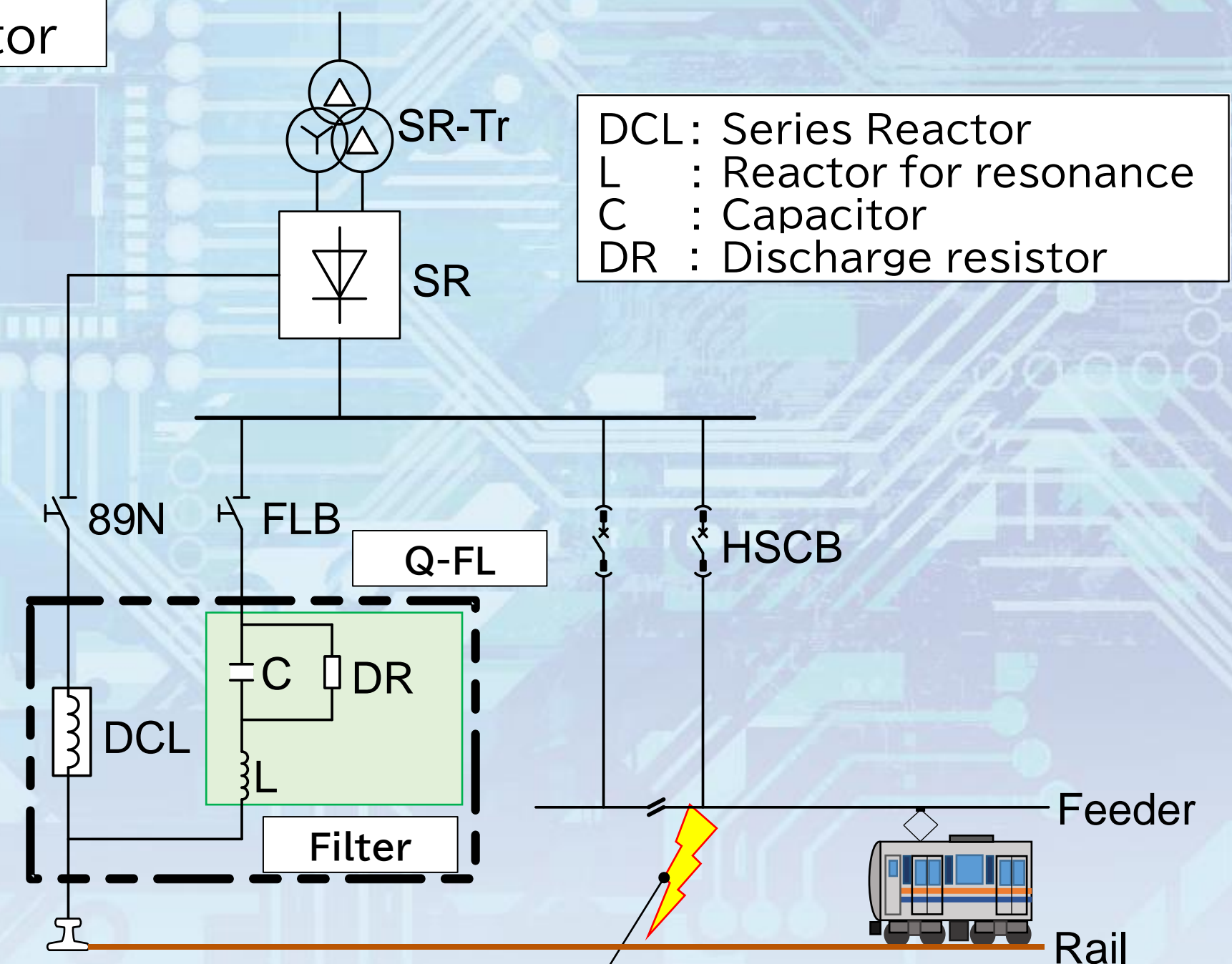
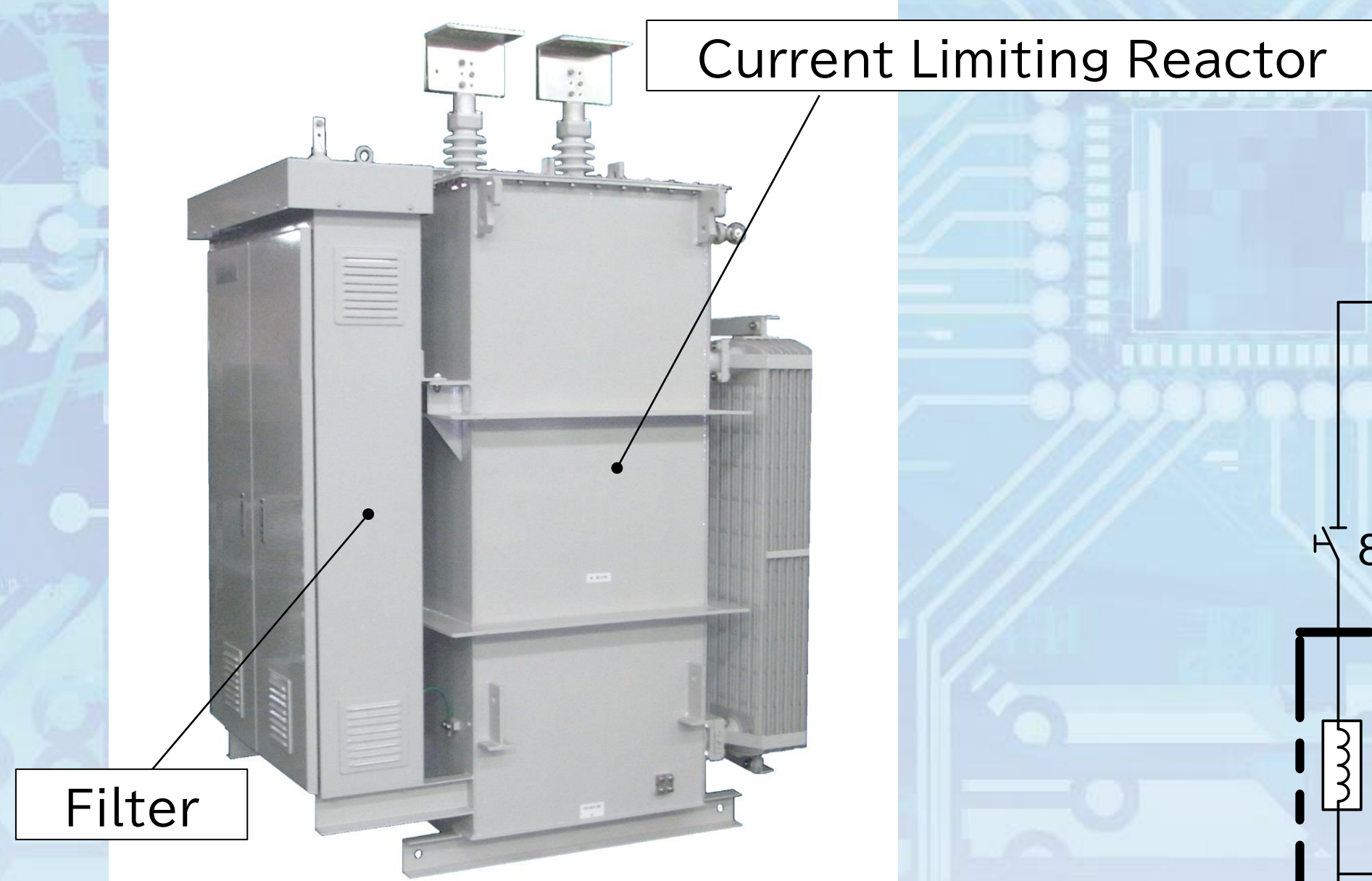


