



Tarfala Research Station automatic weather station, 1998

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1 Instrumentation

The TRS met station consisted of the following instruments during 1998

Sensor	Serial number	Remark
Pt100		in Stevenson screen
Pt100		in Young screen
T/Rh		at 2 m (Young screen)
Young Wind Monitor		at 3 m
LiCor Li-200SB pyranometer		at 2 m
Tipping bucket precipitation gauge		at 2 m
Ventilated T/Rh		at 2 m
CR10 data logger		

2 Notes on the station data

- Precipitation added 29 July, 15:30, replacing SR50 in column (10)
- Ventilated T/Rh sensor added on 6 August 15:00 in columns 14 and 15
- The pyranometer appears to have experienced problems or has been programmed wrong at an undocumented reprogramming in September. Values after 1998-11-28 19:00:00 could be a new sensor since offset in assumed December program have not changed.

3 Data coverage

- General data gap
1998-04-18 22:00:00 to 1998-05-11 16:00:00
- Radiation data missing from
1998-09-11 18:00:00 to 1998-11-28 18:00:00
- Precipitation data missing from
1998-01-01 01:00:00 to 1998-07-29 15:00:00 (sensor installed in July)
- Temperature data missing from
1998-08-06 15:00:00 sensor installed and functioning
1998-09-11 18:00:00 to 1998-10-24 18:00:00 (ventilated sensor)
1998-12-01 16:00:00 to 1998-12-01 17:00:00 (ventilated sensor)
- Wind data missing from
1998-08-06 15:00:00 to 1998-08-08 16:00:00 (wind direction)
- Data missing from daily values 1998-01-02 00:00:00 to 1998-07-29 00:00:00 (Precipitation)
1998-09-12 00:00:00 to 1998-10-25 00:00:00 (Ventilated T/Rh) 1998-09-12 00:00:00 to 1998-11-29 00:00:00 (Radiation)

4 Notes on data storage

Example of hourly data (representing reprogramming stages during summer):

```
101,1998,185,1300,3.052,2.988,3.007,88.8,1.374,154,.152,206.9,NaN,NaN
101,1998,210,1500,10.11,10.15,10.36,70.5,1.295,280.6,.123,266.6,0
101,1998,224,1300,4.249,4.115,4.02,85.4,2.559,141.7,0,63.7,0,5.081,84.1
```

Column	Example data	Description
01:	101	ID
02:	1998	Year
03:	185	Day of Year
04:	1300	hour-minute (hhmm)
05:	3.052	2 Pt100 T in Stevenson screen)
06:	2.988	3 T in Young screen
07:	3.007	4 Pt100 in new Young screen
08:	88.8	5 Rh in Young screen
09:	1.374	6 Mean horizontal wind speed
10:	154	7 resultant mean wind direction
11:	.152	8 Standard deviation of wind direction
12:	206.9	9 Global radiation
13:	NaN	10 Precipitation
14:	NaN	11 ventilated T
15:	-	12 ventilated Rh

Example of daily data summaries (representing reprogramming stages during summer):
124,1998,185,2400,2.217,2.156,2.114,91.4,6.028,1312,.303,210,4.087,1147,1.253,
149,99.3,NaN,NaN,13.91
124,1998,211,2400,7.88,7.95,7.87,86.4,9.12,1609,6.115,444,7.77,1819,2.053,93.9,
28.04,20.96,13.92
124,1998,221,2400,6.323,6.226,6.185,77.4,9.18,1411,4.184,222,7.11,1311,2.016,
245.8,101.5,.64,13.91,7.31,78.1

Column	Example data	Description
01:	124	ID
02:	1998	Year
03:	221	Day of Year
04:	2400	hour-minute (hhmm)
05:	6.323	2 Daily average T in Stevenson screen)
06:	6.226	3 Daily T from T/Rh in Young screen
07:	6.185	4 Daily T from T/Rh in Young screen
08:	77.4	5 daily average humidity in Young screen
08:	9.18	6 Daily maximum temperature in Young screen
10:	1411	7 hhmm for maximum daily temperature
11:	4.184	8 Daily minimum temperature in Young screen
12:	222	9 hhmm for minimum daily temperature
13:	7.11	10 Maximum wind speed
14:	1311	11 hhmm for maximum wind speed
15:	2.016	12 Average wind speed
16:	245	13 Average wind direction
17:	101.5	14 Incoming radiation
18:	.64	15 Totalized precipitation
19:	13.91	16 Battery voltage
20:	7.31	17 Average ventilated temperature
21:	78.1	18 Average ventilated relative humidity

Example of 'Synoptic' output:
103,1998,185,1300,3.808

Column	Example data	Description
01:	103	ID
02:	1998	Year
03:	185	Day of Year
04:	1300	hour-minute (hhmm)
05:	12.41	Pt100 in Young screen

5 Data files and content

TRSmnet1998.csv Raw data file

TRS_met_1998_Precipitation.csv

Date-time, Precipitation

1998-01-01 01:00:00,NaN

TRS_met_1998_Radiation.csv

Date-time, Global radiation

1998-01-01 01:00:00,-14.38

TRS_met_1998_Relative_humidity.csv

Date-time, hourly average Rh, ventilated Rh

1998-01-01 01:00:00,85.1,0.0

TRS_met_1998_Temperature.csv

Date-time, hourly average T (Stevenson), hourly average T (Young), hourly average T/Rh (Young), ventilated (T/Rh)

1998-01-01 01:00:00,-8.65,-8.60,-8.48,NaN

TRS_met_1998_Wind.csv

Date-time, Mean horizontal wind speed, resultant mean wind direction

1998-01-01 01:00:00,2.8,145.5,0.0760

TRS_met_1998_Daily_data.csv

Data columns follows description above

1998-01-02 00:00:00,-9.73,-9.68,-9.48,85.7,-7.27,310,-11.03,820,12.0,2312,4.9,147.6,
-14.3,NaN,NaN,13.9,0.0

TRS_met_1998_Synop_data.csv

Date-time, sample temperature

1998-01-01 01:00:00,-7.76

The data collected during 1998 is summarized the figure 1 and Table 1.

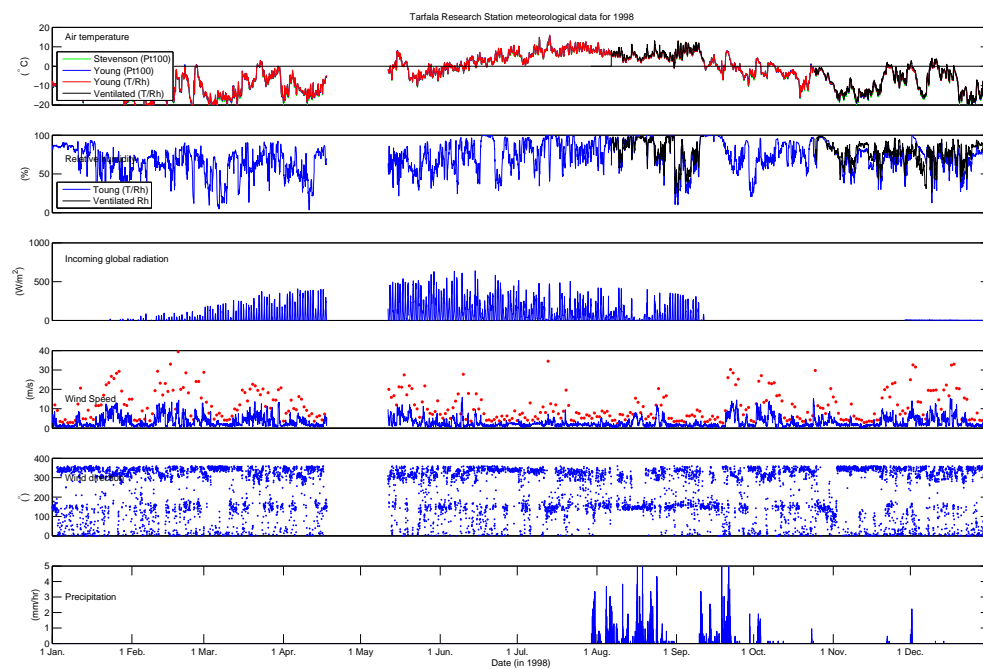


Figure. 1. Summary of meteorological data from Tarfala Research Station automatic weather station 1998.

