

**KEF Micromet station**  
 Jiquan Chen, 7/31/2017

**Sensors & Datalogger**

- 14" x 16" Enclosure (1)
- CR23 datalogger (1)
- HMP45C RH & T (1) – 2.0 m
- Radiation shield (1)
- HFT3 soil heat flux plates (3) – 2 cm
- CS616 soil moisture (1)
- 257 soil moisture block (1) 10-15 cm
- T-type TC(3), 5, 15, 25 cm

Program file "KEF\_MET080217"

LoggerNet

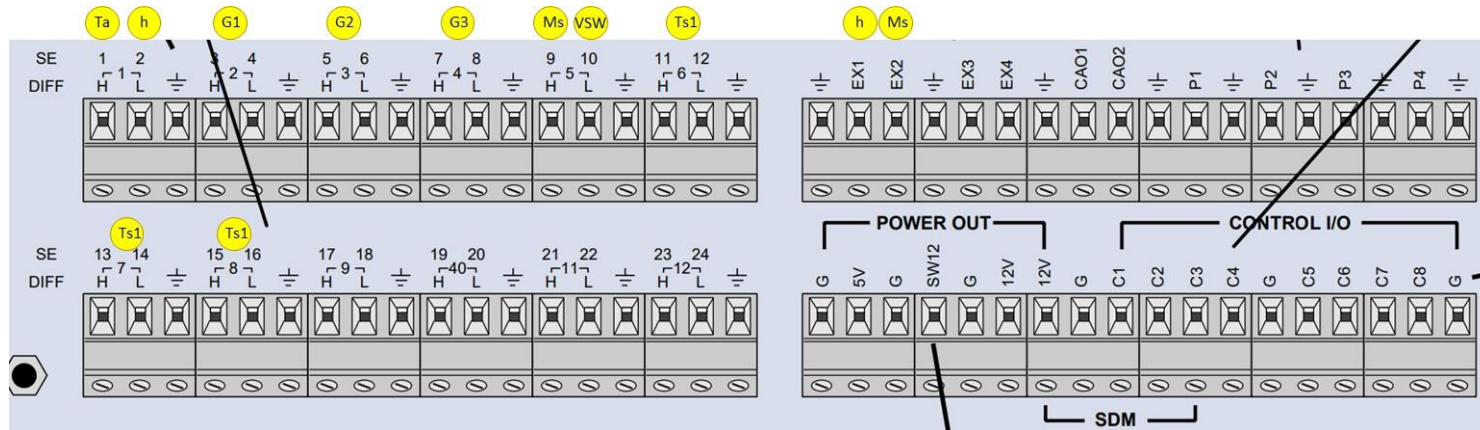
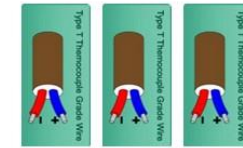
Laptop

Communication cable



**Supporting Frame**

- Triangular antenna, 6" (1)
- Guyed wires, 7.5' (3)
- Silver anchors (3)
- 3/8" R bar (4)
- Deep cycle marine battery (1)
- Battery case (1)
- Lightning rod (1)
- Grounding rod (1)
- 2'x2' plywood base (1)
- Power cable
- Grounding cable
- Protection tubing
- Small metal anchors



};{CR23X-TD}

; **Micromet station at the KEB -- understory, 8/2/2017**

; Jiquan Chen

; This program includes the following sensors

; HMP45C RH & Ta (1) – 2.0 m

; 3 HFT3 soil heat flux plates

; 1 257 soil moisture block at 10-15 cm

; 1 CS616 soil moisture, 0-30 cm

; 3 T-type TC for soil temperature at 5, 15, 25 cm

; Tech support from CSI: 435-227-9100

; **-Wiring for CR23X-**

; HMP45C (7-wire, cable switched power)

; 1H: Yellow

; 1L: Blue

; Ground: Purple

; Ground: Black

; Ground: Clear

; 12V: Red

; C1: Orange

; Differential Voltage (1)

; Ground: Shield

; 2H: High

; 2L: Low

; Differential Voltage (2)

; Ground: Shield

; 3H: High

; 3L: Low

; Differential Voltage (3)

; Ground: Shield

; 4H: High

; 4L: Low

; 257 Soil Moisture Sensor

; Ground: Clear

; Ground: White

; 5H: Red

; EX1: Black

; CS616 Water Content Reflectometer

; Ground: Clear

; 5L: Green

; G: Black

; 12V: Red

; C2: Orange

; Type T (copper-constantan) Thermocouple (1)

; 6H: Blue

; 6L: Red

; Type T (copper-constantan) Thermocouple (2)

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; 7H: Blue
; 7L: Red

; Type T (copper-constantan) Thermocouple (3)
; 8H: Blue
; 8L: Red

;-Measurement Labels-

; Default Measurements
; 1 BattV
; 2 ProgSig

; HMP45C (7-wire, cable switched power)
; 3 Ta
; 4 h

; Differential Voltage (1)
; 5 G1

; Differential Voltage (2)
; 6 G2

; Differential Voltage (3)
; 7 G3

; 257 Soil Moisture Sensor
; 9 kOhms
; 10 Ms

; CS616 Water Content Reflectometer
; 11 VW
; 12 PA_uS

; Type T (copper-constantan) Thermocouple (1)
; 13 Ts_1

; Type T (copper-constantan) Thermocouple (2)
; 14 Ts_2

; Type T (copper-constantan) Thermocouple (3)
; 15 Ts_3

; Wiring Panel Temperature
; 16 PTemp_C

; 101 Output_Table 30.00 Min
; 1 101 L
; 2 Year_RTM L
; 3 Day_RTM L
; 4 Hour_Minute_RTM L

