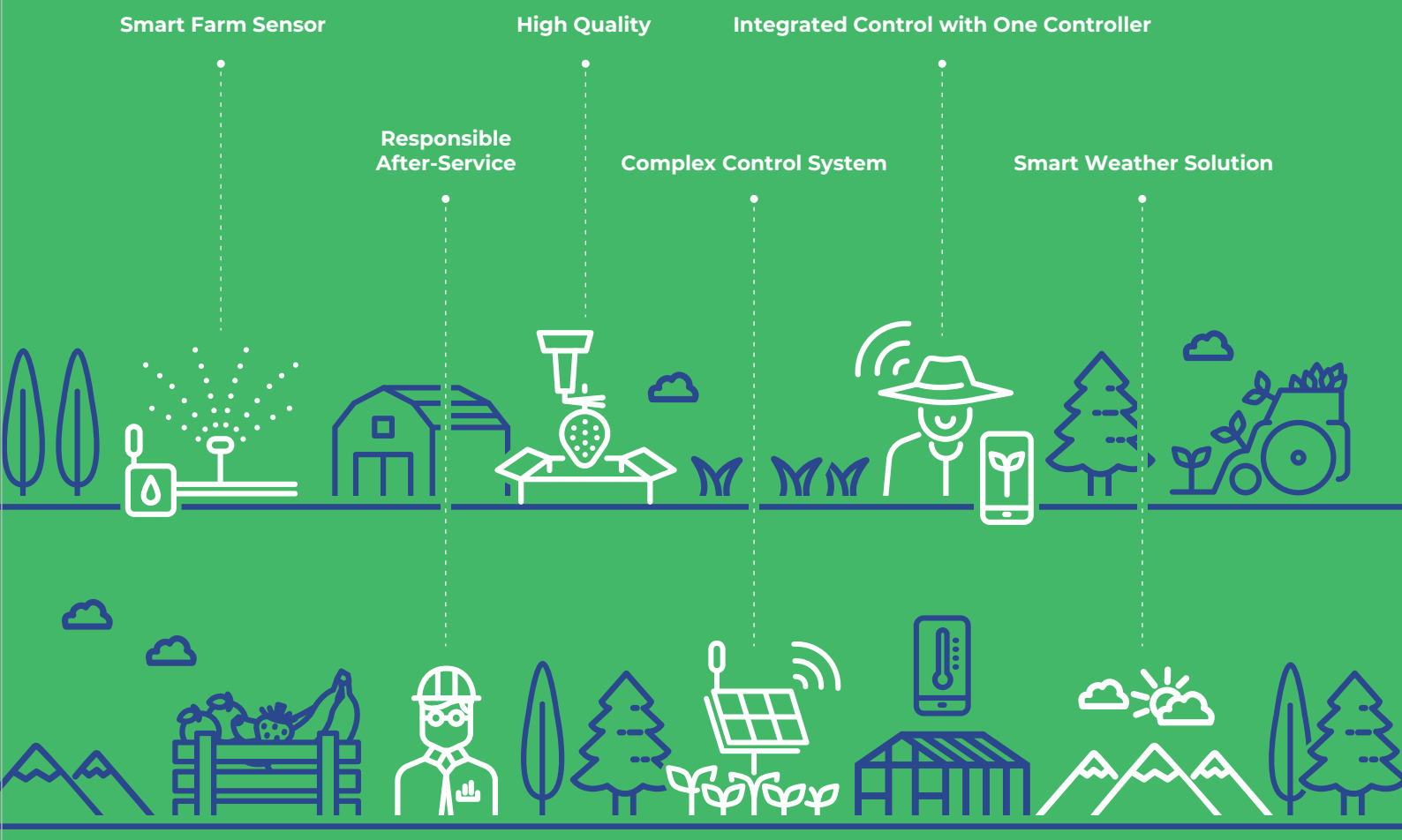
2022 CATALOG

FARMSCUBE

Smart Farm & Smart Weather System

FARMSCUBE is the most outstanding Complex Environment Control System
that combines precise sensor technology,
control technology, and advanced wireless technology.