Table. 1. Monthly averages of meteorological parameters from the Tarfala Research Station automatic weather station 1998.

	Jan.	Feb.	Mar.	Apr.	May	Jun.	Jul.	Aug.	Sep.	Oct.	Nov.	Dec.
Average air temperature (Stevenson)												
(°C)	−10.1	−12.8	−10.9	−12.2	−2.5	2.0	7.8	5.6	2.3	−4.1	−10.2	−8.3
<i>n</i>	743	671	767	429	487	743	742	767	743	767	743	767
Average air temperature (Young)												
(°C)	−9.9	−12.6	−10.6	−11.9	−2.4	2.2	7.9	5.5	2.4	−4.0	−9.9	−8.1
<i>n</i>	743	671	767	429	487	743	742	767	743	767	743	767
Average air temperature												
(°C)	−9.7	−12.4	−10.4	−11.6	−2.4	2.2	7.8	5.5	2.4	−3.9	−9.7	−8.0
<i>n</i>	743	671	767	429	487	743	742	767	743	767	743	767
Positive degree sum												
(°C)	0	7	49	—	—	2026	5883	4235	2628	194	14	117
<i>n</i>	0	13	45	—	—	533	742	761	459	111	33	72
Average relative humidity												
(%)	70.2	65.0	58.8	57.4	61.8	75.0	82.6	86.3	71.5	77.0	67.5	69.6
<i>n</i>	743	671	767	429	487	743	742	767	743	767	743	767
Average incoming global radiation												
(W m ^{−2})	−13.1	−3.8	39.8	83.2	148.6	133.4	74.6	43.1	59.5	—	—	3.1
<i>n</i>	743	671	767	429	486	743	742	767	281	—	—	767
Global incoming energy sum												
(W m ^{−2})	119	4419	36450	38189	—	100283	57734	37638	18674	—	—	2414
<i>n</i>	13	133	316	233	—	580	499	407	129	—	—	767
Totalized precipitation												
(mm)	—	—	—	—	—	—	29.92	227.36	137.76	19.20	1.28	9.60
<i>n</i>	—	—	—	—	—	—	57	767	743	767	743	767
Average wind speed												
(m s ^{−1})	3.5	3.8	3.7	2.5	4.0	2.3	2.1	2.5	2.6	3.5	2.6	4.1
<i>n</i>	743	671	767	429	487	743	742	767	743	767	743	767

Logger program

5.1 Program valid until 29 July (1997 program)

```
;{CR10}
*Table 1 Program
  01: 10.0000   Execution Interval (seconds)

1:  Batt Voltage (P10)
  1: 10        Loc [ Batteri_V ]

2:  If (X<=>F) (P89)
  1: 10        X Loc [ Batteri_V ]
  2: 4         <
  3: 9.7       F
  4: 0         Go to end of Program Table

3:  3W Half Bridge (P7)
  1: 1         Reps
  2: 33        25 mV 50 Hz Rejection Range
  3: 1         SE Channel
  4: 1         Excite all reps w/Exchan 1
  5: 2100      mV Excitation
  6: 21        Loc [ Rs_Ro_T1 ]
  7: 100       Mult
  8: 0.0000    Offset

4:  3W Half Bridge (P7)
  1: 1         Reps
  2: 33        25 mV 50 Hz Rejection Range
  3: 3         SE Channel
  4: 2         Excite all reps w/Exchan 2
  5: 2100      mV Excitation
  6: 22        Loc [ Rs_Ro_T2 ]
  7: 100.00    Mult
  8: 0.0000    Offset

5:  Temperature RTD (P16)
  1: 2         Reps
  2: 21        R/R0 Loc [ Rs_Ro_T1 ]
  3: 1         Loc [ T1_bur__C ]
  4: 1         Mult
  5: 0.0000    Offset

6:  Do (P86)
  1: 41        Set Port 1 High

7:  Volt (Diff) (P2)
  1: 2         Reps
  2: 35        2500 mV 50 Hz Rejection Range
  3: 3         DIFF Channel
  4: 3         Loc [ T3_Rot__C ]
  5: 0.1       Mult
  6: 0.0000    Offset

8:  Pulse (P3)
  1: 1         Reps
  2: 1         Pulse Input Channel
  3: 21        Low Level AC, Output Hz
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```

4: 5      Loc [ Vhast_m_s ]
5: 0.098  Mult
6: 0      Offset

9:  Excite-Delay (SE) (P4)
1: 1      Reps
2: 5      2500 mV Slow Range
3: 9      SE Channel
4: 3      Excite all reps w/Exchan 3
5: 2      Delay (0.01 sec units)
6: 2500   mV Excitation
7: 6      Loc [ Vrikt____ ]
8: 0.142  Mult
9: -135   Offset

10: If (X<=>F) (P89)
1: 6      X Loc [ Vrikt____ ]
2: 4      <
3: 0      F
4: 30     Then Do

11: Z=X+F (P34)
1: 6      X Loc [ Vrikt____ ]
2: 360    F
3: 6      Z Loc [ Vrikt____ ]

12: End (P95)

13: Volt (SE) (P1)
1: 1      Reps
2: 33     25 mV 50 Hz Rejection Range
3: 10     SE Channel
4: 7      Loc [ Sol__W_m_ ]
5: 116.55 Mult
6: 0.0000 Offset

14: Internal Temperature (P17)
1: 9      Loc [ Logtemp_C ]

15: Do (P86)
1: 42     Set Port 2 High

16: Excitation with Delay (P22)
1: 1      Ex Channel
2: 1      Delay W/Ex (0.01 sec units)
3: 0      Delay After Ex (0.01 sec units)
4: 2      mV Excitation

17: Do (P86)
1: 52     Set Port 2 Low

18: Pulse (P3)
1: 1      Reps
2: 2      Pulse Input Channel
3: 0      High Frequency, All Counts
4: 23     Loc [ Avstand_m ]
5: -.0025 Mult
6: 0.0000 Offset

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19:  Z=X+F (P34)
    1: 2      X Loc [ T2_skyd_C ]
    2: 273.15  F
    3: 24      Z Loc [ T_SR50__K ]

20:  Z=F x 10^n (P30)
    1: 273.15  F
    2: 0      n, Exponent of 10
    3: 25      Z Loc [ Ref_Temp_ ]

21:  Z=X/Y (P38)
    1: 24      X Loc [ T_SR50__K ]
    2: 25      Y Loc [ Ref_Temp_ ]
    3: 26      Z Loc [ Mult_     ]

22:  Z=SQRT(X) (P39)
    1: 26      X Loc [ Mult_     ]
    2: 26      Z Loc [ Mult_     ]

23:  Z=X*Y (P36)
    1: 23      X Loc [ Avstand_m ]
    2: 26      Y Loc [ Mult_     ]
    3: 23      Z Loc [ Avstand_m ]

24:  Z=X+F (P34)
    1: 23      X Loc [ Avstand_m ]
    2: 2.45    F
    3: 11      Z Loc [ Snodjup_m ]

25:  If time is (P92)
    1: 0      Minutes (Seconds --) into a
    2: 60      Interval (same units as above)
    3: 10      Set Output Flag High

26:  Set Active Storage Area (P80)
    1: 1      Final Storage Area 1
    2: 101     Array ID

27:  Real Time (P77)
    1: 1220    Year,Day,Hour/Minute (midnight = 2400)

28:  Average (P71)
    1: 4      Reps
    2: 1      Loc [ T1_bur__C ]

29:  Wind Vector (P69)
    1: 1      Reps
    2: 1      Samples per Sub-Interval
    3: 0      S, é1, & â(é1) Polar
    4: 5      Wind Speed/East Loc [ Vhast_m_s ]
    5: 6      Wind Direction/North Loc [ Vrikt____ ]

30:  Average (P71)
    1: 1      Reps
    2: 7      Loc [ Sol__W_m_ ]

31:  Average (P71)

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```

1: 1      Reps
2: 11     Loc [ Snodjup_m ]

32: Sample (P70)
1: 1      Reps
2: 11     Loc [ Snodjup_m ]

33: Serial Out (P96)
1: 71     Storage Module

34: If time is (P92)
1: 0      Minutes (Seconds --) into a
2: 1440   Interval (same units as above)
3: 10     Set Output Flag High

35: Set Active Storage Area (P80)
1: 1      Final Storage Area 1
2: 124    Array ID

36: Real Time (P77)
1: 1220   Year,Day,Hour/Minute (midnight = 2400)

37: Average (P71)
1: 4      Reps
2: 1      Loc [ T1_bur__C ]

38: Maximum (P73)
1: 1      Reps
2: 10     Value with Hr-Min
3: 2      Loc [ T2_skyd_C ]

39: Minimum (P74)
1: 1      Reps
2: 10     Value with Hr-Min
3: 2      Loc [ T2_skyd_C ]

40: Maximum (P73)
1: 1      Reps
2: 10     Value with Hr-Min
3: 5      Loc [ Vhast_m_s ]

41: Wind Vector (P69)
1: 1      Reps
2: 1      Samples per Sub-Interval
3: 1      S, é1 Polar
4: 5      Wind Speed/East Loc [ Vhast_m_s ]
5: 6      Wind Direction/North Loc [ Vrikt____ ]

42: Average (P71)
1: 1      Reps
2: 7      Loc [ Sol__W_m_ ]

43: Average (P71)
1: 1      Reps
2: 11     Loc [ Snodjup_m ]

44: Sample (P70)
1: 1      Reps

