

Tarfala Research Station automatic weather station, 1998

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November 4, 2014

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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

TRSmnet.1998.Precipitation.csv

Date-time, Precipitation

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

TRSmnet.1998.Radiation.csv

Date-time, Global radiation

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

TRSmnet.1998.Relative_humidity.csv

Date-time, hourly average Rh, ventilated Rh

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

TRSmnet.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

TRSmnet.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.

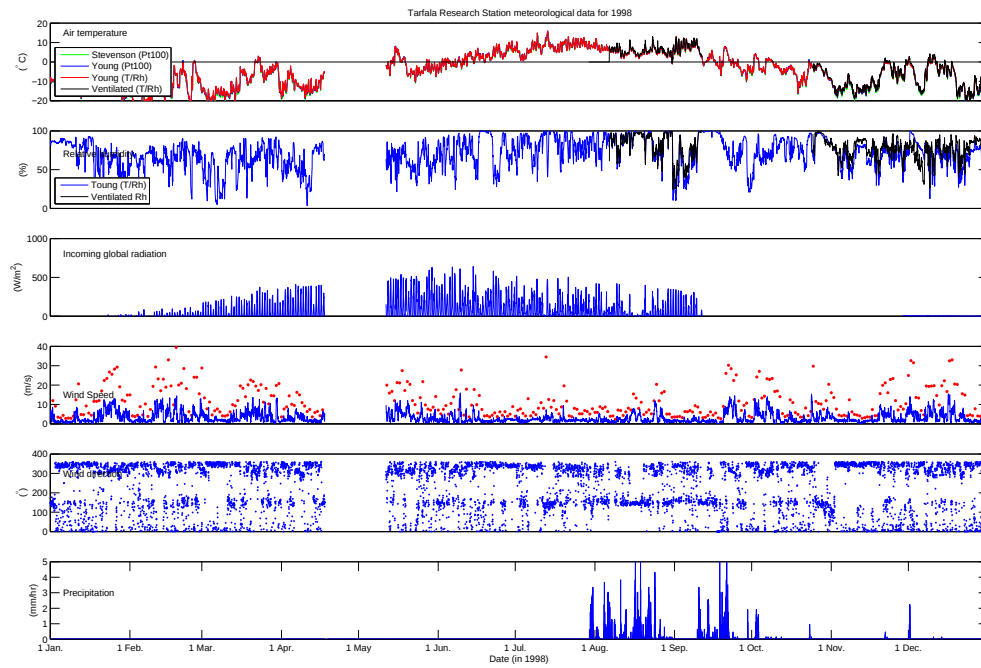


Figure 1: Summary of meteorological data from Tarfala Research Station automatic weather station 1998.

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, 1, & (1) 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, 1 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, 1, & (1) 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, 1 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, 1, & (1) 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, 1 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, 1, & (1) 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, 1 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	-----	-----	---