
***** Protocol for downloading lookup files to CipherLab terminals *****

Note : All commands or records sent to /or received from the CPT-7xx terminals should be ended with a return character (0x0d).

1. Send the "CIPHER" command to CPT-7xx terminal and wait for return.
2. If the terminal returns "ACK", then it is ready for receiving lookup data from the PC.
3. Send lookup data to terminal record by record. Each record should be ended with 2 bytes of checksum. The checksum is calculated according to the following rules:
 - A. Sum up the record data byte by byte.
 - B. Devide the sum by 256 to get the first byte checksum value. If this value happens to be 13 (the return character: 0x0d), change it to 14 (0x0e).
 - C. The remaining of the above calculation is the second byte checksum value. If it happens to be 13, change it to 14.
4. If the terminal returns "ACK", send next record to the terminal, otherwise, re-send the same record to the terminal. Repeat the same procedures until all the data is successfully transmitted.
5. Send the "OVER" command to the CPT-7xx terminal to stop this communication.

***** Protocol for receiving transaction data from CipherLab terminals *****

Note : All commands or records sent to or received from the CPT-7xx terminals should be ended with a return character (0x0d).

1. Send the "READ" command to the CPT-7xx terminal and wait for return.
2. If the terminal returns "ACK", then it is ready to send data to PC.

3. The format of each record received from the terminal is as follows,
 - A. The first byte is a sequence count rotated from 0 to 9. It's purpose is to ensure the correct order of data transmission.
 - B. The last two bytes are the checksum values. The checksum is calculated by adding up the sequence count and all the data bytes.
 - C. Devide the sum calculated above by 256 will get the last byte checksum value. If this value happens to be 13 (the return character: 0x0d), change it to 14 (0x0e).
 - D. The remaining of the above calculation is the first byte checksum value. If it happens to be 13, change it to 14.
 - E. Please note that the checksum byte-order for this protocol is different to that of downloading lookup files.
4. If the received data is correct, the PC program should return "ACK" to the CPT-7xx terminal so that it can send the next record.
5. If the received data is not correct, the PC program should return "NAK" to the CPT-7xx terminal so that it can resend the record.
6. If the received data is duplicated (i.e. the sequence count is same as previous record), then the PC program should discard this record but still return "ACK" to the CPT-7xx terminal so that it can send the next record.
7. Repeat the above procedures until receiving the "OVER" command from the CPT-7xx terminal.