```

```

2: 11      Loc [ Snodjup_m ]

45: Sample (P70)
1: 1      Reps
2: 10     Loc [ Batteri_V ]

46: Serial Out (P96)
1: 71     Storage Module

47: If time is (P92)
1: 60     Minutes (Seconds --) into a
2: 1440   Interval (same units as above)
3: 10     Set Output Flag High

48: Set Active Storage Area (P80)
1: 1      Final Storage Area 1
2: 103    Array ID

49: Real Time (P77)
1: 1220   Year,Day,Hour/Minute (midnight = 2400)

50: Sample (P70)
1: 1      Reps
2: 2      Loc [ T2_skyd_C ]

51: If time is (P92)
1: 240    Minutes (Seconds --) into a
2: 1440   Interval (same units as above)
3: 10     Set Output Flag High

52: Set Active Storage Area (P80)
1: 1      Final Storage Area 1
2: 103    Array ID

53: Real Time (P77)
1: 1220   Year,Day,Hour/Minute (midnight = 2400)

54: Sample (P70)
1: 1      Reps
2: 2      Loc [ T2_skyd_C ]

55: If time is (P92)
1: 420    Minutes (Seconds --) into a
2: 1440   Interval (same units as above)
3: 10     Set Output Flag High

56: Set Active Storage Area (P80)
1: 1      Final Storage Area 1
2: 103    Array ID

57: Real Time (P77)
1: 1220   Year,Day,Hour/Minute (midnight = 2400)

58: Sample (P70)
1: 1      Reps
2: 2      Loc [ T2_skyd_C ]

59: If time is (P92)

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```

1: 600      Minutes (Seconds --) into a
2: 1440     Interval (same units as above)
3: 10       Set Output Flag High

60: Set Active Storage Area (P80)
1: 1        Final Storage Area 1
2: 103      Array ID

61: Real Time (P77)
1: 1220     Year,Day,Hour/Minute (midnight = 2400)

62: Sample (P70)
1: 1        Reps
2: 2        Loc [ T2_skyd_C ]

63: If time is (P92)
1: 780      Minutes (Seconds --) into a
2: 1440     Interval (same units as above)
3: 10       Set Output Flag High

64: Set Active Storage Area (P80)
1: 1        Final Storage Area 1
2: 103      Array ID

65: Real Time (P77)
1: 1220     Year,Day,Hour/Minute (midnight = 2400)

66: Sample (P70)
1: 1        Reps
2: 2        Loc [ T2_skyd_C ]

67: If time is (P92)
1: 960      Minutes (Seconds --) into a
2: 1440     Interval (same units as above)
3: 10       Set Output Flag High

68: Set Active Storage Area (P80)
1: 1        Final Storage Area 1
2: 103      Array ID

69: Real Time (P77)
1: 1220     Year,Day,Hour/Minute (midnight = 2400)

70: Sample (P70)
1: 1        Reps
2: 2        Loc [ T2_skyd_C ]

71: If time is (P92)
1: 1140     Minutes (Seconds --) into a
2: 1440     Interval (same units as above)
3: 10       Set Output Flag High

72: Set Active Storage Area (P80)
1: 1        Final Storage Area 1
2: 103      Array ID

73: Real Time (P77)
1: 1220     Year,Day,Hour/Minute (midnight = 2400)

```

```

74: Sample (P70)
   1: 1      Reps
   2: 2      Loc [ T2_skyd_C ]

75: If time is (P92)
   1: 1320   Minutes (Seconds --) into a
   2: 1440   Interval (same units as above)
   3: 10     Set Output Flag High

76: Set Active Storage Area (P80)
   1: 1      Final Storage Area 1
   2: 103    Array ID

77: Real Time (P77)
   1: 1220   Year,Day,Hour/Minute (midnight = 2400)

78: Sample (P70)
   1: 1      Reps
   2: 2      Loc [ T2_skyd_C ]

```

```

*Table 2 Program
  01: 0.0000   Execution Interval (seconds)

```

```

*Table 3 Subroutines

```

```

End Program

```

1	[T1_bur__C]	RW--	2	1	Start	-----	---
2	[T2_skyd_C]	RW--	13	1	-----	-----	End
3	[T3_Rot__C]	RW--	2	1	Start	-----	---
4	[rH_Rot___]	RW--	2	1	-----	-----	End
5	[Vhast_m_s]	RW--	3	1	-----	-----	---
6	[Vrikt_____]	RW--	4	2	-----	-----	---
7	[Sol__W_m_]	RW--	2	1	-----	-----	---
8	[Nederb_mm]	----	0	0	-----	-----	---
9	[Logtemp_C]	-W--	0	1	-----	-----	---
10	[Batteri_V]	RW--	2	1	-----	-----	---
11	[Snodjup_m]	RW--	4	1	-----	-----	---
12	[_____]	----	0	0	-----	-----	---
13	[_____]	----	0	0	-----	-----	---
14	[_____]	----	0	0	-----	-----	---
15	[_____]	----	0	0	-----	-----	---
16	[_____]	----	0	0	-----	-----	---
17	[_____]	----	0	0	-----	-----	---
18	[_____]	----	0	0	-----	-----	---
19	[_____]	----	0	0	-----	-----	---
20	[_____]	----	0	0	-----	-----	---
21	[Rs_Ro_T1]	RW--	1	1	-----	-----	---
22	[Rs_Ro_T2]	RW--	1	1	-----	-----	---
23	[Avstand_m]	RW--	2	2	-----	-----	---
24	[T_SR50__K]	RW--	1	1	-----	-----	---
25	[Ref_Temp_]	RW--	1	1	-----	-----	---
26	[Mult_]	RW--	2	2	-----	-----	---

