



MK3 OUT OF PARLOUR FEEDING INSTALLATION

Version - December 2013

IMPORTANT

For Out-Of-Parlour Systems With Spacing Between Any Or All Of The Feeder Stalls
Please Contact ATL For Special Wiring Instructions.





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GOOD PRACTICE: Mains Supply.

A clean 230volt 50Hz AC mains supply together with a sound earth is essential for trouble-free feeding management. Although ATL power supplies incorporate several advanced mains protection features, time spent installing a good mains source will be very beneficial.

- A separate mains supply and earth running directly from the customers distribution board is essential.
- Avoid routing the mains cable to the power supply close to other supplies especially those providing intermittent current - motors that are starting and stopping continually or high power heaters with thermostatic control.
- The supply must be capable of providing at least 10A peak and 5A continuous and the cable should be rated at 13A minimum.
- Terminate in a sealed, fused, double pole switched outlet fitted with a 5A anti-surge fuse or contactor. A 13A 3-pin ring mains socket is not suitable for Out Of Parlour conditions. All mains cabling must be contained within a firmly secured, durable conduit.
- All mains work should be referred to a Qualified Electrician.

Power Supply: Siting.

ATL power supplies are designed to cope with arduous conditions and are protected with fuses and a thermal cutout, but like any other power supply they can become warm when under load. Good ventilation is very important - with means careful siting.

- Fix the power supply to a wall or suitable brackets in a well ventilated area sufficiently high to avoid physical contact or damage, leaving a gap of at least 250mm (10") between the top of the power supply casing and the ceiling.
- Position the power supply so that the output (low DC voltage) cables are as short as possible even if this means extending the mains supply.

ATL Power Supply: Output Voltages.

ATL power supply outputs are factory set and should not be adjusted. For a 230volt mains supply the DC outputs should be:

- Feeder Supply with 4 Feeders Running: Nominal 13.6volts. This is often referred to as the 12volt Regulated line.
- Control Supply: Nominal 15volts under load but maybe as high as 21volts without load. This supply is often referred to as 18vDC.

The feeder supply is fused at 20A and the Control Supply 2A (max). Additionally, there is a thermal cutout associated with the feeder supply which will remove power from the feeders in the event of an overload. It may take several minutes for the supply to be restored if the cutout does operate.

There are two indicators fitted to the base of the power supply casing; red indicates that the mains is present and green that the supply is available.

Control, Cables and Conduit.

- Entries must be made into the bottom of power supply or control casings but never into the top. This will invalidate the warranty.
- Keep multicore cables away from other cables especially those carrying mains or heavy currents. Cross only at 90° where necessary and do not enclose in conduit with other cables.

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Data Cables

The data cable supplied is 'twisted pair' configuration especially designed for communications. No other cables should be used as replacements. Ensure it is connected exactly as shown in the diagrams and keep the cable run as short as possible.

- Do not run near or parallel to, or cross over AC mains supplies or wires carrying switched current (i.e. milk pumps).
- Generally avoid fluorescent lighting or radio wave sources.
- Ideally, data cable should be run through a suitable conduit by itself, especially if it is exposed to the weather. Sharing conduit with power wires invariably corrupts data.

The portable Console unit contains the computing circuitry, stores the herd data and controls the tag reading and feeding process. It must be connected for the system to operate. Generally, the Console should be kept and used in a dry environment such as the farm office and may be connected to the feeder stalls by up to 100meters of special data cable. Power is derived from a small power supply that is plugged into a standard 13amp mains socket (230v AC) in the office environment.

Out-Of-Parlour Interface and Feeder Cables:

Sufficient co-axial cable is provided to wire the stall antennas to the Out-Of-Parlour Interface.

- Cable entries into control box MUST be made through the glands provided. Never cut new entries into the top or sides of the casing. This will automatically invalidate any warranties.
- ALWAYS use the correct csa (cross sectional area) cable specified in the diagrams.

Environmental Considerations

ATL Out Of Parlour Control equipment is built to the highest specifications to give faithful and reliable service for years and years. However, it could deteriorate prematurely if a few simple steps are not taken to safeguard it.

- Good ventilation is essential. Fresh air is not only good for animals but also dissipates the highly corrosive gases produced by silage, slurry, and some feedstuffs
- Position Out Of Parlour stalls where there is plenty of air movement. Stale air will collect in enclosed corners of even large buildings. Exposed concentrates will deteriorate rapidly where ventilation is inadequate. Air circulation can be improved by replacing some of the sheeted cladding with Yorkshire Boarding.

About the ATL Out-Of-Parlour System

The high-speed scanning system addresses each stall in turn seeking a valid ear tag read and so makes any other form of animal detection unnecessary. Each system contains one (1) Interface for every 4 feeders, a Console Display Unit, a power supply and a varying number of stalls depending on system size. Only 1 reader is required per system and this is normally located in the Interface for feeders 1-4.

The Interface contains all of the electronics to detect the presence of an ear tag in a stall, relay that information back to the Console unit, receive the ration allocation from the Console and drive the appropriate stall feeder. It can provide the tag reading facility for almost any number of stalls providing they are not too widely spaced (100 metres absolute maximum) and drive the first 4 feeder motors. For additional stalls extra Interfaces are required each capable of driving up to 4 feeders.

Systems which have second feeders (B) are fitted with an additional, smaller circuit board sited on top of the main board. This carries the drive circuits for the second feeders.



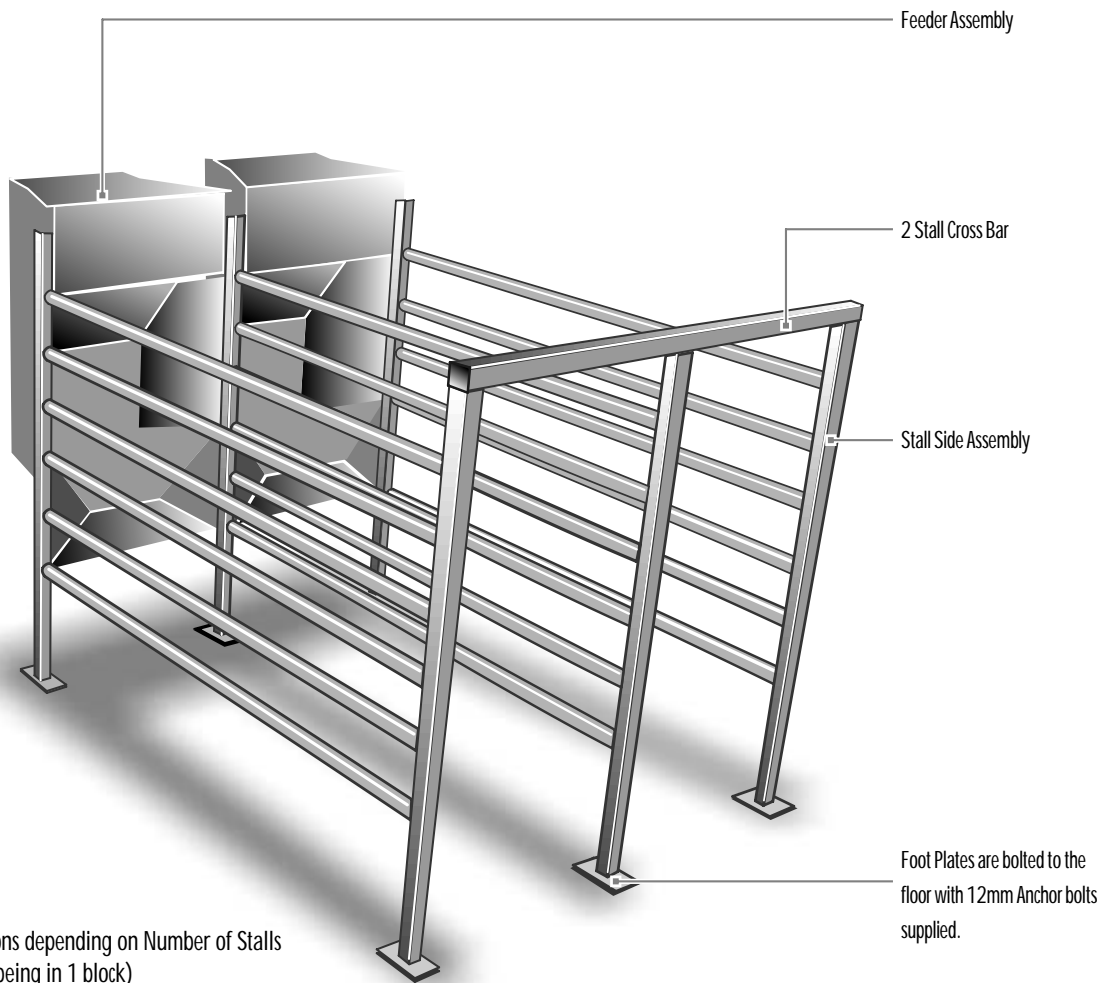
MK3 OUT OF PARLOUR FEEDING INSTALLATION: 2

Stall Work and Feeder Assembly.

- The feeders are fitted to the rear of the stall work; cows enter from the front.
- All of the stall work is delivered separately from the feeders and electronics.
- Stand 2 end rails upright, position front cross bar across top and loosely bolt.
- Then position intermediate rails and loosely bolt.

