John Deere Field Connect™

OPERATOR'S MANUAL

John Deere Field Connect™

OMPFP15006 ISSUE J4 (ENGLISH)

CALIFORNIA

Proposition 65 Warning

Diesel engine exhaust and some of its constituents are known to the State of California to cause cancer, birth defects, and other reproductive harm.

If this product contains a gasoline engine:

⚠ WARNING

The engine exhaust from this product contains chemicals known to the State of California to cause cancer, birth defects or other reproductive harm.

The State of California requires the above two warnings.

Additional Proposition 65 Warnings can be found in this manual.

John Deere Ag Management Solutions

PRINTED IN U.S.A.

Introduction

Foreword

WELCOME to the John Deere Field Connect™ system offered by John Deere.

READ THIS MANUAL carefully to learn how to operate and service your system correctly. Failure to do so could result in personal injury or equipment damage. This manual and safety signs on your machine may also be available in other languages. (See your John Deere dealer to order.)

THIS MANUAL SHOULD BE CONSIDERED a permanent part of your system and should remain with the system when you sell it.

RECORD PRODUCT IDENTIFICATION NUMBERS (P.I.N.). Accurately record all the numbers to help in tracing the components should they be stolen. Your dealer also needs these numbers when you order parts. File the identification numbers in a secure place off the machine.

John Deere Field Connect is a trademark of Deere & Company

WARRANTY is provided as part of John Deere's support program for customers who operate and maintain their equipment as described in this manual. The warranty is explained on the warranty certificate which you should have received from your dealer.

This warranty provides you the assurance that John Deere will back its products where defects appear within the warranty period. In some circumstances, John Deere also provides field improvements, often without charge to the customer, even if the product is out of warranty. Should the equipment be abused, or modified to change its performance beyond the original factory specifications, the warranty will become void and field improvements may be denied.

RM72004,00001ED -19-17SEP13-1/1

www.StellarSupport.com

NOTE: Product functionality may not be fully represented in this document due to product changes occurring after the time of printing. Read the latest Operator's Manual prior to operation. To obtain a copy, see your dealer or visit www.StellarSupport.com

CZ76372,000071F -19-18JUN14-1/1

www.AirmarTechnology.com

For additional information about the AIRMAR® WeatherStation® 150WX weather sensor, visit www.AirmarTechnology.com.

AIRMAR and WeatherStation are registered trademarks of Airmar Technology Corporation

RM72004,00001DD -19-05SEP13-1/1

www.campbellsci.com

For additional information on these Campbell Scientific® products–107-L Temperature Probe, CS300-L Pyranometer, LWS-L Leaf Wetness Sensor, and TE525-L Tipping Bucket Rain Gauge, visit www.campbellsci.com.

Campbell Scientific is a registered trademark of Campbell Scientific, Inc.

HC94949,0000255 -19-05MAR13-1/1

Read This Manual

Before installing soil moisture probe, gateway, environmental sensors, operating data collection, and display features, read this manual to learn proper installation and operating procedures.

RM72004,00001DC -19-14OCT13-1/1

Notifications to User

These devices must be operated as supplied by John Deere Ag Management Solutions. Any changes or modifications made to these devices without the express written approval of John Deere Ag Management Solutions may void the user’s authority to operate these devices.

BA31779,00006FC -19-25OCT13-1/1

FCC Notifications to User

John Deere Field Connect™

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) This device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

Field Connect™ Gateway and Moisture Probe

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case the user will be required to correct the interference at his own expense.

Field Connect™ Gateway Modem and Airmar Weather Sensor

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.

BA31779,00006FB -19-29OCT13-1/1

Industry Canada Notifications to User

John Deere Field Connect™

This device complies with Industry Canada licence-exempt RSS standard(s). Operation is subject to the following two conditions: (1) this device may not cause interference, and (2) this device must accept any interference, including interference that may cause undesired operation of the device.

Field Connect™ Gateway Modem

Under Industry Canada regulations, this radio transmitter may only operate using an antenna of a type and maximum (or lesser) gain approved for the transmitter by Industry Canada. To reduce potential radio interference to other users, the antenna type and its gain should be so chosen that the equivalent isotropically radiated power (e.i.r.p.) is not more than that necessary for successful communication.

This radio transmitter IC ID:5131A-GE865 and 4650A-1135 has been approved by Industry Canada to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

5131A-GE865
Cellular Antenna: Omnidirectional
- 3.0 dBi Maximum Permissible Gain
- 50 OHMS Required Impedance

4650A-1135 (PFP12389)
Satellite Antenna: Omnidirectional Whip
- 137-150.05 MHz Frequency
- 50 OHMS Required Impedance

RF Exposure Guidance

This equipment complies with FCC and Industry Canada radiation exposure limits set forth for an uncontrolled environment. This equipment should be installed and operated with a minimum distance of 20 cm (8 in.) between the radiator and persons. This transmitter must not be co-located or operating in conjunction with any other antenna or transmitter, except in accordance with FCC and Industry Canada multi-transmitter product procedures.

PC17927 —UN—29OCT13

Continued on next page

John Deere Field Connect™

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

Modem de la passerelle Field Connect™

Conformément à la réglementation d'Industrie Canada, le présent émetteur radio peut fonctionner avec une antenne d'un type et d'un gain maximal (ou inférieur) approuvé pour l'émetteur par Industrie Canada. Dans le but de réduire les risques de brouillage radioélectrique à l'intention des autres utilisateurs, il faut choisir le type d'antenne et son gain de sorte que la puissance isotrope rayonnée équivalente (p.i.r.e.) ne dépasse pas l'intensité nécessaire à l'établissement d'une communication satisfaisante.

Le présent émetteur IC ID: 5131A-GE865 et 4650A-1135 a été approuvé par Industrie Canada pour fonctionner avec les types d'antenne énumérés ci-dessous et ayant un gain admissible maximal et l'impédance requise pour chaque type d'antenne. Les types d'antenne non inclus dans cette liste, ou dont le gain est supérieur au gain maximal indiqué, sont strictement interdits pour l'exploitation de l'émetteur.

5131A-GE865
L'antenne Cellulaire: Fouet Omnidirectionnelle
- 3.0 dBi Gain Admissible Maximal
- 50 OHMS L'impédance Requise

4650A-1135
L'antenne Satellite: Fouet Omnidirectionnelle
- 137-150.05 MHz La Fréquence
- 50 OHMS L'impédance Requise

RF L'exposition Guidance

Cet équipement est conforme aux normes FCC et les limites d'exposition aux rayonnements Industrie Canada énoncées pour un environnement non contrôlé. Cet équipement doit être installé et utilisé à une distance minimale de 20 cm (8 in.) entre le radiateur et les personnes. Cet émetteur ne doit pas être co-localisées ou opérant en conjonction avec une autre antenne ou un autre émetteur, sauf en conformité avec la FCC et Industrie Canada Procédures de produits multi-émetteurs.

PC17928 —UN—28OCT13

BA31779,00006FD -19-28OCT13-2/2

Contents

Continued on next page

Original Instructions. All information, illustrations and specifications in this manual are based on the latest information available at the time of publication. The right is reserved to make changes at any time without notice.

Recognize Safety Information

This is a safety-alert symbol. When you see this symbol on your machine or in this manual, be alert to the potential for personal injury.

Follow recommended precautions and safe operating practices.

T81389 —UN—28JUN13

DX,ALERT -19-29SEP98-1/1

Understand Signal Words

A signal word—DANGER, WARNING, or CAUTION—is used with the safety-alert symbol. DANGER identifies the most serious hazards.

DANGER or WARNING safety signs are located near specific hazards. General precautions are listed on CAUTION safety signs. CAUTION also calls attention to safety messages in this manual.

TS187 —19—30SEP88

DX,SIGNAL -19-03MAR93-1/1

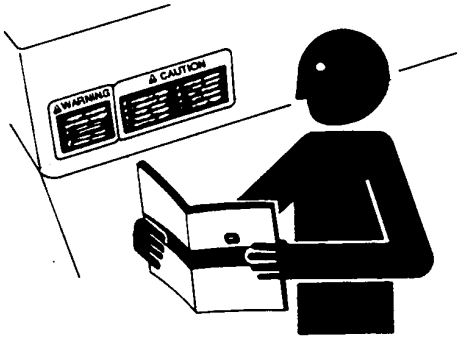
Follow Safety Instructions

Carefully read all safety messages in this manual and on your machine safety signs. Keep safety signs in good condition. Replace missing or damaged safety signs. Be sure new equipment components and repair parts include the current safety signs. Replacement safety signs are available from your John Deere dealer.