5.2 Program valid bwtween 29 July and 6 August

```

;{CR10}

```

```
;=====
; TARFALA MET STATION
; downloaded 29. juli 1998, 14:30 wintertid
; NEW: precipitation logged
; Regine Hock
;=====
;{CR10}
```

*Table 1 Program

01: 10.0000 Execution Interval (seconds)

1: Batt Voltage (P10)

1: 10 Loc [Batteri_V]

2: IF (X<=>F) (P89)

1: 10 X Loc [Batteri_V]

2: 4 <

3: 9.7 F

4: 0 Go to end of Program Table

;===== TEMPERATURE =====

3: 3W Half Bridge (P7)

1: 1 Reps

2: 33 25 mV 50 Hz Rejection Range

3: 1 SE Channel

4: 1 Excite all reps w/Exchan 1

5: 2100 mV Excitation

6: 21 Loc [Rs_Ro_T1]

7: 100 Mult

8: 0.0000 Offset

4: 3W Half Bridge (P7)

1: 1 Reps

2: 33 25 mV 50 Hz Rejection Range

3: 3 SE Channel

4: 2 Excite all reps w/Exchan 2

5: 2100 mV Excitation

6: 22 Loc [Rs_Ro_T2]

7: 100.00 Mult

8: 0.0000 Offset

5: Temperature RTD (P16)

1: 2 Reps

2: 21 R/R0 Loc [Rs_Ro_T1]

3: 1 Loc [T1_bur__C]

4: 1 Mult

5: 0.0000 Offset

6: Do (P86)

1: 41 Set Port 1 High

7: Volt (Diff) (P2)

1: 2 Reps

2: 35 2500 mV 50 Hz Rejection Range

3: 3 DIFF Channel

4: 3 Loc [T3_Rot__C]

5: 0.1 Mult

6: 0.0000 Offset

```

;===== WIND SPEED =====
8:  Pulse (P3)
   1: 1      Reps
   2: 1      Pulse Input Channel
   3: 21     Low Level AC, Output Hz
   4: 5      Loc [ Vhast_m_s ]
   5: 0.098  Mult
   6: 0      Offset

;===== WIND DIRECTION =====
9:  Excite-Delay (SE) (P4)
   1: 1      Reps
   2: 5      2500 mV Slow Range
   3: 9      SE Channel
   4: 3      Excite all reps w/Exchan 3
   5: 2      Delay (units 0.01 sec)
   6: 2500   mV Excitation
   7: 6      Loc [ Vrikt____ ]
   8: 0.142  Mult
   9: -135   Offset

10: IF (X<=>F) (P89)
   1: 6      X Loc [ Vrikt____ ]
   2: 4      <
   3: 0      F
   4: 30     Then Do

11: Z=X+F (P34)
   1: 6      X Loc [ Vrikt____ ]
   2: 360    F
   3: 6      Z Loc [ Vrikt____ ]

12: End (P95)

;===== GLOBAL RADIATION =====
13: Volts (SE) (P1)
   1: 1      Reps
   2: 33     25 mV 50 Hz Rejection Range
   3: 10     SE Channel
   4: 7      Loc [ Sol__W_m_ ]
   5: 116.55 Mult
   6: 0.0000 Offset

;===== PRECIPITATION =====
14: Pulse (P3)
   1: 1      Reps
   2: 2      Pulse Input Channel
   3: 2      Switch Closure, All Counts
   4: 8      Loc [ Nederb_mm ]
   5: 0.16   Mult
   6: 0.0    Offset

15: Internal Temperature (P17)
   1: 9      Loc [ Logtemp_C ]

; ===== OUTPUT =====

```



```

16:  If time is (P92)
    1: 0      Minutes (Seconds --) into a
    2: 60      Interval (same units as above)
    3: 10      Set Output Flag High

17:  Set Active Storage Area (P80)
    1: 1      Final Storage Area 1
    2: 101     Array ID

18:  Real Time (P77)
    1: 1220    Year,Day,Hour/Minute (midnight = 2400)

19:  Average (P71)
    1: 4      Reps
    2: 1      Loc [ T1_bur__C ]

20:  Wind Vector (P69)
    1: 1      Reps
    2: 1      Samples per Sub-Interval
    3: 0      S, é1, & â(é1) Polar
    4: 5      Wind Speed/East Loc [ Vhast_m_s ]
    5: 6      Wind Direction/North Loc [ Vrikt____ ]

21:  Average (P71)
    1: 1      Reps
    2: 7      Loc [ Sol__W_m_ ]

22:  Totalize (P72)
    1: 1      Reps
    2: 8      Loc [ Nederb_mm ]

23:  Serial Out (P96)
    1: 71      SM192/SM716/CSM1

; ===== STORAGE DAILY MEANS AT MIDNIGHT =====

24:  If time is (P92)
    1: 0      Minutes (Seconds --) into a
    2: 1440    Interval (same units as above)
    3: 10      Set Output Flag High

25:  Set Active Storage Area (P80)
    1: 1      Final Storage Area 1
    2: 124     Array ID

26:  Real Time (P77)
    1: 1220    Year,Day,Hour/Minute (midnight = 2400)

27:  Average (P71)
    1: 4      Reps
    2: 1      Loc [ T1_bur__C ]

28:  Maximize (P73)
    1: 1      Reps
    2: 10      Value with Hr-Min
    3: 2      Loc [ T2_skyd_C ]

29:  Minimize (P74)

```

```

1: 1      Reps
2: 10     Value with Hr-Min
3: 2      Loc [ T2_skyd_C ]

30: Maximize (P73)
1: 1      Reps
2: 10     Value with Hr-Min
3: 5      Loc [ Vhast_m_s ]

31: Wind Vector (P69)
1: 1      Reps
2: 1      Samples per Sub-Interval
3: 1      S, é1 Polar
4: 5      Wind Speed/East Loc [ Vhast_m_s ]
5: 6      Wind Direction/North Loc [ Vrikt____ ]

32: Average (P71)
1: 1      Reps
2: 7      Loc [ Sol__W_m_ ]

33: Totalize (P72)
1: 1      Reps
2: 8      Loc [ Nederb_mm ]

34: Sample (P70)
1: 1      Reps
2: 10     Loc [ Batteri_V ]

35: Serial Out (P96)
1: 71     SM192/SM716/CSM1

36: If time is (P92)
1: 60     Minutes (Seconds --) into a
2: 1440   Interval (same units as above)
3: 10     Set Output Flag High

37: Set Active Storage Area (P80)
1: 1      Final Storage Area 1
2: 103    Array ID

38: Real Time (P77)
1: 1220   Year,Day,Hour/Minute (midnight = 2400)

39: Sample (P70)
1: 1      Reps
2: 2      Loc [ T2_skyd_C ]

40: If time is (P92)
1: 240    Minutes (Seconds --) into a
2: 1440   Interval (same units as above)
3: 10     Set Output Flag High

41: Set Active Storage Area (P80)
1: 1      Final Storage Area 1
2: 103    Array ID

42: Real Time (P77)
1: 1220   Year,Day,Hour/Minute (midnight = 2400)

