



# Line Laser Sensor SurfaceMeasure-S

**SurfaceMeasure1008S**

**SurfaceMeasure0303S**

**SurfaceMeasure2929S**

## Grounding Guide

### - Instruction Manual -

Read this document thoroughly before operating the product. After reading, retain it close at hand for future reference.

This English language version of the document contains the original instructions.

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## ■ Product names and model numbers covered in this document

Product name	Model number
Line Laser Sensor SurfaceMeasure-S	SurfaceMeasure1008S SurfaceMeasure0303S SurfaceMeasure2929S

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## About This Document

### ■ Positioning of this document in document map

This section describes the positioning of this document and its relationship with other manuals.

- Hardware and Software manuals

Line Laser Sensor  
SurfaceMeasure-S  
User's Manual

Provides precautions for use, operations and functions of SurfaceMeasure-S.

Line Laser Sensor  
SurfaceMeasure-S  
1 Sheet Guide

A quick guide for using the SurfaceMeasure-S.

Line Laser Sensor  
SurfaceMeasure-S  
Measurement tool  
Technical Manual

Provides technical descriptions and algorithms of SurfaceMeasure-S.

- Others

Line Laser Sensor  
SurfaceMeasure-S  
Grounding Guide

Provides guides for reducing the effects of potential differences and noise.

### ■ Intended readers and purpose of this document

- Intended readers

This is intended for those who use this product, and those who build inspection and evaluation systems, and perform various kinds of non-contact form measuring.

- Purpose

The purpose of this document is to help you to understand the functional outline of the product, functions of each part, how to use it and maintenance details.

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# 1 Overview

This instruction guide provides different grounding schemes for Line Laser Sensor SurfaceMeasure-S (hereinafter Sensor or SM-S) and Network controller Master810/2410(hereinafter Master or Master810/2410) installed in production environment that may require different grounding schemes to eliminate potential differences or noises that may be present on the grounding paths which may cause issues with SM-S resetting or behaving erratically. Different grounding schemes are required to accommodate different types of noises that may be present in the environment such as noise generated by other equipment connected to the same grounding point as SM-S and/or Master810/2410.

## 2 Software and Hardware Requirements

SM-S Firmware	All
SM-S Series	All
Master Series	All

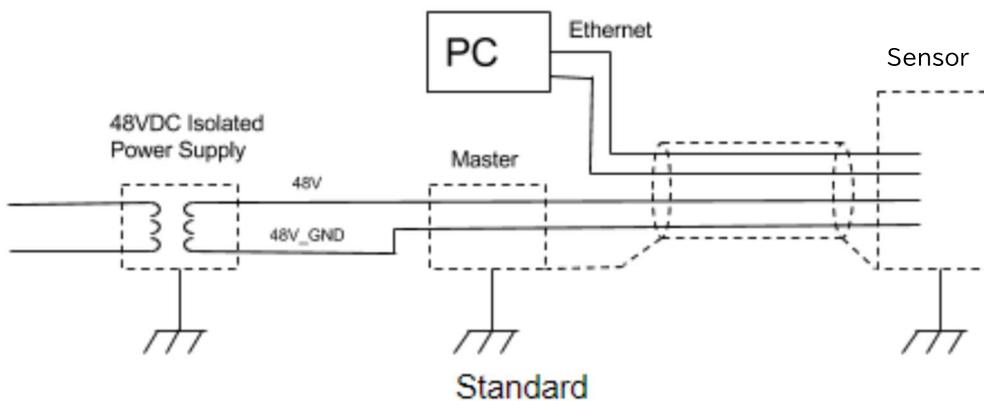
### 3 Grounding Schemes

#### 3.1 SurfaceMeasure-S Cables

Note the dotted lines in the drawings below represent the Master and SM-S's chassis with ground connection. The dotted line between Master and SM-S chassis to the cable shield in between connected through the cable braid wire on the sensor end, and metal jack on the Master end.

