

Sokkia

SET310

SET310S

SET510

SET510S

SET610

SET610S

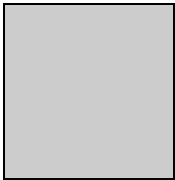


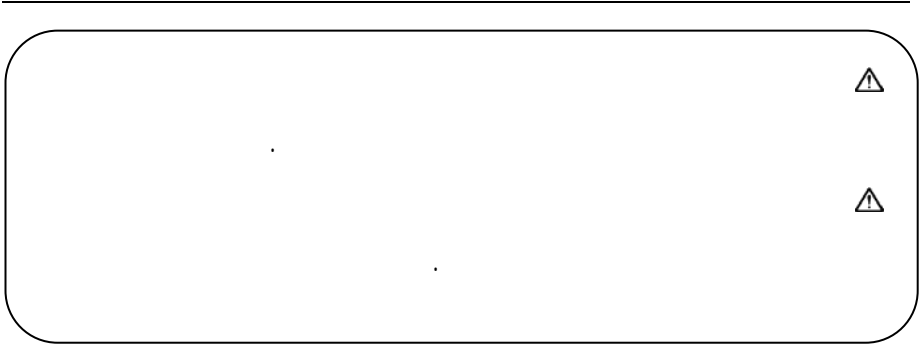


[illegible]

[illegible]

[illegible]





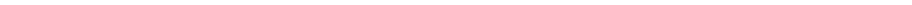


( )

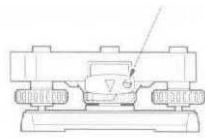
"









[illegible]

•

" "☞

SET •

SET •

SET •

---

•

•

SET •

) •

SOKKIA ( •

" "☞

SET •

SET •

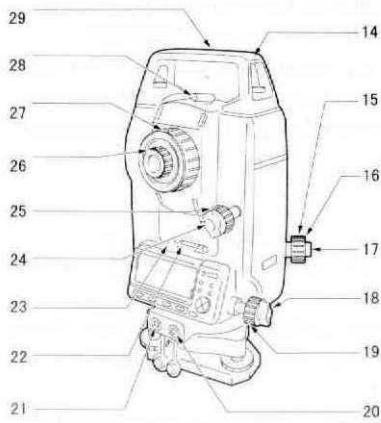




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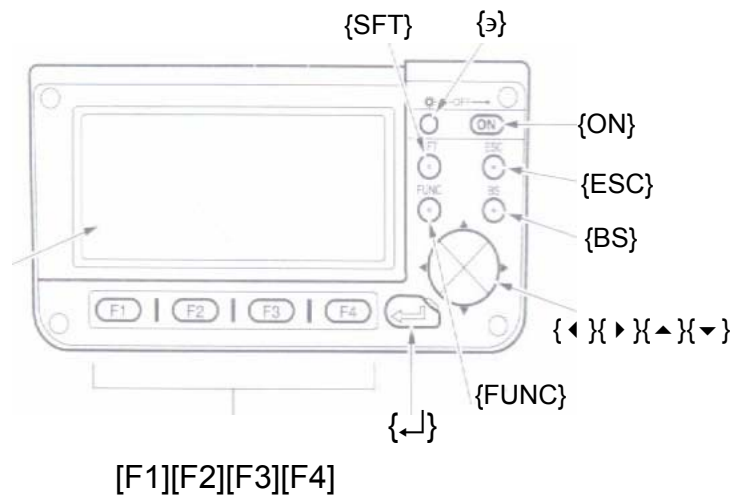
$$\left( \begin{array}{c} \text{ } \\ \text{ } \end{array} \right) /$$

( : SET 310S / 510S/ 610S )

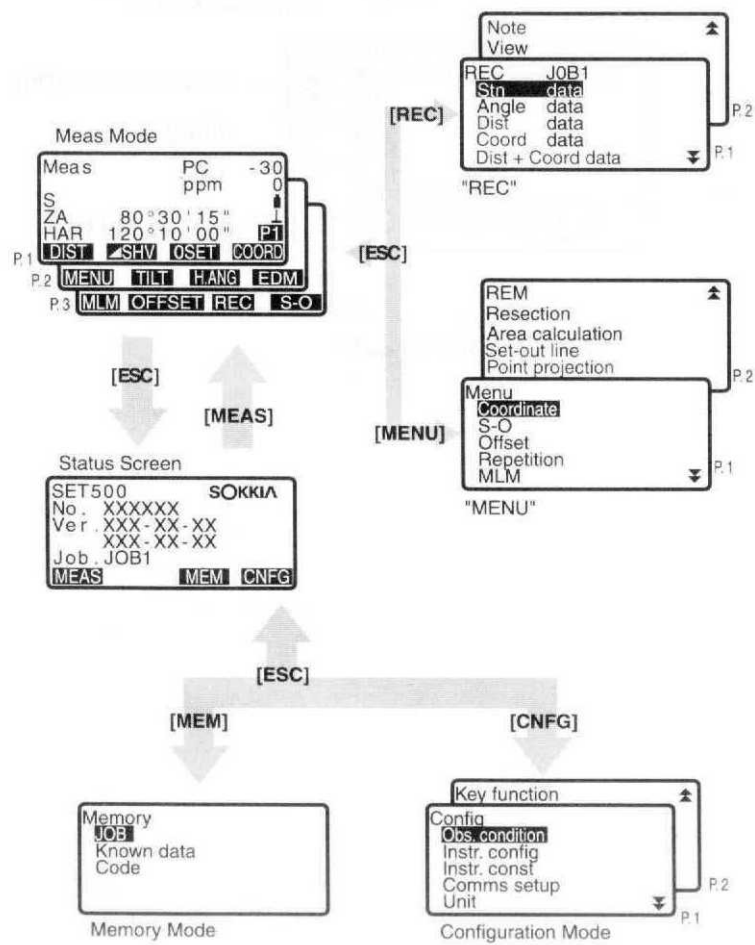
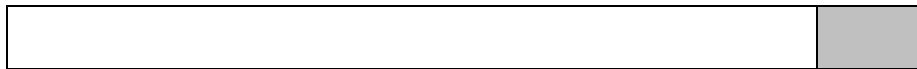


( SET 610/610S )

( )







--	--

" "

☞

/ ●

: {ON}

: {э} {ON}

●

: {э}

●

: {F4} {F1}

: {FUNC}

MEAS

/ ●

: {F4} {F1}

: {FUNC}

( )

: ( ) : {FUNC}

: ( ) : {FUNC}

: {BS}

: {ESC}

: {SFT}

/ / : {↵}

( 125. 3000 ) 12°30'00" :

MEAS [H. ANG]

H angle {↵}

" " [1]

[2]

[5] {FUNC}

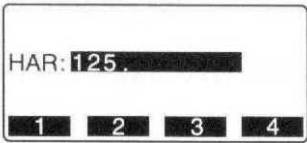
[5]



[.]

