Watchful EyE

Watchful Eye Solutions, Inc.

WTH-80, WTH-100/... Class I+II Series

Lightning & Surge Protection

www.watchfuleyesolutions.com

WTH-80 Series

WTH-100 Series

WTH-100/G/1P-255

WTH-100/G/1P-255 (N-PE Only)

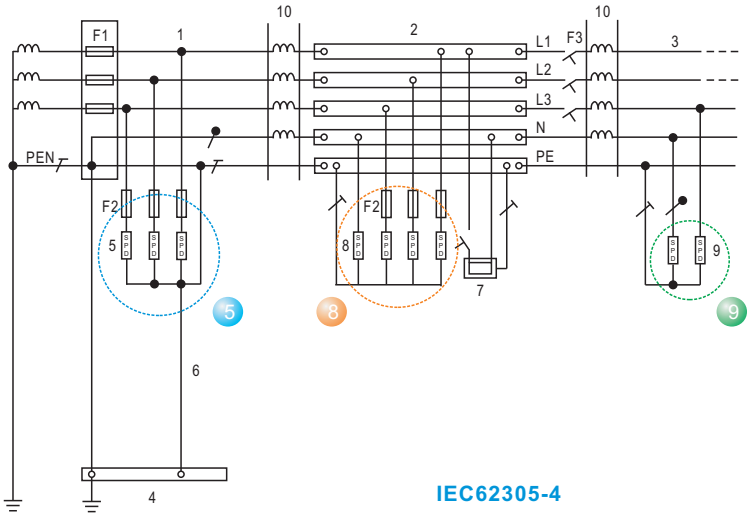
Technical Data	
Uc	255VAC
In	50kA
Imax	100kA
Iimp	12.5kA
Up	1.2kV
Ures	0.7kV

Technical Data

	WTH-80	WTH-100
Requirement Class to IEC61643-1	Class I+II	
IEEE Category Rating	C, B & A	
Protection Modes	L-N, L-PE, N-PE	
Nominal Discharge Current (In @8/20μs)	40kA	50kA
Max. Discharge Current (Imax @8/20μs)	80kA	100kA
Pulsed Current (Iimp @10/350μs)	10kA	12.5kA
Follow Current (If)	NO	
Short Circuit Current Ratings (SCCR)	20kA rms	
Response Time (tA)	< 25ns	
Leakage Current (at 75%U1mA)	<20μA	
Thermal Protection	YES	
Back-up Fuse (if mains > 125A)	125A gL	
Temperature Range	−40° to 176°F (-40° to 80°C)	
Relative Humidity	0% to 95% noncondensing	
Maximum Operating Altitude	10,000 feet (3000m)	
Terminal Cross Section	35mm² (solid) / 25mm² (stranded)	
Stripping Length Contacts	0.6inches (15mm)	
Terminal Screw Torque	Max. 3.5Nm	
Protection Rating (IP Code)	IP 20	
Surge Life at 3kA (8/20μs)	>5000 events	
Din Rail EN60715	35mm top-hat rail	
Housing Material	Thermoplastic; extinguishing degree UL 94 V-0	

Surge Protective Device for Low Voltage Power Supply System

- **Different types for your choosing according to different voltages (110V, 120/208V, 220/380V, 277/480V, 347/600V)**
- **In accordance with: IEC 61643-1 - Class I+II and UL1449 Type 4 Location**
- **Location of use: main sub-distribution boards, branch sub-distribution boards**
- **The convenient plug-in module, and separate base design**
- **Internal thermal disconnect devices help ensure safe or at end-of-life**
- **Combinations: 1P, 1P+NPE, 2P, 3P, 3P+NPE, 4P**
- **Remote Contact: optional**



Key
1. Origin of the installation
2. Distribution board
3. Distribution outlet
4. Main earthing terminal or bar
5. Surge protective device, class I or II tested
6. Earthing connection (earthing conductor) of the surge protective device
7. Fixed equipment to be protected
8. Surge protective device, class II tested
9. Surge protective device, class II or class III tested
10. Decoupling element or line length
F1, F2, F3 overcurrent protective disconnectors
NOTE Refer to IEC 61643-12 for further information.

IEC62305-4

Installation example of test class I, class II and class III SPDs

Technical Data

Type:	Uc (MCOV)	Up	Ures
WTH-80/B+C/...75 Series	75VAC	1.3kV	0.6kV
WTH-80/B+C/...115 Series	115VAC	1.5kV	0.7kV
WTH-80/B+C/...150 Series	150VAC	1.6kV	0.8kV
WTH-80/B+C/...275 Series	275VAC	1.8kV	1.0kV
WTH-80/B+C/...320 Series	320VAC	2.0kV	1.1kV
WTH-80/B+C/...385 Series	385VAC	2.1kV	1.2kV
WTH-80/B+C/...420 Series	420VAC	2.2kV	1.4kV
WTH-80/B+C/...550 Series	550VAC	2.7kV	1.8kV
WTH-80/B+C/...690 Series	690VAC	3.0kV	2.1kV
WTH-100/B+C/...75 Series	75VAC	1.4kV	0.6kV
WTH-100/B+C/...115 Series	115VAC	1.6kV	0.7kV
WTH-100/B+C/...150 Series	150VAC	1.7kV	0.8kV
WTH-100/B+C/...275 Series	275VAC	1.9kV	1.0kV
WTH-100/B+C/...320 Series	320VAC	2.1kV	1.1kV
WTH-100/B+C/...385 Series	385VAC	2.2kV	1.2kV
WTH-100/B+C/...420 Series	420VAC	2.3kV	1.4kV
WTH-100/B+C/...550 Series	550VAC	2.8kV	1.8kV
WTH-100/B+C/...690 Series	690VAC	3.1kV	2.1kV

