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# User Guide

## Scanner Fieldbus Interface Electronics

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IPG Photonics



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### **Preface:**

Please take time to read and understand this User’s Guide in its entirety and familiarize yourself with the operating and maintenance instructions that we have compiled for you before you use the product. We strongly recommend that all operators of the product read and pay particular attention to all safety information contained herein prior to operating the product.

This User’s Guide should stay with the product to provide you and all future operators, users and owners of the product with important operating, safety and other information.

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## 1 Safety Information

### 1.1 Safety Conventions

IPG Photonics use various words and symbols in this User's Guide that are designed to call your attention to hazards or important information. These include:

**WARNING:**  

Refers to a potential *personal* hazard. ( **Electrical**) ( **Laser radiation**) It requires a procedure that, if not correctly followed, may result in bodily harm to you and/or others. Do not proceed beyond the WARNING sign until you completely understand and meet the required conditions.

**CAUTION:** 

Refers to a potential *product* hazard. It requires a procedure that, if not correctly followed, may result in minor personal injury or damage or destruction to the product or components. Do not proceed beyond the CAUTION sign until you completely understand and meet the required conditions.

**IMPORTANT**

Refers to any information regarding the operation of the product. Please do not overlook this information.

### 1.2 General Safety Instructions

**WARNING:**  

This product is intended to be used with a laser. Read and observe all safety instructions provided with the laser.

### 1.3 Electrical Safety

**CAUTION:** 

The Scanner Fieldbus Interface Electronics operates on 24V DC input.

Do not open the SFIE enclosure as there may be hazardous switching voltages inside. Do not operate SFIE in a wet environment.

## 2 Scope of Document

This document covers the connection, configuration, calibration, and safe use of the Scanner Fieldbus Interface electronics box.

## 3 Product Description

The Scanner Fieldbus Interface is used to transfer status and control information between a customer's Fieldbus device and IPG's Scanner Controller. This allows customers to run jobs previously stored on a Scan Controller and monitor the status of those jobs via a Fieldbus interface. The format of these status and control i/o packets is specified in a separate document: "Scanner Fieldbus Interface Guide".

### 3.1 Definition of Terms

SFI: Scanner Fieldbus Interface.  
SFIE: Scanner Fieldbus Interface Electronics.

### 3.2 Connections

The Scanner Fieldbus Interface Electronics has connections to both a Scan Controller and to customer equipment. Refer to the Block Diagram in section 3.3.

#### 3.2.1 Connections to the Scan Controller

The Scanner Fieldbus Interface Electronics connects to the Scan Controller electronics with a high flex cable (20m standard length).

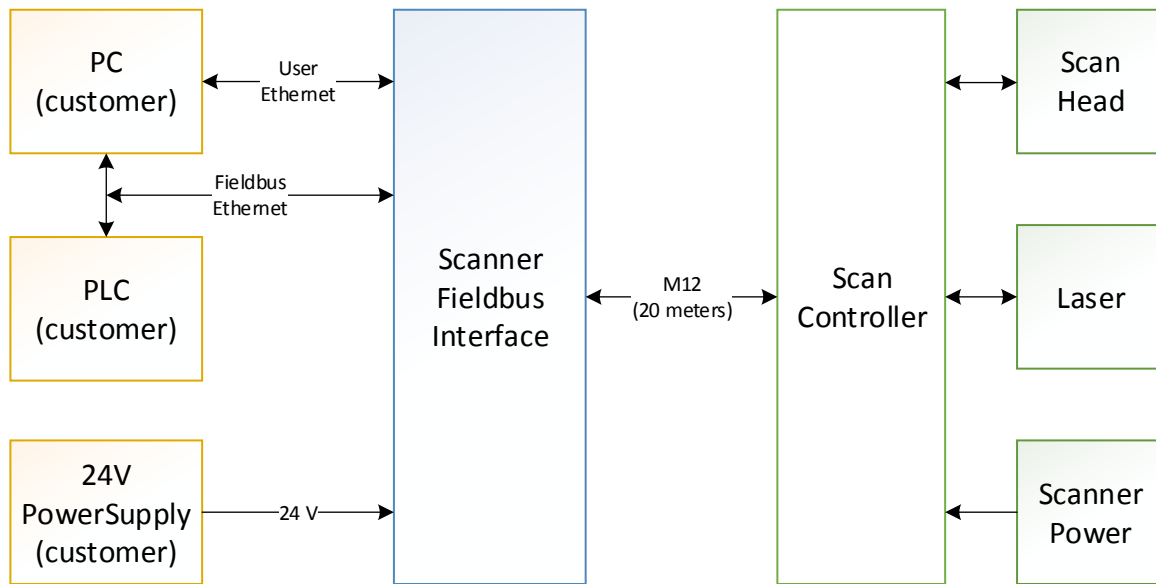
- Data Signal: M12x4 position female to a serial interface adapter (#CEKBASY0000106PX).

#### 3.2.2 Connections to Customer Components

The customer supplies 24 VDC to the SFIE via 3W3 connector. In addition, there is a user Ethernet connector and a Field Bus Ethernet connector.

- User Ethernet: RJ45 connection used for diagnostics.
- Field Bus Ethernet: RJ45 connection used for field bus communication (PROFINET, Ethernet I/P or EtherCAT).
- Power: +24VDC, return, and earth ground on 3W3 connector. (connector and pins provided)
- Ground lug: A screw is provided on the side panel for earth ground attachment
- Analog IO: (this connector is not used)
- Digital IO: (this connector is not used)

### 3.3 Block Diagram



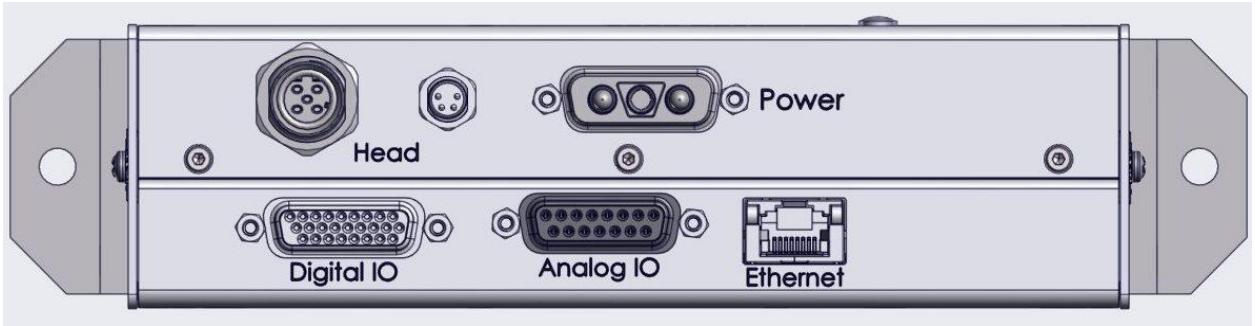
**Figure 1: Scanner Fieldbus Interface, Customer components, Scan Controller**

### 3.4 Product Views

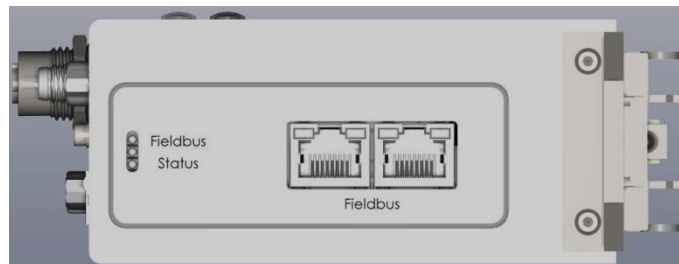
#### Views of Scanner Fieldbus Interface Electronics Enclosure