{FUNC}

{↵}



{FUNC}



: {▲}/{▼}

/

: {▶}/{◀}

: {↵}

:

MEAS

[EDM]

Reflector

{▲}/{▼}

“Sheet”

{▶}/{◀}

“Prism”



{▼} {↵}



: [CNFG]

Meas

: [MEAS]

: [MEM]

: {ESC}



" 7  
: {ESC} : ●

نام دستگاه

SET500 SOKKIA

No. XXXXXX

Ver. XXX-XX-XX

XXX-XX-XX

Job. JOB1

MEAS MEM CNFG

☐ شماره نسخه نرم افزار  
JOB

### Meas

Meas PC - 30

ppm 0

\*۱ طول S

\*۲ زاویه قائم ZA

\*۳ زاویه افقی HAR

مقدار ثابت منشور

ضریب تصحیح اتمسفر

\*۴ باقیمانده توان باتری

\*۵ تصحیح زاویه تیل

شماره صفحه

P1

DIST SHV OSET COORD

\*

"Config . " : 7  
: S  
: H  
: V

\*

"Config . " : 7  
(Z=0) : ZA  
(H=0 / H=±90) : VA  
[ZA/%] % /

\*

[R/L]

: HAR

: HAL



\*

[ ◀ SHV] “S,H,V” “S,ZA,H”  
( EDM 25°C BDC46)

\*



:(

):



”



\*

”

”





( )

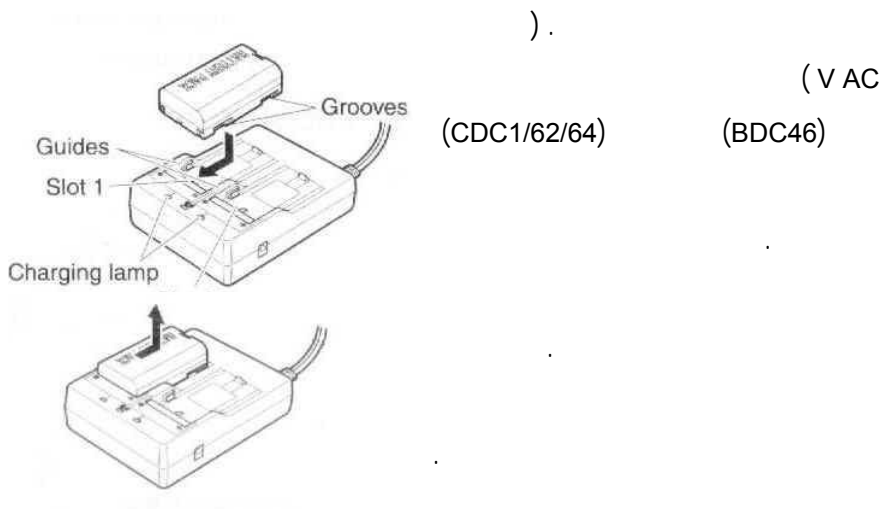
•

•

•

•

•





:

( ).

:

( ).



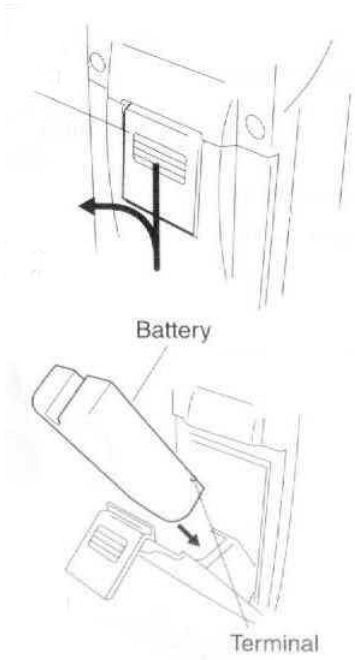
•

/

•

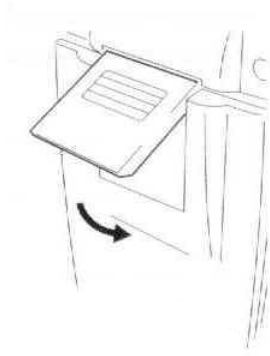


:



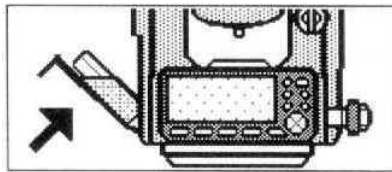


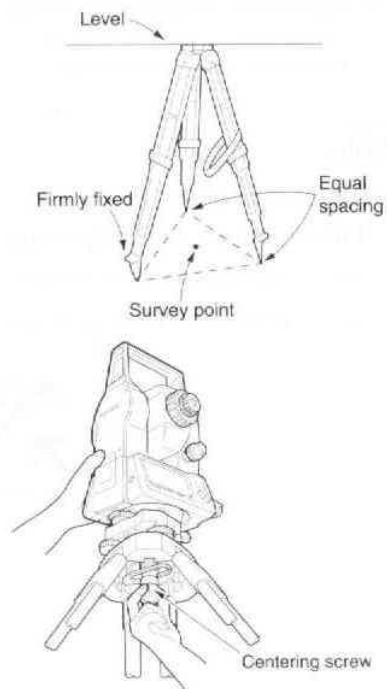




:  
SET

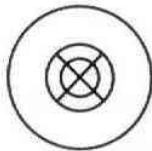
SET



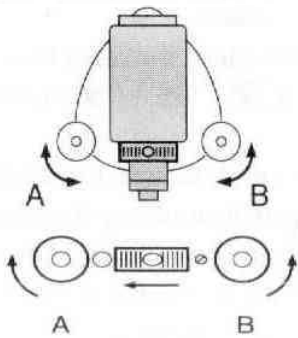
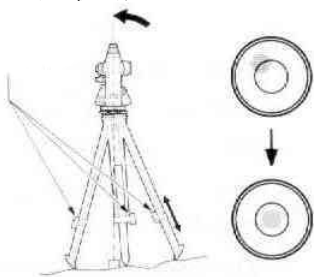




