Ambient Controller ACC 101 Operating manual

CLOCKIT PORTABLE TIMECODE EQUIPMENT

The following features are standard in clockit units making use in the field, easy, quick and problem free,
***Extremely accurate Xtal oscillator with under 1 Frame a day drift with respect to other clockit units.**
***Xtal oscillator frequency can be externally monitored and calibrated in a simple and quick way to 0.2ppm accuracy.**
***Setting of timecode generator independant of framerate (Xjam). Clockit units run with Framerate set with dipswitches.**
***Full Aaton ASCII Origen C compatability.**
***Low current consumption with at least a days work on one battery change. (Often 1 week!)**
***Easy to use controls and indicators.**

CLOCKIT CONTROLLER. ACC 101

The Ambient clockit controller is an extremely accurate portable master clock and timecode Generator/Reader which can be used to jam, read, identify and compare all timecodes.
All framerates and userbit formats are catered for, and the framerate can be changed without losing time of day, so that a camera running at 24 Fps and a recorder running at 25 or 30 Fps can be jamsynced,
The controller can also load, read and compare timecode using the Ascii Aaton method making it an ideal substitute for the Aaton Origen C.
The controller can also be used to check and calibrate the crystal oscillators of the clockit range of products giving unsurpassed accuracy and the ability to check and adjust the calibration accuracy of the Clockit modules in the field.
A unique feature of the controller is that its internal crystal oscillator can be calibrated from 4 different external sources. GPS satellite, DCF Radio Clock, External timecode source, or another Clockit unit. Once calibration to one of these sources has been done the controller becomes a portable Timecode source with 0.2 ppm accuracy.
The controller has already found many users in the film industry, with the added facility of Internal Xtal calibration we feel that it can be used as a master clock to calibrate timecode recorders and film cameras during manufacturing and in the field,

CONTROLS

On
Off press for 3 seconds

Press LTC then menu requirement from keypad.
Press ASCII then menu requirement from keypad.
Menu items 4 to zero are the same whether selectected with ASCII (Aaton) or LTC key.
Send Receive or Compare can be implemented using ASCII or LTC code.
ASCII returns a single answer. LTC a continuous output.

PRESSING LTC OR ASCII RETURNS TO MENU
USE SHIFT KEYS OR KEYPAD TO SELECT

MENU

1t.LTC send	**1a. ASCI send**
2t.LTC receive	**2a.ASCII Receive**
3t.LTC compare	**3a.ASCII Compare**

4. Time
5.Date prod Nr,
6.User
7.Frames
8.Options

1. **GPS**
2. **DCF**
3. **Display**
4. **Uuser format**
5. **printer**
6. **manual tune**
7. **tune intern**

9.Battery
0.Tune extern

Common commands

Press.	Function	Display

1t. LTC then send

Sends timecode to timecode out pin

Timecode appears at TC out pin	**SEND HH MM SS FF FF F UU UU UU UU**
example	**SEND 15 35.12 23 25 F 28 11 95 10**

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2t. LTC then Receive

	Receives timecode and identifies	
	Timecode on TC input pin is identified and displayed.	**RECV HH MM SS FF FF F 1 UU UU UU UU**
	example	**RECV 16 25 25 25 25 F 1 28 12 95 11**
	Arrow up timecode too fast	
	Arrow downtimecode too slow	
Press enter	**Load time. user. both. select**	**LOAD GENERATOR TIME USER BOTH**
Press enter	**Selected data loaded**	

3t. LTC then Comp

	Compares external TC with internal TC. to 9.99 Frs Identifies framerate.	
	With less than 9.99 Frs. error	**EXT : 25 F DIFF. : INT : 30DF + 0.09 F**
Press enter *	**Show user bits**	**EXT: UU: UU: UU: UU INT :UU: UU: UU :UU**
	When TC difference more than 9.99 Frs display running TCs	**EXT: 10: 11: 12: 25 INT : 00: 11: 15: 24**
Press enter	**Freeze timecodes Show framerates Read off total error.**	**24 F: 10: 11: 13 11 * 30 DF 00: 11: 16 18**
Press enter	**Userbits**	**EXT: UU:UU:UU:UU INT :UU:UU:UU:UU**

NOTE. Frame error indicated is independent of framerate . The measurement is done at the zero frame/second point which is coincident for whole number framerates. 29,.97 23.98 and dropframerates will indicate errors as absolute time for internal and external timecodes are not coincident.