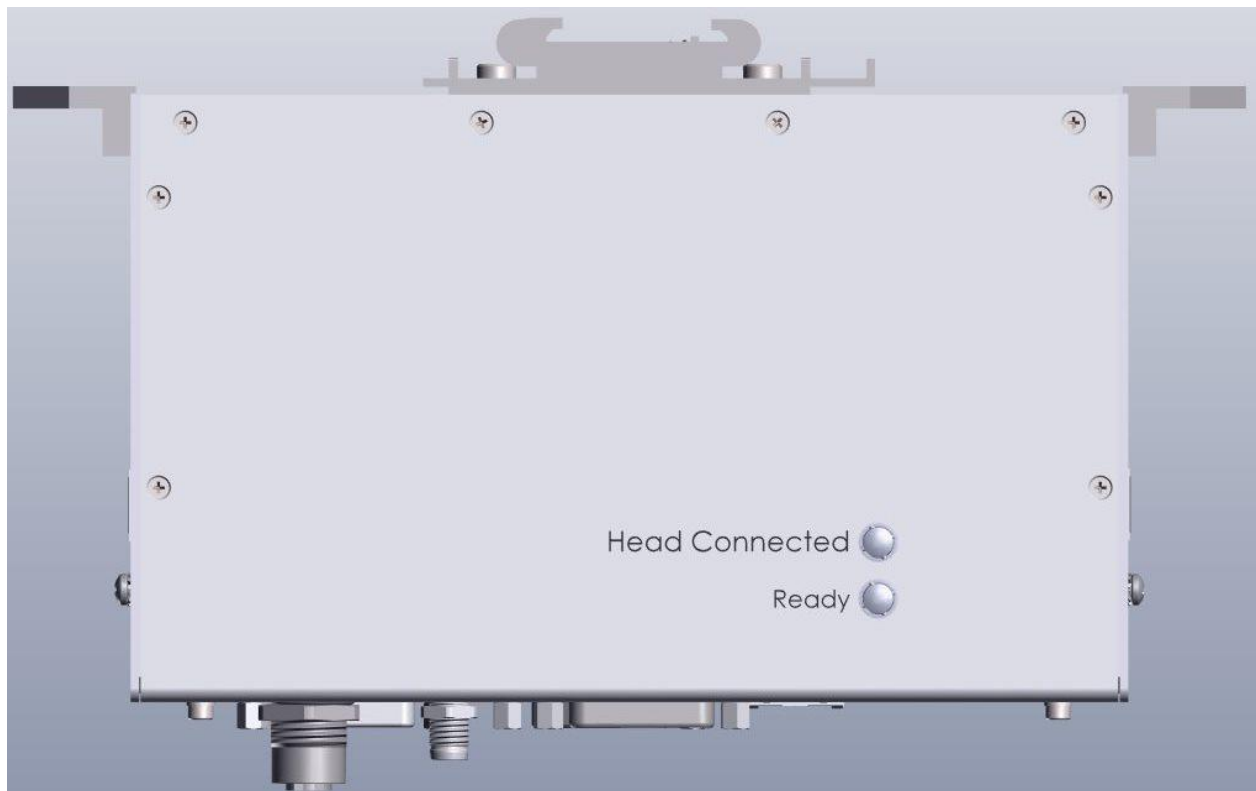
**Figure 2: Scanner Fieldbus Interface enclosure.**



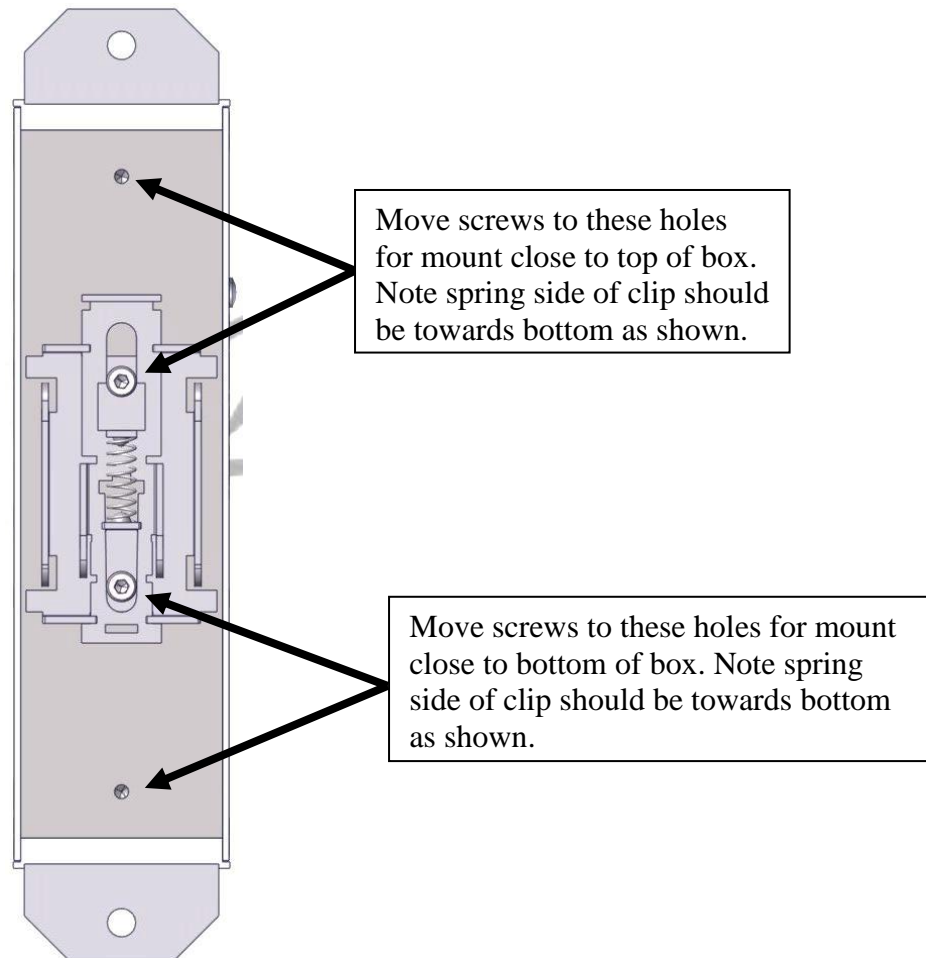
**Figure 3: Front view showing various connectors.**



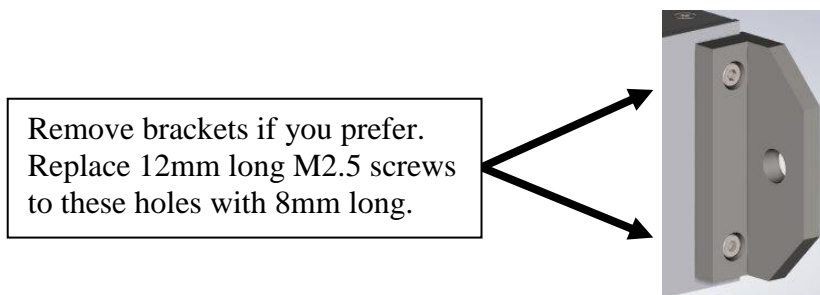
**Figure 4: Top view showing status LEDs and Field Bus Ethernet connectors.**



