2017 New Products

The complete battery-powered wireless control solution for model railways

SCREEN IMAGE SIMULATED
We’ve listened to what you’ve told us that you want from your Acc+Ess Protocab system, following the successful launch and the experience of the customers of our Pilot Series, launched in 2015 after 7 years of research. We’ve not stayed still, we’ve been carrying out research and development throughout and the result is the 2017 New Product range outlined in these pages.

In the Protocab system, each locomotive or powered train contains a rechargeable battery to provide power for the motor and other functions for several hours’ running. This removes completely the need for wheel pickups and any wiring to the track and having to keep the track and wheels spotlessly clean. Also in the locomotive is a computer circuit known as the Acc+Ess Protocab Locomotive Control Unit – or LCU – and a device to charge the battery without having to take it out of the loco.

Locomotives are controlled wirelessly from the Protocab controller and can be selected to drive simply by the press of the respective button – no programming needed!

Your Protocab system operates under the internationally accepted network protocol standards, each Protocab device has a world unique address to prevent unauthorised access and control. You can adjust any of the ‘characteristics’ that adjust performance and set your preferences for e.g. acceleration and braking, with no programming involved – all settings are adjusted from intuitive menus, with plenty of help available should you need it.

All Acc+Ess Protocab components connect to the appropriate device e.g the battery to the LCU, with a unified system of connectors to prevent the wrong plug being fitted to the wrong socket.

Your Acc+Ess Protocab system is backed by exemplary after-sales customer service and support (our customers’ words!). We go above and beyond to provide you with the best possible service, with our special guarantees covering all our Protocab products, including the unique Total Satisfaction Guarantee that enables you to return your Protocab system for a full refund if you find that it isn’t for you! (Terms apply)

Acc+Ess Protocab is designed in house, assembled and professionally manufactured in Scotland and tested in the UK by accredited test laboratories to ensure full compliance with international regulations.
SUMMARY OF THE 2017 NEW PRODUCTS

- Touch Screen Controller (cat no. 0241)
- Four new models of Locomotive Control Unit
- Two new internal loco battery charging units
- New batteries, including cylindrical shape
- Smartphone, tablet and PC control options
- Auxiliary lighting units
- New functions:
  - enhanced operator information e.g. speed and battery charge
  - one button LCU adoption
  - switch loco on from the controller
  - ‘free running’ - control two or more locos simultaneously from the same controller
  - double heading (‘consisting’)
  - support for third rail and overhead line power
- Improved performance
  - ‘glide control’ for smooth start, stop and slow running
- Enhanced ‘over the air’ firmware updates
- Improved network recovery and diagnostics support.
- Backwards compatibility with Pilot Series
- Loco installation service
The 0241 Touch Controller is designed to allow control of layouts with fleets from 1 to 128 locomotives. The new 3.5” touch screen makes selection and operation as simple as possible, providing rich feedback about the status of all parts of the system. Speed control is through a smooth and responsive centre-off slider.

The 0241 is designed to be held in landscape mode, similar to video games controllers, providing a comfortable driving position with easy access to the touch screen for key information about the loco’s performance, battery charge remaining etc. The unit can be held for one-handed, ‘eyes-on-loco’ operation.
Key features of the 0241 Touch Controller:

- 3.5” touch screen for loco selection and setting
- Colour coded locomotive availability and use
- Wireless range of several tens of metres indoors and outdoors
- User-controlled locomotive description for easy display and selection
  - ‘Last used’ locomotive at head of list
- Menu driven Management Mode for characteristics setting with enhanced graphics display, with no programming involved.
- One button LCU adoption.
- On-screen context-sensitive help.
- Support for up to 128 locomotives.
- Tactile centre-off slider for single or two handed “eyes-on-loco” operation.
- Full range of control slider positions with immediate movement from “off”.
- Over-the-air wake from ‘Deep Sleep’ directly from the controller, removing the need for a separate on/off switch.
- Simulated inertia effects
- Comprehensive on-screen system information:
  - Locomotive fleet list including current “sleep mode” status.
  - Locomotive battery state of charge indication even during the charging process.
  - Motor speed RPM and current draw indicators.
  - LCU system status including statistics, radio signal strength and firmware version.
  - Attached accessory status indication (e.g. lighting).
  - State of charge indicator for controller battery.
  - Network strength and activity indicator.

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LOCOMOTIVE CONTROL UNITS

Protocab LCUs provide continuous voltage up to the maximum rating throughout the full discharge period of the battery, with no slowing down as the battery discharges.

The Pilot Series 05XX LCUs are being extended to provide for:

- smaller models in 4mm (typically small tank locos or diesel shunters)
- initial support for 2mm (N gauge) and 7mm (O gauge)

**0503**

**0, N**

**350mA**

**12V**

The 0503 has a board size of only 24mm x 10mm and thanks to a new flat antenna, the board thickness is 4mm and supports motor stall currents up to 350 milliamps.

