

CONNECT SYSTEMS INCORPORATED

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FLEX SERIES UNIVERSAL CONTROLLER

MULTISITE DISPATCH CONTROLLER

User's Instruction Manual

Made in U.S.A.

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GENERAL DESCRIPTION

The FLEX SERIES MULTISITE DISPATCH CONTROLLER by Connect Systems Inc. is a fully automatic repeater controller allowing two repeater sites to simultaneously used by a single user. A built-in LCD digital display allows the user to obtain the maximum power from the on-board microprocessor. All features are user programmable and/or selectable.

SETTING EVERYTHING BACK TO FACTORY DEFAULT

If for some reason it is necessary to set the system back to factory default, plug a telephone into the programming jack in the back of the unit and enter the command "***123456**". You cannot disable the factory reset from working over the local programming jack.

GETTING INTO PROGRAMMING MODE

This product allows the user to unconditionally get into programming mode by pressing ##123456# from the telephone attached to the programming jack in the back of the unit. Because the user has physical access to the unit at this time, security codes is not an issue. Remote access requires the use of a security code programmed in the unit.

DIFFERENT PROGRAMMING AREAS USED

This product uses the following programming areas:

Global

GETTING ADDITIONAL INFORMATION

The web site at www.connectsystems.com has a user programming manual and a hardware reference manual. These manuals should be used in conjunction with this manual.

DIAGNOSTIC MODE

COS, SENSE, SQUELCH

By putting a jumper into JP9, the system will allow the user to determine the value to set the SENSE and COS inputs as well as adjust the squelch pot if COS is not used. When in this mode, the display will look as follows:

```
-----  
|S|Q|U|E| | |C|O|S| | |S|E|N|S|E|  
-----  
|O|F|F| | | |1|3|7| | | |2|3|5| |  
-----
```

The user then generates a high and low value for either the COS or Sense input and watches the display. The value for the trigger voltage for the appropriate parameter is a value between the two points.

The squelch pot is used for proper adjustment of the "SQUE". The results will be either on or off.

DTMF

By putting a jumper into JP7, the system will allow the user to determine if the system is decoding DTMF properly. The bottom line of the display will be used for recording DTMF tones from the radio and the top line will be used for recording DTMF tones from the programming jack in the rear of the unit.

FACTORY TEST

By putting a jumper into JP8, the factory test is performed. This allows Connect Systems Incorporated to do a complete test of the hardware with just a minimal amount of test equipment. The details will not be released until a later version of the manual.

Selects the source of the squelch.

COS POLARITY SELECT ***0000#09#J#** ***0000#09***
J = 1 = positive, J = 0 = negative Default = 1
If set for a positive voltage, then any voltage above the COS
Trigger Voltage will set COS true. If set for a negative voltage,
then any voltage below the COS trigger voltage will set COS true.
There is a one half volt hysteresis built in.

COS TRIGGER VOLTAGE ***0000#10#MMM#** ***0000#10***
MMM = 0 - 255 Default = 128
This is the trigger point that will cause the COS to be active.
See application note to determine how to calculate the COS trigger
voltage.

COS ACQUISITION TIME ***0000#11#MM#** ***0000#11***
MM = 0 - 99 in 1 millisecond increments Default = 0
This parameter is the time COS must be valid before the system
will consider the signal is valid. This is to prevent noise from
triggering the system

COS RELEASE TIME ***0000#12#MM#** ***0000#12***
MM = 0 - 99 in 10 millisecond increments Default = 10
This parameter is the time COS must be invalid before the system
will consider the signal no longer valid. This is to prevent
picket fence signals from distorting the system

Delay Parameters

VOICE DELAY: RADIO TO E&M ***0000#13#NN#** ***0000#13***
MM = 0 - 40 Delay in 10 millisecond increments Default = 40
Sets the amount of voice delay in 10 millisecond increments from
the radio to the E&M Port.

In VOX mode, word clipping or word loss is directly proportional
to radio T/R speed in simplex systems and repeater pick up time
when used through repeaters. The slower the system, the more
desirable voice delay becomes.

The voice delay electronically delays audio originating from the
telephone by 0 to .4 second. This in effect means that the
transmitter has been keyed for .4 second before the audio even
began! This timing makes word loss virtually impossible.

The voice delay is essential when using the Flex Series Controller
through repeaters from a Control Station. It is also recommended
for use in straight VOX simplex mode operation especially when
connected to a slow switching base station radio.