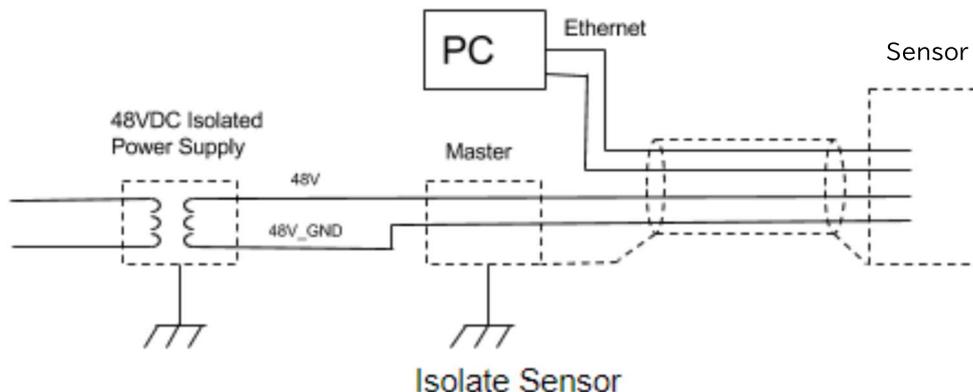
The Ethernet part of the cable is not shielded in standard SurfaceMeasure-S cables.

#### 3.2 Standard



This is the standard recommended grounding method, with the DC ground (24V/48V\_GND) isolated from earth ground and chassis of both the Master and SM-S connected the earth ground through mounting frame or dedicated grounding wire. Note the same earth ground should be connected to the DC power supply as per DC supply manufacturer recommendation.

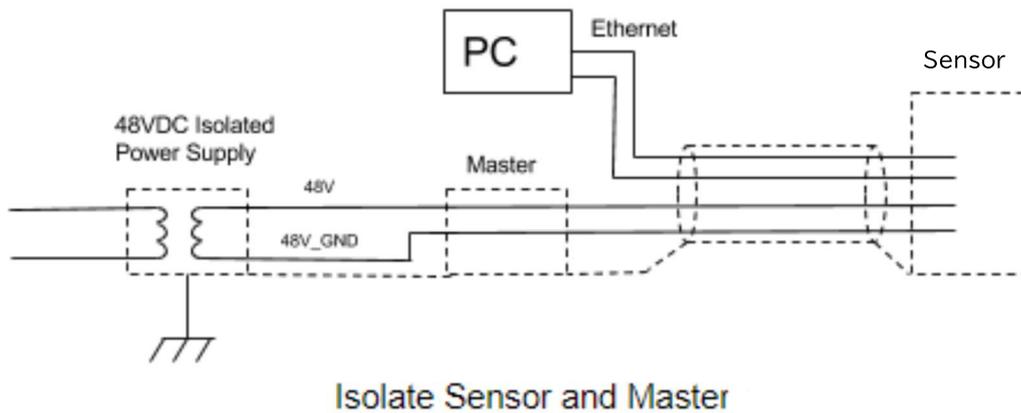
#### 3.3 Isolated Sensor



If the grounding contact the SM-S is mounted on is noisy or may have different potential

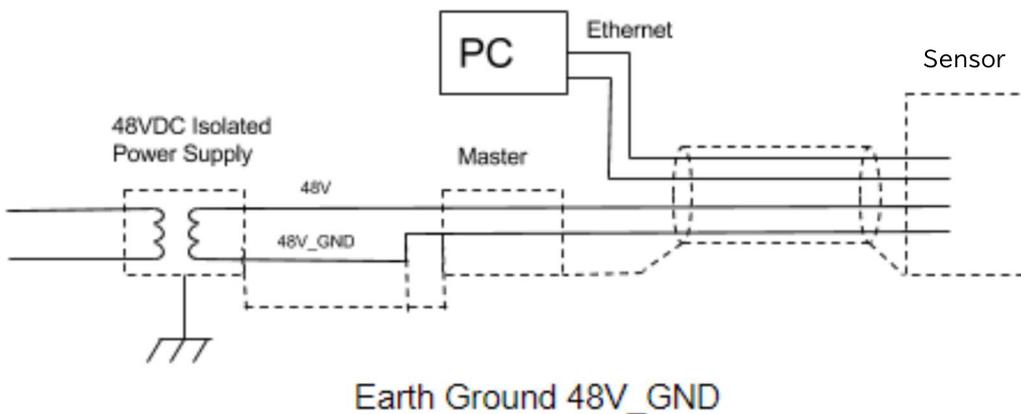
from the rest of the grounding path, ground loops could be present. We suggest isolating the SM-S from any conductive surface completely via insulated mounting mechanism such as nylon bolts and washers.

### 3.4 Isolate Sensor and Master



Both Master and SM-S are recommended to be isolated from the earth ground if the grounding point for both are noisy or could be at different potential causing ground loops. We suggest isolating the SM-S and Master from any conductive surface completely via insulated mounting mechanism such as nylon bolts and washers.

