TECHNICAL NOTE TN-1014

T2040 Control Head Communications Protocol

26th May 2005

Applicability

This Technical Note only applies to the T2040 product range and is only applicable to those integrators wanting to develop a solution that will communicate directly with the T2040 radio body in place of the T2040 Control Head.

1. Introduction

Sometimes it is desirable in certain applications and installations for either a custom made control head or a desktop PC to be used in place of the T2040 control head.
Some reasons for this requirement are listed below:
The radio body needs to be placed in a unique mounting arrangement that does not allow for user access to the control head.
A system integrator wishes to integrate the radio body with other user console equipment.
A system integrator wishes to interface the radio control with a PC application. This will allow the PC operator to only need to use their hands on the PC radio rather than the need to control a radio with their hands also.

The T2040 control head protocol is a Tait Only document that can be provided to system integrators on an all care no responsibility basis (see distribution level at the end of this document). No further modifications will be made to the control head protocol. Use of the protocol is taken by Tait to mean that the integrator has accepted these terms.

If a customer using the T2040 Control head protocol requires further development assistance, please contact the strategic sales team. (sst@tait.co.nz)

2. The Protocol Information

Physical layer:

4800 bit per second
no parity
8 data bits
one stop bit
5 V driver capable

Command Layers

Control Head Command Codes - To Head

ANNUNCIATOR_ON:	"a"; data "0" - "8"
ANNUNCIATOR_OFF:	"b" ; data "0" - "8"
CLEAR_DISPLAY:	"c" ; data "0" - "3
ENTIRE_DISPLAY:	"0"
ENTIRE_LCD:	"1"
LCD_CHARACTERS:	"2"
LCD_ANNUNCIATORS:	"3"
DISPLAY_ASCII_CHARACTER:	"d" ; data "A" - "Z", "0" - "9"; "*", " ", "_", "/","<", ">", "\", "+"
SET_ENTRY_MODE:	"e" ; data "0" - "2"
NON_SCROLLING:	"0"
SCROLLING:	"1"
SCROLLING_FROM_CURSOR_POSITION:	"2"
FLASH_DISPLAY_DIGIT:	"f" ; data "0" - "8"
UNFLASH_DISPLAY_DIGIT:	"g" ; data "0" - "8"
FLASH_ANNUNCIATOR:	"h" ; data "0" - "8"
UNFLASH_ANNUNCIATOR:	"i" ; data "0" - "8"
FLASH_LED:	"j" ; data "0" - "8"
UNFLASH_LED:	"k" ; data "0" - "8"
LED_ON:	"l" ; data "0" - "8"
LED_OFF:	"m" ; data "0" - "8"
SET_CURSOR_POSITION:	"n" ; data "1" - "8"
SET_BACKLIGHT_LEVEL:	"o" ; data "0" - "2"
BACKLIGHT_OFF:	"0"
BACKLIGHT_DIM:	"1"
BACKLIGHT_FULL:	"2"
AUXILIARY_OUTPUT_ON:	"p" ; data "0" - "3"
AUXILIARY_OUTPUT_OFF:	"q" ; data "0" - "3"
SEND_STATUS:	"s" ; data "0" - "2"
CURRENT_KEY_PRESSED:	"0"
PTT_AND_HOOK_STATUS:	"1"
AUXILIARY_INPUTS:	"2"
AUXILIARY_OUTPUT_ON:	"p" ; data "0" - "3"
AUXILIARY_OUTPUT_OFF:	"q" ; data "0" - "3"
SEND_STATUS:	"s" ; data "0" - "2"
CURRENT_KEY_PRESSED:	"0"
PTT_AND_HOOK_STATUS:	"1"
AUXILIARY_INPUTS:	"2"
LAMP_TEST:	"t" ; data "1" - "2"
TEST_ON:	"1"
TEST_OFF:	"2"
DEFINE_CUSTOM_CHARACTER:	"u" ; SPECIAL
DTMF_TONE_ON:	"w" ; data "0" - "9", "A" - "F"
DTMF_TONE_OFF:	"x"
DISABLE_CONTROL_HEAD:	"y"
ENABLE_CONTROL_HEAD:	"z"
ALL_DIGITS:	"0"
LEFT_DIGIT_POSITION:	1
LEFT_DIGIT_POSITION_ASCII:	"1"
RIGHT_DIGIT_POSITION:	8
RIGHT_DIGIT_POSITION_ASCII:	"8"
NUMBER_OF_LCD_DIGITS:	8

Command Codes (Cont)

LED definitions for the "j", "k", "l", & "m", commands

ALL_LEDS:	"0"
DESP_BUTTON_LED:	"1"
ALPH_BUTTON_LED:	"2"
UP_CURSOR_BUTTON_LED:	"3"
CLR_BUTTON_LED:	"4"
STAT_BUTTON_LED:	"5"
FCN_BUTTON_LED:	"6"
DOWN_CURSOR_BUTTON_LED:	"7"
SET_BUTTON_LED:	"8"

Annunciator definitions for the "a", "b", "h", & "i", commands

ALL_ANNUNCIATORS:	"0"
BUSY_ANNUNCIATOR:	"1"
TX_ANNUNCIATOR:	"2"
SCAN_ANNUNCIATOR:	"3"
WAIT_ANNUNCIATOR:	"4"
GO_ANNUNCIATOR:	"5"
DECIMAL_POINT_ANNUNCIATOR:	"6"
UP_DOWN_ANNUNCIATOR:	"7"
SVC_ANNUNCIATOR:	"8"

Command Codes (Cont)	**Keyboard Codes – From Head**

Keyboard Codes – From Head

Alphanumeric Keypad

KEY_0_CODE:	"K"
KEY_1_CODE:	"A"
KEY_2_CODE:	"B"
KEY_3_CODE:	"C"
KEY_4_CODE:	"D"
KEY_5_CODE:	"E"
KEY_6_CODE:	"F"
KEY_7_CODE:	"G"
KEY_8_CODE:	"H"
KEY_9_CODE:	"I"
KEY_STAR_CODE:	"J"
KEY_HASH_CODE:	"L"

Control keys

STAT_KEY_CODE:	"M"
DESP_KEY_CODE:	"N"
FCN_KEY_CODE:	"O"
ALPH_KEY_CODE:	"P"

User controls

MIC_OFF_HOOK_CODE:	"U"
MIC_ON_HOOK_CODE:	"V"
AUX_INPUT_1_OPEN:	"W"
AUX_INPUT_1_CLOSED:	"X"
PTT_PRESS_CODE:	"Y"
PTT_RELEASE_CODE:	"Z"
AUX_INPUT_2_OPEN:	"["
AUX_INPUT_2_CLOSED:	"\"

Others

KEY_RELEASE:	" " ; <SPACE>
CONTROL_HEAD_RESET_CODE:	"^"

Compliance Issues	None

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3.   Issuing Authority

Name and Position of Issuing Officer	Barry Crates Technical Support Team Leader – Terminals
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