- Square up the assembly and finally tighten the bolts.
- Position the stall work accurately on the concrete base leaving sufficient access to the sides and rear to fit the feeders and for future maintenance.
- Drill through the fixing holes in the Foot Plates and secure the whole assembly using the 12mm Anchor Bolts provided.

Stall and Feeder Construction: 2 Stall Unit



Crossbar Variations depending on Number of Stalls
(based on stalls being in 1 block)

= 1 Stall Crossbar
 = 2 Stall Crossbar
 = Stall Linking Bar

1 Stall Unit	2 Stall Unit	3 Stall Unit	4 Stall Unit	5 Stall Unit	6 Stall Unit	7 Stall Unit	8 Stall Unit
x 1	x 1	x 2 x 1	x 1 x 1 x 1	x 2 x 1	x 2 x 1 x 2	x 1 x 2 x 2	x 3 x 2
9 Stall Unit	10 Stall Unit	11 Stall Unit	12 Stall Unit	13 Stall Unit	14 Stall Unit	15 Stall Unit	16 Stall Unit
x 2 x 2 x 3	x 1 x 3 x 3	x 4 x 3	x 2 x 3 x 4	x 1 x 4 x 4	x 5 x 4	x 2 x 4 x 5	x 1 x 5 x 5



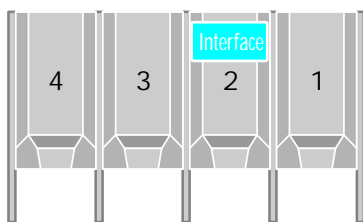
MK3 OUT OF PARLOUR FEEDING INSTALLATION: 3

Stall/Block Layouts

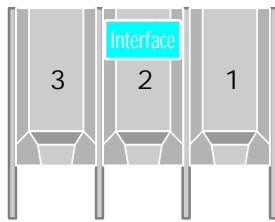
The feeder motors turn a single revolution at each pulse from the Out-Of-Parlour Interface to deliver a predetermined portion of cake with a delay between each 'drop'. This 'small and often' arrangement ensures that the cow does not 'bolt' her feed, discourages bullying, and prevents a build-up of uneaten feed. Feeder motor and auger must be fitted as an assembly to guarantee proper 'parking' and minimise 'dribble'.

The diagrams below show the position of the Interface in various stall layouts; in all the arrangements the Out-Of-Parlour Interface is mounted with pre-fitted fixings.

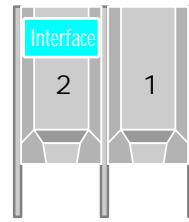
IMPORTANT - THE FEEDERS ARE NUMBERED RIGHT TO LEFT LOOKING FROM THE REAR.



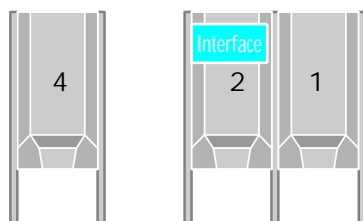
4 Stalls in line:



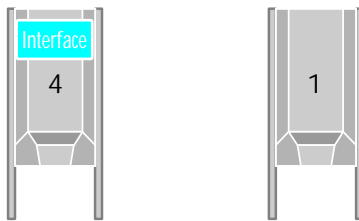
3 Stalls in line:



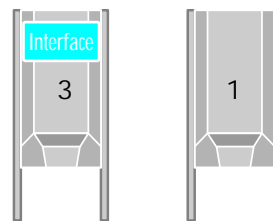
2 Stalls in line:



3 Stall close staggered:

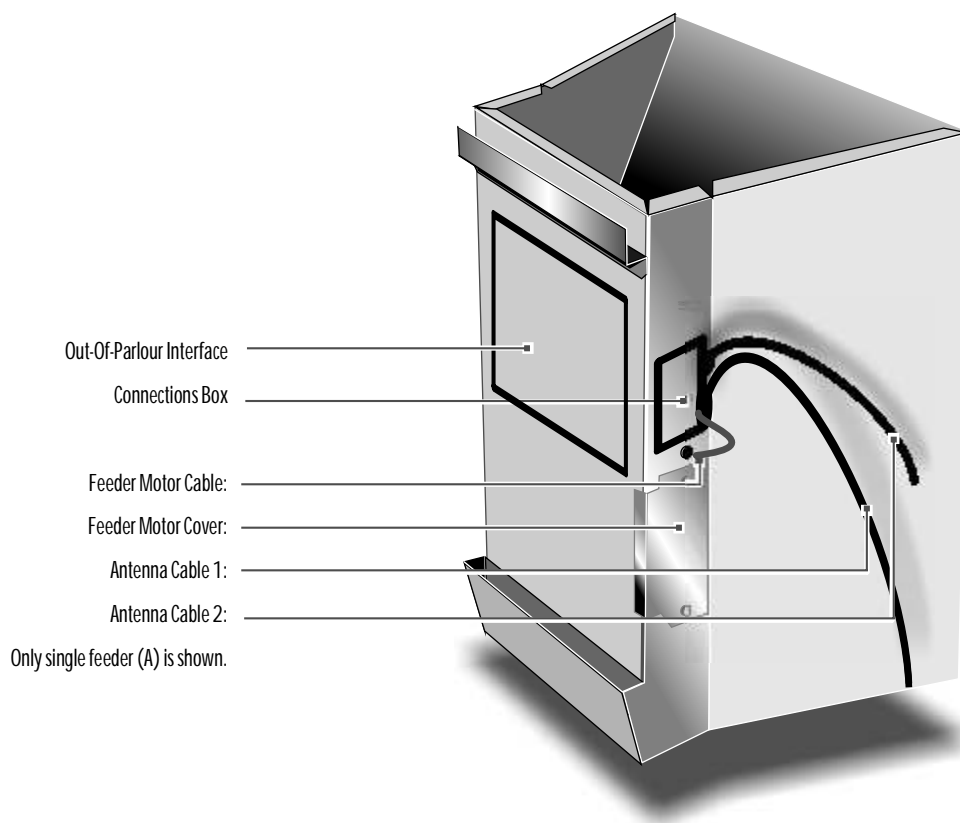


2 Stall wide stagger (Special order wiring):



2 Stall close stagger:

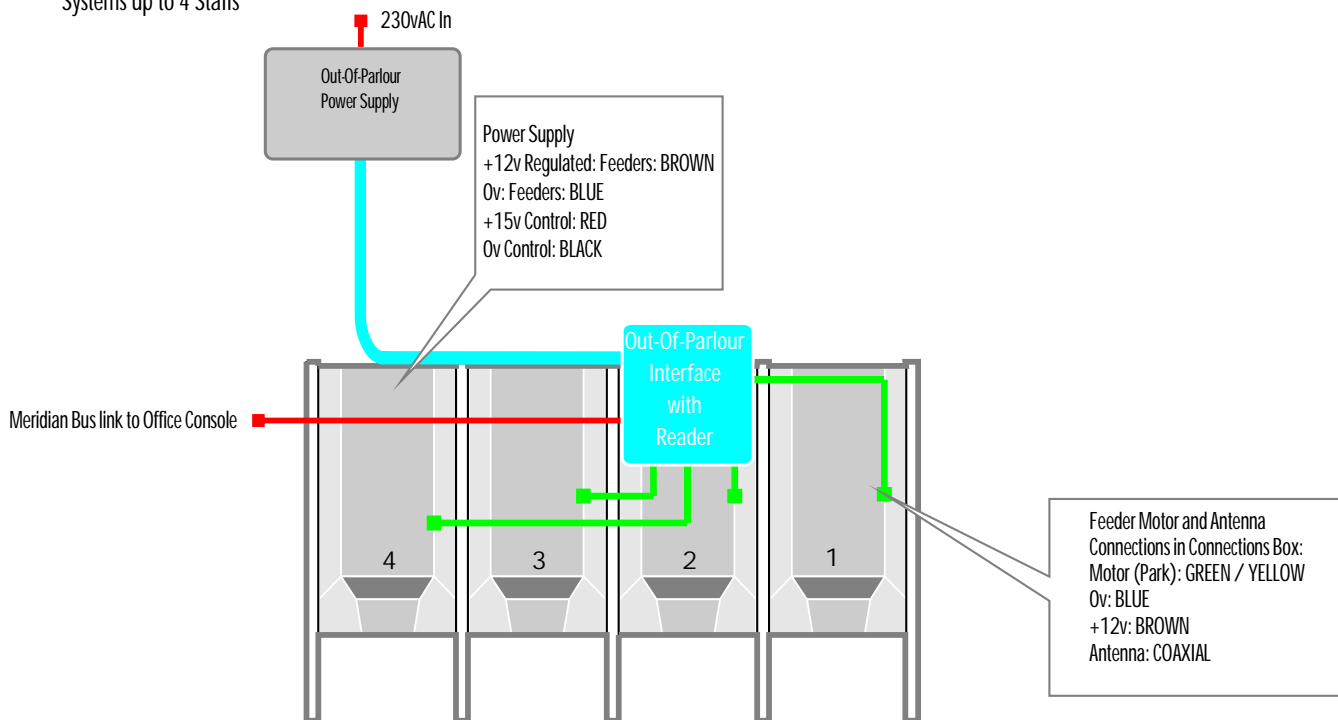
The Out Of Parlour Feeder



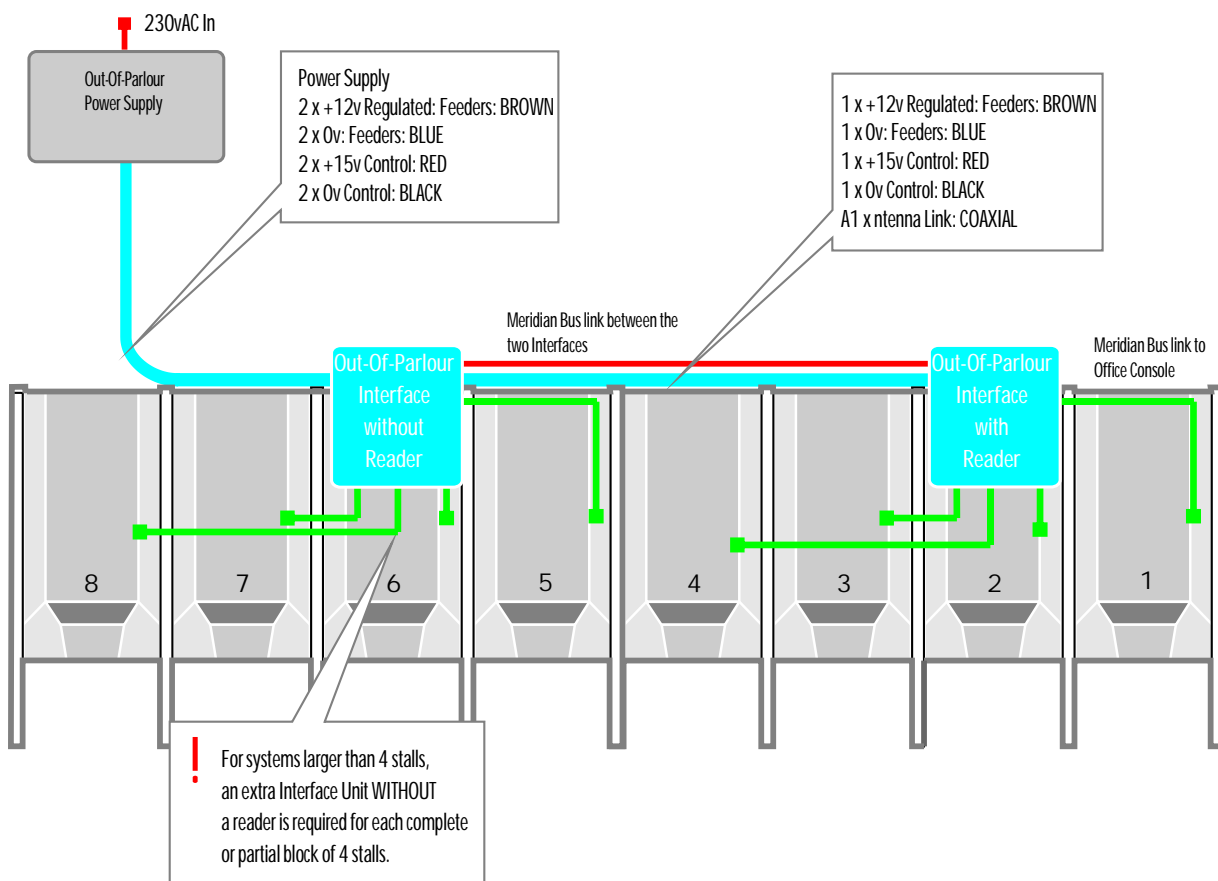


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Scanning Out Of Parlour Feeding System: Interface Siting:
Systems up to 4 Stalls



Systems with 5 or more Stalls





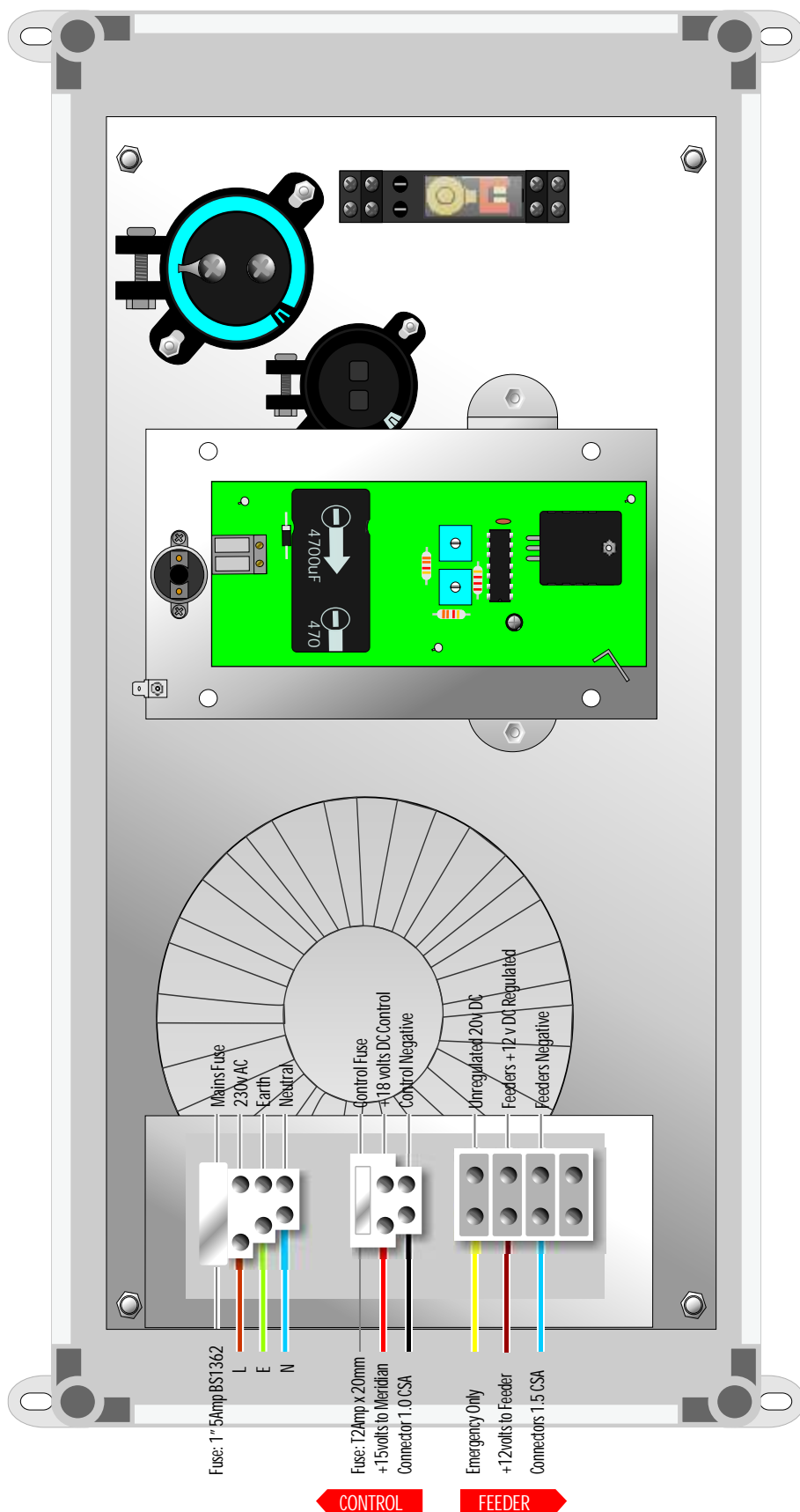
MK3 OUT OF PARLOUR FEEDING INSTALLATION: 5A

Out of Parlour Power Supply

- Mains Voltage: 230volt AC
- Feeder Output Voltage: Nominal 12volt DC
- Control Output Voltage: Nominal 15volt DC
- Mains Fuse: 5 Amp - Use 1 Inch type conforming to BS1362 only
- Control Fuse: T2 Amp - Use 20mm type



