

CHEPSTOW AND DISTRICT AMATEUR RADIO SOCIETY NEWSLETTER



October 2011

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Diary dates for 2011:- (All at CDARS unless stated otherwise)

Tuesday 4th October – Talk on Caving & Communications

Sunday 16th October – Blackwood ARS Rally, Risca

Tuesday 18th October – Informal club night, bring some kit and play

Tuesday 1st November – Talk on Early Radar Development

Tuesday 8th November – FoDARG Talk & demo on Direction Finding

Sunday 13th November – D Star Workshop, Cardiff

Tuesday 15th November CDARS AGM

AGM ADVANCED NOTIFICATION: The Chepstow and District Amateur Radio Society Annual General Meeting will be held at the Chepstow Athletic Club on Tuesday the 15th of November at 8pm. Nominations are requested for the positions of the club committee members as well as any agenda items you wish to raise. Please send to secretary@gw4lwz.com

Training - CDARS are about to start another Foundation level course, so if you know of anyone who might be interested please ask them to get in touch with me (Paul) at secretary@gw4lwz.com. It will probably run every Tuesday night other than the 1st Tuesday of the month when we have our club talks.

R.I.P. - the end of the 60 watt filament light bulb



As of midnight on September 1st 2011, the manufacture of 60 watt light bulbs was prohibited in the UK. Retailers are still able to sell the bulbs until their stocks run out, but they will be prohibited from receiving any more orders.

The phasing out of incandescent light bulbs began in 2009, when manufacturers were prohibited from making 100 watt bulbs, then continued with the end of manufacture of 75 watt bulbs in 2010.

However not everyone is of the view that the energy saving replacements are as effective in terms of light quality as the old filament bulbs. Also there is evidence that the cost of the replacement low energy bulbs has gone up, manufacturers blame increased raw material costs.

If any of you have found a really good low energy bulb suitable as a work light when soldering etc let me know and I will circulate the information.

ROTA report: After a very wet start a good day was enjoyed by CDARS and FoDARG members who braved the weather for the 2011 ROTA event at the Forest of Dean Railway. Most of the operation was on 40 metres, we tried 80 metres as well after experimenting with a different counterpoise but 80 was unusually quiet. We managed to contact quite a few of the other ROTA special event stations. In the afternoon the weather brightened up considerably which is when most of the pictures were taken, the weather wasn't like this all day!



We operated from the Norchard station upper platform with a backdrop of the DFR sidings.



Steam QRM to be contended with!



Pete, Adrian and junior from FoDARG.



CDARS members Steve, Robin, Nick and Benjamin with Dave from FoDARG in the background. (Apologies Benjamin is out of focus but he never stays still very long!)



Jim called in and had a spell on the mike. (He was kindly chauffeured by Sue).



The Dean Forest Railway had a 1940s weekend on with quite a few military vehicles and people in period uniforms. Rod provided a WS 19 and a WS 38 for our display. The WS 19 pictured above was supplied under the lease lend programme and has both English and Russian markings.

Optical Transmission talk by Peter Stone



Peter Stone, a colleague of Steve's at Alcatel Lucent, gave an excellent talk on Optical Transmission at the September CDARS meeting. It started with the brief history of using light as a means of communication from the early experiments of John Tyndall in 1870, Graham Bell's development of the "Photophone" in 1880 to the first semiconductor lasers in 1962. The basic optical transmission principle is: input > electrical interface > data encoder/modulator > light emitter > optical fibre > light detector > data decoder/demodulator > electrical interface > output.

LED or laser sources can be used depending on the requirement, LEDs having wavelengths of 780, 850 and 1300 nano metres (nm) and lasers having wavelengths of 1310, 1550 and 1625 nm, shorter wavelengths tend to attenuate more than longer wavelengths.

The digital to optical conversion is achieved by switching the laser on or off at very high speed, using a PIN diode with a very lightly doped I region to enable the fast switching.

Optical network applications are categorised as Intra Station – up to 2 Km, Short Haul – up to 15Km and Long Haul as 80 to 100Km. Longer distances require amplifiers or regenerators to boost the signal.

