

The iButtonLink SS-0F10N-01 SmartSubscriber™ transmitter and F7 class thin film metal thickness corrosion sensors measure the remaining useful thickness of metal available after corrosion. The iButtonLink SS-0F10N-01 communicates over the 1-Wire® bus using the iButtonLink SmartSubscriber™ standard register layout for easy use with other iButtonLink sensors.

The iButtonLink SmartSubscriber™ transmitter holds up to two F7 class iButtonLink thin film thickness corrosion sensors.

The F7 class corrosion sensors measure real-time metal film thickness, which may be used to support ANSI/IEC 71.04 measurements for airborne contaminants – gasses in real time (ANSI/IEC 71.04-2013, Section 7.1). The sensors are used by the SmartSubscriber™ transmitter to calculate the amount of usable metal thickness remaining on a sensing surface after the effects of corrosion gasses.

This product was developed under a joint development agreement with IBM Research and is targeted at enterprise-level data center environments. This product is covered under IBM patents both pending and issued.

Key Features

- Senses nanometers of metal removed by corrosion.
- iButtonLink SmartSubscriber™ technology works with motes for a mesh network deployment.

Why iButtonLink

- Industrial-strength design
- 100% final test and burn-in
- Flexible and responsive

Table 1 General information

Part Number	SS-0F10N-01
Version	Hardware: AA07; Firmware: 2.1
Description	SmartSubscriber™ transmitter – holds up to two F7 class sensors such as corrosion (metal film thickness) sensors
Protocol	iButtonLink SmartSubscriber™ over 1-Wire®
Connectors	Two RJ-45 1-Wire® daisy chain connectors. See Appendix A for pinout.
Batteries	None, external power over 1-Wire® RJ-45 connectors
Dimensions and drawings	https://www.polycase.com/bt-2315?file=pdf
Internal sensors	Up to two F7 class sensors
Supported sensors	F7-KAA9V-01 – 900 nm silver thin film corrosion sensor F7-KAC9W-01 – 900 nm copper thin film corrosion sensor F7-KAA2K-01 – 250 nm silver thin film corrosion sensor F7-KAC2M-01 – 250 nm copper thin film corrosion sensor
Environmental seals	Elements must be exposed to airflow for proper measurement. No environmental seals.



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262-662-4029
info@ibuttonlink.com
<http://www.ibuttonlink.com>
iButtonLink, LLC.
1221 Innovation Drive, Suite #117
Whitewater, WI 53190

Table 2 Normal Operating Parameters

Parameter	Min	Typical	Max	Units	Comments
Power input, +5 V	4.7	5V	5.5	Volts	1-Wire +5 V supply line
Power input, V+	7	12	14	Volts	1-Wire V+ voltage supply
Operating current		28	30	mA	Two corrosion sensors installed
Operating current		15	20	mA	One corrosion sensor installed
Operating current		6.5	8	mA	No corrosion sensors installed
Operating temperature	0	25	50	Degrees C	
Operating humidity	20	50	80	% RH	Non-condensing
IP rating		IP40			Elements must be exposed to airflow for proper measurement. No environmental seals.

Table 3 F7-KAA9V-01 Specifications

Parameter	Min	Typical	Max	Units	Comments
Metal		Silver			
Initial thickness, usable	900			nm	
Corrosion resolution		0.0625		nm	Coupon metal thickness change
Corrosion accuracy		±5		%	
Corrosion repeatability		±2		nm	
Temperature accuracy		±1		°C	
Temperature resolution		0.0625		°C	

Table 4 F7-KAC9W-01 Specifications

Parameter	Min	Typical	Max	Units	Comments
Metal		Copper			
Initial thickness, usable	900			nm	
Corrosion resolution		0.0625		nm	Coupon metal thickness change
Corrosion accuracy		±5		%	
Corrosion repeatability		±2		nm	
Temperature accuracy		±1		°C	
Temperature resolution		0.0625		°C	

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Table 5 F7-KAA2K-01 Specifications

Parameter	Min	Typical	Max	Units	Comments
Metal		Silver			
Initial thickness, usable	250			nm	
Corrosion resolution		0.0625		nm	Coupon metal thickness change
Corrosion accuracy		±5		%	
Corrosion repeatability		±2		nm	
Temperature accuracy		±1		°C	
Temperature resolution		0.0625		°C	

Table 6 F7-KAC2M-01 Specifications

Parameter	Min	Typical	Max	Units	Comments
Metal		Copper			
Initial thickness, usable	250			nm	
Corrosion resolution		0.0625		nm	Coupon metal thickness change
Corrosion accuracy		±5		%	
Corrosion repeatability		±2		nm	
Temperature accuracy		±1		°C	
Temperature resolution		0.0625		°C	

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APPENDIX A: Pin Assignments

The pin assignments listed below are viewed as looking into either jack on any MS product.

The latch is on the bottom side of the jack.

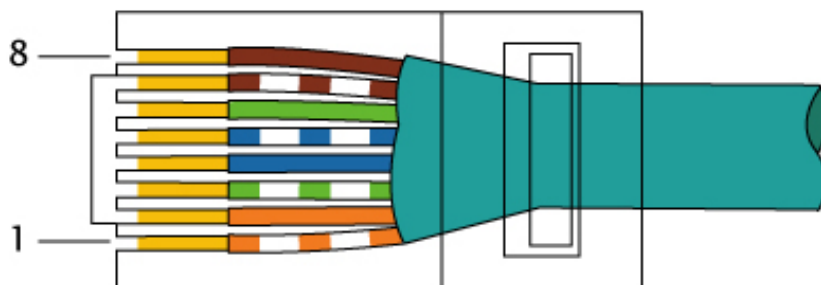


Figure 1: Standard EIA/TIA 568 RJ-45 Colors

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Table 7: The wire color and connections for the EIA/TIA 568 RJ-45 cable.

Pin	EIA/TIA 563A Cable Color	1-Wire [®] Connection	Notes
1	Orange and white	5 volt return	
2	Orange	+5 volts	May be powered via +5 volts or V+.
3	Green and white	Aux return	
4	Blue	1-Wire [®] data	Required signal
5	White and blue	1-Wire [®] return	Required signal
6	Green	AUX (Switched +5 volts)	Unused, passed thru
7	White and brown	V+ (+12 volts)	May be powered via +5 volts or V+.
8	Brown	+12 volts returns	Ground