Power Supply System	Uc(MCOV), L-PE Mode, Uc>1.15Un
110V, 120/208	150VAC
220/380	275VAC, 320VAC, 385VAC
230/400V	275VAC, 320VAC, 385VAC, 420VAC
240/415V	320VAC, 385VAC, 420VAC
277/480V	320VAC, 385VAC, 420VAC
347/600V	550VAC, 690VAC

How to name our products

WTH - 80 / B+C / R / 1P - 385

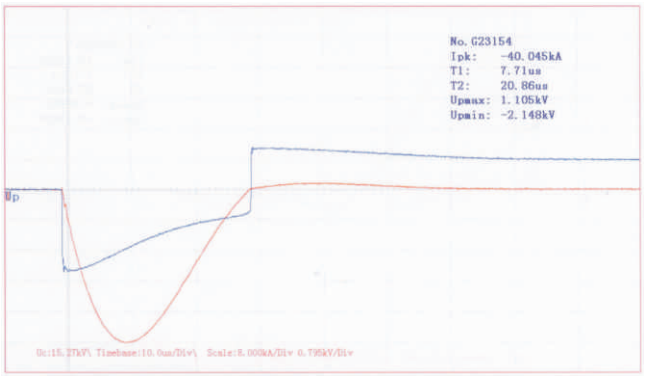
- WTH: Watchfuleye
- 80: Imax
- B+C: Class 1+II / Type 1+2
- R: Remote contacts
- 1P: Combination
- 385: Uc~: 385V

Features of Class I + II :

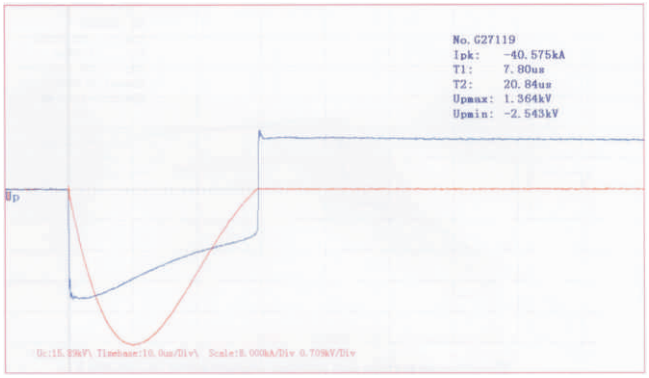
Have high capability of Class I lightning and surge protection, and capability of Class II (equivalent to the parameters of WTH-40) fine protection with low residual voltage as well, applying to Class I and Class II lightning and surge protection in multiple areas. If you are not sure which module to choose for protecting your area, Class I + II is the best solution.

Un: Normal operating voltage rating
Uc (MCOV - UL): Max. continuous operating voltage
Up: Voltage protection level (at In)
Ures: Residual voltage at 6kV 1.2/50μs & 3kA 8/20μs
Frequency: 50Hz to 60Hz

Note: Uc>1.15Un
The relationship between two parameters Uc and Up of a SPD is proportional. If Uc is small, the value of Up is also small; SPDs with smaller Up can provide better surge protection.
Whether to choose smaller Uc depends on the voltage stability of the grid. If you choose SPDs with smaller Uc for the grid with instable voltage, the SPDs will frequently work while the grid voltage fluctuates, resulting in shortening SPD's product life.
If you choose larger Uc, and the value of Up is accordingly large, the surge protective efficiency will not be so fine.
If you are unsure of the voltage stability of the grid, it is suggested to calculate Uc using the following formula: $\sqrt{2}Un < Uc < \sqrt{3}Un$



The impulse current and residual voltage curve in In=-40kA
(WTH-80/B+C/1P-420(L-PE))

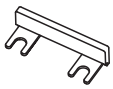


The impulse current and residual voltage curve in In=-40kA
(WTH-80/B+C/1P-690(L-PE))

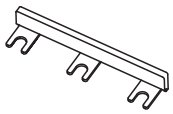
Application

- Customized and designed by professional and experienced engineers according to your systems
- Different specifications for your choices (plastic shell and metal shell box; single-phase, three-phase power supply system)
- Suitable for 110V, 120/208V, 220/380V, 277/480V, 347/600V AC voltage systems
- Able to assemble fuses, circuit breakers, lightning counter and monitoring, etc. in accordance with the requirements of your surge protection systems
- Realize remote intelligent monitoring through wireless, wired network or cloud service

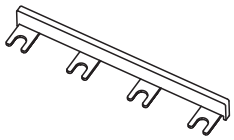
Bus Bar



WTH-2P/100
(1P+NPE, 2P Mode)

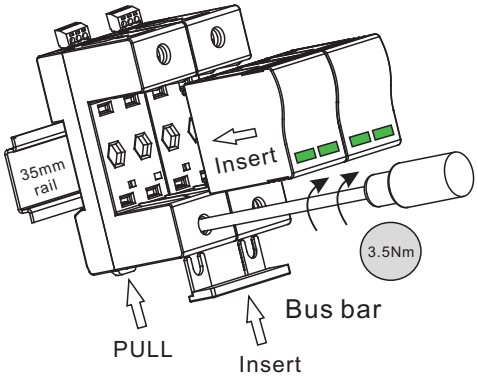


WTH-3P/100
(2P+NPE, 3P Mode)



WTH-4P/100
(3P+NPE, 4P Mode)