There can be additional safety information contained on parts and components sourced from suppliers that is not reproduced in this operator's manual.

Learn how to operate the machine and how to use controls properly. Do not let anyone operate without instruction.

Keep your machine in proper working condition. Unauthorized modifications to the machine may impair the function and/or safety and affect machine life.



TS201 —UN—15APR13

If you do not understand any part of this manual and need assistance, contact your John Deere dealer.

DX,READ -19-16JUN09-1/1

Practice Safe Maintenance

Understand service procedure before doing work. Keep area clean and dry.

Never lubricate, service, or adjust machine while it is moving. Keep hands, feet , and clothing from power-driven parts. Disengage all power and operate controls to relieve pressure. Lower equipment to the ground. Stop the engine. Remove the key. Allow machine to cool.

Securely support any machine elements that must be raised for service work.

Keep all parts in good condition and properly installed. Fix damage immediately. Replace worn or broken parts. Remove any buildup of grease, oil, or debris.

On self-propelled equipment, disconnect battery ground cable (-) before making adjustments on electrical systems or welding on machine.

On towed implements, disconnect wiring harnesses from tractor before servicing electrical system components or welding on machine.

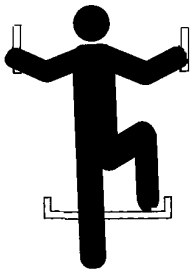
TS218 —UN—23AUG88

DX,SERV -19-17FEB99-1/1

Use Steps and Handholds Correctly

Prevent falls by facing the machine when getting on and off. Maintain 3-point contact with steps, handholds, and handrails.

Use extra care when mud, snow, or moisture present slippery conditions. Keep steps clean and free of grease or oil. Never jump when exiting machine. Never mount or dismount a moving machine.



T133468 —UN—15APR13

DX,WW,MOUNT -19-12OCT11-1/1

Handle Electronic Components and Brackets Safely

TS249 —UN—23AUG88

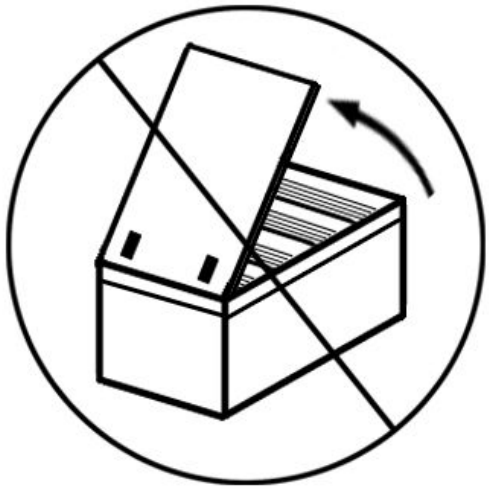
Falling while installing or removing electronic components mounted on equipment can cause serious injury. Use a ladder or platform to easily reach each mounting location. Use sturdy and secure footholds and handholds. Do not install or remove components in wet or icy conditions.

If installing or servicing a RTK base station on a tower or other tall structure, use a certified climber.

If installing or servicing a global positioning receiver mast used on an implement, use proper lifting techniques and wear proper protective equipment. The mast is heavy and can be awkward to handle. Two people are required when mounting locations are not accessible from the ground or from a service platform.

DX,WW,RECEIVER -19-24AUG10-1/1

Handling Batteries Safely



PC15538 —UN—18JUL12

Do not open a sealed battery to check electrolyte level.

Battery gas can explode. Keep sparks and flames away from batteries.

Never check battery charge by placing a metal object across the posts. Use a voltmeter.

Always remove grounded (-) battery clamp first and replace grounded clamp last.

Sulfuric acid in battery electrolyte is poisonous and strong enough to burn skin, eat holes in clothing and cause blindness if splashed into eyes.

Avoid hazards by using battery manufacturer's instructions and this manual for proper use, maintenance and replacement of sealed battery.

Dispose of the battery according to your local regulations.

CAUTION: Battery can explode, causing serious injury to you or others. Only replace battery with approved replacement type (see your John Deere dealer and Battery Specifications in this manual).

TS204 —UN—15APR13

If acid is spilled on skin or in eyes:

1. Flush skin with water.
2. Apply backing soda or lime to help neutralize the acid.
3. Flush eyes with water for 15 – 20 minutes. Get medical attention immediately.

If acid is swallowed:

1. Do not induce vomiting.
2. Drink large amounts of water or milk, but do not exceed 2 L (2 qt.).
3. Get medical attention immediately.

WARNING: Battery posts, terminals, and related accessories contain lead and lead compounds, chemicals known to the State of California to cause cancer and reproductive harm. **Wash hands after handling.**

BA31779,00004E7 -19-14NOV12-1/1

Avoid Buried Utility Lines

Digging through gas, electric, or water lines can cause serious injury or death to you or others. Contact local utility companies to determine and mark off location of gas, electric, or water lines before digging.

PC18243 —UN—17DEC13

HC94949,0000462 -19-17DEC13-1/1

Avoid Exposure to High Radio Frequency Fields

Prevent injury from exposure to high radio frequency fields at the Field Connect Gateway. Do not touch the antennas while the system is transmitting. Always disconnect power to the Gateway before installing or servicing.

While using the Field Connect Gateway, stay at least 20 cm (8 in.) away from the antennas.

PC12632 —UN—04JUN10

BA31779,00004E9 -19-17JUL12-1/1

Waste Electrical and Electronic Equipment

Products marked with the crossed-out wheeled bin symbol indicate electrical and electronic equipment that must not be disposed of as unsorted municipal or household waste.

Send electrical and electronic equipment, accessories and packaging for environmental recycling.

PC17530 —UN—06AUG13

RM72004,00001E6 -19-05AUG13-1/1

Overview

System Overview

Theory of Operation

The John Deere Field Connect™ system allows operators to measure, store, and analyze multiple types of field data. Soil moisture probe and environmental sensors measure key inputs, including soil moisture and environmental conditions. Cellular and satellite communication technologies support data uploads.

Field Connect™ technology enhances the ability to manage water usage and related inputs to maximize yields, getting more output with the same, or less input.

Components

- 0.5 m, 1 m, or 1.5 m soil moisture probe
- Telematics gateway
- Solar panel
- Satellite antenna
- Cellular antenna
- Wiring harnesses
- Battery

Optional Components

- AIRMAR WeatherStation 150WX Weather Sensor
- Campbell Scientific 107-L Temperature Probe
- Campbell Scientific CS300-L Pyranometer
- Campbell Scientific LWS-L Leaf Wetness Sensor
- Campbell Scientific TE525-L Tipping Bucket Rain Gauge

BA31779,00006E0 -19-29OCT13-1/1

Glossary

Field–Used as a grouping of management zones. Provides a name that describes reason for the grouping.

Gateway–Hardware used for consolidating information from soil moisture probe and sensors. Gateway transmits information for display in a web application.

Land–Specific to an organization, includes multiple fields and management zones.

Management Zone–Physical region used to manage data. Data collected from a soil moisture pobe or sensor is stored relative to management zone.

Organizational Account–A virtual location for user and equipment data. An account represents an individual organization; Field Connect™ supports dealer and customer accounts.

Soil Moisture Probe–Hardware installed in field soil.

- Contains multiple soil moisture sensors measuring soil moisture at different soil depths.
- Attaches to a gateway for data transmission.
- Each gateway can have more than one soil moisture probe connected, but a soil moisture probe cannot be connected to more than one gateway at a time.

User Account–Login credentials and identification information for a specific person in a system. User login credentials allow access to an organizational account.

RM72004,00001DA -19-29OCT13-1/1

Required Components

System is composed of several on-board components. Gateway is primary component, which houses data processing and communications equipment. Antennas, soil moisture probe, and environmental sensors connect to gateway through external communication ports.

