

Release Notes for IPGP694 Scanner Fieldbus Interface

Release 2.2.0 Configuration File Suite URL and Components

Release 2.2.0 SVN URL:

http://ipgpsvn/svn/designs/SubComponent/Electrical/CEBIUCX0694XXXXX_IPGP694_Cut_Head_Base_Station/ConfigurationFiles/SWFP00143400000U_IPGP694_ScannerFieldbusInterface/Releases/2.2.0

Release 2.2.0 Components:

	FILENAME	NOTE
BOOTLOADER	P60-000377_lpgArmBootloader_5.2.bin	NO CHANGES – LATEST VERSION
SOFTWARE (.bin)	SWFP00143400000U_IPGP694_SFI_141828_lib141805_2.2.0.bin	SEE CHANGE HISTORY BELOW.
FPGA (.rbf)	SWFP00143400000U_IPGP694_SFI_FPGA_125830_2.2.0.rbf	NO CHANGES – LATEST VERSION
DICTIONARY (.txt)	SWFP00143400000U_IPGP694_SFI_Dictionary_2.2.0.txt	SEE DICT/INIT VALUE CHANGES
INIT FILES (.txt)	SWFP00143400000U_IPGP694_SFI_InitTable_2.2.0.txt	SEE DICT/INIT VALUE CHANGES
Upgrade (.xml)	SWFP00143400000U_IPGP694_SFI_2.2.0.xml	MODIFIED TO REFLECT LATEST FILENAMES
Clobber (.txt)	SWFP00143400000U_IPGP694_SFI_Clobber_2.2.0.txt	NO CHANGES – LATEST VERSION

2.x.x Change History

2.2.0 (12/6/2023)

- Updated SFI's Ethernet/IP IO Configuration Setup page with a checkbox option to allow use of the 32-bit Run/Idle header in the Input Assembly Real Time transfer format for target devices requiring this header to be present in the Input Assembly. The default (unchecked) setting for this option corresponds to a Modeless (no Run/Idle header) Input Assembly Real Time format. The SFI Dictionary and Init files have also been updated with an entry tracking this option's state.

2.1.0 (7/25/2023)

- Updated the Rotation dictionary entry and Scanner Fieldbus Interface specification to treat Rotation parameter as an S32 offset type instead of S16 to maintain compatibility with the Scan Controller which expects this value to be a signed 32-bit rotation offset.
- Updated SFI's Profinet IO Configuration Setup page to allow setting of Station Name ID suffix by the user. This allows multiple SFI device instances* to be connected on the same Profinet Fieldbus network and controlled by one PLC. The Profinet Station Name ID is stored in non-volatile memory

and retained through system power-cycling. The Profinet device description (XML) file was also updated to have its DNS-compatible name match the name expected by the firmware's Profinet module initialization default.

* Each additional SFI instance requires a corresponding XML file containing the same DNS-compatible Station Name ID as was defined in its SFI Profinet IO Configuration Setup page.

2.0.3 (2/15/2023)

- Fixed a Profinet-specific issue in Scanner Fieldbus Interface firmware (.bin file) where its Fieldbus initialization did not provide a unique DNS-compatible name (PNS_STATION_NAME) that would avoid conflict with PNS_STATION_NAME strings used by IPG's other Fieldbus-based products. The update now allows multiple IPG products using Profinet to be configured in the same Profinet Fieldbus network. The Profinet device description (XML) file was also updated to have its DNS-compatible name match the name expected by the firmware's Profinet module initialization.

2.0.2 (2/8/2023)

- Updated SFI (Scanner Fieldbus Interface) firmware (.bin file) to set its Fieldbus Product Code value to one which does not conflict with IPG's other Fieldbus-based products to allow multiple IPG slave device types to be configured in one Fieldbus network. SFI device description files were updated to have their respective Product Codes field match the Product Code value used by firmware. Dictionary changes include addition of "FbProductCode" and removal of unused "PressureUnits".