- Single modules can be combined with a bus bar in multiple combination methods

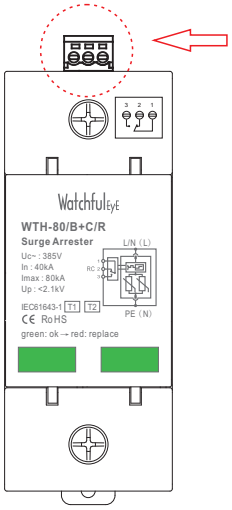


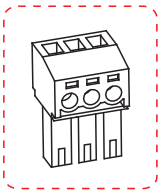
Remote Contacts

Type: WTH-80/B+C/ R /1P-385

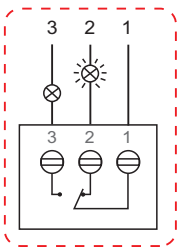
Remote contacts

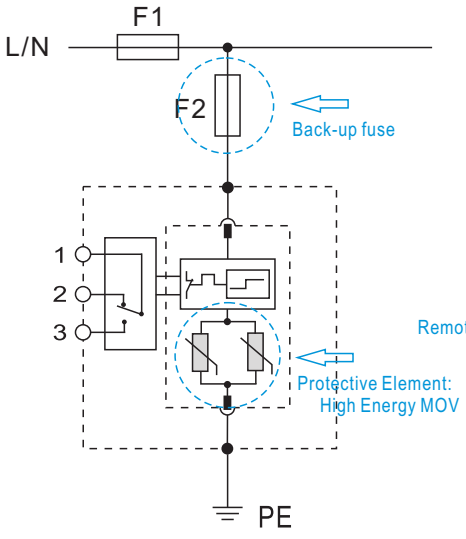
Remote Contacts	
Contact Ratings	AC:125V/1A
Terminal Cross Section	Max. 1.5mm²
Stripping Length Contacts	0.25inches (6-7mm)
Remote Terminal Torque	0.25Nm



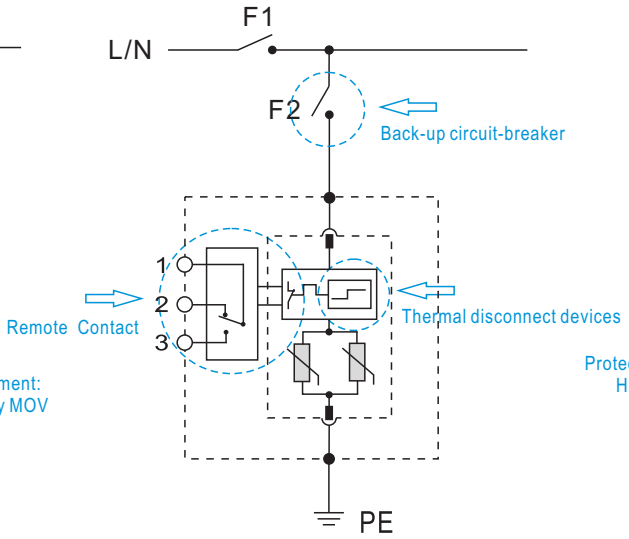


1: COM(Common)
2: NC(Normally Close)
3: NO(Normally Open)

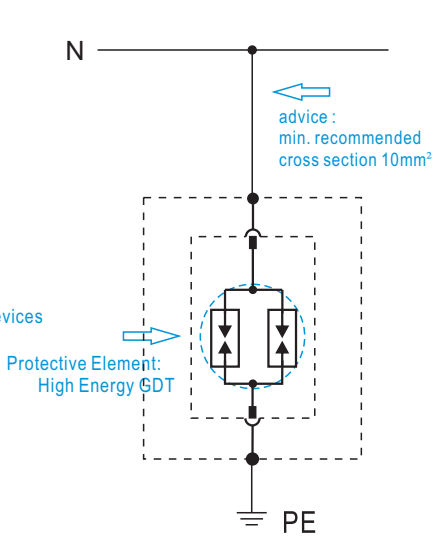




WTH-80, WTH100 Series



WTH-80, WTH-100 Series



WTH-100/G/1P-255

Selection of back-up fuse

F1 > 125A gL ⇨ F2 = 125A gL

F1 ≤ 125A gL ⇨ ~~F2~~

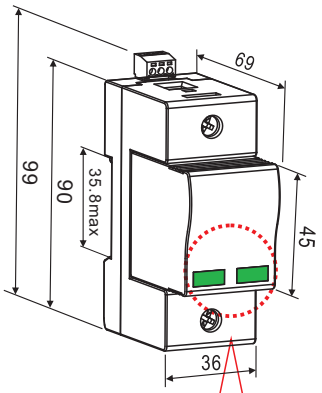
Selection of back-up circuit-breaker

F1 > 63A ⇨ F2 = 63A

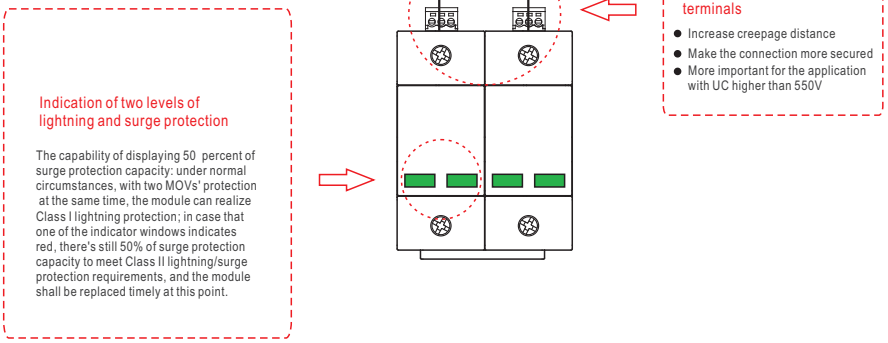
F1 ≤ 63A ⇨ ~~F2~~

N-PE Only

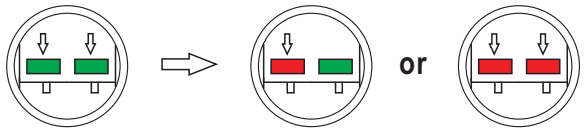
Dimensions



Two details strengthening the protection

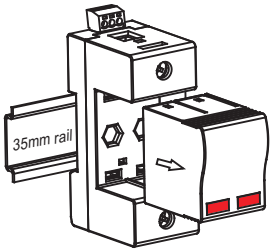


Fault Indication



green : OK

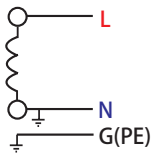
red : fault (replace)



