+ClockPlus+

Timecode/Tally Display

Installation and Operation Manual

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1. General Safety Summary

Please read and observe the following safety precautions to avoid personal injury and prevent damage to this product or any products connected to it. To avoid potential hazards, use this product only as specified.

Servicing should only be undertaken by skilled and qualified personnel.

For mains powered units: Use only the power cord specified for this product and certified for the country of use. This product is grounded through the grounding conductor of the power cord. To avoid electric shock, the grounding conductor MUST be connected to earth ground. Before making any other connections to the product, ensure that the product is properly grounded. Use only the fuse type and rating specified for this product.

For all units: Avoid exposed circuitry. Do not touch exposed connections and components when power is present. To avoid fire or shock hazard, observe all ratings and marking on the product. Use only the specified types of connectors with the product. Do not operate the product with covers or panels removed. Do not operate with suspected failures. If you suspect there is damage to the product, have it inspected by qualified service personnel. Provide proper ventilation. Operate the product only when it has been installed according to the manual's installation instructions as these are designed to provide adequate ventilation around the product. Do not operate the unit with the ventilation holes covered. Do not store or operate the product where it may be exposed to damage by coming into contact with other objects. Do not operate in wet or damp conditions. Do not operate in an explosive atmosphere. Keep product surfaces clean and dry.

2. Introduction to +ClockPlus+

Autoscript has introduced this unique piece of equipment for use in TV studios wherever there is a need to display SMPTE/EBU station Timecode. It has the additional feature of the display colour changing from Green to Red when an external Tally stimulus is applied. The unit is lightweight and fixes directly to the front of Autoscript prompting monitors, using the fixings already incorporated into the front edge of the monitor. The clock face has 2.25" tall digits that display HH:MM:SS A/P in 12 hour mode or HH:MM:SS in 24 hour mode, and provides a bright and clear display easily read in the typical studio environment.

Source timecode may be presented to the +ClockPlus+ either in LTC (Longitudinal Time Code) or VITC (Vertical Interval Time Code) format. When a timecode source is connected the clock will instantly set itself to the input time. When the timecode source is removed the clock will continue to count and display time but with limited accuracy.

3. Specification

3.1 Display:

Format: HH:MM:SS A/P
Size (HH:MM:SS): 2.25”
(A/P): 1.5”

3.2 Linear Time Code Input:

Standard: SMPTE 12M linear time code - 24, 25 or 30 Fps nominal
Impedance: > 50k Ω, balanced
Connector: 3 pin male TiniQ-G miniature XLR
Level: 1 V to 3.0 p-p

3.3 Vertical interval Time Code Input:

Standard: PAL or NTSC
Impedance: 75 Ω, balanced
Connector: BNC Socket
Level: 1 V p-p

3.5 Physical:

Dimensions (excluding controls/connectors)
383 mm W x 88 mm H x 34.5 mm D

Weight
0.8kg

Temperature range
Operating: 5 to 40 degrees C
Storage: -20 to 60 degrees C

3.5 EMC Compatibility

This product is designed to meet the relevant requirements of the following standards:

Standard	Title	Limits
EN55022:1998 (+A1/A2)	Information technology equipment – Radio Disturbance characteristics. Limits and methods of measurement	Class A Emissions
EN55024:1998 (+A1/A2)	Information technology equipment – Immunity characteristics. Limits and methods of measurement	
EN61000-6-2:2001	Electromagnetic compatibility (EMC) Part 6-2: Generic standards – Immunity for industrial environments	
CFR 47 : 2004	Code of Federal Regulations: Pt 15 Subpart B – Radio Frequency Devices – Unintentional Radiators	Class A

4. Installation

4.1 General

Preparation for installing +ClockPlus+ includes the following points:

- Removal of all packaging
- Checking of components for damage
- Comparison of components received with those on the delivery note
- Connection to the signal source and power supply
- Building into your system, bearing in mind technical and spatial aspects

4.2 Removing the Packaging and Checking Individual Parts

After unpacking all the delivered components, they should be checked for completeness and visually inspected for possible transit damage. If any deficiencies are found then please contact the supplier given on the delivery note. Have the delivery note number, serial number and a description of the deficiency to hand.

The original packaging should be kept for future reuse.