DISCONNECT MAINS SUPPLY
BEFORE REMOVING
POWER SUPPLY COVER

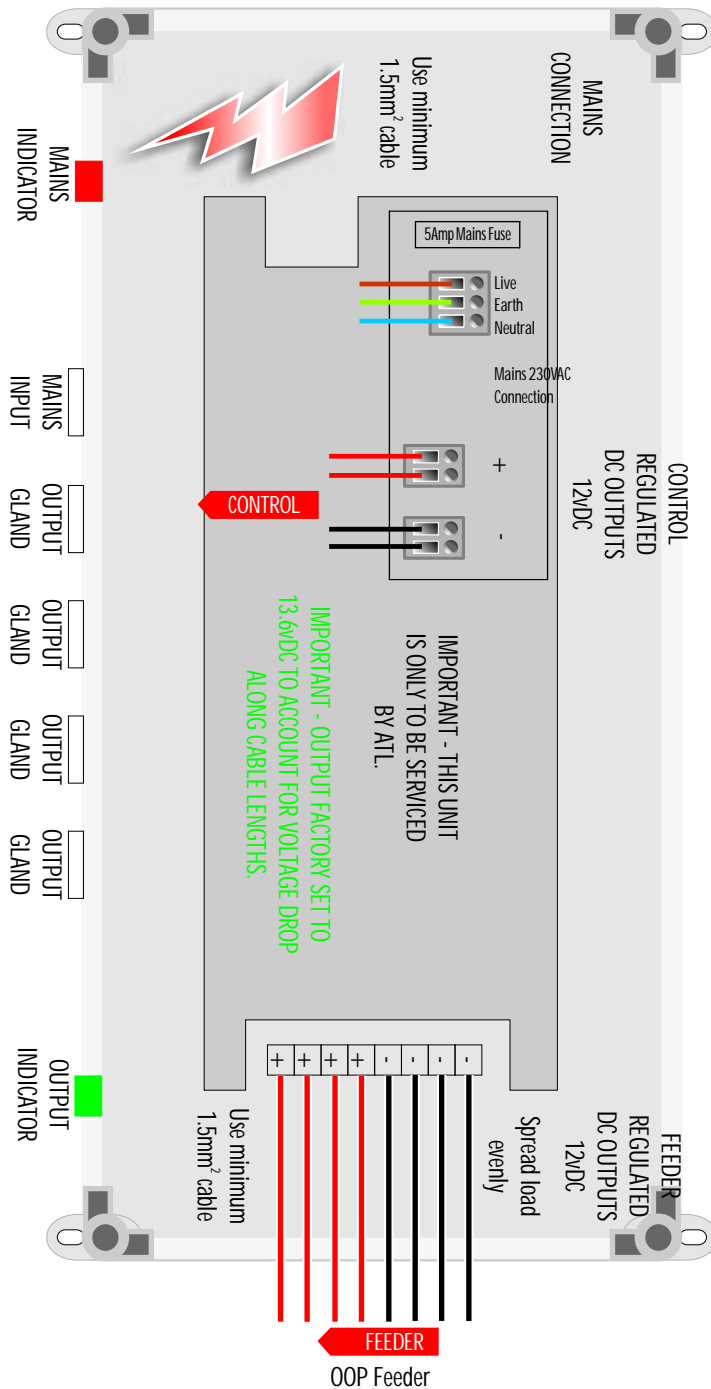




MK3 OUT OF PARLOUR FEEDING INSTALLATION: 5B

396 Watt 12vDC Power Supply

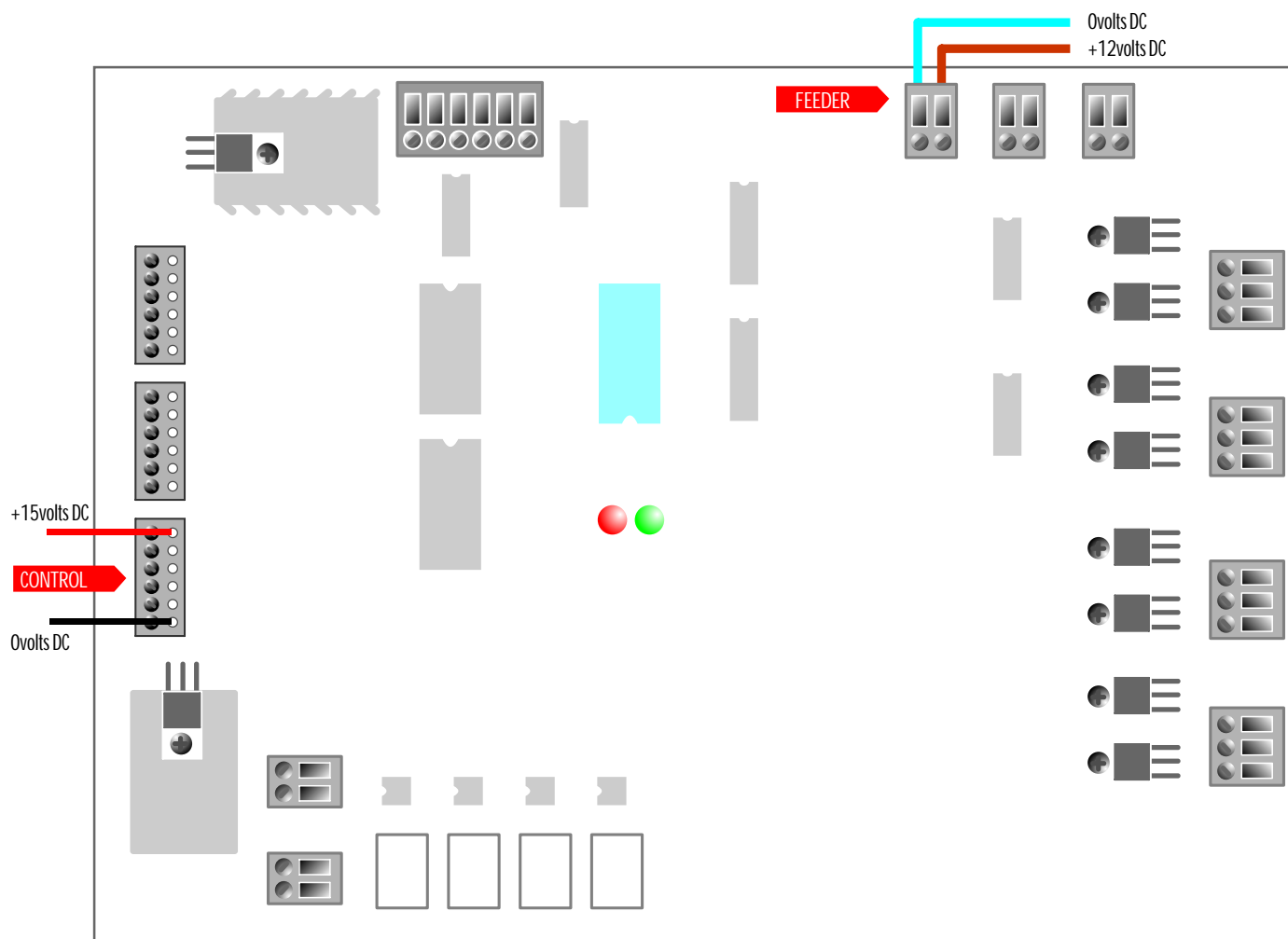
- Mains Voltage: 230volt AC
- Output Voltage: Nominal 13.6volt DC
- Mains Fuse: 5 Amp - 20mm Type





MK3 OUT OF PARLOUR FEEDING INSTALLATION: 6A

Out of Parlour Interface Power Supply Connections



Connecting the Power to the Out-Of-Parlour Interface:

With the mains supply switched OFF, for each Interface:

- Run RED 1.0csc from the Power Supply +15volt connector.
- Run BLACK 1.0csc from the Power Supply 0v (Control) connector.
- Run BROWN 1.5csc from the Power Supply Feeders +12volt connector.
- Run BLUE 1.5csc from the Power Supply Feeders 0volts connector.

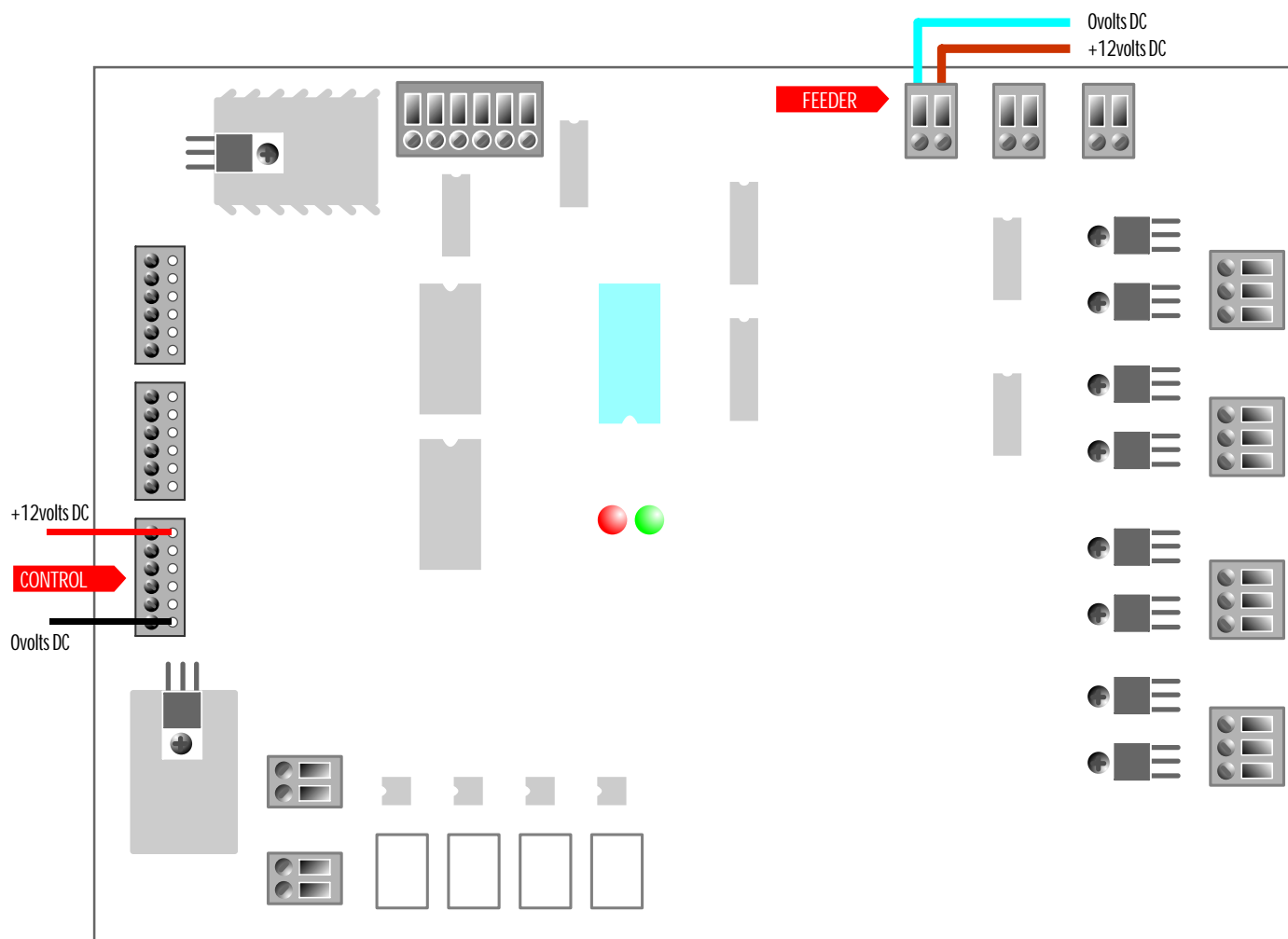
The +15v supply is fitted to the Meridian Connector **CONTROL** on the left hand of the Interface (viewed from the front) and the +12v feeder supply to a two-way connector at top right. **FEEDER**