**Figure 5: Left side view showing two status lights, Ready and Head Connected.**



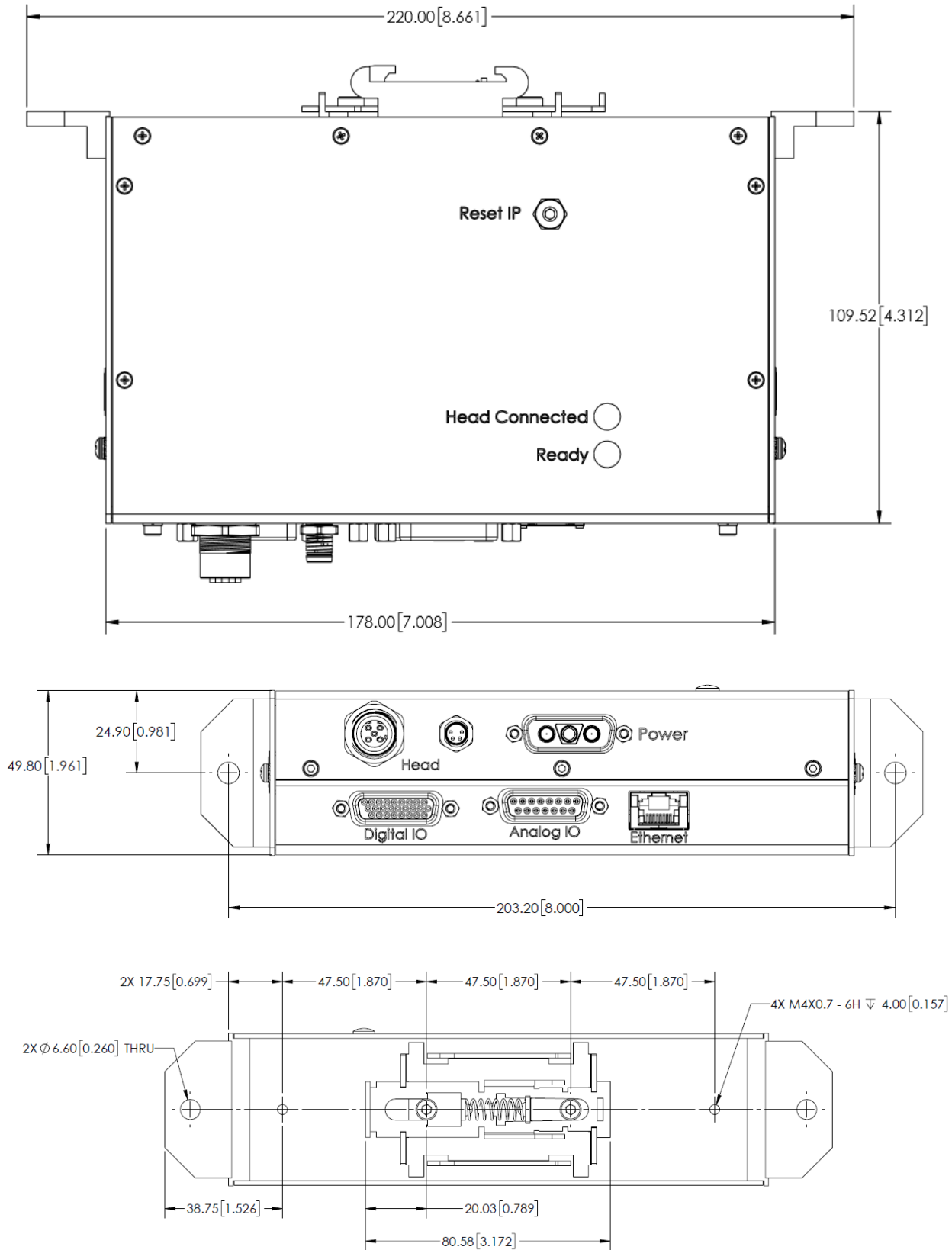
**Figure 6** View of rear of base. DIN Rail Mount comes centered but may be adjusted higher or lower by inserting screws in lower or upper set of holes instead of center holes.



**Figure 7:** Two mounting tabs may be removed if not used to reduce footprint. Remove the bracket and replace the M2.5 x 12 screws with M2.5 x .45 x 8 screws (not provided).



### 3.5 Dimensions



### 3.6 Status LEDs

#### 3.6.1 Ready

The Ready light located on the left side panel is lit when the base is in READY state- Powered up and no alarms. Note alarms must be cleared after correction for Ready to return. Alarms may be cleared by command, web page, or digital input.

### 3.6.2 Head Connected

The Head Connected light located on the left side panel shows the status of communication with the Scan Controller.

Light	Description	D50 Head	Compact Head
On Solid	Head connected	Yes	Yes
Slow Blink	Base is not communicating with Head	Yes	Yes
Fast Blink	Base is communicating with Head Controller, but there is an issue with height sensor board connection to head controller.	Yes	Not Applicable
Off	No power to base or base failure	Yes	Yes

### 3.6.3 Ethernet

There are two small LEDs on the diagnostic Ethernet connector.

LED on Left is Green when there is power to the board.

LED on Right is Yellow when connected to host computer.

### 3.6.4 Field Bus

There are LEDs on the Field Bus Ethernet Connectors and three LEDs to the left of the connector.

Ethernet Connectors have Link and Active LEDs

	Fieldbus Type		
	EtherCAT	PROFINET	Ethernet/IP
<b>Top LED</b>	ERR	BF	NS
<b>Middle LED</b>	RUN	SF	MS
<b>Bottom LED</b>	SYS	SYS	SYS

## 4 Installation, Configuration and Operation

### 4.1 Maximum cable lengths

Connection from SFIE to Customer

Cable	Type	Maximum length
User Ethernet	RJ45-RJ45	23m (75 ft)
Fieldbus Ethernet	RJ45-RJ45	23m (75 ft)
Power	DB 3W3	5m (16 ft)

Connection from SFIE to Scan Controller

Cable	Type	Maximum length
Data	M12	20m (65 ft)

### 4.2 Installation: SFIE Connections

- Turn off power to SFIE.
- Turn off power to the Scan Controller.
- Connect the M12 cable from the SFIE to the Scan Controller.
- Connect the User Ethernet cable from the SFIE to the customer's PC.
- Connect the Fieldbus Ethernet cable from the SFIE to the customer's PLC.
- Make up a 3 wire power cable for 24VDC, return, and ground using supplied 3W3 connector. Connect this power cable from the power supply to the SFIE.

### 4.3 User Ethernet Interface

The User Ethernet Interface connector is provided to allow bidirectional communication with the SFIE from a Customer supplied Laptop or Computer. The SFIE Web Interface is accessed by browsing to the SFIE IP Address. The SFIE uses a fixed IP address that may be later changed by the user to a different fixed address. Adding a second Ethernet interface to your PC (such as USB to Ethernet adapter) to connect with the SFIE, will allow the computer to still be on a network if desired. The SFIE may be operated without using the User Ethernet.

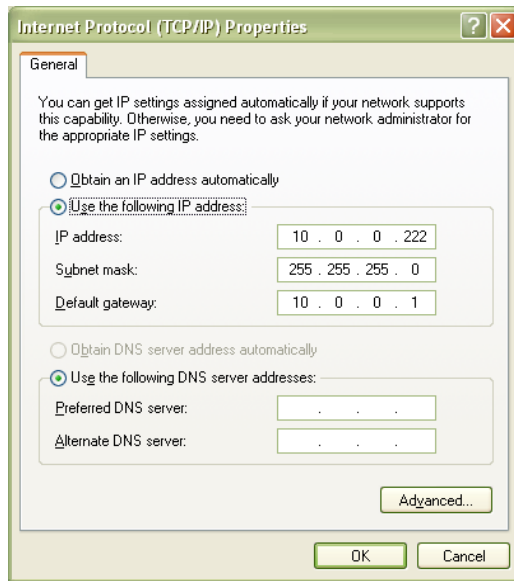
Plug the Ethernet connector from the computer into the "Ethernet" RJ-45 jack and not the optional Ethernet based Field Bus connectors.

#### 4.3.1 User Ethernet Interface Setup

The SFIE User Ethernet has a default fixed IP address of 10.0.0.20 and it is recommended that you use that address unless you need to change it. The process for changing the SFIE IP address to a different IP address is covered in section 4.3.2.

Configure the Ethernet interface of the host computer or laptop Internet Protocol (TCP/IP) properties to have a fixed IP address of 10.0.0.xxx where xxx can be any number between 50 and 230. Example:

IP address:	10.0.0.222
Subnet Mask	255.255.255.0
Default gateway	10.0.0.1



Note a second Ethernet Adapter such as a USB to Ethernet adapter may be necessary or convenient should you want to retain a network connection using the primary port.

