



NRCAN CSA C802.2 2018

*Stable and reliable  
power Certified  
high efficiency  
transformers*

Over the last 35 years, Delta Transformers has designed and manufactured apparatus using the technology of magnetics to reduce and eliminate harmonic currents in low voltage power distribution systems.

With the **Mitigator e-Series**, the company has achieved a high efficiency benchmark in transformer design and technology.



*Quality solutions  
for your next  
project!*



SYNONYMOUS WITH QUALITY

[www.delta.xfo.com](http://www.delta.xfo.com)





## THE QUALITY

The **Mitigator e-Series** provides the industry with the highest of standards for transformers designed to mitigate harmonics present in typical commercial, institutional and industrial environments. First in its class, the Mitigator e-Series leads the industry in both quality and performance.

## THE EXPERIENCE

With more than 35 years' experience in transformer design and manufacturing, Delta Transformers has introduced the latest in its line of industry leading products: the **Mitigator e-Series**. This family of transformers, whose primary function is the mitigation of harmonics in typical low voltage power distribution systems, is available in **e-Platinum**, **e-Gold** and **e-Silver** configurations. These variations give customers the flexibility to choose the right product for each unique application.

## THE DESIGN

The patented\* design of the **Mitigator e-Series** results in a quality unit that is certifiable and tested to meet international standards and users preferences. The field adjustable phase shifting option is first in its class for the industry, allowing increased flexibility in the field. The assurance of the Delta Quality Process is enhanced by the application of an Epoxy Vacuum Impregnation - **E.V.I.** - process, which provides superior environmental protection for all units.

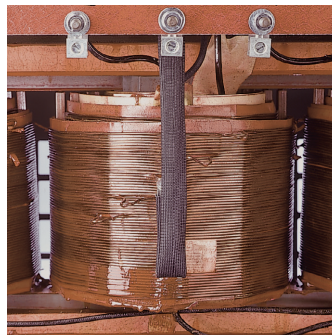
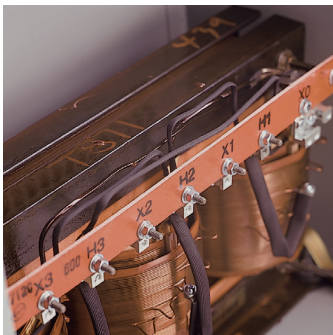


## FIELD ADJUSTABLE PHASE SHIFT \*

The **Mitigator e-Series** comes with optional field adjustable phase shift on the primary winding, a design that allows selection of the desired primary to secondary phase shift while in the field. This innovation gives customers maximum flexibility to adjust each transformer to suit actual application situations.

## CORE AND COIL DESIGN

The **Mitigator e-Series** core is designed using non-aging silicon steel with a three leg common core topology. Its coils are built with electrolytic copper magnetic wire, geometrically designed to allow for uniform cooling. This combined design is such that transformer direct and zero sequence impedance are maintained at a level that reduces voltage distortion generated by harmonic currents.



## EPOXY VACUUM IMPREGNATION - E.V.I. - PROCESS

An epoxy compound is impregnated into the **Mitigator e-Series**'s core and coil in a sealed vacuum pressure tank during production. Impervious to cracking or peeling, this compound increases the mechanical strength of the unit and reduces noise emissions. The **E.V.I.** Process enhances transformer performance by improving the winding insulation. The **Mitigator e-Series** with **E.V.I.** performs in carefully protecting the core and coil, particularly in heavily contaminated environments.

## TESTED AND CERTIFIED TO MEET HIGH EFFICIENCY STANDARDS PER CSA C802.2 - 2018 & LATEST NRCAN STANDARDS

Designed to individual specifications, each unit in the **Mitigator e-Series** is also built to strict international standards, including CSA standards. Units are performance tested and certified at Delta Transformers state of the art Certifying Test Facilities, where customers are invited to observe the process.

## PRODUCT CONFIGURATION

Three phase, 60Hz systems display a characteristic 120 degrees shift between each phase. On systems with balanced loads, the neutral current is zero. Loads that result in the generation of harmonics and the distortion of current and voltage present different characteristics and require specific transformer configurations.