KOREA DIGITAL
Since 1997 Think Digital

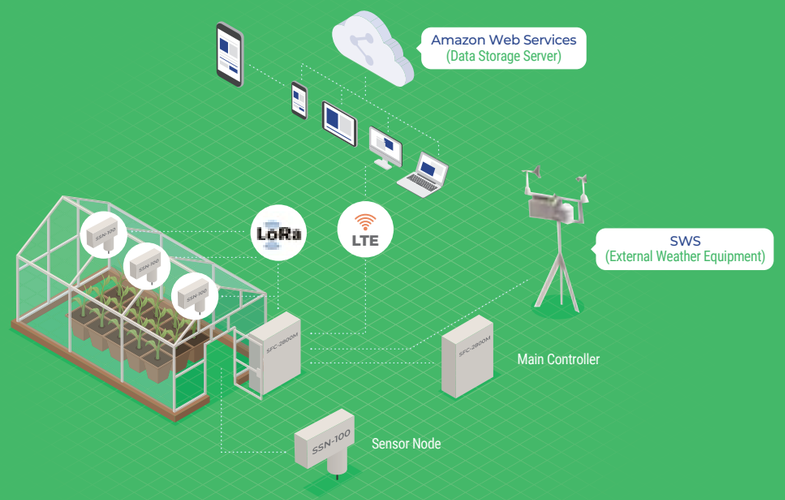
FARMSCUBE

Smart Farm & Smart Weather System

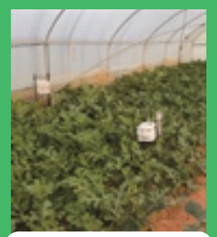
FARMSCUBE?

FARMSCUBE is the most outstanding Complex Environment Control System
that combines precise sensor technology,
control technology, and advanced wireless technology.

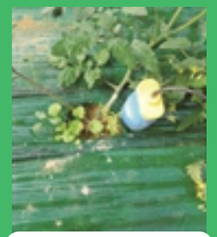
Complex Environmental Control System Conguration Diagram



Installation cases



CO_2 / Pyranometer



Soil moisture

SWS-600
Weather Observation System

Temperature
/ Humidity, CO 2 sensor

FARMSCUBE Feature

Convenience

Easy to install and convenient to move and place.

Economics

We offer all products at an economical price as a manufacturer of all sensors and controllers
※ The application used for FARMSCUBE is free.

Mobile

Sensor monitoring, control and setting,
data storage and analysis can be used quickly and easily through a smartphone.

Scalability

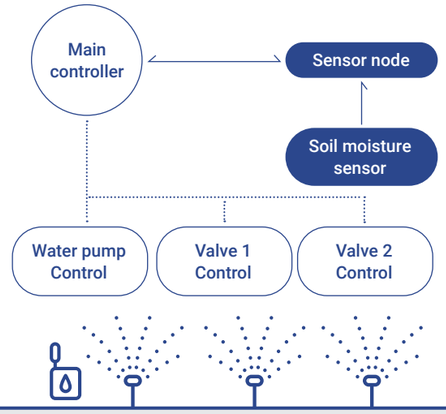
Able to control various equipment with one controller since it supports 24-channel relay port and 12-channel switchgear dedicated port.

Wireless

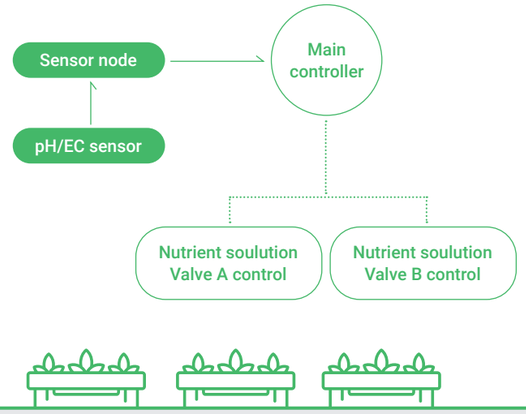
Able to easily connect to the device anytime,
anywhere through LoRa wireless communication,
LTE modem and Bluetooth.

