Protocab NEWS UPDATE
JANUARY 2014
THE NEWSLETTER OF CLUB PROTOCAB MANAGED BY ACC+ESS LIMITED- MANUFACTURERS OF THE PROTOCAB WIRELESS MODEL RAILWAY CONTROL SYSTEM

This news update follows the feedback we received from newsletter issue number 6 which we sent to you just before Christmas. In particular, the product update on the 1201 Handheld Controller has resulted in an interesting split of votes for particular models (see below). The update on the 9011 LIU has led to some questions by several modellers who are planning the installation of Protocab based on the templates we showed in issue 3. The increased size of the 9011 has led to some misunderstandings which we'd like to correct in this update (see article at the right).

1201 - the votes so far

We've had a great response to our request for your preferences for the three proposed designs for the 1201 shown in newsletter 6 and a number of useful comments about usability. There were also a number of questions about design and, for example, how the locos are allocated to the buttons. From the responses received so far, the percentage votes to date are:

Button throttle	**50%**
Wheel throttle	**50%**
Lever throttle and brake	**0%**

(there *were* considerably more than two votes!)

We haven't included the responses we received at the MERG meeting in July, so we'll add the number of votes from the MERG meeting and let you know the latest result in the next newsletter. If you haven't yet voted, please email club@protocab.com or text 'left', 'right' or 'centre' to 07831 231164.

Some updates from modellers' responses: you want more than six loco selection buttons. The plan is that you allocate a loco in your fleet to each button, and press the respective button to select a loco to drive. 9 buttons have been suggested, but questions have been asked about what happens when you take the loco to a friend's or club layout. We think that these responders are thinking about the keying of the loco address when using other types of command system. Acc+Ess Protocab locos don't have short addresses which you need to key in. The Protocab controllers (including the Android app as well as the proposed handhelds) convert the one click button selection to the Protocab LCU address (acknowledging that some other control systems do translate the loco address to a single button click). There are a number of ways to allocate the LCU address to a respective button. Some of these will benefit from the use of a computer, but from our discussions with modellers that prefer a physical controller, many of you do not have access to a PC. The method we have in mind to allocate locos to the buttons without a PC has not yet been tested, so we'll outline this once we are closer to finalising the design.

Several modellers have combined the 1201 controller with other aspects described in newsletter 6, such as the battery fuel gauge. We are looking at the best method of incorporating it along with other indicators that you have indicated would be useful.

You've asked when the 1201 would be available. We are working on the development in parallel with the Pilot Series, and we estimate that the 1201 should be available about six months after the initial availability of the Pilot Series this Spring.

A HAPPY NEW YEAR TO ALL CLUB PROTOCAB MEMBERS!

LIU Matters

In newsletter 6 we reported on the design update to the 0501 Locomotive Control Unit (LCU) and reported a reduction in the size of the footprint. We also noted that, in moving some of the components from the 0501 to the 9011 LCU Interface Unit (LIU) there was a corresponding increase in its footprint.

We received a number of concerns from Club members, in particular that its original small footprint enabled the unit to be placed either between the frames or in the bunker of tank locos. The concern was that, with space being at a premium in the smallest locos, the 9011 would be too large.

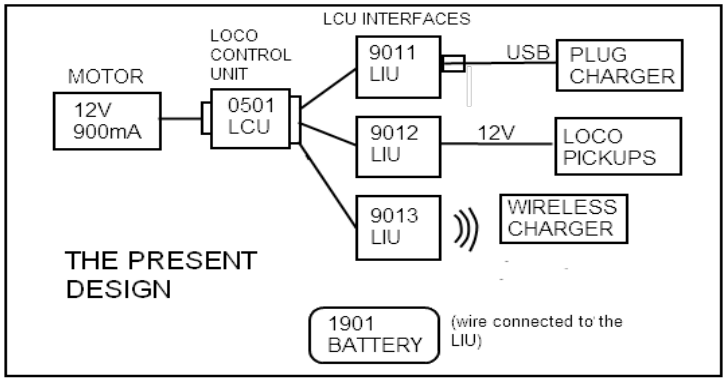
It occurred to us that we had not clarified one important factor. The 9011 is designed for use *only* with the 0501, as it provides the 0501 with the 900 milliAmps that the 0501 delivers to the motor. However, whilst this would still enable the larger 9011 to be fitted inside O gauge bunkers, it would be too wide for 4mm locos, so we are addressing this with a revised design (see next page).

We will introduce the **0502** and **0503** LCUs to address the space limitations inside small 4mm locos and these LCUs deliver the typically lower power that the motors in these smaller locos draw. Consequently, the LIUs that support these units will be smaller, and we are looking at a circuit for the 0503 that might eliminate the need for the LIU altogether.

The responses to our request for feedback on the position of the charger socket were a big surprise to us. Almost everybody who replied suggested that because any one position would not suit everyone, it would be the best solution to have the charging socket as a separate unit, wire connected to the LIU. The downside of this approach is that it would increase production costs slightly, but there are a number of advantages. Firstly, being that much smaller (around 10 x11mm), it will be much easier to find a place to locate the charging socket, which is now the only external interface required. We still favour a separate LIU/LCU rather than combining both circuits as the discrete units can be installed in various parts of the loco or tender.

Another advantage is that we can provide a standard interface to the LIU for plug, contact or wireless charging so deciding to change from e.g. plug to wireless charging simply replaces the charging unit. The diagram on page 2 shows the resulting relationships.