### The Delta Primary – Zig Zag Secondary Transformer (0°C or -30°C)

- Single output three phase secondary
- 0° or -30° phase shift from primary to secondary
- The 3rd, 9th and 15th harmonic currents are cancelled by flux opposition at low impedance
- Reduction of current imbalance
- Less voltage distortion due to low zero-sequence impedance
- Improved power factor

### The Delta Primary – Zig Zag Secondary Transformer (-15°C, -45°C or 0°C, -30°C)

- Double output three phase secondary
- Cancellation of the 3rd, 5th, 7th, 9th, 15th, 17th and 19th harmonics
- Elimination of the 11th and 13th harmonics (by utilizing the phase shift between the transformer windings so that these currents subtract at the common bus with 11th and 13th harmonic currents existing at the bus)
- Improved power factor





### Industry standard warranty

- + Delta technology
- + Delta commitment to service and quality

**= the best in class for high efficiency harmonic mitigation transformers!**

The **Mitigator e-Series** offers three distinct models to address the full scope of harmonic mitigation applications. The patented\*, field adjustable phase shifting feature is available on each model. The enclosure is a Type 3R enclosures.

The **Mitigator e-Series**, like all Delta Transformers products, are manufactured using the Epoxy Vacuum Impregnation -**E.V.I.** - Process.

Benefits include:

- Increased mechanical strength
- Reduced noise
- Improved winding insulation
- Enhanced performance in heavily contaminated areas

Delta Transformers is truly a Canadian success story. It has been in existence for over thirty five years and continues to be one of the leading Canadian suppliers of transformers and associated magnetic products. Its commitment to the market has been demonstrated by its distribution products warranty and the high caliber of agents it has located across the country, consistently responding to the needs of customers. Delta Transformers continues on the road of excellence with the **Mitigator e-Series**.

**Note :** All **Mitigator e-Series** products are tested and certified to meet High Efficiency Standards per CSA & NRCAN requirements.



*e-Platinum*

K-factor profile of 13\*, suitable for health care environments (including operating rooms) and critical electronic applications such as radar and radio. High efficiency characteristics from 35% - 100% load requirements. Copper winding.



*e-Gold*

K-factor profile of 13\*, suitable for data centers, computer services and critical loads. High efficiency characteristics at 35% load requirements. Copper winding.



*e-Silver*

K-factor profile of 13, suitable for most general-purpose applications. High efficiency characteristics at 35% load requirements. Aluminum winding.

\* Other K factors available upon request.

## HEALTH CARE INSTITUTIONS

Health care facilities depend on a complex array of high-tech biomedical instruments delivering essential services such as patient diagnosis and life support systems. The **Mitigator e-Series** helps provide stable and consistent power to these critical electronic devices.

## COMMERCIAL OFFICE BUILDINGS

Commercial buildings are home to a wide range of organizations that rely on computer hardware and other sensitive electronic equipment. The **Mitigator e-Series** helps ensure that these devices operate efficiently and without costly disruptions to daily operations.

## CONDOMINIUMS

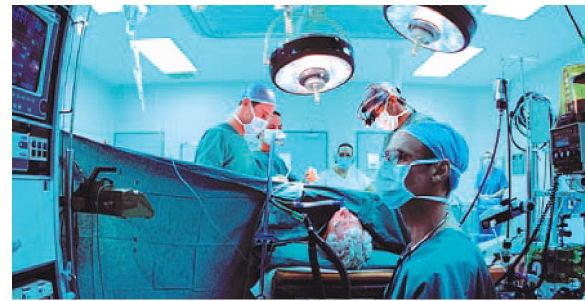
Multi-residential buildings provide services requiring a variety of electrical loads, all of which must work together for optimum service efficiency. From central services to water, air, fire and security systems and residential supply, the **Mitigator e-Series** can provide multi-residential environments with the right transformer for specific electrical loads.

## AIRPORT TRANSPORTATION FACILITIES

Communications, air traffic control and airfield lighting are among an airport's most critical functions. The **Mitigator e-Series** helps ensure that there is a continuous and stable power supply available for the operation of these services, contributing to safe and efficient airport operations.

## INDUSTRIAL APPLICATIONS

Advances in automation and motor control technology have resulted in major benefits and energy savings for industrial users. The power quality problems associated with these advances – such as power factor, voltage distribution and resonance – can be resolved with new approaches to systems design and the installation of appropriate equipment. The **Mitigator e-Series** delivers effective phase shifting technology that eliminates most of the harmful harmonics in industrial applications while improving the total power factor and voltage distortions.





