

RAM-1 - Sistem za brezžični nadzor odvodnikov prenapetosti nad 1 kV

RAM-1 - Remote condition monitor for surge arresters above 1 kV

Namen

Prvi v svetu smo izdelali in s patentom zaščitili pametno napravo RAM-1, ki omogoča brezžični nadzor stanja vseh tipov vgrajenih ZnO odvodnikov prenapetosti nad 1 kV.

Use

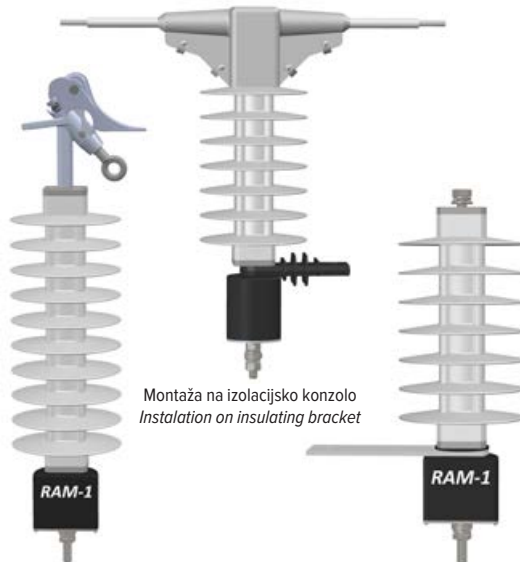
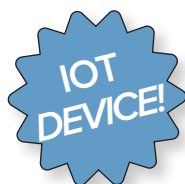
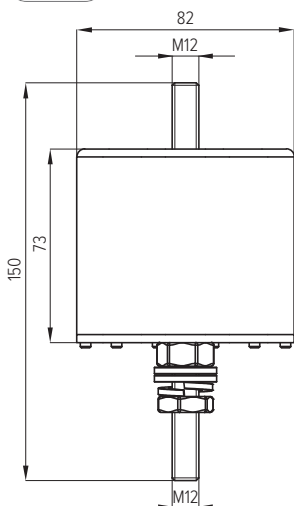
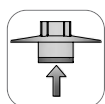
We are the first in the world to design and patent a smart RAM-1 device that enables wireless monitoring of all types of installed ZnO surge arresters above 1 kV.

Tehnični podatki

Uporaba	daljinski nadzor vgrajenih odvodnikov prenapetosti nad 1 kV
Osnovna meritev	ohmska komponenta uhajavega toka od 0 ... 3 mA ($\pm 10\%$)
Ostale meritve	okvara, števec strel, temperatura, nagib, lokacija
Standard	IEC 60099-5
Temperaturno območje	- 20 °C (- 40 °C) ... + 85 °C
Stopnja zaščite ohišja	IP 67
Frekvenca	48 Hz ... 62 Hz
Uporabniški vmesnik	web, app, email
Merilni cikel	1 ura
Komunikacijski cikel	okvara - takoj, normalno delovanje - 60 dni (nastavljivo)
Komunikacija	Bluetooth, 4G, 5G ali LoRaWAN
Avtonomija	do 20 let brez vzdrževanja
Material ohišja	termoplast V-0 (UL 94), nerjavno jeklo A2 (A4)
Priključek / material	M12 / nerjavno jeklo A2 (A4)
Montaža	na ozemljitveni strani odvodnika
Masa	0,580 kg

Technical data

Application	remote monitoring of installed surge arresters above 1 kV
Main measurement	resistive component of leakage current from 0 ... 3 mA ($\pm 10\%$)
Other measurements	instant fault, surge counter, temperature, position, location
Standard	IEC 60099-5
Temperature range	- 20 °C (- 40 °C) ... + 85 °C
Housing IP protection level	IP 67
Frequency	48 Hz ... 62 Hz
User interface	web, app, email
Measuring cycle	1 hour
Communication cycle	instant fault - instantly, normal conditions - 60 days (customizable)
Communication	Bluetooth, 4G, 5G or LoRaWAN
Autonomy	up to 20 years with out maintenance
Housing material	termoplast V-0 (UL 94), stainless steel A2 (A4)
Connector / material	M12 / stainless steel A2 (A4)
Installation	on the earthing side of the arrester
Mass	0,580 kg



Prostozačna montaža
Installation on overhead power line

Montaža na izolacijsko konzolo
Installation on insulating bracket

Montaža na kovinsko konzolo
Installation on steel bracket

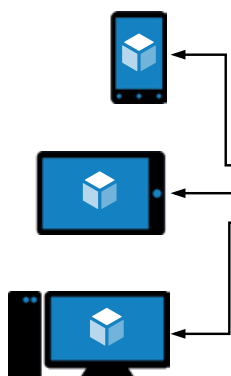
Prednosti

- Trenutno javljanje okvare, avtonomno delovanje, prikaz mesta vgradnje
- Enostavna vgradnja, ugodna cena, do 20 let brez vzdrževanja, brez stroškov povezave
- Dograditev na vse tipe vgrajenih ali na nove odvodnike prenapetosti od 1 kV dalje
- Pripravljeno za strojno učenje