4.3 Installation – Points to note

When installing the +ClockPlus+ the following points should be noted:

- The maximum operating ambient temperature of +40° must not be exceeded.
- There must be unimpeded free flow of air around the unit, and the ventilation holes must not be obstructed.
- Connection to the video input of the unit should always be made with screened 75Ω coaxial cable (irrespective of length). However, all cables degrade the signals passed through them and shorter lengths of cable will give better signal quality.
- The video cable screen should be connected to ground (earth) at both ends.
- The LTC input is balanced and connection should be made with a suitable twin screened audio cable.
- Use only the power supply unit supplied with the unit, connected to a suitable mains power outlet with protective earth.
- EMC and safety: The +ClockPlus+ has been designed for building into a unit or system. The constructor or operator of the system is responsible for maintaining electromagnetic compatibility and safety according to the relevant local regulations.

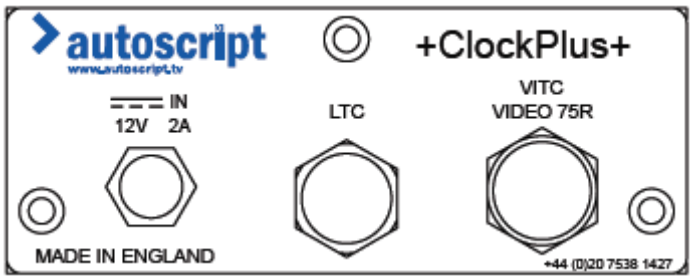
4.4 Mounting

The equipment should be unpacked carefully and inspected for transit damage. It should be installed into a well-ventilated situation on the front of an Autoscript monitor using the M3 (M2.5) fixing screws incorporated into the unit with thumbscrews on the front top edge (M2.5 – with the unit un-powered insert a thin cross-point screwdriver carefully through the holes on the front top edge until the point engages with the head of the screw).

Place the rectangular spacer plate supplied between the back face of the +ClockPlus+ and the monitor, the fixing screws pass through this plate, and the single large hole in the plate should be over the corresponding hole at the top of the +ClockPlus+ back panel to allow light from the Cue Light on the monitor to reach the opto sensor.

Note: The ventilation holes in the top and bottom edges of the electronics enclosure must not be obstructed.

4.5 Connections & Controls



4.5.1 DC Power

Use the supplied AC-DC converter or a 12V dc power source capable of supplying 2A.

Connector type: 2.1mm DC Jack
Mating connector: 2.1mm DC socket

Pin	Signal
CENTRE	+12V DC
OUTER	GROUND

4.5.2 LTC

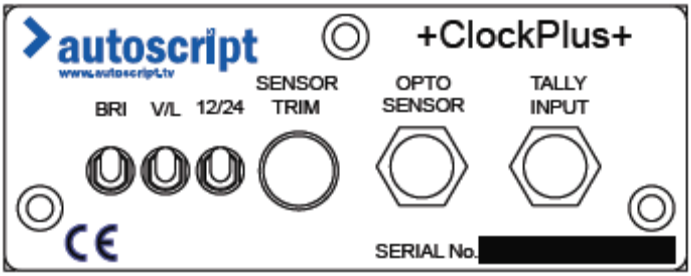
Pin	Signal
1	GROUND
2	SIGNAL + (HOT)
3	SIGNAL – (COLD)

Connector type: Switchcraft TRA3M
Mating connector: Switchcraft TA3F

4.5.3 VITC

Connector type: BNC Socket
Mating connector: BNC Plug

Pin	Signal
Centre	VIDEO WITH EMBEDDED VITC
Outer	GROUND



4.5.4 Switches

Switch	Function	↑ Setting	↓Setting	Notes
1	BRI	HIGH BRIGHT	BRIGHT	
2	V/L	VITC PRIORITY	LTC PRIORITY	1
3	12/24	24 HOUR MODE WITH NO A/P INDICATION	12 HOUR MODE WITH A/P INDICATION	

Note 1: This switch selects which timecode source will be displayed if both are connected, if only one source is connected then it will auto-select that input, regardless of the switch setting.

4.5.5 Sensor Trim Rotary Control

Opto Sensor trim control – adjust for clean switching of internal or external opto sensor.

