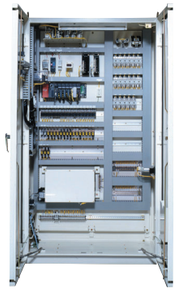
Product appearance

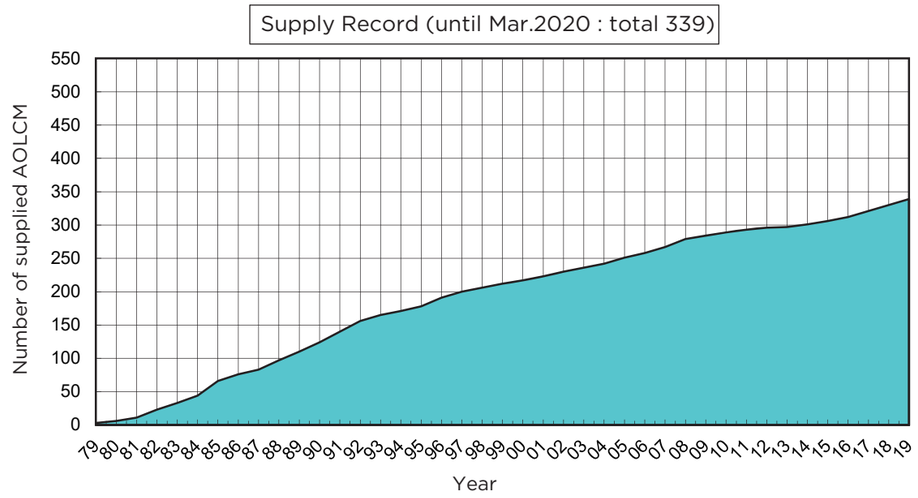


Measuring panel

Grounding box for
GTR neutral point

Grounding box for
EVT neutral point

Supply record



Please inform us of the following data for the estimation of the system.

- **Single line connection diagram**
  Voltage, grounding method, number of buses, GTR / EVT capacity and number
- **Feeder list**
  Number of lines, number of cores[single core (including triplex), 3-cores], conductor size

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ED603(2020.4) SBC

Automatic On-Line Cable
insulation Monitoring system

AOLCM

SUMITOMO ELECTRIC
Connect with Innovation

Measuring panel

Central monitoring station

Fully automatic monitoring of deterioration of XLPE insulated cables 3.3 to 11kV
Powerful support for preventive cable maintenance!

SUMITOMO
ELECTRIC
GROUP

Powerful support for preventive maintenance

- AOLCM is the latest tool for preventive maintenance from cable insulation breakdown and allows the uninterruptible continuous operation of factories and buildings.
- AOLCM can improve the precision of cable insulation deterioration and the judgment of renewal of cables.
- Also, you can monitor from a branch station connected to the AOLCM central monitoring station via internal network.

Fully automatical measurement of the insulation resistance of high-voltage cables and bus

[Object of measurement]

- XLPE insulated cables 3.3～11kV, single-core, triplex, 3-cores

[Measuring items]

- Insulation resistance of cable main insulation (RI)
- Insulation resistance of cable sheath (RS)
- Conducting resistance of shielding layer (RT)　＊except 3-cores
- Insulation resistance of bus (RB)

AOLCM automatically processes the measured values and raises an alarm once abnormality happens. Preventive maintenance according to the situation is possible.

[Statistic display]

- List of measured values of all feeders for each measurement date
- Measured value list for each feeder　•Monthly / Annual report chart
- Time series chart for each feeder for measurement item
- Estimated remaining lifetime curve of cable main insulation resistance for insulation failure.

Measurement principle

•RI measurement
Measurement voltage (DC50V) shall be applied between cable conductor and shielding layer through primary neutral point of GTR (or EVT) and busbar. DC leakage current of cable insulation shall be transported to measuring panel and measured to insulation resistance.

•RB measurement
DC leakage current of bus line by applying DC50V shall be measured to insulation resistance.

•RS measurement
Measurement voltage (DC5V) shall be applied between cable shielding layer and the earth. DC leakage current of cable sheath shall be transported to measuring panel and measured to insulation resistance.

•RT measurement
For RT measurement, each cable shielding layer shall be connected at the point of load side of a feeder line. By the connection, loop line of shielding is formed. Measurement voltage (DC5V) shall be applied between one phase and the connection of another two phases. Measurement shall be done for 3 phases. Resistance of each shielding layer is calculated from the measured currents.