The basic fibre cable has a glass core (10 micro metres diameter, less than a human hair), surrounded by a glass cladding, then a kevlar buffer and finally a PVC outer jacket. The glass core and cladding allow the light to be refracted at the interface. Different types of fibre are available:- non dispersion shifted fibre NDSF, dispersion shifted fibre DSF and non zero dispersion shifted fibre NZDSF.

Light beams can be different wavelengths allowing multimode operation along one fibre. Different cables have different attenuation characteristics, depending on the fibre type, length of fibre and signal wavelength. 1550 nm wavelength is used for the longer distances that allow signals to be transmitted across the Channel, North Sea and Irish Sea but not the Atlantic. Transatlantic transmission requires the use of submarine regenerators along the cable which actually decode and regenerate the signal at regular intervals; these are powered by very high voltages fed from the ends of the cable. Signal amplification and regeneration can take various forms:

- Reamplify
- Reamplify and reshape
- Reamplify, reshape and retune. The latter has to be done electrically in a regenerator

The choice between amplification or regeneration is determined by the signal to noise ratio. For example in erbium doped fibre amplifiers the erbium excites at 1550 nm but amplifies noise as well as the signal.

A significant cost of deploying fibre communication systems is the task of putting fibres in the ground so a lot of development has gone into maximising the throughput of each individual fibre. Using these techniques an individual fibre has the capacity for everyone in the country to hold 2 simultaneous telephone conversations. (Not a concept most males are familiar with, but ask your wife or girlfriend!)

Capacity is increased by using more fibres, up to 96 different wavelengths, wavelength division multiplexing and increasing the bit rate – it is now up to 10GB/sec

Altogether it was an excellent talk which I can hardly do justice to in such a brief summary. The thing I found mind-boggling was the volumes of voice and data transmissions carried by fibres around the world and the increasing desire for more and more capacity. More images of sub-marine fibre cable laying can be found here: http://news.cnet.com/2300-1035_3-10004733-3.html

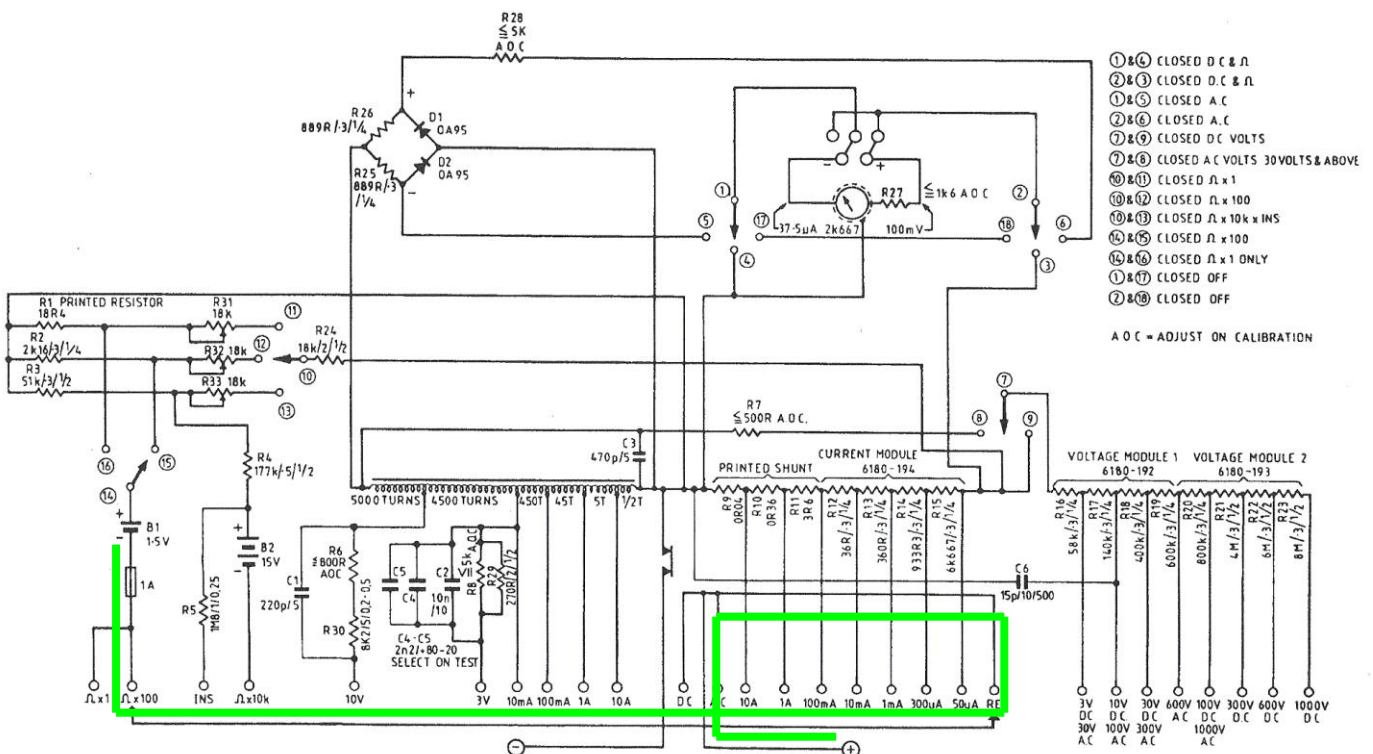
Last months quiz question on multimeter polarity