DUPLEX MODE PARAMETERS

STATION IDENTIFICATION MODE ***0000#14#J#** ***0000#14***
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J = 0 = BEACON, J = 1 = Activity Default = 0
In Beacon mode, the Station ID will go out periodically according to the interval. In Activity mode, the Station ID will go out periodically according to the interval but only if there was activity since the last transmission.

CW ID OR Voice *0000#15#N# *0000#15*
N = 0 - 7 Default = 0
If set to 0, then CW ID is used for station identification. If between 1 and 7, then the voice message number will be used for station identification.

CW ID CALL SIGN *0000#16#AAAAAAAAA# *0000#16*
AAAAAAAAA Default = blank
Up to ten digits for call sign. Any alphanumeric character accepted. If not valid CWID character, ignored.

CWID FREQUENCY *0000R#17#MM# *0000R#17*
MM = 1 - 20 Default = 5 = 800Hz
Sets the frequency of the Morse code per the users preference. By having a different frequency for each repeater, the user can determine which repeater is active if they are being monitored. When "N" = 1, then the frequency is 400 Hz. Each increment of "N" increase the frequency by 100 Hz.

CW OR VOICE ID INTERVAL *0000#18#MM# *0000#18*
MM = 0 - 99, 0 = Disable Default = 20 minutes
Choose the CW ID or Voice ID interval that you prefer for repeater mode. Or, disable repeater mode CW ID or Voice ID interval by entering 0. The CW ID or Voice ID interval is equal to 1 minute times the number entered.

REPEATER HANG TIME *0000#19#MM# *0000#19*
MM = 0-99 (0-9.9 seconds) Default = 30 = 3.0 seconds
Selects the time in seconds that the repeater remains on the air after the input signal drops. The time is equal to .1 second times the number entered.

REPEATER ACTIVITY TIMER *0000#20#MM# *0000#20*
MM = 0 - 99, 0 = Disable Default = 30 seconds
Any single continuous mobile transmission exceeding the repeater activity timer limit puts the repeater off the air. The activity time in seconds is equal to the number entered. Entering 0 disables the activity timer.

REPEATER COURTESY BEEP *0000#21#J# *0000#21*
J = 0 = Disable, J = 1 = Enable Default = 1
Whenever carrier goes from active to inactive, the system will generate a courtesy beep if the feature is enabled.

COURTESY BEEP FREQUENCY *0000#22#NNN# *0000#22*
N = 1 - 20 Default = 5 = 800Hz
Sets the frequency of the courtesy beep per the users preference.

J = 1 = Enable, J = 0 = Disable Default = 0
If enabled, the system will generate a momentary beep when the E&M Port side stops transmitting and its time for the radio side to start speaking.

REMOTE SHUTDOWN

SENSE POLARITY SELECT *0000#32#J# *0000#32*
J = 1 = positive, J = 0 = negative Default = 1
If set for a positive voltage, then any voltage above the SENSE Trigger Voltage will set SENSE true. If set for a negative voltage, then any voltage below the SENSE trigger voltage will set SENSE true. There is a one half volt hysteresis built in.

SENSE TRIGGER VOLTAGE *0000#33#MMM# *0000#33*
MMM = 0 - 255 Default = 128
This is the trigger point that will cause the SENSE to be active.

SENSE ACQUISITION TIME *0000#34#MM# *0000#34*
MM = 0 - 99 in 1 millisecond increments Default = 0
This parameter is the time SENSE must be valid before the system will consider the signal is valid. This is to prevent noise from trigger the system

SENSE RELEASE TIME *0000#35#MM# *0000#35*
MM = 0 - 99 in 10 millisecond increments Default = 10
This parameter is the time SENSE must be invalid before the system will consider the signal no longer valid. This is to prevent picket fence signals from distorting the system

REMOTE SHUT DOWN *0000#36#J# *0000#36*
J = 0 = Disable. J = 1 = Enable Default = 0
This parameter allows an external device to control this product. If the parameter is enabled, then an active sense input will disable the product and if the parameter is disabled, the sense input will have no effect. When enabled, the system will immediately shut down no matter what the system is doing.