4.5.6 Opto Sensor

Type: Light Dependent resistor, 20k Ω at 10 Lux, 5K Ω at 100 lux
OR (grounding) contact closure
HIGH ILLUMINATION/CONTACT CLOSURE = RED,
LOW ILLUMINATION/CONTACT OPEN = GREEN

Connector type: 3.5mm mono jack socket

Pin	Signal
TIP	HOT
SLEEVE	GROUND

4.5.7 Tally Input

Type: Senses a positive logic signal applied to the input and switches display RED
POSITIVE VOLTAGE (>2.5V, <12.5V) = RED,
VOLTAGE <1.0V or CONTACT OPEN = GREEN

Connector type: 3.5mm mono jack socket

Pin	Signal
TIP	HOT
SLEEVE	GROUND

5. Operation

5.1 Displaying timecode

Only two connections to the unit are required to display timecode, 12V DC power to the 2.1mm DC jack power input connector, and either LTC to the miniature XLR-type audio connector or VITC to the BNC connector. It is possible to connect both LTC and VITC at the same time, the V/L switch controls which source is displayed on the reader. Connections may be made in any sequence, and the LTC and VITC connections can be made or unmade whilst the unit is powered.

5.2 Tally Operation

If the Tally feature whereby the display changes colour from green to red on application of an external Tally stimulus (optical or electrical) is not required, the colour may be set to green by turning the SENSOR TRIM control fully anti-clockwise. If a permanent red display is required, insert a shorting 3.5mm mono jack plug into the OPTO SENSOR socket (a shorting plug is made by connecting the tip and sleeve wiring contacts together inside the body of the plug).

The trigger for the colour change may come either from the internal opto sensor (this is active unless a plug is inserted into either the OPTO SENSOR or TALLY INPUT sockets) or from an external opto sensor (available as an accessory from Autoscript). The internal sensor is designed to be triggered by the Tally (Cue) Light on the front of an Autoscript prompter monitor. The external sensor is typically attached by Velcro® to the camera tally light and allows the +ClockPLus+ to mimic the operation of the camera tally.

Other ways of triggering the colour change include connecting a shorting switch (grounding loop) to the OPTO SENSOR socket, or applying a positive logic voltage to the TALLY LOGIC input.

5.3 VITC Distribution with Prompt Video

One of the most powerful features of the Autoscript prompting system used in conjunction with the +ClockPlus+ is that VITC can be added to the prompting video at source and distributed to all the Autoscript prompting monitors simultaneously. A +ClockPlus+ unit can be easily attached to the front of each monitor, and the video looped out of the monitor into the +ClockPlus+. No additional cables are therefore required to distribute the timecode signal, saving on infrastructure cost. See the diagram below for more details of how such a system is connected. There is no practical limit to the number of +ClockPlus+ displays that can be connected in this way.

