Wolf ATEX/IECEx 400VA/320VA and 250VA Stainless Steel Transformer
Operation and Maintenance Instructions
Please Retain – Read Before Use

LL-133/ T class /(Suffixes define cable, plug, socket and fuse options)
LL-233/ T class /(Suffixes define cable, plug, socket and fuse options)
LL-243/ T class /(Suffixes define cable, plug, socket and fuse options)

The Wolf ATEX St/St Transformer range are rated at 400VA/320VA and 250VA and uses a marine grade Stainless Steel enclosure housed in a protective 316 stainless steel skid.

Check model identification label attached to the lid for the transformer's power rating. The user must ensure this power rating is not exceeded.

400VA/320VA Transformer

The transformers listed below are certified with a maximum output of 400VA in an ambient temperature of up to 30ºC or 320VA in an ambient temperature of up to 42ºC, and are Group II, Category 2 equipment for use in Zone 1 & 2 potentially explosive gases, vapours & mists, where temperature class T3 is permitted, and zone 21 & 22 potentially explosive dusts where a maximum surface temperature of 195ºC is permitted.

Approval Codes/Certification:

Ex II 2 G D Ex d e IIC T3 Gb
Ex t IIIC T195ºC Db IP66

400VA - Tamb = -20 to +30ºC 320VA - Tamb = -20 to +42ºC

Model No	Input Voltage	Output Voltage
LL-133/T3/***	110V AC +6%, -10%	24V AC
LL-233/T3/***	230V AC +6%, -10%	24V AC
LL-243/T3/***	230V AC +6%, -10%	110V AC.
LL-243/T3/***/CTE	230V AC+6%, -10%	110V AC CTE (55V-0V-55V)

Check model identification label attached to the lid for rated voltage.

250VA Transformer

The transformers listed below are certified with a maximum output of 250VA in an ambient temperature of up to 55ºC and are Group II, Category 2 equipment for use in Zone 1 & 2 potentially explosive gases, vapours & mists, where temperature class T4 is permitted, and zone 21 & 22 potentially explosive dusts where a maximum surface temperature of 130ºC is permitted.

Approval Codes/Certification:

Ex II 2 G D Ex d e IIC T4 Gb
Ex t IIIC T130ºC Db IP66

Tamb = -20 to +55ºC

Model No	Input Voltage	Output Voltage
LL-133/T4/***	110V AC +6%, -10%	24V AC
LL-233/T4/***	230V AC +6%, -10%	24V AC
LL-243/T4/***	230V AC +6%, -10%	110V AC.
LL-243/T4/***/CTE	230V AC+6%, -10%	110V AC CTE (55V-0V-55V)

Check model identification label attached to the lid for rated voltage.

ATEX Certificate: LCIE 02 ATEX 6118X.
Certificate 'X' suffix – Do not open when energised.
Declarations and Attestations of conformity are also enclosed.
The transformer is also IECEx approved as described above:
IECEx LCI 11.0008X.

