Copper
Inner Wire	2+Paper shield	6
Wire Strength	Very Strong	Weak
Diameter	Ø6.5	Ø10
Weight	Light	Heavy
Outer Covering	Polyurethane	
Marking Interval	every 0.5m	
Cable	50m or 100m	

### Cable Drum

Item	Specifications
Function	BLE, auto sleep, waterproof
Switch, Button	2 (Power, BLE reset)
LED Indicator	Power, charging, BLE status
Terminals	1 (Charging, debugging)
Usage Time	25h continuous use (5h charge)
Charger spec.	+19Vdc;2A / 100~260Vac 60Hz

### Data Reader, Application

- **OS** Android OS 5.0 +
- **Features** Touch screen interface, wireless BLE, 2-axis displacement measurement, voice guidance, data check, data storage, email transmission, etc.
- **Hands-free** Automatic data stability judgment and automatic measurement function.
- **Folding** Data storage and management by site.
- **Basic offer** 7-inch or 8-inch tablet PC (Model may change depending on product supply and demand conditions.)

### Components

Cable drum, inclinometer probe, cable, tablet, end-cap, charger, wireless remote control, cable drum bag, probe bag



# IPI2

## IPI2

Automatic underground inclinometer

Q-mark

Applicable fields | Civil engineering · safety · maintenance measurement solution



## IPI2

Item	Specifications
Axis	X-axis or X+Y axis
Range	±30° (deg) (±180 full Range)
Resolution	0.63mm per 30m
Accuracy	1.5mm per 30m
Current	4.2mA per segment
Consumption	@12Vdc
Temperature	-30°C ~ +70°C
Output	CAN bus
Power Source	10 ~ 30Vdc
Waterproof	100m underwater
Dimensions	W65 × D65 × H55mm
Weight	640g
Cable	Polyurethane

### · Measuring Range

For 1-axis, up to ±180° (deg)

For 2-axis, up to ±90° (deg)

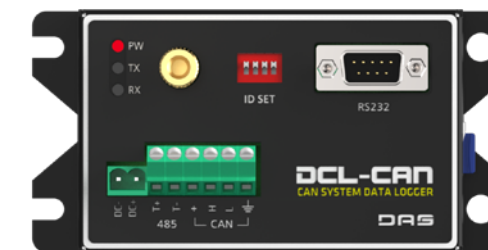
Default range ±30° (deg)

P.S) The wider the measuring range, the larger the error range

## DCL-CAN

Item	Specifications
Power Source	10 ~ 30Vdc
Current	30mA
Consumption	Less than@12Vdc
Temperature	-30°C ~ +70°C
Output Voltage	Input power (VCC)
Interface	CAN * 1ch (RS485, RS 232)
CAN Baud Rate	125 / 250 / 500 kbps
Serial Baud Rate	9,600 / 38,400 / 115,200 bps
Memory	Up to 8Gb
Dimension	W134.6 × D67 × H30.2mm
Weight	750g
Connection	3DS Converter
Software	DMS300, DMS300-TCP

### Data Logger



DCL-CAN



3DS Converter

## 3DS

Tunnel displacement, railway rail displacement

Q-mark

Applicable fields | Civil engineering · safety · maintenance measurement solution



Item	Specifications
Length	0.5m or 1m per segment
Joints	200ea (MAX 200m)
Power Source	10 ~ 30Vdc
Current	4.2mA per segment
Consumption	@12Vdc
Resolution	0.63mm per 30m
Accuracy	1.5mm per 30m
Range	360° (deg) (2D or 3D)
Temperature	-30°C ~ +70°C
Waterproof	20ATM (200m) waterproof
Segment	Up to 90° (deg)
Flexibility	

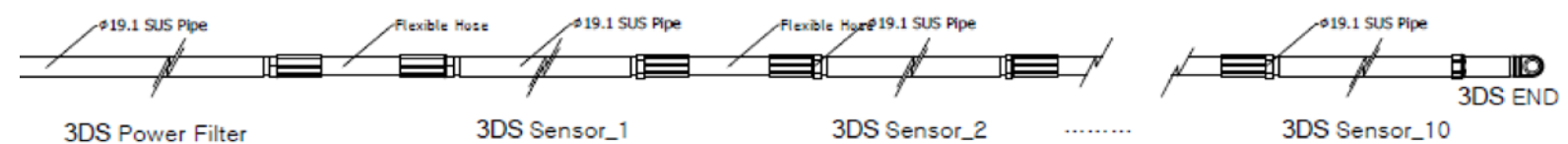
### Applicable for

- Tunnel shear surface bore displacement measurement
- Railroad · rail displacement measurement, uplift · settlement measurement
- Replaces vertical and horizontal automatic underground inclinometers
- Inclination, construction, underground behavior, displacement measurement



- **ERMSA** (Error Reduction Method for Sensor Array) Operation technology that innovatively improved accumulated errors in array operation
- Interworking with Campbell Scientific data logger and multiplexer

### Segment Diagram



# KIT-TILT-INF

## KIT-TILT-INF

Inclination systems for semiconductor equipment  
 Individual and global zeroing function  
 Control and monitor 4 sensors with 1 interface module (4 in 1)  
 Real-time data logging through RS232 serial communication  
 Applicable fields | Semiconductor production equipment, industrial automation, etc.



### Indicator

Item	Specifications	Remarks
Power Source	10 ~ 30Vdc	
Channal	4 × Input/Output to Sensors / 1 × Power Source / 4 × Alarm Output / 1 × RS232	24Vdc @Vin=24Vdc
Display	6 × 7-Segment FND / 4 × Alarm LED	
Operation Method	3 × Momentary Switch	
Attachment	35mm DIN Rail	
Dimensions	W134 x H28 x D76mm	
Weight	200g	

### Sensor

Item	Specifications	Remarks
Measuring Axis	Uniaxial ±180° (deg) Biaxial ±90° (deg)	
Measuring Range	±1.00° (deg)	
Resolution	0.001° (deg)	
Non-Linearity	±0.02° (deg)	
Response	<0.5 sec	
Ouwput	RS485	
Power Source	10 ~ 30Vdc	
Operating Temp.	-20°C ~ +70°C	
Dimensions	W40 × D40 × H24mm	
Weight	65g	

# LED-TILT-LAMP

## LED-TILT-LAMP

Tilt status alert LED indicator | High performance angle(tilt) sensor  
 Daytime visibility secured by using high-brightness LED  
 User-Based Inclination Setting  
 Indication of slope safety status of boarding platform of aerial work platform  
 Applicable fields | Aerial work vehicle, etc.



Item	Specifications	Remarks
Angle	±3° / ±5° (deg)	Max 30°(deg)
Attachment	Ceiling mount	
LED Colors	0° (deg): Green +angle : Blue -angle : Red	Can be changed
Output	Serial Protocol (Vin swing)	
Input	Serial Protocol (Vin swing)	
Zero Calibration	Zero calibration 2-pin	
Power Source	24Vdc (10 ~ 30Vdc)	Calibrate on contact
Current	<200mA	@24Vdc
Consumption		
Operating Temp.	-20°C ~ +85°C	
Waterproof	IP65	
Dimensions	W120 x D64 x H27mm	
Weight	270g	
Cable	4p, 1,500mm	

### Operation direction (basic installation direction)



# MSENS series

## MSENS-TA

High-performance MSMS based tilt switch (angle alarm)

CE | ROHS

Applicable fields | Construction machinery · heavy equipment



Item	Specifications	Remarks
Measuring Range	Uniaxial ±180° (deg)	Settable
	Biaxial ±90° (deg)	Settable
Resolution	0.1° (deg)	
Non-Linearity	0.25% FS	
Response	<0.5 sec	
Output	Uniaxial, relay 2channel	Select output
	Uniaxial, relay 1channel	High = VCC out
	Biaxial, relay 2channel	Low = GND out
Power Source	10 ~ 30Vdc	
Current	<60mA	@12Vdc
Consumption		
Operating Temp.	-20°C ~ +85°C	
Waterproof	IP65	
Dimensions	W42 × D57 × H20mm	without mount
Weight	68g	

### • Measuring Range

e.g. -90° ~ +90° (deg) or -30° ~ +60° (deg) etc.

• For 2-axis specifications, individual measurement ranges can be specified for each axis.

For ±90° (deg), the error range increases at angles exceeding ±85° (deg).

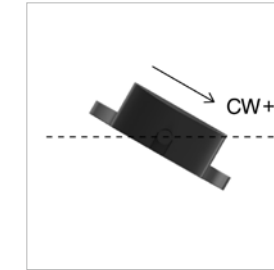
• The MIN/MAX angle must satisfy each axis' designated range.

Please inquire separately for less than -3° ~ +3° (deg).

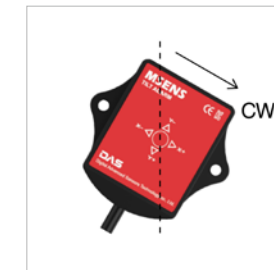
• 1-axis, relay 2channel : +direction relay 1ch, -direction relay 1ch

1-axis, relay 1channel : relay 1ch regardless of +/- direction

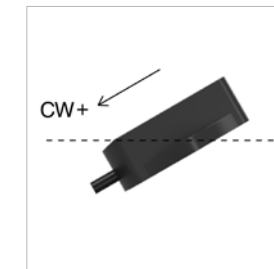
2-axis, relay 2channel : relay 1ch for X-axis, relay 1ch for Y-axis regardless of +/- direction



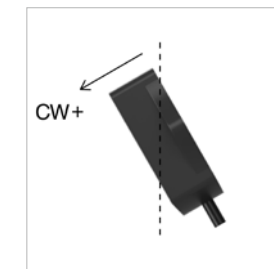
X-axis, Floor mount



X-axis, Wall mount



Y-axis, Floor mount



Y-axis, Wall mount

# MSENS series

## MSENS-IN

High-performance MSMS based angle(tilt) sensor

Q-mark | CE | ROHS

Applicable fields | Construction machinery · heavy equipment



Item	Specifications	Remarks
Measuring Range	Uniaxial ±180° (deg)	Settable
	0° ~ 360° (deg)	Fixed
	Biaxial ±90° (deg)	Settable
Resolution	0.1° (deg)	
Non-Linearity	0.25% FS	
Response	<0.3 sec	<10° (deg)/sec
Output	0.5 ~ 4.5Vdc	
	4.32 ~ 19.68mA	
	RS485	
Power Source	10 ~ 30Vdc	
Current	<60mA	@12Vdc
Consumption		
Operating Temp.	-20°C ~ +85°C	
Waterproof	IP65	
Dimensions	W42 × D57 × H20mm	without mount
Weight	68g	

### • Measuring Range

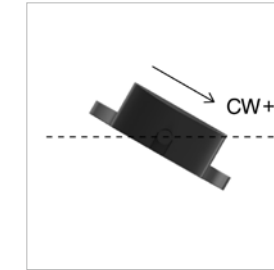
e.g. -90° ~ +90° (deg) or -30° ~ +60° (deg) etc.

• For 2-axis specifications, individual measurement ranges can be specified for each axis.

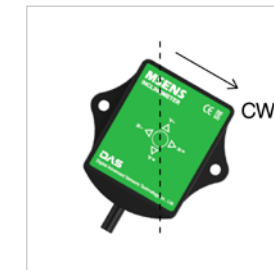
For ±90° (deg), the error range increases at angles exceeding ±85° (deg).

• The MIN/MAX angle must satisfy each axis' designated range.