"

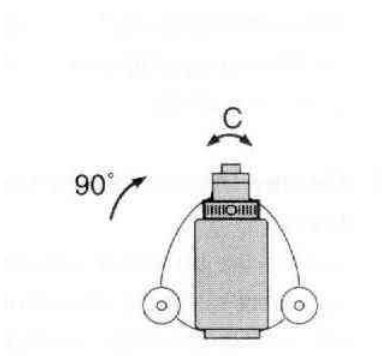
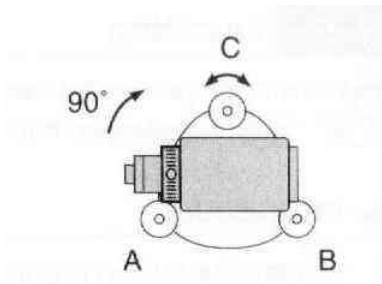


تنظیم پایه‌های سه پایه



A , B

A , B



A , B

C

A , B

a

- b

C

"

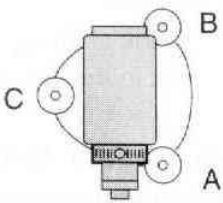
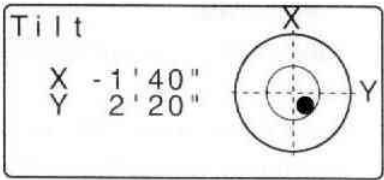
" 

**SET**

: (SET 310/510/610)

: (SET 310S/SET510S/SET610S)

$\pm$  mm



{ON}

{TILT}

(.)

±3"

±6"

X

Y

(.)

"

A , B

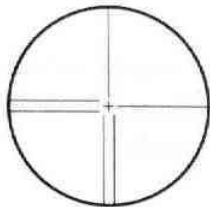
B A

Y C X

0°

Meas

{ESC}



( )







: H index / Vindex



SET300/500/600

"Config"



0 SET	
ZA	0SET
HAR	0SET

{ON}

0SET	
ZA	Take F1
HAR	V1
	0°00'00"
	<b>OK</b>

"Manual"

"Hindexing"



"HAR 0SET"

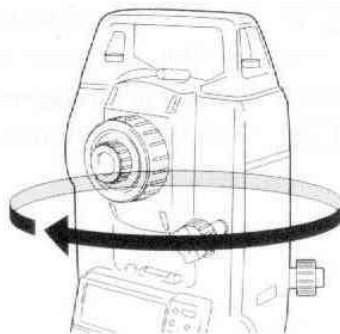
"Manual"

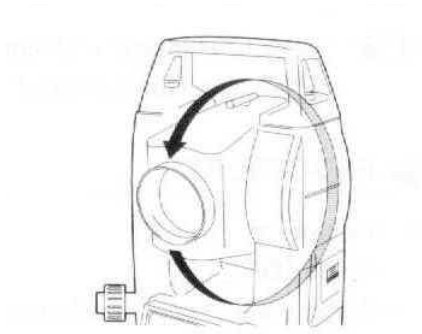
"V indexing"



"

"





Meas	PC	-30
	ppm	0
S		
ZA	80°30'15"	
HAR	120°10'00"	P1
DIST	SHV	OSET
		COORD

Meas

"Out Of Range"

•  
"On" Instr. Config "Resume"

"Config" " " (hand icon)

"Obs. "Tilt crn" •

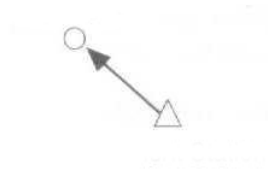
"NO" condition"

" Config" " (hand icon)



( 0° )

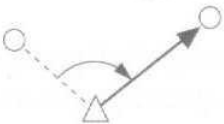
“0SET”



Meas	PC	-30
	ppm	0
ZA	89°59'50"	
HAR	0°00'00"	P1
DIST	SHV	0SET
		COORD

Meas [0SET]

[0SET] [0SET]



0°

Meas	PC	-30
	ppm	0
ZA	89°59'50"	
HAR	117°32'20"	P1
DIST	SHV	0SET
		COORD

(HAR)



(       )



[H. ANG] Meas

“H Angle”

HAR: 125.

1

2

3

4

{-}

Meas                      PC    -30

ppm    0

ZA            89°59'50"

HAR        117°32'20"    P1

DIST    SHV    OSET    COORD



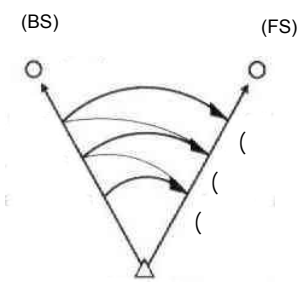
[HOLD]

[HOLD]

[HOLD]

: [HOLD]






)  
)  
)



(REP)

Repetition  
HARp 0°00'00"  
Reps. 0  
Ave.  
Take BS  
CE OK

"  
"   
- 0° [REP]  
[OK]

[OK]

Repetition  
HARp 110°16'20"  
Reps. 2  
Ave. 50°38'10"  
Take BS  
CE OK

[OK]  
[OK]

"HAR<sub>P</sub>"

"Ave"



) [CE] :

“Take BS”

(

{ESC}

“Repetition”

Meas

[MENU]



”

” :

7

”

:

“

”

“



SET

[D-OUT]

Meas

"Angle Data"

[D-OUT]



EDM Standby  
EDM ALC

“

”



“★”