System conguration examples

Irrigation control system



Nutrient solution control system



FARMSCUBE
Smart Farm & Smart Weather System

FARMSCUBE is the most outstanding
Complex Environment Control System
that combines precise sensor technology,
control technology, and advanced
wireless technology.
It is convenient and easy.

System Configuration

CCTV	Soil Moisture Content	Liquid Pen	Sprinkler
Front Window Switch	Sensor Node	Piper	External Weather Equipment
CO2 Generator	Side Window Switch	Nutrient Solution Supplier	Unmanned Control System

Main Controller SFC-2088MD

- 32 Sensor Nodes Manageable
- 7 Sub-Controllers Manageable
- 24 Relay Channels (AC220/40A)
  (Under 60% Rated Current: 24A Recommended)
- Switchgear Channel 12 Channels (DC24/10A)
  (Under 60% Rated Current: 6A Recommended)
- Built-in Earth Leakage Breaker 30A
- Built-in Lightning Protector (SPD)

Sub Controller SFC-2800S

- 24 Relay Channels (AC220/40A)
  (Under 60% Rated Current: 24A Recommended)
- Switchgear Channel 12 Channels (DC24/10A)
  (Under 60% Rated Current: 6A Recommended)
- SMPS: 2KW built-in
- Built-in Earth Leakage Breaker 30A
- Built-in Lightning Protector (SPD)

Smart Farm Automation and Remote Control

IOT Remote Control System Linked Perfectly with the Smart Farm System

- Irrigation Control
- Warm and Waterproof Control
- Air Conditioner/Heater
- Motor Control
- Fluid Fan
- Nutrient Liquid Control

※ App available on mobile phones, pads, and Chromebooks

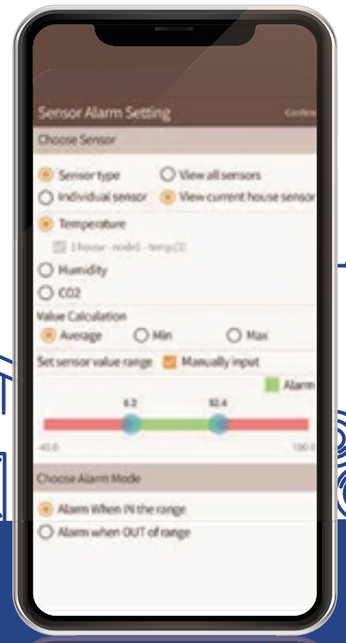
Automatic Setting System that Implements Smart Farm Automation

The labor and time required for farming is reduced by more than half.

※ Including Simultaneous Use Restriction and Sequential Control Function

Real-Time Alarm

Urgent alarms for desired information such as temperature,
humidity, soil temperature, soil moisture content,
soil EC, etc. of all sensors.
Able to respond to emergencies through remote control or
automatic setting.



Alarm Setting → Alarm Received → Emergency Response

Smart Farm environment analysis

Real-time data is monitored and recorded in order to identify and
solve problems in farming such as temperature and humidity,
CO2, solar radiation, soil moisture content,
pH / EC, wind direction, wind speed, rainfall detection, etc.

- Thermo-Humidity
- CO2
- Solar Radiation
- Soil Moisture Content
- pH / EC
- Wind Direction
- Wind Speed
- Rainfall Detection

Food Jukebox

FarmsCube-21 (FarmOS V2)

A nutrient solution pump can be used to supply nutrient solution to the roots of plants by mist spraying.
Food jukebox was developed by the Korea Institute of Science and Technology (KIST) - Korea Digital Co., Ltd. - Jinong Co., Ltd. developed and disseminated

FEATURE

Plant cultivation
Plant growth/cultivation environment/customized growth system

Same quality
Same growing environment anywhere in the world with the same seed

Individual growth
Individual quality with customized growth conditions with the same seed

The plant grower can measure internal temperature, humidity, and CO_2, measure EC (electrical conductivity) of nutrient solution, and measure external temperature and humidity.