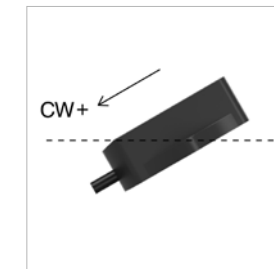
Please inquire separately for less than -3° ~ +3° (deg).



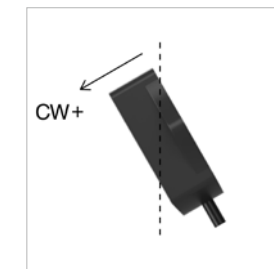
X-axis, Floor mount



X-axis, Wall mount



Y-axis, Floor mount



Y-axis, Wall mount

# 02

## Accelerometer Sensor

MSENS-AC 023

GSENS-AC 024

# MSENS series

## MSENS-AC

High-performance MSMS based accelerometer (vibration) sensor  
 CE | ROHS  
 Applicable fields | Construction machinery · heavy equipment



Item	Specifications	Remarks
Measuring Range	±2g ~ ±8g	default ±2g
Sensitivity	1mg	
Zero Point Drift	±0.15mg/°C	-20°C ~ +85°C
Non-Linearity	0.1%	@2g
Response	100 Hz	
Output	0.5 ~ 4.5Vdc 4.32 ~ 19.68mA RS485	
Power Source	10 ~ 30Vdc	
Current	<60mA	@12Vdc
Consumption		
Operating Temp.	-20°C ~ +85°C	
Waterproof	IP65	
Dimensions	W42 × D57 × H20mm	without mount
Weight	68g	

# GSENS series

## GSENS-AC

High-performance MEMS-based accelerometer (vibration) sensor  
CE

Applicable fields | Construction machinery · heavy equipment



Item	Specifications	Remarks
Measuring Axis	Uniaxial X or Y or Z	
	Uni-Dual X or Y or Z	
	Biaxial X+Y axis, X+Z axis	
Measuring Range	±2g, ±6g, ±12g	
Sensitivity	1,000mV/g	@±2g
Zero Point Drift	±1mg/°C	
Transverse	±1%	any two axis
Sensitivity		
Non-Linearity	±0.3% FS	
Bandwidth	500Hz	
Output	±2.0Vdc	
Power Source	9 ~ 16Vdc	
Current	<10mA	@12Vdc
Consumption		
Operating Temp.	-20°C ~ +85°C	
Waterproof	IP65	
Dimensions	W40 × D40 × H24mm	
Weight	65g	

# 03

## Length Sensor

DWSMini	026
DWSMini-C2	027
DWSMini-CO	028
DWS	029
DWS-CO	030
DWS-Medium	031
DWS-Medium-CO	032
DWS-Medium-OW	033

# DWSMini series

## DWSMini

Precision potentiometer mini wire length sensor

CE

Applicable fields | Construction machinery · heavy equipment



Item	Specifications		
Measuring Range	1.5m	2m	3m
Output Voltage(S)	0.5 ~ 3.25V	0.5 ~ 4.2V	0.5 ~ 3.95V
Output Voltage(D)	3.25 ~ 0.5V	4.2 ~ 0.5V	3.95 ~ 0.5V
Repeatability	≤10mm		
Power Source	5Vdc		
Potentiometer	5kΩ		
Non-Linearity	0.25% FS		
Wire Material	Nylon-coated stainless steel		
Wire Diameter	Ø0.8		
Durability	Over 20,000 round trips		
Operating Temp.	-20°C ~ +80°C		
Waterproof	IP65 (sensor part)		
Dimensions	W70 × D76.5 × H77mm		
Weight	150g		

- Output Voltage : RATIO

### Ordering Code

Procedure	Order Spec.		
① Length	15 (1.5m)	20 (2m)	30 (3m)
② Output	None (Single)	D (Dual)	
③ Direction	L (Drawing from Left)	R (Drawing from Right)	
④ Output Format	None (Analog voltage, 10~80% of input voltage)		

- Code format e.g. : DWSMini-15-L / DWSMini-30-D-R

# DWSMini series

## DWSMini-C2

Precision potentiometer mini wire length sensor

CE

Applicable fields | Construction machinery · heavy equipment



Item	Specifications
Measuring Range	3m
Output Voltage(S)	0.5 ~ 4.5V
Output Voltage(D)	0.5 ~ 4.5V
Repeatability	≤10mm
Power Source	10 ~ 30Vdc
Potentiometer	5kΩ
Non-Linearity	0.25% FS
Wire Material	Nylon-coated stainless steel
Wire Diameter	Ø0.8
Durability	Over 20,000 round trips
Operating Temp.	-20°C ~ +80°C
Waterproof	IP65 (sensor part)
Dimensions	W70 × D76.5 × H77mm
Weight	150g

### Ordering Code

Procedure	Order Spec.	
① Length	30 (3m)	
② Output	None (Single)	D (Dual)
③ Direction	L (Drawing from Left)	R (Drawing from Right)
④ Output Format	C2 (Analog voltage - 0.5~4.5Vdc)	

• Code format e.g. : DWSMini-30-L-C2 / DWSMini-30-D-R-C2

# DWSMini series

## DWSMini-CO

Precision potentiometer mini wire length sensor

CE

Applicable fields | Construction machinery · heavy equipment



Item	Specifications		
Measuring Range	1.5m	2m	3m
Output	CANopen		
Repeatability	≤10mm		
Power Source	10 ~ 30Vdc		
Potentiometer	5kΩ		
Non-Linearity	0.25% FS		
Wire Material	Nylon-coated stainless steel		
Wire Diameter	Ø0.8		
Durability	Over 20,000 round trips		
Operating Temp.	-20°C ~ +80°C		
Waterproof	IP65 (sensor part)		
Dimensions	W70 × D76.5 × H77mm		
Weight	150g		

### Ordering Code

Procedure	Order Spec.	
① ~ ③	Same as DWSMini	
④ Output	CO (CAN Open)	
⑤ Digital Input	None (no select)	DI (Digital Input 2ch)
⑥ Measuring Axis	X or Y (Uniaxial)	X+Y (Biaxial)
⑦ Angle	0000 (Uniaxial, ±180°, MIN ±5°) / (Biaxial, ±90°, MIN±5°)	
⑧ Mount	F (Floor mount)	W (Wall mount)
⑨ CAN ID	00 (CANOpen communication identification ID, HEX)	

• Code format e.g. : DWSMini-30-R-CO-DI-X--3090-F-0×03

# DWSMini series

## DWS

Precision potentiometer wire length sensor

CE

Applicable fields | Construction machinery · heavy equipment



Item	Specifications		
Measuring Range	1.2m	3m	5m
Output Voltage(S)	0.5 ~ 4.49V	0.5 ~ 4.75V	0.5 ~ 4.75V
Output Voltage(D)	4.45 ~ 0.5V	4.45 ~ 0.5V	4.45 ~ 0.5V
Repeatability	≤10mm	≤10mm	≤20mm
Power Source	5Vdc		
Potentiometer	5kΩ		
Non-Linearity	0.25% FS		
Wire Material	Nylon-coated stainless steel		
Wire Diameter	Ø1.0		
Durability	Over 20,000 round trips		
Operating Temp.	-20°C ~ +80°C		
Waterproof	IP65 (sensor part)		
Dimensions	W103 × D81 × H103mm		
Weight	600g		

- Output Voltage : RATIO

### Ordering Code

Procedure	Order Spec.		
① Length	12 (1.2m)	30 (3m)	50 (5m)
② Output	None (Single)	D (Dual)	
③ Direction	L (Drawing from Left)	R (Drawing from Right)	

- Code format e.g. : DWS-12-L / DWS-50-D-R

# DWSMini series

## DWS-CO

Precision potentiometer wire length sensor

CE

Applicable fields | Construction machinery · heavy equipment



Item	Specifications		
Measuring Range	1.2m	3m	5m
Output Voltage(S)	0.5 ~ 4.49V	0.5 ~ 4.75V	0.5 ~ 4.75V
Repeatability	≤10mm	≤10mm	≤20mm
Output	CANOpen		
Power Source	5Vdc		
Potentiometer	5kΩ		
Non-Linearity	0.25% FS		
Wire Material	Nylon-coated stainless steel		
Wire Diameter	Ø1.0		
Durability	Over 20,000 round trips		
Operating Temp.	-20°C ~ +80°C		
Waterproof	IP65 (sensor part)		
Dimensions	W103 × D81 × H103mm		
Weight	600g		

- Output Voltage : RATIO

### Ordering Code

Procedure	Order Spec.
① ~ ③	Same as DWS specification, only single output possible
④ Output	CO (CANOpen)
⑤ Measuring Axis	X-axis
⑥ Angle	0000 (±5° ~ ±180°)
⑦ Mount	F (Floor mount) W (Wall mount)
⑧ CAN ID	00 (CANOpen communication identification ID, HEX)

- Code format e.g.  
DWS-12-L-CO-X--9090-F-0×04  
DWS-30-R-CO-X--3090-W-0×03

# DWSMini series

## DWS-Medium

Precision potentiometer wire length sensor

CE

Applicable fields | Construction machinery · heavy equipment



Item	Specifications		
Measuring Range	8m	10m	12m
Output Voltage(S)	0.5 ~ 4.2V	0.25 ~ 4.88V	0.25 ~ 3.78V
Output Voltage(D)	4.45 ~ 0.5V	4.88 ~ 0.25V	3.78 ~ 0.25V
Repeatability	≤30mm		
Power Source	5Vdc		
Potentiometer	5kΩ		
Non-Linearity	0.25% FS		
Wire Material	Nylon-coated stainless steel		
Wire Diameter	Ø1.0		
Durability	Over 20,000 round trips		
Operating Temp.	-20°C ~ +80°C		
Waterproof	IP65 (sensor part)		
Dimensions	W156 x D97.3 x H156mm		
Weight	1,700g		

- Output Voltage : RATIO

### Ordering Code

Procedure	Order Spec.		
① Length	80 (8m)	100 (10m)	120 (12m)
② Output	None (Single)	D (Dual)	
③ Direction	L (Drawing from Left)	R (Drawing from Right)	

- Code format e.g. : DWS-80-L / DWS-100-D-R

# DWSMini series

## DWS-Medium-CO

Precision potentiometer wire length sensor

CE

Applicable fields | Construction machinery · heavy equipment



Item	Specifications		
Measuring Range	8m	10m	12m
Output Voltage(S)	0.5 ~ 4.2V	0.25 ~ 4.88V	0.25 ~ 3.78V
Repeatability	≤30mm		
Output	CANOpen		
Power Source	5Vdc		
Potentiometer	5kΩ		
Non-Linearity	0.25% FS		
Wire Material	Nylon-coated stainless steel		
Wire Diameter	Ø1.0		
Durability	Over 20,000 round trips		
Operating Temp.	-20°C ~ +80°C		
Waterproof	IP65 (sensor part)		
Dimensions	W156 x D97.3 x H156mm		
Weight	1,700g		

- Output Voltage : RATIO

### Ordering Code

Procedure	Order Spec.
① ~ ③	Same as DWS specification, only single output possible
④ Output	CO (CANOpen)
⑤ Measuring Axis	X-axis
⑥ Angle	0000 (±5° ~ ±180°)
⑦ Mount	F (Floor mount) W (Wall mount)
⑧ CAN ID	00 (CANOpen communication identification ID, HEX)