Pull out upward

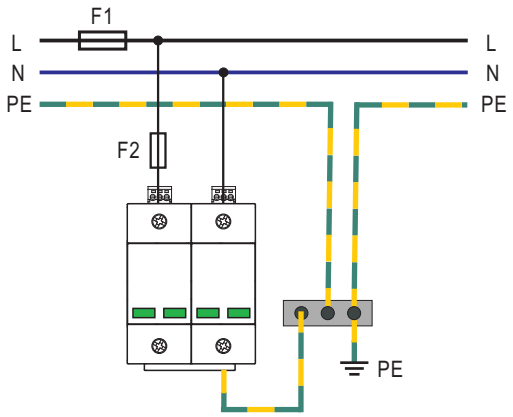
Lightning and Surge Protection for 2 Wire + Ground System

1



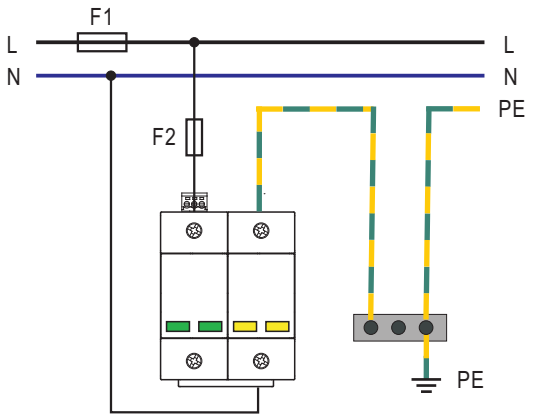
Single Phase
2 Wire + Ground

A



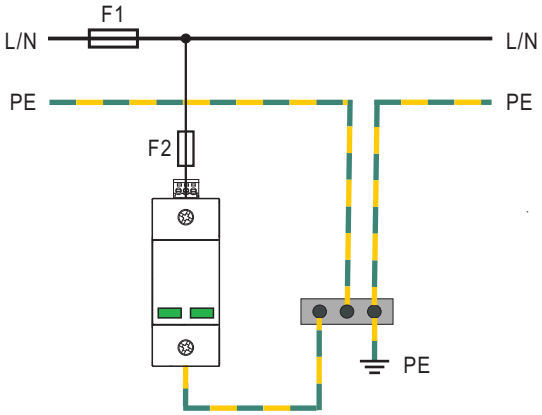
WTH-80/B+C/...2P, WTH-100/B+C/...2P Combination

B

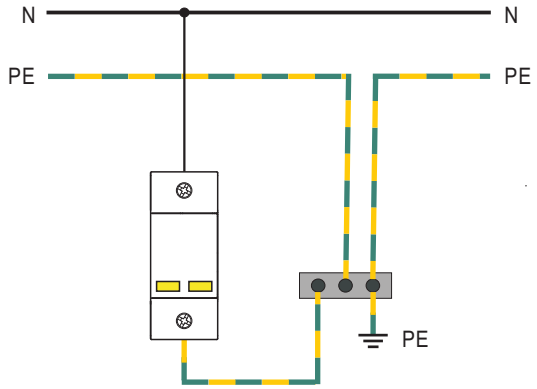


WTH-80/B+C/...1P+NPE, WTH-100/B+C/1P+NPE... Combination

C



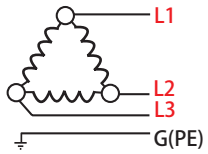
WTH-80/B+C/...1P, WTH-100/B+C/...1P Series



WTH-100/G/1P-255

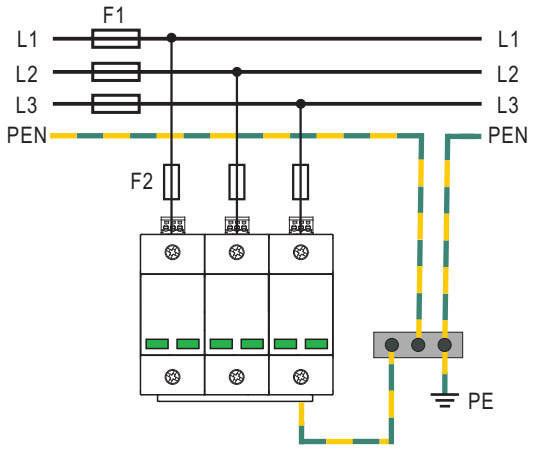
Lightning and Surge Protection for 3 Wire + Ground System