**0554**

**0, N**

**400mA**

**5V**

The 0554 is the first Protocab LCU to support 5 Volt motors. To support this new LCU, Acc+Ess Retail is to include a range of high quality, miniaturised motors for which the 0554 has been optimised. The 0554 has a footprint of 24mm x 10mm, with an overall thickness of 4mm.

**0515**

**0, O**

**1.5A**

**12V**

The 0515 handles stall currents up to 1.5 amps.

**0525**

**O**

**2.5A**

**12V**

The 0525 is the highest power LCU in the 2017 range providing support for 2.5 amps @ 12 volts making it ideal for O gauge locomotives.

(image shown is approximate indication of size)
Each of the LCUs in the 05XX range contain appropriate sockets to fit relevant components such as the motor connection, the charging cable or the battery cable. LCUs contain a number of safety devices to prevent overcurrent situations occurring, such as a motor being connected that draws too much current for the battery to supply safely. A resettable fuse provides further protection. Each 05xx LCU comes packed in ESD-safe packaging, and includes materials to distribute localised heat that may be generated by the LCU plus a detailed user guide. Each LCU provides automatic ‘deep sleep’ to lengthen battery power availability. An auxiliary port on the 05xx LCU connects various devices such as lighting units, described later in this brochure.

Acc+Ess is building on the substantial success of its Pilot Series, introduced in 2015, shown above ready for installation in a OO gauge Bachmann British Railways Southern Region ‘Mogul’, showing (left to right), the 0502 LCU, the 9601 Plug Charging Unit and the 1902-653042 lithium ion polymer battery, shown against a sterling 2p piece for size comparison. The 2017 range enhances the Pilot Series which will continue to be available.
BATTERY CHARGING UNITS

The new battery charging units provide alternatives to the Pilot Series 9601 Plug Charging Unit. All of the charging units are interchangeable with the 05XX series LCUs, but some models are designed to fit only certain LCUs to prevent the loco battery being charged at too high a current.

When used with the new series of LCUs, they automatically detect availability of external power and switch over to it during charging to enable the LCU to be powered so it can communicate with the controller to display charging progress.

961x CONTACT CHARGING UNITS (CCUs)

This series of charging units provides for the charging current to be derived from e.g. a special piece of track and through the locomotive wheels. This, in conjunction with the Loco Installation Adaptor described later in this brochure, is the simplest method of installing an integral charging unit in the locomotive. Alternatively, special charging ‘ramps’ and contacts below the locomotive can enable loco batteries to be recharged without needing to power the track.

A special feature of the 961x CCUs is the ability to derive power from e.g. third rail or overhead line equipment (‘catenaries’) rather than from, or in addition to, an onboard battery, with control for the locomotive or train being wireless from the Protocab controller to the LCU as usual.

The 961x units provide the required current to charge the battery from a range of input voltages from 5 to 17 Volts. It can rectify alternating current voltages to the direct current required for the recharging management circuit included on the 961x.
965x INDUCTION CHARGING UNITS (ICUs)

This series of charging units provides for the charging current to be derived from a transmitter located e.g. between the rails of the track which is then received through ‘induction’ by a receiver located beneath the locomotive. There is therefore no contact between the locomotive and the transmitter.

When the loco is adopted to the 0241 Touch Controller, an indication will appear on the touch screen when the receiver on the locomotive is correctly positioned over the transmitter.

The 965x ICU series comprises a matched transmitter and receiver, balanced together for charging the installed model of battery.
**BATTERIES**

The 2017 range of Protocab batteries supports the new and existing range of 05xx LCUs with cylinder shaped units that simplify the installation in steam outline boilers. This addresses the limitation that prevents tender drive steam outline models being fitted with the flat form 1902-series batteries.

**Single Cell Lithium-Ion Batteries**

Three new models of battery will be available in 2017:

<table>
<thead>
<tr>
<th>Battery Code</th>
<th>Capacity (mAh)</th>
<th>Diam (mm)</th>
<th>Length (mm)</th>
</tr>
</thead>
<tbody>
<tr>
<td>1901-1044</td>
<td>300</td>
<td>10</td>
<td>45</td>
</tr>
<tr>
<td>1901-1450</td>
<td>750</td>
<td>15</td>
<td>51</td>
</tr>
<tr>
<td>1901-1875</td>
<td>3000</td>
<td>19</td>
<td>76</td>
</tr>
</tbody>
</table>

All Acc+Ess Protocab batteries are fitted with overcurrent protection circuits, the appropriate connector for the respective LCU and each battery is provided with user guidelines on use and storage.

**Dual Cell Batteries**

For the higher current LCU (0515 and 0525) we are introducing a range of dual-cell batteries. These provide a more efficient way of generating the voltage and current necessary for the work these LCUs are designed for. These batteries have specific large style connectors which prevents inadvertent connection to smaller LCUs and have a dedicated range of charging units that are tailored to the requirements of dual cell charging.