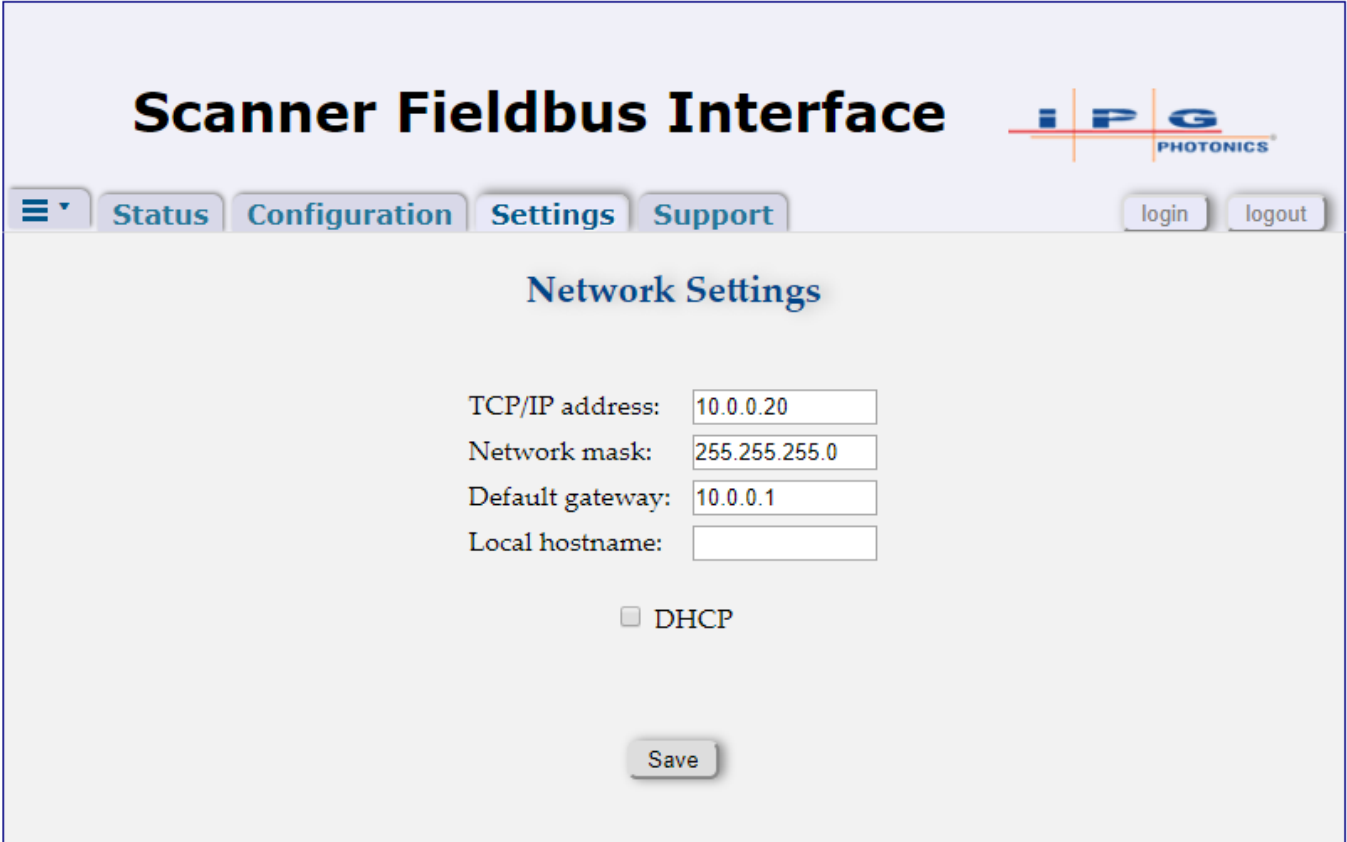
#### 4.3.2 Configuring the SFIE User Ethernet for a different IP Address

It is recommended you stay with the default address 10.0.0.20 unless necessary to change. This section covers modifying the Ethernet address to a user selected value.

**When you change the controller IP address of the you must then also change the IP address of the host computer to be in the same range of addresses.**

## Procedure for changing the EtherNet/IP address on the Scanner Fieldbus Interface Electronics.

1. Configure PC Ethernet port to communicate with at the Current Ethernet address.
2. Connect Ethernet cable from PC to "User Ethernet" input.
3. Connect Power to controller
4. Open browser (e.g. Internet Explorer or Chrome) web page to http://10.0.0.20 or the current Ethernet Address. The current IP address of the CHCE will be shown on the CHCE display on power up. Enter the current IP address for the CHCE instead of the default 10.0.0.20 if it was previously changed.
5. The WEB server window should open.
6. Select "Settings" tab.

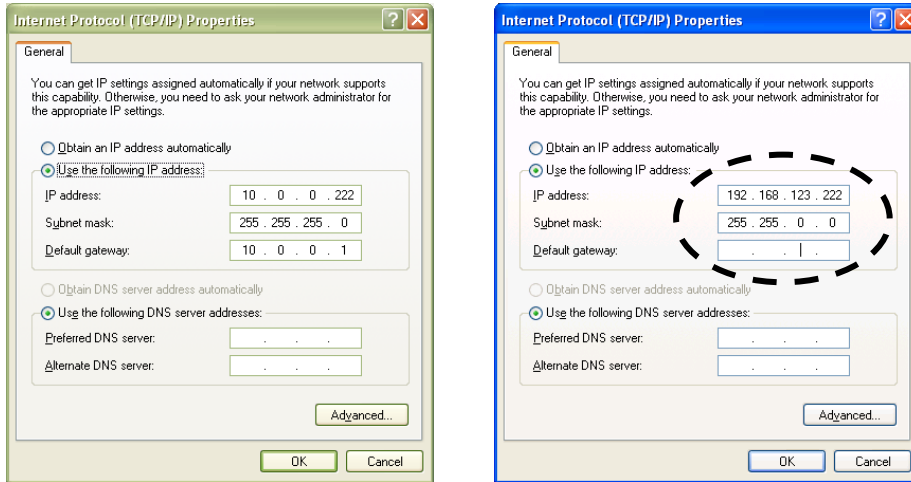


The screenshot displays the 'Scanner Fieldbus Interface' web application. At the top, the title 'Scanner Fieldbus Interface' is prominently displayed in black, with the 'IPG PHOTONICS' logo to its right. Below the title is a navigation bar with tabs for 'Status', 'Configuration', 'Settings', and 'Support'. The 'Settings' tab is currently selected. In the top right corner of the interface, there are 'login' and 'logout' buttons. The main content area is titled 'Network Settings' and contains several input fields: 'TCP/IP address' (10.0.0.20), 'Network mask' (255.255.255.0), 'Default gateway' (10.0.0.1), and 'Local hostname' (empty). Below these fields is a checkbox for 'DHCP' which is currently unchecked. A 'Save' button is located at the bottom center of the form.

7. Enter new IP parameters, and press the Save button. Set the default gateway to the same as the TCP/IP address with the last digit as 1. A dialog box will open and if ok will say 'New Setting Saved'. Click OK, Exit the Browser. **YOU MUST POWER CYCLE CHCE FOR NEW IP ADDRESS TO TAKE EFFECT.**

Note: Once the IP address of the Controller has been changed via the web interface, you must update the IP address in Internet Explorer to the new address. For example, above to see the webpage after making the change you should go to http://196.168.123.89. Should you need to change IP address again you go to the current IP address for the CHCE instead of 10.0.0.20.

8. Be sure to configure the Ethernet interface of the host computer or laptop Internet Protocol (TCP/IP) properties to have a fixed IP address in the range of the newly changed CHCE address:

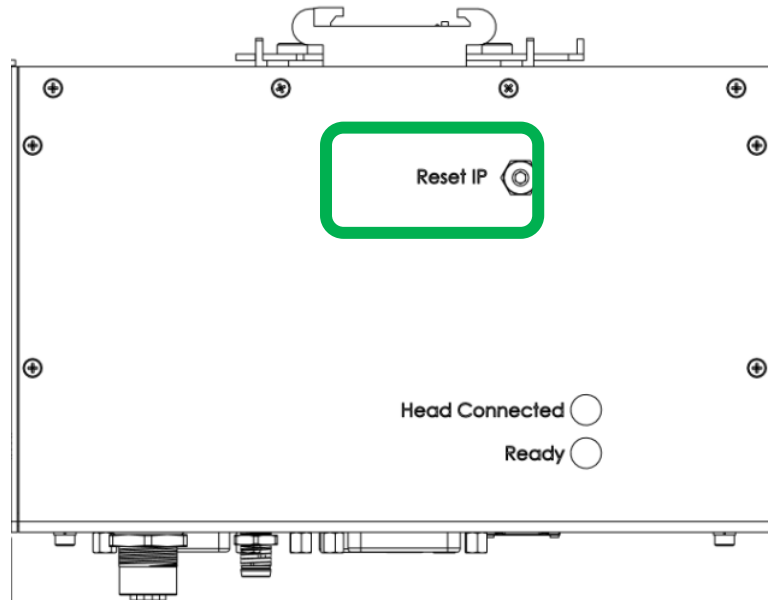


9. Power cycle the SFIE.
10. Open Web browser and enter new IP address to get back to the SFIE web page.

#### 4.4 Resetting the IP Address to Default 10.0.0.20

If you have changed the IP address, but have forgotten what it is set to, you may reset the IP Address to the default 10.0.0.20 using the access port in the base cover (see figure):

- Remove the button head screw from the top cover of the base that is marked IP Reset.
- With power on press and hold the button on the PCB for 10 seconds (use of a small screw driver or plastic or wooden dowel inserted through the tapped hole)
- Power cycle box.
- IP is reset to 10.0.0.20; Make sure the host is in the correct domain to communicate.