DC Filter with Current Limiting Reactor (Q-F ℓ)

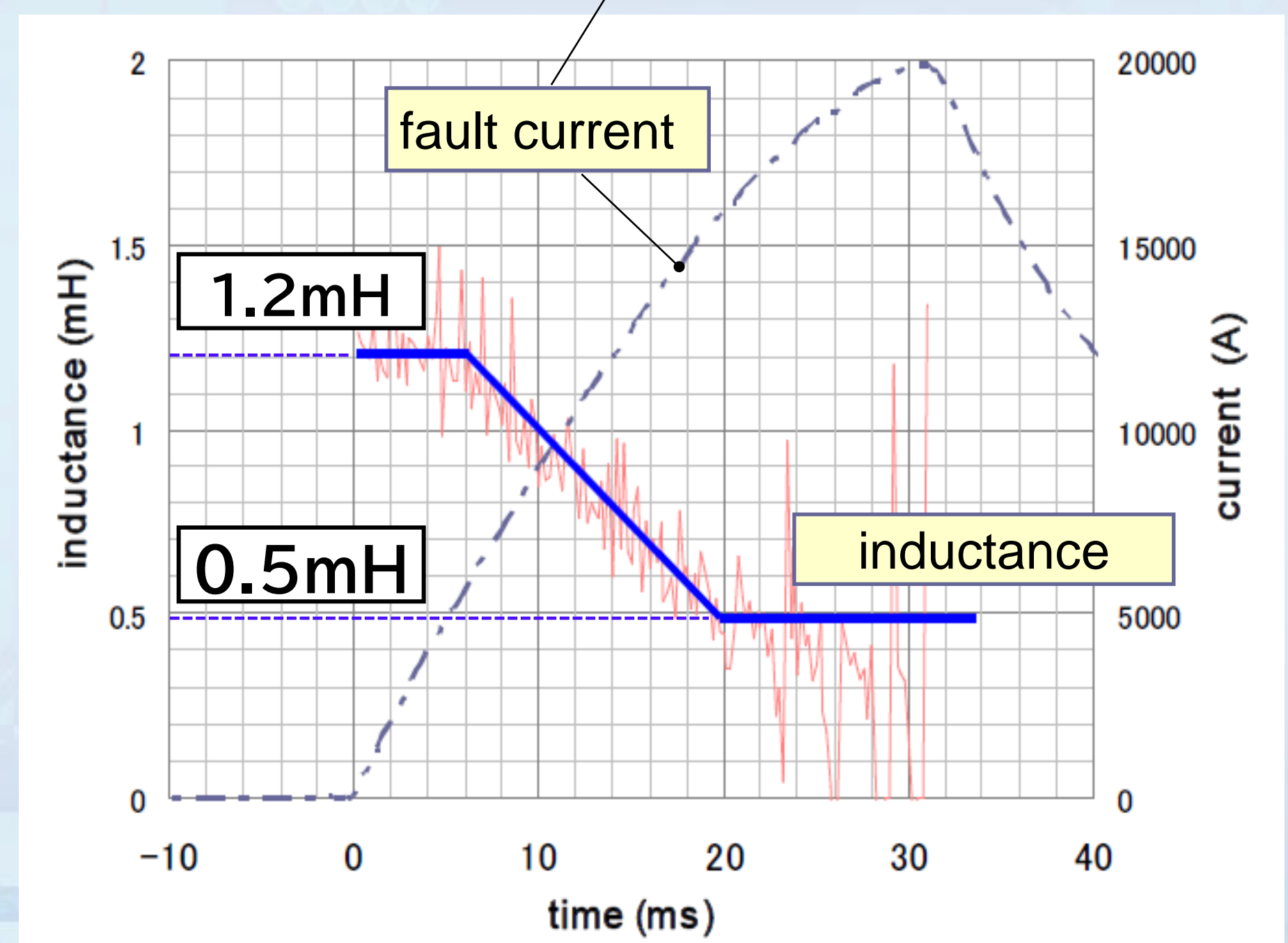
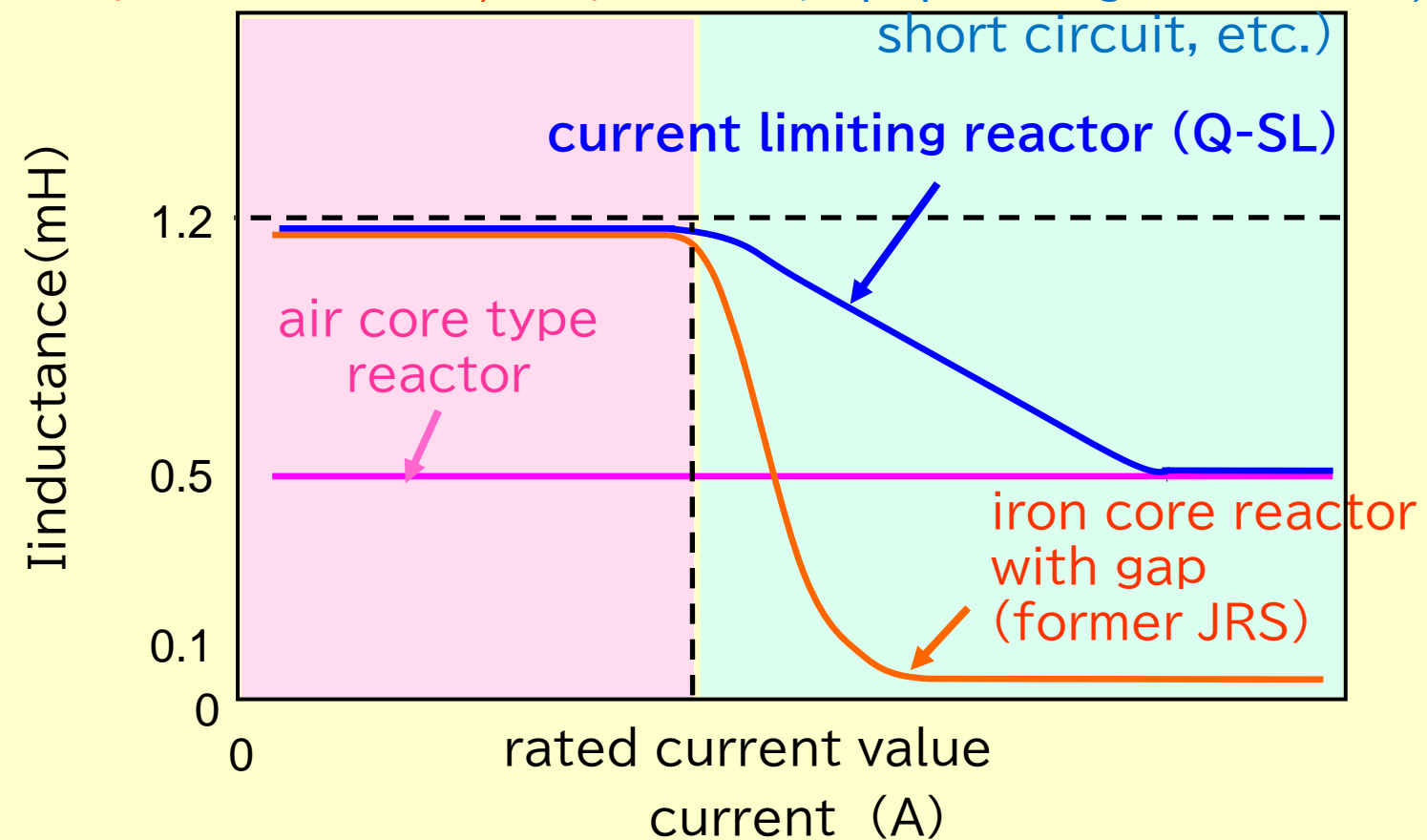
The device that suppresses harmonics generated by rectifiers in DC feeding substations. It is equipped with a series reactor which properly limits excessive fault current in any current range.