IMPORTANT - ENSURE FEEDER MOTOR POWER IS THE CORRECT WAY ROUND.



MK3 OUT OF PARLOUR FEEDING INSTALLATION: 6B

Out of Parlour Interface 396 Watt 12vDC Power Supply Connections



Connecting the Power to the Out-Of-Parlour Interface:

With the mains supply switched OFF, for each Interface:

- Run RED 1.0csc from the Power Supply +12volt connector.
- Run BLACK 1.0csc from the Power Supply 0v (Control) connector.
- Run BROWN 1.5csc from the Power Supply Feeders +12volt connector.
- Run BLUE 1.5csc from the Power Supply Feeders 0volts connector.

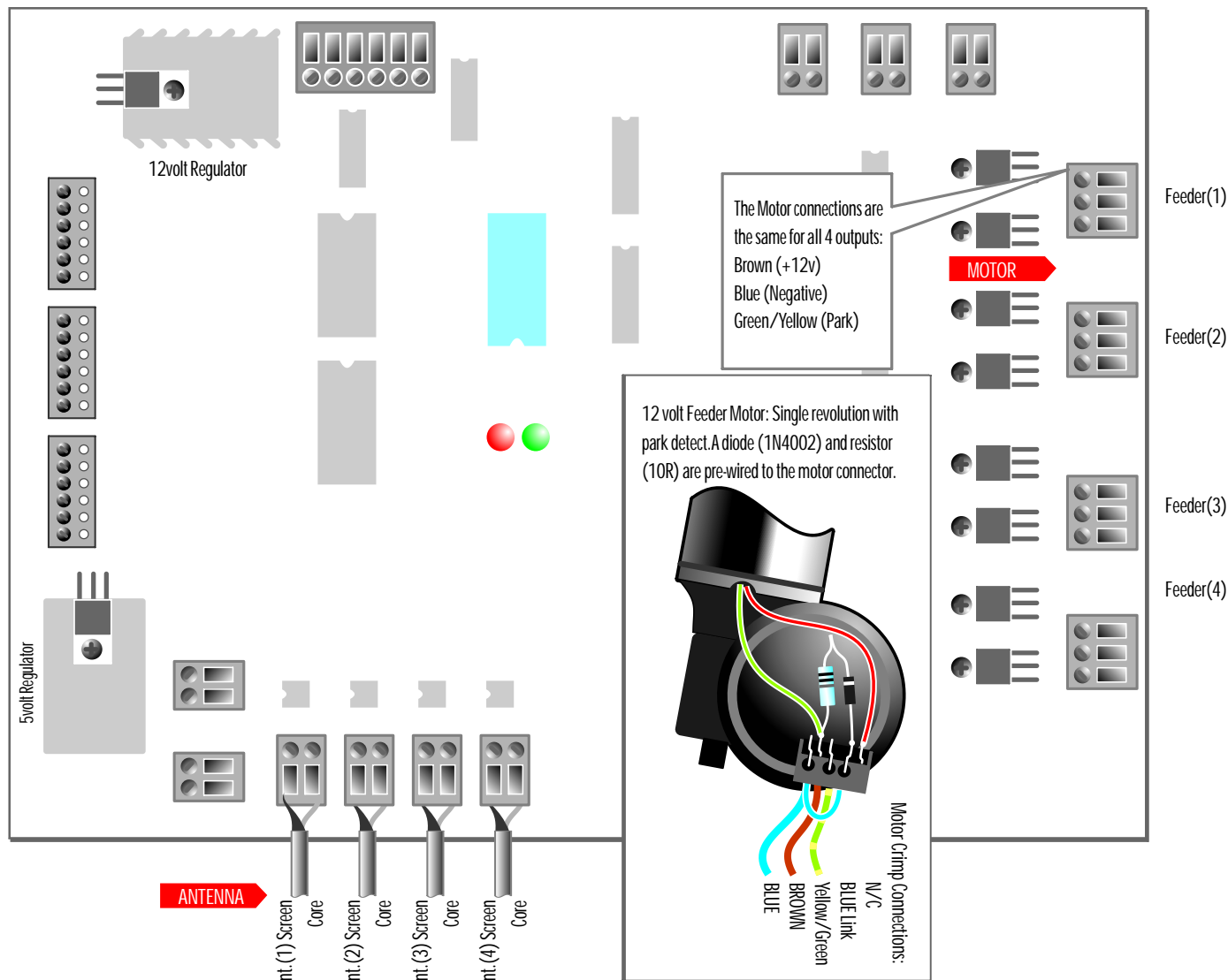
The +12v supply is fitted to the Meridian Connector **CONTROL** on the left hand of the Interface (viewed from the front) and the +12v feeder supply to a two-way connector at top right. **FEEDER**

IMPORTANT - ENSURE FEEDER MOTOR POWER IS THE CORRECT WAY ROUND.



MK3 OUT OF PARLOUR FEEDING INSTALLATION: 7A

Antenna and Motor Interface PCB Connections: **Pre December 2013**



Connecting the Feed Stations to the Out-Of-Parlour Interface:

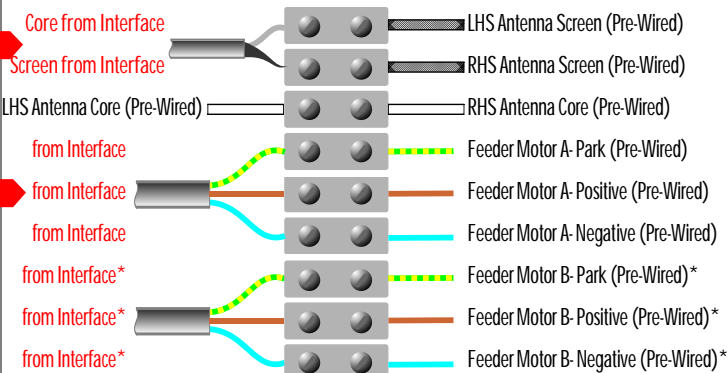
Cables are pre-fitted from the Antennas (black coaxial) and the Feeder Motors (white 3-core sheathed) into each stall's Connector Box. Start with Stall (1) on the extreme right when viewed from the rear and work toward Stall (4).

- Measure and cut the same lengths of co-axial and 3-core cable to fit from the Connector Box to the Interface; running the cable up the side and along the top of the stalls and through the small glands in the left hand side of the Interface Unit. Use the lowest pair of glands for Stall (1) and work upward.

Inside the Interface:

- Trim the Antenna Coaxial and bare the ends. It is important that the screen wires are twisted securely together and there are no 'stray' strands that might cause short circuits.
- Fit the core and screen to the appropriate Antenna connector (bottom left on the circuit board) **ANTENNA** making sure they are correctly orientated. Screens and cores cannot be inter-changed.
- Trim and strip the Feeder Motor cable **MOTOR** and fit it to the appropriate Feeder connector on the right hand side of the circuit board. Check that the connections are correct.
- Tidy the cables and secure them with the cable ties.