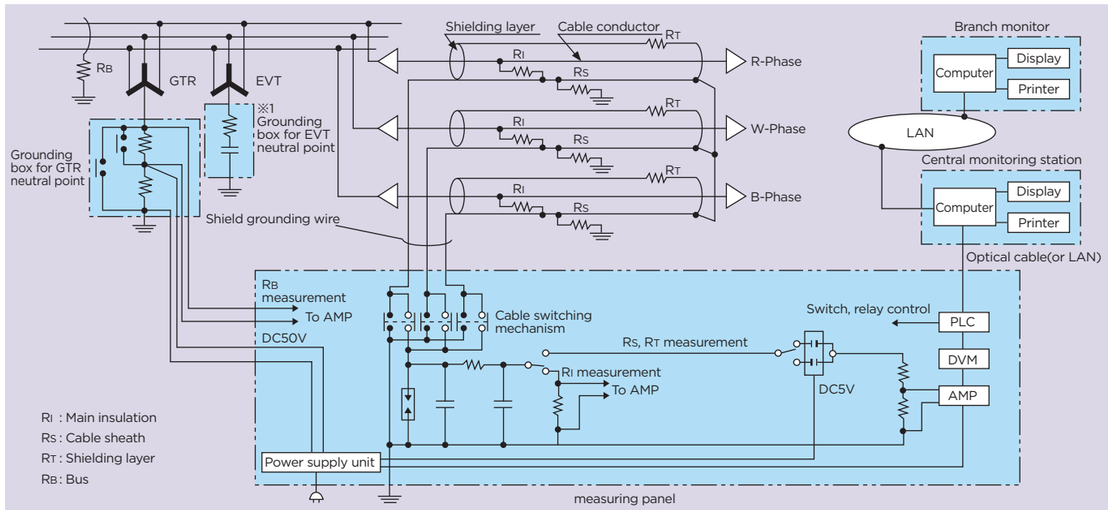
Measurable range (example)

Item		Measurable range
Main insulation(RI)		10MΩ～10000MΩ
Cable sheath(RS)		0kΩ～10MΩ
Shielding layer(RT)		0Ω～1kΩ
Bus(RB)	Ungrounded	2kΩ～20MΩ
	Resistance grounded	4kΩ～5MΩ

Judgment criteria (recommended value)

Item	Measured value	Judgment	Action
RI : Main insulation [6.6kV cable]	RI≧3000MΩ	Good	Not necessary
	3000MΩ＞RI ≧300MΩ	Slight deterioration	Monitoring carefully
	300MΩ＞RI ≧30MΩ	Medium deterioration	Renewal shall be considered and planned.
	30MΩ＞RI	Serious deterioration	Cable shall be renewed immediately.(Cable will go to breakdown soonly.)
RS: Cable sheath	RS≧1MΩ	Good	Not necessary
	1MΩ＞RS	Not good	Localization and repair work is recommended.
RT: Shielding layer	100Ω＞RT	Good	Not necessary
	RT≧100Ω	Not good	Localization and repair work is recommended.
RB: Bus	Judgment shall be done by considering the condition of bus because no criteria is available.		

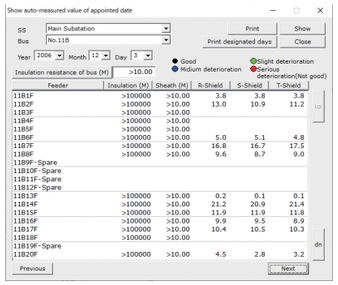
System construction and measurement circuit (example of neutral grounded system)



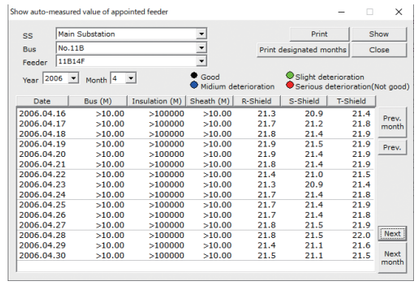
※1: To maintain the measurement voltage (DC50V) applied on the bus, EVT neutral point grounding boxes shall be installed on the EVT besides the point applied DC50V.

Example of measured values list

All feeders in a day



Each feeder



- display with colored letter

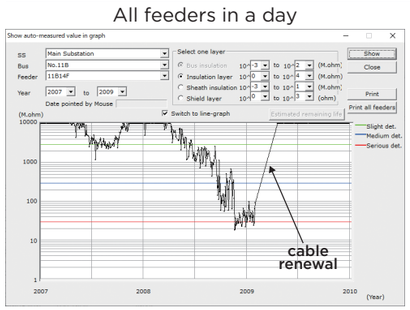
RI : 3 criterion steps according to the degree of deterioration

RS : red letter for the value less than 1MΩ

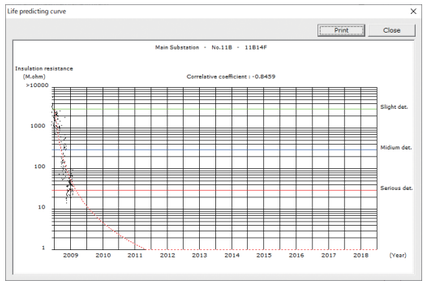
RT : red letter for the value more than 100Ω

Example of time series chart (6.6kV)

All feeders in a day



Estimated lifetime curve



- You can understand the degree of cable deterioration at a look of the chart.

- You can judge the cable renewal with high precision in advance.

- You can estimate remaining lifetime curve based on measured values.