### 3.5 Shared Earth and DC Ground (24V/48V\_GND)



There are cases where connecting the earth ground to DC ground (24V/48V\_GND) with both Master and SM-S completely isolated from ground eliminate grounding noise issues. Connecting the DC ground (48V\_GND) to the earth ground prevents the DC voltages from floating with earth ground as reference.

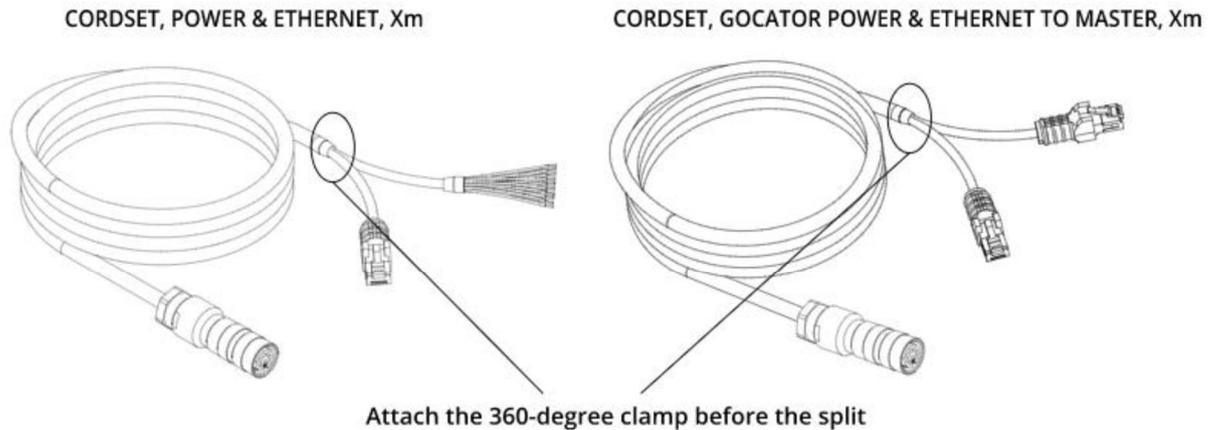
## 4 Ferrite Core



If high frequency noise is present in the power line, looping the SM-S power cable through ferrite core assists in reducing the noise. The ferrite core should only have the power part of the cable looped inside, and not the Ethernet part as the ferrite core could interfere with Ethernet data transmission.

## 5 Recommended Practices for Cordsets

If you need to minimize interference with other equipment, you can ground the Power & Ethernet or the Power & Ethernet to Master cordset (depending on which cordset you are using) by terminating the shield of the cordset before the split. The most effective grounding method is to use a 360-degree clamp.



To terminate the cordset's shield:

1. Expose the cordset's braided shield by cutting the plastic jacket before the point where the cordset splits.

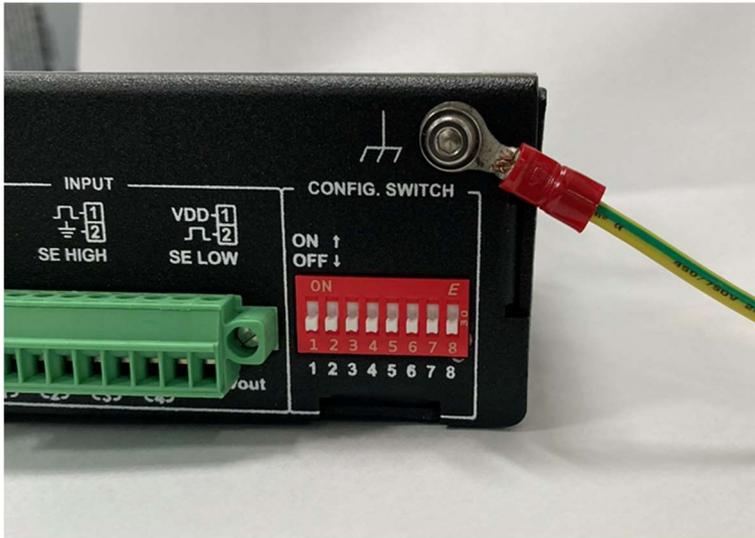


2. Install a 360-degree ground clamp



## 6 Grounding Attachment Example

Below photos are an example on how grounding wires can be attached to SM-S and Master chassis. The grounding wire can be attached to any mounting point on the SM-S chassis, the grounding point for the Master chassis is marked with a ground symbol.



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