

# Arc Flash Analytic v5.0 User Guide



### Arc Flash Hazard Analysis and Label Making Without the Fuss



#### **Getting Started**

#### **Installing Arc Flash Analytic version 5.0**

• Download installation wizard to your PC or insert the installation CD into the CD drive. Arc Flash Analytic version 5.0 package comes in form of a single executable file.

• Double click the EXE file icon to launch the installation wizard.

Welcome screen will appear.

• Click <u>Next</u> button and follow instructions to complete the installation



#### About the program

Arc-Flash-Analytic version 5.0 (AFA V5.0) is a powerful, easy to use Windows based program developed to assist in performing arc flash and shock hazard analysis in low and medium voltage power systems. With Arc-Flash-Analytic, it is also easy to create customized arc flash warning labels, reducing the cost of obtaining compliance with NFPA 70E and Canadian CSA Z462 standards.

#### AFA V5.0 Key Features

#### IEEE 1584 EMPIRICALLY DERIVED MODEL AND LEE METHOD

Applicable for systems with voltages in the range of 208V to 46kV, short circuit currents in the range of 700A to 106kA, switchgears, MCC, panels, cables and arc in open air.

AFA V5.0 has been extended to include circuit protection device drop down list. The program will populate the list with protection devices meeting the application's system voltage and interrupting rating requirements. AFA V5.0 comes accompanied with a built-in library of selected protection devices and the capability to extent the library with customer specific devices. The program will automatically determine arc duration based on the predicted arcing current value and the selected protective device type and rating.

Also, the new software version introduces evaluated threshold incident energy for a second degree burn at the arc flash boundary. The value was preset to industry standard 1.2 cal/cm^2 (5 J/cm^2) bare skin exposure to second degree burn in previous software editions. AFA V5.0 allows to enter different than the industry accepted value as well as let the program itself to evaluate onset incident energy for a 2nd degree burn to determine arc flash boundary at that incident energy.

#### AFA V5.0 Key Capabilities

1) Determine:

- $\sqrt{\text{Arcing current}}$
- $\sqrt{$ Incident energy
- $\sqrt{\text{Arc flash boundary}}$
- $\sqrt{\text{Limited}, \text{restricted}, \text{prohibited shock approach boundaries}}$
- $\sqrt{\text{Initial arc pressure}}$
- $\sqrt{\text{Arc blast explosive TNT mass equivalent}}$
- $\sqrt{\text{Site-specific level of personal protection equipment (PPE)}}$
- $\sqrt{\text{Typical clothing system}}$

2) Save input configurations, calculation results for future reference or printing.

- 3) Generate arc flash warning labels in electronic jpg, bmp, tif, gif, pdf formats.
- 4) Save the labels on local drive or print them direct from Label Preview screen.
- 5) Perform analysis using metric, imperial units.

6) Create warning labels in English and a variety of international languages.

#### Launching and registering the program

- Click on Windows START button
- Select ARC-FLASH-ANALYTIC V5.0 from Program Manager
- Click on program icon to launch the program

First time you launch the program, you will need to register it and unlock the program features inactivated in unregistered / demo version.

- Click on <u>Help</u> menu
- Select <u>Register</u> option

Arc Flash Analytic V5.0
Arc Flash Analytic
Uninstall Arc Flash Analytic

Krc-Flash-Analytics version 5.0.7 - unregistered						
File Settings Library				Help		
Equip	ment Class	Contents				
Swite	hgear	Register				
				About		

Registration screen will pop up. Enter your individual AFA V5.0 registration credentials including your first and last names, company name and your individual license key exactly as they appear on the letter or email accompanying your AFA V5.0 purchase.

#### NOTE

Registration key comes with the purchase of the software. Please contact us for your individual registration key.

#### **Settings Menu**

Use <u>Settings</u> to manage units of measurement, arc duration cut-off, incident energy at arc flash boundary settings and site specific PPE recommendation settings.

