

Anytronics : Anylight 32 Interface

32 Channel / 64 Preset Dimming Control System

1.0 Introduction

The Anylight 32 interface card fits inside Anytronics CB (ie circuit breaker protected) dimming packs. It accepts commands from remote outstations to control thirty two circuits ('Channels'), each of which can be configured for either dimming or switching operation. The card stores sixty four preset scenes ('Presets') which can be recalled by commands from remote outstations.

The data output from the Anylight 64 interface card is in DMX format and this data output is available on the XLR and RJ45 connectors of the dimming pack in which the card is installed. Standard Category 5 RJ45 cables can be used to easily link this data to further Anytronics dimming packs. The interface card also features four digital outputs on an RJ12 connector for connection to DSI or DALI controlled dimming fluorescent ballasts.

Key Features

- Thirty two channels of dimming or switching control
- each channel configurable for either dimming or switching operation
- simple two wire interface connection to remote outstations
- sixty four stored preset scenes
- inclusion or exclusion of each channel from each stored scene
- user selected channel fade rates
- four outputs for DSI or DALI fluorescent ballasts
- DMX512 output
- last output levels retained during power failure
- clock and command display LCD
- optional RS232 monitor, Preset download and upload facility

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2.0 Installation

Supplies

The Anylight 32 interface card is normally factory installed in an Anytronics CB dimming pack. The dimming pack will first need to be installed and connected to suitable supplies and to the load circuits by a qualified electrician. **Anytronics strongly recommend that a qualified electrician be used to install dimming packs and power circuits to all controlled equipment, and that a proper mains earth connection to the dimming pack earth bus bar is in place before any other connections are made.** Our guidance notes written for electricians who are installing CB packs should be enclosed with the pack.

Output Connections

Anytronics CB dimming packs incorporate a mains Earth buss bar, a switched Neutral buss bar and dimmer (Live) outputs from circuit breakers for power distribution to the output channels. Lighting equipment and other appliances controlled from the dimming pack should be supplied with Live, Neutral and Earth connections as recommended by their manufacturers.

Once electrical installation is complete both metal lids of the dimming pack should be securely fastened down. For commissioning work, the interface PCB switches and low voltage terminals are all safely accessible through the removable clear plastic cover.

Isolation

Anytronics dimming packs fitted with Anylight interface cards have their low voltage electronics (and hence the interface card and the two wire interface with outstations) all isolated from mains earth. This isolation is generally considered a good safety feature particularly for use in domestic premises. **Outstations should not be earthed.**

Other connections made to or from the low voltage electronics of the pack might compromise this safety isolation. DSI or DALI connections to dimming fluorescent ballasts should be OK, but DMX connections to other earthed dimming equipment are likely to provide a path back to mains earth which could compromise this isolation. An isolated DMX buffer unit can be used to preserve isolation, but be aware that even with the three DMX data lines isolated in this way, a DMX cable screen might still provide an earth path if connected back to the 0V of the interface card or low voltage electronics of the dimming pack instead of to a suitable earthing point.

If for any reason you prefer to earth reference the data system, it is recommended that you make only one earth connection to the 'B' buss connection on the interface card.

Outstations

The two wire interface connections from the PCB screw terminals to the outstations can be made in any order or configuration, star or daisy chain or combinations of these. The outstations should be wired in parallel, each outstation being connected back to both the A and B screw terminal connections on the interface PCB. Either polarity of connection will work at the outstation. Do not wire the outstations in series, or they will not work.

For short runs oval twin wire should be adequate for outstation connections. A 'twisted pair' connection will always be better in an electrically noisy environment. If using screened cable, do not connect the screen at the outstation, but make all screen connections to a suitable safe earthing point, not to the 0V of the dimming pack or Anylight interface.

Dimming control outputs

Assuming that the appropriate data and power connections from the interface card to the dimming pack have been factory fitted, there is normally nothing else to connect inside the pack.

You will need to make DMX connections to additional external dimming packs to expand the system to its full capacity. The DMX output is available via RJ45 and XLR connectors on the CB pack. If connecting the DMX outputs to external DMX controlled dimming systems, please take note of the points mentioned under isolation above and follow normal good DMX connection practice by using a suitable category 5 screened cable with twisted pairs.