Meas

[AIM]

”

” 7

Aiming

\*

DIST BEEP

[AIM]

<Aiming>



“★”

“★”





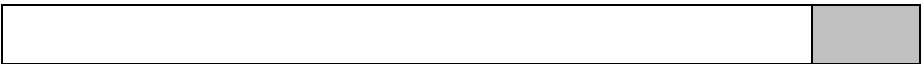
[BEEP]

[BEEP]

[DIST]



- Meas



Meas PC -30  
ppm 0  
S  
ZA 80°30'15"  
HAR 120°10'00" P1  
DIST SHV OSET COORD

[DIST] Mess

Dist  
Rapid "r" PC -30  
ppm 25  
STOP

) EDM

(

(S)

(HAR)

(ZA)

Meas PC -30  
ppm 0  
S 525.450m  
ZA 80°30'10"  
HAR 120°10'00" P1  
STOP



Meas

PC - 30

ppm 0

S 525.450m

H 518.248m

V 86.699m

P1

DIST SHV OSET COORD

[STOP] .

Meas

[◀ SHV]

( ) H ( ) S .

( ) V



S-9 ... S-2 S-1

[S-A]

"



[RCL]

Meas

"



[RCL] .

S	525.450m
ZA	80°30'10"
HAR	120°10'10"
N	-128.045
E	-226.237
Z	30.223

[◀ SHV]

{ESC} .

--	--

11

11.



SET .

[D. OUT]

Meas



"Dist data"

[D-OUT] .

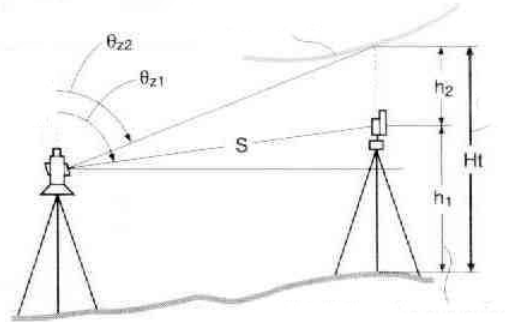
[STOP] .

Meas

REM

REM

$$H_t = h_1 + h_2$$
$$h_2 = S \sin \theta$$

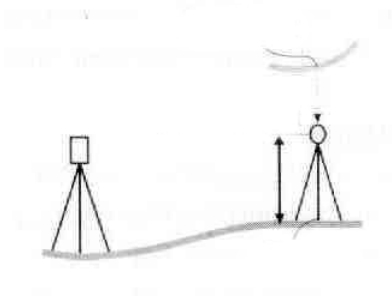


[REM]

Meas

"

"



Meas

"

"



[DIST]

(S)

(HAR)

(ZA)

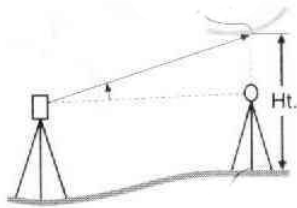
REM  
Ht . 6.255m  
S 13.120m  
ZA 89°59'50"  
HAR 117°32'20"  
**STOP**

[STOP]

[REM]

REM

"Ht"



REM  
Ht . 6.255m  
S 13.120m  
ZA 89°59'50"  
HAR 117°32'20"  
**REM** **OBS**

[STOP]

[OBS]

{ESC}

Meas

[MENU]

REM

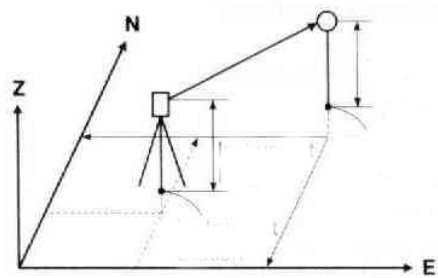
[Ht]( )

"stn data"

"

"

Back



sight

EDM

“ EDM

” :



NO :	0.000		
EO :	0.000		
ZO :	0.000		
Inst.h :	1.400m		
Tgt.h :	1.200m		
1	2	3	4

NO :	370.000		
EO :	10.000		
ZO :	100.000		
Inst.h :	1.400m		
Tgt.h :	1.200m		
1	2	3	4

[COORD]

coord

“Stn

”Stn Orientation”

Coordinate”

[EDIT]



[READ]

“ ”

[OK]

<Coord>

“ RECORD — ”



JOB JOB

JOB JOB

“ JOB ” 7

Pt.	11111111	▲
Pt.	1	
Crđ.	2	
Stn	12345679	
Stn	1234	▼
[P] [TOP] [LAST] [SRCH]		

[READ]

JOB :pt

JOB

: Crđ. /stn

JOB JOB

N0:	9.876
E0:	5.432
Pt.	PNT-001
Inst.h	0.000m
Tgt.h	0.000m
[READ] [REC] [EDIT] [OK]	

{-}



-

{▼} {▲} [↑↓...P] •

[TOP] •

[LAST] •

[SRCH] •

.

-

“Pt. NO”

[OK] .

<Instrument station data setting>

[EDIT] •

JOB



•





[OK] .

[OK] .

Back sight

Back sight [YES]

<Coord> .

[NO]

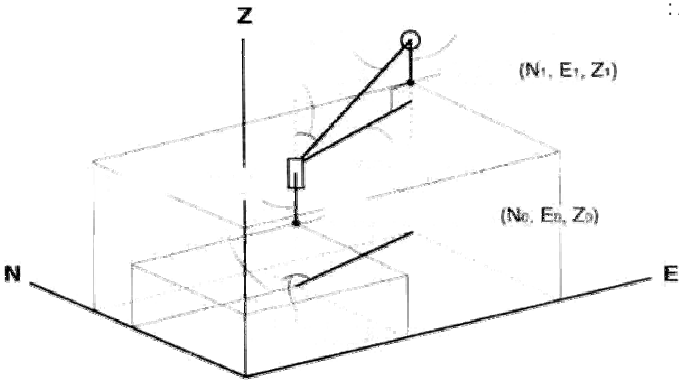
Back sight

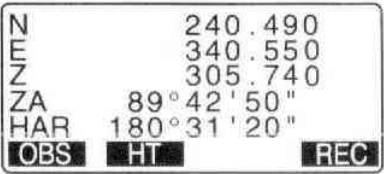
$NO + S \times \sin Z \times \cos AZ = N1$

$Eo + S \times \sin Z \times \sin AZ = E1$

$ZO + S \times \cos Z + ih - th = Z1$

: ih	: S	N	: N0
: fh	: Z	E	: E0
: Az	Z	Z	: Z0





A screenshot of a handheld device screen. The screen displays astronomical data in a table format. At the bottom, there are three buttons labeled 'OBS', 'HT', and 'REC'.