IMPORTANT INFORMATION

1. Read these instructions carefully before commencing to use the Transformer and retain them for future use.
2. Check the approval label to ensure the Transformer is suitable for the supply provided, ambient temperature present and present and the environmental conditions.
3. Ensure the cable type is suitable for your application as certain cables and their operational use / installation may alter the temperature range of the product:
   -SY cable has a lower operational temperature range of -5°C for flexed applications. Note this cable's insulation is made from PVC.
   -SB cable has a lower operational temperature range of -20°C for flexed applications.
   -H07RN-F cable has a lower operational temperature range of -25°C flexed applications.
   -Helkama cable has a lower operational temperature range of -35°C for flexed applications.
4. It is the user's responsibility to ensure there is no potential difference between the earth supply to the transformer and the earth where it is sited. Where this is not possible the transformer should also be locally earth bonded. A flexible cable with a conductor area of 6mm^2 minimum which is no longer than two metres is recommended for this. The transformer must be de-energised during connection or disconnection of the local earth bond.
5. The Transformer housing is constructed from 316 stainless steel and the mounted sockets are plastic, the end user must ensure that these materials are suitable for the atmosphere the transformer will be used in. Excessive force should not be used on plastic components.
6. The Transformer must not be opened when energised. After disconnection from the mains supply a delay of 5 mins must be observed before opening.
7. Ensure all replacement fuses are of the correct type and current rating. **Details of the fuses fitted are found on the transformer model identification label attached to the lid.**
8. Prices and design are subject to alteration without notice. All products sold are subject to our conditions of sale. A copy of these instructions with any relevant revisions can be found at -www.wolfsafety.com
9. When using the product, the plugs must be connected and fully engaged in their corresponding socket to maintain the IP rating of the plug & socket. Check the seals are present and in good condition in the socket lid on any fitted sockets. The covers on the sockets must be fully closed and latched to seal surfaces and maintain the stated IP rating of the product.
   Note - Plugs do not have latching covers or other devices to prevent the ingress of fluid and/or dusts. They are only IP rated when engaged in their corresponding sockets. Plugs must be kept clean and dry when not engaged with a socket.

MAINTENANCE

1. Isolate the Transformer from the mains.
2. It is essential that the Transformer is maintained in accordance with the requirements of EN60079-17
3. A visual check should be carried out to ensure all internal cable is in good condition, and not suffering any sign of damage or degradation. All internal connections should be checked to ensure that they are correctly secured.
4. The transformer input and any connected equipment cables, glands and plugs should be inspected before each use. Any damaged cables, glands and plugs should be replaced immediately.
5. The condition of the Enclosure, door gaskets and sockets should be inspected to ensure there is no breakdown in the IP66 rating.
6. If changing the input or output fuses care should be taken to secure the screwed cover on fully.
7. **IMPORTANT -** No modifications are permitted to the Transformer.

USER GUIDANCE FOR WOLF ATEX TRANSFORMERS

1. It is a requirement of the certification that the transformer is only operated in a vertical orientation, with the component transformer at the bottom. This is indicated by the orientation warning label affixed to the transformer door.
2. This Wolf ATEX Transformer is fitted with IEC 60269, 80kA breaking capacity cartridge fuses and is designed to supply a maximum load of 400VA/320VA or 250VA dependent on the rating of these fuses. The fuse types and maximum values must not be exceeded. The certification is reliant on these fuses to prevent the T Class (in max ambient) being exceeded under fault or overload conditions. Replacing these with fuses of a different type or of a higher rating could result in an unsafe condition occurring in the safe or hazardous area. To prevent nuisance tripping, the total power of apparatus operated from the transformer should not exceed the given maximum VA. Table 1 on page 2, contains suggested combinations of Wolf lamps that can be connected. Where apparatus other than Wolf lighting products are connected, its load should be checked to ensure it is suitable for use with type gG (general) fuses. **Details of the fuses fitted are found on the transformer model identification label attached to the lid.**
3. In the event of a fault in a circuit connected to the transformer, it is important that this fault current is interrupted by the output fuses before overheating damage to circuits and a potentially unsafe condition in the safe or hazardous area can occur. The user must therefore ensure that the maximum total impedance of the potential fault current flow path, from the source to the point of a fault, will not prevent this happening.
   The connected circuit impedance is proportional to the length and conductor area of the cable. Table 2 on page 2 contains Wolf's recommended maximum cable lengths for given transformer output voltage and fuse fitted. As can be seen from Table 2, reducing the fuse value increases the permitted cable length. Transformers with part numbers suffixed /2FXX are equipped with 2 off output fuses, and this permits the use of longer cable lengths as the load is distributed across two smaller value fuses. However, transformers with two output fuses, due to the centre tap of the secondary being connected to earth (CTE), will have shorter permitted cable lengths than non CTE versions of the same output voltage.
   Check model identification label on lid to establish whether the output of the transformer is CTE connected.
4. Apparatus with long cable lengths (>20m @ 24V) must be checked to ensure the calculated voltage drop will not prevent the apparatus from operating within the specified voltage tolerance (see apparatus instructions).
5. DIN rail mounted screw type terminal blocks are fitted to the transformer to connect the input cable. Each terminal is suitable for a single conductor up to 4mm^2 only. These terminals should be tightened down to 0.6 Nm whether a conductor is fitted or not.
6. Approved cable glands must be used and be suitable for the type of cable used. Any unused cable entries should be blanked off with an approved stopper plug to maintain a minimum IP rating as marked on the certification label. Gland and stoppers should be approved to maintain the certification and IP rating as per the label.
   Brass M20 Trumpet glands fitted by Wolf have the cable clamp tightened to 1Nm. If contact between the two clamping faces is not made then low strength threadlock is applied to prevent clamp fixing from loosening. Black polymide M25 Trumpet glands have the cable clamp tightened to 2.0Nm.