## 4.5 Scanner Fieldbus Interface Web Pages

IPG provides a set of web pages with the SFIE available via User Ethernet that can be used to monitor status or configure the device.

Using a supported browser such as Internet Explorer or Chrome, the user selects the current IP address of the SFIE (the default is 10.0.0.20). To connect to the web interface:

1. Configure your Ethernet adapter as shown in section 4.3.1.
2. Start web browser – see supported browsers list.
3. Type **http://10.0.0.20/** into your browser address window

### **Supported Browsers for Windows:**

Internet Explorer 11, Edge; Chrome V.55 and higher; Firefox V. 40 and higher.



*Use of unsupported browser versions may show refresh issues or reduced functionality.*

### 4.5.1 Status Web Page

The Status page shows the current value of the various registers comprising the Scanner Fieldbus Interface. For Registers that are bit sets, the individual bits are also shown. Bits that are illuminated are on or logic 1, bits that are grey are off or logic 0.

The screenshot shows a web browser window displaying the 'Scanner Fieldbus Interface' status page. The browser address bar shows 'http://10.0.0.20/control'. The page has a navigation menu with 'Status', 'Configuration', 'Settings', and 'Support' tabs, and 'login' and 'logout' buttons. The main content is divided into two columns: 'Registers' and 'Bits'.

**Registers**

Scanner Status:	0x001F003A
Laser Status/Airflow:	0xF
Port C:	0x00001000
Port B:	0x00010000
Laser Power:	0
Window PD:	1408
Window PD:	-64.768608 dbua
Head Temperature:	65435
Head Temperature:	3.097092 °C
Frame ID:	32741
Object ID:	3
Job ID:	1
Scanner Control:	0x00000003
Port A:	0x00000000
X Offset:	0
Y Offset:	0

**Bits**

**Scanner Status**

- Ready
- Active
- Error
- X Error
- Y Error
- Z Error
- Communication
- Checksum Error (controller)
- 3D Head: Focus Home
- 3D Head: Focus Away
- 3D Head: Camera Home
- 3D Head: Tray Not Present
- 3D Head: Interlock Open
- 3D Head: Reserved
- 3D Head: Checksum Error
- 3D Head: Carrier
- Sbus Present
- Checksum Error (sbus)
- Fiber Interlock Closed

**Port C**

- Laser Enable
- Guide Enable
- Focus Enable
- Focus Mode

**Port B**

- Laser Modulation

**Scanner Control**

- Start
- Enable



**Figure 8: Status Page**

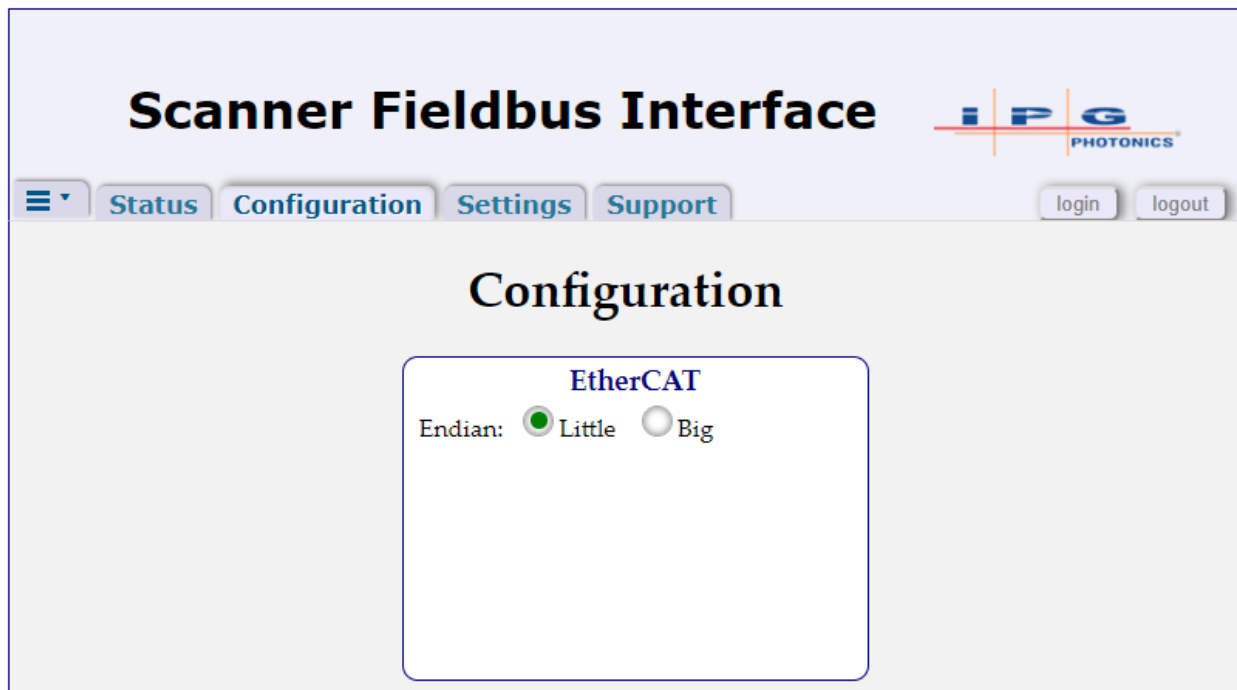
#### 4.5.2 Configuration Web Page

This page is used to configure characteristics of the Scanner Fieldbus Interface. After this page displays, the top of the Configuration pane will indicate the Fieldbus option, namely EtherCAT, EtherNet/IP or PROFINET.

In order to specify desired Fieldbus Endianness, select either the Little or Big radio button.

In order to specify the desired Fieldbus Address for the SIM, enter the desired values for IP Address, Subnet Mask and Default Gateway. Note that Fieldbus Address is configurable only for the EtherNet/IP and PROFINET options and it does not apply in the case of EtherCAT.

When done making changes, hit the Save button and then power cycle the Scanner Fieldbus Interface to have the address changes applied.