1a ASCII then send

	Sends time through ASCII protocoll Sends enquiry to Clockit unit or Aaton Kamera	
	connected Unit has not been set	**SEND ENQUIRY WAIT TARGET IS IDLE VERIFY NEW TIME TARGET TIME OK**
	.	
	when less than 9.99 Frames	**DIFF : 0.00 FRS TO GENERATOR**
	When Time is different but has been initialised	
Press enter	**Show timecodes Read off total error.**	**EXT: 10: 11: 13 11 * INT: 00: 11: 16 18**
	If time OK press ASCII or LTC to return to menu, or disconnect or ascii receive to see Time/userbits	

Press enter	**If time not OK** **select**	**LOAD TARGET?** **YES / NO**
Press enter	**To load**	**SEND NEW TIME** **VERIFY NEW TIME** **TARGET TIME OK**

2a ASCII then Receive

Receives Time /User through ASCII protocoll. Displays time and user afdter sending enquiry. Time valid at moment of enquiryt.

SEND ENQUIRY
WAIT

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RECV HH MM SS 00
DD MM YY PP

3 a ASCII then Comp

Compares time in ASCII protocoll
compares time and user at moment of enquiry.

	Under 9.99 Frs.	**SEND ENQUIRY** **WAIT** **DIFF : 0.02 FRS** **TO GENERATOR**
	when more than 5 frames	**EXT HH MM SS FF** **INT HH MM SS FF**
press enter	**user bits displayed**	**EXT UU UU UU UU** **INT UU:UU:UU:UU**

4. Press LTC or ASCII then TIME

sets TC generator and RTC time.

	use shift keys to edit digits **move cursors to edit**	**EDIT HOURS** **TIME HH:MM:SS**
Press enter	**Select generator yes no**	**SET GEN ? YES NO** **TIME HH:MM:SS**

Press enter	**Select Realtime clock yes /no**	**SET RTC YES NO** **TIME HH:MM:SS**
Press enter	**Time entered to generator and /or RTC as selected.**	

5. Press LTC or ASCII then DATE

Sets Date / proj. Nr

Press enter	**Edit date using shifts number pad**	**EDIT DATE** **DATE TT MM YY**
Press enter	**set Gen yes /no, select**	**SET GEN YES NO** **DATE TT MM YY**
Press enter	**set RTC yes /no. select**	**SET RTC YES NO** **DATE TT MM YY**

6. Press LTC or ASCII then USER

Sets userbits as selected in options

Press enter	**edit user bits as per window and user bit option selected example Aaton format** *** P prod nr 1. 2**	**EDIT USER 1-2** **USER DD MM YY PP***
Press enter	**Set Gen yes/ no select**	**SET GEN YES NO** **USER DD MM YY PP***
Press enter	**Save yes/ no select (save saves this format when controller switched on next time)**	**SAVE YES NO** **USER DD MM YY PP***

NOTE. Userbits are presented in the format selected in the options Menu Nr 4

7. Press LTC or ASCII then FRAMES

Sets framerates

press enter	*** Frame format 24, 23.98 (24D), 25,30, 29 97 30Drop, 29.97Drop, 23.98**	**FRAME FORMAT** **25 FRS**
press enter	**set frames yes/ no**	**SET YES NO** **25 FRS**

Press enter	**Save yes no**	**SAVE YES NO**
	save for next controller power up	**25 FRS**

NOTE. Framerate can be changed without losing time. For instance you can change from 24 to 25 Fps and the absolute time will remain valid. In other words the beginning of the second will be correct. Only the second will be divided up differently depending on the framerate,. When selecting 29.97 or 23.98 Fps time will be lost and will show up in the LTC compare function as a continuous timeslip.