DMX Address setting

The 64 data bytes of the output DMX sequence correspond to the 64 different Channels in sequence 1-64. Each DMX controlled pack will need to have its start address set so that it will respond to the required Channel data. Any pack in which the interface card is factory installed will have its DMX address set to 1. Other dimming packs added to the system will need to have the appropriate DMX start addresses set.

External DMX sources

In normal domestic installations, the interface card is intended to be the only source of DMX in the system and to have control of all Channels all the time. For this mode of use, keep option DIL switch 5 OFF (front right hand corner of PCB by data and power LEDs).

For more sophisticated system use it is possible to connect an external DMX source to the DMX ports and this external source will shut down the DMX output of the Anylight interface card. The card will continue to process all the outstation commands, but these will have no effect on the lighting system, and the display will show the message 'doff' for DMX off. When the external DMX source is removed the Anylight interface will take over control of the DMX lines and the outstation control will be effective once more. This feature has now to be positively engaged by setting DIL switch 5 to ON.

DSI / DALI outputs

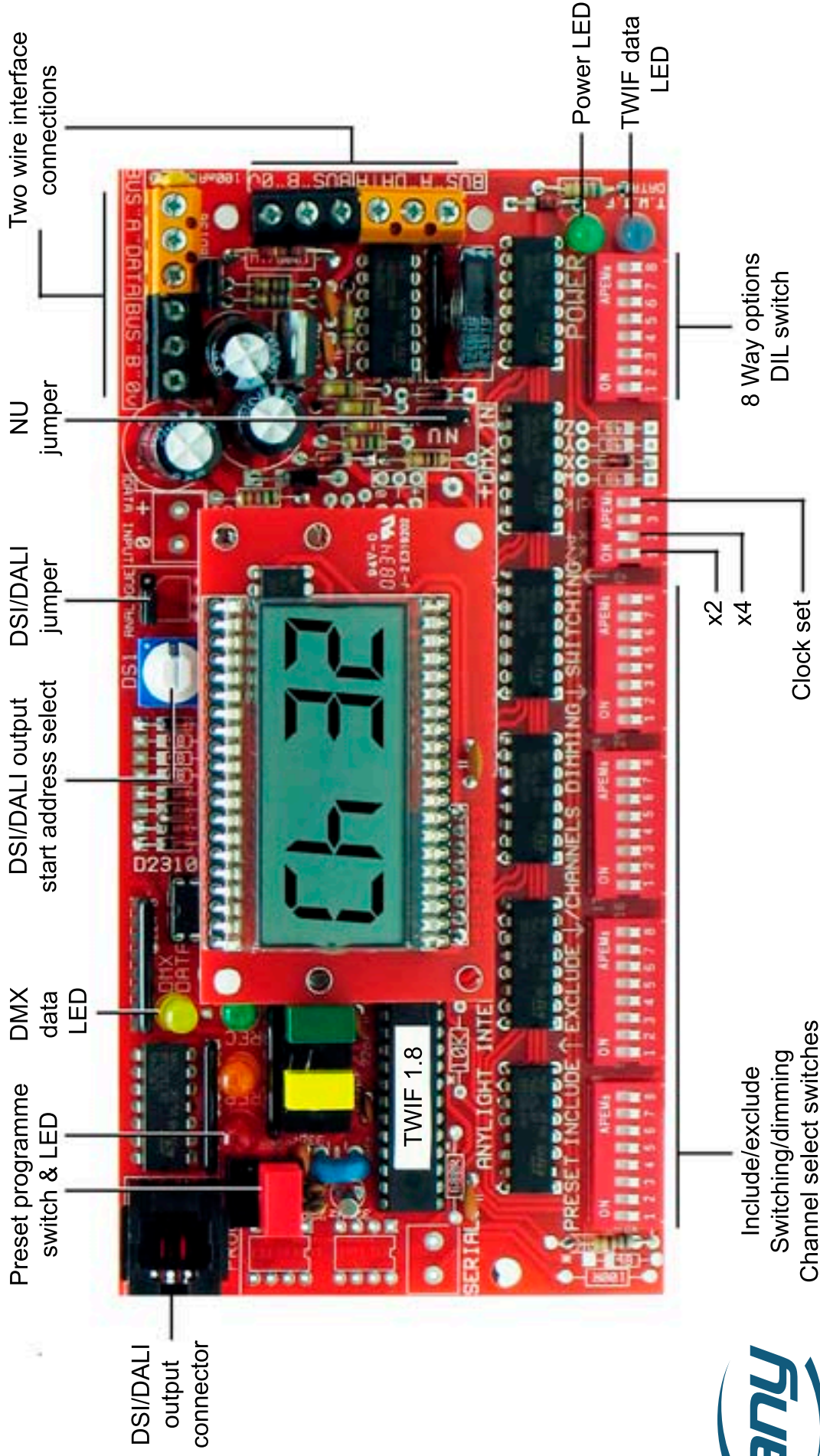
Either DSI or DALI controlled digital dimming fluorescent ballasts can be controlled from the outputs available on the RJ12 socket provided on the interface PCB. The outputs will control DSI ballasts with the jumper in the left position (towards the bcd switch labelled DSI) and DALI ballasts with the jumper in the right position. D1 connections at the ballast should be connected to the 0V pins (1,3), whilst D2 connections should be made to pins (6,2,5,4) for channels 1,2,3,4 respectively. The outputs can be offset from channel 1 by using the bcd address switch labelled DSI. The offset is four times the value shown on the switch, giving channel decoding as shown in the table below :-