```

```

43: Sample (P70)
   1: 1      Reps
   2: 2      Loc [ T2_skyd_C ]

44: If time is (P92)
   1: 420    Minutes (Seconds --) into a
   2: 1440   Interval (same units as above)
   3: 10     Set Output Flag High

45: Set Active Storage Area (P80)
   1: 1      Final Storage Area 1
   2: 103    Array ID

46: Real Time (P77)
   1: 1220   Year,Day,Hour/Minute (midnight = 2400)

47: Sample (P70)
   1: 1      Reps
   2: 2      Loc [ T2_skyd_C ]

48: If time is (P92)
   1: 600    Minutes (Seconds --) into a
   2: 1440   Interval (same units as above)
   3: 10     Set Output Flag High

49: Set Active Storage Area (P80)
   1: 1      Final Storage Area 1
   2: 103    Array ID

50: Real Time (P77)
   1: 1220   Year,Day,Hour/Minute (midnight = 2400)

51: Sample (P70)
   1: 1      Reps
   2: 2      Loc [ T2_skyd_C ]

52: If time is (P92)
   1: 780    Minutes (Seconds --) into a
   2: 1440   Interval (same units as above)
   3: 10     Set Output Flag High

53: Set Active Storage Area (P80)
   1: 1      Final Storage Area 1
   2: 103    Array ID

54: Real Time (P77)
   1: 1220   Year,Day,Hour/Minute (midnight = 2400)

55: Sample (P70)
   1: 1      Reps
   2: 2      Loc [ T2_skyd_C ]

56: If time is (P92)
   1: 960    Minutes (Seconds --) into a
   2: 1440   Interval (same units as above)
   3: 10     Set Output Flag High

```

```

57: Set Active Storage Area (P80)
   1: 1      Final Storage Area 1
   2: 103    Array ID

58: Real Time (P77)
   1: 1220   Year,Day,Hour/Minute (midnight = 2400)

59: Sample (P70)
   1: 1      Reps
   2: 2      Loc [ T2_skyd_C ]

60: If time is (P92)
   1: 1140   Minutes (Seconds --) into a
   2: 1440   Interval (same units as above)
   3: 10     Set Output Flag High

61: Set Active Storage Area (P80)
   1: 1      Final Storage Area 1
   2: 103    Array ID

62: Real Time (P77)
   1: 1220   Year,Day,Hour/Minute (midnight = 2400)

63: Sample (P70)
   1: 1      Reps
   2: 2      Loc [ T2_skyd_C ]

64: If time is (P92)
   1: 1320   Minutes (Seconds --) into a
   2: 1440   Interval (same units as above)
   3: 10     Set Output Flag High

65: Set Active Storage Area (P80)
   1: 1      Final Storage Area 1
   2: 103    Array ID

66: Real Time (P77)
   1: 1220   Year,Day,Hour/Minute (midnight = 2400)

67: Sample (P70)
   1: 1      Reps
   2: 2      Loc [ T2_skyd_C ]

*Table 2 Program
  01: 0.0000   Execution Interval (seconds)

*Table 3 Subroutines

End Program

1      [ T1_bur__C ]  RW--  2      1      Start ----- ---
2      [ T2_skyd_C ]  RW--  12     1      ----- End
3      [ T3_Rot__C ]  RW--  2      1      Start ----- ---
4      [ rH_Rot___ ]  RW--  2      1      ----- End
5      [ Vhast_m_s ]  RW--  3      1      ----- ---
6      [ Vrikt_____ ] RW--  4      2      ----- ---
7      [ Sol__W_m_ ]  RW--  2      1      ----- ---

```

8	[Nederb_mm]	RW--	2	1	-----	-----	---
9	[Logtemp_C]	-W--	0	1	-----	-----	---
10	[Batteri_V]	RW--	2	1	-----	-----	---
11	[Snodjup_m]	----	0	0	-----	-----	---
12	[-----]	----	0	0	-----	-----	---
13	[-----]	----	0	0	-----	-----	---
14	[-----]	----	0	0	-----	-----	---
15	[-----]	----	0	0	-----	-----	---
16	[-----]	----	0	0	-----	-----	---
17	[-----]	----	0	0	-----	-----	---
18	[-----]	----	0	0	-----	-----	---
19	[-----]	----	0	0	-----	-----	---
20	[-----]	----	0	0	-----	-----	---
21	[Rs_Ro_T1]	RW--	1	1	-----	-----	---
22	[Rs_Ro_T2]	RW--	1	1	-----	-----	---
23	[Avstand_m]	----	0	0	-----	-----	---
24	[T_SR50__K]	----	0	0	-----	-----	---
25	[Ref_Temp_]	----	0	0	-----	-----	---
26	[Mult_]	----	0	0	-----	-----	---

5.3 Program valid between 6 August and November

```
;{CR10}
;=====
; TARFALA MET STATION
; downloaded 6. August 1998, 15:21 wintertime
; NEW: VENTILATED TEMPERATURE SENSOR
; Regine Hock
;=====
;{CR10}

*Table 1 Program
01: 10.0000 Execution Interval (seconds)

1: Batt Voltage (P10)
1: 10 Loc [ Batteri_V ]

2: IF (X<=>F) (P89)
1: 10 X Loc [ Batteri_V ]
2: 4 <
3: 9.7 F
4: 0 Go to end of Program Table

;===== TEMPERATURE 1 - PT100 in weather hut =====

3: 3W Half Bridge (P7)
1: 1 Reps
2: 33 25 mV 50 Hz Rejection Range
3: 1 SE Channel
4: 2 Excite all reps w/Exchan 2
5: 2100 mV Excitation
6: 21 Loc [ Rs_Ro_T1 ]
7: 100 Mult
8: 0.0000 Offset

;===== TEMPERATURE 2 - PT100 in radiation shield =====

4: 3W Half Bridge (P7)
1: 1 Reps
2: 33 25 mV 50 Hz Rejection Range
3: 3 SE Channel
4: 2 Excite all reps w/Exchan 2
5: 2100 mV Excitation
6: 22 Loc [ Rs_Ro_T2 ]
7: 100.00 Mult
8: 0.0000 Offset

;=== calculate Temp 1 and Temp 2 from Rs/Ro =====
5: Temperature RTD (P16)
1: 2 Reps
2: 21 R/R0 Loc [ Rs_Ro_T1 ]
3: 1 Loc [ T1_bur__C ]
4: 1 Mult
5: 0.0000 Offset

6: Do (P86)
1: 41 Set Port 1 High

;===== Temperature Rotronic =====
```

```

7: Volt (Diff) (P2)
  1: 1      Repts
  2: 35      2500 mV 50 Hz Rejection Range
  3: 3      DIFF Channel
  4: 3      Loc [ T3_Rot__C ]
  5: 0.1     Mult
  6: 0.0000  Offset

;===== RELATIVE HUMIDITY Rotronic =====

8: Volts (SE) (P1)
  1: 1      Repts
  2: 35      2500 mV 50 Hz Rejection Range
  3: 7      SE Channel
  4: 4      Loc [ rH_Rot___ ]
  5: 0.1     Mult
  6: 0.0     Offset

;===== VENTILATED TEMPERATURE SENSOR (Vaisala PT100) =====

9: 3W Half Bridge (P7)
  1: 1      Repts
  2: 33      25 mV 50 Hz Rejection Range
  3: 11      SE Channel
  4: 3      Excite all reps w/Exchan 3
  5: 2100    mV Excitation
  6: 23      Loc [ Rs_Ro_ven ]
  7: 100     Mult
  8: 0.0000  Offset

10: Temperature RTD (P16)
  1: 1      Repts
  2: 23      R/R0 Loc [ Rs_Ro_ven ]
  3: 11      Loc [ TempVent ]
  4: 1      Mult
  5: 0.0000  Offset

;===== RELATIVE HUMITY (VENTILATED SENSOR) =====

11: Volts (SE) (P1)
  1: 1      Repts
  2: 35      2500 mV 50 Hz Rejection Range
  3: 8      SE Channel
  4: 12      Loc [ HumVent ]
  5: 0.1     Mult
  6: 0.0     Offset

;===== WIND SPEED =====

12: Pulse (P3)
  1: 1      Repts
  2: 1      Pulse Input Channel
  3: 21      Low Level AC, Output Hz
  4: 5      Loc [ Vhast_m_s ]
  5: 0.098  Mult
  6: 0      Offset

;===== WIND DIRECTION =====

13: Excite-Delay (SE) (P4)