- Code format e.g.  
DWS-80-L-CO-X--9090-F-0×04  
DWS-100-R-CO-X--3090-W-0×03

# DWSMini series

## DWS-Medium-OW

Contact point S/W 1-line data reel

CE

Applicable fields | Construction machinery · heavy equipment



Item	Specifications
Data Reel Length	16m
Switch Input	1Channel
Output	1Channel
Select Output	High = VCC out Low = GND out
Power Source	10 ~ 30Vdc
Wire Material	Nylon-coated stainless steel
Wire Diameter	Ø1.0
Durability	Over 20,000 round trips
Operating Temp.	-20°C ~ +80°C
Waterproof	IP65 (sensor part)
Dimensions	W156 x D97.3 x H156mm
Weight	1,700g

### Ordering Code

Procedure	Order Spec.
① Length	160 (16m)
② Output	None (Single)
③ Direction	L (Drawing from Left)      R (Drawing from Right)
④ OverWind	OW
⑤ Output Format	H (VCC out)                      L (GND out)

• Code format e.g. : DWS-160-L-OW-H / DWS-160-R-OW-L

# 04

## Gyro Sensor

GY100S

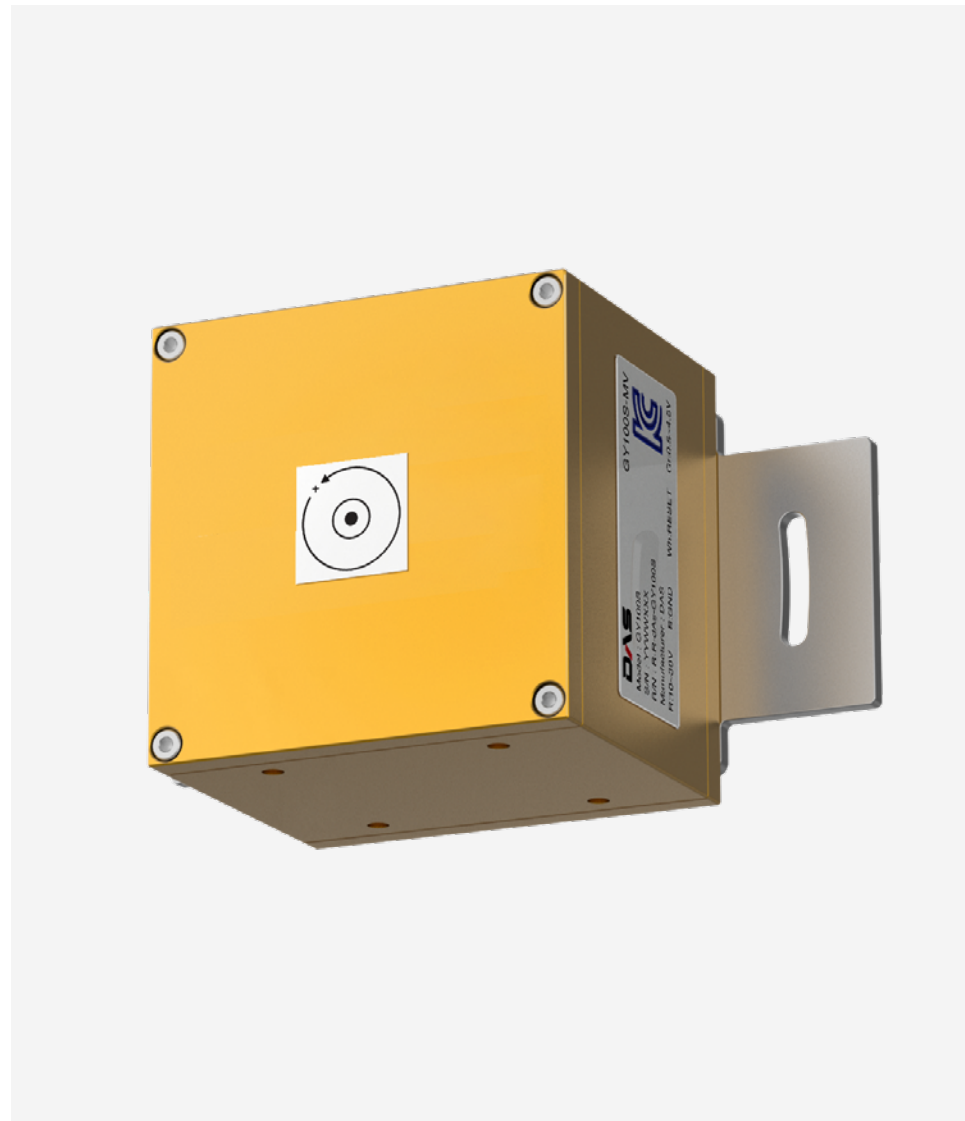
035

# GY00S

## GY100S

High performance MEMS gyro sensor

Applicable fields | Construction machinery · heavy equipment



Item	Specifications	Remarks
Measuring Axis	YAW axis (Turning)	
Measuring Range	±360° (deg)	
Resolution	0.1° (deg)	
IN-Run Bias	<0.5° (deg)/h	
Stability		
Output	0.5 ~ 4.5 Vdc 4 ~ 20 mA RS232 RS485	
Power Source	10 ~ 30 Vdc	
Current	<100mA	@12Vdc
Consumption		
Operating Temp.	-20°C ~ +85°C	
Waterproof	IP65	
Dimensions	W65 x D65 x H55	without mount
Weight	550g	

### • Measuring Range

If +360° is exceeded, increase from -360°

If less than -360°, decrease from +360°

# 05

## Output Converter

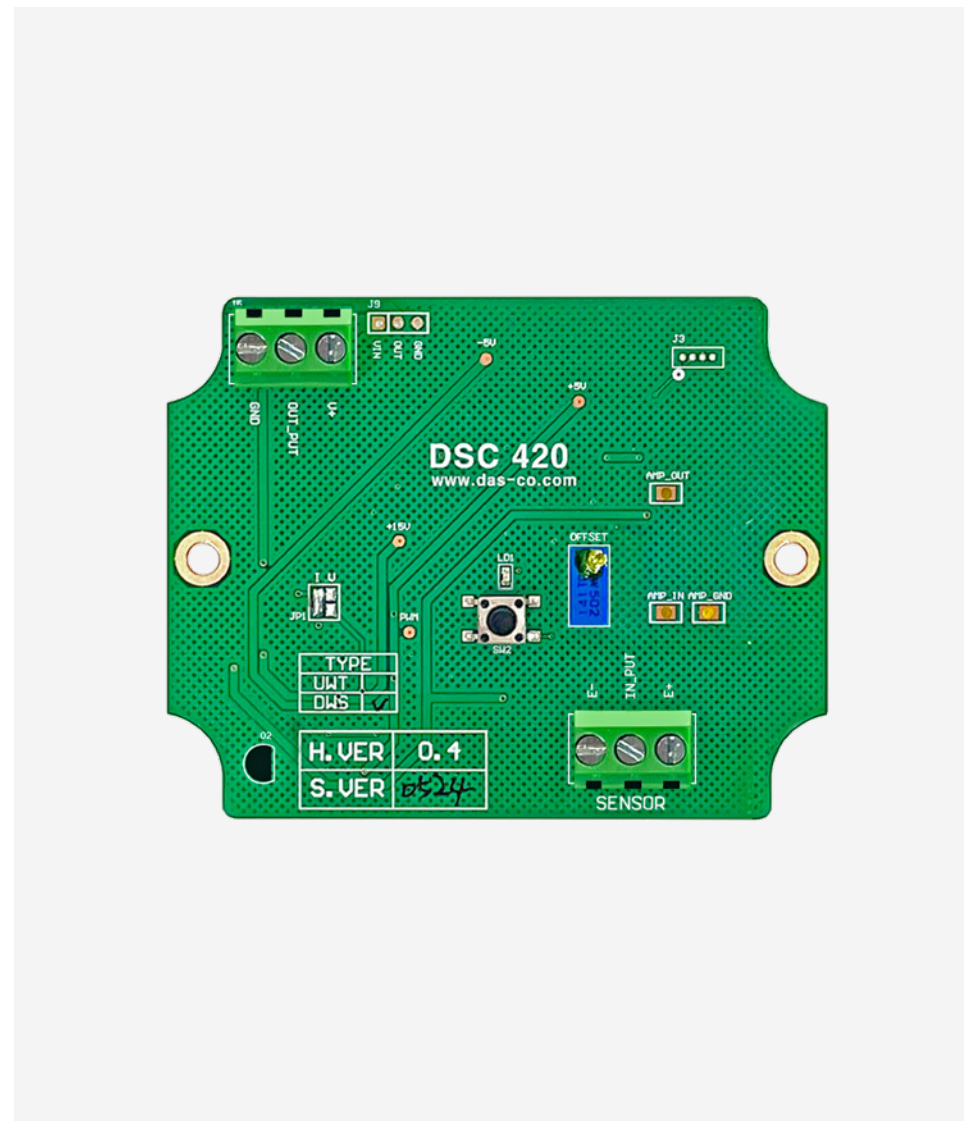
# DSC420

## DSC420-DWS / DSC420-UWT

DC voltage to 4-20mA output converter

Easy and convenient correction

Applicable fields | Heavy equipment · civil engineering · safety · maintenance measurement solution



Item	Specifications	Remarks
Power Source	10 ~ 30Vdc	
Recommended Power	12Vdc	
Input Signal	4 ~ 20mA 0.5 ~ 4.5Vdc	
Output Signal	4 ~ 40mA	
Operating Temp.	-30°C ~ +80°C	
Dimensions	W85 x H67mm	PCB size

### Compatible Case (Inquire separately)

- Case part number : ABS B65G / FIBOX (company)



# 006

## I/O Device

DScale2	039
CANModule	040
CANModule-EX	041
AirSW2	042

# DScale

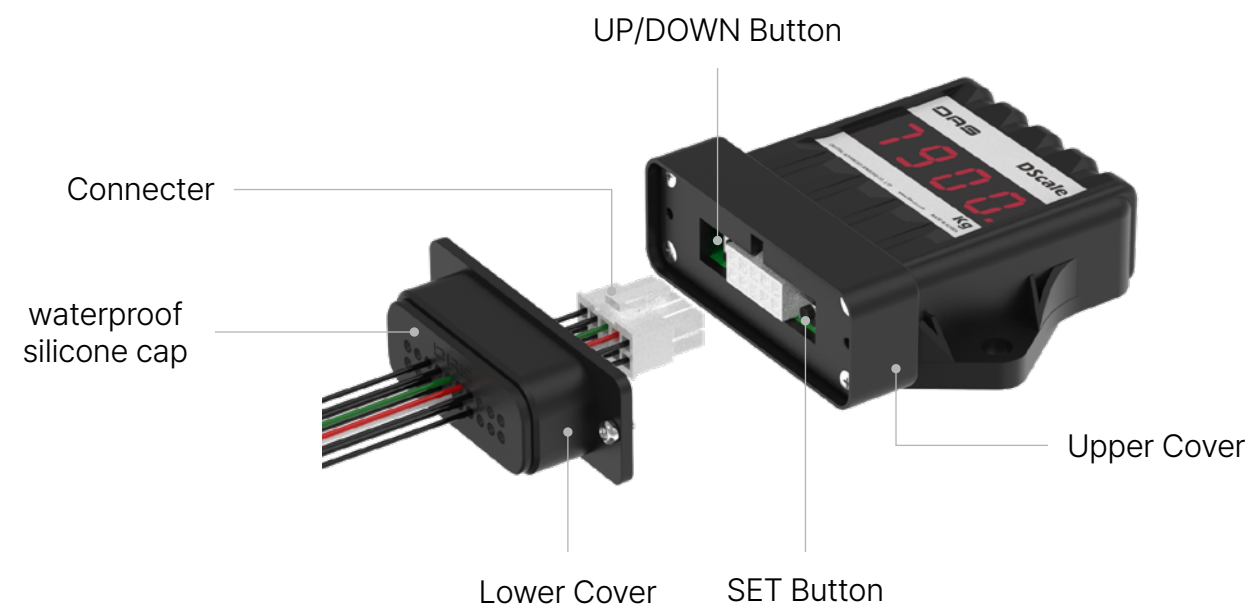
## DScale

Load cell indicator | CAN communication output  
 Easy load calibration | Load setting trigger relay output  
 Applicable fields | Heavy equipmen · PLC · factory automation, etc.



