

# Introduction to USB Chargers

May 2014



# Webinar - Topics

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- Brief history of USB
- What are the main trends driving the use of USB Chargers?
- What are the common issues Power Chargers?
- What are the environmental issues with Power Chargers?
- What are the key elements to look for on a USB charger?
- What are the opportunities for USB chargers in the construction industry?

# USB Chargers

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## ■ Brief History of USB sockets?

- Universal Serial Bus (USB) is an industry standard that was originally designed by a group of 7 companies\* in mid-nineties  
(\*Compaq, Digital Equipment Corporation, IBM, Intel, Microsoft, NEC and Nortel)
- One of the main objectives was to reduce clutter and time to plug multiple devices to a computer
- Ajay Bhatt of Intel, was one of the main architects involved in the design and is often attributed as the “father” of USB Standard
- USB evolved from a socket capable of supplying limited power and serial data interface to a socket used as default provider of power to phones, tablets, readers and other small devices

# USB Chargers

## ■ What are the main trends driving the use of USB Chargers?



- In recent studies the giant Cisco and others experts predict that Australia will use in excess of 3 mobile devices per capita by the end of this decade
- USB Standard is constantly evolving and the Battery Charging Specifications Rev 1.2 (2010) allows up to 5A charging current in USB 2.0 type sockets
- USB sockets are widely accepted as the power source and have become the de-facto power modules for mobile devices
- Some mobile phone manufacturers are already shipping their products without a power adaptor

# USB Chargers

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- What are the common issues with Power Chargers?
  - **Inconvenience**

The difficulty today is the need to carry around multiple chargers, swapping and changing plug-in units, the risk of losing them and not having enough powerpoints to plug them into
  - **Constant Need of Power**

Often we need to charge mobile devices at home, at the office, airport or elsewhere
  - **Inadequate Charging**

There is a huge variance between available USB Chargers. Using inadequate chargers may have a negative impact on the longevity of the battery and performance

# USB Chargers

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## ■ What are the environmental issues with Power Chargers?



### – Environment

Incompatibility of chargers is a major environmental problem

A user who wants to change the mobile phone must usually acquire a new charger and dispose the current one, even if this is in perfect condition

This situation unnecessarily generates important amounts of electronic waste

Plug in units with poor stand-by energy consumption can generate significant amount energy waste

# USB Chargers

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- What are the key elements to look for on a USB charger?



- **Maximum Charging capacity**

Ability for the charger to provide maximum current when you need it most ( $2.1\text{A} \times 5\text{V} = 10.5\text{W}$ )

- Eg ability to charge 2 iPads a full charge simultaneously

- **Simplicity**

Ability to integrated USB charger  
in a wall switches and Power Outlets

- **Flexibility**

Ability to install the charger in a place were you normally rest  
you mobile device. Bedside table, Kitchen, etc

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## ■ What are the key elements to look for on a USB charger? (cont...)



- **Overload protection**

To protect the charger circuit in case of faulty cable that could cause a short circuit on the 5V side

- **Low Stand-by power consumption**

Required to minimise energy consumption while the charger is not in use. The benchmark is  $< 0.15W$

- **Compliance with Standards**

Standard have been updated to cover battery charging mechanisms and power sources



# USB Chargers

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## ■ What are the key elements to look for on a USB charger? (cont...)

### – **Energy Efficiency**

Optimized circuitry for maximum energy efficiency

Performance mark V

Minimum Energy Performance Standards (MEPS)

### – **Variable charging rate circuit**

Smart charging circuit that adjusts charging current to optimise speed and to protect the life of the battery



# USB Chargers

■ What are the opportunities for USB chargers in the construction industry?



– Opportunities can be divided in three main areas:

**Living Areas**

- long time stay

**Studying/Working Areas**

- medium time stay

**Waiting room Areas**

- short time stay

# USB Chargers

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■ What are the opportunities for USB chargers in the construction industry?



– **Living Areas:** (long time stay)

- » House s → 2 x Dual socket in the Kitchen and 1 x Dual socket in each bedroom
- » Student rooms → 1 x Dual socket in the Kitchen and 1 x Dual socket in each bedroom
- » Hotel rooms → 1 x Dual socket in the Study/Bed
- » Hospitals → 1 x Dual socket per Bed

# USB Chargers

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■ What are the opportunities for USB chargers in the construction industry?



– **Studying/Working Areas:** (medium time stay)

- » Offices → 1 x Dual socket per workstation
- » Libraries → 1 x Dual socket per study table
- » Study rooms → 1 x Dual socket per study table

# USB Chargers

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■ What are the opportunities for USB chargers in the construction industry?

– **Waiting Areas:** (short time stay)

» Airport lounge

» Hospital waiting rooms, patient rooms

» Public waiting rooms (ie councils)

» Train stations, etc

– In these environment it would be expected to have multiple charging stations depending on size and people traffic



# USB Charger Legrand Solution

- Legrand offers a USB charging module that can be assembled in any single or double Excel Life/Excel/Linea and Arteor powerpoint or multi-gang configuration.

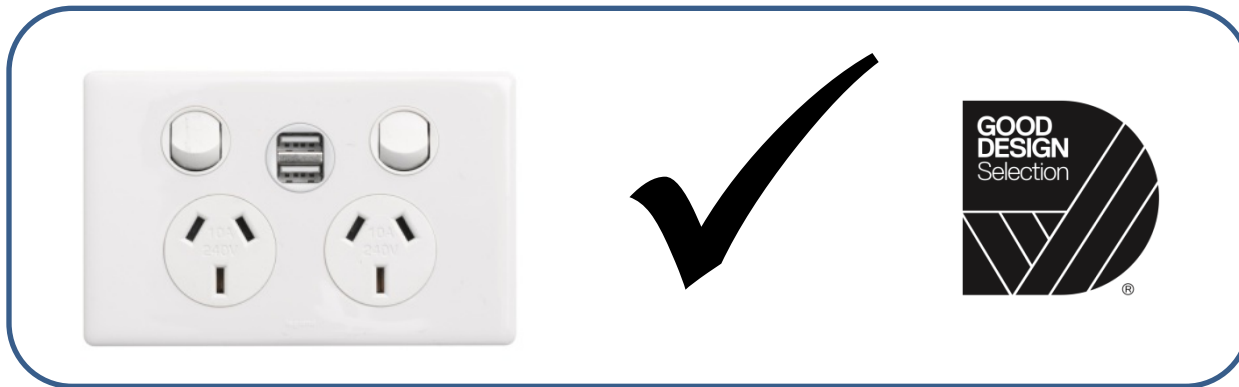


- The Legrand Excel Life USB charging module has been designed to provide maximum charging speed (2x2.1A) and the highest energy efficiency to minimise stand-by power consumption.



# USB Charger Legrand Solution

- Legrand USB Charger has been recently a recipient of the Good Design Selection Award by the Australian Good Design Awards



# USB Charger

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## Q&A





# USB Charger

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Thank you