# MITIGATOR E-SERIES, SERIES 6

## HARMONIC MITIGATION TRANSFORMERS TECHNICAL SPECIFICATIONS

### Serie Mitigator e-Silver, single output

Energy savings:	Transformer must be certified and bear the NRCAN – CSA C802.2 2018
Harmonic Treatment:	3 <sup>rd</sup> , 9 <sup>th</sup> , 15 <sup>th</sup> ... on the secondary and 5 <sup>th</sup> , 7 <sup>th</sup> , 17 <sup>th</sup> , 19 <sup>th</sup> ... with 30° phase shift on the primary common bus
Load Compatibility:	K-13 load profile, crest factor of 3
Load Imbalance:	Reduction of fundamental current imbalance from secondary to primary of transformer
Windings:	Aluminum
Secondary Windings:	Wound to mitigate zero sequence current flux. These zero-sequence currents shall not be coupled into the primary winding of the transformer.
Phase Shift:	Windings configured to provide primary-to-secondary phase shift of -30° or 0° (as specified on drawings)
Zero Sequence Data :	Standard
Voltage Distortion :	Non Linear Loads test bench certified
Certified Performance:	Non Linear Loads test bench certified
Nameplate Impedance:	4.0 – 6.5% (up to 300 kVA)
Insulation Class :	Class 220
Operating Temperature Rise:	150°C
Efficiency:	NRCAN – CSA C802.2 2018 Program at 35% loading
Electrostatic Shield:	Single shield
Impregnation Method :	Epoxy Vacuum Impregnation
Construction Standards:	Applicable NEMA, CSA and ANSI/IEEE standards
Certification / Labeling:	CSA C22.2 No 47, NRCAN – CSA C802.2 2018
Neutral Rating:	200% of rated secondary phase current
Frequency:	60 Hz
Taps:	4 x 2.5% full capacity taps (2-FCBN + 2-FCAN)
Type:	Three-phase, common core, dry-type convection air cooled
Sound Level:	Per CSA C9, NEMA ST-20
Enclosure:	Type 3R, ASA #61 grey
Warranty:	10 years pro-rated with limited liability
<b>OPTIONS</b>	
1. Dual Output:	0°/-30° and -15°/-45° mitigates 3 <sup>rd</sup> , 5 <sup>th</sup> , 7 <sup>th</sup> , 9 <sup>th</sup> , 15 <sup>th</sup> , 17 <sup>th</sup> , 19 <sup>th</sup> ... on the secondary and 11 <sup>th</sup> , 13 <sup>th</sup> ... with 15° phase shift on the primary common bus
2. Field Adjustable Phase Shifts*:	+15°, -15°, 0° supplementary phase shift
3. Operating Temperature Rise:	80°C, 115°C
4. Enclosure:	Open-type
5. Thermocouples:	Type K, one per leg in the secondary winding
6. Thermal Sensors:	NO or NC contact set at 200°C, one per leg in the secondary winding
7. TVSS:	80,000 Amps per mode surge current capacity, UL 1449 Approved.
8. Custom Color:	Specify
Standard Product:	Product must be standard item in manufacturer's published catalog. Non linear test bench certified. Custom design and / or packaging to meet this specification are not acceptable.
Substitution :	Alternate must be approved by the engineer 10 days prior to bid closing, subject to meeting all aspects of this specification.
Acceptable Manufacturer:	Delta Transformers Inc., MITIGATOR e-Silver series.

### Aluminum e-Silver DZ(0°) Series CZ6A, Three-phase, Type 3R, Primary 600 V, Secondary 208/120V, Load Profile K13, ESS, 150° C

kVA	Mounting (1)	Catalog number (2)	Dimensions (3)						Weight		Noise Level dB
			Height		Width		Depth		lb	kg	
			In	mm	In	mm	In	mm			
15	W/F	CZ6A0015 S911007	26	660	18	457	15	381	276	125	45
30	W/F	CZ6A0030 S911007	31	787	23	584	18	457	413	187	45
45	W/F	CZ6A0045 S911007	37	940	28	711	22	559	548	248	45
75	F	CZ6A0075 S911007	37	940	28	711	22	559	745	338	50
112.5	F	CZ6A0112 S911007	46	1168	31	584	24	610	1129	512	50
150	F	CZ6A0150 S911007	46	1168	31	584	24	610	1185	537	50
225	F	CZ6A0225 S911007	53	1346	37	940	29	737	1945	882	55
300	F	CZ6A0300 S911007	53	1346	37	940	29	737	2390	1084	55

(1) W = Wall mount F = Floor mount

(2) Catalog Number

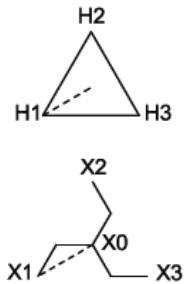
THREE-PHASE: 15 - 300 kVA 2 x FCAN, 2 x FCBN 4 x 2.5%

(3) All weights and dimensions are subject to change without notice.