N	240.490
E	340.550
Z	305.740
ZA	89°42'50"
HAR	180°31'20"
OBS	HT
REC	

"Obserration" <Coord>

[STOP]

[HT]

[REC]

“ RECORD

[OBS]

<Coord>

{ESC}



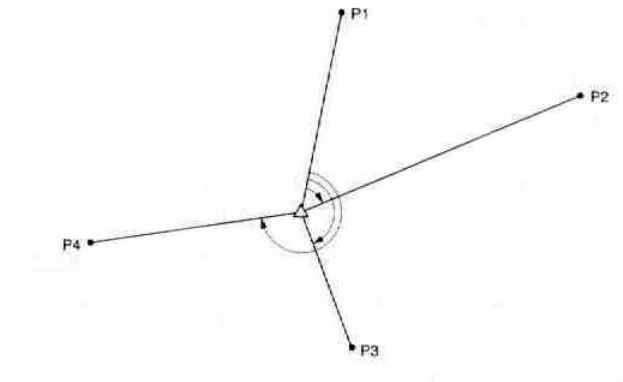
(x<sub>0</sub>,y<sub>0</sub>,70)

(X<sub>i</sub> , Y<sub>i</sub> , Z<sub>i</sub>)

(H<sub>i</sub>)

(V<sub>i</sub>)

(D<sub>i</sub>)



	Z	Z , N , E	•
	Z , N , E		•
	N,E	Z	
"	" "	"	
			•
		Job	
"Job		"	☞



Z , N , E



[RESEC]

1st Pt. ▶▶

Np: 100.000

Ep: 100.000

Zp: 50.000

Tgt.h: 1.400m

1 2 3 4

"



[RESEC]

[EDIT]

NEZ

Resection 1st Pt.

N 100.000

E 100.000

Z 50.000

DIST ANGLE

{↵}

[MEAS]

[READ]



"

{↵} •

[DIST]

[YES]

[ANGLE]

N	100.001
E	100.000
Z	9.999
$\sigma$ N	0.0014m
$\sigma$ E	0.0007m
RESULT	REC OK

[CALC]

[YES]

[CALC]

[RESULT]

{ESC}

[ADD]

	$\sigma$ N	$\sigma$ E
1st	-0.001	0.001
* 2nd	0.005	0.010
3rd	-0.001	0.001
4th	-0.003	-0.002
BAD	RE CALC	RE OBS
		ADD

[REC]

"RECORD

\* [BAD]



[RE CALC] .

Resection  
Start point  
Last point

[RE OBS] •

[OK] .

Back

[YES]

sight

[NO] •





[MENU]

"Resection"

"feet"

"inch"

(     ) Z

[RESEC]

[EDIT]

"Elevation"

◀◀      10th Pt.

Zp:      11.891

Tgt.h:      0.100m

1    2    3    4

{◀}

[MEAS]

Resection 10th Pt.

Z              11.718

OBS

{▶}

[OBS]

[YES]





[CALC]

Z

10.000

$\sigma Z$

0.0022m

RESULT

REC

OK

[YES] [CALC]

$\sigma Z$

1st -0.003

2nd -0.003

3rd 0.000

4th 0.002

BAD

RE CALC

RE OBS

ADD

[RESULT]

{ESC}

[BAD]

\*

[RE CALC]

( ) Z

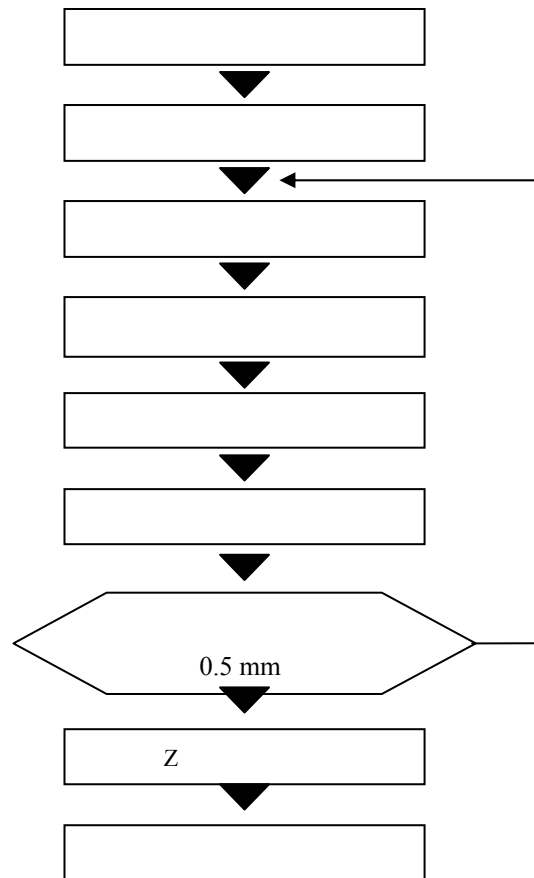
[OK]

N,E



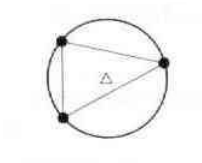
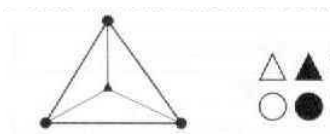
N , E

Z .