Item	Specifications	Remarks
Display	4-DGIT, 7 SEGMENT	
MAX Notation	9999kg / 9.999ton	Can be changed
Output	2A @24Vdc relay	Select Vcc or GND
Data	CAN communication	MAX 500kbps
Communication	250kbps (default)	
Load Cell Format	Full-Bridge strain gage	
Load Cell	CAN communication,	
Calibration	Calibration switch	
Power Source	10 ~ 30 Vdc	
Waterproof	IP65	
Operating Temp.	-30°C ~ +80°C	
Dimensions	W98 × H103 × D32mm	
Weight	120g	

### Product Configuration



# CANModule

## CANModule

CANbus extended I/O controller

Applicable fields | Construction machinery · heavy equipment



Item	Specifications	Remarks
Processor	32bit, 16MHz	
Power Source	10 ~ 30Vdc	
Analogue Input	MAX 6 port	0 ~ 5V, 22mA
Digital Input	MAX 14 port	
Digital Output	MAX 8 port	3A
PWM Output	MAX 8 port	10 ~ 3,000Hz
REF Output	+5V	
CANbus	Standard CAN2.0A (125/250/500/1,000kbps)	
Operating Temp.	-20°C ~ +85°C	
Waterproof	IP65	
Dimensions	W98 × D32 × H103mm	
Weight	120g	
Connector	MOLEX Mini-Fit 20pin	5557-20

### CANbus Default Value

Item	Default Spec.	Remarks
ID	0×7F (127)	
DI / DO	Digital output 8 channel	
AI	Analog output 6 channel	
Communication Speed	250kbps	

- CANbus and I/O can be configured through the CANModule Manager program.

# CANModule-EX

## CANModule-EX

CANbus Extended I/O Controller | 4 channels each of digital I/O  
 Applicable fields | Construction machinery · heavy equipment ·  
 factory automation, etc.



Item	Specifications	Remarks
Power Source	12Vdc / 24Vdc	
Current	≤20mA	+24Vdc
Consumption	Stand by (DI=4Port full up, DO=4Port cut)	
Digital Input	DI Low ≤+1Vdc	DI_0, DI_1, DI_2, DI_3
Usable 0 ~ 30Vdc	DI High ≥+2.5Vdc	
Relay Output	MAX Switching current : +24Vdc / 3A Contact resistance : 100Ω MAX Operate time : 10.0 msec MAX Release time : 10.0 msec MAX Insulation resistance : 1000Ω (500Vdc)	DO_0_IN, DO_0_OUT DO_1_IN, DO_1_OUT DO_2_IN, DO_2_OUT DO_3_IN, DO_3_OUT
Diagnostic	LED RX, LED TX	Check with LED ON/OFF
Function	DI_LED0 ~ DI_LED4, DO_LED0 ~ DO_LED4	
CAN	Basic Speed : 250kbit/s Basic ID : 0×0E (Selection ID 0×01 ~0xFF) CAN OUT Type : Standard Type / CAN2.0A Protocol : DAS Protocol	Selection Speed 125kbit/s 250kbit/s 500kbit/s
Waterproof	IP67	
Operating Temp.	-25°C ~ +75°C	
Dimensions	W98 × D32 × H103mm	
Weight	120g	
Connector	MOLEX Mini-Fit 20pin	5557-20

# AirSW2

## AirSW2 Transmitter · Receiver

Contact S/W wireless transmitter · receiver

Applicable fields | Construction machinery · heavy equipment



Item	Specifications	Remarks
Transmitter Power	Battery (3.7V 2,000mAh)	
Receiver Power	10 ~ 30Vdc	
Frequency	447MHz	
Transmit Distance	MAX 100m	
Switch Input	1 channel	
Receiver Output	Relay 1 channel (30V, 5A)	
Solar Panal	0.29W	
Waterproof	IP65	
Operating Temp.	-20°C ~ +80°C	
Dimensions	W98 × D32 × H103mm	Transmitter / Receiver

- Wireless Transmitter/Receiver AirSW2 is a dedicated device for OWS, which is DAS Co., Ltd.'s over-wind device

### Wiring and Installation Method

- Combines the 2-pin plug of the wireless transmitter (AirSW2-T) and the receptacle of the over-wind device (OWS).  
If there is only one overwinding device, only one plug needs to be connected.
- Check the harness label of the wireless receiver (AirSW-R) and connect each wire to the vehicle electric field.
- Since the wireless transmitter is shipped with the power turned off to avoid discharge, loosen the screw at the bottom of the transmitter to open the lower cover and turn on the power switch before use.

# 07

## Wireless Remote Controller

SVC

DBR set	044
DBR2 set	045
IRON-XC set	046
IRON-MD set	047

# DBR series

## DBR

Specially equipped vehicles · industrial bar-type wireless remote controller



### Transmitter

Item	Specifications	Remarks
Function Buttons	MAX 12ea	can be customized
Special Button	1 jog switch or 1 emergency stop switch	optional
Wireless Communication	Bluetooth	
Charging Power	DC 5Vdc	charger for car
Battery	2 × AA Ni-MH 2,600mAh	
Usage Time	MAX 8 hours	
Operating Temp.	-30°C ~ +80°C	
Waterproof	IP65	
Dimensions	W55 × D52 × H215mm	
Weight	200g	

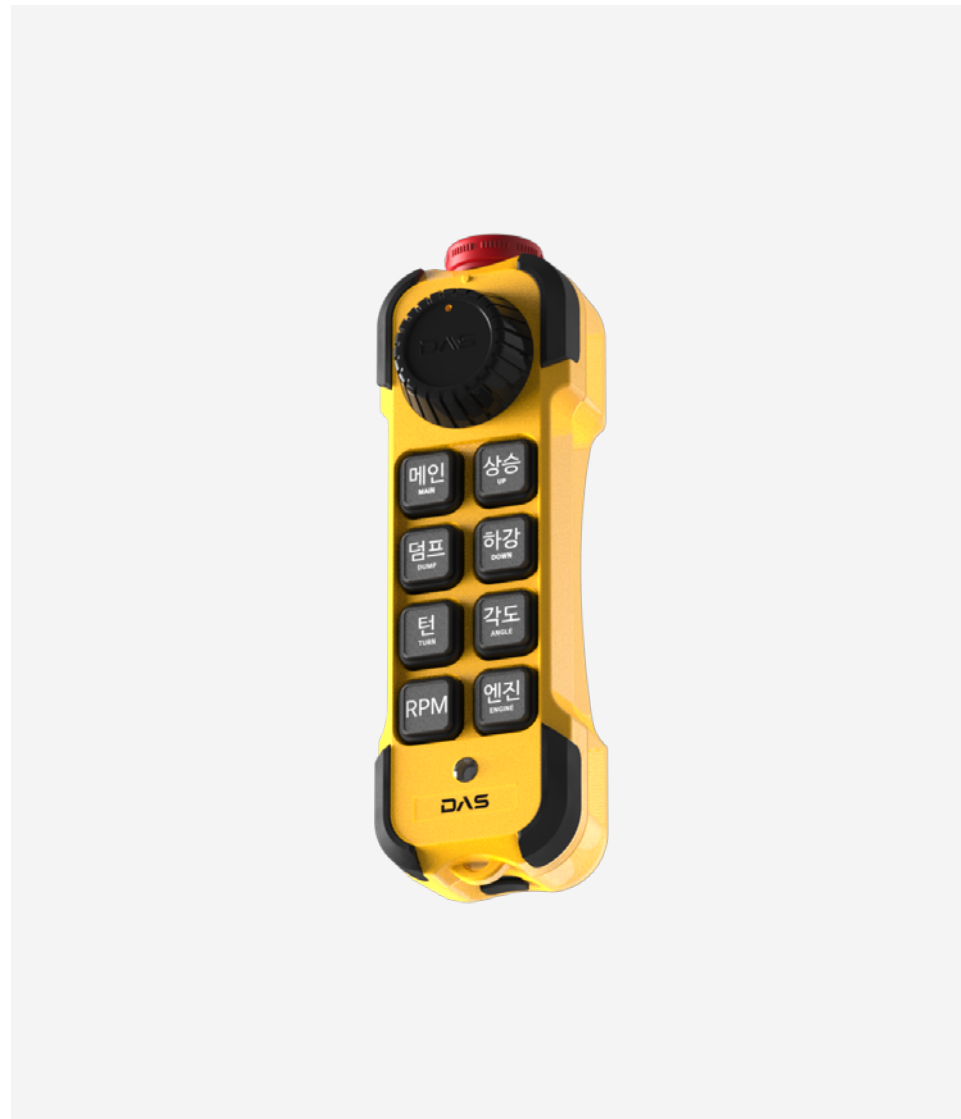
### Receiver

Item	Specifications	Remarks
Power Source	DC 10 ~ 30Vdc	
Communication	CAN	
Output Method		
Operating Temp.	-30°C ~ +80°C	
Waterproof	IP65	
Dimensions	W82 × D45 × H66mm	without antenna

# DBR series

## DBR2

Specially equipped vehicles · industrial bar-type wireless remote controller



### Transmitter

Item	Specifications	Remarks
Function Buttons	MAX 8ea	can be customized
Special Button	1 jog switch 1 emergency stop switch	
Wireless Communication	Bluetooth	charger for car
Charging Power	DC 5Vdc	
Battery	Li-ion 18650 2,600mAh	in sleep mode
Usage Time	MAX 40 hours	
Operating Temp.	-30°C ~ +80°C	
Waterproof	IP65	
Dimensions	W58 × D60 × H195mm	
Weight	205g	

### Receiver

Item	Specifications	Remarks
Power Source	DC 10 ~ 30Vdc	
Communication	CAN	
Output Method		
Operating Temp.	-30°C ~ +80°C	
Waterproof	IP65	
Dimensions	W82 × D45 × H66mm	without antenna

# IRON series

## IRON-XC

Specially equipped vehicles · industrial wireless remote controller



### Transmitter

Item	Specifications	Remarks
Display	LCD, 128 × 64	optional
Wireless Frequency	447MHz	
Battery	Li-ion 18650 3.7V 3,000mAh	optional
Usage Time	12 hours or more	
Operating Temp.	-20°C ~ +70°C	
Waterproof	IP65	
Dimensions	W331 × D165 × H174mm	
Weight	1.7kg	

### Receiver

Item	Specifications	Remarks
LED Indicators	7 LED	
Power Source	8 ~ 26Vdc (3A)	
Communication	CAN	
Output Method		
Contact Output	Relay 10A+MOSFET(SW) 3A	optional
Operating Temp.	-20°C ~ +70°C	
Waterproof	IP65	
Weight	0.4kg	