We appreciate your feedback, comments and criticisms and, of course, any questions you have, so please contact us at club@protocab.com



Your responses so far to the items in newsletter 6 have encouraged us to think about the design of the components to be fitted in the locos. In particular, the thoughts about the best location for the charging socket and your preference for a separate unit suggest that a separation would be advantageous.

We can alter the layout of the components very quickly so testing different configurations is not a problem. We are looking mainly at the usability aspects but we are also careful to consider any cost/price implications.

The diagram above shows the present design under test. The three proposed methods of charging the battery each require separate methods of voltage conditioning to provide a standard voltage to the battery charger on board the LIU, hence the need for separate LIUs (9011 for the plug charger, 9012 if you want to take power from the rails via pickups on the loco and the proposed 9013 which enables the battery to be charged wirelessly).

The output from the 901x LIU is the same regardless of model and provides the 0501 LCU with 900mA at up to 12V.

(For all models of the 901x, the battery in the 1901 series is wired connected to the LIU).

The Revised Design

Taking the charging socket off the 9011 LIU will reduce the footprint of the 9011 and increase the flexibility of where to locate the LCU, LIU and charging socket. The proposed plan (below) has other new features. We no longer need separate models of the LIU for a specific voltage/current output. Instead, we provide separate units to connect to the LIU. From the top of the drawing:

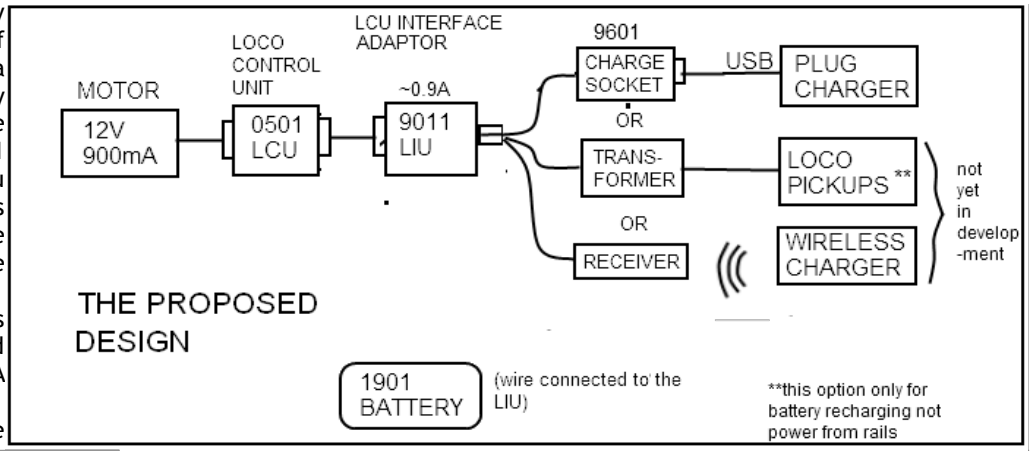
1.The new model 9601 charge socket will now be around 10mm x 11mm x 8mm with three wires that are connected to the LIU. This means a third connector on the LIU which now measures 26x13mm.

2.The transformer that is used to connect the LIU to loco pickups for contact recharging power will need to be transformed from track voltage to the LIU input voltage. This new arrangement means that we can cater more simply for different fixed track voltages e.g. 12V DC or 16V AC, by having different models of transformer. It also simplifies the situation where, for example, modellers want to run Protocab-fitted locos on a DCC fitted layout and charge the battery from the track.

3.The receiver for wireless charging will enable this unit to be placed between the frames with greater ease than having it located on the LIU.

We can envisage being able to switch between one form of charge and another by means of a switchable unit, but this is for the future.

We're very pleased to receive and respond to users' suggestions. We're also installing the components in a range of locos to understand the difficulties encountered. We will be testing these proposed alterations and we will report back in the next newsletter. If you have any comments meanwhile, please forward them to club@protocab.com or send text to 07831 231164.



Q&A

Every time you publish a newsletter or update there is a different design. Surely this is delaying you getting the products out for sale?

There are two reasons for changing the design: the results of our testing and user feedback. We spent the bulk of 2013 creating and testing the Pilot Series architecture so that we could make rapid changes to the design. The above change, for example, took us one day to implement and prototype. Far more important is to listen to what our customers tell us, which is why feedback is vital to us. It would be unwise and expensive to commission the production of components to find that users find them difficult to use or have features they don't want or are missing features that they do want.

The time that it is taking to release the first products is mainly testing and adjusting the components so that the Pilot Series will provide the reliability and quality of service that customers want. Many of the components that we have incorporated into the designs require careful placement on the printed circuit boards and we test redesigns thoroughly. I can tell you that by the time you receive this, we will have placed an order with our suppliers for an initial run that we hope will pass all our tests and be the final design that goes forward to production.

I can't use the 0501 and thus the 9011 as they won't fit in my 4mm tank locos. How big will the 0502 and 0503 and the associated LIUs be?

At this point we are still designing these units, but the aim for the 0502 is to provide 500mA in a 35x35mm footprint and for each of the 0503 boards (this is split to fit into each of the side tanks of the loco) to provide 300mA in a pair of 25mm x 10mm units. We don't yet know how big the LIUs will be and, indeed, if we will actually need them on the 0502/3 now that we can wire connect the charging socket off it.

You've taken the charging socket off the LIU, so we now have three units to fit inside the loco. Why don't you combine the LCU and LIU as they originally were?

We could quite easily do what you ask, but our experience in fitting our test components into locos suggest that discrete components provide much greater flexibility in fitting into the limited spaces available. We have sourced some suitably small connectors to simplify the interconnections and we still aim to produce components that require soldering only to the motor terminals.

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