(     )



(



(



(



( )

:

:

DHA = -

:

Sdist : S-OS = -

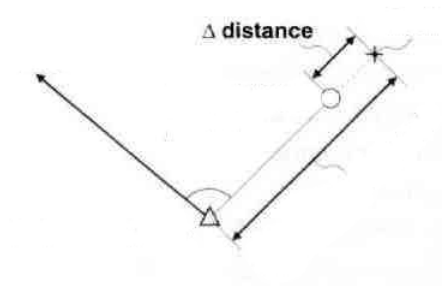
Hdist : S-OH = -

Vdist : S-O7 = -

:

.REM

•



$$[\blacktriangle \text{ S-O}]$$

$$[\blacktriangle \text{S-O}] .$$
$$\vdots$$


7

S-O H

Hdist: 3.300m

H ang: 40

1

2

3

4

[EDIT]

: Sdist / Hdist / Vdist(

:Hang(

[OK]

DHa

[OBS]

S-O H 0.820m

dHA 0°09'40"

H 2.480m

ZA 75°20'30"

HAR 39°05'20"

STOP

.(S-O H)

"+" S-OH 0m

" "

[↔]

: ←

: →

: ↓

: ↑

↑ ↓

↔

0.010m

0°00'30"

H 2.290m

ZA 75°20'30"

HAR 39°59'30"

STOP



<S-O> {ESC} .

[READ]

[REC]

" : 7

"RECORD -

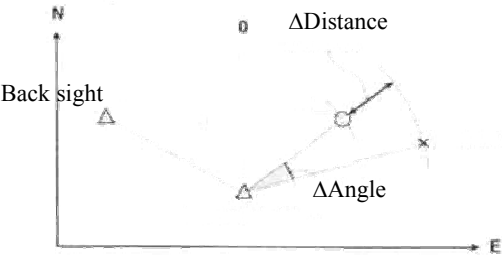


[MENU]

"S-O"

Meas

SET



Z .



Meas

[S-O] .

<S-O>



"

"

Back sight

"

"

S-O Coord			
Np:	100.000		
Ep:	100.000		
Zp:	50.000		
Tgt. h:	1.400m P1		
1	2	3	4

[▲ S-O]

"S-O data"

<S-O Coord>

[EDIT]

[READ]

↓	1.988m
→	2.015m
▲	-1.051m
ZA	89°52'50"
HAR	150°16'10"
OBS	AS-O ←→ REC

"

"

[OK]

[OBS]

"

"

..


..





<S-O> {ESC} .  
[READ]

REM

"REM "   
◀



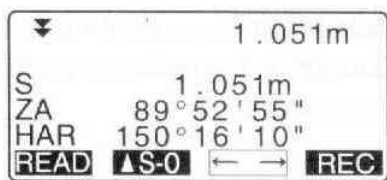
)  
(  
<S-O> Meas [S-O] .

" 

"

S-O Ht  
Height: 3.300m  
1 2 3 4

[▲ S-O] "S-O data" .  
<S-O Ht.>  
[EDIT] .



[OK]

REM

[REM]

" 

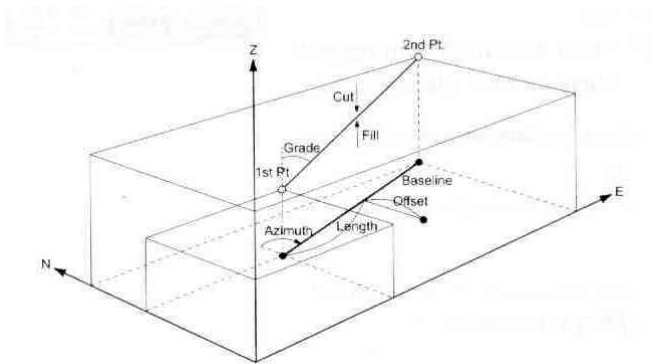
"

..

..

{ESC}

<S-O>



scale factor

$$\text{Scale factor} = \frac{\text{Hdist}'(\quad)}{\text{Hdist}(\quad)}$$

scale factor

- 
- 



	Meas	[S-O Line]
"		"
<set-out		[S-O Line]
		line>

Define 1st Pt. ▶▶

Np: 113.464

Ep: 91.088

Zp: 12.122

1 2 3 4

◀◀ Define 2nd Pt.

Np: 112.706

Ep: 104.069

Zp: 11.775

P1

READ REC EDIT OK

◀◀ Define 2nd Pt.

Np: 112.706

Ep: 104.069

Zp: 11.775

P2

MEAS

Measure 1st Pt.

N 113.464

E 91.088

Z 12.122

OBS

1-12" ➡

<set-out "Define baseline" .

[EDIT] line>

[READ] •

" ➡

"

{↵}

{▶}.

[EDIT] .

[MEAS] {FUNC} .

•

[MEAS] .<sup>9</sup>



[OBS]

[STOP] •

•

[YES] .

[ NO] •

[OBS]

[YES] .

scale factor

<set-out .

[OK] .

line>

" 

"

" 

"

scale

[Sy = 1] •

factor

:

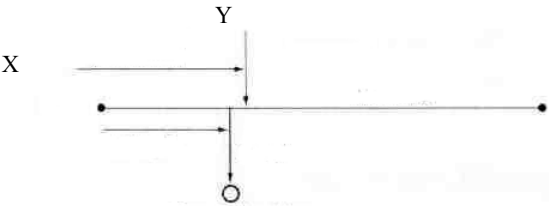
⌋ [1 : \*\*] •

" : "

Meas

" set-out line "

[MENU]



Set-out line

Length 3.678m

Offset 1.456m

1234

<set-out line> "point"

[EDIT]

: length ( )

( X )

: offset ( )

( Y )



Set-out line	
N	111.796
E	94.675
Z	12.024
REC S-O	

[OK] .

: [RES] •

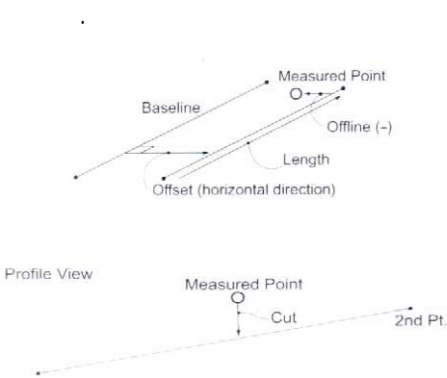
/ " : "

[▲ S-O ] •

" "

{ESC} .