Question: When using the resistance range of a multimeter to check the forward resistance of a diode why is it that on digital multimeters you connect the positive red lead to the diode anode whereas when using an analogue multimeter you typically have to connect the black negative lead to the diode anode?

Answer: When measuring resistance with an analogue meter on any range the BLACK lead is positive and the RED lead is negative. This means that when using an AVO, for instance to check a diode, you must connect black to anode and red to cathode to measure the FORWARD resistance of the diode. This is due to the internal construction of analogue multimeters.

In most analog multimeters, the positive lead (marked by +) is actually connected to the negative end of the internal battery, while the other lead (marked by -, or COM for common) is connected to positive end of the battery. In the example AVO circuit diagram below if you follow the highlighted connection from the negative side of the battery through the selector switches you find it is connected to the positive terminal of the meter:

CIRCUIT DIAGRAM



I need some more quiz questions for future newsletters, please feel free to contribute; this includes all readers not just CDARS members. I'm happy to do the background investigation I just need some more ideas! Send them to secretary@gw4lwz.com



Royal Signals Museum: One of the potential CDARS visits we are planning is to the Royal Signals Museum near Blandford Forum in Dorset, Rod has been there and says it is well worth a visit with really interesting displays. More info can be found at the museum website: <http://www.royalsignalsmuseum.co.uk/WebSite/>
Admission is £7.50 (£6.50 for concessions). If we hire a 9 seater minibus the total cost per person including fuel and entrance will be approximately £23. If we share lifts in a couple of members cars the cost will be approximately £16 per person. Please let me know at secretary@gw4lwz.com if you are interested in going and we will try and work out a date to suit the majority.

Is the speed of light really the limit?

Recent experimental data released may cast doubt on the speed of light being the limit, or is there a flaw in the experiments? More info: <http://www.bbc.co.uk/news/science-environment-15017484>

Club construction projects: Dan has volunteered to lead a simple construction project for club members who want to have a go at building something and do not know where to start. The proposal is a simple HF receiver, it will be quite basic, to keep the cost down and will not have world beating performance but it will give you experience of simple construction and maybe fault finding if it doesn't work first time! The one he has in mind can be found here - <http://www.zerobeat.net/g3ycc/sudden.htm> currently he is investigating the costs, more news to follow.

Nick has also offered to lead a J pole antenna construction project for 2 metres based on 300ohm ribbon feeder.

Help wanted: Jim Hewitt is trying to set up Echolink but is having difficulty with firewalls and settings. If you can help in anyway please get in touch with him by email (initially) at auqd77@dsl.pipex.com.

If you have anything you want to raise in the for sale or wanted section please let me know at secretary@gw4lwz.com

This months featured weblink:

http://www.bbceng.info/Operations/transmitter_ops/Reminiscences/Woofferton/wooff50y-v2.pdf

Rod mentioned in conversation the BBC transmission site at Woofferton near Ludlow. Co-incidentally the October edition of Practical Wireless mentions Woofferton in Rob Mannions *Topical Talk* piece and refers to a more substantial article to come in the November issue on Transmitter Station Earthing Systems. (Many thanks to Practical Wireless)