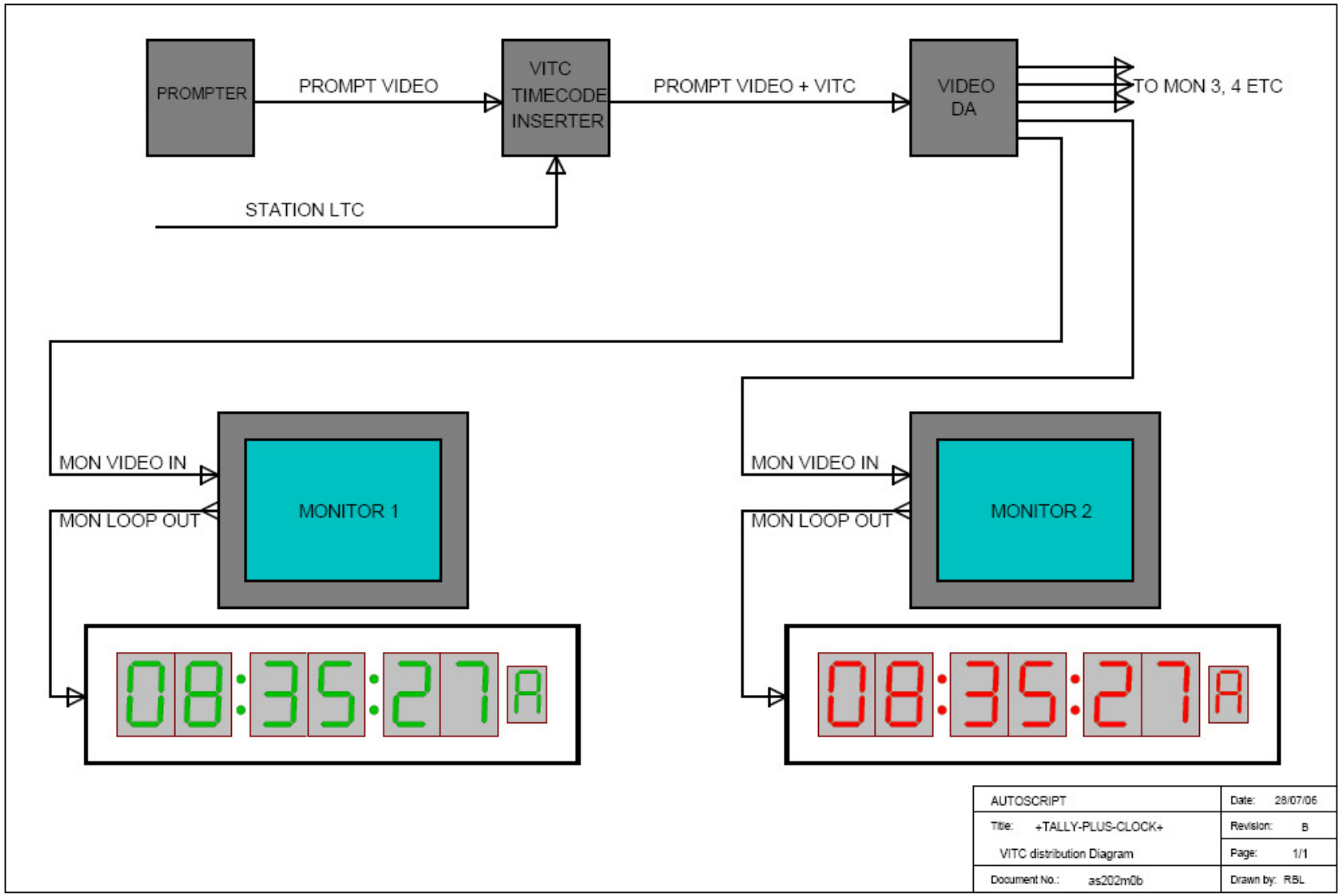
Contact Autoscript for a system quotation tailored to your requirements.

