CTI METEOR PLUS

Single line Caller ID device
with audio recording capability

General Information
for
Software Developers

(Version 2, July 2014)

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Note: This version 2 manual is for the CTI Meteor Plus units purchased on or after 22 July 2014. For units purchased prior to this date, please see the version 1 manual dated Oct 2013.

1.0   INTRODUCTION

CTI Meteor Plus is a device for decoding the Caller ID from the telephone line and presenting it on a serial Port of a PC. It also detects dialled digits and the telephone going on/off hook. With the right PC application the CTI Meteor Plus will allow one to record the following details from a telephone call:

> Number dialled or Caller ID
> Time & date of call
> Whether it was answered
> How long the telephone rang
> How long the call lasted
> What was said during the conversation (requires accessory audio lead)

The following information describes the operation of the device and gives some details about the presentation of the data. This will allow software developers to provide turn-key applications. Some information regarding Caller ID is also presented.

ActiveCID.Net is a .Net Framework 3.5 Component designed for Visual Studio.Net that interfaces with the CTI Meteor Plus and makes its functionality easily accessible from other applications.

ActiveCID.Net allows both incoming and outgoing calls to be monitored and recorded. Information for incoming calls includes the full BT & cable caller display message and additional timing and status information that may be used to track the progress of the entire call. Information provided for outgoing calls is limited to the start time, end time and the phone number dialled. ActiveCID.Net can be purchased from the Crucible Technologies website.

2.0   SPECIFICATION

There are four major types of Caller ID to be found around the world. They can be categorised as follows:
> US FSK: Ring, FSK data, Ring.
> ETSI FSK: Ring, FSK data, Ring.
> BT FSK: Line reversal, FSK data, Ring
> ETSI DTMF: Ring, DTMF data, Ring

The CTI Meteor Plus is designed to work with all of the FSK data formats ie US FSK, ETSI FSK and BT FSK. It can do this because it detects ring or line reversal signal as the start of the Caller ID sequence.

There are minor differences between the FSK types as to how the data is formatted. However, the CTI Meteor Plus does not try to interpret the data it receives from the PSTN. It checks the data for errors by using the checksum and then passes it as received to the PC. In this way, any differences between the FSK types can be resolved with the application running on the PC.

The CTI Meteor Plus detects and reports the following events on the telephone line:
> Ring
> Line reversal
> Caller ID
> Off-hook (from any extension)

On-hook (from any extension)
DTMF dialling (from any extension)

3.0   HARDWARE

The CTI Meteor Plus is powered from the RS232 interface. When an appropriate application is run on the PC, the red LED comes on to indicate that the unit is ready to receive messages. When a call comes in, the red LED flashes to indicate ringing. The green LED flashes briefly to indicate that data is being received. This can be a useful diagnostic, e.g. to check that the service has actually been switched on by the service provider or that the telephone line is connected. When an extension telephone is off-hook, the red LED flashes continuously.

4.0   TELEPHONE CONVERSATION RECORDING

An accessory audio lead is available that allows the CTI Meteor Plus to be connected to the sound card of the PC. A software application can then record all conversations to the hard disk. The serial port information will allow the application to decide when to start and stop the conversation.

5.0   EXAMPLES OF DATA

The serial data is presented at a baud rate of 1200, with 1 start and 1 stop bit. The data is sent whenever there is activity on the telephone line. The CTI Meteor Plus does not receive any data from the PC. Below are examples of the data that is sent:

5.1   Ring with no Caller ID.

EVENT	MESSAGE
Ring	OFF-LINE<cr><lf><00H>
Ring	OFF-LINE<cr><lf><00H>

Note: It is up to the PC application to determine whether the OFF-LINE data represents ringing. For example, if the unit is in use in the UK, the silence between the ring bursts is 2 seconds. If there is a gap, of say less than 3 seconds between the ringing, then the OFF-LINE messages can be interpreted as reporting ringing. If the gap is more than 3 seconds, then it may be odd transients, or line reversals that have caused the OFF-LINE to be generated.