bcd switch address setting	RJ12 Pin 6	RJ12 Pin 2	RJ12 Pin 5	RJ12 Pin 4
0	1	2	3	4
1	5	6	7	8
2	9	10	11	12
And so on down to				
6	25	26	27	28
7	29	30	31	32

For expansion to control a greater number of DSI or DALI channels use an Anytronics DMX to DSI/DALI interface (order code AC006).



Anylight 32 Channel Interface



3.0 Commissioning

Power Up

On powering up, the green power LEDs of pack and interface card should both light followed by their two yellow DMX data LEDs to show that the card is producing a DMX output and that the pack is decoding the DMX data. At this stage no other LED should be lit, and the output levels to the dimming pack should all be zero. (Normally, on powering up, the output levels will be remembered from when the pack powered down and the pack outputs will fade to those remembered levels.) If the interface card has not been powered up for several days, the LCD display may not show the correct time.

If the red, yellow and green LEDs start flashing in unison, this indicates that there is a short circuit across the two wire interface, a problem which will have to be remedied before the interface can work. If the yellow data LEDs do not light and the LCD display shows four 'eights', remove the power from the system. Locate the jumper on the interface card labelled N/U (just to the right of the LCD) from position N to U, and then power up again. The LCD should now show 08:00, and the jumper can be moved back to position N.

Setting dimming / switching channels

As supplied, the interface will default to dimming operation on all channels. If it is required to have switching operation on selected channels, this can be simply programmed into the non-volatile memory by using the following procedure.

Make sure that DIL switch 4 of the four way DIL switch is set to OFF. Now set the required operation of dimming or switching for each channel on the four eight way DIL switches situated along the bottom edge of the PCB. 'On' will programme switching operation for the relevant channel, 'Off' will programme dimming operation. Now whilst holding down the pair of adjacent green and yellow switches on the PCB, press the third red 'programme' button by the red LED down for five seconds, then release. All three LEDs by the switches will come on, and the dimming and switching settings will be saved in non-volatile memory. Release the two switches and if any LED remains on at the end of this operation, press and release the adjacent switch to extinguish it.

These adjustments will make sure that the DMX output of this interface card has only zero or full level data on the channels selected for switching. To ensure correct zero voltage switching action by the dimming/switching pack, the corresponding channels of the dimming/switching pack should also be set for switching. In the Anytronics CB packs this is achieved by setting the Dimming/Switching DIL selector switch on the main PCB.

For the dimming pack in which the interface card is installed, this DIL switch is on the main PCB underneath the interface card and only becomes accessible by temporarily removing the interface card. For your own safety, please remove all power from the system before carrying out this procedure.