Field Connect™ Gateway

Gateway contains:

- Main processor
- Cellular and satellite modem
- Cellular and GPS antenna
- Satellite antenna
- Solar panel
- Battery
- Communications ports

Gateway acquires measurement data from soil moisture probe and environmental sensors. Data is collected at 30 min. intervals and stored until data is uploaded.

Gateway transmits data to a central, web-based management tool using cellular or satellite communications. Data calls occur every 2 hr. If data communication fails, data is stored until next successful call.

PC17605 —UN—04SEP13

BA31779,0000361 -19-29OCT13-1/4

GSM Cellular and GPS Antenna

NOTE: Without clear view of sky at installation site, GPS accuracy is degraded. Follow installation guidelines provided in John Deere Field Connect™ Installation Instructions.

A single antenna serves GSM cellular data transmission and GPS signal reception.

Two coaxial cables, one for GSM cellular and one for GPS, connect to antenna within a single mounting enclosure.

PC12641 —UN—11JUN10

Continued on next page

BA31779,0000361 -19-29OCT13-2/4

Satellite Antenna

NOTE: Without clear view of sky at installation site, GPS accuracy is degraded. Follow installation guidelines provided in John Deere Field Connect™ Installation Instructions.

Satellite Coverage

John Deere Field Connect™ system primarily uses cellular signals to send information. In poor or no cellular coverage areas, system uses satellite signals to send information. To check if there are gaps in satellite coverage, go to:

http://orbservices.orbcomm.net/WH/DisplayCoverageMap

PC14727 —UN—20FEB12

Continued on next page

BA31779,0000361 -19-29OCT13-3/4

Field Connect™ Soil Moisture Probe

NOTE: Improperly installed soil moisture probe degrades soil moisture data. Complete tube-to-soil contact is required for accurate measurements. Follow installation guidelines provided in John Deere Field Connect™ Installation Instructions.

Soil moisture probe components are calibrated for data accuracy when manufactured. Do not install sensor array in different housing. Data accuracy will be affected. Contact your John Deere dealer if soil moisture probe housing or sensor array have been damaged.

To open Soil Moisture Probe housing, use a 30 mm socket on square nut on top of housing cap. When closing soil moisture probe housing, torque cap to 16.4 N·m (145 lb.-in.).

Store between -40 °C (-40 °F) and 70 °C (158 °F). Store soil moisture probe in a secure, vertical, or horizontal position. Do not store at an angle. See End of Year Best Practices section for more information.

PC17736 —UN—23SEP13

Soil moisture probe is a key component of system. The soil moisture probe places a sensor array in the crop root zone to facilitate direct, accurate measurement of soil moisture at multiple depths. Sensor array is calibrated to tube housing of soil moisture probe when it is installed. Do not install a sensor array in a different housing.

Sensor array is a capacitance sensor; complete tube-to-soil contact is required for accurate measurements.

Soil Moisture Probe Length	Number of Sensors	Sensor Depths
0.5 m (1.64 ft.)	4	10 cm (4 in.) 20 cm (8 in.) 30 cm (12 in.) 50 cm (20 in.)
1.0 m (3.28 ft.)	5	10 cm (4 in.) 20 cm (8 in.) 30 cm (12 in.) 50 cm (20 in.) 100 cm (40 in.)
1.5 m (4.92 ft.)	6	10 cm (4 in.) 20 cm (8 in.) 30 cm (12 in.) 50 cm (20 in.) 100 cm (40 in.) 150 cm (60 in.)

BA31779,0000361 -19-29OCT13-4/4

Battery

NOTE: Charge battery before first use.

A solar panel is part of Field Connect™ system to keep battery charged.

If battery voltage drops below 11.5 V, gateway stops transmitting data. When charging raises battery voltage above 12.2 V, data transmissions begin again. If system voltage drops below 10.5 V, system goes into hibernation mode. If hibernation occurs, go to gateway and select multifunction button to restore system.

Service

IMPORTANT: The battery is sealed. Do not attempt to refill the battery.

Proper battery maintenance is vital to dependable service. Keep batteries clean. Keep all connections clean and tight. Remove any corrosion, and wash terminals with baking soda and water. Coat with grease before attaching cables.

Do not short across battery terminals.

Keep batteries fully charged, especially during cold weather. Disconnect and remove battery when not used for 30 days or longer.

Store batteries below 27 °C (81 °F) for maximum shelf life. Check voltage after storage, and recharge as needed, as recommended by battery manufacturer.

Do not store batteries in discharged state or stack batteries on top of each other.

Charging Battery

IMPORTANT: Do not use a booster battery or attempt to jump the battery.

Set battery charger at nominal 12 V and not more than 16 V.

NOTE: Due to the self-discharge characteristics of this type of battery, it is imperative that the battery be charged within six months of storage, otherwise permanent loss of capacity can occur as a result of sulfation.

1. Disconnect battery terminals from gateway.
2. With charger in off position, connect positive charger lead to positive terminal. Connect negative charger lead to negative terminal.
3. Switch charger on and charge battery according to charger instructions.
4. Switch charger off. Disconnect negative charger lead, then positive lead.

Cycle Applications: Limit initial current to 3.6 A. Charge until battery voltage (under charge) reaches 14.4–14.7 V at 20 °C (68 °F). Hold at 14.4–14.7 V until current drops to under 120 mA. Battery is fully charged under these conditions. Disconnected charger or switch to “float” voltage.

“Float” or “Stand-By” Service: Hold battery across constant voltage source of 13.5–13.8 V.

Battery Specifications

Type	ES12-12
Nominal Voltage	12 V
Nominal Capacity	12 Ah / 20 HR
Height	94 mm (3.7 in.)
Length	151 mm (5.9 in.)
Width	98 mm (3.9 in.)
Max. Charge Current	3.6 A

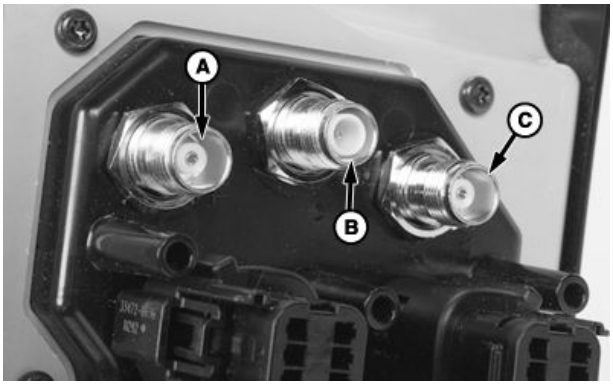
BA31779,0000362 -19-20OCT14-1/1

Antenna Connections

NOTE: Cellular (A) and satellite antenna cables (C) have same TNC connector receptacles and can be connected to incorrect connector on gateway. When connecting antenna cables to gateway, verify correct antenna cables connect to correct gateway bulk head connectors.

Cables attached to the Field Connect™ gateway for cellular (A), GPS (B), and satellite (C) services use coaxial TNC connectors. To prevent incorrect connections, GPS and cellular cables have different connectors. GPS connector is a TNC plug and cellular connector is a TNC receptacle. The matching connectors for cellular and GPS are integrated into antenna cable.

Satellite connection utilizes a single, coaxial TNC receptacle connector for antenna. The matching connector is integrated into antenna cable.



PC15225 —UN—24SEP12

A—Cellular Antenna Coax Connection (CELL)
B—GPS Antenna Connection (GPS)
C—Satellite Radio Whip Antenna Coax Connection (SAT)

RM72004,00001EC -19-29OCT13-1/1

Field Connect™ Gateway Ports

NOTE: Record port connection for soil moisture probe and each environmental sensor. Some port connections must be entered in website when completing installation of Field Connect™ hardware.

There are 16 ports located on side of gateway. Use ports to connect soil moisture probe and environmental sensors to gateway.

A—DIG 1
B—DIG 2
C—DIG 3
D—DIG 4
E—ALG 1
F—ALG 2
G—ALG 3
H—ALG 4
I— FRQ 1
J— FRQ 2
K—SER 1
L—SER 2
M—SMP 1
N—SMP 2
O—AUX 1
P—AUX 2

PC17564 —UN—08AUG13

BA31779,00006A8 -19-29OCT13-1/1

Soil Moisture Probe Connection

NOTE: Do not activate probe before connecting it to gateway.