# IRON series

## IRON-MD

Specially equipped vehicles · industrial small wireless remote controller



### Transmitter

Item	Specifications	Remarks
Display	Graphics 128 × 128	optional
Wireless Frequency	447MHz / 2.4GHz	
Battery	Li-ion 18650 3.7V 3,000mAh	
Usage Time	40 hours or more	
Operating Temp.	-20°C ~ +70°C	
Waterproof	IP65	
Dimensions	W236 × D111 × H148mm	
Weight	1.1kg	

### Receiver

Item	Specifications	Remarks
LED Indicators	7 LED	
Power Source	8 ~ 26Vdc, 3A Min	
Wireless Frequency	447MHz / 2.4GHz	
Communication	CAN	
Output Method		
Contact Output	Relay 10A	optional
Operating Temp.	-20°C ~ +70°C	
Waterproof	IP65	
Dimensions	W92 × D80 × H145mm	without antenna
Weight	0.4kg	

# 08

## Communication Converter

SVC

CAN to RS232 049

CAN TO OPTIC 050

# CAN to RS232

## CAN to RS232

PCB Type CAN to RS232 Converter

Compact size for easy device connection

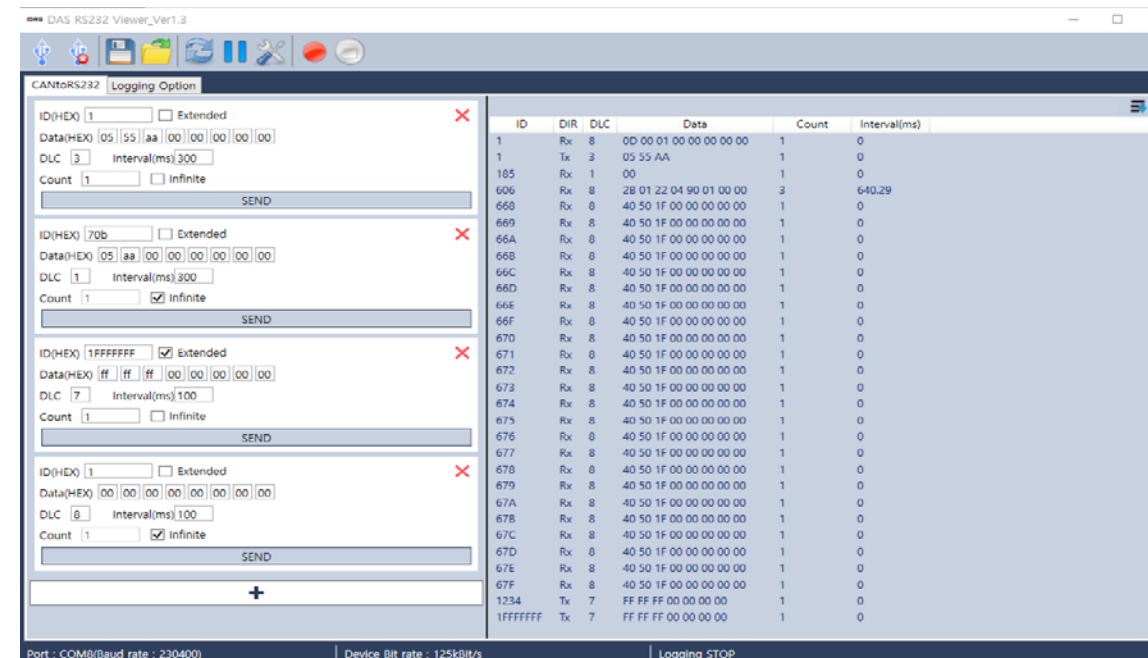
Supports high communication speed, provides viewer program for Windows

Applicable fields | Heavy equipment · measuring equipment · PLC · factory automation, etc.



Item	Specifications	Remarks
Power Source	10 ~ 30Vdc	
Current	Idle <15mA	
Consumptions	Active <20mA	
Communication	CANbus + RS232	
Operating Temp.	-20°C ~ +70°C	
CAN Speed	50 / 125 / 250 / 500 / 1,000kbps	Default : 250kbps
RS232 Speed	9,600 / 19,200 / 38,400 / 57,600 / 115,200 / 230,400 / 256,000 / 460,800 bps	Default : 115,200bps
Dimensions	W31.5 × D50 × H27mm	
Weight	21g	

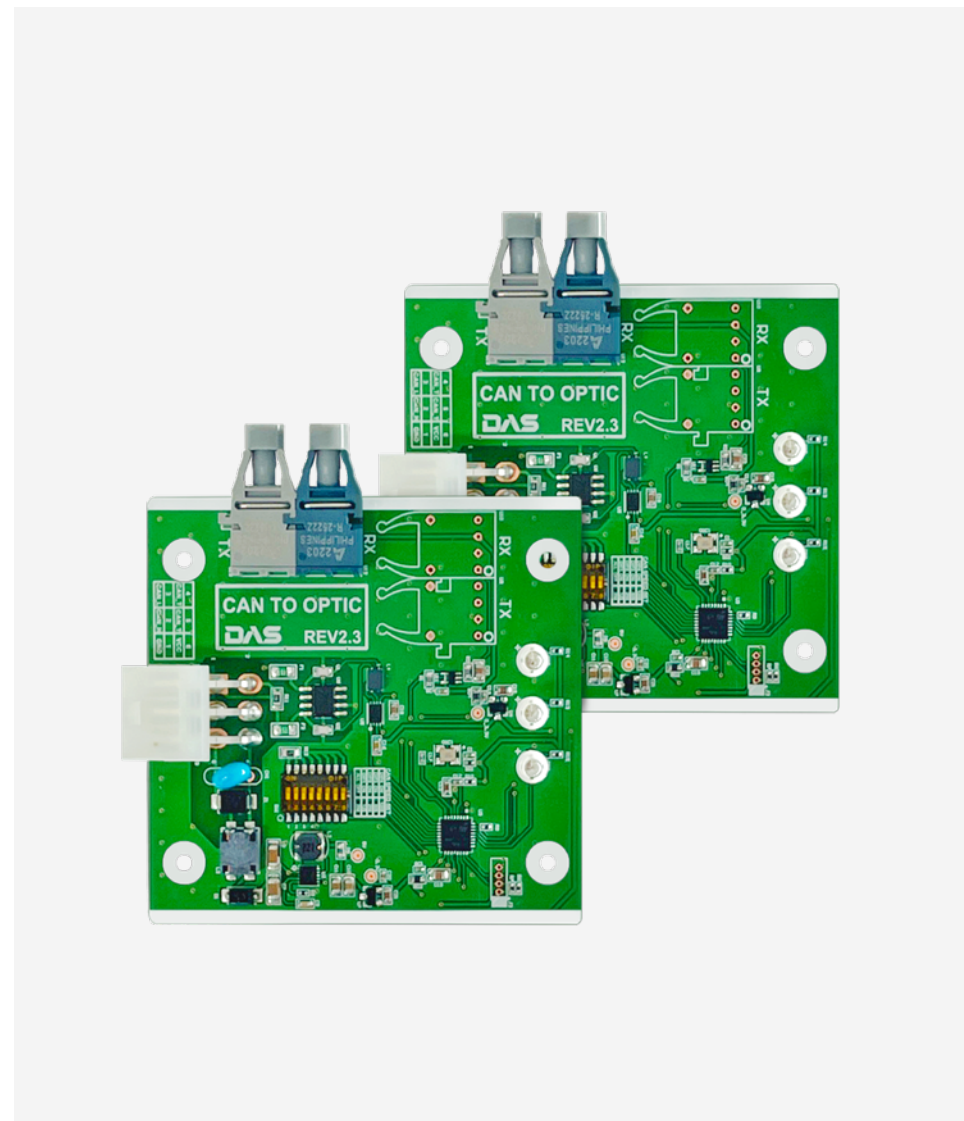
## Viewer Program for CAN to RS232



# CAN TO OPTIC

## CAN TO OPTIC

CAN communication optical converter | CAN speed up to 500 kbps  
 Loss-free CAN data transmission and reception | Electrical Isolation  
 With high withstand voltage design, it can be used where insulation section is required  
 Applicable fields | High-voltage live wire aerial work vehicle, etc.

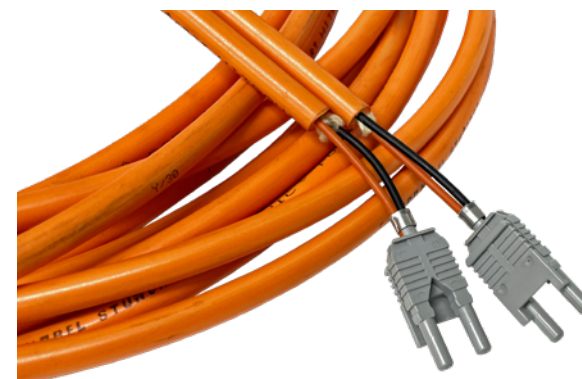


Item	Specifications	Remarks
Power Source	10 ~ 30Vdc	
Current Consumption	<60mA	@12Vdc
CAN Speed	125 / 250 / 500kbps	Default : 250kbps
CAN DATA MAX	50mS per one DATA frame	DATA frame loss occurs when set below 50mS
Baud Rate		
Optical Fiber Connector	HFBR-4516Z	Broadcom Limited (co.)
Unidirectional/ Duplex Mode	Dual Mode / Single Mode	
Fiber Cover Dia.	1000µm	Optical Fiber SPEC
Jacket Diameter	2.29mm (insulation)	Optical Fiber SPEC
Waterproof	-30°C ~ +85°C	
Dimensions	W73 x H76.6 x D0.8mm	

- one DATA frame = based on ID+DCL 8

### Compatible Optical Cable (not included)

- Cable part number : HFBR-4516Z



# VWM100

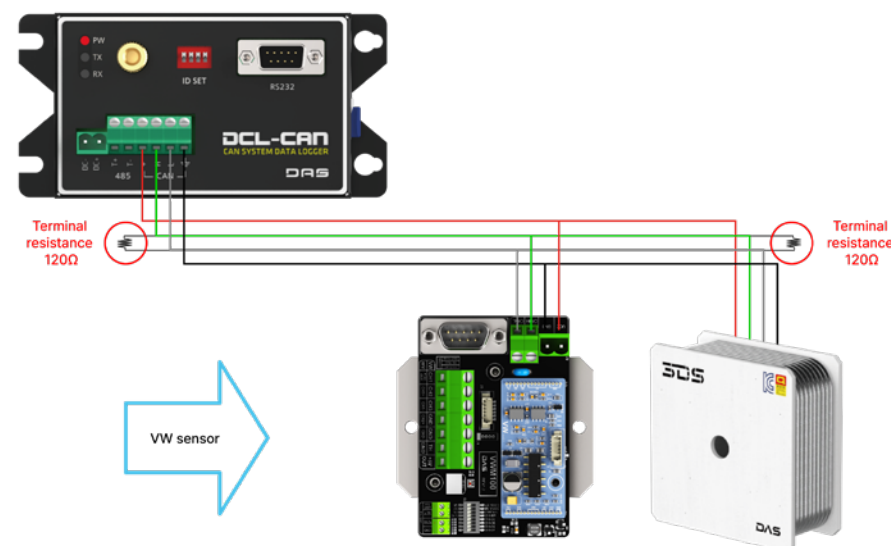
## VWM100

Vibrating string sensor measurement transmission/reception module  
CAN, RS232, TTL digital communication output