2



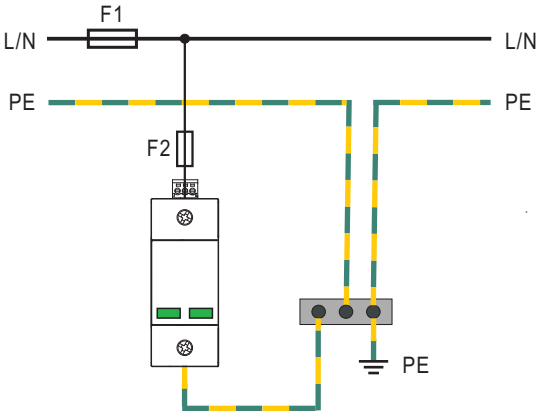
3 Phase Delta
3 Wire + Ground

D

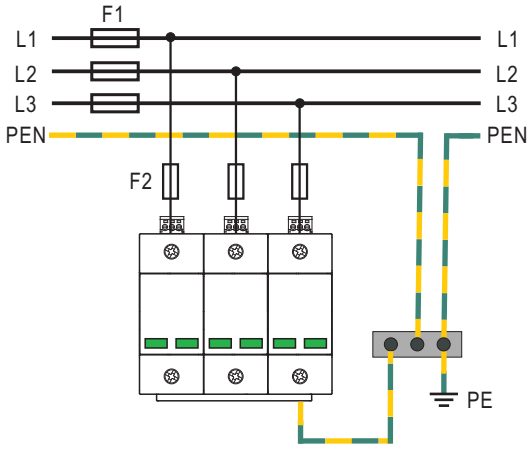


WTH-80/B+C/...3P, WTH-100/B+C/...3P Combination

E



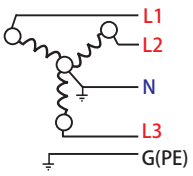
WTH-80/B+C/...1P, WTH-100/B+C/...1P Series



WTH-80/B+C/...3P, WTH-100/B+C/...3P Combination

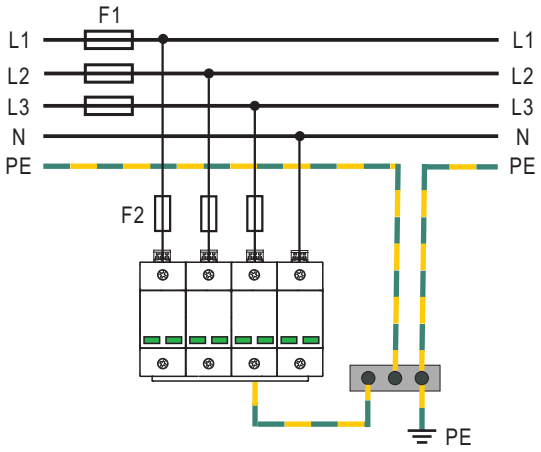
Lightning and Surge Protection for 4 Wire + Ground System

3



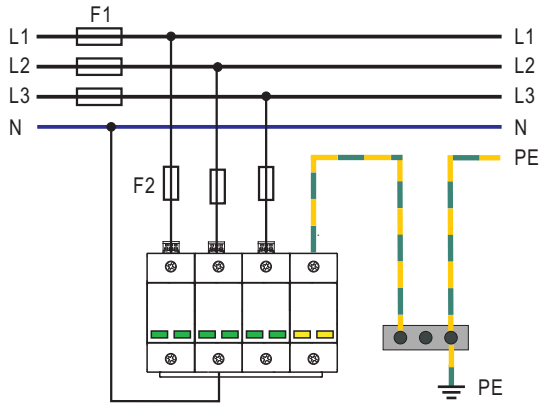
3 Phase Star
4 Wire + Ground

F



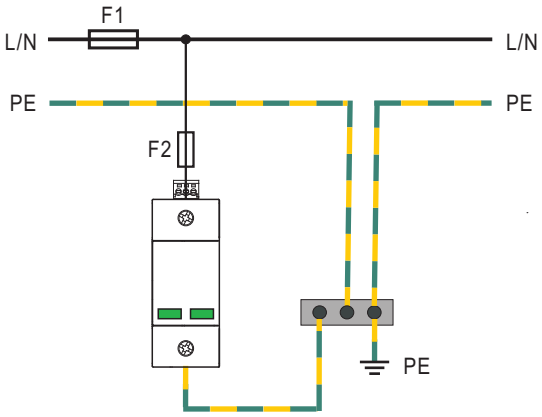
WTH-80/B+C/...4P, WTH-100/B+C/...4P Combination

G

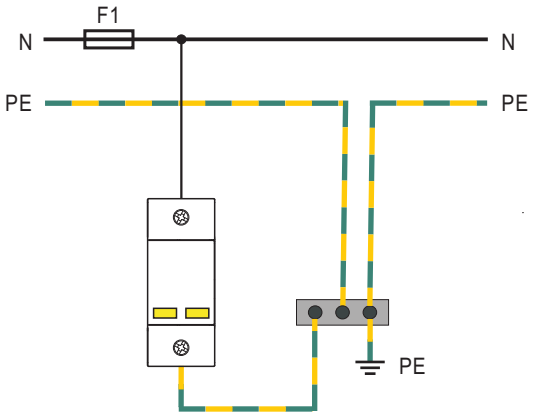


WTH-80/B+C/...3P+NPE, WTH-100/B+C/...3P+NPE Combination

H



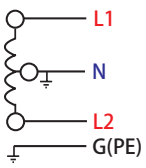
WTH-80/B+C/...1P, WTH-100/B+C/...1P Series