Consult Delta representative for K rating other than K-13 (CSA C802.5 Guideline for evaluation the efficiency of dry-type transformers under non-linear loading)

STANDARD PHASE SHIFTING  
0° \* (0)

Aluminum winding  
3 phase 600 - 208/120  
150°C / 60 Hz / ESS / CSA C802.2  
K factor up to 13



Phase shifting 0°

### Aluminum e-Silver DZ(-30°) Series CZ6A, Three-phase, Type 3R, Primary 600 V, Secondary 208/120V, Load Profile K13, ESS, 150° C

kVA	Mounting (1)	Catalog number (2)	Dimensions (3)						Weight		Noise Level dB
			Height		Width		Depth		lb	kg	
			In	mm	In	mm	In	mm			
15	W/F	CZ6A0015 S911017	26	660	18	457	15	381	276	125	45
30	W/F	CZ6A0030 S911017	31	787	23	584	18	457	413	187	45
45	W/F	CZ6A0045 S911017	37	940	28	711	22	559	548	248	45
75	F	CZ6A0075 S911017	37	940	28	711	22	559	745	338	50
112.5	F	CZ6A0112 S911017	46	1168	31	584	24	610	1129	512	50
150	F	CZ6A0150 S911017	46	1168	31	584	24	610	1185	537	50
225	F	CZ6A0225 S911017	53	1346	37	940	29	737	1945	882	55
300	F	CZ6A0300 S911017	53	1346	37	940	29	737	2390	1084	55

(1) W = Wall mount F = Floor mount

(2) Catalog Number

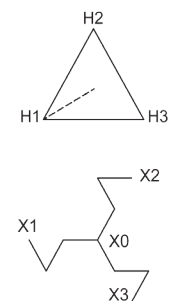
THREE-PHASE: 15 - 300 kVA 2 x FCAN, 2 x FCBN 4 x 2.5%

(3) All weights and dimensions are subject to change without notice.

Consult Delta representative for K rating other than K-13 (CSA C802.5 Guideline for evaluation the efficiency of dry-type transformers under non-linear loading)

STANDARD PHASE SHIFTING  
-30° \* (1)

Aluminum winding  
3 phase 600 - 208/120  
150°C / 60 Hz / ESS / CSA C802.2  
K factor up to 13



Phase shifting -30°

# MITIGATOR E-SERIES, SERIES 6

## HARMONIC MITIGATION TRANSFORMERS TECHNICAL SPECIFICATIONS

### Serie Mitigator e-Gold, single output

Energy Savings :	Transformers must be certified and bear the NRCAN – CSA C802.2 2018
Harmonic Treatment :	3 <sup>rd</sup> , 9 <sup>th</sup> , 15 <sup>th</sup> ... on the secondary and 5 <sup>th</sup> , 7 <sup>th</sup> , 17 <sup>th</sup> , 19 <sup>th</sup> ... with 30° phase shift on the primary common bus
Load Compatibility :	K-13 load profile, crest factor of 5, consult Delta representative for K ratings other than K-13, (CSA C802.5)
Load Imbalance :	Reduction of fundamental current imbalance from secondary to primary of transformer
Windings :	Copper
Secondary Windings :	Wound to mitigate zero sequence current flux. These zero-sequence currents shall not be coupled into the primary windings of the transformer.
Phase Shift :	Windings configured to provide primary-to-secondary phase shift of -30° or 0° (as specified on drawings)
Zero Sequence Data :	Less than 0.95% ZS impedance, less than 0.3% ZS reactance
Voltage Distortion :	Non linear load test bench certified
Certified Performance :	Non linear load test bench certified
Nameplate Impedance :	2.5 – 4.0% (up to 75 kVA), 5.0% max (112.5-300 kVA)
Insulation Class :	Class 220
Operating Temperature Rise :	150°C, optional 130°C
Efficiency :	NRCAN – CSA C802.2 2018 program at 35% loading
Electrostatic Shield :	Single shield
Impregnation Method :	Epoxy vacuum impregnation
Construction Standards :	Applicable NEMA, CSA, and ANSI/IEEE standards
Certification / Labeling :	CSA C22.2 No 47, NRCAN – CSA C802.2 2018
Neutral Rating :	200% of rated secondary phase current
Frequency :	60 Hz
Taps :	4 x 2.5% full capacity taps (2-FCBN + 2-FCAN)
Type :	Three-phase, common core, dry-type, convection air cooled
Sound Level :	Per CSA C9, NEMA ST-20
Enclosure :	Type 3R, ASA #61 grey
Warranty :	10 years pro-rated, with limited liability