The plant grower uses the Peltier element to provide cooling and heating functions to control the internal temperature.
When the indoor CO_2 ppm value is low using the CO2 sensor, the CO_2 value can be adjusted using the ventilation fan.

Using EC (Electrical Conductivity), the user can check whether the nutrient solution is in the proper ratio.

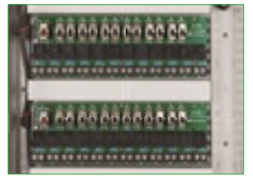
It uses three types of LEDs, BLUE, RED, and WHITE, to provide the amount of light required for photosynthesis of plants, and the brightness can be adjusted in stages (0-100%) as needed.

A nutrient solution pump can be used to supply nutrient solution to the roots of plants by mist spraying.

TECHNICAL DATA

Measurement Item	Measurement Range . Error
Temperature	-40℃ ~ +80℃ / ±0.3℃
Humidity	RH 0 ~ 99%RH / ±0.3%
EC Electrical Conductivity	0~10mS/cm. / ±2% FS
CO_2	0~3,000ppm / ±(3%FS+2%Reading)

Output Node(Switch 12 Channels)

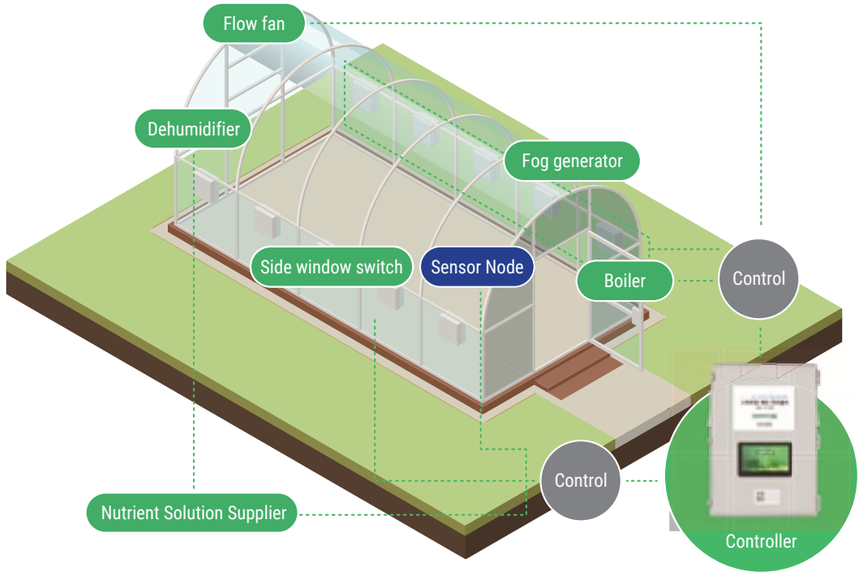


Output Node(Relay 24 Channels)

Main Controller SFC-2800MD

TECHNICAL DATA

Data		Specifications
General Function		Manage 32 Sensor Nodes (Max) Manage 8 Output Nodes (Max) Update Firmware Remotely
Power		1. Surge Protective Device 2. DC 12V (AC 220V Adapter included)
Communications	External	LTE Modem (LTE, Built-in Antenna) Wired LAN(100Mbps) Bluetooth(Within 10m) RS-485
	Node	LoRa(Free Communication Expense, Built-in Antenna, 1km Max)
Operating Condition		Temperature: -10 ~ 60℃ Humidity: Max 95% RH
Output Node	Relay Node	24 Channels (AC 220, 10A)
	Switch Node	12 Channels (DC 24C, 10A) SMPS DC 24V / Built-in 2KW