**Figure 9: Configuration Page for EtherCAT**

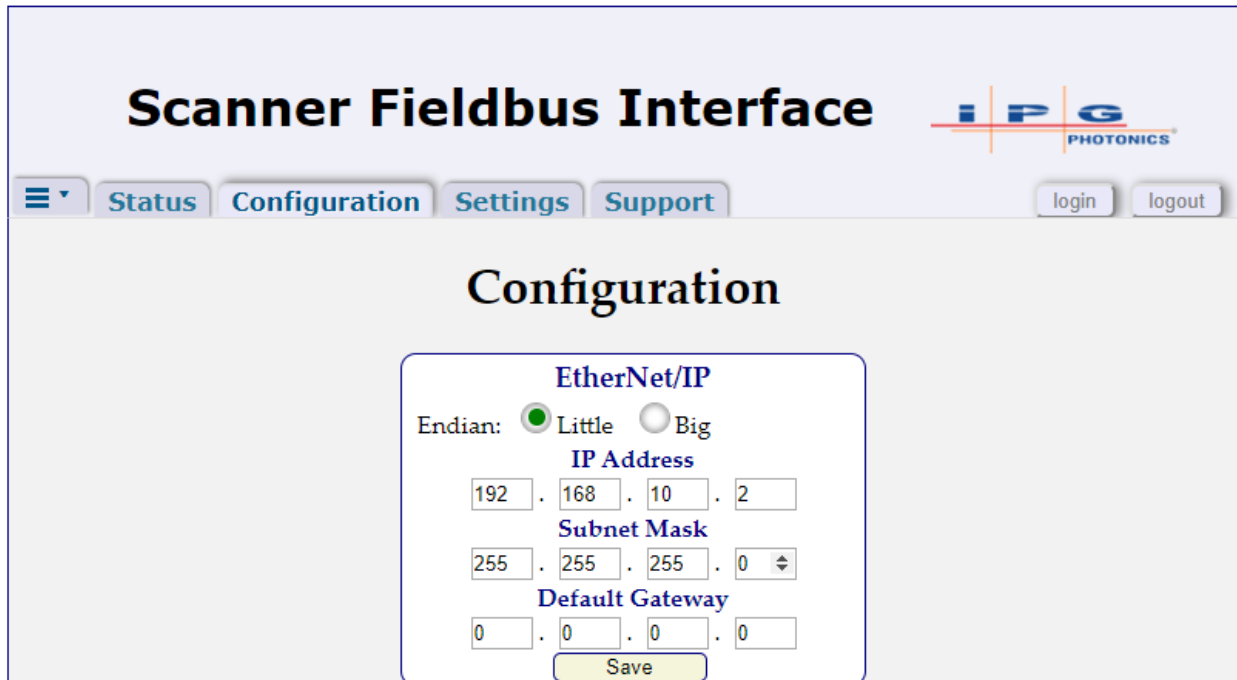


Figure 10: Configuration Page for EtherNet/IP

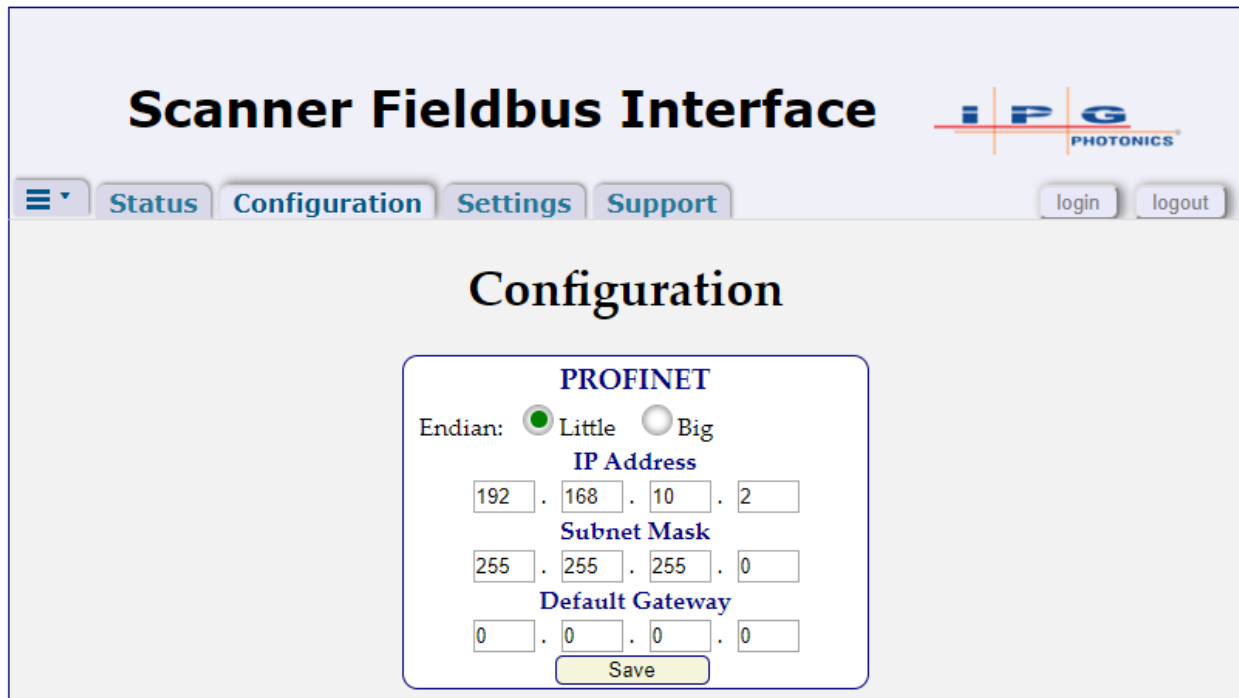
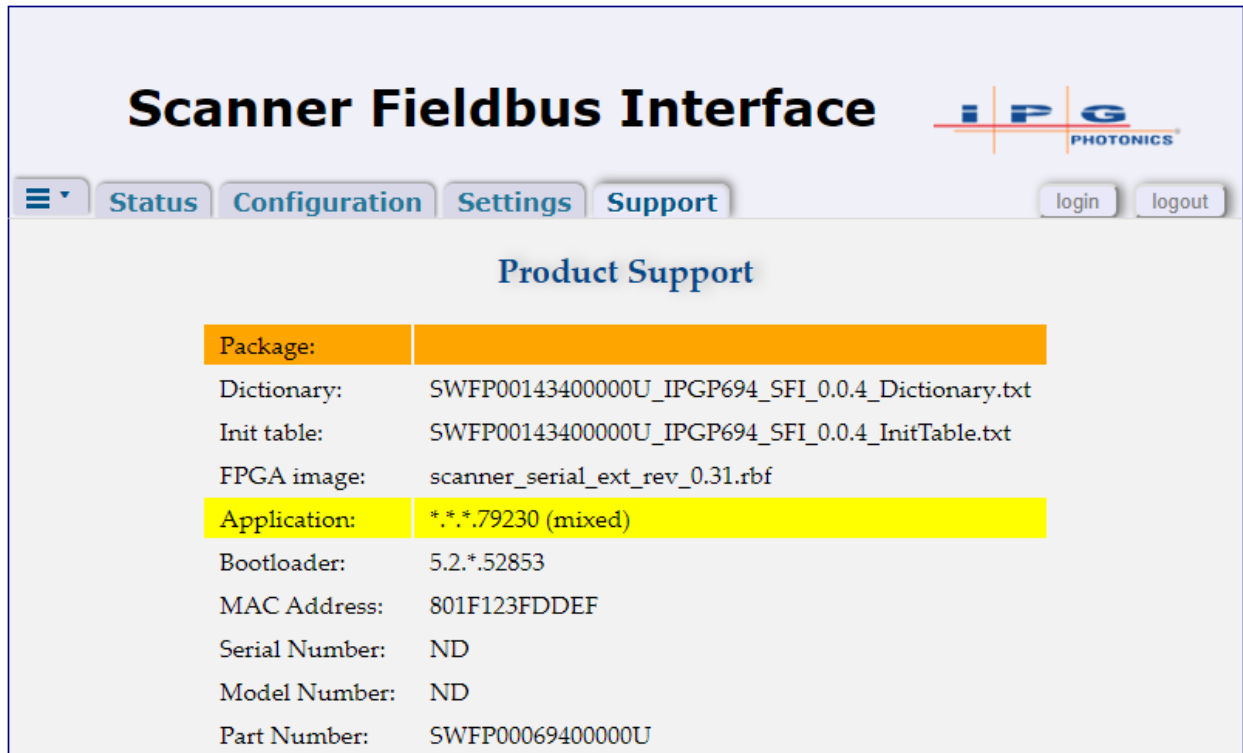


Figure 11: Configuration Page for PROFINET

### 4.5.3 Support Web Page

The Support page displays information about the Scanner Fieldbus Interface including the current software revisions. When contacting IPG for assistance it is recommended to take a screen shot of this page.



The screenshot shows the 'Scanner Fieldbus Interface' web page. At the top, there is a navigation menu with 'Status', 'Configuration', 'Settings', and 'Support' tabs. The 'Support' tab is active. Below the navigation, the page title 'Product Support' is centered. A table of system information is displayed, with the 'Application' row highlighted in yellow.