DC Filter With Current Limiting Reactor (Q-F ℓ)

Current-limiting reactor (Q-SL) **maintains an inductance of 1.2 mH up to the rated current range**, as indicated in the former JRS, **while ensuring 0.5 mH at any high current**, thereby **contributing to reliable interruption of fault current in DC high-speed circuit breakers** and reduce the load on substation equipment such as rectifiers.

frequency of breakdowns: Many (train accident, etc.) failure frequency: Low (equipment ground fault, short circuit, etc.)



Purpose and role of the device

In recent years, there has been a tendency for large currents with steep rise to flow during low-resistance ground faults near substations due to the effects of lower impedance rectifiers, such as larger substation capacities and lower regulation ratios for the purpose of utilizing regenerative power effectively. Under such circumstances, the series reactor shall be effective to suppress excessive current so that the DC high-speed circuit breaker in the substation can be properly perform its breaking function against the fault current in any current range.

Features

This system is equipped with the series reactor which can secure more than 0.5mH when a large fault current flows, and can maintain a high inductance value even when a rated current or fault current (such as train accident) similar to rated current flows. As main objective of this system, this suppresses the harmonics generated by the rectifier. In addition, Current Limiting Reactor have the function of slowing down abrupt current changes, so they can be installed as a substitute for resistors used for short-circuit protection in power storage systems for electric railways, thereby contributing to energy conservation.





Configuration

This DC Filter(Q-F ℓ) consists of the filter panel on which the resonant circuit equipment is mounted and the series reactor. Upon request, DC ground fault protective relay(64P) and DC feeding voltage measuring equipment(DCVT) can be installed in the filter panel.

Maintainability

All equipment in the resonant circuit is dry self-cooled and mounted in the filter panel separately from the series reactor, making it easy to perform maintenance and repairs.

Reducing environmental impact

The oil-filled self-cooled series reactor uses a vegetable oil system with rapeseed oil as the base oil to reduce the environmental impact. The vegetable oil-based insulating oil has an extremely high flash point and is safe to use. (Dry self-cooling type is also available)

Primary circuit rated voltage		DC 1500V		
Resonant circuit	Commercial frequency	50Hz	60Hz	
	Resonance frequency	600Hz	720Hz	
	Resonance reactor	0.440mH	0.305mH	
	Capacitor	160μF		
	Circuit current	35A		
Series Reactor	Inductance	0.9 ~ 1.1mH At rated current When iron core is saturated 0.5mH(Minimum)		
Rated current		2000A	4000A	6000A
Dimensions (Oil-filled self-cooling)		W:1750mm D:2250mm H:2950mm	W:2000mm D:2550mm H:3050mm	W:2100mm D:2650mm H:3200mm
Weights (Oil-filled self-cooling)		Approx. 6000kg	Approx. 10000kg	Approx. 13000kg