Before installing soil moisture probe in ground, connect harness to soil moisture probe. Soil moisture probe uses a keyed connector. Use proper alignment when connecting harness to soil moisture probe.

PC15537 —UN—16JUL12

BA31779,0000363 -19-21OCT13-1/1

Website

Compatibility

Web Browsers

Use a compatible browser to view John Deere Field Connect™ website. Unlisted browsers may not render pages or data from site. A list of compatible browsers is located under the Help section on Field Connect™ website.

RM72004,00001D8 -19-29OCT13-1/1

Images

Images from John Deere Field Connect™ website used in this manual change without notice on John Deere Field Connect™ website.

Always refer to website Help and “What’s New” for current instructions.

RM72004,00001DB -19-29OCT13-1/1

Login

Go to http://myjohndeere.deere.com and select Field Connect™ to access Field Connect™ website. Enter valid user name and password to access Field Connect™ website. Operators with access to one organization are taken to organization account. If an operator has access to multiple organizations, select one organization from dropdown list. Dropdown list contains all available organizations.

A Demo Login button is available to view Field Connect™ website in demo mode. Not all features are available in demo mode.

BA31779,00006FA -19-29OCT13-1/1

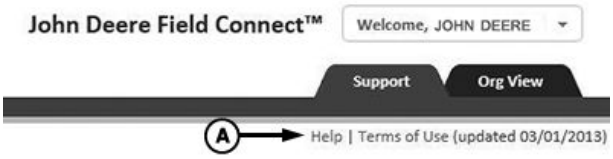
Website Navigation

Field Connect™ User Guide

For navigation information within Field Connect™ website, select Help (A) to display Field Connect™ User Guide.

A—Help

PC17397 —UN—17OCT14



CZ76372,000072A -19-17OCT14-1/1

Field Connect™ Gateway

Electrical

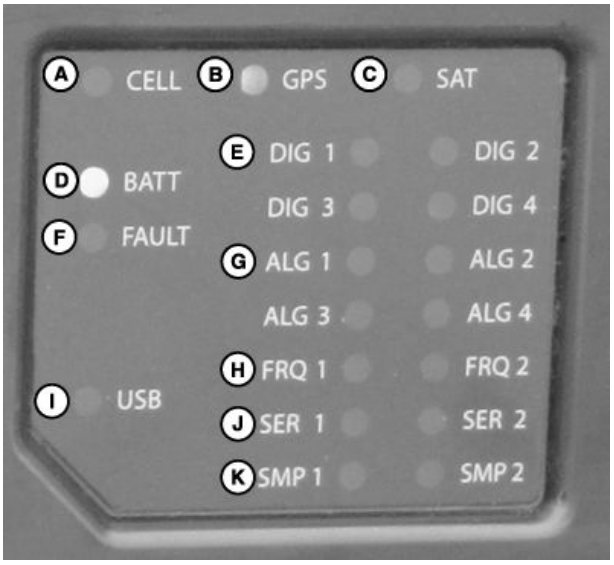
- Input Voltage—Range, 9–16 V
- Fuse—Protect device with 5 A fuse.

Battery

- Nominal Voltage—12 V
- Rated Capacity—12.0 Ah/0.60 A (20 hr., 1.8 V/cell, at 25 °C (77 °F))

LED Display

A—CELL
B—GPS
C—SAT
D—BATT
E—DIG 1–4
F—FAULT
G—ALG 1–4
H—FRQ 1, 2
I— USB (Multi-colored LED)
J— SER 1, 2
K—SMP 1, 2



PC17702 —UN—20SEP13

LED Display

LED	STATE	DESCRIPTION
CELL (A)	Solid	Connection established
	Blinking	Attempting connection or unable to connect
	Off	Device not enabled
GPS (B)	Solid	Connection established
	Blinking	Attempting connection or unable to connect
	Off	Device not enabled
SAT (C)	Solid	Connection established
	Blinking	Attempting connection or unable to connect
	Off	Device not enabled
BATT (D)	Solid	Battery connected
	Blinking	Critical power state
	Off	Unit not powered
DIG 1 (E)	Solid	Device present
	Blinking	Channel enabled; no device detected
	Off	Channel disabled
DIG 2 (E)	Solid	Device present
	Blinking	Channel enabled; no device detected
	Off	Channel disabled
DIG 3 (E)	Solid	Device present
	Blinking	Channel enabled; no device detected
	Off	Channel disabled
DIG 4 (E)	Solid	Device present
	Blinking	Channel enabled; no device detected
	Off	Channel disabled
FAULT (F)	Solid	N / A
	Blinking	Urgent Fault
	Off	No Fault Active
ALG 1 (G)	Solid	Device present
	Blinking	Channel enabled; no device detected
	Off	Channel disabled
ALG 2 (G)	Solid	Device present
	Blinking	Channel enabled; no device detected
	Off	Channel disabled

Continued on next page

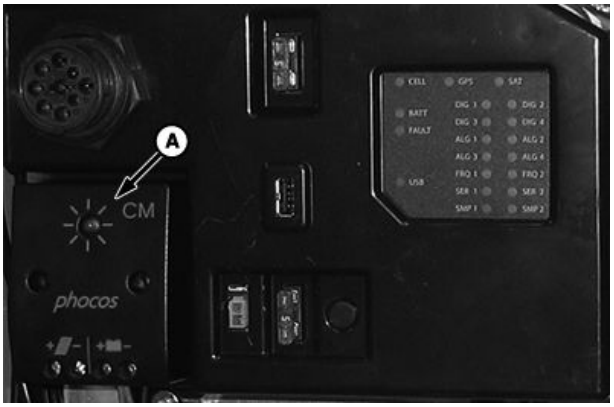
ALG 3 (G)	Solid	Device present
	Blinking	Channel enabled, no device detected
	Off	Channel disabled
ALG 4 (G)	Solid	Device present
	Blinking	Channel enabled; no device detected
	Off	Channel disabled
FRQ 1 (H)	Solid	Device present
	Blinking	Channel enabled; no device detected
	Off	Channel disabled
FRQ 2 (H)	Solid	Device present
	Blinking	Channel enabled; no device detected
	Off	Channel disabled
USB (Green) (I)	Solid	Successful data transfer or firmware update
	Blinking	Nothing performed
	Off	N / A
USB (Red) (I)	Solid	Failure
	Blinking	LED blinks for 5 seconds and goes out: • If USB drive is unplugged during firmware update. LED blinks until USB drive is unplugged: • If firmware update or data transfer fails. • If no firmware update file exists on USB drive. • If outdated firmware update file is detected. • If USB drive failure occurs.
	Off	N / A
USB (Blue) (I)	Solid	N / A
	Blinking	Update in progress — Reading from USB drive
	Off	N / A
USB (Yellow) (I)	Solid	N / A
	Blinking	Update in progress — Writing firmware to gateway
	Off	N / A
USB (Teal) (I)	Solid	N / A
	Blinking	Update in progress — Writing firmware to modem
	Off	N / A
USB (Magenta) (I)	Solid	Data transfer complete
	Blinking	Data transfer in progress
	Off	N / A
USB (No LED lit) (I)	Off	No USB drive or ignoring USB drive
SER 1 (13-RS232 1) (J)	Solid	Device detected by gateway; communication verified
	Blinking	Channel enabled; no communication or device connected
	Off	Device not enabled
SER 2 (14-RS232 2) (J)	Solid	Device detected by gateway; communication verified
	Blinking	Channel enabled; no communication or device connected
	Off	Device not enabled
SMP 1 (K)	Solid	Probe detected by gateway or communication verified
	Blinking	Probe channel enabled; no communication or probe detected
	Off	Probe not connected
SMP 2 (K)	Solid	Probe detected by gateway and communication verified
	Blinking	Probe channel enabled; no communication or probe detected
	Off	Probe not connected

Continued on next page

Charge Controller

LED	STATE	DESCRIPTION
Charge Controller (A)	Solid	Charging
	Blinking	Full Charge
	Off	No Charging