};CR23X
;KEF_Met080217.DLD
;Created by Short Cut (2.8)

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;$
;:BattV :ProgSig :Ta :h :G1
;:G2 :G3 :Scratch_8:kOhms :Ms
;:VW :PA_uS :Ts_1 :Ts_2 :Ts_3
;:PTemp_C
;$

;%
;Final Storage Label File for: KEF_Met080217.SCW
;Date: 8/2/2017
;Time: 16:26:38
;
;
;101 Output_Table 30.00 Min
;1 101 L
;2 Year_RTM L
;3 Day_RTM L
;4 Hour_Minute_RTM L
;5 BattV_AVG L
;6 Ta_AVG L
;7 h L
;8 G1_AVG L
;9 G2_AVG L
;10 G3_AVG L
;11 Ms L
;12 VW_AVG L
;13 Ts_1_AVG L
;14 Ts_2_AVG L
;15 Ts_3_AVG L
;16 PTemp_C_AVG L
;
;102 Output_Table 1440.00 Min
;1 102 L
;2 Year_RTM L
;3 Day_RTM L
;4 Hour_Minute_RTM L
;5 BattV_MIN L
;6 ProgSig L
;
;Estimated final storage locations used per day: 774
;
;%

```

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MODE 1
SCAN RATE 5.0000

```

```

1:P10
1:1

```

```

2:P92
1:0
2:1440
3:30

```

```

3:P19
1:2

```

```

4:P95

```

**; air temperature (C) and relative humidity (%) with HMP45C, single ended**

5:P86

1:41

6:P22

1:1

2:15

3:0

4:0

7:P1

1:1

2:25

3:1

4:3

5:0.1

6:-40.0

8:P1

1:1

2:25

3:2

4:4

5:0.1

6:0

9:P86

1:51

10:P89

1:4

2:3

3:100

4:30

11:P89

1:4

2:4

3:108

4:30

12:P30

1:100

2:0

3:4

13:P95

14:P95

**; Soil heat fluxes (w/m2) using diff voltage, SN: H973486**

15:P2

1:1

2:25

3:2

4:5  
5:43.11  
6:0.0

**; Soil heat fluxes (w/m2) using diff voltage, SN: H973485**

16:P2  
1:1  
2:25  
3:3  
4:6  
5:43.43  
6:0.0

**; Soil heat fluxes (w/m2) using diff voltage, SN: H973557**

17:P2  
1:1  
2:25  
3:4  
4:7  
5:41.01  
6:0.0

**; Soil water potential (M, Pa)**

18:P5  
1:1  
2:13  
3:9  
4:1  
5:200  
6:9  
7:1  
8:0

19:P59  
1:1  
2:9  
3:1

20:P34  
1:14  
2:-21  
3:8

21:P37  
1:8  
2:0.018  
3:8

22:P34  
1:8  
2:-1  
3:8

23:P37  
1:8  
2:-1

3:8

24:P38

1:9

2:8

3:10

25:P37

1:10

2:0.07407

3:10

26:P34

1:10

2:-0.03704

3:10

**; CS616 volumetric soil moisture (%)**

27:P37

1:10

2:100

3:10

28:P138

1:1

2:10

3:12

4:12

5:1

6:0

29:P55

1:1

2:12

3:11

4:-0.0663

5:-0.0063

6:0.0007

7:0

8:0

9:0

**; Three soil temperature using T-type thermocouples (C) at 5, 15, and 25 cm, diff**

30:P14

1:3

2:21

3:6

4:1

5:16

6:13

7:1

8:0

31:P17

1:16

32:P92  
1:0  
2:30  
3:10

33:P80  
1:1  
2:101

34:P77  
1:1220

35:P71  
1:1  
2:1

36:P71  
1:1  
2:3

37:P70  
1:1  
2:4

38:P71  
1:1  
2:5

39:P71  
1:1  
2:6

40:P71  
1:1  
2:7

41:P70  
1:1  
2:10

42:P71  
1:1  
2:11

43:P71  
1:1  
2:13

44:P71  
1:1  
2:14

45:P71  
1:1  
2:15



46:P71  
1:1  
2:16

47:P92  
1:0  
2:1440  
3:10

48:P80  
1:1  
2:102

49:P77  
1:1220

50:P74  
1:1  
2:0  
3:1

51:P70  
1:1  
2:2

MODE 2  
SCAN RATE 10.0000  
1:P96  
1:71

MODE 3

MODE 10  
1:28  
2:124  
3:0

MODE 12  
1:0000  
2:0000  
3:0000

**; Final Storage Label File for: KEF\_Met080217.SCW**  
; Date: 8/2/2017  
; Time: 16:26:38

; 101 Output\_Table 30.00 Min  
; 1 101 L  
; 2 Year\_RTM L  
; 3 Day\_RTM L  
; 4 Hour\_Minute\_RTM L  
; 5 BattV\_AVG L  
; 6 Ta\_AVG L  
; 7 h L  
; 8 G1\_AVG L

; 9 G2\_AVG L  
; 10 G3\_AVG L  
; 11 Ms L  
; 12 VW\_AVG L  
; 13 Ts\_1\_AVG L  
; 14 Ts\_2\_AVG L  
; 15 Ts\_3\_AVG L  
; 16 PTemp\_C\_AVG L

; 102 Output\_Table 1440.00 Min  
; 1 102 L  
; 2 Year\_RTM L  
; 3 Day\_RTM L  
; 4 Hour\_Minute\_RTM L  
; 5 BattV\_MIN L  
; 6 ProgSig L

; Estimated final storage locations used per day: 774