

Cabling Policy for KAGRA ISC

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Scope

- Summary of RF/AF cabling policy discussed at IOO and ISC mailing list, and Kamioka
- References:
 - [JGW-D1100425](#) (electronics racks layout)
 - [JGW-D1402984](#) (Cabling around PSL+IMC)
 - [JGW-D1402986](#) (ISC rough layout and cabling)
 - [JGW-D1403017](#) (Oplev rough layout and cabling)
 - [JGW-D1403033](#) (cable racks layout)
 - [JGWwiki/KAGRA/Subgroups/DGS/Projects/STDA/Dsub9](#)
(Dsub cable policy for avoiding ground loops)
- Abbreviations
 - RF: radio frequency (~10 kHz to ~100 MHz)
 - AF: audio frequency (DC to ~ 10 kHz)

RF Cabling Policy









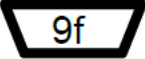





- Use N-connectors for RF oscillators, RF distributors, and RF delay-line
- Use N-N low loss cables for table to rack, rack to rack cabling (Fujikura 12D-SFA-LITE)
- Use SMA-SMA flexible cable for cabling around a table, around a rack (LMR195?)
- SMA-SMA, N-N cables should be male-male
- N-SMA conversions will be done at patch panels
- Use N-SMA conversion connectors when there's no patch panel for that cabling path
- Use SMA connectors for RFin/out in circuits
- Do not use BNC, LEMO (they make glitches), TNC, etc. (they add extra complexity)

AF Cabling Policy

- Use Dsub 9 pin male-female cables for table to rack, rack to rack cabling (**may be should accept some exceptions to use single-ended instead; under discussion**)
- Use TNC-TNC cables for cabling around a table, around a rack (BNC-BNC cables are accepted for monitor channels)
- Auxiliary slow channels should be concentrated to Dsub 9 pin at the table
- Use Dsub female for circuits which “send” signals (there are some exceptions, i.e. RF PD and RF QPD)
- Use Dsub male for circuits which “receive” signals (there are some exceptions)
- Do not use 2-pin (multiple pin) LEMO
- Dsub 15pin for QPDs
- Dsub 37pin for Binary Inputs/Outputs

Cabling Example

- Cabling example can be found in [JGW-D1403111](#)

	BNC, TNC		optical path
	SMA		RF low loss cable
	SMB, SMC		RF flexible cable
	N		BNC/TNC cable
	Dsub (pin, gender)		ribbon cable
	DC power		DC power cable
	needs AC power		other cable