5.2   Caller display and ringing followed by answer and then hang-up

EVENT	MESSAGE
Caller display	Caller display data
Ring	OFF-LINE <cr><lf><00H>
Ring	OFF-LINE <cr><lf><00H>
Answer	ON-LINE <cr><lf><00H>
Hang-up	OFF-LINE <cr><lf><00H>

Note: The fact that call answer is reported allows the PC application to monitor answered and unanswered calls. If the telephone conversation is being recorded, then this could start at the point of answer.

5.3   Off-hook, dial and hang-up

EVENT	MESSAGE
Off-hook	ON-LINE <cr><lf><00H>
Dial 653265	653265
Hang-up	OFF-LINE <cr><lf><00H>

Note: The reporting of outward dialled digits allow logging of all calls with duration.

6.0   CALLER ID DATA STRUCTURE

Within the FSK data types, there are two types of message structures. The one used in Europe (including the UK) and most of the US is known as the Multiple Data Message Format, MDMF, and is described below. The other message structure is known as the Single Data Message Format, SDMF, and is not described here. It is only used in some parts of the US.

The UK MDMF Caller ID message typically consists of the following.

Component	Length	Notes
Message type	1 byte	Always sent
Message length	1 byte	Always sent. Number of bytes in the message excluding the Checksum
Parameter type	1 byte	At least 1 sent
Parameter length	1 byte (=X)	Number of bytes to follow for the Parameter
Parameter data	X bytes	Information content
Checksum	1 byte	Always sent. For message error checking

The Parameter block (Parameter type, length and data) may be repeated.

Message type
For valid Caller ID this will in most instances be 80H. For message waiting 82H is sent but this is little used. In general, if 80H is not received from the serial port, the whole Caller ID string can be discarded.

Message length
This is a total of all the bytes to follow, except the Checksum. It is useful as an error check.

Parameter Block
This is the actual payload of the Caller ID data. There are a number of parameter typess that are defined. The most important ones are outlined below.

6.1   Time & Date = 01H
This parameter is always sent with a length of 8 and is structured as follows. (This can be assumed to be "real time" accurate to within 1 minute and can be used to update the PC clock if required.)

First 2 bytes   Month
Next 2 bytes   Day
Next 2 bytes   Hours
Last 2 bytes   Minutes

6.2   Calling Line Number=02H
The maximum length of the number sent is 18 characters.
Spaces and/or dashes can be sent as delimiters.

6.3   Reason for absence of number = 04H
This parameter is set as follows:
WITHHELD=50H ('P' ASCII)
UNAVAILABLE=4FH ('O' ASCII)

6.4   Calling Line Name = 07H
This parameter was initially designed to send the callers name. However, international calls have "INTERNATIONAL" in this field, and some payphone calls have "PAYPHONE" in this field.

6.5   Call Type = 11H
This parameter is only sent for ETSI FSK and BT FSK. In general it can be ignored. There are three call types defined:
Voice call   01H
Ring back when free   02H
Message waiting   81H

Note: The parameters can be sent in any order.

7.0   MESSAGE EXAMPLE

Byte sent (decimal)	Description
128	**Message Type**
34	Message Length
17	**Call Type Parameter**
1	Parameter length
1	Call type = 1 (Voice Call)
1	**Date & Time Parameter**
8	Parameter length = 8
49	1
48	0 (Month = 10)
49	1
48	0 (Day = 10)
48	0
51	3 (Hour = 3)
51	3
48	0 (Minutes = 30)
2	**Calling Number Parameter**
10	Parameter length = 10
49	1
50	2
51	3
52	4
53	5
54	6
55	7
56	8
57	9
48	0 (Number = 1234567890)
7	**Calling Name Parameter**
7	Parameter length = 7
80	P
69	E
84	T
69	E
82	R
32	(Space)
82	R
161	**Checksum**