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DISTRIBUTION SOLUTIONS

VisiVolt™

Passive Voltage Indicator VV-A, VV-B

Installation and operation instructions



Description

VisiVolt™ is ABB indicator of voltage presence for applications in outdoor and indoor medium voltage systems. It is adapted for permanent installation directly on current bars and naked or insulated conductors of the system.

VisiVolt™ indicates the presence of voltage by displaying a large, well visible lightning arrow sign on its LCD display. VisiVolt™ indicator is a fully self-supplying and maintenance-free device; it is powered by the electric field surrounding the energized conductor, on which it is installed.

ABB recommends to use VisiVolt™ – new product indicating presence of voltage – to increase safety during any maintenance operations with indoor and outdoor medium voltage systems (including switching apparatus placed in open installation points).

Attention: The equipment covered in this manual should be used and serviced only by competent personnel familiar with and following good work and safety practices.

This equipment is for use by such personnel and is not intended as a substitute for adequate training and experience in safety procedures for this type of equipment. These instructions neither cover all details or situations in equipment use nor do they provide for every possible contingency to be encountered in relation to installation, operation or maintenance.

If further information and details are required, ABB should be contacted.

Before installing VisiVolt™ Passive Voltage Indicator, thoroughly read, understand and follow these instructions. Retain the instruction for further reference.

Installation of VisiVolt™ indicators on a power system can only be performed after voltage is switched off and its conductors are earthed, according to the safety rules required by the relevant standards.

Specification & dimensions

VisiVolt type			VV-A	VV-B
3-phase system	Nominal voltage (Un)	[kV]	3.0 - 6.0 ¹⁾ 6.0 - 15.0	13.8 - 36.0
	Rated voltage, max.	[kV]	3.6 - 17.5 ²⁾	17.5 - 40.5 ²⁾
	Threshold voltage (p-g and p-p) ^{3) 4)}		> 0.6 kV < 45% Un	> 1.5 kV < 45% Un
1-phase system	Nominal voltage (Un p-g) ³⁾	[kV]	4.8 - 8.0	8.0 - 20.0
	Threshold voltage (p-g) ³⁾		> 1.0 kV < 78% Un	> 1.5 kV < 78% Un
Application range	Non insulated (bare) metal bars and conductors; insulated circular-section conductors with maximal insulation thickness 3 mm.			
Nominal frequency	[Hz]	50 – 60		
Response time	[s]	< 1 at temperature –20°C and above < 3 at temperature –30°C < 10 at temperature –40°C		
Short-time (symmetrical) withstand current (1s) ⁵⁾	[kA]	63		
Peak withstand current ⁵⁾	[kA]	164		
Operation temperature range	[°C]	–40 - +85		
Physical dimensions	[mm]	H: 92 × W: 63 × D: 38		
Net weight	[g]	109		

1) On not insulated (bare) circular-section conductors and on bars of width up to 30mm

2) Depending on pole distance (see recommended minimum clearances)

3) p-g voltage = phase-ground voltage; p-p voltage = phase-phase voltage

4) For pole distance ranges within limits given in installation and operation instructions

5) Rated withstand currents given are valid to VisiVolt indicators only and do not supersede the specifications of the system the indicators are installed on.

Application range

- non insulated (bare) metal bars and conductors
- insulated circular-section conductors with maximal insulation thickness 3 mm

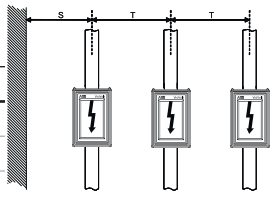
Insulation withstand coordination

Rating		Power frequency withstand voltage 50 Hz 1 min*		Impulse withstand voltage 1,2/50 μ s*		Recommended minimum clearances*	
IEC	ANSI	IEC [kV] r.m.s. value	ANSI [kV]	IEC [kV] peak value	ANSI [kV]	T min [mm]	S min [mm]
3.6		10		40		100	
7.2	4.8	20	19	60		120	
12.0	8.3	28		75		140	
17.5		38		95		160	
24.0	15.5	50		95	110	210	
	27.0	50	60	125		230	
			70		150	320	
36.0		70		145		290	
				170		330	
40.5	38.0	80		165	150	320	
		80	95	190		360	400

*Minimum clearances and withstand voltages given are valid to VisiVolt indicators only and do not supersede the requirements and specifications for the system the indicators are installed on. Withstand voltages given correspond to the minimum recommended clearances; larger clearances will typically result in larger withstand voltages.