#### Units of measurement

#### • Click on <u>Settings</u> menu and select Units.

The *Units* screen will pop up showing default units measurement for input and output data.

This feature allows you to switch units of measurement for a wide variety of input and output data including protection boundaries, incident energy, working distance, arc flash initial pressure and arc blast explosive equivalent. The program would also automatically convert all relevant values to the new units of measurement including input, output data and label readings.

The AFA V5.0 software will memorize the selected units of measurement as well as other program settings and apply them next time the program is launched.

#### **Populating Protection Device Database**

## • Click on <u>Settings</u> menu and select <u>Fuses</u> or <u>Breakers</u>

*Circuit Protection Device Maintenance* dialog screen will show up. The feature allows you to add new protection devices not published in AFA V5.0 built-in circuit protection device database. You can specify manufacturer name, series, current rating, rated voltage, interrupting rating and the device clearing characteristics data for each one of the devices. When finished, close the form to return to the main program screen. You will notice newly entered devices listed under *Upstream Protection Device* drop down list. Click on *Not Listed* radio button if the device information is not available or if you'd like to enter arc duration manually. <sup>Upstream Protection Device</sup>

Fuse
 Breaker
 Not Listed / Manual Arc Duration Er



01	
Settings: Units	
Units of Measurem	ent
Distances:	inches 👻
Energies:	cal/cm^2 👻
Pressure:	lbs/ft^2 ▼
TNT Equivalent:	grams 👻
Reset Ca	ancel Save

ng	S									
•		<mark>۶۶</mark> Arc	-Flash	-Anal	ytic v	5.0.7 -	regi	ste	red	
		File	Sett	tings	Lik	orary	He	lp		
	Equipment		Class		Fuses					
		MCC	C and F	anels		Cire	uit B	rea	kers	_
tection	Device Libra	ary: Fuse Main	tenance		a copo		1			
Source	Make	Series	Part #		Current, A	Volt, VAC	I.R., kA	•	More Info	
Built In	FUSETEK	2CM	2CM400	)	400	600	200		Add Fuse	ן ר
Buitin Buitin	FUSETEK FUSETEK	2CO 2CO	2C015 2C020		15 20	600 600	200 200		Delete Fuse	i l
Built In Built In	Add New			-	-				Close	ן נ
BuiltIn						_				
Buitin Buitin			Make:	XYZ		•				
BuitIn			Series:	ABC		•				
Buitin Buitin		Part	Number:	ABC100	TTY					
Buitin Buitin Buitin		Currer	nt Rating:	100		Amp				
Buith		Voltage	e Rating:	600		Volt		Ŧ		
	Inte	rrupting Rat	ing (I.R.):	200		kA				
	Average Melting Current Data:									
		Current @ 0	).01 sec :	5000		Amp				
		Current @	0.1 sec :	4000		Amp				
		Current @	0.5 sec :	3000		Amp				
		Current@	2.0 sec :	2000		Amp				
		Current @	10 sec :	1000		Amp				
			Cancel		Save					
	Ma	ke: X	ΥZ		•	Series:	ABC			-
								_		
try	Par	t#:∣Al	BC100-	TTY 10	JOA 60	JOV 200	JKA I.	R		•

#### Saving and Printing Labels

From *Label Preview* window, click on <u>Save</u> <u>as Image</u> or <u>Save as PDF</u> buttons to save the label in any one of the available electronic formats.

You can also click on *Printing* to fine tune printer settings, preview and print labels.

You will need standard laser or specialized label printer to produce warning labels created using Arc Flash Analytic software.



#### Note: We offer label printing services. Please visit <u>www.arcadvisor.com</u> website or contact us for more information.

#### **Saving Calculation Results**

By pressing <u>Save Results</u> button from System Summary and Calculation Results screen, the results will be saved to new or an existing text file for future reference or printing.