Item	Specifications	Remarks
Input	VW sensor	[A, B, C, D, E Type]
	Thermistor 3k Temp. sensor	
Input channel	VW sensor	3 Channel
	Thermistor 3K Temp. sensor	1 Channel
Power	11 ~ 30Vdc	
Current	<25mA average in standby	@12Vdc
Consumption	<60mA average in operating	@12Vdc
Output Power	5Vdc / 20mA 1 Channel	
Communication	CAN, RS232, TTL	
Operating Temp.	-30°C ~ +80°C	
Storage Temp	-40°C ~ +85°C	
Dimensions	W80 x L70 x H27mm	
Weight	<150g	

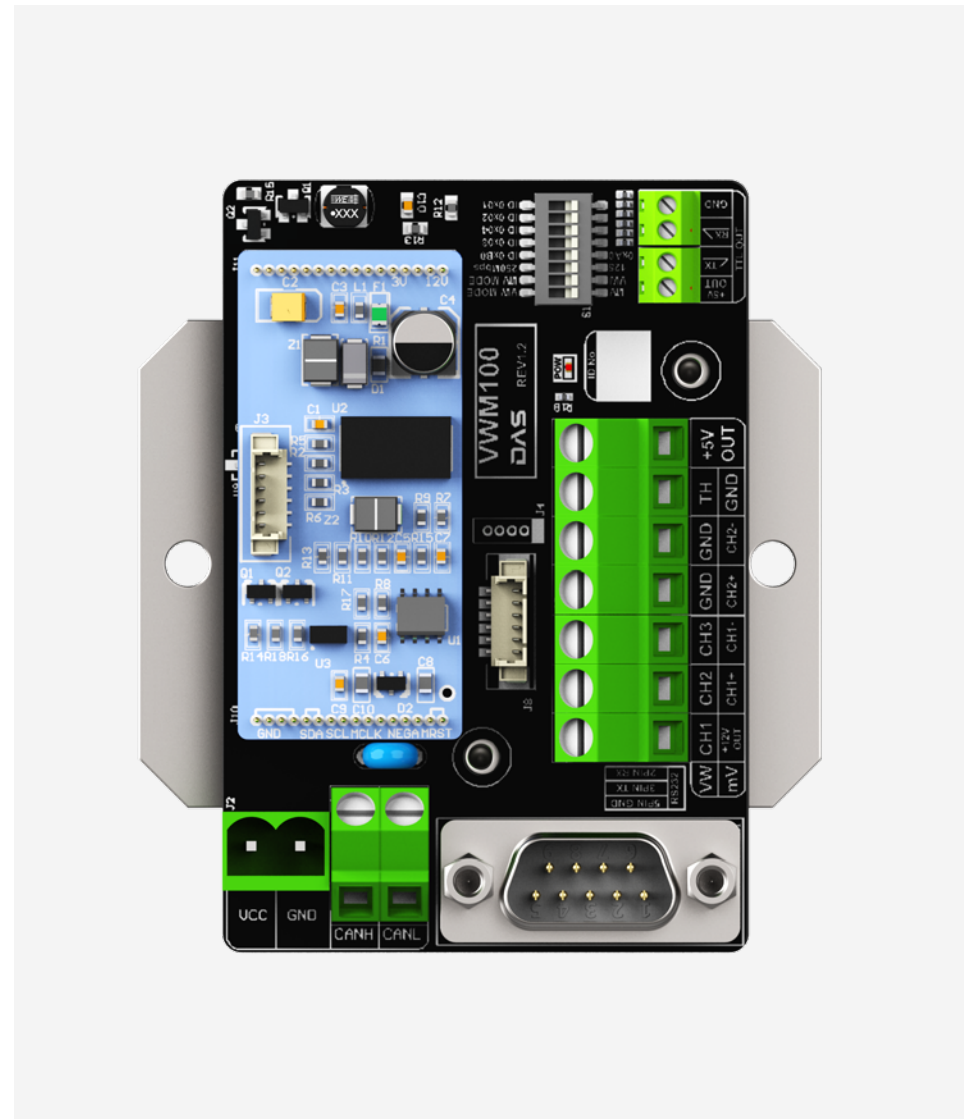
### DCL-CAN and IPI2, 3DS interconnection method



# MVM100

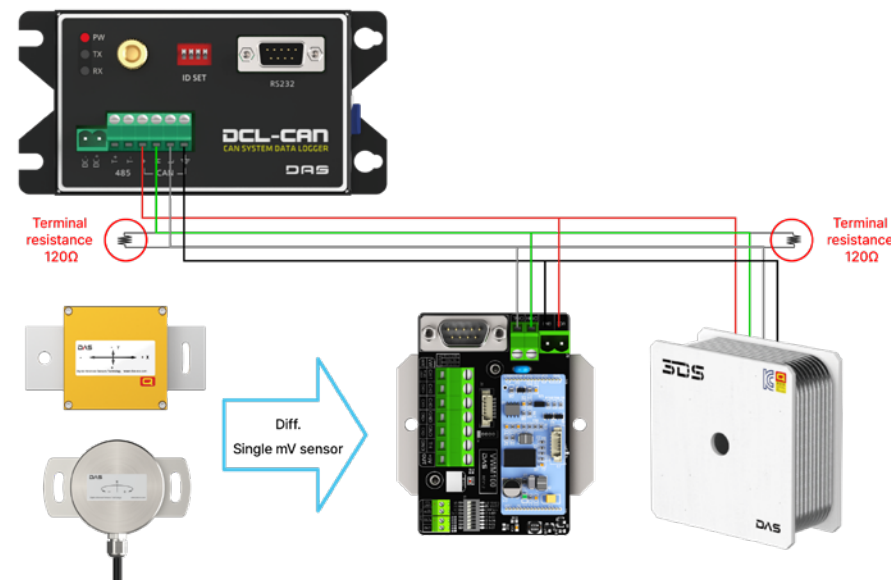
## MVM100

Supports Diff., single sensor automatic measurement for mV  
CR1000 (Campbell), DCL-CAN (DAS) interconnection possible  
CAN, RS232, TTL digital communication output



Item	Specifications	Remarks
Input	All sensors with $\pm 5V$ output	
Input channel	2 Channel	
Power	11 ~ 30Vdc	
Current	<25mA average in standby	@12Vdc
Consumption	<60mA average in operating	@12Vdc
Output Power	DC 5V / 100mA 1 Channel DC 10V / 100mA 1 Channel	
Communication	CAN, RS232, TTL	
Operating Temp.	-30°C ~ +80°C	
Storage Temp	-40°C ~ +85°C	
Dimensions	W80 x L70 x H27mm	
Weight	<150g	

### DCL-CAN and IPI2, 3DS interconnection method



# 09

## HMI · Display

DMI-05 054

ANDROID HMI-09 055

# DMI-05

## DMI-05

Industrial display device · HMI | CAN, RS232 communication  
 Full-touch screen + 8 input buttons | 600cd/m<sup>2</sup> bright screen  
 micro-SD support | User-customized UI design  
 Applicable fields | Construction machinery · heavy equipment · PLC ·  
 factory automation, etc.



Item	Specifications	Remarks
Processor	ARM Cortex M4 (168MHz)	
Application	MAX 1Mb	
Flash Memory	micro-SD, MAX 16Gb	
Power Source	10 ~ 30Vdc	
Current	300mA	@12Vdc
Consumption		
Display	5inch, TFT LCD, 600cd/m <sup>2</sup>	WVGA (800×400, 5:3)
Input Method	Touch screen, 8 Button	
Communication	CAN, RS232	
Option	Speaker, Bluetooth V4.2	
Operating Temp.	-20°C ~ +65°C	
Outout Port	1xDO (400mA)	100% of input voltage
Input Port	2xAI / 2xDI	0~5V, 12bit / 10~32V
Waterproof	IP65	front only
Dimensions	W170 × D47.7 × H96mm	without mount
Weight	260g	without mount

### Cradle for DMI-05

DMI-05  
connection



Sucker

# ANDROID HMI 9inch

## HMI 9inch

Android system | Bluetooth, Wi-Fi, GPS (optional)  
 Various input ports | Camera, USB, serial port  
 Front full-touch screen, sound output  
 Applicable fields | Construction machinery · heavy equipment



Item	Specifications	Remarks
Model	HMI 9inch	
Display	9 inch Touch Screen	
Resolution	1024*600	
Communication	USB, Wi-fi, Serial	option : CAN, GPS
OS	Android 10.0	
Power Source	12Vdc	option : 30Vdc
Current	About 1A	@12Vdc
Consumption		
Operatinf Temp.	-30°C ~ +60°C	
Dimensions	W300 x D100 x H250 mm	
Weight	1.5kg	

## Bracket for HMI 9inch



## Components



GPS anthena



REAR camera



RCA cable



POWER cable



USB cable



USB cable

# 10

## Indicator

SVC

CND	057
OR Status Display PCB	058
DIGIANGLE-1D/2D	059
DIGIANGLE-VW	060
DIGIANGLE-Multi	061

## CAN NUMBER DISPLAY

CAN transmission value indication device | FND 4digit  
 Numerical data display such as error code, specific code, and battery value output  
 Applicable fields | Heavy equipment · industrial automation, etc.