Maximum allowable pole distances

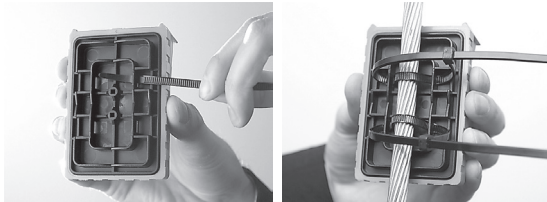
Nominal voltage Un (p-p) [kV]	Maximum allowed pole distance T max [mm]
3.0 - 3.3	110
4.16 - 4.8	135
6.0 - 6.9	400
≥ 8.3	without limit



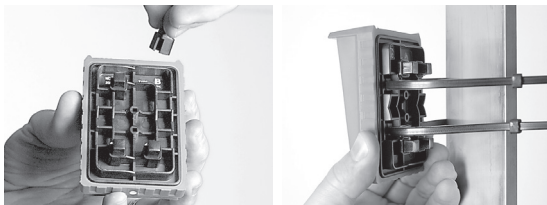
Attention: Clearances between high-voltage conductors and to ground may be reduced after installing the VisiVolt™. Make sure that the resulting clearances after installing the VisiVolt meet the applicable safety and design requirements. See the insulation withstand coordination table.

Installation

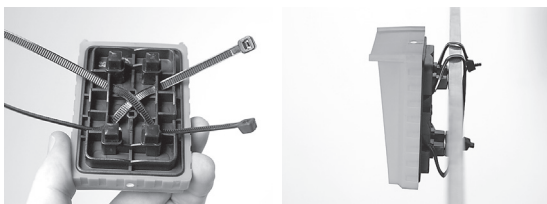
1. Lead the cable ties through the openings in the back plate. For installing on conductors of small diameter lead the cable ties as shown.



2. When installing on current bars broader than 40 mm, fix the enclosed spacers on the ribs of the back plate as shown. Lead the cable ties as shown.

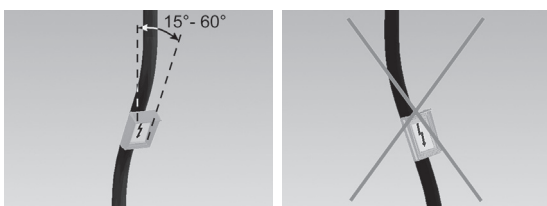


3. For installation on horizontally running bars lead the cable ties as shown. When installing on bars broader than 50 mm, install the spacers as indicated.

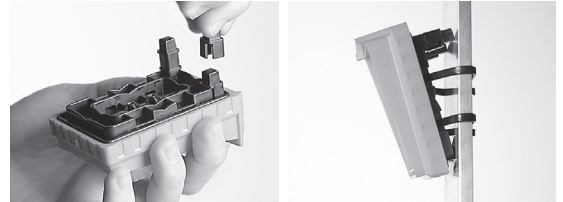


4. In outdoor systems VisiVolt™ must be installed tilted down by angle indicated. If needed, bend the conductor.

Note: It is not allowed to install VisiVolt™ tilted up.



5. On current bars, to attain the required angle, use the attached spacers as shown. If needed, in indoor systems with current bars of restricted visibility, the spacers can be also attached at different points of the back plate to direct the display towards the viewing point.



6. Tighten the cable ties firmly and cut off the extra part.



Attention: Passive Voltage Indicator only shows voltage presence above a defined threshold value and any lack of indication of voltage presence does not prove voltage absence. VisiVolt™ is not a test device according to the relevant standards (e.g. IEC 61243-1, IEC 61243-2, IEC 61243-5). To ensure that the system is deenergized and safe to touch, approved test means and safety measures required by the relevant standards and safety procedures must be used prior to any access or work on the device. Disregarding this warning notice may lead to risk of electrical shock, burn, serious injury, or even death!

Before installation read and understand the attached installation and operation instructions. Retain the instructions for further reference. Prior to energizing the system, the attached self-adhesive warning label must be fixed close to the „high-voltage” warning sign at the system the VisiVolt™ indicators have been installed on. ABB will take no liability for any loss, damage or tort resulting from not using the VisiVolt indicators as described in the instructions.

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