2.0.1 (10/21/2022)

- Updated SFI (Scanner Fieldbus Interface) EthernetIP Fieldbus software initialization (.bin file) to accommodate newer Hilscher Fieldbus module firmware revisions installed in their COMX 51CA-RE EthernetIP module variants. SFI 2.0.1 extends compatibility to both the 2.x and 3.x firmware versions Hilscher offers with these EthernetIP modules. Prior to SFI 2.0.1, only Hilscher EthernetIP Fieldbus modules programmed with Revision 2.x were compatible with SFI software. Other Hilscher COMX 51CA-RE modules (EtherCAT, Profinet) remain compatible with SFI software.

2.0.0 (9/30/2022)

- The SFI (Scanner Fieldbus Interface) Status web page has been redesigned for use with the extended SFI interface FPGA implementation and updated dictionary entry naming.
- Extended SFI status reporting includes Laser Alarm/Status and Wait Status monitoring to track scanner's positioning and completion states.
- Support added for reading two analog signal inputs and sending their data to the SFI via fieldbus link.
- Enhanced Serial Bus and Head connectivity detection and communication error reporting.
- Support added for controlling the scanner angle of rotation.

- Scanner Controller's Start, Enable, PortA[0], and PortA[1] input signals via Fieldbus and Digital I/O.
- Added the internal Virtual Scope for signal debug/analysis to the SFI's Service tab options.
- Added Status words/signals
 - Word 0
 - Definition
 - Configurable status values, currently only available as software statuses through IPGScan
 - Definition ID
 - ID number of the currently used Definition
 - Word 1
 - No changes
 - Word 2
 - Added Scan Controller statuses including laser statuses
 - Word 3
 - Combined Window PD sensor and Head Temp sensors into one word
 - Changed each sensor from 32 bit value to 16 bit value
 - Word 4
 - Added laser interface statuses (Port B on the Scan Controller)
 - Word 5
 - Added most recently finished Frame ID from Scan Controller
 - Word 6
 - Added most recently finished Object ID from Scan Controller
 - Word 7
 - Added most recently finished Job ID From Scan Controller
 - Word 8
 - Added number of frames currently in Scan Controller's buffer
 - Word 9
 - Added number of objects and jobs in Scan Controller's buffer (each 16 bits)
 - Word 10
 - Added bits for each possible event the Scan Controller could be holding the buffer for
 - Word 11
 - Reserved (unused)
- Added Control words/signals
 - Words 0-3
 - No Change
 - Word 4
 - Rotation offset for Scan Controller output
 - Word 5-6
 - Reserved (unused)
 - Word 7
 - Analog feedback signals

Release 2.2.0 Dictionary/Init Value Changes

Dictionary Name	Added/Removed/Renamed	Location	Function
FbBigEndian	Changed to Boolean (Bit 0)	Memory: 0x20083E31	Tracks Endianness state
FbInpAssmHdrEnb	Added Boolean flag (Bit 1)	Memory: 0x20083E31	Tracks Run/Idle hdr enable

Init Value Name	Added/Changed	Init Value	Function
FbInpAssmHdrEnb	Added	OFF	Default to Modeless (no Run/Idle header).

Release 2.1.0 Dictionary/Init Value Changes

Dictionary Name	Added/Removed/Renamed	Location	Function
Rotation	Changed from S16 to S32 type	FPGA register 0x90	Rotation offset
FbStationNameId	Added	Memory: 0x20083E30	Profinet Station Name ID

Init Value Name	Added/Changed	Init Value	Function
FbStationNameId	Added	0x01	Default Profinet Station Name ID.