```

```

1: 1      Reps
2: 5      2500 mV Slow Range
3: 9      SE Channel
4: 1      Excite all reps w/Exchan 1
5: 2      Delay (units 0.01 sec)
6: 2500   mV Excitation
7: 6      Loc [ Vrikt____ ]
8: 0.142  Mult
9: -135   Offset

14: IF (X<=>F) (P89)
1: 6      X Loc [ Vrikt____ ]
2: 4      <
3: 0      F
4: 30     Then Do

15: Z=X+F (P34)
1: 6      X Loc [ Vrikt____ ]
2: 360    F
3: 6      Z Loc [ Vrikt____ ]

16: End (P95)

;===== GLOBAL RADIATION =====
17: Volts (SE) (P1)
1: 1      Reps
2: 33     25 mV 50 Hz Rejection Range
3: 10     SE Channel
4: 7      Loc [ Sol__W_m_ ]
5: 116.55 Mult
6: 0.0000 Offset

;===== PRECIPITATION =====
18: Pulse (P3)
1: 1      Reps
2: 2      Pulse Input Channel
3: 2      Switch Closure, All Counts
4: 8      Loc [ Nederb_mm ]
5: 0.16   Mult
6: 0.0    Offset

19: Internal Temperature (P17)
1: 9      Loc [ Logtemp_C ]

; ===== OUTPUT =====

20: If time is (P92)
1: 0      Minutes (Seconds --) into a
2: 60     Interval (same units as above)
3: 10     Set Output Flag High

21: Set Active Storage Area (P80)
1: 1      Final Storage Area 1
2: 101    Array ID

22: Real Time (P77)
1: 1220   Year,Day,Hour/Minute (midnight = 2400)

```



```

23: Average (P71)
   1: 4      Reps
   2: 1      Loc [ T1_bur__C ]

24: Wind Vector (P69)
   1: 1      Reps
   2: 1      Samples per Sub-Interval
   3: 0      S, é1, & â(é1) Polar
   4: 5      Wind Speed/East Loc [ Vhast_m_s ]
   5: 6      Wind Direction/North Loc [ Vrikt____ ]

25: Average (P71)
   1: 1      Reps
   2: 7      Loc [ Sol__W_m_ ]

26: Totalize (P72)
   1: 1      Reps
   2: 8      Loc [ Nederb_mm ]

27: Average (P71)
   1: 2      Reps
   2: 11     Loc [ TempVent  ]

28: Serial Out (P96)
   1: 71     SM192/SM716/CSM1

; ===== STORAGE DAILY MEANS AT MIDNIGHT =====

29: If time is (P92)
   1: 0      Minutes (Seconds --) into a
   2: 1440   Interval (same units as above)
   3: 10     Set Output Flag High

30: Set Active Storage Area (P80)
   1: 1      Final Storage Area 1
   2: 124    Array ID

31: Real Time (P77)
   1: 1220   Year,Day,Hour/Minute (midnight = 2400)

32: Average (P71)
   1: 4      Reps
   2: 1      Loc [ T1_bur__C ]

33: Maximize (P73)
   1: 1      Reps
   2: 10     Value with Hr-Min
   3: 2      Loc [ T2_skyd_C ]

34: Minimize (P74)
   1: 1      Reps
   2: 10     Value with Hr-Min
   3: 2      Loc [ T2_skyd_C ]

35: Maximize (P73)
   1: 1      Reps
   2: 10     Value with Hr-Min

```

```

3: 5          Loc [ Vhast_m_s ]

36: Wind Vector (P69)
1: 1          Reps
2: 1          Samples per Sub-Interval
3: 1          S, é1 Polar
4: 5          Wind Speed/East Loc [ Vhast_m_s ]
5: 6          Wind Direction/North Loc [ Vrikt_---- ]

37: Average (P71)
1: 1          Reps
2: 7          Loc [ Sol__W_m_ ]

38: Totalize (P72)
1: 1          Reps
2: 8          Loc [ Nederb_mm ]

39: Sample (P70)
1: 1          Reps
2: 10         Loc [ Batteri_V ]

40: Average (P71)
1: 2          Reps
2: 11         Loc [ TempVent  ]

41: Serial Out (P96)
1: 71         SM192/SM716/CSM1

42: If time is (P92)
1: 60         Minutes (Seconds --) into a
2: 1440        Interval (same units as above)
3: 10         Set Output Flag High

43: Set Active Storage Area (P80)
1: 1          Final Storage Area 1
2: 103        Array ID

44: Real Time (P77)
1: 1220       Year,Day,Hour/Minute (midnight = 2400)

; SAMPLE TEMP FOR COMPARISON WITH 3-HOURLY DATA OF OTHER STATIONS =====

45: Sample (P70)
1: 1          Reps
2: 2          Loc [ T2_skyd_C ]

46: If time is (P92)
1: 240        Minutes (Seconds --) into a
2: 1440        Interval (same units as above)
3: 10         Set Output Flag High

47: Set Active Storage Area (P80)
1: 1          Final Storage Area 1
2: 103        Array ID

48: Real Time (P77)
1: 1220       Year,Day,Hour/Minute (midnight = 2400)

```

```

49: Sample (P70)
   1: 1      Reps
   2: 2      Loc [ T2_skyd_C ]

50: If time is (P92)
   1: 420    Minutes (Seconds --) into a
   2: 1440   Interval (same units as above)
   3: 10     Set Output Flag High

51: Set Active Storage Area (P80)
   1: 1      Final Storage Area 1
   2: 103    Array ID

52: Real Time (P77)
   1: 1220   Year,Day,Hour/Minute (midnight = 2400)

53: Sample (P70)
   1: 1      Reps
   2: 2      Loc [ T2_skyd_C ]

; 3-HOURLY TEMP VALUES TO FILE =====0

54: If time is (P92)
   1: 600    Minutes (Seconds --) into a
   2: 1440   Interval (same units as above)
   3: 10     Set Output Flag High

55: Set Active Storage Area (P80)
   1: 1      Final Storage Area 1
   2: 103    Array ID

56: Real Time (P77)
   1: 1220   Year,Day,Hour/Minute (midnight = 2400)

57: Sample (P70)
   1: 1      Reps
   2: 2      Loc [ T2_skyd_C ]

58: If time is (P92)
   1: 780    Minutes (Seconds --) into a
   2: 1440   Interval (same units as above)
   3: 10     Set Output Flag High

59: Set Active Storage Area (P80)
   1: 1      Final Storage Area 1
   2: 103    Array ID

60: Real Time (P77)
   1: 1220   Year,Day,Hour/Minute (midnight = 2400)

61: Sample (P70)
   1: 1      Reps
   2: 2      Loc [ T2_skyd_C ]

62: If time is (P92)
   1: 960    Minutes (Seconds --) into a
   2: 1440   Interval (same units as above)
   3: 10     Set Output Flag High