Protocab batteries are tested to UL62133 and are distributed in accordance with UL3480, and, in the UK, to Royal Mail regulations.
Acc+Ess and its agents regularly attend exhibitions and are invited to club meetings to describe the benefits of battery powered wireless control.

If your club or exhibition will benefit from learning more about the pleasures of battery powered wireless control, please contact tony@protocab.com.

To find out where Protocab is being exhibited in your area, please visit protocab.com.

Back in spring 2013, Protocab was demonstrated on the Bristol Barrow Road layout of the UK’s ‘Glevum Group’ using the smartphone control we are reintroducing in 2017.
APPLICATION FUNCTIONS

The new series of products to be available in 2017 provide a number of functions not previously available on the Pilot Series.

ONE BUTTON ADOPTION (0241 only)

Acc+Ess Protocab LCUs are ‘adopted’ by one controller to prevent unauthorised control by other controllers. Each LCU and controller has a world-unique address burnt into its electronic circuit and the adoption process records the address of the LCU in the parent controller and vice versa. The process has been simplified to selecting the address of the LCU from the controller’s screen and pressing one button.

GLIDE CONTROL

Modern efficient motors and gearboxes go a long way to providing the smooth running, particularly when starting and stopping that emulates the ‘pull’ feeling of the full-sized locomotive under load. However, some motors and gearboxes require a significant voltage in order to overcome inertia and at that voltage the speed suddenly shoots the loco forward, unprototypically. Protocab’s ‘Glide Control’ senses and uses the voltage generated by the motor (‘back-EMF’) to get an accurate measure of the speed in order to control it precisely as it accelerates from stop.

‘FREE RUNNING’

This lets you select a loco to run, and while it is running, to select and subsequent loco to drive, useful if your layout has several circuits.
AUXILIARY CONTROL UNITS

Recognising that not all modellers will want to use their Protocab system other than for speed control, the 05xx series of LCUs provides for the attachment and control of auxiliary functions, some of which have their own control system.

970x AUXILIARY LIGHTING

Acc+Ess is introducing a range of lighting options that connect to the Auxiliary Control Port on all models of the 05xx series of LCUs. The initial range is intended to power LEDs and current will be drawn from the battery attached to the 05xx LCU via the ACU port. In the 9707 (cat no), for example, up to 7 LEDs can be switched off and on in any combination. Brightness of each LCU can be independently set.

The 0201 Direct Controller was introduced in 2015 in response to many modellers’ requests for a physical control knob rather than the screen of the smart phone. The 0241 Touch Controller combines the best features of both, and the 0201 will still be available in an improved version in 2017.
ACCESSORIES

These accessories are designed to simplify the use and installation of Protocab components into your locomotive.

9921 MOTOR TEST LEAD

The 9921 Motor Test Leads can be used to test the operation of Protocab LCUs on motors, without having to solder wires to the motor connector. This can be used to determine if the LCU is able to provide suitable power to the motor, which can be determined on the 0241 Touch Controller screen display.

9941 LOCOMOTIVE INSTALLATION ADAPTOR

This 8-pin plug attached to a cable pair that attaches to the Motor output of the 05xx LCUs and input socket of the 961x Contact Charging Units allows quick installation of Protocab in DCC-ready locomotives.

9801 MANAGEMENT APP FOR WINDOWS®*

- keeping your Protocab system up to date

In order to keep customers up to date, we have designed the system so that you can, through the 9801 Management App, download updates to the firmware which runs inside the controllers and LCUs. The Management App will be enhanced in 2017 to support the new products and to permit multiple concurrent updates to your LCUs.

*also operates under MacOS with appropriate third-party software

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SERVICES
Acc+Ess intends to extend its pre-and after-sales services in 2017

INSTALLATION SERVICE
If you would prefer us to install the Acc+Ess Protocab components in your locomotives, we can do this for you for a small charge. We test the locomotives before sending them back to you ready-to-run!

PROTOCAB OWNER’S CLUB
Apart from support available from our website, protocab.com, and support available by email and telephone, everyone who owns an Acc+Ess Protocab controller is automatically a member of the Protocab Owner’s Club. Membership is currently free and members receive regular news and updates of latest developments, technical hints and tips and reports from other Owners on how they use Acc+Ess Protocab. Owners also receive advance news of special offers, some of which are limited to Owners.
In 2017, Acc+Ess will be visiting various centres to hold clinic meetings where Owners can meet each other and chat to the Protocab designers.

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The Products described in this brochure are planned for release during 2017. To keep informed of progress, and if you are not already a member of Club Protocab, please send an email to launch@protocab.com letting us know a bit about your modelling interests, scales, experience etc. Alternatively, please visit us at protocab.com and click on the Contact page.