Documentation of the serial communication

for TECO Coatron X Family

with

Tecam Smart Rev. 7.07

1.0 Protocol TECAM SMART

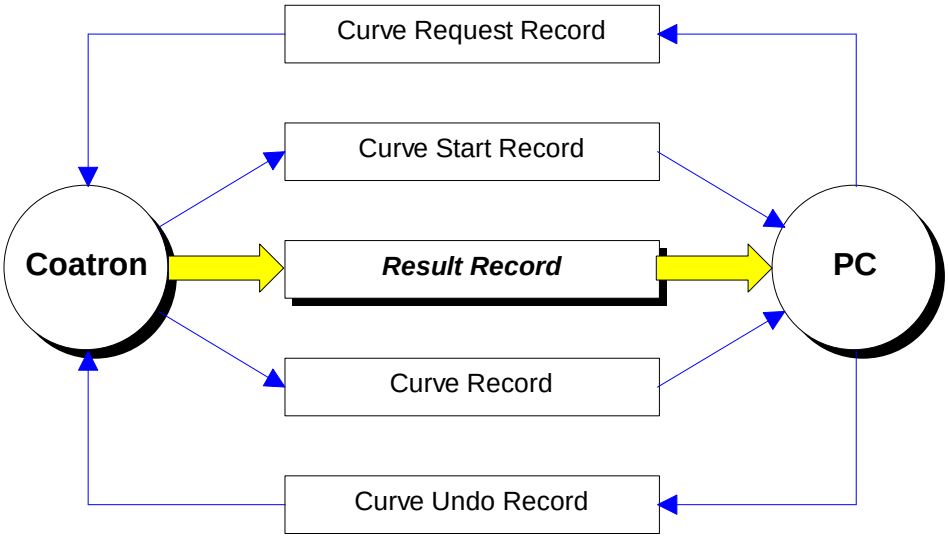
1.1 General:

Protocol: TECAM = Teco Coatron Monitoring
Instruments: Coatron X Family
Interface: 115200 Baud , no parity , 8 bit . 1 stop bit

ASCII command control characters:

STX	start of transmission	asc(2)
ETX	end of transmission	asc(3)
ACK	transmission ok	asc(6)
NAK	transmission failed	asc(21)
TAB	vertical tabulator	asc(9)
LF	line feed	asc(10)
CR	carriage return	asc(13)
DLE	idle	asc(16)

1.2 Overview of records and principle:



1.3 Establish communication:

The result record is always transmitted from the COATRON.

However the curve record transmission must be activated from PC. For this send curve enable or disable record (see below)

1.4 The curve enable record:

enables curve transmission !

Definition: <DLE &"4" CR>

DLE = asc(16)
CR = asc(13)

1.5 The curve disable record

disables curve transmission !

Definition: <DLE &"3" CR>

DLE = asc(16)
CR = asc(13)

1.6 The curve start record

Indicates that a new measurement had been started.
The transmission need to be enabled by the "Curve Request Record".

Definition:
<STX &"P"><Optic><LF & ETX>

Fields:

Delimiter:	asc(9) = tabulator
<STX & "P">	Record header ; STX=asc(2)
<Optic>	optic cannel 1-4 (channel 1 = 0)
<LF & ETX>	Record end; LF=asc(10) , ETX=asc(3)

1.7 The curve record

Transmission of actual optical density every second
The transmission need to be enabled by the "Curve Request Record".

Definition:
<STX &"O"><Optic><mOD ><LF & ETX>
(sent every second)

Fields:

Delimiter:	asc(9) = tabulator
<STX & "O">	Record header ; STX=asc(2)
<Optic>	optic cannel 1-4 (channel 1 = 0)
<mOD>	milli optical density
<LF & ETX>	Record end; LF=asc(10) , ETX=asc(3)

Example: Signal = 0,999 E in channel 1--> <STX "O"><0><999><LF & ETX>

1.8 The barcode record

Transmission of a barcode (max 16char)
Definition:
< DLE &"b" & barcode & CR>

Fields:

DLE = asc(16)
BARCODE = 1- 16 char
CR = asc(13)

Example: Barcode 1234 --> <DLE "b" 1234 CR>

1.9 The system info record

Receive SIN+PIN from instrument. Required to login into TECO ticket system www.teco-reg.com .

Definition:
<STX &"O"><SIN><PIN><LF & ETX>

Fields:

Delimiter:	asc(9) = tabulator
<STX & "S">	Record header ; STX=asc(2)
<SIN>	system ident number
<PIN>	passport ident number
<LF & ETX>	Record end; LF=asc(10) , ETX=asc(3)

1.10 The result record

Message structure: STX Message ETX Checksum

Checksum calculation algorithm:
XOR of each character in the message inclusive STX + ETX

Field Delimiter: asc(9) = tabulator

Handshaking: TECAM must acknowledge only transmission errors with NAK as STX NAK ETX (2 21 3)

Fields:

<STX & "R">	Record header ; STX=asc(2)
<Optic>	optic cannel 1-4 (channel 1 = 0)
<S/N>	system identifier
<Error>	Result errors: 'X' = double values > 15% 'T' = Temperature not 36-38°C 'E' = reagent expired 'S' =optical signal low
<Date>	dd.mm.yyyy or yyyy/mm/dd
<Time>	mm:ss
<PID>	Patient ID Max. 16char, mostly coming from barcode
<SID>	Sample ID auto number 1,2,3, coming from instrument
<Flags>	Result flags : ‚F' = high fibrinogen ‚f' = low fibrinogen ‚>', ‚<' = result greater,smaller
<Test>	name of test ("PT","APTT",…)
<Res1>	12.5
<Unit1>	"s"
<Res2>	100.0
<Unit2>	"%"
<Res3>	1.00
<Unit3>	"INR"
<LF & ETX>	Record end; LF=asc(10) , ETX=asc(3)

Examples:

STX & R|
0104000275|0| |27.11.2019|04:55|1251|16|PT|F|13.5|s|90.1|%|1.04|INR|
<Lf><ETX> Vertical checksum='8' (ASCI=56)