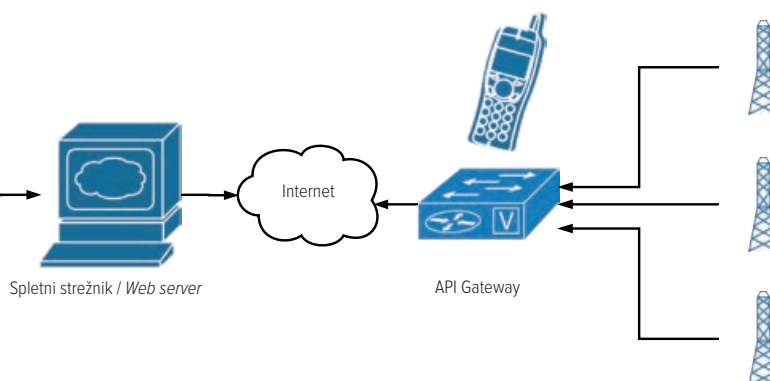
Advantages

- Alarm in case of instant fault, autonomous working, showing the installation location
- Simple instalation, low price, up to 20 years with out maintenance, no conection fees
- Instalation possible on all already instaled or new surge arresters above 1 kV
- Machine learning ready device

Shema delovanja (RAM-1)



Operation scheme (RAM-1)



Paketi / Package

	1	2	3	4
	Nelicenci Without licence	Osnovni Basic	Razširjen Extended	Upravljanje Full
Meritve / Measurements				
Ohmska komponenta uhajavega toka IEC 60099:5 <i>Resistive component of leakage current IEC 60099:5</i>	✓	✓	✓	✓
Okvara / Instant fault	✓	✓	✓	✓
Lokacija / Location		✓	✓	✓
Števec strel / Surge counter			✓	✓
Temperatura / Temperature			✓	✓
Nagib / Position			✓	✓
Izračun izgub (v pripravi) / Calculation of power loss (in preparation)			✓	✓
Povezljivost / Connectivity				
4G / 4G	✓	✓	✓	✓
5G / 5G			✓	✓
Bluetooth / Bluetooth	✓	✓	✓	✓
LoRaWan / LoRaWan			✓	✓
Obveščanje / Messaging				
Prikaz sporočila na 2 meseca (email) / Status report every 2 months (email)	✓	✓	✓	✓
Prikaz zadnjih 5 meritev (web, app) / Display of last 5 status reports (web, app)		✓	✓	✓
Prikaz celotne zgodovine meritev, grafični prikaz (web, app) <i>Display of entire history of status reports (web, app)</i>			✓	✓
Avtomatsko obveščanje ob prekoračitvi dovoljene vrednosti (email) <i>Automatic status report when set values are exceeded (email)</i>	✓	✓	✓	✓
Avtomatsko obveščanje ob prekoračitvi dovoljene vrednosti (web, app, email) <i>Automatic status report when set values are exceeded (web, app, email)</i>		✓	✓	✓
Nastavljiv interval poročanja / Adjustable status report interval			✓	✓
GPS lokacija (koordinate) / GPS location (coordinates)		✓	✓	✓
GPS lokacija (koordinate, zemljevid, vodenje do naprave) <i>GPS location (coordinates, map, guidance to surge arrester)</i>			✓	✓
Alarm za okvaro (email) / Alarm in case of instant fault (email)	✓	✓	✓	✓
Alarm za okvaro (web, app, email) <i>Alarm in case of instant fault (web, app, email)</i>		✓	✓	✓
Opcije / Additional options				
Odčitavanje meritev iz naprave RAM-1 na terenu (Bluetooth) <i>Status report from RAM-1 in the field (Bluetooth)</i>		✓	✓	✓
Jezik uporabniškega vmesnika - angleški / User Interface - English language	✓	✓	✓	✓
Jezik uporabniškega vmesnika - na željo kupca / User Interface - language by request			✓	✓
Beleženje aktivnosti naprave (pregledi, popravki, morebitne poškodbe, ...) <i>Activity log (inspections, repairs, maintenance, ...)</i>			✓	✓
Upravljanje z uporabniki (omejeno) / User management (limited)		✓		
Upravljanje z uporabniki (neomejeno) / User management (unlimited)			✓	✓
Upravljanje s sistemom RAM-1 v domeni podjetja Izoelektro <i>Outsourcing services - management of RAM-1 system by Izoelektro</i>				✓
Možnost integracije v obstoječ nadzorni sistem (SCADA) <i>Possibility of integration into the existing control system (SCADA)</i>		✓	✓	
Pripravljeno za strojno učenje / Machine learning ready device	✓	✓	✓	✓