A—Charge Controller



PC17637 —UN—10SEP13

BA31779,000036B -19-20OCT14-3/3

EC Declaration of Conformity

DXCE01 —UN—28APR09

Deere & Company
Moline, Illinois USA

CE

The undersigned hereby declares that:

Product Name: Gateway
Model(s): GW01

fulfills all relevant provisions and essential requirements of the following directives:

DIRECTIVE	NUMBER	CERTIFICATION METHOD
Radio and Telecommunication Terminal Equipment (R&TTE)	1999/5/EC	Annex III of the Directive
Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS)	2011/65/EU	Article 7 of the Directive

The product is in conformity with the following standards and/or other nonnative documents:

EN 60950-1, EN 60950-22
EN 55022, EN 55024
EN 301 489-1, EN 301 489-20
EN 301 721, EN 301 511
1999/519/EC

Name and address of the person in the European Community authorized to compile the technical construction file:

Brigitte Birk
John Deere European
John Deere Strasse 70
Mannheim, Germany D-68163

Place of Declaration: Urbandale, Iowa
Date of Declaration: 01 August 2013

Name: Aaron Senneff
Title: Engineering Manager
Manufacturing Unit: John Deere Intelligent Solutions Group

RM72004,00001E0 -19-06AUG13-1/1

EC Declaration of Conformity

DXCE01 —UN—28APR09

Deere & Company
Moline, Illinois USA

CE

The undersigned hereby declares that:

Product Name: Leaf Wetness Sensor
Model(s): LWS-L

fulfills all relevant provisions and essential requirements of the following directives:

DIRECTIVE	NUMBER	CERTIFICATION METHOD
Electromagnetic Compatibility (EMC)	2004/108/EC	Annex II of the Directive
Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS)	2011/65/EU	Article 7 of the Directive

The product is in conformity with the following standards and/or other nonnative documents:

EN 61326-1

Name and address of the person in the European Community authorized to compile the technical construction file:

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John Deere European
John Deere Strasse 70
Mannheim, Germany D-68163

Place of Declaration: Urbandale, Iowa
Date of Declaration: 01 August 2013

Name: Aaron Senneff
Title: Engineering Manager
Manufacturing Unit: John Deere Intelligent Solutions Group

RM72004,00001E5 -19-06AUG13-1/1

EC Declaration of Conformity

DXCE01 —UN—28APR09

Deere & Company
Moline, Illinois USA

CE

The undersigned hereby declares that:

Product Name: Moisture Probe
Model(s): PB01, PB02, PB03

fulfills all relevant provisions and essential requirements of the following directives:

DIRECTIVE	NUMBER	CERTIFICATION METHOD
Electromagnetic Compatibility (EMC)	2004/108/EC	Annex II of the Directive
Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS)	2011/65/EU	Article 7 of the Directive

The product is in conformity with the following standards and/or other nonnative documents:

EN 55022, EN 55024

Name and address of the person in the European Community authorized to compile the technical construction file:

Brigitte Birk
John Deere European
John Deere Strasse 70
Mannheim, Germany D-68163

Place of Declaration: Urbandale, Iowa
Date of Declaration: 01 August 2013

Name: Aaron Senneff
Title: Engineering Manager
Manufacturing Unit: John Deere Intelligent Solutions Group

RM72004,00001E4 -19-06AUG13-1/1

EC Declaration of Conformity

DXCE01 —UN—28APR09

Deere & Company
Moline, Illinois USA

CE

The undersigned hereby declares that:

Product Name: Pyranometer
Model(s): CS300-L

fulfills all relevant provisions and essential requirements of the following directives:

DIRECTIVE	NUMBER	CERTIFICATION METHOD
Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS)	2011/65/EU	Article 7 of the Directive

Name and address of the person in the European Community authorized to compile the technical construction file:

Brigitte Birk
John Deere European
John Deere Strasse 70
Mannheim, Germany D-68163

Place of Declaration: Urbandale, Iowa
Date of Declaration: 01 August 2013

Name: Aaron Senneff
Title: Engineering Manager
Manufacturing Unit: John Deere Intelligent Solutions Group

RM72004,00001E3 -19-06AUG13-1/1

EC Declaration of Conformity

DXCE01 —UN—28APR09

Deere & Company
Moline, Illinois USA

CE

The undersigned hereby declares that:

Product Name: Tipping Bucket Rain Gauge
Model(s): TE525-L

fulfills all relevant provisions and essential requirements of the following directives:

DIRECTIVE	NUMBER	CERTIFICATION METHOD
Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS)	2011/65/EU	Article 7 of the Directive

Name and address of the person in the European Community authorized to compile the technical construction file:

Brigitte Birk
John Deere European
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Mannheim, Germany D-68163

Place of Declaration: Urbandale, Iowa
Date of Declaration: 01 August 2013

Name: Aaron Senneff
Title: Engineering Manager
Manufacturing Unit: John Deere Intelligent Solutions Group

RM72004,00001E2 -19-06AUG13-1/1

EC Declaration of Conformity

DXCE01 —UN—28APR09

Deere & Company
Moline, Illinois USA

CE

The undersigned hereby declares that:

Product Name: Temperature Probe
Model(s): 107-L

fulfills all relevant provisions and essential requirements of the following directives:

DIRECTIVE	NUMBER	CERTIFICATION METHOD
Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS)	2011/65/EU	Article 7 of the Directive

Name and address of the person in the European Community authorized to compile the technical construction file:

Brigitte Birk
John Deere European
John Deere Strasse 70
Mannheim, Germany D-68163

Place of Declaration: Urbandale, Iowa
Date of Declaration: 01 August 2013

Name: Aaron Senneff
Title: Engineering Manager
Manufacturing Unit: John Deere Intelligent Solutions Group

RM72004,00001E1 -19-06AUG13-1/1

EC Declaration of Conformity

DXCE01 —UN—28APR09

Deere & Company
Moline, Illinois USA

CE

The undersigned hereby declares that:

Product Name: Extension Harness
Model(s): PFA10396, PFA10395

fulfills all relevant provisions and essential requirements of the following directives:

DIRECTIVE	NUMBER	CERTIFICATION METHOD
Restriction of Hazardous Substances in Electrical and Electronic Equipment (RoHS)	2011/65/EU	Article 7 of the Directive

Name and address of the person in the European Community authorized to compile the technical construction file:

Brigitte Birk
John Deere European
John Deere Strasse 70
Mannheim, Germany D-68163

Place of Declaration: Urbandale, Iowa
Date of Declaration: 06 August 2013

Name: Aaron Senneff
Title: Engineering Manager
Manufacturing Unit: John Deere Intelligent Solutions Group

BA31779,000036D -19-06AUG13-1/1

Manual Firmware Update

Firmware Update Files

To locate latest version of John Deere Field Connect™ gateway firmware and release notes, go to Downloads and Updates section at StellarSupport.com.

Installation Instructions

1. Ensure USB drive is formatted to FAT32.

IMPORTANT: File must be named GWFRMWR.BIN to be recognized by gateway as a firmware update file. Remove any other firmware update files in any folders on USB drive.

2. Copy update file to root of USB drive.
3. Verify battery voltage is above 12.2 V.
4. Insert USB drive into USB port on gateway.
5. USB LED flashes blue and transitions to yellow and teal. Wait approximately 3 - 10 minutes.
6. Unit automatically resets and all LEDs turn on momentarily.
7. If update is successful, USB LED turns solid green. Remove USB drive and USB LED turns off.
8. Verify GPS time source is valid. It is valid once GPS LED is solid.
9. Press multifunction button on gateway.
   - If GPS time source is valid, all LEDs flash once.
   - If GPS time source is invalid, all LEDs flash three times.

   GPS time source has to be valid for gateway to recognize probe.

CZ76372,000072B -19-20OCT14-1/1

Viewing Environmental Sensor Data

View Environmental Sensor Data

NOTE: On Field Connect™ website, assign environmental sensors to a port on gateway. During Field Connect™ installation, assign connected sensor to gateway port. Before installing Field Connect™ gateway, soil moisture probe, and sensors, log in to website and open Help topics. Review procedures to assign a sensor to a gateway port. Complete port assignment, and then continue with field installation.