Package:	
Dictionary:	SWFP00143400000U_IPGP694_SFI_0.0.4_Dictionary.txt
Init table:	SWFP00143400000U_IPGP694_SFI_0.0.4_InitTable.txt
FPGA image:	scanner_serial_ext_rev_0.31.rbf
Application:	*.*.*.79230 (mixed)
Bootloader:	5.2.*.52853
MAC Address:	801F123FDDEF
Serial Number:	ND
Model Number:	ND
Part Number:	SWFP00069400000U

**Figure 12: Product Support Page**

## 5 Connection Pin Assignments and Technical Information

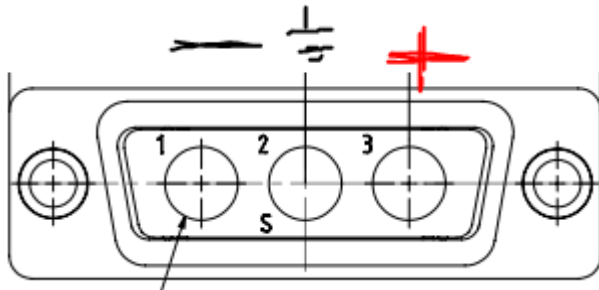
### 5.1 Power Input Connector

CHCE: D Sub 3W3p Male.

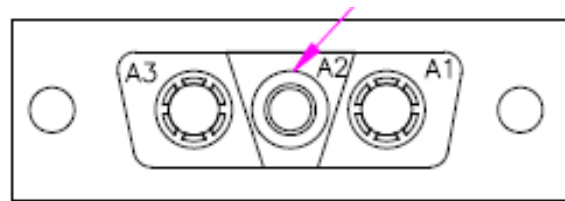
Pin	Name	Function	Current, Maximum Amps
1	Ground	Return for 24 Volts	
2	CASEGND	Earth Ground	
3	+24Volts DC	+24 VDC +/- 10%;	1 Amp maximum
Shield	CASEGND	Earth Ground	

Head should also be attached to Earth Ground.

MATING CONNECTOR: F3W3SC-K121 Molex# 1731070058



MATE CONNECTOR REAR VIEW



MATE CONNECTOR FRONT VIEW

### 5.2 User Ethernet

RJ-45 Connector Ethernet connection allows connection to computer browser to access web pages in SFIE. Connection requires Ethernet connection to host with fixed IP address in SFIE. See Chapter 3. Default IP address is 10.0.0.20. Maximum recommended length cable: 23 meters (75 Feet).

If there is a need to reset the IP Address to its default value, see section 4.4.

### 5.3 Field Bus Ethernet

When you purchase you have a choice of EtherCAT, PROFINET, or EtherNet/IP interfaces. Each Fieldbus option includes an RJ45 connector. Refer to the IPG Scanner Fieldbus Interface Guide for the field bus protocol.

## 6 Fieldbus Interface

IPG provides three fieldbus interface types as an option when purchasing your IPG SFI. This section of the manual provides information on the interfaces that are available along with available field bus protocols. The following is a list of fieldbus types and their associated part numbers:

- SCAN BASE ETHERCAT: #CEU45010381C00XU
- SCAN BASE ETHERNET/IP: #CEU45010381C01XU
- SCAN BASE PROFINET: #CEU45010381C02XU

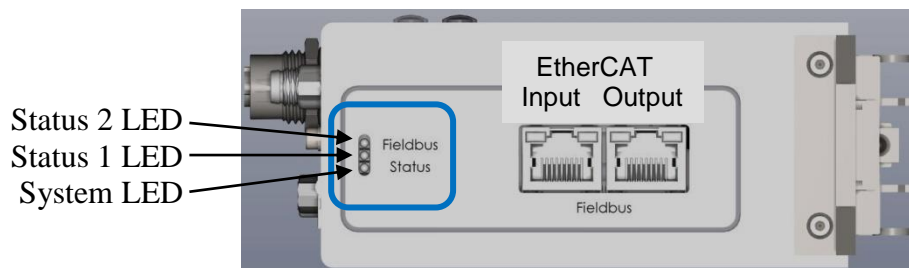
**Note: Field bus protocol is covered in a separate document: Scanner Fieldbus Interface Guide.**

### 6.1 EtherCAT

The SFI uses an embedded Hilscher communication module (COMX 51CA-RE) configured as a slave to provide the EtherCAT interface.

An EtherCAT XML file found on IPG’s FTP site at [software.ipgphotonics.com](http://software.ipgphotonics.com) can be used by a master when configuring the Fieldbus.

The Hilscher EtherCAT communication module provides diagnostic LED’s to indicate the current status of the module. The diagnostic LED’s are visible on the base electronics. When all three LED’s are steady green, the module is communicating to the scanner/master. The LEDs are viewable on the top side of the base.















**Figure 6-1 EtherCAT Diagnostic LED’s**

System LED Status Codes		
Color	State	Meaning
●	Off	Power supply off, OR hardware defect
●	On	Operating system running
● ●	Blinking	Second stage bootloader is waiting for firmware*
●	On	Second stage bootloader missing*

**Table 6-1 EtherCAT System LED**

EtherCAT LED status codes			
LED	Color	State	Meaning
Status 1	●	Off	No Power

(Run)		On	Device is operational
		Blinking	Pre-operational state
		Flash	Safe-operational state
Status 2 (Error)		Off	No Power
		Blinking	Invalid configuration*
		1 Flash	Local Error*
RJ45		2 Flash	Application watchdog timeout
		On	Ethernet connection is established
		Flashing	Device sending and receiving Ethernet frames
RJ45		Off	No Connection
			
			

**Table 6-2 EtherCAT Status LED's**

\*Contact IPG for assistance

### 6.1.1 Notes on wiring EtherCAT

- **Use the Left RJ45 connector for Input to Base and Right side RJ45 connector for output.**
- Use shielded Ethernet cables that meet the requirements of at minimum category 5 (CAT 5) as indicated in EN50173 or ISO/IEC 11801.
- Do not use hubs in an EtherCAT network.
- Use switches only between EtherCAT master and first EtherCAT slave device (100 Mbit/s, Full Duplex).
- The cable length between two EtherCAT devices must not exceed 100 meters.

## 6.2 EtherNet/IP

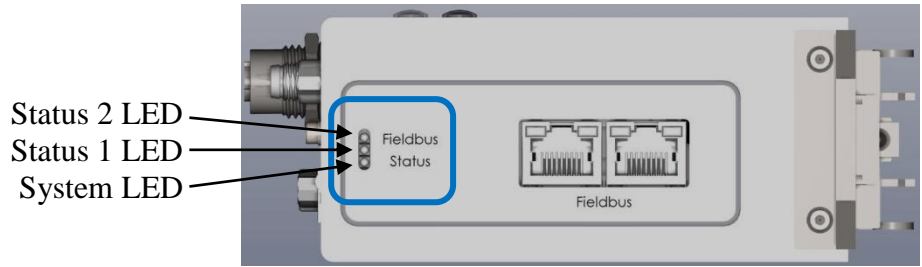
The SFI uses an embedded Hilscher communication module (COMX 51CA-RE) configured as a slave to provide the EtherNet/IP interface.

An EtherNet/IP EDS file found on IPG's FTP site at [software.ipgphotonics.com](http://software.ipgphotonics.com) can be used by a master when configuring the Fieldbus.





Fieldbus IP Address for the EtherNet/IP communication module is configurable using the Configuration Web Page described in section 4.5.2.

The Hilscher EtherNet/IP communication module provides diagnostic LED's to indicate the current status of the module. The diagnostic LED's are visible on the base electronics.

When all three LED's are steady green, the module is communicating to the scanner/master. The LEDs are viewable on the top side of the base.