Individual Feed Station Connections Box Wiring



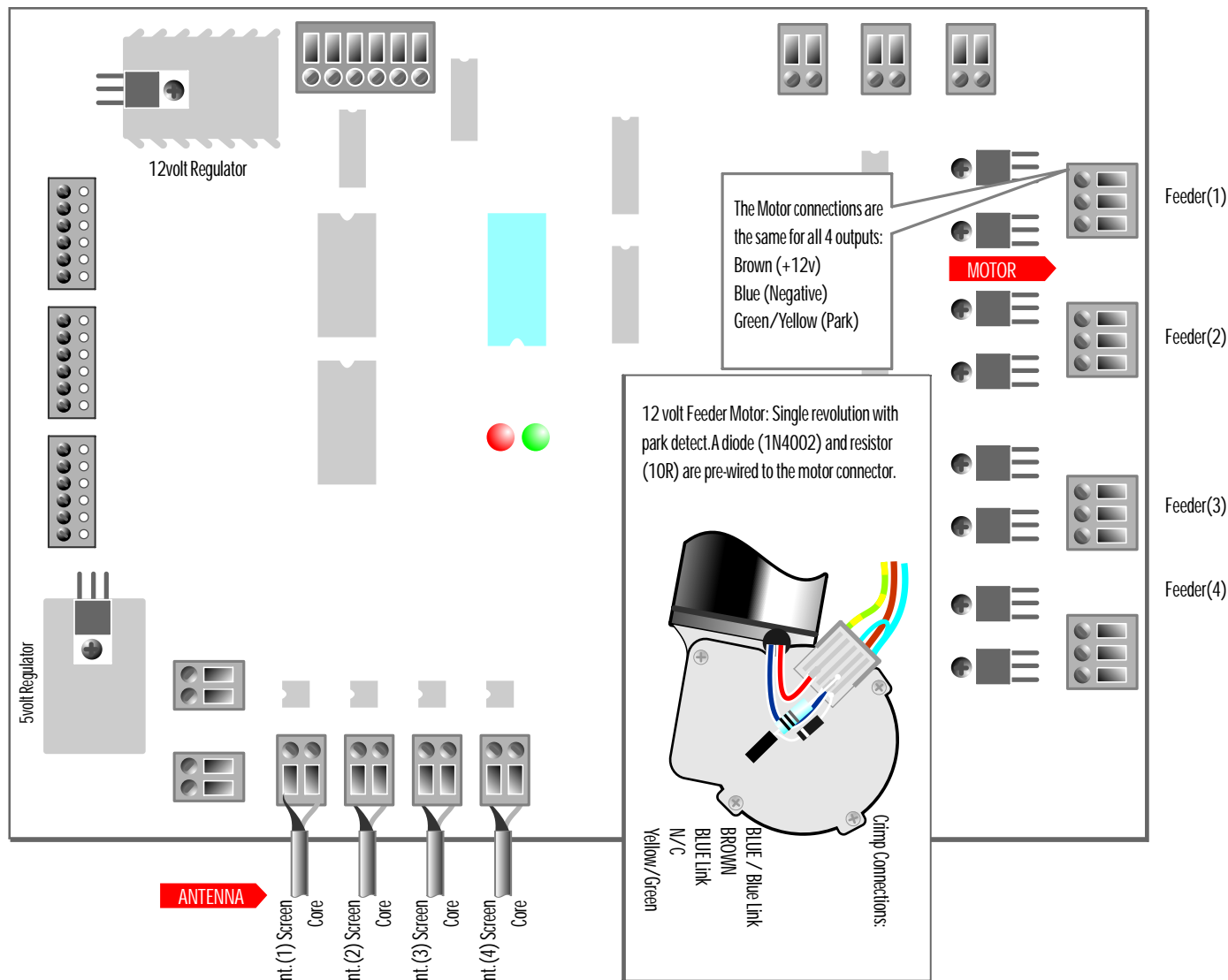
Red Highlight - Wiring Required On Site

* NB - Only provided on systems with a 'B' Feeder



MK3 OUT OF PARLOUR FEEDING INSTALLATION: 7B

Antenna and Motor Interface PCB Connections: **Post December 2013**



Connecting the Feed Stations to the Out-Of-Parlour Interface:

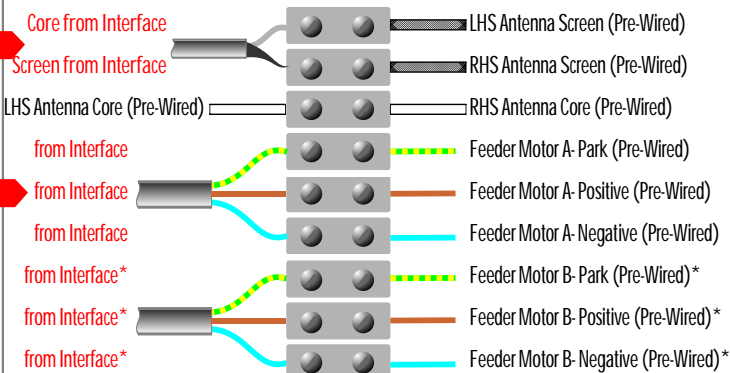
Cables are pre-fitted from the Antennas (black coaxial) and the Feeder Motors (white 3-core sheathed) into each stall's Connector Box. Start with Stall (1) on the extreme right when viewed from the rear and work toward Stall (4).

- Measure and cut the same lengths of co-axial and 3-core cable to fit from the Connector Box to the Interface; running the cable up the side and along the top of the stalls and through the small glands in the left hand side of the Interface Unit. Use the lowest pair of glands for Stall(1) and work upward.

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Individual Feed Station Connections Box Wiring



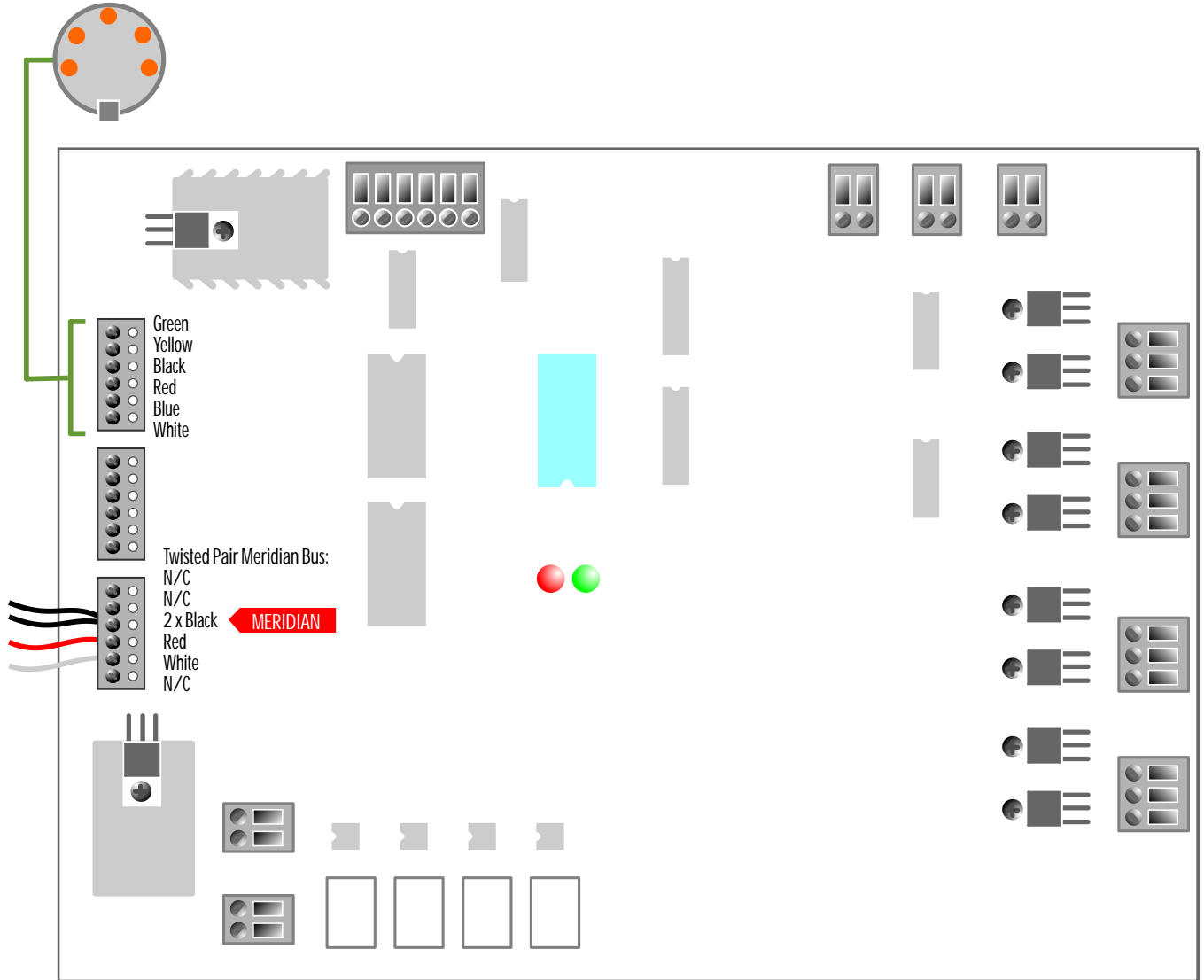
Red Highlight - Wiring Required On Site

* NB - Only provided on systems with a 'B' Feeder



MK3 OUT OF PARLOUR FEEDING INSTALLATION: 8

Out of Parlour Interface Meridian Bus Connections

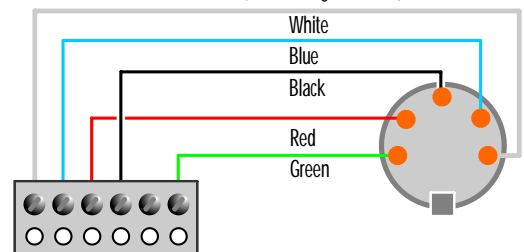


Connecting the Out-Of-Parlour Interface with Reader:

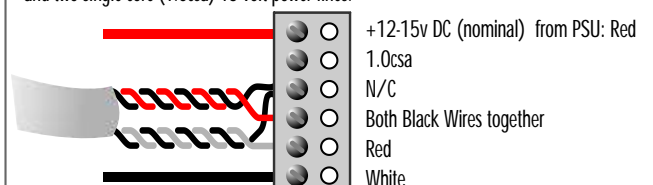
The Meridian Bus is the cable along which data is routed. Externally, it is a dual twisted pair cable with a grey sheath. It runs from the Out-Of-Parlour Console which must be stored and used in a dry, cool office area, to the Interface.