Sensor output is collected at gateway and transmitted to Field Connect™ website. To view sensor output, go to Graph page of http://fieldconnect.deere.com. Log in with user ID and password. Navigate to Graph page of appropriate management zone. To view specific sensor data, select View and Filter Options and Data Layers. Choose data from list, and select UPDATE DATA.

For more information and help on viewing environment sensor data, use online Help available in the upper dropdown menu of website. In Help table of contents, select Environmental Sensors. Choose from the environmental sensor topics.

Air Temperature (AIRMAR WeatherStation 150WX Weather Sensor)

- Unit of Measure: Degrees Celsius (Degrees Fahrenheit)
- Range: -40—55 °C (-40—131 °F)
- Precision: XX.X

Humidity (AIRMAR WeatherStation 150WX Weather Sensor)

- Unit of Measure: Percent, Relative Humidity
- Range: 10–95% relative humidity (RH)
- Precision: XXX.X

Wind Speed (AIRMAR WeatherStation 150WX Weather Sensor)

- Unit of Measure: Kilometers Per Hour (Miles Per Hour)
- Range: 0–144 km/h (0–92 mph)
- Precision: XX.X

Wind Direction (AIRMAR WeatherStation 150WX Weather Sensor)

- Range: N, NW, W, SW, S, SE, E, NE

Air or Soil Temperature (Campbell Scientific Model 107-L Temperature Probe)

- Unit of Measure: Degrees Celsius (Degrees Fahrenheit)
- Range: -35—50 °C (-31—122 °F)
- Precision: XX

Solar Radiation (Campbell Scientific CS300-L Pyranometer)

- Unit of Measure: Watts Per Square Meter (Watts Per Square Foot)
- Range: 0–1750 W/m^2 (0–162.6 W/ft^2)
- Precision: XXX.XX

Leaf Wetness (Campbell Scientific LWS-L Leaf Wetness Sensor)

- Unit of Measure: Unitless Reference Value
- Range: 2,000–12,000
- Precision: XXX

Precipitation (Campbell Scientific TE525-L Rain Gauge)

- Unit of Measure: Millimeters (Inches)
- Range: 0–100 mm (0–4 in.)
- Precision: XX.XX

RM72004,00001E9 -19-29OCT13-1/1

AIRMAR WeatherStation 150WX Weather Sensor

Theory of Operation

The AIRMAR WeatherStation 150WX weather sensor provides air temperature, relative humidity, wind speed, and wind direction. Air temperature, relative humidity, and wind speed are used to calculate evapotranspiration (ET), a critical measurement in irrigation planning and scheduling.

A—Weather Sensor
B—Sensor Extension Piece
C—Wiring Harness with 8-Pin Connector

PC16619 —UN—25FEB13

RM72004,0000171 -19-07MAY13-1/1

Specifications

NOTE: Specifications are for a new sensor. System performance may vary based on application.

Measurements

- Measurement Time: 10 ms
- Power: 2.5 VDC at 2 mA, to 5 VDC at 7 mA
- Output: 320–1000 mV at 3 V excitation
- Operating Temperature Range: -40–55 °C (-40–131 °F)
- Air Temperature Range: -40–55 °C (-40–131 °F)
- Air Temperature Resolution: 0.1 °C (0.1 °F)
- Air Temperature Accuracy: ±1 °C (±1.8 °F), wind greater than 7.4 km/h (4.6 mph)
- Relative Humidity Range: 10–95% RH
- Relative Humidity Accuracy: ±4% RH
- Wind Speed Range: 0–144 km/h (0–90 mph)
- Wind Speed Accuracy, Low Wind Speed: 0–18.5 km/h (0–11.5 mph), RMS error of 1.8 km/h (1.1 mph) + 10% of reading
- Wind Speed Accuracy, High Wind Speed: 18.5–144.5 km/h (11.5–90 mph), RMS error of 3.7 km/h (2.3 mph) or 5% RMS, whichever is greater
- Wind Direction Range: 0° to 360°
- Wind Direction Resolution: 0.1°
- Wind Direction Accuracy, Low Wind Speed: 7.4–18.5 km/h (4.6–11.5 mph), 5° RMS, typical
- Wind Direction Accuracy, High Wind Speed: Greater than 18.5 km/h (greater than 11.5 mph), 2° RMS, typical

NOTE: When wind speed is less than 7.4 km/h (4.6 mph) and (or) air temperature is below 0 °C (32 °F), wind, temperature, and relative humidity readings are less accurate.

RMS error (root-mean-square error) is a measure of the differences between values predicted by a model and values actually observed.

Dimensions, Sensor Body

- Diameter, Top: 72 mm (2.83 in.)
- Diameter, Nut Assembly, Connection With Sensor Body: 45 mm (1.77 in.)
- Length, Total: 131 mm (5.16 in.)
- Length, Sensor Body: 90 mm (3.54 in.)

CZ76372,000072E -19-20OCT14-1/1

Mounting Location

Sensor must be mounted away from obstructions that interfere with readings of temperature, humidity, wind speed, and the electronic compass. Mounting location must be:

- 1.8 m (6 ft.) from objects on the same horizontal plane
- 0.5 m (20 in.) above surrounding surface
- 1 m (3.3 ft.) from sources of magnetic field (radio transmitter, engine, alternator)
- Unobstructed sky view for GPS signal

NOTE: Align notch on bottom of lower housing so it faces north.

CZ76372,000072C -19-17OCT14-1/1

Maintenance

NOTE: Do not damage metal plate or blue film when cleaning sensor.

Contact your John Deere dealer for replacement parts.

Sensor requires minimal maintenance. Keep sensor free of insects, dirt, and any other debris.

Replace humidity sensor every two years for optimal performance.

RM72004,0000156 -19-07MAY13-1/1

External Cleaning Of Probe, Sensors, and Gateway

IMPORTANT: Field Connect components and connections may not be weatherproof. Properly close and latch enclosure cover after any procedure completed inside enclosure.

Do not use pressure washer or common solvents such as automotive brake cleaning fluid to clean soil moisture probe, sensors, or gateway. To remove soil from plastic components, use a solution of soap and water.

RM72004,000019D -19-07MAY13-1/1

Troubleshooting

Ice

If weather conditions indicate ice formation, remove the weather sensor.

Wind Direction, Wind Speed Values

If wind direction and wind speed values are not accurate, check for obstructions on sensor wind channel.

Temperature Limit

Do not expose sensor to temperatures greater than 65 °C (149 °F); sensor calibration may no longer be accurate.

Data Not Displayed

NOTE: If data from sensor is not being displayed, follow these steps.

If troubleshooting indicates sensor damage, contact your John Deere dealer.

1. Confirm:
   - power to sensor
   - correct connections
   - tight connections
   - no kinks in harness
2. Check wind channel for obstructions.
3. Inspect blue, waterproof film for tears, punctures, or other damage.
4. Inspect silver plate for dents, scratches, or other damage.

CZ76372,000072F -19-28OCT14-1/1

Campbell Scientific Model 107–L Temperature Probe

Theory of Operation

Temperature probe measures air, soil, or water temperature. For air temperature measurements, mount a radiation shield to probe to limit solar radiation loading.

The probe can be buried in ground or submerged in water up to 15 m (50 ft.). Maximum pressure is 145 kPa (21 psi).

Multiple temperature probes can be used at varying heights to monitor inversion layers for freeze detection and warnings.

PC15764 —UN—27AUG12

Temperature Probe

PC15767 —UN—28AUG12

Radiation Shield

RM72004,0000157 -19-07MAY13-1/1

Specifications

Sensor: BetaTherm 100K6A1B Thermistor

Measurement Range: -35—50 °C (-31—122 °F)

Tolerance: ±0.2 °C over 0—50 °C range (±0.36 °F over 32—122 °F range)

Output: Voltage drop across fixed resistors (1000 Ohm to 249 kOhm fixed resistors) @ 2500 mV excitation voltage

Operating Environment: -35—50 °C (-31—122 °F)

Dimensions: 10.4 cm (4.1 in.) long, 0.762 cm (0.3 in.) diameter

Cable Length: 6 m (20 ft.)