Sensor Node

TECHNICAL DATA

Data		Specifications
Measurement	Measurement range	Temperature -40 ~ 60℃
	range	RH 0 ~ 99%RH
	Resolution	Temperature 0.1℃ RH 0.1%RH
	Accuracy	Temperature ± 0.3℃ RH ± 3.0% (10 to 90%)
Electrical	Power supply	3.3VDC
	Power consumption	4mA @3.3V
	Communication	SM-BUS, RS-485
Dimensions	Out Dimension	150mm x 160(Dia. X H)
	Weight	100g
	Connection	M12 - 4P

Features

- Built-in temperature and humidity sensor
- Easy to install, move, re-install
- Sensor node selectable according to sensor communication method

Sensor node conguration diagram

CO control nodes
(Bracket sold separately)

Temperature, humidity, solar radiation, CO , CO included

Shelter type node configuration
(Bracket sold separately)

Temperature, humidity, solar radiation, CO included

CO_2 Sensor KCD-HP100-3F

TECHNICAL DATA

Data		Specifications
Measurement	Measurement range	0~3,000ppm
	Acuuacy *	±(3%FS+2% Reading)
	Response time	<65 sec
	Measurement time interval	0.75 sec
General	Warn up time	<2 min
	Storage temperature	-40~70℃
	Weight	<350g
Operating conditions	Operating temperature	5~45℃
	Operating humidity	0~95%RH, Non-condensing
Electrical	Power supply	16~28VDC
	Power consumption	70mA Average
	Outputs	0~5VDC, 0~VDC, 4~20mA
	Communication	RS485

@25℃, equipment conditions at the factory, medium value of detection range

- When using the normal environment, it may be necessary to calibrate at intervals of about one year.
- The above images and specifications are subject to change without prior notice for performance and quality improvement

Thermo-Hunidity Sensor KSH-7310

TECHNICAL DATA

Data		Specifications
Measurement	Measurement range	Temperature -40 ~ 60℃ | RH 0 ~ 99%RH
	Resolution	Temperature 0.1℃ | RH 0.1%RH
	Accuracy	Temperature ± 0.3℃ | RH ± 3.0% (10 to 90%)
Electrical	Power supply	3.3VDC
	Power consumption	4mA @3.3V
	Communication	SM-BUS, RS-485
Dimensions	Out Dimension	150mm x 160(Dia. X H)
	Weight	100g
	Connection	M12 - 4P

Product Appearance

- Easy installation
- Digital communication method Waterproof structure of IP65 (humidity), IP67 (temperature)
- Used for measuring temperature and humidity for agricultural andmeteorological applications

Pyrheliometer SWSR-7500

TECHNICAL DATA

Data		Specifications
Measurement	Irradiance Range	0~2,000 W/m2
	Spectral Range	400~1,000 nm (Silicon Photodiode)
	Resolition	1 W/m2
	Acuracy	± 5%
	Temperature Coeficient	0.12%/℃
General Conditions	Warm up time	< 5 s
	Storage temperature	-40 ~ 80℃
	Operating Environment	-40 ~ 60℃, Max 95%RH
Electrical	Power supply	3.3VDC
	Power consumption	10mA@3.3V
	Communication	SM-BUS
Dimensions	Out Dimension	45mm x 60mm(Dia. x H), Sensor 90mm x 7.5mm(Dia. x H), Plate
	Weight	88g (Sensor) | 110g (Plate)
	Connection	M12-8p

Product Appearance

- Easy installation
- Digital communication method
- Waterproofing structure equivalent to IP 67
- Used for solar energy system for agriculture and weather