### OPTIONS

1. Dual Output :	0°/-30° and -15°/-45° mitigates 3 <sup>rd</sup> , 5 <sup>th</sup> , 7 <sup>th</sup> , 9 <sup>th</sup> , 15 <sup>th</sup> , 17 <sup>th</sup> , 19 <sup>th</sup> ... on the secondary and 11 <sup>th</sup> , 13 <sup>th</sup> ... with 15° phase shift on the primary common bus
2. Field Adjustable Phase shift* :	+15°, -15°, 0° supplementary phase shift
3. Operating Temperature Rise :	80°C, 115 °C
4. Enclosure :	Open-type
5. Thermocouples :	Type K, one per leg in the secondary winding
6. Thermal Sensors :	NO and NF contact set at 200°C, one per leg in the secondary winding
7. TVSS :	80,000 Amps per mode surge current capacity, UL 1449 approved, EMI / RFI filtering
8. Custom Color :	Specify
Standard Product :	Product must be standard item in manufacturer's published catalog. Non linear test bench certified. Custom design and / or packaging to meet this specification are not acceptable.
Substitution :	Alternate must be approved by the engineer 10 days prior to bid closing, subject to meeting all aspects of this specification
Acceptable Manufacturer :	Delta Transformers Inc. MITIGATOR e-Gold Series



### Copper e-Gold DZ(0°) Series CZ6C, Three-phase, Type 3R, Primary 600V, Secondary 208/120V, Load Profile K13, ESS, 150° C

kVA	Mounting (1)	Catalog number (2)	Dimensions (3)						Weight		Noise Level
			Height		Width		Depth		lb	kg	
			In	mm	In	mm	In	mm			
15	W/F	CZ6C0015 S912107	26	660	18	457	15	381	284	128	45
30	W/F	CZ6C0030 S912107	31	787	23	584	18	457	430	195	45
45	W/F	CZ6C0045 S912107	37	940	28	711	22	559	504	228	45
75	F	CZ6C0075 S912107	37	940	28	711	22	559	900	408	50
112.5	F	CZ6C0112 S912107	46	1168	31	584	24	610	1048	475	50
150	F	CZ6C0150 S912107	46	1168	31	584	24	610	1328	602	50
225	F	CZ6C0225 S912107	53	1346	37	940	29	737	2061	935	55
300	F	CZ6C0300 S912107	53	1346	37	940	29	737	2394	1086	55

(1) W = Wall mount F = Floor mount

(2) Catalog Number

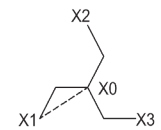
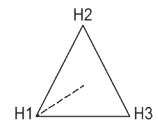
THREE-PHASE: 15 - 300 kVA 2 x FCAN, 2 x FCBN 4 x 2.5%

(3) All weights and dimensions are subject to change without notice.

Consult Delta representative for K rating other than K-13 (CSA C802.5 Guideline for evaluation the efficiency of dry-type transformers under non-linear loading)

STANDARD PHASE SHIFTING  
0° \* (0)

**Copper windings**  
3 phase 600 - 208/120  
150°C / 60 Hz / ESS / CSA C802.2  
Optional 130°C  
Load profile K13



Phase shifting 0°

### Copper e-Gold FAPST-Z(-15°/-30°/+15°) Series CZ6C, Three-phase, Type 3R, Primary 600V, Secondary 208/120V, Load Profile K13, ESS, 150° C

kVA	Mounting (1)	Catalog number (2)	Dimensions (3)						Weight		Noise Level
			Height		Width		Depth		lb	kg	
			In	mm	In	mm	In	mm			
15	W/F	CZ6C0015 S912167	26	660	18	457	15	381	284	128	45
30	W/F	CZ6C0030 S912167	31	787	23	584	18	457	430	195	45
45	W/F	CZ6C0045 S912167	37	940	28	711	22	559	504	228	45
75	F	CZ6C0075 S912167	37	940	28	711	22	559	900	408	50
112.5	F	CZ6C0112 S912167	46	1168	31	584	24	610	1048	475	50
150	F	CZ6C0150 S912167	46	1168	31	584	24	610	1328	602	50
225	F	CZ6C0225 S912167	53	1346	37	940	29	737	2061	935	55
300	F	CZ6C0300 S912167	53	1346	37	940	29	737	2394	1086	55

(1) W = Wall mount F = Floor mount

(2) Catalog Number

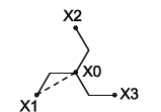
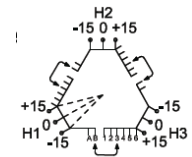
THREE-PHASE: 15 - 300 kVA 2 x FCAN, 2 x FCBN 4 x 2.5%

(3) All weights and dimensions are subject to change without notice.