Connector Type: Molex MX150

CZ76372,000072D -19-17OCT14-1/1

Mount Location

For air temperature measurements, locate probe over an open, level area at least 9 m (30 ft.) in diameter. Ground that is bare or covered by short grass provides best results.

Locate sensor at a distance of at least four times the height of any nearby obstruction and at least 30 m (98 ft.) from large, paved areas.

When probe is used for air temperature measurements, provide adequate ventilation and protection from thermal radiation. Install probe with radiation shield.

For soil temperature measurements, probe can be buried in ground. For water temperature measurements, submerge probe in water.

RM72004,00001E8 -19-29OCT13-1/1

Maintenance

NOTE: Contact your John Deere dealer for replacement parts.

Temperature probe requires minimal maintenance. For air temperature measurements, clean radiation shield every month. Check cables for signs of damage and moisture intrusion.

RM72004,00001E7 -19-08OCT13-1/1

External Cleaning Of Probe, Sensors, and Gateway

IMPORTANT: Field Connect components and connections may not be weatherproof. Properly close and latch enclosure cover after any procedure completed inside enclosure.

Do not use pressure washer or common solvents such as automotive brake cleaning fluid to clean soil moisture probe, sensors, or gateway. To remove soil from plastic components, use a solution of soap and water.

RM72004,000019E -19-07MAY13-1/1

Troubleshooting

NOTE: If troubleshooting indicates sensor damage, contact your John Deere dealer.

Verify:

- power to sensor
- correct connections
- tight connections
- no kinks in harness

Symptom: Incorrect Temperature

- Check cable for signs of damage and possible moisture intrusion.

Symptom: Unstable Temperature

- Make sure the clear, shielded wire is connected to ground and gateway is properly grounded.

RM72004,000016C -19-07MAY13-1/1

Campbell Scientific CS300-L Pyranometer

Theory of Operation

The pyranometer measures solar radiation. Output from the pyranometer is an analog electric current. A potentiometer located in the sensor converts current to voltage.

PC15766 —UN—24AUG12

RM72004,000015A -19-07MAY13-1/1

Specifications

Output:

- Responsivity: 0.20 mV per W/m^2 (millivolts per watts per square meter of surface area)
- In full sunlight: 220 mV (1100 W/m^2)
- Linear Range: 0—350 mV (0—1750 W/m^2)

Cosine Response:

- 45º zenith angle, ± 1%
- 75º zenith angle, ± 5%

Input Power: Not required. Internal thermopile generates a voltage output signal that is proportional to the solar radiation.

Operating Environment: -25—55 °C (-13—131 °F), 0 to 100% relative humidity

Dimensions: 2.4 cm diameter x 2.75 cm height (0.9 in. x 1.1 in.)

Connector Type: Molex MX150

RM72004,000017C -19-07MAY13-1/1

Mounting Location

The pyranometer must be mounted in an unshaded area. Sensor must be positioned with cable pointing toward nearest magnetic pole.

RM72004,000015B -19-07MAY13-1/1

Maintenance

NOTE: Handle sensor carefully when cleaning. Do not scratch sensor surface area.

Contact your John Deere dealer for replacement parts.

Check sensor monthly. Check bubble level and adjust supporting screws.

Remove dust or debris from sensor head with compressed air or soft bristle brush.

RM72004,000015C -19-07MAY13-1/1

External Cleaning Of Probe, Sensors, and Gateway

IMPORTANT: Field Connect components and connections may not be weatherproof. Properly close and latch enclosure cover after any procedure completed inside enclosure.

Do not use pressure washer or common solvents such as automotive brake cleaning fluid to clean soil moisture probe, sensors, or gateway. To remove soil from plastic components, use a solution of soap and water.

RM72004,000019F -19-07MAY13-1/1

Troubleshooting

NOTE: If troubleshooting indicates sensor damage, contact your John Deere dealer.

Verify:

- power to sensor
- correct connections
- tight connections
- no kinks in harness

Symptom: Radiation Value is -9999 or 0

- Disconnect sensor leads and use a digital voltmeter (DVM) to check voltage between the red, positive (+) and black, negative (-) wires. Voltage must be 0—200 mV for 0 to 1000 W/m^2 radiation. No voltage indicates a problem with either the photodiode or shunt resistor, which are potted in the sensor head and cannot be serviced.

Symptom: Incorrect Solar Radiation Value

- Ensure that sensor head surface is clean and sensor is level.

RM72004,000015D -19-07MAY13-1/1

Campbell Scientific LWS-L Leaf Wetness Sensor

Theory of Operation

The Leaf Wetness Sensor imitates leaf characteristics and is used in the plant canopy or on a weather station mast. The sensor detects moisture or frost on the upper surface by measuring the dielectric constant of the surface.

PC15763 —UN—24AUG12

RM72004,000015E -19-07MAY13-1/1

Specifications

Measurement Time: 10 ms

Power: 2.5 VDC @ 2 mA, to 5 VDC @ 7 mA

Output: 320—1000 mV @ 3 V excitation

Operating Environment: -20—60 °C (-4—140 °F)

Dimensions: 11.2 cm x 5.8 cm x 0.075 cm (4.4 in. x 2.3 in. x 0.03 in.)

Cable Length: 6 m (20 ft.)

Connector Type: Molex MX150

RM72004,0000168 -19-07MAY13-1/1

Mounting Location

The Leaf Wetness Sensor is mounted either in crop canopy or with other sensors being used.

RM72004,000015F -19-07MAY13-1/1

Maintenance

NOTE: Contact your John Deere dealer for replacement parts.

Accumulation of dust and debris on Leaf Wetness Sensor causes dry output to increase. Clean sensing surface with a moist cloth periodically or when elevated dry output is detected. Sensors exposed to high levels of UV radiation develop a chalky residue on sensor surface. Chalky residue causes surface to lose its sheen over time. A small amount of chalky residue can be rubbed off sensor during aggressive cleaning.

RM72004,0000160 -19-07MAY13-1/1

External Cleaning Of Probe, Sensors, and Gateway

IMPORTANT: Field Connect components and connections may not be weatherproof. Properly close and latch enclosure cover after any procedure completed inside enclosure.

Do not use pressure washer or common solvents such as automotive brake cleaning fluid to clean soil moisture probe, sensors, or gateway. To remove soil from plastic components, use a solution of soap and water.

RM72004,00001A0 -19-07MAY13-1/1

Troubleshooting

NOTE: If troubleshooting indicates sensor damage, contact your John Deere dealer.

Verify:

- power to sensor
- correct connections
- tight connections
- no kinks in harness

RM72004,0000161 -19-07MAY13-1/1

Campbell Scientific TE525-L Tipping Bucket Rain Gauge

Theory of Operation

The rain gauge measures precipitation (rainfall and overhead irrigation) in 0.25 mm (0.01 in.) amounts and sends a signal through the gateway to the John Deere Field Connect website. The website collects the sensor signals and presents precipitation amounts up to 100 mm per hour (4 in. per hour).

Precipitation collects in a bucket that tips when filled to the calibrated level. A magnet triggers a switch as the bucket tips. Switch signals are counted to measure precipitation.

PC15761 —UN—24AUG12

RM72004,0000162 -19-07MAY13-1/1

Specifications

Switch: Momentary potted reed switch

Average Switch Closure Time: 135 ms

Bounce Settling Time: 0.75 ms

Switch Rating: 30 VDC @ 2 A, 115 VAC @ 1 A

Output Resolution: 0.2 mm (0.01 in.)

Accuracy: 1.0% up to 50 mm/hr. (2 in./hr.)

Operating Environment: 0–50 °C (32–125 °F), 0–100% relative humidity

Dimensions:

- Height, Total: 255 mm (10 in.)
- Collector Diameter: 154 mm (6.1 in.) with knife-edge
- Funnel Depth: 163 mm (6.4 in.)
- Splash Protection: Greater than 50 mm (2 in.)
- Cable Length: 6 m (20 ft.)
- Connector Type: Molex MX150

RM72004,0000166 -19-07MAY13-1/1

Mount Location

NOTE: Before installing rain bucket, remove packaging that secures tipping mechanism inside rain bucket.