OPERATION

The system is always operational as a repeater with squelch (either COS or internal squelch) controlling the repeat cycle. If the COS is active, then it repeats the audio locally as well as generates a -48 volts by closing the auxiliary relay. This in turn is transmitted over the network where a -48 volt detector at the other end detects this signal. When this signal is detected, it turns on the transmitter at the far end and then passes audio. Because of the turn on delay of the system, the audio from the far unit is delayed up to 400 milliseconds to allow the system to key up before the audio is passed through.

If a person is transmitting at the far end and the local unit is transmitting, the two audio streams are mixed and the audio is simultaneously transmitted on both sites.

When the COS is inactive, then the -48 volts drop (subject to various delays such as hang time) and both repeaters turn off. As long as the system is within the hang time, communication between systems is instantaneous (subject to the built in voice delay).

If the REMOTE SHUT DOWN parameter is enabled, then if the sense is active, the product will immediately be disabled and stop transmitting voice over the repeater and over the E&M port.

LIMITED WARRANTY

Connect Systems Inc. (CSI) hereby warrants our products to be free from defective workmanship for a period of one year and defective parts for a period of one year from date of sale to the initial end user. This warranty applies only to the original consumer/end user purchaser of each FLEX SERIES CONTROLLER. During the first year of warranty, CSI will repair any of its products at no charge providing the defective unit is shipped prepaid and service is performed by CSI. Conventional prevailing labor and shipping charges will apply following the end of the first year. CSI, at its sole discretion, will replace defective parts on an exchange basis for the first year of ownership by the original purchaser. All shipping cost is the responsibility of the customer.

What is not covered by this limited warranty:

This warranty shall not apply, if, in our judgment the defects are caused by misuse, lightning strikes, customer modification, water damage, negligent use, improper installation, overloads caused by external voltage fluctuations, use of unregulated power supply, damage caused by transit or handling or an abusive treatment not in accordance with ordinary product use or the product serial number has been removed, altered, or defaced. **Specific Exclusion:** This warranty specifically excludes lightning protection devices (MOVs and phone line fuses) and transistors in the PTT (Push to Talk) circuitry. These components can only fail from external abuse.

THIS WARRANTY IS IN LIEU OF ALL OTHER WARRANTIES, STATEMENTS OR REPRESENTATIONS, AND UNLESS STATED HEREIN, ALL SUCH WARRANTIES, STATEMENTS OR REPRESENTATIONS MADE BY ANY OTHER PERSON OR FIRM ARE VOID. ALL IMPLIED WARRANTIES IN CONNECTION WITH THE SALE OF THIS EQUIPMENT, INCLUDING THE WARRANTY OF MERCHANTABILITY, SHALL BE OF THE SAME DURATION AS THE WARRANTY PERIOD STATED ABOVE. SOME STATES DO NOT ALLOW LIMITATIONS OF HOW LONG AN IMPLIED WARRANTY LAST, SO THE ABOVE LIMITATION MAY NOT APPLY TO YOU. IN THE EVENT OF PRODUCT FAILURE WHICH PROVES TO BE CAUSED BY A DEFECT IN WORKMANSHIP OF MATERIALS, YOUR SOLE REMEDY SHALL BE THE REPAIR OF THE DEFECT BY CSI OR ITS APPOINTED REPAIR STATION AS STATION AS STATED IN THIS WARRANTY, AND UNDER NO CIRCUMSTANCES SHALL CSI BE LIABLE FOR ANY LOSS OR DAMAGE, DIRECT, INCIDENTAL, OR CONSEQUENTIAL, ARISING OUT OF THE USE, OR INABILITY TO USE, THIS PRODUCT. SOME STATES DO NOT ALLOW THE EXCLUSION OR LIMITATION OF INCIDENTAL OR CONSEQUENTIAL DAMAGES, SO THE ABOVE LIMITATION OR EXCLUSION MAY NOT APPLY TO YOU.

If your new CSI product shall ever fail, contact Connect Systems Inc. Customer Service Dept. for repair and warranty information at (805) 642-7184

Note: Connect Systems Inc. reserves the right to render a modest service charge when returned units are found to be free of parts or workmanship defect(s) (i.e. operating to factory specification) within the first year of warranty. Such units will be returned freight collect to the sender, including the appropriate service charge.

REVISION HISTORY

September 1, 2003 (Version 1.00) First Release

September 12, 2003 (Version 1.01) Added E&M Parameters to allow more flexibility.

September 26, 2003 (Version 1.02) Released to production. Changed a few parameters and edited manual.

October 10, 2003 (Version 1.03) Added remote shut down feature. Added parameters 32 through 36.