Consult Delta representative for K rating other than K-13 (CSA C802.5 Guideline for evaluation the efficiency of dry-type transformers under non-linear loading)

STANDARD PHASE SHIFTING  
-30° \* (6)

**Copper windings**  
3 phase 600 - 208/120  
150°C / 60 Hz / ESS / CSA C802.2  
Optional 130°C  
Load profile K13



Phase shifting  
-15°/0°/+15°

### Copper e-Gold DZ(-30°) Series CZ6C, Three-phase, Type 3R, Primary 600V, Secondary 208/120V, Load Profile K13, ESS, 150° C

kVA	Mounting (1)	Catalog number (2)	Dimensions (3)						Weight		Noise Level
			Height		Width		Depth		lb	kg	
			In	mm	In	mm	In	mm			
15	W/F	CZ6C0015 S912117	26	660	18	457	15	381	284	128	45
30	W/F	CZ6C0030 S912117	31	787	23	584	18	457	430	195	45
45	W/F	CZ6C0045 S912117	37	940	28	711	22	559	504	228	45
75	F	CZ6C0075 S912117	37	940	28	711	22	559	900	408	50
112.5	F	CZ6C0112 S912117	46	1168	31	584	24	610	1048	475	50
150	F	CZ6C0150 S912117	46	1168	31	584	24	610	1328	602	50
225	F	CZ6C0225 S912117	53	1346	37	940	29	737	2061	935	55
300	F	CZ6C0300 S912117	53	1346	37	940	29	737	2394	1086	55

(1) W = Wall mount F = Floor mount

(2) Catalog Number

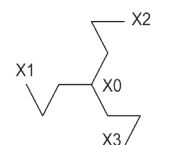
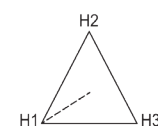
THREE-PHASE: 15 - 300 kVA 2 x FCAN, 2 x FCBN 4 x 2.5%

(3) All weights and dimensions are subject to change without notice.

Consult Delta representative for K rating other than K-13 (CSA C802.5 Guideline for evaluation the efficiency of dry-type transformers under non-linear loading)

STANDARD PHASE SHIFTING  
-30° \* (1)

**Copper windings**  
3 phase 600 - 208/120  
150°C / 60 Hz / ESS / CSA C802.2  
Optional 130°C  
Load profile K13



Phase shifting -30°

# MITIGATOR E-SERIES, SERIES 6

## HARMONIC MITIGATION TRANSFORMERS TECHNICAL SPECIFICATIONS

### Mitigator Series e-Platinum, single output

Energy Savings :	Transformer must be certified and bear the NRCAN – CSA C802.2 2018
Harmonic Treatment:	3 <sup>rd</sup> , 9 <sup>th</sup> , 15 <sup>th</sup> ... on the secondary and 5 <sup>th</sup> , 7 <sup>th</sup> , 17 <sup>th</sup> , 19 <sup>th</sup> ... with 30° phase shift on the primary common bus
Load Compatibility:	K-13 load profile, crest factor of 5, consult Delta representative for k ratings other than K-13 (CSA C802.5)
Load Imbalance :	Reduction of fundamental current imbalance from secondary to primary of transformer
Windings:	Copper
Secondary Windings:	Wound to mitigate zero sequence current flux. These zero-sequence currents shall not be coupled into the primary winding of the transformer.
Phase shift	Windings configuration to provide primary-to-secondary phase shift of -30° or 0° (as specified on drawings)
Zero sequence Data:	Less than 0.95% ZS impedance, less than 0.3% ZS reactance
Voltage Distortion :	Non linear loads test bench certified
Certified Performance:	Non linear loads test bench certified
Nameplate Impedance:	2.5 – 4.0% (up to 75 kVA), 5.0% (112.5-300 kVA)
Insulation Class :	Class 220
Operation Temperature Rise:	150°C, optional 130°C
Efficiency :	NRCAN – CSA C802.2 2018 Program from 35% to 100% loading
Electrostatic Shield :	Single Shield
Impregnation Method :	Epoxy Vacuum Impregnation
Construction Standards :	Applicable NEMA, CSA, and ANSI/IEEE standard
Certification / Labeling :	CSA C22.2 No 47, NRCAN – CSA C802.2 2018
Neutral Rating :	200% of rated secondary phase current
Frequency :	60 Hz
Taps :	4 x 2.5% Full capacity taps, (2-FCBN + 2-FCAN)
Type :	Three-phase common core, dry-type, convection air cooled
Sound Level :	Per CSA C9, NEMA ST-20
Enclosure :	Type 3R, ASA #61 Grey
Warranty :	10 year pro-rated, with limited liability