Mount rain bucket in a level spot that is representative of surrounding area. Install rain bucket so funnel lip is horizontal and at least 30 cm (12 in.) above ground.

Install rain bucket above average snow depth. Natural vegetation or gravel surface around rain bucket provides best results. Avoid placing rain bucket in a paved area.

Place rain bucket away from objects that obstruct wind. Position rain bucket a distance of 2–4 times height of any obstruction.

RM72004,0000163 -19-29OCT13-1/1

Maintenance

NOTE: Contact your John Deere dealer for replacement parts.

Check funnel and bucket mechanism. Remove dust, insects, plant litter, and other material.

RM72004,0000164 -19-07MAY13-1/1

External Cleaning Of Probe, Sensors, and Gateway

IMPORTANT: Field Connect components and connections may not be weatherproof. Properly close and latch enclosure cover after any procedure completed inside enclosure.

Do not use pressure washer or common solvents such as automotive brake cleaning fluid to clean soil moisture probe, sensors, or gateway. To remove soil from plastic components, use a solution of soap and water.

RM72004,00001A1 -19-07MAY13-1/1

Troubleshooting

NOTE: If troubleshooting indicates sensor damage, contact your John Deere dealer.

Verify:

- power to sensor
- correct connections
- tight connections
- no kinks in harness

Symptom: No Precipitation

NOTE: Resistance measured at terminal block (on inside of bucket between black and white leads) must be less than 1 Ohm when bucket is balanced.

Resistance varies when bucket is tipped.

1. Disconnect sensor; use Ohm meter to check switch for continuity.
2. Check connection at gateway.

RM72004,0000165 -19-07MAY13-1/1

End of Year Best Practices

Website

NOTE: Deactivate management zone associated with gateway and soil moisture probe before starting maintenance or storage procedures. Do not disconnect battery from gateway until management zone has been deactivated.

Remove environmental sensors from website before disconnecting sensors from gateway.

Confirm deactivated management zone and removal of environmental sensors from website before traveling to gateway and starting maintenance or storage procedures.

If gateway loses power or data is not received from soil moisture probe or environmental sensors, data communication loss is recorded at John Deere Field Connect™ website. Before starting maintenance or storage procedures, log in to website and deactivate management zone associated with gateway and delete environmental sensors.

Deactivating Management Zone

NOTE: Access to data from deactivated management zone continues after soil moisture probe is removed. In Field Monitor, management zone shows as Inactive with no soil moisture probes attached. Data from management zone remains available.

1. Log in to website and navigate to Field Monitor.
2. Go to Assets tab and select Land.
3. Select management zone to deactivate.
4. Select Edit button. Scroll down and find checked soil moisture probe serial number(s) associated with management zone.
5. Deselect soil moisture probe serial number(s) that are checked to remove the association.
6. Select Save.
7. Select Yes to disassociate soil moisture probe(s).
8. Proceed with maintenance and storage procedures.

When returning to Field Monitor, management zone displays as inactive with no soil moisture probes attached. Data from deactivated management zone is still available even though a soil moisture probe is no longer associated.

Removing Installed Environmental Sensors

NOTE: Only sensors connected to ALG and DLG ports are removed on website.

1. Log in to John Deere Field Connect™ website and navigate to Field Monitor. Go to Assets tab and select Hardware.
2. Select gateway serial number.
3. Select sensors from left menu.
4. Select Trash Can icon to remove digital and analog sensors.

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Hardware

NOTE: See Field Connect™ Installation Instructions for more information on hardware removal.

After disassociating gateway and soil moisture probe from management zone using John Deere Field Connect™ website and deleting environmental sensors, remove gateway, soil moisture probe, and environmental sensors from installed location.

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Storage

After removing gateway, soil moisture probe, environmental sensors, and battery, prepare all components for storage.

Gateway

- Clean gateway using water.
- Remove soil from gateway post.
- Update gateway firmware.

Soil Moisture Probe

- Use water to remove soil and clean soil moisture probe.
- Store indoors in original packaging when not in use.
- Store between -40 °C (-40 °F) and 27 °C (81 °F). Maximum storage temperature: 60 °C (140 °F).
- Protect soil moisture probe from bending or warping. Store in secure vertical or supported horizontal position.

Environmental Sensors

Refer to Environmental Sensors sections for cleaning of environmental sensors.

Battery

See Battery in Components section for more information.

- Remove battery from gateway before removing unit from field.
- Charge battery to specifications using a trickle charger limited to 3.6 A.
- Do not store battery on concrete floor.
- Do not store battery for more than six months without recharging.
- Charge battery before next use.

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Archive and Data Management

Fields and management zones can be archived; data is still available but is easily filtered out when doing a search.

1. Select Assets tab.
2. Select Land located under the Assets tab.
3. Select a field or management zone.
4. Select ARCHIVE to archive field and management zone.

If field and management zone is currently archived, select UNARCHIVE to unarchive Field and Management zone.

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John Deere Service Literature Available

Technical Information

Technical information can be purchased from John Deere. Some of this information is available in electronic media, such as CD-ROM disks, and in printed form. There are many ways to order. Contact your John Deere dealer. Call **1-800-522-7448** to order using a credit card. Search online from http://www.JohnDeere.com. Please have available the model number, serial number, and name of the product.

Available information includes:

- PARTS CATALOGS list service parts available for your machine with exploded view illustrations to help you identify the correct parts. It is also useful in assembling and disassembling.
- OPERATOR'S MANUALS providing safety, operating, maintenance, and service information. These manuals and safety signs on your machine may also be available in other languages.
- OPERATOR'S VIDEO TAPES showing highlights of safety, operating, maintenance, and service information. These tapes may be available in multiple languages and formats.
- TECHNICAL MANUALS outlining service information for your machine. Included are specifications, illustrated assembly and disassembly procedures, hydraulic oil flow diagrams, and wiring diagrams. Some products have separate manuals for repair and diagnostic information. Some components, such as engines, are available in separate component technical manuals
- FUNDAMENTAL MANUALS detailing basic information regardless of manufacturer:
  - Agricultural Primer series covers technology in farming and ranching, featuring subjects like computers, the Internet, and precision farming.
  - Farm Business Management series examines "real-world" problems and offers practical solutions in the areas of marketing, financing, equipment selection, and compliance.
  - Fundamentals of Services manuals show you how to repair and maintain off-road equipment.
  - Fundamentals of Machine Operation manuals explain machine capacities and adjustments, how to improve machine performance, and how to eliminate unnecessary field operations.

TS189 —UN—17JAN89

TS191 —UN—02DEC88

TS224 —UN—17JAN89

TS1663 —UN—10OCT97

DX,SERVLIT -19-31JUL03-1/1

John Deere Service Keeps You On The Job

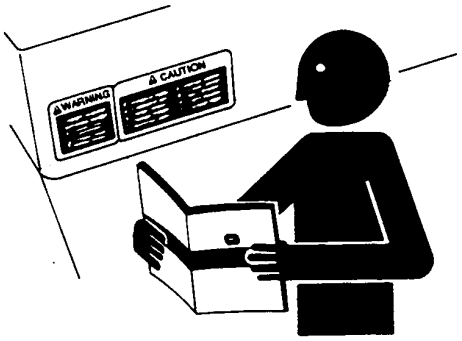
John Deere Is At Your Service

CUSTOMER SATISFACTION is important to John Deere.

Our dealers strive to provide you with prompt, efficient parts and service:

–Maintenance and service parts to support your equipment.

–Trained service technicians and the necessary diagnostic and repair tools to service your equipment.



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CUSTOMER SATISFACTION PROBLEM RESOLUTION PROCESS

Your John Deere dealer is dedicated to supporting your equipment and resolving any problem you may experience.

1. When contacting your dealer, be prepared with the following information:

–Machine model and product identification number

–Date of purchase

–Nature of problem

2. Discuss problem with dealer service manager.

3. If unable to resolve, explain problem to dealership manager and request assistance.

4. If you have a persistent problem your dealership is unable to resolve, ask your dealer to contact John Deere for assistance. Or contact the Ag Customer Assistance Center at 1-866-99DEERE (866-993-3373) or e-mail us at www.deere.com/en_US/ag/contactus/.

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