



Application Note: WAN16-0028

Application note:

Titel: RS232 Protokoll WT 1 / WT 1H / WT 2M - EXTERN Rev. 03
Title: RS232 Protocol WT 1 / WT 1H / WT 2M - INTERNAL

Datum: 13.07.2018 **Bearbeiter:** D. Schoenau
Date: *Editor:*

Beschreibung:
Description:

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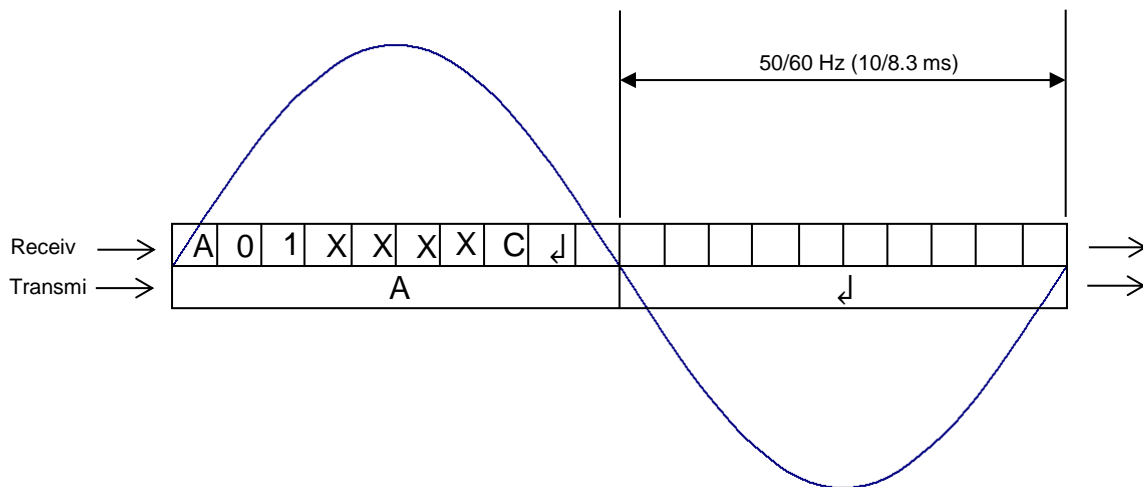
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Application note:

1. Timing

9600 baud, 8 bit ASCII, no parity, 1



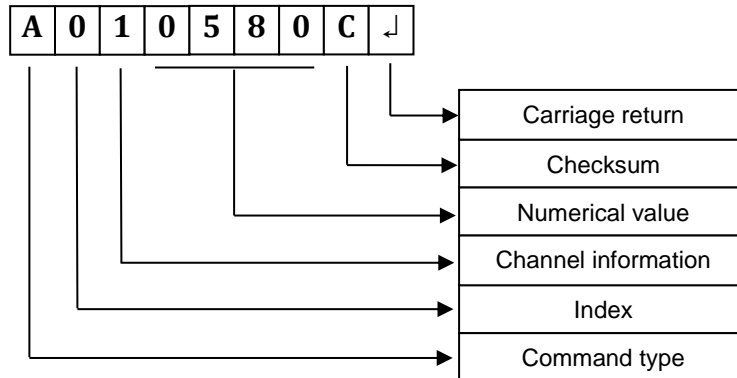
For 50 Hz:

Eight bytes of data (ASCII characters) + carriage return are transmitted and received.
A maximum of 10 values per second are transmitted (one ASCII character per 10 ms results in 10 complete data records).
100 values per second are received via UART interrupt (1 ms for 1 byte (ASCII characters) results in 100 complete data records).

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Application note:

2. Structure of the data string



- Command type : Specifies the type of data record.
- Index : Reference number in the data record
- Channel information : Channel number
- Numerical value : Four-digit numerical value
- Checksum : Checksum representing the preceding eight ASCII characters

ASCII characters	Decimal code
A	65
0	48
0	48
1	49
0	48
5	53
8	56
0	48
Checksum	159

- Carriage return : Confirms input



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Application note:

3. Protocol

Z = Channel **XXXX = Value** **C = Checksum**

PC requests information:

Station outputs the following information:

A ↓ Output AD values

A0Z↓
A1Z↓
A2Z↓
A3Z↓
A4Z↓
A5Z↓
A6Z↓

A0ZXXXXC↓ Measured value for PT20
A1ZXXXXC↓ Measured value for PT100
A2ZXXXXC↓ Measured value for PT1000
A3ZXXXXC↓ Measured value for THERMO1
A4ZXXXXC↓ Measured value for THERMO2
A5ZXXXXC↓ Measured value for resistance 1 k
A6ZXXXXC↓ Measured value for resistance 43 k

D ↓ Output AD values

D0Z↓
D1Z↓
D2Z↓
D3Z↓
D4Z↓

Measured with source of measuring current
D0ZXXXXC↓ Measured value for Heating_Pin2
D1ZXXXXC↓ Measured value for Heatwire_Pin7
D2ZXXXXC↓ Measured value for Heating_Pin7
D3ZXXXXC↓ Measured value for Heating wire_P7_HAP2
D4ZXXXXC↓ Measured value for Heating wire_P2_HAP2

I ↓ Output actual values

I0Z↓
I1Z↓
I2Z↓
I3Z↓
I4Z↓
I5Z↓
I6Z↓
I7Z↓
I8Z↓

I0ZXXXXC↓ Actual value for PT20 (1/10 °C)
I1ZXXXXC↓ Actual value for PT100 (1/10 °C)
I2ZXXXXC↓ Actual value for PT1000 (1/10 °C)
I3ZXXXXC↓ Actual value for THERMO1 (1/10 °C)
I4ZXXXXC↓ Actual value for THERMO2 (1/10 °C)
I5ZXXXXC↓ Actual value for controller (1/10 °C)
I6ZXXXXC↓ Actual value for display (filtered °C/°F)
I7ZXXXXC↓ Actual value (filtered 1/10 °C)
I8ZXXXXC↓ Actual value for resistance (mOhm)



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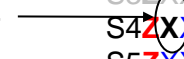
P ↓ Output station parameters

P0*↓	P0XXXXXC↓	Key code (three-digit)
P1*↓	P1XXXXXC↓	Station ID (three-digit)
P2*↓	P2XXXXXC↓	HAP_On_Time (in seconds)
P3*↓	P3XXXXXC↓	VAC_Off_Time (in seconds)
P4*↓	P4XXXXXC↓	VAC_On_Time (in seconds)
P5*↓	P5XXXXXC↓	Airflow (%)
P6*↓	P6XXXXXC↓	Active channel
P7*↓	P7XXXXXC↓	Pick_Up_Flow (%)
P8*↓	P8XXXXXC↓	Manometer level (-mbar)
P9*↓	P9XXXXXC↓	CAL-AD value_manometer
P:*↓	P:XXXXXC↓	AD value_manometer (query only)
P;*↓	P;XXXXXC↓	AIR1
P<*↓	P<XXXXXC↓	AIR2
P=*↓	P=XXXXXC↓	AIR3
P>*↓	P>XXXXXC↓	Display brightness 0-100%
P?*↓	P?XXXXXC↓	Display contrast 0 - 32
P@*↓	P@XXXXXC↓	Measured value for voltage 24 V in 1/10 V (query only)
P^*↓	P^*XXXXXC↓	Calibrationstatus (0 = OK)
P_*↓	P_*XXXXXC↓	Insidetemperatur (1/10 °C)

S ↓ Output target values

S0Z↓	S0ZXXXXC↓	Target temperature (1/10 °C)
S1Z↓	S1ZXXXXC↓	Fixed temperature 1 (1/10 °C)
S2Z↓	S2ZXXXXC↓	Fixed temperature 2 (1/10 °C)
S3Z↓	S3ZXXXXC↓	Fixed temperature 3 (1/10 °C)
S4Z↓	S4ZXXXXC↓	Setback time (min)
S5Z↓	S5ZXXXXC↓	Standby temperature (1/10 °C)
S6Z↓	S6ZXXXXC↓	Offset (1/10 °C)
S7Z↓	S7ZXXXXC↓	Temperature window (1/10 °C)
S8Z↓	S8ZXXXXC↓	Temperature in centre of window (1/10 °C)
S9Z↓	S9ZXXXXC↓	Auto-off time (min)
S:Z↓	S:ZXXXXC↓	Fixed temp1 in centre of window (1/10 °C)
S;Z↓	S;ZXXXXC↓	Fixed temp2 in centre of window (1/10 °C)

Setback on-
flag





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Application note:

Y ↓ Output program version

YxxXXXXC ↓ **XXXX** Program version
xx Station index

- 01 WD1
- 02 WD2
- 03 WD1M
- 04 WD2M
- 05 WD1*
- 06 WD2*
- 07 WD1M*
- 08 WD2M*
- 20 WR2
- 30 WR3M
- 31 WR3M
- 32 WR3ME
- 50 WT 1
- 51 WT 1H
- 52 WT 2M

X ↓ Tool type

X0Z ↓

X0ZXXXXC ↓ 0000 No tool
 0001 PT20 tool
 0002 PT100 tool
 0003 PT1000 tool
 0004 WMRP tool
 0005 TWEEZER tool
 0006 HAP1 tool
 0007 HAP200 tool

X1Z ↓

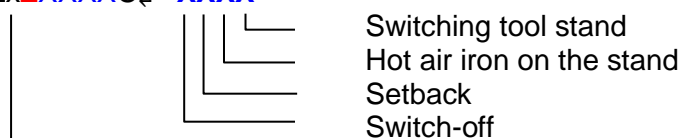
X1ZXXXXC ↓ 0000 No tool
 0001 wp120
 0002 wp200
 0003 wp65
 0004 wp80
 0005 wtp90
 0006 lr21
 0007 wsp150
 0008 wmrp
 0009 wmr
 0010 dsx80
 0011 dsx120

↓ Power class

#0ZXXXXC ↓ Power of the connected tool in watts

Z ↓ Output channel status

ZxZXXXXC ↓ **XXXX**



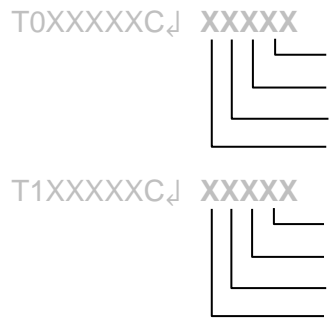
x Active channel (0 not active; 1 active)



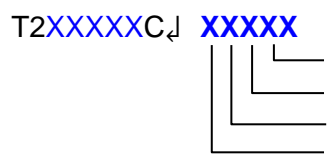
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Application note:

T ↓ Output button status

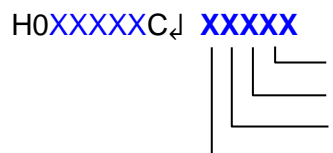


UP button
DOWN button
 T1 button
 T2 button
 T3 button
 AIR button
 I.II.III button
 PICK-UP button



AIR/START button
 MENU button
 UP_T2 button
 DOWN_T1 button
 EXIT button

H ↓ Output station status
 Hz)



–Mains frequency (0 = 50 Hz, 1 = 60 Hz)
 Lock
 Act. temperature curve (0=°C,1=°F)
 Remote

~ ↓ Read the operating hour counter MAXIMUM is at 32,500 hours



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Application note:

Query/specify individual values:

PC requests information:

A61↓
I12↓
K11↓
N21↓
P1X↓
S21↓

Station outputs the following information:

A61XXXXC↓ Measured value for resistance 43 k ch1
I12XXXXC↓ Actual value for controller (1/10 °C) ch2
K11XXXXC↓ Upper AD value for PT100 channel 1
N21XXXXC↓ Lower AD value for PT1000 channel 1
P1XXXXXC↓ Key code
S21XXXXC↓ Fixed temp. no. 2 channel 1

PC passes on information:

C ↓ Set °C
E ↓ Switch channel to ON
F ↓ Set °F
L ↓ Lock
U ↓ Unlock
J ↓ Remote on
M ↓ Remote off
O ↓ Switch channel to OFF
Q ↓ Triac test

R ↓ FSE
R01↓ FSE °C test bench
R02↓ FSE °F test bench

Station responds with ↓ :

↓
↓
↓
↓
↓
↓
↓
↓
↓ (only when no tool is connected)
↓ (All triacs on; a full wave)

↓
↓
↓
↓
↓
↓
↓
↓
↓

W ↓ Channel change
+ ↓ Switch on pick-up pump
- ↓ Switch off pick-up pump
(↓ Switch on AIR/VAC pump
) ↓ Switch off AIR/VAC pump
{ ↓ HAP button mode (unlocked)
} ↓ HAP button mode (locked)

PC passes on individual value: (lower case leading character!)

No response.

s014500C↓

Target temperature (1/10 °C)

n41XXXXC↓

Measure and save
lower AD value for THERMO2

Assigned characters:

ABCDEFGHIJKLMNOPQRSTUVWXYZ+-()#{}~