```

```

63: Set Active Storage Area (P80)
   1: 1      Final Storage Area 1
   2: 103    Array ID

64: Real Time (P77)
   1: 1220   Year,Day,Hour/Minute (midnight = 2400)

65: Sample (P70)
   1: 1      Reps
   2: 2      Loc [ T2_skyd_C ]

66: If time is (P92)
   1: 1140   Minutes (Seconds --) into a
   2: 1440   Interval (same units as above)
   3: 10     Set Output Flag High

67: Set Active Storage Area (P80)
   1: 1      Final Storage Area 1
   2: 103    Array ID

68: Real Time (P77)
   1: 1220   Year,Day,Hour/Minute (midnight = 2400)

69: Sample (P70)
   1: 1      Reps
   2: 2      Loc [ T2_skyd_C ]

70: If time is (P92)
   1: 1320   Minutes (Seconds --) into a
   2: 1440   Interval (same units as above)
   3: 10     Set Output Flag High

71: Set Active Storage Area (P80)
   1: 1      Final Storage Area 1
   2: 103    Array ID

72: Real Time (P77)
   1: 1220   Year,Day,Hour/Minute (midnight = 2400)

73: Sample (P70)
   1: 1      Reps
   2: 2      Loc [ T2_skyd_C ]

```

```

*Table 2 Program
  01: 0.0000   Execution Interval (seconds)

```

```

*Table 3 Subroutines

```

```

End Program

```

1	[T1_bur__C]	RW--	2	1	Start ----- ---
2	[T2_skyd_C]	RW--	12	1	----- ----- End
3	[T3_Rot__C]	RW--	2	1	Start ----- ---
4	[rH_Rot___]	RW--	2	1	----- ----- ---
5	[Vhast_m_s]	RW--	3	1	----- ----- ---
6	[Vrikt____]	RW--	4	2	----- ----- ---

7	[Sol__W_m_]	RW--	2	1	-----	-----	---
8	[Nederb_mm]	RW--	2	1	-----	-----	---
9	[Logtemp_C]	-W--	0	1	-----	-----	---
10	[Batteri_V]	RW--	2	1	-----	-----	---
11	[TempVent]	RW--	2	1	-----	-----	---
12	[HumVent]	RW--	2	1	-----	-----	---
13	[_____]	----	0	0	-----	-----	---
14	[_____]	----	0	0	-----	-----	---
15	[_____]	----	0	0	-----	-----	---
16	[_____]	----	0	0	-----	-----	---
17	[_____]	----	0	0	-----	-----	---
18	[_____]	----	0	0	-----	-----	---
19	[_____]	----	0	0	-----	-----	---
20	[_____]	----	0	0	-----	-----	---
21	[Rs_Ro_T1]	RW--	1	1	-----	-----	---
22	[Rs_Ro_T2]	RW--	1	1	-----	-----	---
23	[Rs_Ro_ven]	RW--	1	1	-----	-----	---
24	[_____]	----	0	0	-----	-----	---
25	[_____]	----	0	0	-----	-----	---
26	[_]	----	0	0	-----	-----	---
27	[Rs_lo2]	----	0	0	-----	-----	---
28	[Temp2m]	----	0	0	-----	-----	---
29	[RelHum2m]	----	0	0	-----	-----	---

5.4 Possible program after change in November

```
;{CR10}
*Table 1 Program
  01: 10.0000   Execution Interval (seconds)

1:  Batt Voltage (P10)
  1: 10        Loc [ Batt      ]

2:  If (X<=>F) (P89)
  1: 10        X Loc [ Batt      ]
  2: 4          <
  3: 9.7        F
  4: 0          Go to end of Program Table

3:  3W Half Bridge (P7)
  1: 1          Reps
  2: 33         25 mV 50 Hz Rejection Range
  3: 1          SE Channel
  4: 2          Excite all reps w/Exchan 2
  5: 2100       mV Excitation
  6: 21         Loc [ RsR01      ]
  7: 100        Mult
  8: 0          Offset

4:  3W Half Bridge (P7)
  1: 1          Reps
  2: 33         25 mV 50 Hz Rejection Range
  3: 3          SE Channel
  4: 2          Excite all reps w/Exchan 2
  5: 2100       mV Excitation
  6: 22         Loc [ RsR02      ]
  7: 100        Mult
  8: 0          Offset

5:  Temperature RTD (P16)
  1: 2          Reps
  2: 21         R/R0 Loc [ RsR01      ]
  3: 1          Loc [ T1_bur_1  ]
  4: 1          Mult
  5: 0          Offset

6:  Do (P86)
  1: 41         Set Port 1 High

7:  Volt (Diff) (P2)
  1: 1          Reps
  2: 35         2500 mV 50 Hz Rejection Range
  3: 3          DIFF Channel
  4: 3          Loc [ T3_Rot      ]
  5: .1         Mult
  6: 0          Offset

8:  Volt (SE) (P1)
  1: 1          Reps
  2: 35         2500 mV 50 Hz Rejection Range
  3: 7          SE Channel
  4: 4          Loc [ rH_Rot      ]
  5: .1         Mult
```

```

6: 0      Offset

9: 3W Half Bridge (P7)
1: 1      Reps
2: 33     25 mV 50 Hz Rejection Range
3: 11     SE Channel
4: 3      Excite all reps w/Exchan 3
5: 2100   mV Excitation
6: 23     Loc [ RsR0vent ]
7: 100    Mult
8: 0      Offset

10: Temperature RTD (P16)
1: 1      Reps
2: 23     R/R0 Loc [ RsR0vent ]
3: 11     Loc [ Tvent ]
4: 1      Mult
5: 0      Offset

11: Volt (SE) (P1)
1: 1      Reps
2: 35     2500 mV 50 Hz Rejection Range
3: 8      SE Channel
4: 12     Loc [ rHvent ]
5: .1     Mult
6: 0      Offset

12: Pulse (P3)
1: 1      Reps
2: 1      Pulse Input Channel
3: 21     Low Level AC, Output Hz
4: 5      Loc [ Wspd ]
5: .098   Mult
6: 0      Offset

13: Excite-Delay (SE) (P4)
1: 1      Reps
2: 5      2500 mV Slow Range
3: 9      SE Channel
4: 1      Excite all reps w/Exchan 1
5: 2      Delay (0.01 sec units)
6: 2500   mV Excitation
7: 6      Loc [ Wdir ]
8: .142   Mult
9: -135   Offset

14: If (X<=>F) (P89)
1: 6      X Loc [ Wdir ]
2: 4      <
3: 0      F
4: 30     Then Do

15: Z=X+F (P34)
1: 6      X Loc [ Wdir ]
2: 360    F
3: 6      Z Loc [ Wdir ]

16: End (P95)