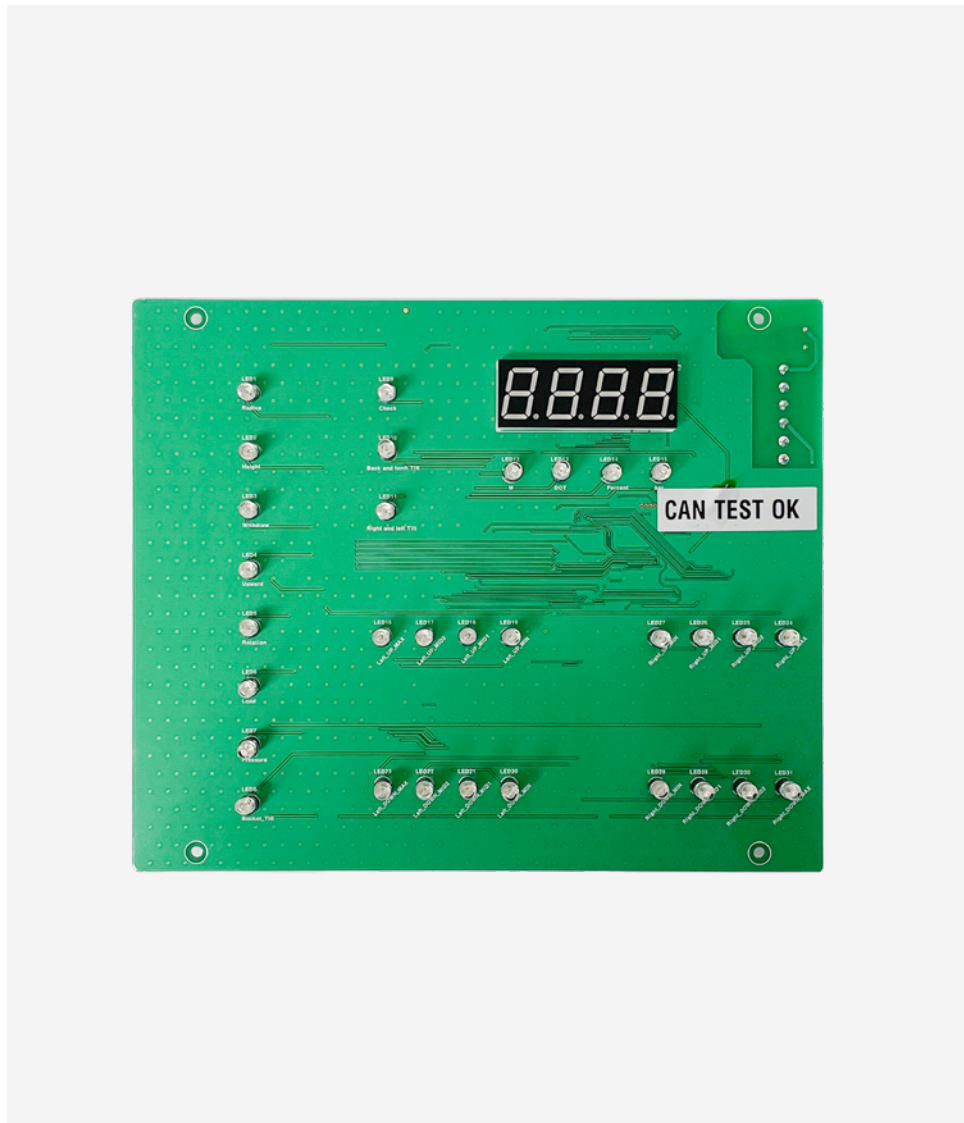


Item	Specifications	Remarks
Power Source	10 ~ 30Vdc	
Current	<120mA	@12Vdc
Consumption		
CAN Speed	125 / 250 / 500kbps	Default : 250kbps
LED	LED 1ea	
Number Output	FND 4digit	
Sound Output	Piezo buzzer	optional
Oterating Temp.	-30°C ~ +85°C	
Dimensions	W100 × H30 × D27mm	

# OR 상태 표시 PCB

## OR 상태 표시 PCB

Status indication device using CAN communication  
 FND 4digit, 31 LED  
 Customized design for applied equipment is available  
 Applicable fields | Heavy equipment · industrial automation, etc.



Item	Specifications	Remarks
Power Source	10 ~ 30Vdc	
Current	<120mA	@12Vdc
Consumption		
CAN Speed	125 / 250 / 500kbps	Default : 250kbps
LED	LED 31ea	
Number Output	FND 4digit	
Sound Output	Piezo buzzer	
Oterating Temp.	-30°C ~ +85°C	
Dimensions	W196 × H161 × D27mm	

# DIGIANGLE series

## DIGIANGLE-1D/2D

Digital goniometer for measuring inclination · displacement · horizontality and verticality

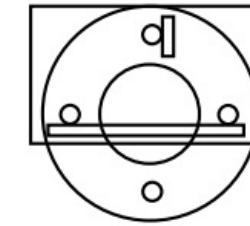
Applicable fields | Civil engineering · safety · maintenance measurement solution



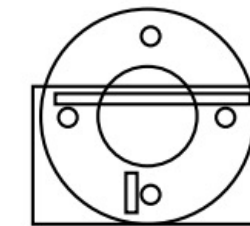
Item	Specifications	Remarks
Measuring Range	±30° (deg)	1D X axis / 2D X+Y axis
Resolution	0.001° (deg)	
Notation Precision	0.01° (deg) / 0.01mm	
Non-Linearity	0.1% FS	
Battery	3.7V 500mAh (Li-ion)	
Usage Time	150 hours	
Output	USB to RS232	Default 115,200
Charging Power	USB 5V 500mA	
Operating Temp.	0°C ~ +65°C	
Dimensions	W110 × D80 × H32mm	
Weight	430g	

### Measuring Methods

- ABS (absolute value) : Measures the angle from the factory default origin while ABS is displayed on the screen (absolute value mode)
- None-ABS (Relative Value): Measures the angle from the set relative origin point in the state where the ABS display is off on the screen (Relative Value Mode)  
For measurement convenience, the initial value of the long-term measurement site can be set as the relative origin.
- Check-Sum : When measuring displacement in civil engineering, safety, and maintenance measurement, measure the angle of the measuring place in the forward direction (A0), rotate the device 180° and measure again in the reverse direction (A180), and use these two data to accurately Calculate displacement.



A0



A180

# DIGIANGLE series

## DIGIANGLE-VW

Vibrating Wire (VW) sensor indicator  
 Applicable fields | Civil engineering · safety · maintenance  
 measurement solution



Item	Specifications	Remarks
Measuring Range	450 ~ 6,000Hz	
Measuring CH.	VW 3ch + Temp. 1ch	
Resolution	0.01Hz	
Temp. Resolution	0.1°C	
Non-Linearity	0.01% FS	
Battery	3.7V 500mAh (Li-ion)	
Charging Power	USB 5V 500mA	
Operating Temp.	0°C ~ +65°C	
Dimensions	W110 × D80 × H32mm	
Weight	430g	

- Temperature channel input : Thermistor 3kΩ
- Screen display : VW 3ch measurement value, sum or average, temperature measurement value

### Measuring Modes

- MODE [A] : Full sensor = Hz (450~6,000Hz bandwidth)
- MODE [B] : Load gauge and piezometer =  $\text{Hz}^2 \times 10^{-3} \times 4.062$  (1,200~3,500Hz bandwidth)
- MODE [C] : Surface-attached strain gage =  $\text{Hz}^2 \times 10^{-3} \times 4.062$  (450~1,000Hz bandwidth)
- MODE [D] : Buried type strain gage =  $\text{Hz}^2 \times 10^{-3} \times 3.304$  (450~1,000Hz bandwidth)
- MODE [E] : Spot welding type strain gauge =  $\text{Hz}^2 \times 10^{-3} \times 4.062$  (1,000~3,500Hz bandwidth)

# DIGIANGLE series

## DIGIANGLE-Multi

Voltage output (Sn/Diff mV) sensor indicator  
 Applicable fields | Civil engineering · safety · maintenance  
 measurement solution



Item	Specifications	Remarks
Measuring Range	-5 ~ +5Vdc	
Measuring CH.	Diff. 2ch	
Resolution	1mV	
Output Voltage	About 10Vdc ± 1V	depends on battery condition
Non-Linearity	0.1% FS	
Response	<4 sec (0 ~ 4Vdc change)	
Communication	RS232 (USB terminal)	
Battery	3.7V 500mAh (Li-ion)	
Charging Power	USB 5V 500mA	
Operating Temp.	0°C ~ +65°C	
Dimensions	W110 × D80 × H32mm	
Weight	430g	

### Measuring Sensor

- MVOLT : Diff.Volt sensors (Measuring range = ±5Vdc)
- Other sensors except MVOLT : Sn Volt sensors (Measuring range = 0~+5Vdc)



# Data Logger · Multiplexer

DCL-CAN	063
DPRO3	064
DPRO-MUX	065
MUX1632	066
DLB-CAN	067

# DCL-CAN

## DCL-CAN

Data logger for CAN communication sensors

Applicable fields | Civil engineering · safety · maintenance measurement solution



Item	Specifications	Remarks
Power Source	10 ~ 30Vdc	
Current	30mA	less than @12Vdc
Consumption		
Operating Temp.	-30°C ~ +70°C	
Output Voltage	Input power source (VCC)	
Interface	CAN * 1ch (RS485, RS 232)	
CAN Speed	125 / 250 / 500 kbps	
Serial Speed	9,600 / 38,400 / 115,200 bps	
Memory	8Gb or more	
Sensor Connect	3DS Converter	
Dimensions	W134.6 × D67 × H30.2mm	
Weight	750g	
Software	DMS300, DMS300-TCP	

### Application Field

- Collect data from CAN output type sensor
- Data collection of exclusive sensors of Das Co., Ltd.

# DPRO series

## DPRO3 Logger

Data logger

Applicable fields | Civil engineering · safety · maintenance measurement solution



Item	Specifications
Sensor Input	Diff. Vdc output sensor Single-ended Vdc (0-5V) output sensor Single-ended Vdc (0-10V) output sensor 4-20mA output sensor Full-bridge sensor VW (Vibrating Wire) sensor Thermistor (3K) Temperature sensor RTD (PT-100) sensor
Input Channel	Default mode 10ch Multi mode 30ch
Power Source	11 ~ 30Vdc
Current	Average < 70mA @12Vdc in standby
Consumption	Average < 130mA @12Vdc in operating
Output Power	DC +12V, +5V, +2V
Memory	8Gb or more
A/D Resolution	16-bit
Communication	RS232, RS485
Operating Temp.	-30°C ~ +80°C
Dimensions	W212.6 × D85 × H61.5mm
Weight	760g
Exterior Material	Steel

# DPRO series

## DPRO3-MUX

Multiplexer for channel expansion

Applicable fields | Civil engineering · safety · maintenance measurement solution



Item	Specifications
Sensor Input	Diff. Vdc output sensor Single-ended Vdc (0-5V) output sensor Single-ended Vdc (0-10V) output sensor 4-20mA output sensor Full-bridge sensor VW (Vibrating Wire) sensor Thermistor (3K) Temperature sensor RTD (PT-100) sensor
Input Channel	Default mode 10ch Multi mode 30ch
Power Source	11 ~ 30Vdc
Current	<70mA @12Vdc
Consumption	
Output Power	DC +12V, +5V, +2V
Operating Temp.	-30°C ~ +80°C
Dimensions	W212.6 × D85 × H61.5mm
Weight	673g
Exterior Material	Steel

### PC Software for DPRO3 - DMS300, DMS300-TCP

- PC connection through wired/wireless connection with DPRO3
- Write and transmit data collection program
- Real-time data check and data download

# MUX1632

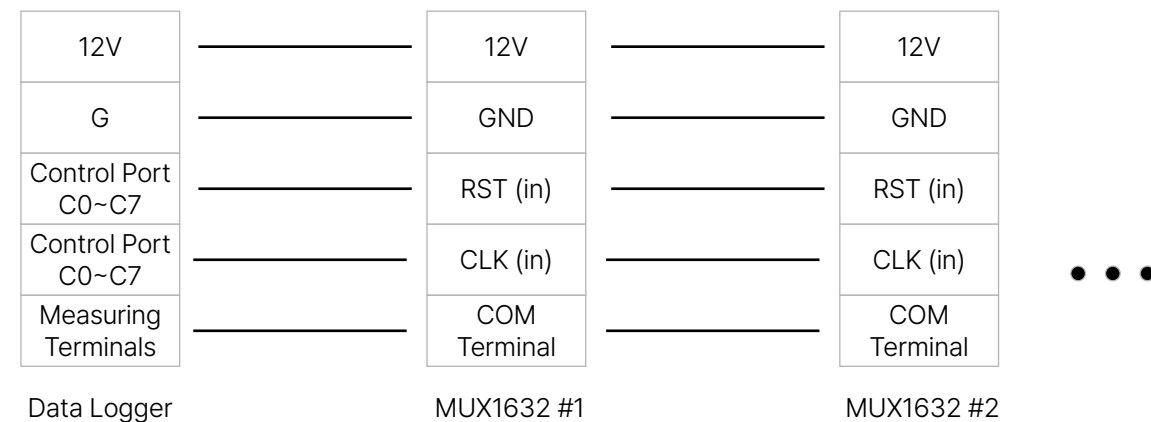
## MUX1632

Multiplexer | Campbell (company) compatible channel expander  
 Applicable fields | Civil engineering · safety · maintenance  
 measurement solution