Rainfall Detection Sensor SWRS-7481

TECHNICAL DATA

Data		사양
Measurement	Measurement range	Rain On/Off
Electrical	Power supply	3.3VDC
	Power consumption	15mA@3.3V
	Communication	SM-BUS
Dimensions	Out Dimension	80mmx140(Dia. X H)
	Weight	100g
	Weight	M12 - 8p

pH / EC Sensor KCD-PE300

TECHNICAL DATA

48mm		Specifications
Measurement	Measurement range	PH 0.0 ~ 14.0 | EC 0 ~ 10mS/cm
	Accuracy(@25℃)	PH ±0.05 (@ pH3 ~ pH8) EC ±2% F.S. (@ 0~4mS/cm)
	Temp. compensation	EC Automatic From 5~40℃, (β=2%/℃)
	Measurement time interval	Min 2sec
General Conditions	Warm up time	< 2 min
	Storage temperature	-20 ~ 80℃
	Operating Environment	0~50℃, Max 95%RH
User Interface	Display	< 2 min
	Button Switch	4 Buton Switch
Electrical	Power supply	24VDC ±5V
	Power consumption	<1.5W
	Analog Output	4~20mA
	Communication	RS-485 (Baud rate 38,400bps)
	Realy Output	2-relay, SPST AC250V, 3A Max
Calibration	Maunal	pH Offset (pH7), Span (pH4 or pH10) EC offset, Span
Dimensions	Out Dimension	180mm x 130mm x H36mm
	Weight	300g (without electrode)
	Mounting Pitch	Φ 4.0 x 4spot 162x112

Easy installation and calibration
- CPU-installed, Reliable data processing using MICRO PROCESS with multi-function, high-performance

Display various measurement and parameter value
- Current pH, EC, Temperature Control setting pH, EC
- pH, EC contact operation time and minimum interval setting

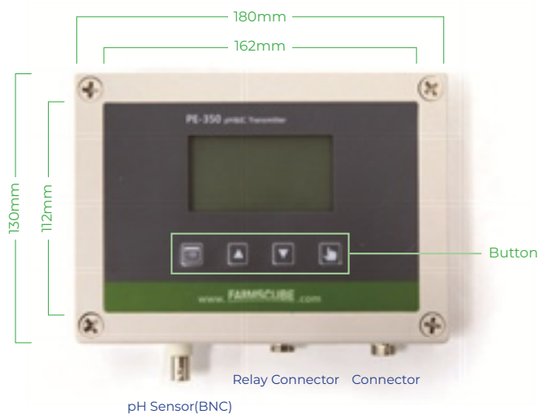
Various output signals
- Analog 4 ~ 20mA, RS-485, Relay contact

Automatic temperature compensation function
- Correction factor β = 2% / ℃

Remarks
- The electrode is a consumable.
- Maintenance such as periodic cleaning and calibration is necessary.
- Please refer to separate data for protocol for RS-485 communication.
- This instrument is set up for pH electrode and electric conductivity electrode sold separately.
- If other electrode is used, the output value may be different.

Accessories (sold separately)
- PE-800PH : pH electrode
- PE-900EC : EC electrode (cell constant K = 1)
- PE8004M : pH 4.0 solution for calibration 20ml
- PE8007M : pH 7.0 solution for calibration 20ml
- PE8005M : 5mS / cm solution for calibration 20ml
- PE8012M : 12.89mS / cm solution for calibration 20ml
- PE800P : Power adapter (AC220V to DC)

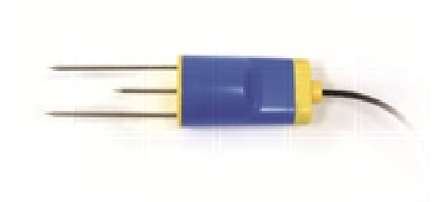
Appearance and specifications are subject to change without prior notice for performance improvement.