WTH-100/G/1P-255

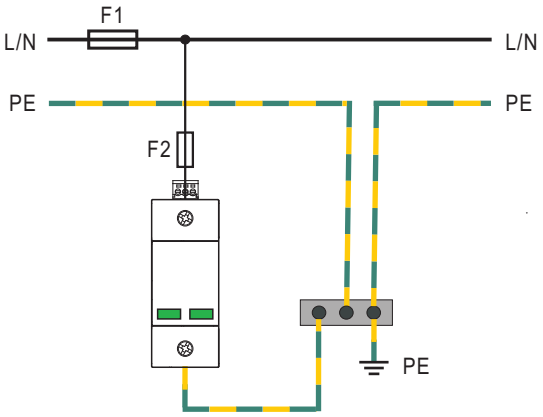
Lightning and Surge Protection for 3 Wire + Ground System

4

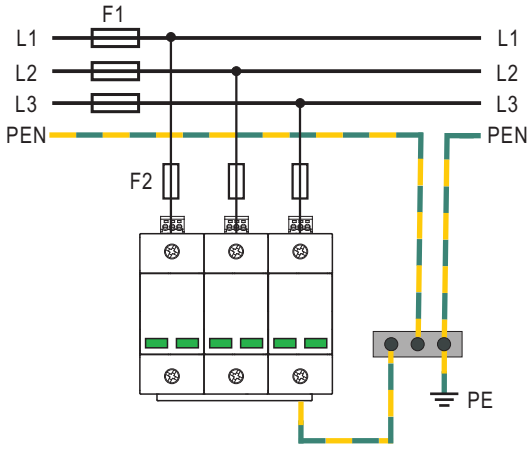


Split Phase
3 Wire + Ground

1



WTH-80/B+C/...1P, WTH-100/B+C/...1P Series



WTH-80/B+C/...3P, WTH-100/B+C/...3P Combination

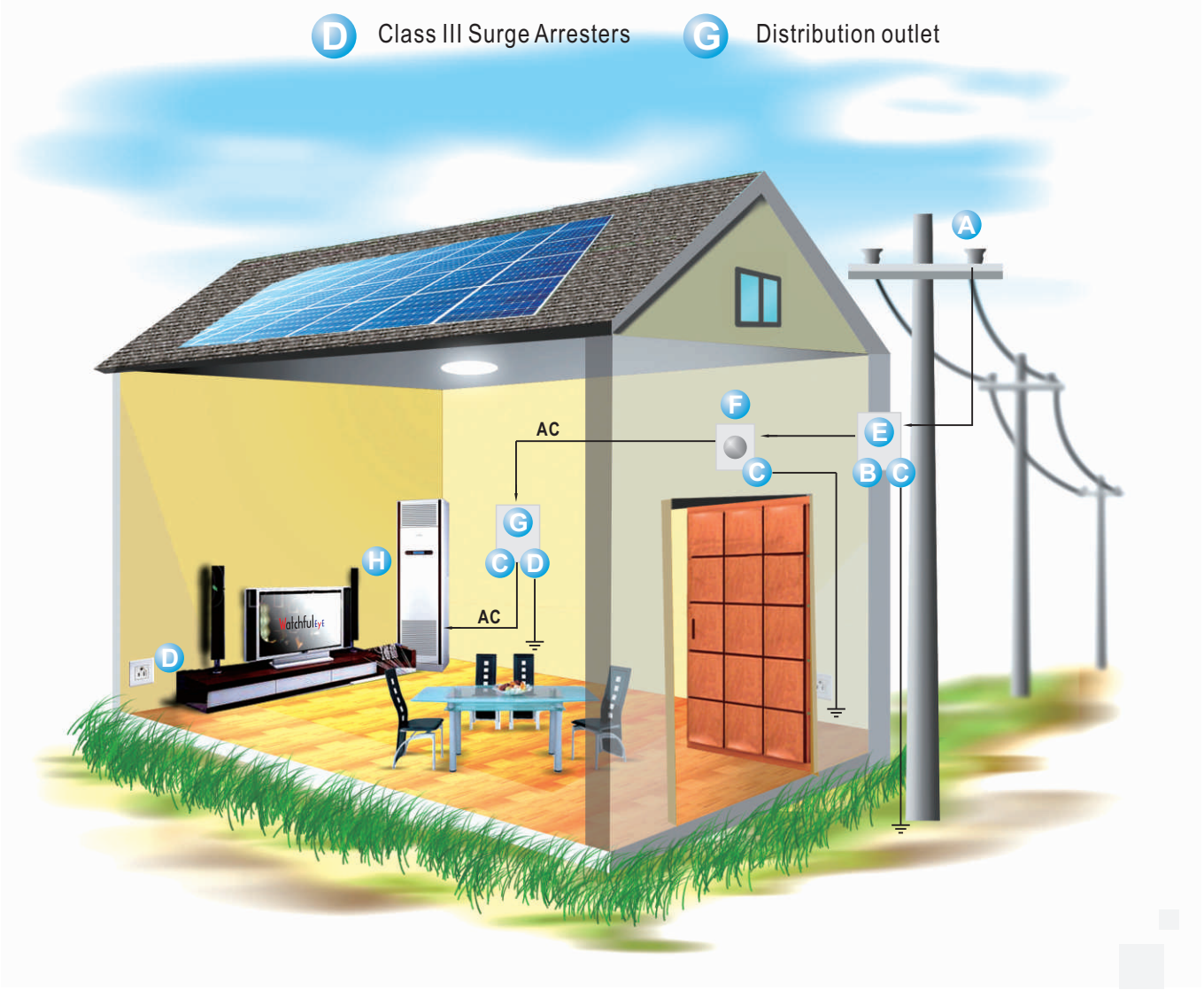
Watchful Eye offers complete and reliable technical solutions for AC power supply systems, protecting the electrical facilities throughout buildings against lightning and surge, providing a guarantee for the security of your systems and avoid unnecessary losses.