```

```

17: Volt (SE) (P1)
  1: 1      Reps
  2: 33     25 mV 50 Hz Rejection Range
  3: 10     SE Channel
  4: 7      Loc [ Rad      ]
  5: 116.55 Mult
  6: 0      Offset

18: Pulse (P3)
  1: 1      Reps
  2: 2      Pulse Input Channel
  3: 2      Switch Closure, All Counts
  4: 8      Loc [ Prec      ]
  5: .16    Mult
  6: 0      Offset

19: Internal Temperature (P17)
  1: 9      Loc [ Tint      ]

20: If time is (P92)
  1: 0      Minutes (Seconds --) into a
  2: 60     Interval (same units as above)
  3: 10     Set Output Flag High

21: Set Active Storage Area (P80)
  1: 1      Final Storage Area 1
  2: 101    Array ID

22: Real Time (P77)
  1: 1220   Year,Day,Hour/Minute (midnight = 2400)

23: Average (P71)
  1: 4      Reps
  2: 1      Loc [ T1_bur_1 ]

24: Wind Vector (P69)
  1: 1      Reps
  2: 1      Samples per Sub-Interval
  3: 0      S, é1, & â(é1) Polar
  4: 5      Wind Speed/East Loc [ Wspd      ]
  5: 6      Wind Direction/North Loc [ Wdir      ]

25: Average (P71)
  1: 1      Reps
  2: 7      Loc [ Rad      ]

26: Totalize (P72)
  1: 1      Reps
  2: 8      Loc [ Prec      ]

27: Average (P71)
  1: 2      Reps
  2: 11     Loc [ Tvent     ]

28: Serial Out (P96)
  1: 71     Storage Module

```



```

29:  If time is (P92)
    1: 0      Minutes (Seconds --) into a
    2: 1440   Interval (same units as above)
    3: 10     Set Output Flag High

30:  Set Active Storage Area (P80)
    1: 1      Final Storage Area 1
    2: 124    Array ID

31:  Real Time (P77)
    1: 1220   Year,Day,Hour/Minute (midnight = 2400)

32:  Average (P71)
    1: 4      Reps
    2: 1      Loc [ T1_bur_1 ]

33:  Maximum (P73)
    1: 1      Reps
    2: 10     Value with Hr-Min
    3: 2      Loc [ T2_Young ]

34:  Minimum (P74)
    1: 1      Reps
    2: 10     Value with Hr-Min
    3: 2      Loc [ T2_Young ]

35:  Maximum (P73)
    1: 1      Reps
    2: 10     Value with Hr-Min
    3: 5      Loc [ Wspd      ]

36:  Wind Vector (P69)
    1: 1      Reps
    2: 1      Samples per Sub-Interval
    3: 1      S, é1 Polar
    4: 5      Wind Speed/East Loc [ Wspd      ]
    5: 6      Wind Direction/North Loc [ Wdir      ]

37:  Average (P71)
    1: 1      Reps
    2: 7      Loc [ Rad      ]

38:  Totalize (P72)
    1: 1      Reps
    2: 8      Loc [ Prec      ]

39:  Sample (P70)
    1: 1      Reps
    2: 10     Loc [ Batt      ]

40:  Average (P71)
    1: 2      Reps
    2: 11     Loc [ Tvent      ]

41:  Serial Out (P96)
    1: 71     Storage Module

42:  If time is (P92)

```

```

1: 60      Minutes (Seconds --) into a
2: 1440    Interval (same units as above)
3: 10      Set Output Flag High

43: Set Active Storage Area (P80)
1: 1      Final Storage Area 1
2: 103    Array ID

44: Real Time (P77)
1: 1220    Year,Day,Hour/Minute (midnight = 2400)

45: Sample (P70)
1: 1      Reps
2: 2      Loc [ T2_Young ]

46: If time is (P92)
1: 240     Minutes (Seconds --) into a
2: 1440    Interval (same units as above)
3: 10      Set Output Flag High

47: Set Active Storage Area (P80)
1: 1      Final Storage Area 1
2: 103    Array ID

48: Real Time (P77)
1: 1220    Year,Day,Hour/Minute (midnight = 2400)

49: Sample (P70)
1: 1      Reps
2: 2      Loc [ T2_Young ]

50: If time is (P92)
1: 420     Minutes (Seconds --) into a
2: 1440    Interval (same units as above)
3: 10      Set Output Flag High

51: Set Active Storage Area (P80)
1: 1      Final Storage Area 1
2: 103    Array ID

52: Real Time (P77)
1: 1220    Year,Day,Hour/Minute (midnight = 2400)

53: Sample (P70)
1: 1      Reps
2: 2      Loc [ T2_Young ]

54: If time is (P92)
1: 600     Minutes (Seconds --) into a
2: 1440    Interval (same units as above)
3: 10      Set Output Flag High

55: Set Active Storage Area (P80)
1: 1      Final Storage Area 1
2: 103    Array ID

56: Real Time (P77)
1: 1220    Year,Day,Hour/Minute (midnight = 2400)

```

```

57: Sample (P70)
   1: 1      Reps
   2: 2      Loc [ T2_Young ]

58: If time is (P92)
   1: 780    Minutes (Seconds --) into a
   2: 1440   Interval (same units as above)
   3: 10     Set Output Flag High

59: Set Active Storage Area (P80)
   1: 1      Final Storage Area 1
   2: 103    Array ID

60: Real Time (P77)
   1: 1220   Year,Day,Hour/Minute (midnight = 2400)

61: Sample (P70)
   1: 1      Reps
   2: 2      Loc [ T2_Young ]

62: If time is (P92)
   1: 960    Minutes (Seconds --) into a
   2: 1440   Interval (same units as above)
   3: 10     Set Output Flag High

63: Set Active Storage Area (P80)
   1: 1      Final Storage Area 1
   2: 103    Array ID

64: Real Time (P77)
   1: 1220   Year,Day,Hour/Minute (midnight = 2400)

65: Sample (P70)
   1: 1      Reps
   2: 2      Loc [ T2_Young ]

66: If time is (P92)
   1: 1140   Minutes (Seconds --) into a
   2: 1440   Interval (same units as above)
   3: 10     Set Output Flag High

67: Set Active Storage Area (P80)
   1: 1      Final Storage Area 1
   2: 103    Array ID

68: Real Time (P77)
   1: 1220   Year,Day,Hour/Minute (midnight = 2400)

69: Sample (P70)
   1: 1      Reps
   2: 2      Loc [ T2_Young ]

70: If time is (P92)
   1: 1320   Minutes (Seconds --) into a
   2: 1440   Interval (same units as above)
   3: 10     Set Output Flag High

```

71: Set Active Storage Area (P80)

1: 1 Final Storage Area 1

2: 103 Array ID

72: Real Time (P77)

1: 1220 Year,Day,Hour/Minute (midnight = 2400)

73: Sample (P70)

1: 1 Reps

2: 2 Loc [T2_Young]

*Table 2 Program

01: 0.0000 Execution Interval (seconds)

*Table 3 Subroutines

End Program

1	[T1_bur_1]	RW--	2	1	Start	-----	---
2	[T2_Young]	RW--	12	1	-----	-----	End
3	[T3_Rot]	RW--	2	1	-----	-----	---
4	[rH_Rot]	RW--	2	1	-----	-----	---
5	[Wspd]	RW--	3	1	-----	-----	---
6	[Wdir]	RW--	4	2	-----	-----	---
7	[Rad]	RW--	2	1	-----	-----	---
8	[Prec]	RW--	2	1	-----	-----	---
9	[Tint]	-W--	0	1	-----	-----	---
10	[Batt]	RW--	2	1	-----	-----	---
11	[Tvent]	RW--	2	1	-----	-----	---
12	[rHvent]	RW--	2	1	-----	-----	---
13	[-----]	----	0	0	-----	-----	---
14	[-----]	----	0	0	-----	-----	---
15	[-----]	----	0	0	-----	-----	---
16	[-----]	----	0	0	-----	-----	---
17	[-----]	----	0	0	-----	-----	---
18	[-----]	----	0	0	-----	-----	---
19	[-----]	----	0	0	-----	-----	---
20	[-----]	----	0	0	-----	-----	---
21	[RsR01]	RW--	1	1	-----	-----	---
22	[RsR02]	RW--	1	1	-----	-----	---
23	[RsR0vent]	RW--	1	1	-----	-----	---