Release 2.0.x Dictionary/Init Value Changes

Dictionary Name	Added/Removed/Renamed	Location	Function
ScannerStatus	No change	FPGA register 0x40	Scanner status bits
PortC	Renamed (was "PortCAI")	FPGA register 0x44	Scanner job feedback
ScannerStatus2	Added	FPGA register 0x48	Scanner status bits
WindowPD	Relocated (was FPGA reg. 0x48)	FPGA register 0x4C	Window PD (dB μ A)
HeadTemp	Relocated (was FPGA reg. 0x4C)	FPGA register 0x4E	Head temp. ($^{\circ}$ C)
WindowPDRaw	Added (integer equivalent)	FPGA register 0x4C	Window PD (dB μ A x 100)
HeadTempRaw	Added (integer equivalent)	FPGA register 0x4E	Head temp. ($^{\circ}$ C x 100)
LaserStatus	Renamed (was "PortBAI")	FPGA register 0x50	Laser status bits
FinishedFrameID	Renamed (was "FrameID")	FPGA register 0x54	Finished frame ID
FinishedObjectID	Renamed (was "Object")	FPGA register 0x58	Finished object ID
FinishedJobD	Renamed (was "JobID")	FPGA register 0x5C	Finished job ID
FramesInBuffer	Added	FPGA register 0x60	Frames in buffer
ObjectsInBuffer	Added	FPGA register 0x64	Objects in buffer
GroupsInBuffer	Added	FPGA register 0x66	Groups in buffer
WaitStatus	Added	FPGA register 0x68	Wait status bits
ScannerControl	No change	FPGA register 0x80	Scanner control bits
DevIDOut	Added	FPGA register 0x82	Device ID out
PortA	Renamed (was "PortAAll")	FPGA register 0x84	Scanner job setup
XOffset	Renamed (was "X_OFF")	FPGA register 0x88	Scanner X offset
YOffset	Renamed (was "Y_OFF")	FPGA register 0x8C	Scanner Y offset
Rotation	Added	FPGA register 0x90	Scanner rotation angle
DigOut	Added	FPGA register 0xC0	Digital output bits
DigIn	Added	FPGA register 0xC2	Digital input bits
AnalogPower	Added	FPGA register 0xD0	Analog laser power read
AnalogOut0	Added	FPGA register 0xD2	Analog ch. 0 output

AnalogPowerAlt	Added	FPGA register 0xD4	Analog laser power read (alt.)
AnalogOut1	Added	FPGA register 0xD6	Analog ch. 1 output
AnalogIn0	Added	FPGA register 0xD8	Analog ch. 0 input (no scale)
AnalogIn0Scaled	Added	FPGA register 0xDA	Analog ch. 0 input (scaled)
AnalogIn1	Added	FPGA register 0xDC	Analog ch. 1 input (no scale)
AnalogIn1Scaled	Added	FPGA register 0xDE	Analog ch. 1 input (scaled)
AOut0Scale	Added	FPGA register 0xE0	Analog ch. 0 output scale
AOut1Scale	Added	FPGA register 0xE2	Analog ch. 1 output scale
Aln0Scale	Added	FPGA register 0xE4	Analog ch. 0 input scale
Aln1Scale	Added	FPGA register 0xE6	Analog ch. 1 input scale

Init Value Name	Added/Changed	Init Value	Function
SimIntEnable	Changed	0x0003FFFF	Enable Interrupts from Scanner Interface Module.
AOut0Scale	Added	0.9	Default scaling for analog ch. 0 output.
AOut1Scale	Added	0.9	Default scaling for analog ch. 1 output.
Aln0Scale	Added	1.1	Default scaling for analog ch. 0 input.
Aln1Scale	Added	1.1	Default scaling for analog ch. 1 input.

Release 2.2.x Scanner Fieldbus Interface Specification

The descriptions of the data transferred between the Scanner Fieldbus master and Scanner Fieldbus Interface slave are located in the following documents:

ScannerFieldbusInterface.PDF

http://ipgpsvn.ipgphotonics.com/svn/designs/SubComponent/Software/IPGP694_ScannerFieldbusInterface/Releases/2.2.0/docs/ScannerFieldbusInterface.pdf [IPG-internal only]

ScannerFieldbusInterface_Customer.PDF

http://ipgpsvn.ipgphotonics.com/svn/designs/SubComponent/Software/IPGP694_ScannerFieldbusInterface/Releases/2.2.0/docs/ScannerFieldbusInterface_Customer.pdf [IPG-customer]

