Al-Quds open university
Information and Communication Technology Center (ICTC)

Electrical Systems & Network Standards for QOU New Buildings.

These standards have been prepared to be taken into account during the process of design and preparation of tender documents by the Engineering Office, and are not an alternative to the general and special standards prepared by the Office.

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23-5-2017	Fadi Qurt	Document Creation
16-8-2017	Fadi Qurt	Add Abbreviations
11-9-2017	Fadi Qurt	Add lightning system and clean earthing system for server room
27-3-2018	Fadi Qurt	Modification on Computer, ICT and Multimedia Labs section

Abbreviations

Abbreviation	Abbreviation stand for	Description
CCTV	Closed circuit television	Camera system
EMS	Environment monitoring system	System that monitor environment variables and gives programmable alarms
FM200	Fire master gas	A gas used to extinguish Data Centers and electrical panels
LV	Low voltage system	Telephony and network systems
UL	Universal license	Certification for Quality
MDB	Main destitution board	Main electrical panel
SMDB	Sub MDB	Sub electrical panel
ATS	Automatic transfer switch	electrical control panel for generator
UPS	Uninterruptable power supply	Power supply device use batteries to maintain static voltage on electrical loads in case of electrical failer
3P	Three phase	three phase electrical system

Abbreviation	Abbreviation stand for	Description
EL	Earth leakage	Electrical panel component
CB	Circuit breaker	Electrical panel component
AC	Air conditioning	Air conditioning system
BMS	Building management system	Centralized system to control all electrical systems and devices in a building
GSM	GSM dialing system	Device gives alarms via SMS and voice calls
SNMP	Simple network management protocol	Device gives alarms & management via emails
BS	British standards	British standards for electrical and network works

Standards

Data Center & Network	Data center should have its own electrical distribution panel
	A clean earth system should be installed in server room, that is separated from the main earthing to protect low voltage systems in server room
	Data center should be equipped with the following security system: 1- CCTV 2- Access control 3- EMS (environment monitoring system) 4- Fire alarm system connected with FM200 extinguishing system 5- FM200 extinguishing system 6- Burglar alarm
	Every system that is IP managed should have its own switching in data center
	All LV, Security, communication and telephony systems should be IP managed
	Data cables should be Cat7A Giga Ethernet UL listed
	The space of data center should be enough, sufficient and suitable for future expansion
Electrical works	Electrical room should include MDB, SMDB,ATS, UPS panel, UPS and main telephone panel, space should be enough and sufficient
	A complete Lightning rod system should be installed, the system should protect the building and the area around the building, and to include a separate earthing system (earth wire 70mm² isolated, 3 electrodes (19mm²×1.5m) in 3 manholes (40×40×40cm) and according to manufacture instruction.
	all loads should be equally distributed on phases
	All electrical panels that feed single phase loads should include main 3P breaker and EL
	All electrical panels should have a free space no less than 25% for future expansion
	lighting circuit should not exceed 1.2 kw with 10A CB & 3*1.5 cable
	power circuit should not exceed 1.4 kw with 16 CB & 3*2.5 cable
	Every electrical panel should have indication lamps and multi meter
	Boiler, AC unites and similar loads each should have independent line and breaker
	kitchen should have at least three power outlets
	Electrical shaft should be connected with electrical room
	All electrical lines and LV lines should be fully separated from source to terminal

	complete labeling for all electrical and communication systems and reflected on As-built
	AS- BUILT drawings identical to reality for electrical installations, panels, LV, communication and security systems should be submitted
	All corridors, lobby, waiting areas or any interior free space should include electrical services
	Full lightning system should be installed around the building
	FM200 system should be installed in every electrical panel more than 100A

Computer, ICT and Multimedia Labs	Every PC should have a double power outlet and data outlet
	Every Lab should have its own electrical panel and switching cabinet
	Every lab should have a high quality PVC floor
	Space should be enough and sufficient for at least 30 PCs plus instructor PC
Offices & lecture rooms	Every desk should have double UPS outlet, data outlet and telephone point
	If the room can have space for more desks than ones appear in the design, then every added desk should have power, data and telephone services
	Every room should have at least two service power outlets
	Every lecture room should have at least two double power outlet , a data outlet and two UPS outlets
	In every lecture room a ceiling box should be installed for projector including HDMI, Data and power lines
Generator	Safe room with sufficient ventilation
	water proof data point for generator
	Generator room should include electrical service
	Diesel tank minimum 2000 Liter, or proportional to generator capacity

	Generator should follow bellow specs and standards: - Super silencer system with standard canopy - Support BMS - connection with BMS - Free software - Full training on software - SNMP and GSM module Follow the standards 1. Fuel, oil Consumption BS 5514 Part 1:1987. 2. Speed Governing BS 5514 Part 4: 1984. 3. Torsional Vibrations BS 5514 Part 5:1984. 4. Over speed Protection BS 5514 Part 6:1992

	Data point for UPS
UPS	UPS should follow bellow specs and standards: - Include SNMP - Support BMS - Connection with BMS - Include GSM module - Overload tolerance 1min at 150% load - PF more than 0.9 - Keep efficiency more than 90% at 15% load - Deep cycle charge\discharge batteries - true online double conversion - modular type - expandable to at least 200% - built in STS for each module
General	Wi-Fi coverage for all interior space
	Burglar alarm in important rooms
	CCTV system should cover all outdoor borders, corridors, waiting areas and free spaces
	Fire alarm should cover all rooms

END