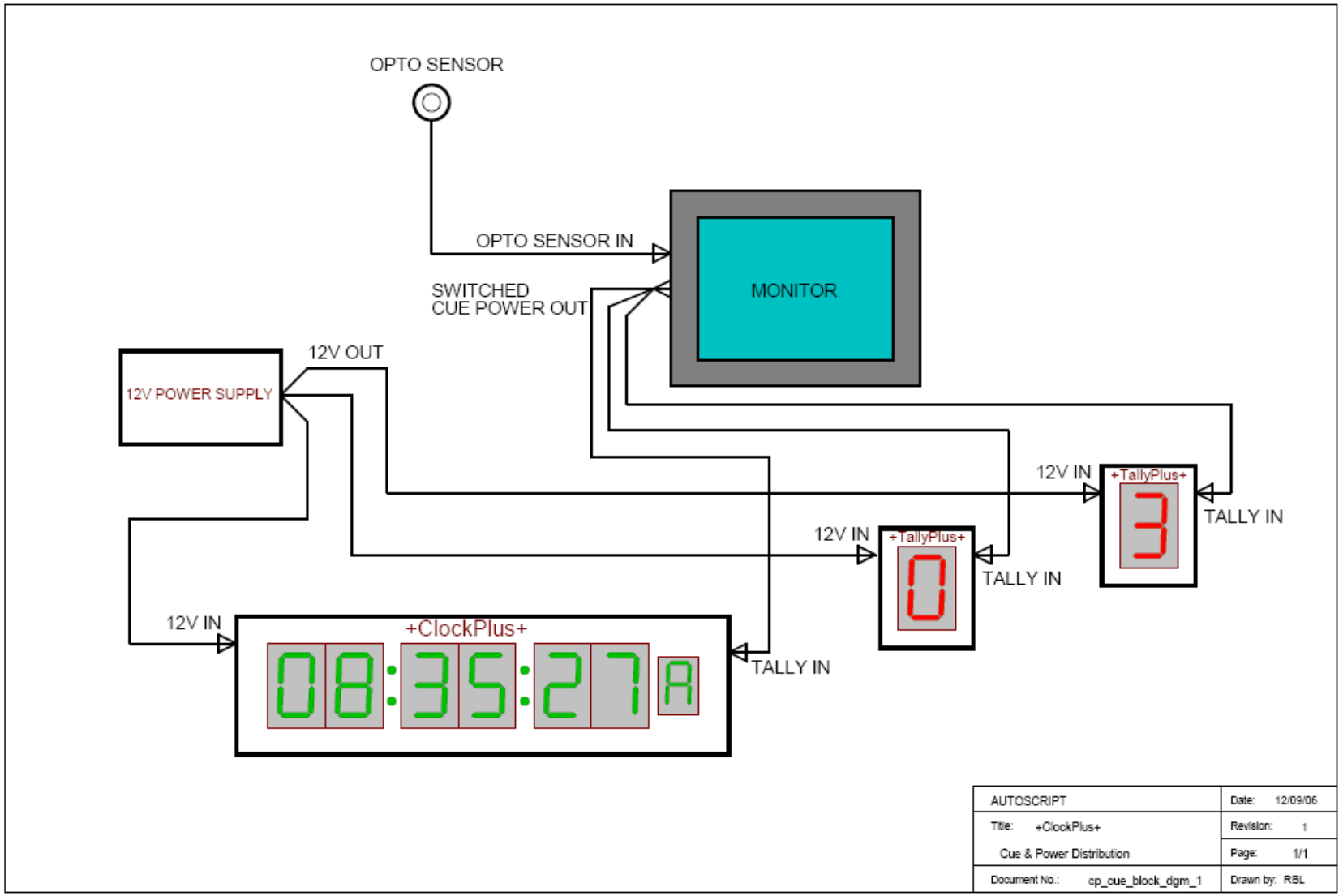
5.4 Operation with +TallyPlus+

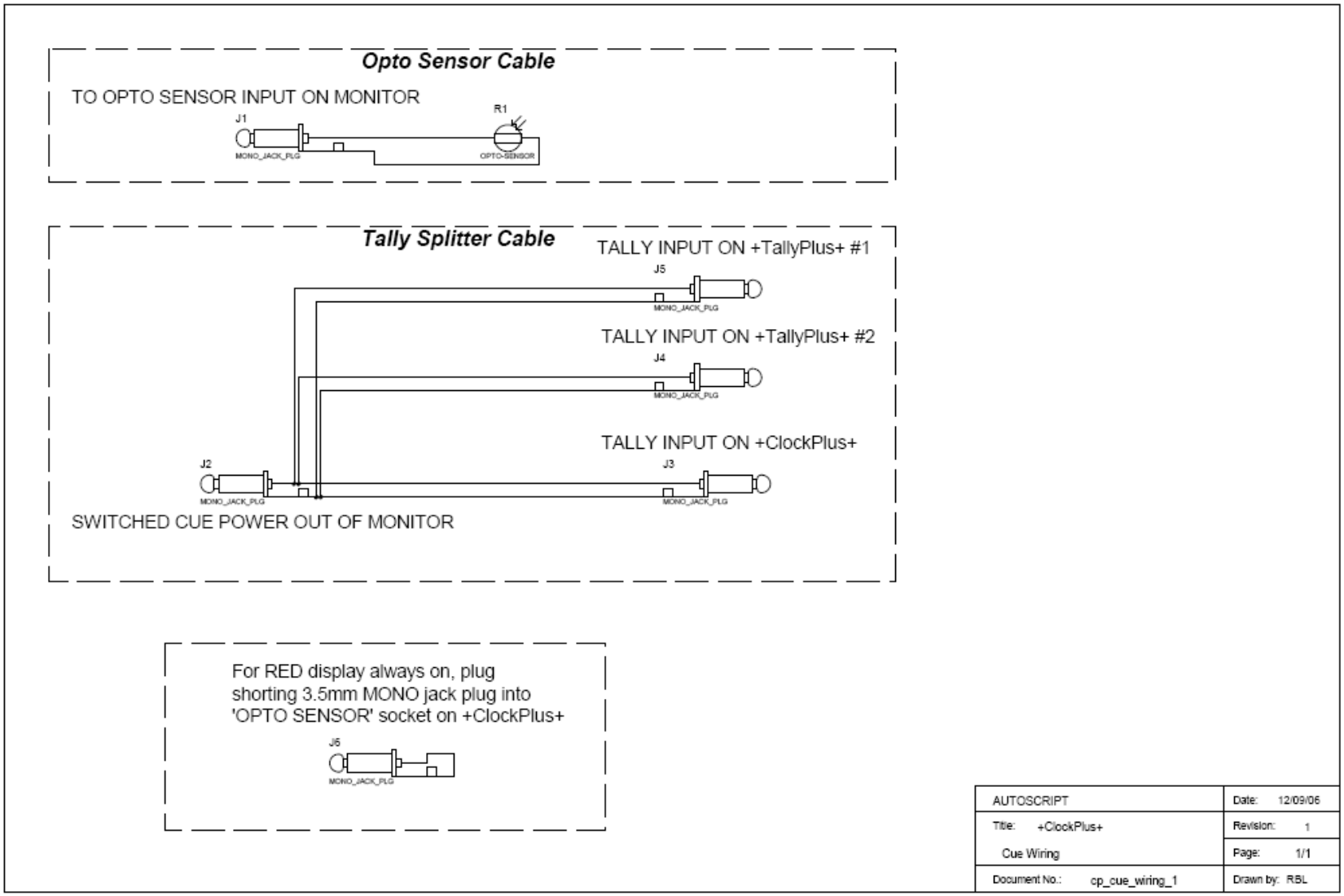
The Autoscript +TallyPlus+ is a camera number display that has the same Green/Red tally function as the +ClockPlus+. The situation frequently arises where as well as displaying timecode on the front of an Autoscript prompter monitor it is

