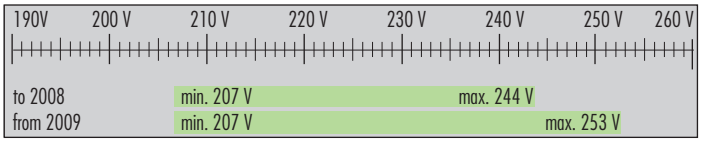
Introduction

Transformers and power supply units are important components to operate supply of power in the control and automation systems. They are the heart of each cabinet. The transformer is used to reduce the power supply voltage to a value suitable for a control panel system, and also to isolate the control circuit from the power supply for safety reasons.
The lower secondary AC voltage from the transformer is converted into DC using a half wave or bridge rectifier. Most single-phase applications use the bridge or full wave circuit.

Important terminology explained

Definite shutoff
The PSU does switch off when main current is transgress. The PSU is still offline when error recovery is larger than 5 seconds.

Supply voltages to IEC 60038



Murrelektronik power supplies are already designed to accept the future European norm voltages of 230 V AC or three-phase 400 V AC.

Inrush current
Input current spike, when electrical equipment switch on.

Inrush current limiting
A circuit or component (resistor, NTC) is used to lower the inrush current caused by switching a load, to an acceptable level.

EMC
Elektro Magnetic Compatability (Interference emission and susceptibility).
It is defined as the ability of an electrical product to continue to function problem free in its environment. Differentiations are made between:
- Industrial: High levels of interference are allowed
- Domestic: Low levels of emission which is then filtered out by other units

The optimum product is one which can withstand high levels of interference while at the same time emitting very little.

EN 61558
European norm for power supplies with transformers; follow the EN 60742.

EN55011/EN55022
Class A: Units with interference signal in industial area.
Class B: Units with interference signal in residential and business area.

EN 60950-1
European norm with respect to safety in IT technology.

EN61204-3/EN62041
All units meet the necessary requirements for high interferance resistance in industrial areas.

Power Factor Correction (PFC)
Power Factor Correction is the correction of the phase between current and voltage.

De-rating
Required rating under certain conditions, i.e. exceeding definite temperature

MTBF - number
Mean Time Between Failure is the statistical analysis of the average duration between two succeeding failures.

Mains failure bridging time
The length of time during mains failure in which the power source remains at full strength.

Mains voltage
At present the nominal mains supply voltage varies between countries. The European norm voltage will become 230 V single-phase and 400 V three-phase.

PELV
Protected Extra Low Voltage is a safety low voltage with integrated earth.

Redundance
Parallel operating power supply units. In case of failure of one unit another will take over the complete load.

Important terminology explained

Automatic re-start
The power supply unit cuts off and on periodicly: as soon as the nominal current exceeds the allowable limit, and it switches on again automatically after the overload is gone.

SELV
Separated Extra Low Voltage is a safety safe voltage without attached protective grounding.

Safety transformers
are transformers, whose input and output windings are separated. Those transformers will be used to supply circuit distributor or compatible units up to 50 V AC/DC.

Isolation transformers
are transformers with electronic separated windings to meet the requirements of "protected separation".

Over voltage protection
VDR: against short term spikes.
Thyristor (crowbar): generates a short-circuit. This is electronically monitored and the output is switched off.

Over heating protection
Using a thermal switch, overheating is recognized and the output voltage switched off. Dependent on the unit, either an alarm is sent or the unit automatically restarts after a cooling down period.

Wide voltage input
The large wide voltage input allows the power supplies to be used in almost any network, worldwide designed for the global market, the atest devices have international approvals such as UL, cUL, ENEC and CSA. The input voltage range in the main catalogue are always related to the minimum and maximum possible input voltage.

Certification, Approvals and Manufacturers marks
Approvals make the use of products throughout the world much simpler.

UL: Underwriter Laboratories Inc.
An independant organization which tests the safety of products in the USA and gives them certification. Approved products and the manufacturing facilities are regularly re-assesed.

Components approvals	recognized	
Unit approvals	listed	Listed

cULus: Test mark of the Underwriter Laboratories Inc. for the Canadian market.

Components approvals	recognized	
Unit approvals	listed	Listed
Comparable with		

CSA: Canadian Standard Association
Independant Canadian product safety testing organization

Comparable with		Listed

CE: Placed on a product by the individual manufacturer to show that the relevant European guidelines have been met.
Each product also has a certificate of conformity, which lists all of the norms and guidelines which are applicable. Those are available upon request.