Fade Period Setting

The Anylight system features a number of fading periods, two of which are readily available from outstations. A double click on an outstation button will make events happen over the shortest fade period of 2.5 seconds. A single click on an outstation button will use the user selected fade period set on the four way interface PCB DIL switch according to the following table :-

Sw 1	Sw 2	Fade Period (seconds)
off	off	20
on	off	10
off	on	5
on	on	2.5

The other two DIL switches 3 and 4 should be set to off for the time being.

Setting the clock

To set the clock first make sure that the jumper on the PCB labelled N/U (just to the right of the LCD) is in the N (for normal) position. Now move the four way DIL switch position 4 to ON to enter clock setting mode. The push buttons beside the green, amber and red LEDs increment the minutes, tens and hours of the display respectively (and for convenience the displayed time should be set in that order). Once the time has been set, return DIL switch position four to the OFF position. The jumper should be left in position 'N'. In the event of a power failure the clock should keep running to time (but with no visible LCD display) for several days.

Checking outstation operation

Assuming that the outstations are installed and that their channel and preset addresses correctly set, you should be able to control each channel in turn from the appropriate outstation buttons. When an outstation button is used, the blue TWIF data LED on the PCB should flash on to show that a command has been accepted, and if the clock and command LCD display option is fitted, information relating to a valid received command will also be displayed for a while with its corresponding Channel or Preset address. If the button presses do not register in this way, one of several typical installation problems is indicated, but the investigative action should be the same.

1. Use a dc voltmeter to check that there is 12 Volts between A and B buss connectors. Anything much less than this indicates a problem on the two wire interface. A short across the interface will usually cause three LEDs on the PCB to flash on and off.
2. When an outstation button is depressed, this voltmeter reading will usually fluctuate to indicate the presence of data. (The size of fluctuation depends on the meter characteristics.) Zero fluctuation indicates no outstation connection.

Having identified the type of connection problem, the external outstation wiring will need to be broken down into sections to locate and identify the source of the problem. Such wiring problems encountered in practice have included :-

- open circuit or unmade connections at outstations or junction boxes,
 - short circuit connections between A and B wires in junction boxes,
 - both connections at an outstation made to A or to B connection, not to A and B,
- (this will short out the two wire interface and prevent any outstation communicating with the interface card).

If you are still having problems and want to gain confidence that the Anylight system is working, try this test :-

1. Disconnect all connections to the two wire interface A and B screw terminals on the Anylight interface card.
2. Remove one of the outstations with channel control buttons from its installed position (or get a spare one) and set its bcd addresses to 0 with all DIL switches off.
3. Connect two wires to the two sections of one of the twin terminal screw connections on the back of the outstation.

4. Connect one wire to the A bus screw terminal connector on the Anylight interface and the other to the B bus connector (they are different colours).
5. Now check for correct operation using this test outstation, looking for the flashes of light on the blue TWIF data LED. If the outstation is correctly wired this should work!

The only way to trouble shoot a large scale installation is by breaking it down into smaller wired sections and checking each section in turn by inspection, and by testing from each outstation back to the interface card.

Using Presets

Presets are memorised levels on selected ('included') channels which can be recalled from an outstation by using its Preset buttons. Sixty four addressable Presets can be memorised on this interface card, each containing from none to 32 Channels.

Each Preset can be programmed to affect only specific output channels. These channels are 'included' in the preset. Channels which are not to be affected by the Preset are 'excluded' at programming time. In this way you can include all the channels in one room in some Presets without affecting the channels controlling the lights in other rooms. Those other rooms can have their Presets programmed to include only the channels in those rooms, but they could include any of the Channels. For example most of the Presets in the living area would include just the lights in that area, but one Preset in that area could dim the room lights and bring up the garden or patio lighting at the same time. Another Preset in the living area might blackout all the room lights, but also bring on the hallway or stairway lighting to light the way upstairs at night.