( ) .



Set-out line

Offset 0.000m

1

2

3

4

<set-out line>

" line "

[EDIT]

: offset ●

[OBS]

[STOP]

[YES]

Set-out line

Offline -0.004m

Cut 0.006m

Length 12.917m

REC

OBS

: offline ●

: " cut " ●

: " fill " ●

: length ●

[NO]



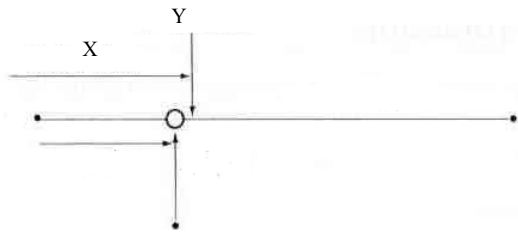


[OBS]

: [REC] ●

"Record Data





Meas

[P-PROJ]

Point projection

Np: 103.514

Ep: 101.423

Zp: 12.152

P1

READ OBS EDIT OK

"

"

<point

[P-PROJ]

projection>

"

"

<point projection>

[OK]

"

"



[MENU]



•

"point projection"

Meas



"

"



<point

[P-PROJ]

projection>

[EDIT]

Point projection

Np: 103.514

Ep: 101.423

Zp: 12.152

P1

1234

[OBS]

•

•

{FUNC}

[RES]

Point projection

Length 10.879m

Offset 9.340m

d.Elev 0.321m

XYZ REC S-O

/

"



"

[OK]

:

:Length •

( x )



: Offset

( y )

:d. Elev •

[XYZ] •

[OFFSET] •

[REC] •

"



"

[◀ S-O] •

"



{ESC} .

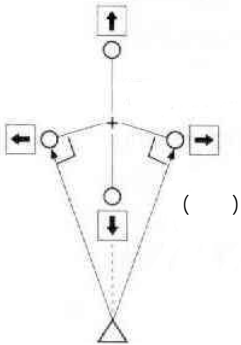


(       )

(       )

•

•



(       )

•

◦

•

◀





[DIST]

Meas

[STOP]

[OFFSET]

< Offset > Meas

" 

"

"Offset / Dist"

[EDIT]

(

(

•

: ←

: →

: ↓

: ↑

[OBS] •

[OK]

S	34.770m		
ZA	80°30'10"		
HAR	120°10'00"		
Dist:	2 m		
Dirac:	→		
1	2	3	4

Offset/Dist			
S	10.169m		
ZA	73°37'50"		
HAR	190°47'10"		
REC	XYZ	NO	YES

[YES]

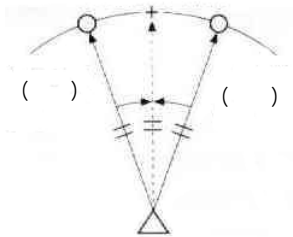
[XYZ]

[NO] •

[REC] •

” 

” Record



)

(

[DIST]

Meas

[STOP]

Meas

[OFFSET]

< Offset >

"

-

"

"Offset / Angle" < Offset >

S	34.770m
ZA	80°30'10"
HAR	120°10'00"
2nd obs.OK?	
<b>OBS</b>	<b>OK</b>

Offset/Angle	
S	34.980m
ZA	85°50'30"
HAR	125°30'20"
<b>REC</b>	<b>XYZ</b>
<b>NO</b>	<b>YES</b>

[OK]

[YES]

< Offset >

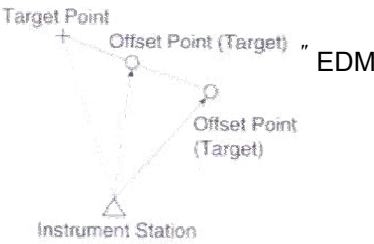


( )

( 2RT500 )

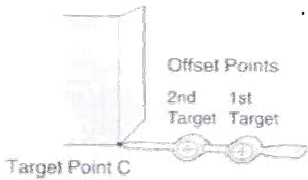
•

:



" "

( 2RT500 )



•

•

•

" Sheet "

•

◀

---

)

(

Observe 2nd o/s

ZA73°18'00"

HAR250°12'00"

OBS

B-C:1.2m

1234

Offset/2D

N10.480

E20.693

Z15.277

REC

HVD

NO

YES

[OFFSET]

< Offset > Meas

-۳

"

"

"Offset/2D" < Offset > -۴

-۵

[OBS]

2<sup>nd</sup> target " [YES]

" observation

[OBS]

[YES]

{-}

<Offset> [YES]

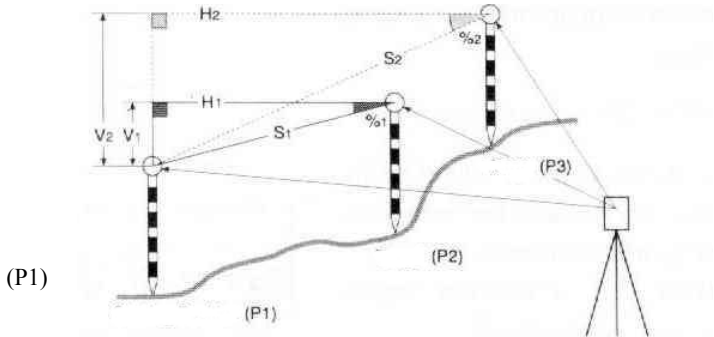
[HVD]

S ZA HAR

MLM

(                    )

- 
- 



Meas [DIST]

[STOP] .

MLM	
S	20.757m
H	27.345m
V	1.012m
MLM	MOVE S/% OBS

[MLM]

Meas

:

: S  
: H  
: V

[MLM]

[S/%] •

(S)

[OBS] .