Table 1 and 2 on page 2 should be used in conjunction with one another to ensure that the combination of lamps does not exceed total maximum cable lengths permissible. The total cable length of a string of linkable lights is the combined total of all the lamps in the chain. Where cables with different conductor areas are combined, the maximum cable length should be selected based on the smallest conductor area.

For advice regarding the cable type and conductor area fitted to your product please e-mail info@wolfsafety.com

Table 1. Suggested combinations of lamps for use with Wolf ATEX 400VA/320VA and 250VA Transformers.

400VA Transformer Output Voltage	400VA Transformer Output Fuse	Max No of products where T3 temperature class is permitted 35°C max ambient temp.
24V	16A gG	4 x LL-500
		4 x WF-300
		2 x WF-300 + 2 x LX-400*
		8 x LX-400**
		4 x LL-24
	12A gG	3 x LL-500
		6 x LX-400**
		3 x WF-300
	10A gG	2 x LL-500
		2 x WF-300
		5 x LX-400**
		2 x SP-600 + 2 x WF-300
	8A gG	2 x SP-600 + 2 x LL-500
		2 x SP-600 + 4 x LX-400**
		2 x LL-24
		1 x SP-600 + 1 x WF-300 + 1 x LX-400
	6A gG	2 x SP-600 + 2 x LX-400
	4A gG	4 x SP-600
110V + 110V CTE	4A gG	4 x LL-500
		5 x WF-300**
		14 x LX-400**
		2 x SP-600 + 4 x LX-400

320VA Transformer Output Voltage	320VA Transformer Output Fuse	Max No of products where T3 temperature class is permitted 50°C max ambient temp
24V	16A	3 x LL-500
		3 x WF-300
		2 x WF-300 + 2 x LX-400*
		6 x LX-400**
		4 x LL-24
	12A	3 x LL-500
		6 x LX-400**
		3 x WF-300
	10A gG	2 x LL-500
		2 x WF-300
		5 x LX-400**
		2 x SP-600 + 2 x WF-300
	8A gG	2 x SP-600 + 2 x LL-500
		2 x SP-600 + 4 x LX-400**
		2 x LL-24
		1 x SP-600 + 1 x WF-300 + 1 x LX-400
	6A gG	2 x SP-600 + 2 x LX-400
	4A gG	4 x SP-600
110V + 110V CTE	4A gG	3 x LL-500
		5 x WF-300**
		12 x LX-400**
		2 x SP-600 + 4 x LX-400

250VA Transformer Output Voltage	250VA Transformer Output Fuse	Max No of products where T4 temperature class is permitted 55°C max ambient temp
24V	10A gG	2 x LL-500
		2 x WF-300
		5 x LX-400**
		2 x SP-600 + 1 x WF-300
	8A gG	2 x SP-600 + 2 x LL-500
		2 x SP-600 + 4 x LX-400**
		2 x LL-24
		1 x SP-600 + 1 x WF-300 + 1 x LX-400
	6A gG	2 x SP-600 + 2 x LX-400
	4A gG	4 x SP-600
110V + 110V CTE	4A gG	1 x SP-600 + 2 x LL-500 + 1 x LX-400
		4 x WF-300
		8 x LX-400**

*This combination of lamps can also be connected to a 24V output transformer fitted with a 12A gG output fuse.