You can programme or re-programme Presets any number of times, but to avoid confusion we strongly recommend working out all Preset numbers in advance with their included Channels and approximate required levels. Copies of the small grid included at the end of these instructions for Presets 1-32 and Channels 1-16 are a simple method of documenting Presets and their included Channel levels. Copies of the full grid can be downloaded from the Anytronics web site literature page. This full grid also forms a suitable medium for passing details of Preset programming to the end user.

Programming Presets

When programming Presets, the first thing is to decide which Channels are to be included in the Preset, and to set their corresponding eight-way DIL switches on the interface card to ON. Channels which are to be unaffected by the Preset (excluded) should have their DIL switch set to OFF. Now use Channel buttons on the outstations to set the required levels on all the included channels, visiting the relevant rooms as necessary to check settings and make adjustments. Once the correct levels have been set, press and release the red 'programme' button on the interface card so that the red LED lights. The card is now in programme mode, and a Preset can be programmed with these settings by pressing the required Preset button on an outstation. The card will drop out of programme mode extinguishing the red LED to indicate that the Preset was successfully programmed, and the preset number with message 'PP' will be displayed on the LCD display.

Clearing Presets

Individual programmed Presets may be over written at any time by following the above procedure, but in the event that it is required to erase all programmed settings, the factory settings can be re-instated by using the following procedure. [Note that this will also reset the clock and the dimming/switching assignments for each Channel.] It needs to be done at a time when resetting the lighting levels will not affect other occupants!

Move the jumper which is to the right of the LCD from position N to position U.

Temporarily disconnect any RJ45 cable connections to the pack.

Using the isolator on the CB pack containing the Anylight Interface card, switch off the power to the card and wait a few seconds for the green power LED on the Anylight interface PCB to extinguish.

Hold down the green button on the interface card whilst switching the power back on using the isolator. The red and green LEDs should all come on with the power, and after releasing the green button, the red LED will stay on for a few seconds whilst the memories are cleared.

After clearing the Presets, set the clock, reconnect any RJ45 cables and replace the jumper to position N.

Address rollover

To allow their use in larger scale systems, all Anylight outstations can address Channels and Presets numbering up to 64. The valid address ranges for this interface card however are 1-32 for Channels and 1-64 for Presets.

With four way DIL switch position 3 OFF, a Channel address above 32 will roll over to address channels starting again from 1. So a five Channel outstation might be set to address Channels 30, 31, 32, 33 and 34, but at the interface card this would be interpreted as Channel addresses 30, 31, 32, 1 and 2. This allows outstations to address Channels at both the top and bottom of the address range.

This feature can be disabled by moving four way DIL switch position 3 to ON, when outstation commands with addresses outside the valid ranges will be ignored. Not even the TWIF data LED or the LCD display outstation will show that data is being received.

4.0 LCD Messages

The variety of codes displayed in the LCD when an outstation button is pushed has been extended from v1.8. The full set of codes and their meanings are shown below.

Ch	Channel On	
CO	Channel Off	
cu	Channel Up	= On, but with memory feature
cd	Channel Down	= Off, but with memory feature
Cu	Channel step Up	= manually stepped Up
Cd	Channel step Down	= manually stepped Down
Ct	Channel Timer command	
Pr	Recall Preset	
PO	Preset Off	
PU	Included, non zero, non switching channels in Preset manually stepped Up	
Pd	Included, non zero, non switching channels in Preset manually stepped Down	
Pt	Preset Timer Command	
PP	Programme whole Preset	
UP	Programme Upper Preset bank	
LP	Programme Lower Preset bank	
AC	External (RS232) all Channels command	
AP	External (RS232) all Presets erase command	
EC	External (RS232) set channel level	
EP	External (RS232) recall Preset	
EO	External (RS232) all included channels in Preset Off	

- EU External, all included, non zero, non switching channels in Preset step up
- Ed External, all included, non zero, non switching channels in Preset step down

5.0 RS232 features

It is now possible to monitor channel levels, download stored Preset levels and to programme Preset levels via RS232 from a PC. All Anylight cards from v1-7 onwards have these features, but the dimming pack will require an extra RS232 interface to access them.

If you have purchased a system with an Anylight RS232 interface fitted, the RS232 features are described in an RS232 appendix to this document.