Ordering Code

Type:	Ordering code	Type:	Ordering code
WTH-80/B+C/1P-75	US 120 241	WTH-80/B+C/R/1P-75	US 120 251
WTH-80/B+C/1P-115	US 120 242	WTH-80/B+C/R/1P-115	US 120 252
WTH-80/B+C/1P-150	US 120 243	WTH-80/B+C/R/1P-150	US 120 253
WTH-80/B+C/1P-275	US 120 244	WTH-80/B+C/R/1P-275	US 120 254
WTH-80/B+C/1P-320	US 120 245	WTH-80/B+C/R/1P-320	US 120 255
WTH-80/B+C/1P-385	US 120 246	WTH-80/B+C/R/1P-385	US 120 256
WTH-80/B+C/1P-420	US 120 247	WTH-80/B+C/R/1P-420	US 120 257
WTH-80/B+C/1P-550	US 120 248	WTH-80/B+C/R/1P-550	US 120 258
WTH-80/B+C/1P-690	US 120 249	WTH-80/B+C/R/1P-690	US 120 259
WTH-100/B+C/1P-75	US 120 261	WTH-100/B+C/R/1P-75	US 120 271
WTH-100/B+C/1P-115	US 120 262	WTH-100/B+C/R/1P-115	US 120 272
WTH-100/B+C/1P-150	US 120 263	WTH-100/B+C/R/1P-150	US 120 273
WTH-100/B+C/1P-275	US 120 264	WTH-100/B+C/R/1P-275	US 120 274
WTH-100/B+C/1P-320	US 120 265	WTH-100/B+C/R/1P-320	US 120 275
WTH-100/B+C/1P-385	US 120 266	WTH-100/B+C/R/1P-385	US 120 276
WTH-100/B+C/1P-420	US 120 267	WTH-100/B+C/R/1P-420	US 120 277
WTH-100/B+C/1P-550	US 120 268	WTH-100/B+C/R/1P-550	US 120 278
WTH-100/B+C/1P-690	US 120 269	WTH-100/B+C/R/1P-690	US 120 279
WTH-100/G/1P-255	US 120 240		
WTH-2P/100	US 129 004		
WTH-3P/100	US 129 005		
WTH-4P/100	US 129 006		

Lightning and Surge Protection for AC Power Supply System

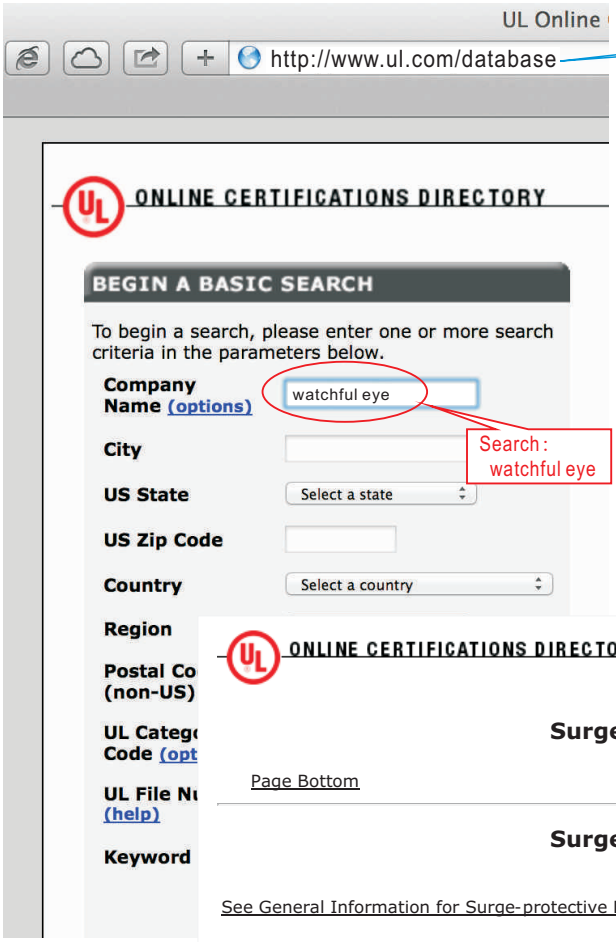
- A Utility Service
- B Class I Surge Arresters
- E Origin of the installation
- H Electric Equipment
- C Class II Surge Arresters
- F Distribution board
- D Class III Surge Arresters
- G Distribution outlet



IEEE 62.41

CATEGORY C: outdoor overhead lines, service entrance (most severe)
CATEGORY B: major feeder, short branch circuits, service panel (indoor)
CATEGORY A: long branch circuits, receptacles (indoor) (least severe)

UL Listed (http://www.ul.com/database)



http://www.ul.com/database

Search results

You may choose to **Refine Your Search.**	
Company Name	**Category Name**
WATCHFUL EYE SOLUTIONS INC	Surge-protective
WATCHFUL EYE SOLUTIONS INC	Surge-protective

Model number information is not published for all product number, please contact Customer Service for further assi

ONLINE CERTIFICATIONS DIRECTORY

VZCA2.E345944
Surge-protective Devices - Component

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Surge-protective Devices - Component