### OPTIONS

1. Dual Output :	0°/-30° and -15°/-45° mitigates 3 <sup>rd</sup> , 5 <sup>th</sup> , 7 <sup>th</sup> , 9 <sup>th</sup> , 15 <sup>th</sup> , 17 <sup>th</sup> , 19 <sup>th</sup> ... on the secondary and 11 <sup>th</sup> , 13 <sup>th</sup> ... with 15° phase shift on the primary common bus
2. Field Adjustable Phase Shifts*:	+15°, -15°, 0° supplementary phase shift
3. Operation Temperature Rise :	80°C, 115°C
4. Enclosure :	Open type
5. Thermocouples :	Type K, one per leg in the secondary winding
6. Thermal Sensors :	NO or NC, contact set at 200°C, one per leg in the secondary winding
7. TVSS :	80,000 Amps per mode surge current capacity, UL 1449 approved, EMI / RFI filtering
8. Custom Color:	Specify
Standard Product:	Product must be standard item in manufacturer's published catalog. Non linear test bench certified. Custom design and / or packaging to meet this specification are not acceptable.
Substitution :	Alternate must be approved by the engineer 10 days prior to bid closing. subject to meeting all aspects of this specification
Acceptable Manufacturer:	Delta Transformers Inc., Serie MITIGATOR e-Platinum



**Copper e-Platinum DZ(0°) Series CZ6C, Three-phase, Type 3R, Primary 600 V, Secondary 208/120V, Load Profile K13, ESS, 150° C**

kVA	Mounting (1)	Catalog number (2)	Dimensions (3)						Weight		Noise Level
			Height		Width		Depth		lb	kg	
			In	mm	In	mm	In	mm			
15	W/F	CZ6C0015 S913107	26	660	18	457	15	381	287	130	45
30	W/F	CZ6C0030 S913107	31	787	23	584	18	457	446	202	45
45	W/F	CZ6C0045 S913107	37	940	28	711	22	559	544	247	45
75	F	CZ6C0075 S913107	37	940	28	711	22	559	897	407	50
112.5	F	CZ6C0112 S913107	46	1168	31	584	24	610	1073	487	50
150	F	CZ6C0150 S913107	46	1168	31	584	24	610	1386	629	50
225	F	CZ6C0225 S913107	53	1346	37	940	29	737	2093	949	55
300	F	CZ6C0300 S913107	53	1346	37	940	29	737	2584	1172	55

(1) W = Wall mount F = Floor mount

(2) Catalog Number

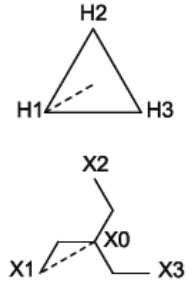
THREE-PHASE: 15 - 300 kVA 2 x FCAN, 2 x FCBN 4 x 2.5%

(3) All weights and dimensions are subject to change without notice.

Consult Delta representative for K rating other than K-13 (CSA C802.5 Guideline for evaluation the efficiency of dry-type transformers under non-linear loading)

STANDARD PHASE SHIFTING  
0°\*(0)

**Copper windings**  
3 phase 600 - 208/120  
150°C / 60 Hz / ESS / CSA C802.2  
Optional 130°C  
Load profile K13



Phase shifting 0°

**Copper e-Platinum DZ(-30°) Series CZ6C, Three-phase, Type 3R, Primary 600 V, Secondary 208/120V, Load Profile K13, ESS, 150° C**

kVA	Mounting (1)	Catalog number (2)	Dimensions (3)						Weight		Noise Level
			Height		Width		Depth		lb	kg	
			In	mm	In	mm	In	mm			
15	W/F	CZ6C0015 S913117	26	660	18	457	15	381	287	130	45
30	W/F	CZ6C0030 S913117	31	787	23	584	18	457	446	202	45
45	W/F	CZ6C0045 S913117	37	940	28	711	22	559	544	247	45
75	F	CZ6C0075 S913117	37	940	28	711	22	559	897	407	50
112.5	F	CZ6C0112 S913117	46	1168	31	584	24	610	1073	487	50
150	F	CZ6C0150 S913117	46	1168	31	584	24	610	1386	629	50
225	F	CZ6C0225 S913117	53	1346	37	940	29	737	2093	949	55
300	F	CZ6C0300 S913117	53	1346	37	940	29	737	2584	1172	55

(1) W = Wall mount F = Floor mount

(2) Catalog Number

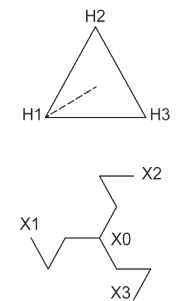
THREE-PHASE: 15 - 300 kVA 2 x FCAN, 2 x FCBN 4 x 2.5%

(3) All weights and dimensions are subject to change without notice.