**Combinations requiring linkable lamps. Use a minimum conductor area of 2.5mm^2 in the circuit when using linkable lamps.

Users must check the fuse rating on the transformer model identification label attached to the lid, and tables 1, 2 + 3 and point four of the user guidance above to ensure loading and voltage drop are not exceeded.

Table 2 Recommended maximum cable lengths for given transformer output voltage and fuse fitted.

2.5mm^2 Cable			4mm^2 Cable		
Output Voltage	Output Fuse	Max cable length	Output Voltage	Output Fuse	Max cable length
110V	4A gG	200M***	110V	4A gG	200M***
110V (CTE)	4A gG	200M***	110V (CTE)	4A gG	200M***
24V	16A gG	20M	24V	16A gG	35M
24V	12A gG	25M	24V	12A gG	40M
24V	10A gG	35M	24V	10A gG	55M
24V	8A gG	40M	24V	8A gG	75M
24V	6A gG	60M	24V	6A gG	110M
24V	4A gG	100M	24V	4A gG	150M

1mm^2 Cable (SP-600 ATEX inspection lamp only)			1.5mm^2 Cable		
Output Voltage	Output Fuse	Max cable length	Output Voltage	Output Fuse	Max cable length
110V	4A gG	200M***	110V	4A gG	200M***
110V(CTE)	4A gG	100M	110V(CTE)	4A gG	150M
24V	12A gG	10M	24V	16A gG	10M
24V	10A gG	15M	24V	12A gG	15M
24V	8A gG	20M	24V	10A gG	20M
24V	6A gG	30M	24V	8A gG	30M
24V	4A gG	40M	24V	6A gG	45M
			24V	4A gG	60M

***200M is given as this is considered a maximum that would be required in practical situations. **For additional advice regarding the permissible maximum cable lengths for given transformer output voltage and fuse fitted please e-mail info@wolfsafety.com**

DISPOSAL OF WASTE MATERIAL

Disposal of packaging, Transformer and associated parts should be carried out in accordance with national regulations.

Transformer Spares.

WARNING: USE ONLY GENUINE WOLF REPLACEMENT PARTS.

LL-1281 – ATEX and IECEx 400VA 230/110V:24V component transformer.
LL-1282 – ATEX and IECEx 400VA 230:110V component transformer.
LL-1092 - ATX 110V 16A 2P+E flange mounted socket.
LL-378 – ATX 24 volt 16A ATX 2P+E flange mounted socket.
LL-1252- Protective Label Cover.

Table 3 –Fuse Spares.

Circuit Protected	Transformer Power	Transformer Input Voltage.	Fuse rating	Wolf Part Number
Input	400/320/250VA	110V	4A aM	LL-377
Input	400/320/250VA	230/254	2A aM	LL-1002

Circuit Protected	Transformer Power	Transformer Output Voltage.	Fuse rating	Wolf Part Number
Output	400/250VA	110V	4A gG	LL-1007
Output	400VA	24V	16A gG	LL-379
Output	400VA	24V	12A gG****	LL-1067
Output	400 /250VA	24V	10A gG	LL-1110
Output	400/250VA	24V	8A gG****	LL-1024
Output	400/250VA	24V	6A gG****	LL-1016
Output	400/250VA	24V	4A gG****	LL-1007

****Alternative fuses to those fitted as standard, to increase the permissible lengths of product cables that can be fitted to the transformer (see table 2) a replacement **transformer model identification label** will be required when changing fuse rating. Ensure products connected do not exceed the current rating of the output fuse. See table 1 for suggested combinations of lamps and consult with Wolf Safety for **replacement transformer model identification labelling** requirements.

For other spares contact Wolf Safety

The Wolf Safety Lamp Co. Ltd has a policy of continuous product improvement. Changes in design details may be made without prior notice.

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