See General Information for Surge-protective Devices - Component

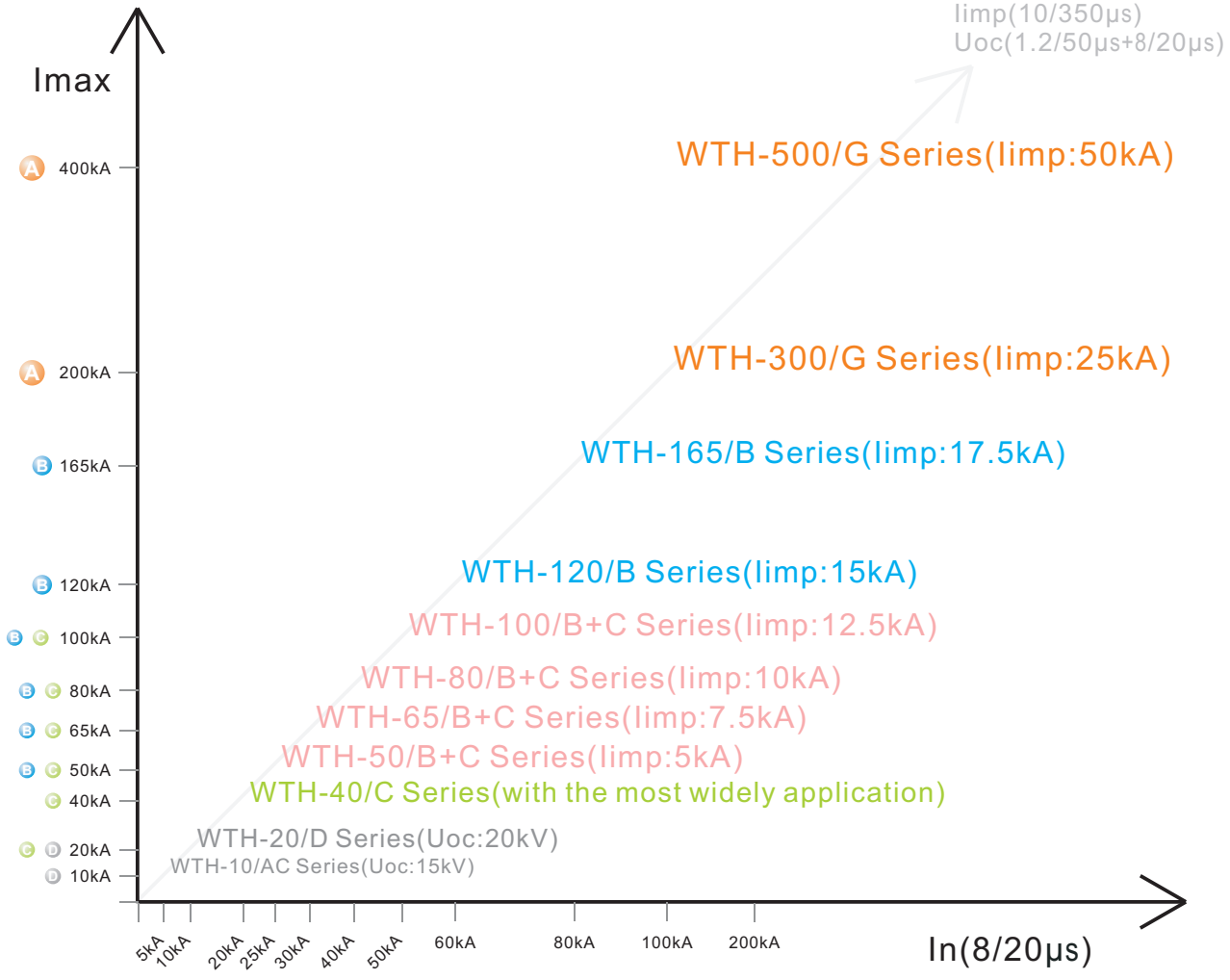
WATCHFUL EYE SOLUTIONS INC E345944
24E Hudson View Dr
Beacon, NY 12508 USA

Effective May 3, 2010

Cat No.	SPD Type	Volts (V)	AC/ DC/ DC PV	PH	AMPS (A)	AMB (°C)	MODE	VPR (Vpk)	MLV (Vpk)	MCOV (V)	Vn (Vdc)	In (kA)	SCCR (kA)	NOTES
WTH-50/ B+C/ 1P-385	4CA	277	AC	1	n/a	65	Ld-Ld	-	1830	385	n/a	20	n/a	1
WTH-50/ B+C/ R/ 1P-385	4CA	277	AC	1	n/a	65	Ld-Ld	-	1830	385	n/a	20	n/a	1
WTH-65/ B+C/ 1P-385	4CA	277	AC	1	n/a	65	Ld-Ld	-	1830	385	n/a	20	n/a	1
WTH-65/ B+C/ R/ 1P-385	4CA	277	AC	1	n/a	65	Ld-Ld	-	1830	385	n/a	20	n/a	1
Din Rail Moudle, Series WTH-385														
WTH-100/ B+C/ 1P-385	4CA	277	AC	1	n/a	65	Ld-Ld	-	1620	385	n/a	20	n/a	1

Lightning and Surge Protection for AC Power Supply System

- A Class I Surge Arresters (voltage switching type)
- B Class I Surge Arresters (voltage limiting type)
- C Class II Surge Arresters
- D Class III Surge Arresters



IEC61643-1

5 Standard ratings
5.1 Preferred values of impulse current for class I tests Iimp
5.2 Preferred values of nominal discharge current for class I I tests In
5.3 Preferred values of open-circuit voltage for class III tests Uoc

Watchfuleye is specialized in a complete range of lightning and surge protective devices, with wide applications in low voltage DC & AC power supply system, data and control system, intelligent monitoring system and new energy industry like solar and wind power system, etc. Our company also offers reliable custom technical solutions in lightning & surge protection for global customers.

Headquatered in New York, watchful Eye has a network of sales to serve our customers world wide. with high quality products and optimal service, Watchful Eye can meet your strict technical standards and unique requirements.

Watchful Eye

The Guardian that Protects Your System against Surge and Lightning

Watchful Eye Solutions, Inc.

www.watchfuleyesolutions.com