Button From left 1 MENU 2 UP 3 DOWN 4 ENTER

Relay Connector From left 1 pH 2 COM 3 EC

Connector From left 1 2 EC 3 4 Temp 5 6 RS-485 7 pH out(4~20mA) 8 EC Out(4~20mA) 9 M(pH/EC Signal GND) 10 DC Power(GND) 11 DC Power(24V)



Soil Moisture Content Sensor KSM8900

TECHNICAL DATA

Data			Specifications
Measurement	Measurement range	VWC	0.0~100.0%VWC
		EC	0~10dS/m
		Temperature	-40 ~ 60℃
	Accuracy (@25℃)	VWC	±3@VWC (0~50%VWC)
		EC	±0.1dS/m(@0~1dS/m)
			±10%(@1~10dS/m)
		Temperature	±1℃
	Temp. compensation	EC Automatic	β=2%/℃
	Resolution	VWC	0.1%VWC
		EC	0.01dS/m
		Temperature	0.1℃
	Measurement time interval	Min	1sec
General Conditions	Warm up time		<10s
	Storage temperature		-20~80℃
	Operating Environment		-40~60℃, Max 95%RH
Measurement Type	Soil Moisture		Frequency Domain Reflectometry
	EC		Impedance
	Temperature		MEMS
Electrical	Power supply		5VDC
	Power consumption		70mA@5V
	Communication		RS-485

Easy installation
- Simultaneous measurement of soil moisture, electrical conductivity and soil temperature
- IP67 waterproof structure
- Automatic temperature compensation (correction coefficient β= 2% / ℃)

Application
- Fertigation Management
- Greenhouse Management

Appearance and specifications are subject to change without prior notice for performance improvement.

External meteorological equipment

SWS-600

TECHNICAL DATA

Property	Specification
Measurement and broadcast interval	1 min
Power	Temperature, humidity, wind direction, wind speed, solar radiation, rain gauge, rainfall detection
Power	DC 12V
Communication	LoRa (free of charge, radius 2km)
Operating environment	Temperature: -40℃~ 60 ℃ Humidity: 0 to 100% RH (* non-condensing conditions)
Power Consumption	Less than 1W (without heater)

Common Agricultural Meteorological Observation Equipment
- External Weather Observation for Complex Environment Control
- Installed at Agricultural Technology Center, Farmers Purchase Receivers
- Receive Precise Weather Data minute by minute. Precise Environment Control
- Free Communication Cost, Smart Farm System Cost Reduction

Weather Vain

TECHNICAL DATA

Data		Specifications
Measurement	Measurement range	0 ~ 360°
	Resolution	1°
	Uncertainty	±5°
	Starting Wind Speed	0.5m/s
General Conditions	Warm up time	< 5초
	Storage temperature	-40 ~ 60℃
	Operating Environment	0 ~ 99%RH (비 결로조건)
Electrical	Power supply	3.3VDC
	Power consumption	15mA @3.3V (Without Heater)
	Operating Environment	SM-BUS
Dimensions	Out Dimension	70mm x 240(Dia. X H), Body 240mm, Vane Length
	Weight	400g
	Connection	M12 - 8p

Wind Speed sensor

TECHNICAL DATA

Data	Specifications
Wind Speed Range	0 ~ 75 m/s
Accuracy	± 5%(@10~70m/s)
Resolution	0.1m/s
Starting Threshold	<0.5m/s
Sensor	Optical disk(8 CPR)

Leading the World's First

"Smart Farm Cost Innovation with SWS Broadcasting"

01 Necessity

- Data Monitoring from External (Atmospheric) Weather Observation Equipment
- Cost Reduction of Smart Farm Complex Environment Control System by Common Use of Meteorological Observation Equipment
- Energy Cost Reduction through Observation Accuracy and Optimal Environmental Control at the Level of the Meteorological Agency AWS

02 SWS Features

- **High accuracy** SWS sensor is a certified product of the Meteorological Administration and is highly accurate and reliable.
- **Fully digital** sensor ID assignment, sensor automatic recognition, calibration/correction
- **Data transmission per minute** Observation data is broadcast in a radius of 2km via LoRa wireless communication
- **Inexpensive SWS data receiver** Receives precise SWS data every minute
- **Automatic control** Automatic control in conjunction with Korea Digital smart farmcomplex control system
- **No power Supply required** Ultra-low power design using solar cell and rechargeable battery
- **Free monitoring app** Download to a smartphone (receiver required)
- **Excellent economical efficiency** Multi-use within 2km radius of SWS installation site, free communication cost

Creating Value for the Future, Dreaming for Tomorrow. Korea Digital Co., Ltd.

will serve farmers to become an expert in smart farm field. Korea Digital will lead the smart farm field from 『experience to precision agriculture』with honest and transparent corporate management and superior technology.