Item	Specifications
Power Source	10 ~ 16Vdc
Current	<20mA
Consumption	
Scan	Below 1.5 Vdc Range above 3.5 Vdc, 5ms or greater Perform scan operation on rising edge of clock signal
Reset	Active on a continuous signal from 3.5 to 16 Vdc Inactive (standby) if <0.9 Vdc
MAX Switching Voltage	50Vdc
MAX Switching Current	500mA
Relay Life	Mechanical life 10 <sup>8</sup> cycles or more Electrical life 2 × 10 <sup>5</sup> cycles or more
Operating Temp.	-30°C ~ +80°C
Dimensions	W212 × D102.6 × H25.6mm (without mount)
Weight	490g

### Wiring Connections



# DLB-CAN

## DLB-CAN

CANbus data logging device

Extensive filtering and triggering environment | Very fast startup

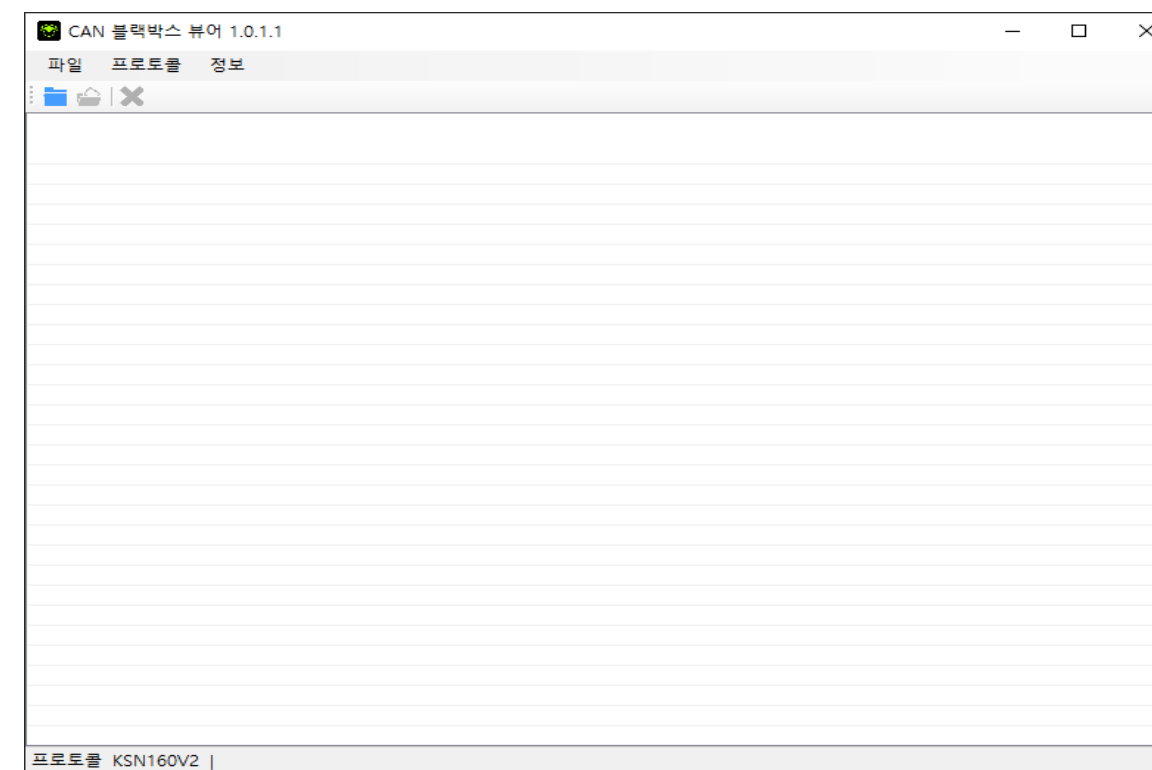
Large capacity micro-SD memory card | Fast data read

Applicable fields | Overall CANBus environment



Item	Specifications	Remarks
Power Source	10 ~ 30Vdc	
Current	30mA	Less than @12Vdc
Consumption		
Operating Temp.	-30°C ~ +70°C	
Output Voltage	Input Power Source (Vcc)	
Interface	CAN * 1ch (RS485, RS 232)	
CAN Speed	125 / 250 / 500 kbps	
Serial Speed	9,600 / 38,400 / 115,200 bps	
Memory	8Gb or more	
Dimensions	W134.6 × D67 × H30.2mm	
Weight	750g	

## Software for DLB-CAN



# 12

## Power Device

SVC

PS1000	069
KBC-12V	070
DPF	071

# PS1000

## PS1000

Power Supply UPS

Applicable fields | Civil engineering · safety · maintenance measurement solution



Item	Specifications	Remarks
Output Power	12Vdc, 3A	
Battery	7Ah	@12Vdc
Charging Power	15 ~ 28Vdc 1.2A 18Vac (RMS)	
Operating Temp.	-30°C ~ +80°C	-10°C ~ +60°C Bettery Operating Temp.
Lamp	Charging status indicator	
Dimensions	W190 × D70 × H105mm	
Weight	2.5kg (with Battery)	

### Wiring Connections

Item	Specifications
BATTERY+	External battery+
BATTERY-	External battery-
CHARGE	Charging (Adapter)+
CHARGE	Charging (Adapter) -
+12V	DC 12V output+
GND	DC 12V GND

- CHARGE terminal does not distinguish +/- polarity
- GND is common, no channel distinction

# KBC-12V

## KBC-12V UPPER&LOWER

12V lead acid battery charger  
 3A fast charging | Battery Indicator LED  
 Preventing main chassis battery discharge  
 Applicable fields | High-voltage live wire aerial work vehicle, etc.



Item	Specifications		Remarks
Battery to be Charged	Rocket, ES 24-12 / 12V, 24Ah		inquire when changing
Charging Capacity	UPPER	100% discharge ~ 110% 10h fully charged	100% (9V)
	LOWER	100% discharge ~ 110% 30h fully charged	110% (14.4V)
Charging Condition	STOP	CAR Battery Voltage is 24V ~ 0.5V less	
	RETURN	CAR Battery voltage is 24V ~ 0.5V more Less than 13V±300mV	
Charging Capacity Indicator	Battery capacity indicated by 2 green LED (●On, ○Off)		Volt error ±100mV
	<b>Amount</b>	<b>LED</b>	<b>Volt</b>
	110% more	all OFF ○○	Red LED off
	100~110%	all OFF ○○	13.32V ~ 14.40V
	80~100%	1 ON ●○	12.92V ~ 13.32V
	80% less	all ON ●●	Less than 12.9V
Charging Stop	Indication while charging is indicated by 1 red LED		on in charging, off in stop
Output Voltage	MAX 17V ±400mV (no current)		
Output Current	UPPER	MAX 3A	depends on
	LOWER	MAX 1A	battery condition
Operating Temp.	-30°C ~ +80°C		
Dimensions	W104.5 x H104.5 x D72.8 mm		without mount
Weight	Each 84g		

- Auto-OFF after charging 110%, auto-checks the battery voltage and recharges when it is less than 13V
- If the CAR Battery is 24V normal and the Basket Battery remains removed, an error is displayed.
- error : Red LED Toggle (error), LED No. 1, LED No. 2, Battery

# DPF

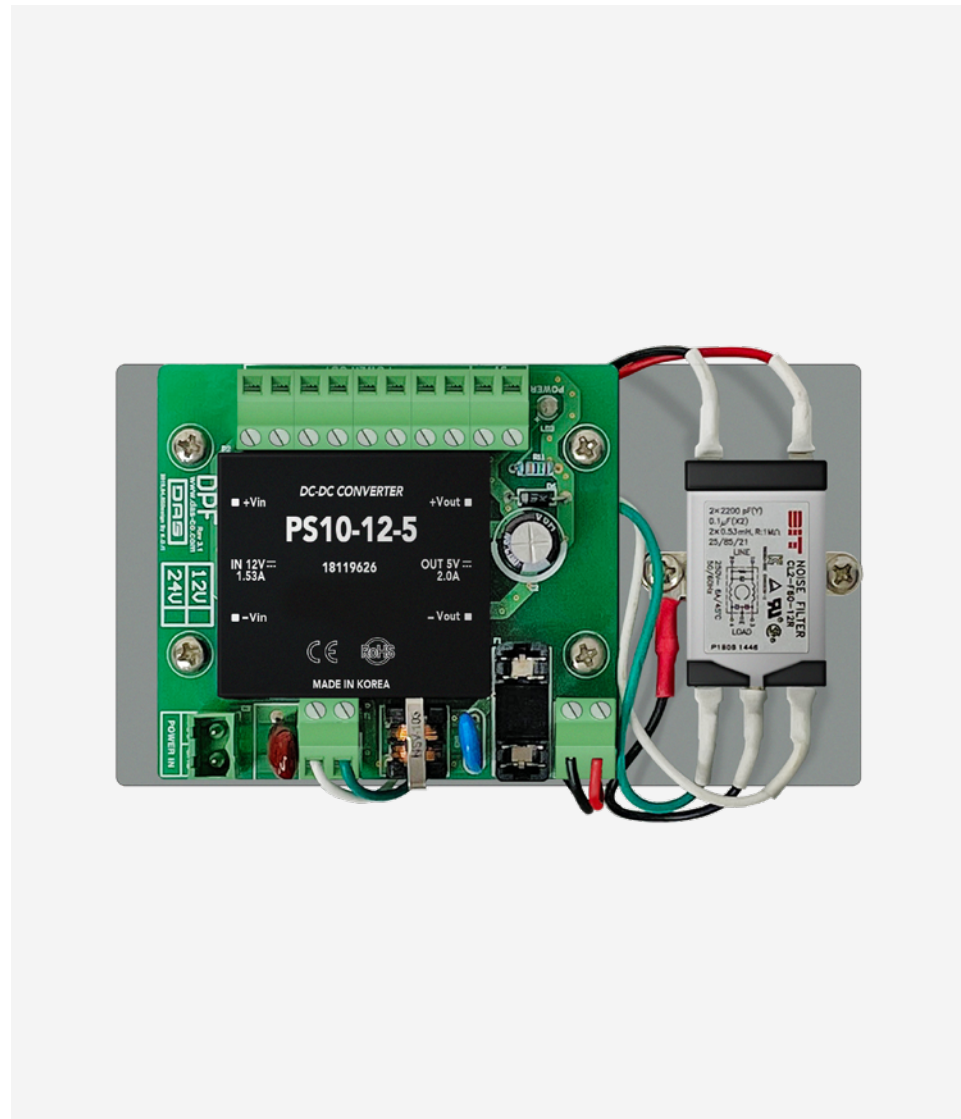
## DPF

DC power supply noise filter

Facility power supply filter installed in construction sites, subways and railroads

Suitable for equipments are often damaged by ESD or surge

Applicable fields | Civil engineering · safety · maintenance measurement solution



Item	Specifications	Remarks
Power Source	12Vdc 9 ~ 15Vdc	
	24Vdc 19 ~ 30Vdc	
Current	5Vdc @2A, 1Port	
Consumption	12Vdc @2A, 4Port	
Isolation	Input-Output, Input-Case,	DC500V, 100MΩ
	Output-Case	
High Spot	Input-Output, Input-Case,	AC500V, 1Min
	Output-Case	
Usage Time	4.8 × 10 <sup>5</sup> hrs	MIL-HDBK-217F
Operating Temp.	-30°C ~ +85°C	
dimensions	W135 x H75mm	



**DAS-Gimje**

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