

SFF Status of Ethernet Focused Specs

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<https://snia.org/sff>

A Quick Note on SFF

- SFF specifications complement existing industry standards work and encompass, Cables, Connectors and cages, Form factors, Management interfaces, Copper and Optical Transceiver modules, Electrical interfaces

72 member companies

150+ published specs

Specifications used everywhere



Date	ID	Title	Status
2024-06-05	SFF-8024	SFF Module Management Reference Code Tables	Published 4.1.1
2024-05-20	SFF-8050	Turnkey SFF+ Memory Map for F10 Frequencies	Published 1.2
2024-05-20	SFF-FA-1005	Storage Systems High-Speed Cable Interconnect	Published 1.0
2024-05-20	SFF-8030	Multi-Function SR Unshielded Connector	Draft 10.2
2024-05-06	SFF-FA-1004	Pluggable Multi-Porting Module	Published 1.0
2024-05-03	SFF-FA-1003	Enterprise and Server-Grade Standard Form-Factor Fibre and Signal Specification (ESDF)	Published 4.0
2024-04-29	SFF-FA-1002	Protocol Agnostic Multi-Lane High-Speed Connector	Published 1.0
2023-04-19	SFF-FA-1001	Close Reference to Select SFF Connectors and Modules	Published 1.1
2024-04-16	SFF-FA-1007	QSFP2C Connector, Cage, & Module Specification	Published 1.0
2024-03-22	SFF-FA-1003	Internal High-Speed Cable / Modular Connector System	Draft 10.2
2024-03-15	SFF-4402	Multi-Protocol Internal Cables for SAS and/or PCIe	Published 1.0
2024-03-07	SFF-FA-1016	Internal Unshielded High-Speed Connector System	Published 1.2
2024-02-09	SFF-8114	Mini Multilane A/EX Shielded Cage Connector (MCM)	Published 3.0
2023-11-06	SFF-FA-1003	Cables and Connector Variants Based on SFF-FA-1002	Published 1.1
2023-10-31	SFF-FA-1008	Enterprise and Server-Grade Standard Form-Factor (E3)	Published 2.1
2023-09-14	SFF-FA-1006	New Project: Proposed Template Guide	Published 1.0
2023-08-08	SFF-8112	Mini-LAN A/EX Shielded Connector	Published 1.0
2023-08-03	SFF-8472	Management Interface for SFF+	Published 1.0
2023-06-11	SFF-FA-1001	SFF+ Cage, Connector, & Module Specification	Published 1.0
2023-01-03	SFF-8030	Management Interface for SFF+ Modules and Cables	Published 2.1
2022-12-21	SFF-4402	SFF+ 14-Pluggable Transceiver Solutions	Published 1.2



In the last 12 months, we:

Published 4 new specifications and Revised 9 existing specifications

Ethernet focused Specifications in SFF

- Transceivers (SFP+/QSFP+)
 - Module Cage, Connector, Transceiver
 - General Electricals (low speed, power, etc.)
 - Recipe for matching specs to speeds
- Module Management Reference Codes
- Management
- Cross Reference Documents

State of 224Gb in SFF

SFF manages two families of specifications: SFP and QSFP

QSFP: 224G updates in process

- SFF-8665: QSFP Transceivers
 - Draft 1.9.8 released. Close to publication.
- SFF-TA-1027: Connector, Cage, Pluggable Module
 - Draft 1.0.5 released. Working through changes before starting approval process
- SFF-8679: General Electrical
 - Published 1.9 to cover 224G

SFP: Updates not started

- SFF-8402: SFP Transceivers
 - R1.2 included 112G. 224G timeline TBD
- SFF-TA-1031: Connector, Cage, Pluggable Module
 - R1.0 supports 112G. 224G timeline TBD
- SFF-8419: General Electrical
 - 112 updates in process. 224G timeline TBD
- SFF-8472: Management Interface
 - Draft 12.4.3. Close to publication.