8. OPTIONS MENU

1 op GPS **Sets RTC to GPS satellite time**

2 op DCF **Sets RTC to DCF Radioclock**

press enter		
	Request time from DCF radio clock	**DCF REQUESTING**
press enter	**Set RTC yes no select**	**SET RTC YES NO**

3 op DISPLAY **sets contrast of display**

press enter	**set Contrast value up down with cursors**	**DISPLAY CONTRAST VALUE 180**
press enter	**save value**	

4 op USER FORMAT Sets user format

press enter	**userbit format select up down with cursors**	**USERBIT FORMAT : AATON DDMMYYPP**
		USERBIT FORMAT FREE XX XX XX XX
		USERBIT FORMAT DD MM YY XX
		USERBIT FORMAT MM DD YY XX
		USERBIT FORMAT YY MM DD XX
	° U UNIT °R ROLL	**USERBIT FORMAT AMPS DDMMU°RRR°**
press enter	**Set format example Aaton Select**	**SET? YES/ NO AATON DDMMYYPP**
press enter	**Save saves for new power up Select**	**SAVE YES/ NO AATON DDMMYYPP**

5 op PRINTER Available in future

6 op MANUAL TUNE

Manually tunes clockit units to desired frequency as indicated can be used. To set xtal frequency offsets in clockit units to match other systems.

Press enter		
	fetch old tune value	**FETCH OLD TUNE VALUE**
	A number about 106 to 110 each digit is 0.2 ppm	**TUNE VALUE: 110**

Adjust number with up down buttons **SAVE WITH ENTER**

press enter **WRITE NEW TUNE VALUE**

PROGRAMM NEW

TUNE VALUE
TUNING IS FINISHED

Press LTC then Tune
To find out actual shift implemented **DIFFERENCE 0.2ppm**

6 op TUNE INTERN

Calibrate Controller Xtal from the following external sources.

REF. external clockit unit for example a Lockit box whose video sync has been adjusted to fit a braodcast video signal running to an accurate timebase.

GPS. signal with 1 second pulse. Controller measures time over 120 secs.

LTC. an externally connected LTC signal

MAN. manually by shifting the Xtals calibration number

Note. controller Xtal doesn't need to be calibrated but can be if extreme

	accuracy is needed.	
press enter *	**Indicates last tuning**	**LAST TUNING:** **MAN 22.11.96**
press enter	**select external source**	**SELECT MODE** **REF GPS LTC MAN**
press enter	**Calibration starts** **GPS. LTC countdown**	**SCANNING GPS** **SIGNAL 120 s** **SCANNING LTC** **SIGNAL 600s**
	MAN Fetch old tune value	**TUNE VALUE 099** **SAVE WITH ENTER**
press save	**calibration implemented**	**WRITE NEW TUNE VALUE**
	REF	**SCANNING TUNE SIGNAL**
		DIFFERENCE: **+ 0.4 +/- 0.4 ppm**
press enter	**to Calibrate select**	**TUNE INTERN** **YES NO**
Press enter	**calibration implemented**	

Note. factory setting of Controller Xtal is accurate enough for most uses. if inadvertently tuned goto tune intern again and select factory setting and press enter.

9. BATTERY

Measures battery voltage

press enter	**battery voltage**	**BATTERY VOLTAGE** **MEASURE**
		BATTERY VOLTAGE **7.88 VOLTS**

0.TUNE EXTERN

Calibrates Xtal of other clockit units to the Xtal frequency in the controller

press enter	**reading difference in ppm**	**SCANNING TUNE** **SIGNAL0.2 +- 0.1 PPM**
press enter	**Calibrate select**	**TUNE TARGET** **YES/ NO**

press enter	**Tuning target**	**FETCH OLD TUNE VALUE** **WRITE NEW TUNE VALUE**
		PROGRAMM NEW TUNE VALUE
		TUNING IS FINISHED **SCANNING TUNE SIGNAL**
	Check if OK **Note accuracy is +- 0.1 ppm**	**DIFFERENCE** **+ O.2 +- 0.1 ppm**
press enter	**retune if not near enough**	

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