Korea Digital supports "high-tech agriculture" with precision sensing technology

By constant technological development **Leading the Technology of Agriculture** + ICT technology **Graft to smart farm** + High efficiency **Extend to smart farm** + With precise agricultural technology **Contributing to increase income**

Business area

User Environment

Manufacturing and Production

Technology Development and Research

Installation and A/S

FARMSCUBE
Smart Farm & Smart Weather System

FARMSCUBE is a trade mark for the smart farm business of Korea Digital which was founded in 1997.
With 20 years of expertise and manufacturing experience with smart sensors,
FARMSCUBE provides a complex environmental control system in smart farm field optimized for customer needs.

VISION

Creating Value for the Future, Dreaming for Tomorrow. Korea Digital Co., Ltd.
We serve farmers to become experts in the smart farm field.
Korea Digital leads the smart farm field with precision agriculture technology with honest and transparent management and excellent technology.
We support "High-tech Digital Farm" with precision sensing technology.

HISTORY

1997. 11
Established Korea Digital Co., Ltd.
(Location: Daerim-dong, Yeongdeungpo-gu, Seoul)

1998. 8
Establishment of R&D Center

1999. 12
Developed Air Conditioner Controller
(3P: UTC CARRIER)

2000. 7
Developed Hot Runner-Temperature Controller

2001. 05
Developed MBL(Micro-Computer Based Laboratory) Science Experiment Equipment

2002. 1
ISO9001, ISO14000 Certified

2003. 6
Headquarters Relocated
(Guro-dong, Guro-gu, Seoul)

2004. 3
Specialized in Industrial Sensor Manufacturing
(Organized Sensor Division)

2005. 5
Awarded the International Standard Grand Prize
(Korea Management Association)

2010. 01
Developed Precision Multi-Channel Temperature Controller

2016. 12
Development of Smart Weather Systems for Smart Farm

2016. 10
Smart Farm Complex Environment Control System Development

2017. 10
Development of Automatic Weather Equipment with Broadcasting Function (World's First)

2018. 03
CEO: Jong Bin, Kim Inaugurated

2018. 02
Launched Open Smart Farm Platform

2018. 01
Developed Multi-Measurement Temperature-Humidity Sensor
(Patent Applied)

2019. 12
Launched Mushroom Cultivation Environment Control System

2020. 10
Launched Plant Farm (Vertical Farm) Complex Environment Control System

2020. 8
Launched Livestock Environment Monitoring Equipment

2020. 6
Launched Korean Smart Farm Standard Product (KSX 3266~KSX 3269)

2018 India IMC Smart Farm Exhibition with Samsung Electronics

Certificate

ISO-9001 (No.FM 590789)
ISO-14001 (No.EMS 590790)
100PPM (No. 1-12-4-643)
NEP-MOCIE-2006-060
INNO-BIZ (No. 3012-0190)
RoHS

Headquarters

Guro-gu, Seoul

Factory

Hwasun Gun,
Cheonnam,
South Korea

KOREA DIGITAL

Location #804, 273 Digital-ro, Guro-gu, Seoul

Factory Neung-ju farming complex, Hwasun Gun, Cheonnam., South Korea

Employees 43 (R&D: 15)

Products 200 kinds of Sensors for IoT

- Smart farm complex environmental control system, - Industrial sensor
- AWS (Automated Weather Instrument) - Scientific Instruments

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Experience to precision agriculture.

will serve farmers to become an expert in smart farm field.

KOREA DIGITAL
Since 1997 Think Digital

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