Program Settings			Calculation Results (100% Arcing Current)			
Arc Duration Cut-Off (ADC):	2	sec	Predicted Arcing Current (PAC):	8.09 6.56	kA	
Incident Energy @ AF Boundary:	1.2	cal/cm^2	Part of PAC thru Protection Device:		kA	
			Arc Duration at PAC:	0.18	sec	
System Summary			Incident Energy Exposure:	6.0	cal/cm^2	
Equipment Name: MAIN SWIT	CHGEAR Switchgear Ungrounded		Arc Flash Boundary (AFB):	1341	mm	
Equipment Class:			Incident Energy at AFB:	1.20	cal/cm <sup>2</sup>	
Grounding:			Site-specific Level of PPE:	2		
Gap between Conductors:	20	mm	Initial Blast Pressure:	3.23	kpa	
System Voltage:	600	V AC	TNT Mass Equivalent:	69	grams	
Working Distance:	mm	Recommended PPE: Arc rated (AR) shirt and AR pants or AR				
Avail 3-ph Short Circuit Current (ASC	C): 10	kA	coverall, AR flash suit hood, AR jacket, saf	ety glasse	is, hard	
Part of ASCC thru Protection Device	e: 8	kA	Calculation Results (Arcing Current Reduce		10000	
Protection Device: AJT600 600A 600	V 200KA I.F	R Fuse	Reduced Arcing Current (RAC):	6.88	kA	
Calculation Model: E		cal	Part of RAC thru Protection Device:		kA	
ouloulation model.	Empiri	cui	Arc Duration at RAC:	0.52	sec	
Shock Protection Boundaries			Incident Energy Exposure:	14.3	cal/cm <sup>2</sup>	
Limited Approach Boundary:	1068	mm	Arc Flash Boundary (AFB):	2425	mm	
Restricted Approach Boundary:	305	mm	Incident Energy at AFB:	1.20	cal/cm <sup>2</sup>	
Insulating Glove Class:	0		Site-specific Level of PPE:	3		
			Initial Blast Pressure:	2.74	kpa	
			TNT Mass Equivalent:	168	grams	

🐕 Arc-Flash-Analytic v5.0.7 - registered

Library

Help

Settings

#### **Opening Results Files**

• Click on <u>Open from File</u> menu to open an existing results file, inspect its current content, do simple editing operations including Cut, Copy and Paste to and from the clipboard, Save and Print.

If you need more complex editing, import the file into your favorite text manipulation processor ( MS Word for example) and do what you need to do.



File

#### **Saving Equipment Configuration**

• Click on Save Current Equipment to Database from *File* menu to save the configuration.

#### **Importing Equipment Configuration**

• Click on Browse Saved Records from File menu to import previously saved equipment configuration.

Use navigation buttons to select a record and click on Import Record button to copy the data into the program main window.

3	🗴 Arc	-Flash-Analytic	v5.0.7 -	registered			
ſ	File	Settings L	ibrary Help				
		Open					
		Save Current Equipment to Database Browse Saved Records					
	Exit						
Equipment	t Databa	ise		_			
Import	t Record		My equip	ment - 1			
	Record		PANEL XYZ MCC-123				
Close	]						
Equipme	nt Name:		PANEL XYZ				
Equipme	nt Class:		MCC and Panels				
Groundin	ng Type:		False				
Gap betw	veen Con	ductors:	25	mm			
Avail 3-p	h Short C	Circuit Current (ASCC)	15	kA			
Part of As	SCC thru	Protection Device:	8	kA			
System \	/oltage:		600	Volt			
Protectio	n Device	E.	JKS600 (	600A 600V 200KA I.			
Working	Distance	E	457	mm			
Arc Dura	tion at Pr	edicted Arcing Curren	t: 0.05	sec			

sec

#### **Help About the Program**

If you have any question or problems with installation, running the program, arc flash hazard analysis, or creating warning labels using the program tool, please check the program Help or contact us.

#### **Contact Information**

ARCAD INC. 1906 - 362 The East Mall Toronto, ON M9B 6C4 Canada

Phone: 647-693-7715 270-573-9840 Fax:

Web: www.arcadvisor.com





Arc Duration at Reduced Arcing Current: 0.09