- There are two spare 6-way connectors on the left hand side of the Interface circuit board; use either connector. ← MERIDIAN
- If the stall count is greater than 4 then there will be an additional Interface fitted. This also has to be connected to the Meridian Bus using twisted pair and the unused 6-way connector. The individual connections are the same for both incoming- and outgoing.

Console Local Socket Connections: from Rear (Refer to Page 7A & 7B)



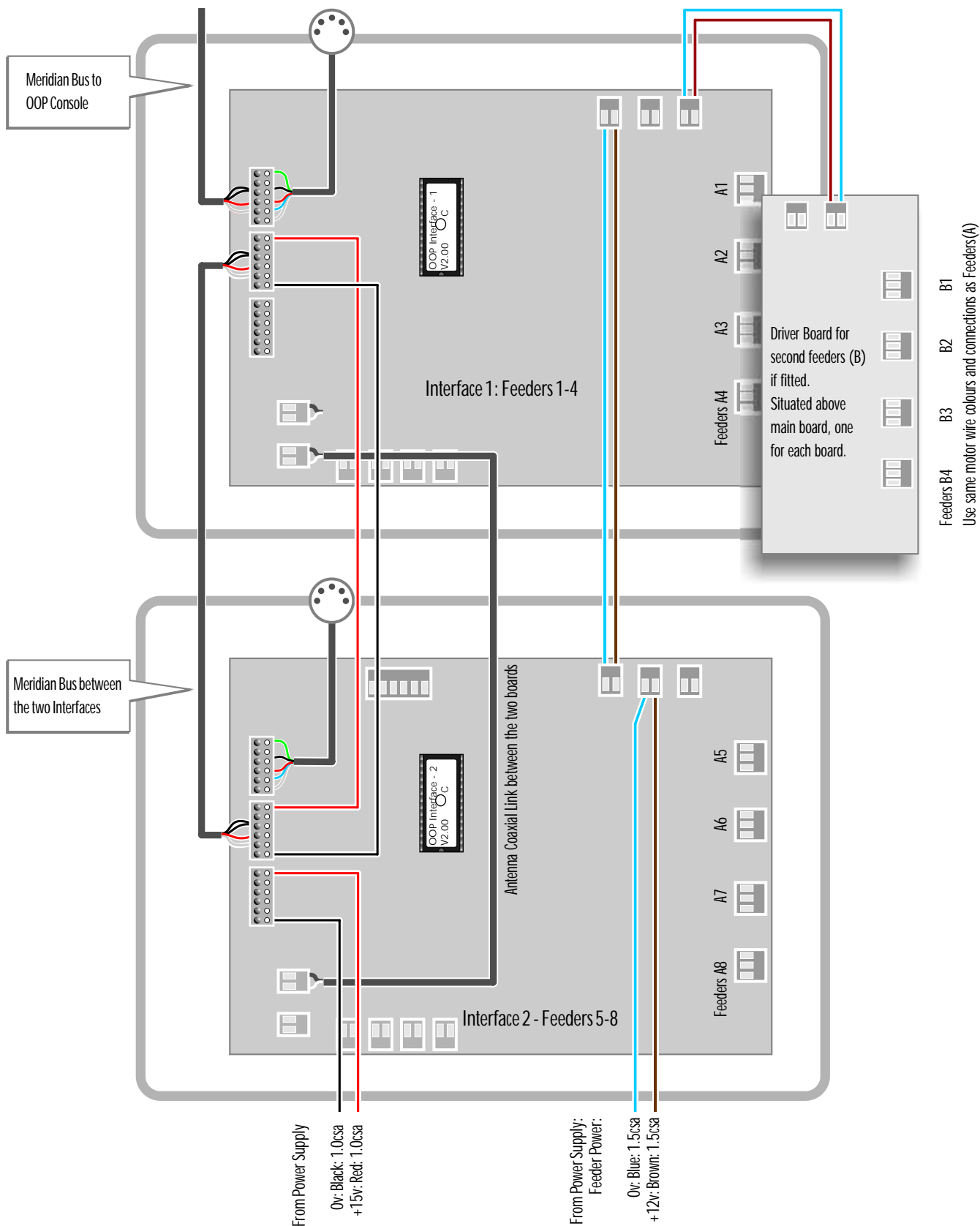
Meridian Bus Connections : 6-way lift off connector, 2 x Twisted pair RS232 cable and two single core (1.0csa) 15 volt power lines.





MK3 OUT OF PARLOUR FEEDING INSTALLATION: 9

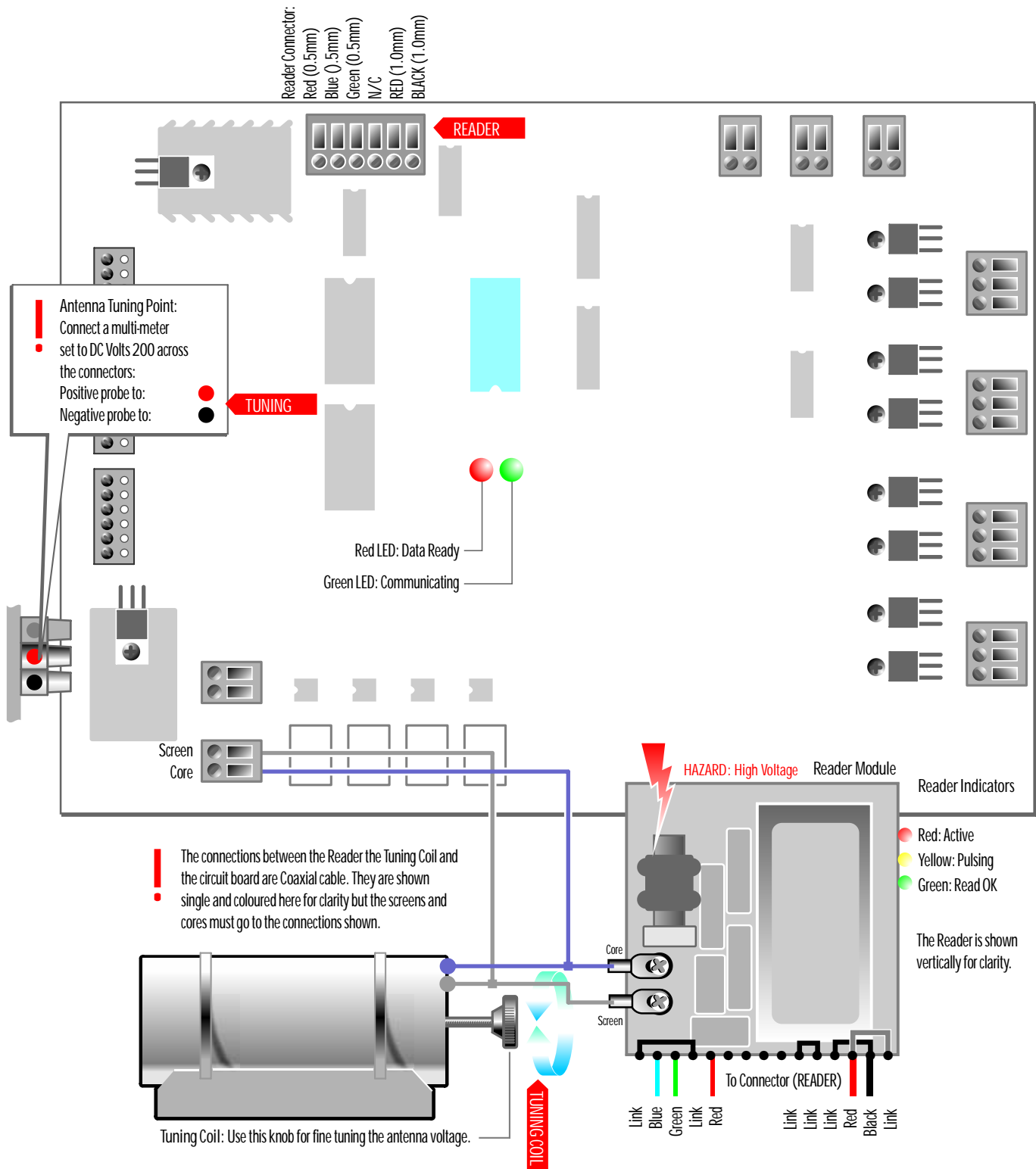
Interface Unit PCB Connections: For 8 Stalls (with 'B' feeders on first 4 feeders):





MK3 OUT OF PARLOUR FEEDING INSTALLATION: 10A

Interface PCB Reader Connections - TIRIS S2000 Reader:



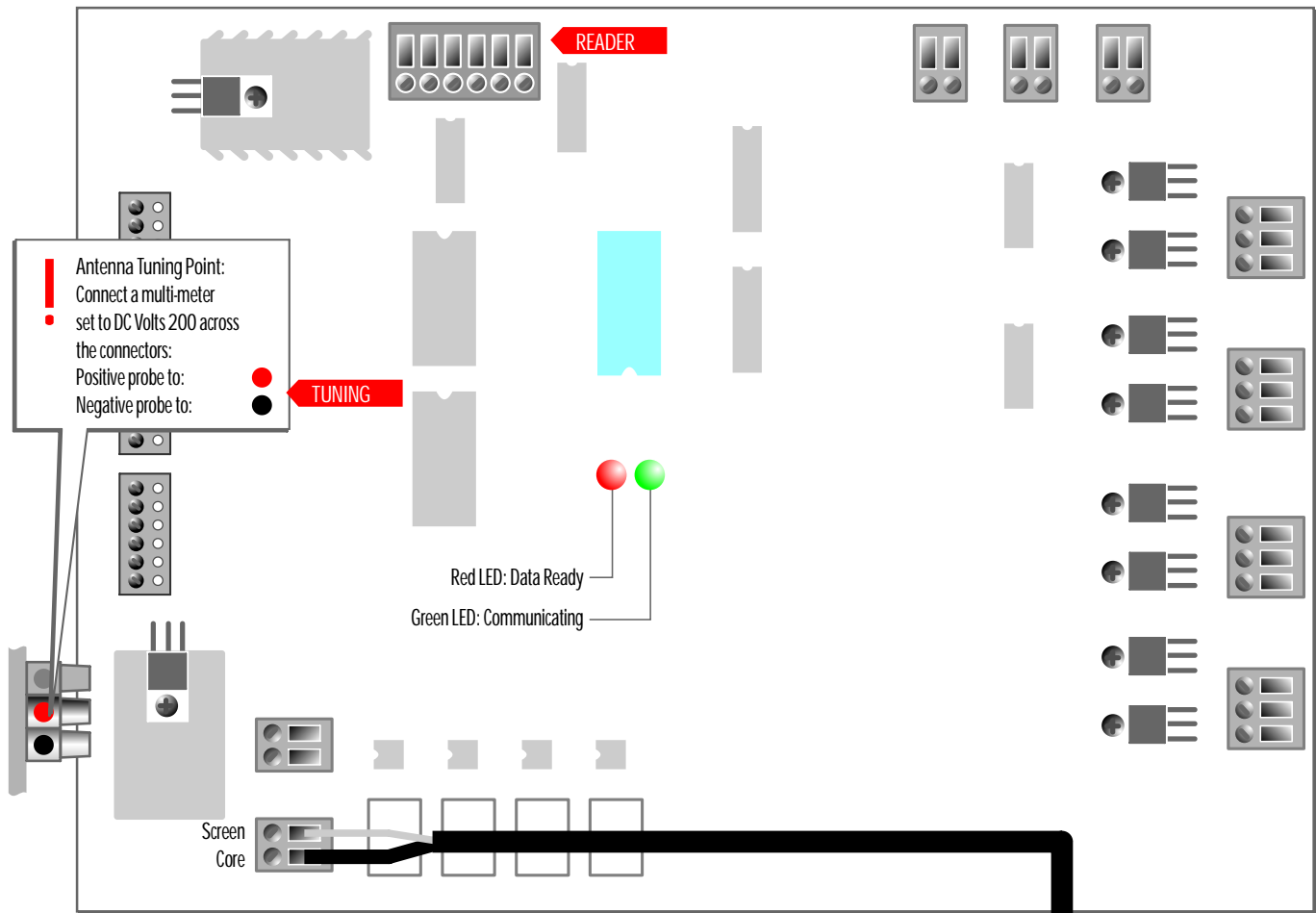
Connections to the Reader Module and Tuning Coil:

These connections are factory fitted but are shown here so that they may be checked and verified.

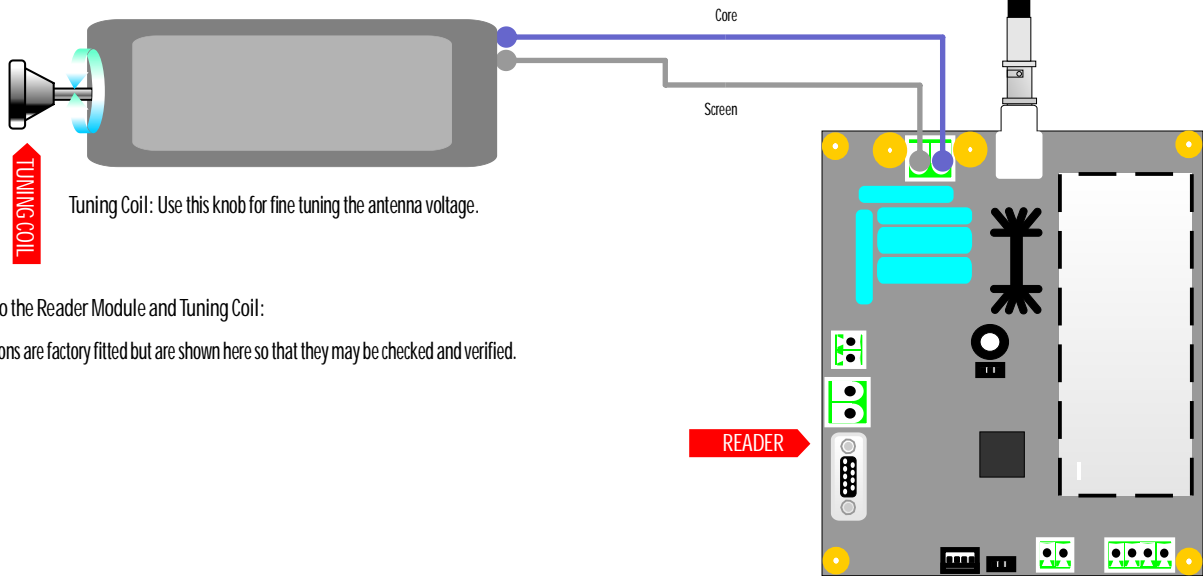


MK3 OUT OF PARLOUR FEEDING INSTALLATION: 10B

Interface PCB Reader and Power Supply Connections - ATL HDX Reader:



The connections between the Reader the Tuning Coil and the circuit board are Coaxial cable. They are shown single and coloured here for clarity but the screens and cores must go to the connections shown.



Connections to the Reader Module and Tuning Coil:
These connections are factory fitted but are shown here so that they may be checked and verified.

ATL HDX Reader Module



MK3 OUT OF PARLOUR FEEDING INSTALLATION: 11

Tuning the Antennas: Subroutine 305 (Pages 10A or 10B)

The antennas must be tuned for effective performance. The antenna tuning voltages will vary slightly according to the distance from the reader. The object of tuning is to obtain the highest overall voltages for all the antennas.

First, connect a multi-meter across the + and - terminals  and set the voltage range to 200DC or more.

Run subroutine 305 to select each antenna in turn.

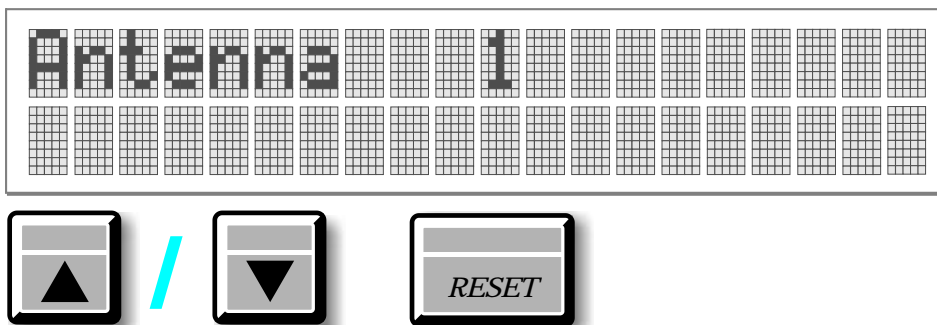
Subroutine 305 allows the antennae at each feed station to be tested.

Press SHIFT + ENTER (Subroutines).


Key 305, the subroutine number for testing the antennae and press ENTER. The 'Antenna 1' message appears on the display.


Press (▲) or (▼) to step through each feed station.

Press RESET to exit the subroutine.



Select the stall number which is mid-way between the nearest and furthest from the reader (measured by antenna cable length). DO NOT SELECT THE ANTENNA FOR MORE THAN ABOUT 10 SECONDS AS THE ELECTRONIC SWITCH WILL HEAT UP AND THE VOLTAGE WILL DROP.

Measure the voltage across the + and - terminals. 

Adjust the voltage by turning the knob on the tuning coil.  The knob can be turned both clockwise and anti-clockwise; turn the knob in one direction and watch the voltage. If the voltage is reduced, turn it in the opposite direction till maximum voltage achieved.

Check and make a note of the voltages of the antennas on other stalls with the up/down cursor keys. If any of the stalls has a very low or a very high voltage compared to the first, use the tuning knob to obtain the best balance of voltage across all the antennas.