Release 2.2.x Scanner Fieldbus Interface Device Description Files

EtherCAT:

Hilscher COMX 51XX RE ECS V4.2 IPG ScannerFieldbusInterface_2.2.0.xml

http://ipgpsvn/svn/designs/SubComponent/Software/IPGP694_ScannerFieldbusInterface/Releases/2.2.0/FieldbusConfigurationFiles/EtherCAT/Hilscher%20COMX%2051XX%20RE%20ECS%20V4.2.X%20IPG%20ScannerFieldbusInterface_2.2.0.xml

Hilscher COMX 51XX RE ECS V4.6 IPG ScannerFieldbusInterface_2.2.0.xml

http://ipgpsvn/svn/designs/SubComponent/Software/IPGP694_ScannerFieldbusInterface/Releases/2.2.0/FieldbusConfigurationFiles/EtherCAT/Hilscher%20COMX%2051XX%20RE%20ECS%20V4.6.X%20IPG%20ScannerFieldbusInterface_2.2.0.xml

Please note: The two XML file variants above are included to maintain compatibility with different EtherCAT Fieldbus Master applications in use by our customers. Both versions are compatible with Sycon EtherCAT Fieldbus masters.

http://ipgpsvn.ipgphotonics.com/svn/designs/SubComponent/Software/IPGP694_ScannerFieldbusInterface/Releases/2.2.0/FieldbusConfigurationFiles/EtherCAT/comX.ico

EthernetIP:

HILSCHER COMX 51XX-RE EIS V1.1 IPG ScannerFieldbusInterface_2.2.0.EDS

http://ipgpsvn/svn/designs/SubComponent/Software/IPGP694_ScannerFieldbusInterface/Releases/2.2.0/FieldbusConfigurationFiles/EthernetIP/HILSCHER%20COMX%2051XX-RE%20EIS%20V1.1%20IPG%20ScannerFieldbusInterface_2.2.0.EDS

http://ipgpsvn.ipgphotonics.com/svn/designs/SubComponent/Software/IPGP694_ScannerFieldbusInterface/Releases/2.2.0/FieldbusConfigurationFiles/EthernetIP/comX.ico

Profinet:

GSDML-V2.33-HILSCHER-COMX 51XX-RE PNS IPG ScannerFieldbusInterface1_2.2.0-20230721.xml

http://ipgpsvn/svn/designs/SubComponent/Software/IPGP694_ScannerFieldbusInterface/Releases/2.2.0/FieldbusConfigurationFiles/Profinet/GSDML-V2.33-HILSCHER-COMX%2051XX-RE%20PNS%20IPG%20ScannerFieldbusInterface1_2.2.0-20230721.xml

http://ipgpsvn.ipgphotonics.com/svn/designs/SubComponent/Software/IPGP694_ScannerFieldbusInterface/Releases/2.2.0/FieldbusConfigurationFiles/Profinet/GSDML-011E-0117-COMX51REPNS.bmp

http://ipgpsvn.ipgphotonics.com/svn/designs/SubComponent/Software/IPGP694_ScannerFieldbusInterface/Releases/2.2.0/FieldbusConfigurationFiles/Profinet/GSDML-011E-0117-COMX51REPNS.ico

Release 1.x.x Change History

1.0.3 (7/30/2020)

- Software fix: At power-up, the task init function needs to write to any FPGA register so that the scan controller wakes up and begins outputting status. Previously firmware was writing to the XOFF register which could cause problems, so now firmware has switched to writing to the FPGA's Control register.
- Dictionary/Init/Clobber: No changes.

1.0.2 (2/26/2020)

- Software fix: The interface spec has been corrected to show that when the fiber interlock bit is set, the interlock is closed.
- Software fix: The status web page has been corrected to show that when the fiber interlock bit is set, the interlock is closed.
- Dictionary/Init/Clobber: No changes.

1.0.0 (2/13/2020)

- Software: Initial release.
- Dictionary/Init: No changes.
- Clobber: Added authMethod.