New: 448Gb work started within SFF

- **Scope: Storage/compute/backplane focus**
 - 448G
 - Introduce 448G capable channels
 - Establish 448G COM parameters
 - Define package IL, ERL etc characteristics
 - Investigate optimal PAM modulation for backplane/copper channels
 - Identify additional link training requirements (if needed)
 - Investigate the use of 448G technology to increase the reach of 112G and 224G interconnects
 - Connector Mechanical specifications are out of scope for this project
 - Separate project at later date
- For more details, see SFF-TA-1043:
<https://members.snia.org/document/dl/55858>

Proposed working plan with other organizations on 448G

- In General: SNIA/SFF project will have a Storage/compute/backplane focus vs networking/front panel focus of other groups.
- IEEE
 - Initiate 448G copper work ahead of an IEEE project
 - Liaison between SNIA/SFF and NEA AI group
- OIF
 - Get connector and channel requirements from OIF high density connector project
 - Provide feedback based on channel simulations
- OCP
- UEC/UALink
 - Request channel requirements
 - Provide copper interconnect information

Other Unrelated Items:

Doc number	Title	Draft	Status:
SFF-TA-1042	Enterprise and Datacenter 2U Form Factor (E2)	0.0.1	New EDSFF form factor for 64 placements
SFF-TA-1041	ULP Gen 7 PCIe Connector	0.0.0	Low profile PCIe cable connector for 128Gbs+
SFF-TA-1040	Internal Low-Profile High-Speed Cable Interconnect	0.0.0	Low profile PCIe cable connector for 128Gbs+
SFF-TA-1039	PCIe FPP Hardware and Electrical Specification	0.0.1	Electrical, power, ESD, thermal for PCIe FPP cable
SFF-TA-1038	Low Profile High Density Flexible Cable Connector	0.0.0	Low profile PCIe cable connector for 64/128Gbs+
SFF-TA-1037	Connectors For Pluggable Multi-Purpose Module	1.0 Update	Errata fixes
SFF-TA-1036	Cable Optimized Boot Peripheral Connector	0.0.1	Multi-pitch cable connector for board to board
SFF-TA-1026	Storage System High Speed Cable Interconnect	1.1 update	Adding protection for pin insertion
SFF-TA-1002	Protocol Agnostic Multi-Lane High Speed Connector	1.5.2	2 nd ortho height, burst currents, labels, errata fix
SFF-9639	Multifunction 6X Unshielded Connector Pinouts	2.1.1	Errata fixes
SFF-9402	Multi-Protocol Internal Cables for SAS and/or PCIe	1.1.0	Reference spec update for various cable pinouts
SFF-8614	Mini Multilane 4/8X Shielded Cage/Connector (HDsh)	3.5.1	Updates for PCIe 5.0, other fixes
SFF-8613	Mini Multilane 4/8X Unshielded Connector (HDun)	3.5.4	Adding SMT footprint, other errata
SFF-8024	SFF Module Management Reference Code Tables	4.12.1	Adding new codes, newer device descriptors
REF-TA-1011	Cross Reference to Select SFF Connectors and Modules	1.1.3	Reference spec update for 112/224

SFF TWG Participation

- We are solving problems around higher speed Ethernet and PCIe interconnects to solve AI bottleneck problems while improving existing interconnects and form factors.
- Our members include participants involved in ASICs/CPU, Data centers, interconnects, networking, research, server systems, storage devices, test equipment, and transceivers.
- **Benefits:**
 - Participation into development of SFF specifications, information documents, and reference guides
 - Ability to open new projects
 - Access to all presentations, all drafts, prior publications, and supplemental material relevant to all SFF projects
- **Resources:**
 - Public Site: <https://www.snia.org/sff>
 - Specifications: <https://www.snia.org/sff/specifications>
 - Additional questions? Please send mail to sfftwgchair@snia.org