useful to display the camera number. The second and third diagrams below show how +TallyPlus+ displays may be integrated with the +ClockPlus+. Contact Autoscript for further details.

6. Diagrams


PROMPTER
PROMPT VIDEO
VITC TIMECODE INSERTER
PROMPT VIDEO + VITC
VIDEO DA
TO MON 3, 4 ETC
STATION LTC
MON VIDEO IN
MON LOOP OUT
MONITOR 1
MON VIDEO IN
MON LOOP OUT
MONITOR 2
08:35:27A
08:35:27A
AUTOSCRIPT
Date: 28/07/06
Title: +TALLY-PLUS-CLOCK+
Revision: B
VITC distribution Diagram
Page: 1/1
Document No.: as202m0b
Drawn by: RBL


OPTO SENSOR
OPTO SENSOR IN
SWITCHED
CUE POWER OUT
MONITOR
12V POWER SUPPLY
12V OUT
12V IN
+TallyPlus+
3
TALLY IN
12V IN
+TallyPlus+
0
TALLY IN
12V IN
+ClockPlus+
08:35:27A
TALLY IN
AUTOSCRIPT
Date: 12/09/06
Title: +ClockPlus+
Revision: 1
Cue & Power Distribution
Page: 1/1
Document No.: cp_cue_block_dgm_1
Drawn by: RBL


Opto Sensor Cable
TO OPTO SENSOR INPUT ON MONITOR
J1
MONO_JACK_PLG
R1
OPTO-SENSOR
Tally Splitter Cable
TALLY INPUT ON +TallyPlus+ #1
J5
MONO_JACK_PLG
TALLY INPUT ON +TallyPlus+ #2
J4
MONO_JACK_PLG
TALLY INPUT ON +ClockPlus+
J2
MONO_JACK_PLG
J3
MONO_JACK_PLG
SWITCHED CUE POWER OUT OF MONITOR
For RED display always on, plug
shorting 3.5mm MONO jack plug into
'OPTO SENSOR' socket on +ClockPlus+
J6
MONO_JACK_PLG
AUTOSCRIPT
Date: 12/09/06
Title: +ClockPlus+
Cue Wiring
Revision: 1
Page: 1/1
Document No.: cp_cue_wiring_1
Drawn by: RBL

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