**Figure 6-2 EtherNet/IP Diagnostic LED's**

System LED Status Codes		
Color	State	Meaning
	Off	Power supply off, OR hardware defect
	On	Operating system running
	Blinking	Second stage bootloader is waiting for firmware*
	On	Second stage bootloader missing*

**Table 6-3 EtherNet/IP System LED**

EtherNet/IP LED status codes			
LED	Color	State	Meaning
Status 1		Off	No Power
		On	Device operational
		Flashing	Standby: Device not configured
		On	Major Fault: non-recoverable fault *
		Flashing	Minor Fault: recoverable fault
		Flashing	Self-Test: Power up test
Status 2		Off	No communication to master
		On	Connected: Device has established a network connection
		Flashing	No Connection
		On	Duplicate IP: Another device has same IP address
		Flashing	Connection timeout
		Flashing	Self-Test: Power up test
RJ45 Link		On	Ethernet connection is established
		Off	No Connection
RJ45 Activity		Flashing	Transmitting and Receiving data

**Table 6-4 EtherNet/IP Status LED's**

\*Contact IPG for assistance

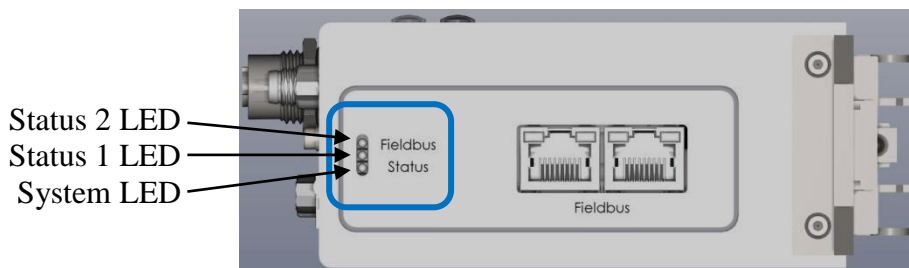
### 6.3 PROFINET

The SFI uses an embedded Hilscher communication module (COMX 51CA-RE) configured as a slave to provide the PROFINET interface.

An PROFINET XML file found on IPG's FTP site at [software.ipgphotonics.com](http://software.ipgphotonics.com) can be used by a master when configuring the Fieldbus.





Fieldbus IP Address for the PROFINET communication module is configurable using the Configuration Web Page described in section 4.5.2.

The Hilscher PROFINET communication module provides diagnostic LED's to indicate the current status of the module. The diagnostic LED's are visible on the base electronics. When all three LED's are steady green, the module is communicating to the scanner/master. The LEDs are viewable on the top side of the base.













**Figure 6-3 PROFINET Diagnostic LED's**



Color	State	Meaning
	Off	Power supply off, OR hardware defect
	On	Operating system running
	Blinking	Second stage bootloader is waiting for firmware*
	On	Second stage bootloader missing*

**Table 6-4 PROFINET System LED**

PROFINET LED status codes			
LED	Color	State	Meaning
Status 1		Off	No error
		On	Watchdog timeout*
		Flashing	DCP signal service initiated
Status 2		Off	No error
		On	No configuration*
		Flashing	No data exchange
RJ45		On	Ethernet connection is established
		Off	No Connection
RJ45		Flashing	Device sending/receiving Ethernet packets
			

**Table 6-5 PROFINET Status LED's**

\*Contact IPG for assistance

## **7 Regulatory Specifications**

### **7.1 Environmental (operating, non-operating)**

Operating temperature:	10 to 45 °C
Storage Temperature:	-20 to +70 °C
Humidity:	30 to 90% non-condensing

### **7.2 Agency Approval (Safety, EMC, RoHS)**

## **8 Warranty**

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21. Product Support. Product support for the SOFTWARE is not provided by MS, Microsoft Corporation, or their affiliates or subsidiaries. For product support, please refer to IPG support number provided in the documentation for the EQUIPMENT. Should you have any questions concerning this EULA, or if you desire to contact IPG for any other reason, please refer to the address provided in the documentation for the EQUIPMENT.
22. Termination. Without prejudice to any other rights, IPG may terminate this EULA if you fail to comply with the terms and conditions of this EULA. In such event, you must destroy all copies of the SOFTWARE and all of its component parts.
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## 8.5 Product Return

# Product Returns

## Returns to the United States

All product returns require a Return Merchandise Authorization (RMA) from IPG.

To obtain an RMA, call the Customer Service department of IPG Photonics Corporation at 508-373-1100 (US) or +49 2736 44 20 451 (Germany).

If you return a product with a RMA, perform the following procedure:

1. Products must be carefully packed in a suitable shipping container(s). Buyer assumes all responsibility for products damaged in shipment to IPG.
2. Buyer must issue a purchase order for the value of the replaced parts/service items and IPG will issue credit or invoice when the parts/service is received. Speak to IPG Service Manager for the amount authorized under the required purchase order.
3. All requests for repair or replacement under this warranty must be made to IPG within 30 days after discovery of the defect (but not later than 7 days after warranty expiration).
4. All products returned to IPG but which meet applicable specifications, not defectively manufactured or used not in accordance with this User's Guide, will result in the Buyer being charged IPG's standard examination charge.
5. Complete packing list with product model and serial number will ensure prompt repair.
6. Be sure to include with the returned product your 'ship to' address for the return of the serviced product.

## Shipping Instructions:

### Warranty Returns

Domestic & International Buyers\* pay for one-way freight costs and insurance to IPG. IPG will pay for freight return cost and insurance back to the Buyer.

### Non-Warranty Returns

Domestic & International Buyers\* pay for two-way freight costs and insurance to IPG. If shipment consists of returns that are both warranty and non-warranty, the shipment will be considered as non-warranty.

### Shipping Address for Returns to US

IPG Photonics Corporation  
50 Old Webster Road  
Oxford, MA 01540  
Attn: Product Returns  
Tel: 508-373-1100

## Returns to Germany

Shipping address for returns to Germany:

IPG Laser GmbH

Siemensstrasse 7

D-57299 Burbach, Germany

Attn: Product Returns

Tel: +49-(0)2736-44-20-451

1. IPG Laser GmbH will only accept returns for which an approved Return Material Authorization (RMA) has been issued by IPG Laser GmbH. You should address to the customer support team at +49-(0)2736-44-20-451 or [support.europe@ipg-photonics.com](mailto:support.europe@ipg-photonics.com) to discuss the return and request an RMA number. You must return defective products freight prepaid and insured to IPG Laser at the address shown herein. All products which have returned to IPG Laser but which are found to meet all previously applicable specifications for such products or which indicate damage to the fiber connectors not resulting from defect manufacturing, shall be subject to IPG Laser' standard examination charge in effect at the time and these costs shall be charged to the Buyer. All products returned to IPG Laser which are not accompanied by an itemized statement of defects, shall be returned to the Buyer at the Buyer's expense and IPG Laser shall not carry out any evaluation of such products. IPG Laser warrants to Buyer that its services, labor and replacement parts, assemblies and modules will be free of defects in material and workmanship for ninety (90) days from the date of shipment or performance of services.
2. Warranty Returns - Domestic & \*International Buyers should pay for one-way freight costs to IPG Laser. IPG Laser will reimburse Buyers for applicable reasonable third-party freight costs and IPG Laser will pay for freight return cost back to the Buyer.
3. Non-Warranty Returns - Domestic & \*International Buyers are responsible for two-way freight costs. If shipment consists of returns that are both warranty and non-warranty, the shipment will be considered as non-warranty. Any UNAUTHORIZED shipments billed to IPG Laser without authorization will be re-invoiced to the Buyer. Confirming purchase orders are required for non-warranty returns.

Product Returns  
Returns to Germany

4. \*International Returns must include applicable DUTIES AND TAXES, and you must mark air bills with "RETURNED FOR REPAIR." In any event, where IPG Laser accepts a shipment, IPG Laser will invoice to the Buyer for any charges as stated above.
5. Returns for credit will not be accepted unless authorized in advance, in writing by IPG Laser, in accordance with IPG Laser' Terms and Condition, including the warranty provisions. In most cases, restocking fees will apply.
6. All returns must be packaged adequately to avoid damage during shipment.
7. Complete packing list with product model and serial number will insure prompt repair, if the other terms of this form are followed.
8. See the IPG Terms and Conditions for the applicable warranty for the products before you request the return of the products.
9. RMA number will expire 31 days after the date of issue. Thereafter, units received in under the expired RMA number will result in a longer turnaround time. Include a copy of the completed RMA form with the return of your unit(s).



To learn more, visit [www.ipgphotonics.com](http://www.ipgphotonics.com)

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