Consult Delta representative for K rating other than K-13 (CSA C802.5 Guideline for evaluation the efficiency of dry-type transformers under non-linear loading)

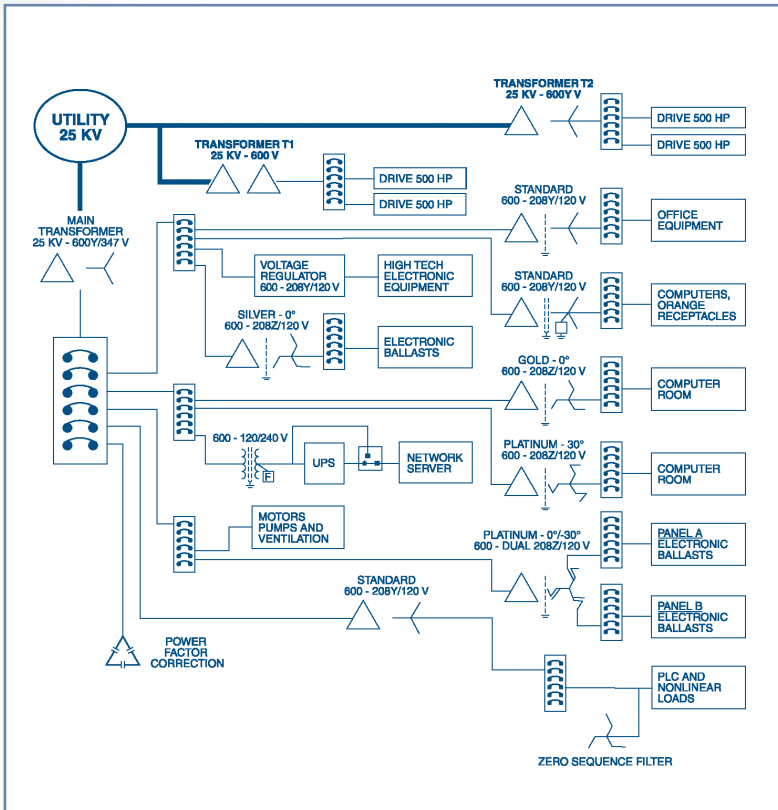
STANDARD PHASE SHIFTING  
-30°\*(1)

**Copper windings**  
3 phase 600 - 208/120  
150°C / 60 Hz / ESS / CSA C802.2  
Optional 130°C  
Load profile K13



Phase shifting -30°

• DIAGRAM •



NOTE: This diagram is an example for suggestion purpose only and is not representative of a particular situation.

MODEL	<i>e-Silver</i>	<i>e-Gold</i>	<i>e-Platinum</i>
<b>Winding</b>	<b>Aluminum</b>	<b>Copper</b>	<b>Copper</b>
<b>K Factor Load profile</b>	13	13*	13*
<b>Temperature Rise</b>	150°C	150°C Optional 130°C	150°C Optional 130°C
<b>Standard Impedance</b>	Standard	Up to 75 kVA: 2.5 - 4.0% 112.5 - 300 kVA: 5.0% max.	Up to 75 kVA: 2.5 - 4.0% 112.5 - 300 kVA: 5.0% max.
<b>Efficiency C802.2-00 2018</b>	At 35% loading	At 35% loading	From 35% to 100% loading
<b>Electrostatic Shield</b>	Yes	Yes	Yes
<b>Field Adjustable Phase Shift*</b>	Optional	Optional	Optional
<b>Double Output</b>	Optional	Optional	Optional
<b>Enclosure</b>	Type 3R	Type 3R	Type 3R
<b>Warranty</b>	10 years pro-rated	10 years pro-rated	10 years pro-rated
<b>Trade Marks</b>			
<b>Certification</b>			

\*Consult your Delta representative for K ratings other than K-13 (CSA C802.5)

\*US Patent No. 6,930,578

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