•

[OBS]

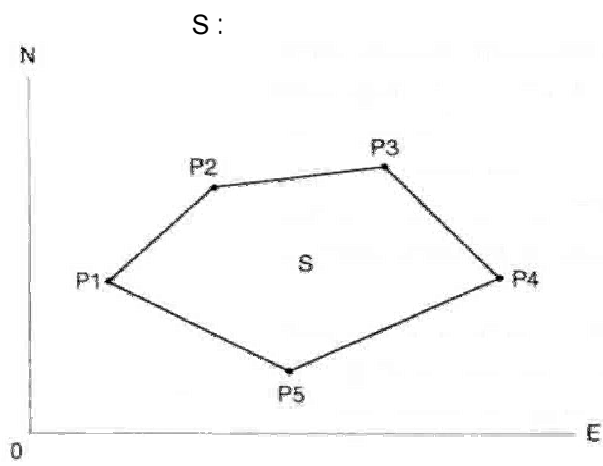
[MOVE] •

" " 

MLM {ESC}



"



P1(N1,E1)  
P2(N2,E2)  
P3(N3,E3)

- 
- 

△

(                      )



Meas

[AREA]

"

"

[AREA]

N	12.345
E	137.186
Z	1.234
ZA	90°01'25"
HAR	109°32'00"
<b>OK</b>	<b>OBS</b>

[OBS] . [MEAS]

[READ] •

"☞"

"

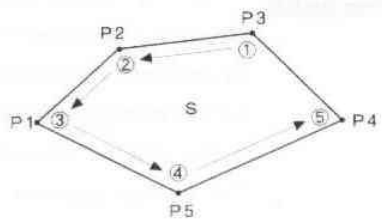
[READ] •

[OBS] •

01:	Pt_01
<b>02:</b>	
03:	
04:	
05:	
	<b>MEAS</b>

[OK]

" pt. 01 "



[CALC]

Area calculation  
Pt.3  
Area 468.064m<sup>2</sup>  
0.00468ha  
OK

[OK]

Meas

"  - \

Pt. Pt.001  
Pt. Pt.002  
Pt. **Pt.004**  
Pt. Pt.101  
Pt. Pt.102  
↓  
11.P TOP LAST SRCH

[READ]

:Pt

:Crd/stn.

Job "

{-}

pt. 01

01:Pt.004  
**02:**  
03:  
04:  
05:  
↓  
READ

[CALC]



Area calculation  
Pt.3  
Area 468.064m<sup>2</sup>  
0.00468ha  
OK

[MENU]

" Area calc "

[CALC]

[OK] Meas



Meas

RECORD

( )

Record

JOB

"JOB / " 

•

JOB

•

JOB

:

•

JOB

•




[REC]

<REC> Meas



JOB •

"Stn data"

[READ] •

N0: 56.789  
E0: -1234567.789  
Z0: 1.234  
Pt.:Pt.004  
Inst.h: 1.234m   

1234

Code   
:pole  
Operator:  
:SOKKIA   

OKEDIT

" 

"

[EDIT]

()

()

()

()

Date : Jan/28/2001▲  
Time : 00:00:00  
Weath: **Fine**  
Wind : Calm  
▼  
OK      ↓      EDIT

Temp. : **12**°C ▲  
Press : 1013hpa  
ppm : -3  
OK      0ppm      EDIT

( )  
( )  
( )  
( )  
( )  
( )  
( )  
( )

[↑] / [↓]

.

.

[0PPM]      0ppm

[OK]

{ESC}      <REC>

SET



(      ) .

9999.999    - 9999.999

snow   heavy rain   light rain   cloudy   Clear :

very strong   strong   light   gentle   calm :

60°   -30 :

1050(mmHg)   375   1400(hPa)   500 :

499   -499 : (ppm)

Job

[AUTO]



<REC>      Meas      [REC]

REC/Angle    rec 2922

ZA    60°15'40"

HAR   110°30'45"

Pt.:Pt.002

AUTO      0SET   REC

"Angle data"

ZA    60°15'40"

HAR   110°30'45"

Pt.: Pt.002

Tgt.h: 1.234m ▼

1    2    3    4

[OK]      [REC]

( )

( )

( )

[OK]

[AUTO]

REC/Angle    rec 2923

ZA    80°30'15"

HAR   120°10'00"

Pt.:Pt.001

Recorded

Meas

[AUTO]

[OFFSET]

{ESC}

<REC>

Job



MEAS [DIST]

" "

Meas [REC]

Dist " <REC>

"data

- [EDIT] [REC]

REC/Dist rec 2923

S 123.456m

ZA 80°30'15"

HAR 120°10'00"

Pt.: Pt.001

AUTO DIST OFFSET REC

S 123.456m

ZA 80°30'15" A

HAR 120°10'00"

Pt: Pt.001

Tgt.h: 1.234m

1 2 3 4

( )

( )

( )

[OK]

[DIST]

{ESC}

<REC>

.



[REC]

.

Job



Meas

" "

REC/Coord rec 2923  
N 344.284  
E 125.891  
Z 15.564  
Pt.: Pt.003  
[AUTO] [OBS] [OFFSET] [REC]

Meas [REC]

Coord " <REC>

"data

[EDIT] [REC]

N 344.284  
E 125.891  
Z 15.564  
Pt.: [Pt.003]  
Tgt.h: 2.000m   
[1] [2] [3] [4]

( )

( )

( )

[OK]

[OK]

{ESC}

<REC>

Job



Meas

[REC]

<REC>

"Dist+Coord data"

<REC/DIST+C>

[OBS]

[EDIT]

[REC]

( )

( )

( )

[OK]

{ESC}

<REC>

REC/Dist+C    rec 3970

N                0.051

E                -0.004

Z                1.486

Pt. PNT-1234

AUTO   OBS   OFST   REC

Job



Meas

[REC]

"Note"

<REC>

REC/Note    rec 2823  
Data is tak  
  
[OK]    [EDIT]

[OK]

[EDIT]

<REC>

Job

Job



SET



Stn    Pt. 1  
Dist    1  
Crd.    2  
Dist    3  
Ang.    4  
1..P    TOP    LAST    SRCH

Meas

[REC]

<REC>

"View"



S123.4567m

ZA20°31'21"

HAR117°32'21"

Pt.1

Tgt.12.345m

NEXTPREV

{←}

[PREV]

[NEXT]

)

[↑↓..P] (

{▼} {▲}

[TOP] .

[LAST] .

[SRCH]

"Pt.No"

{ESC} .

{ESC} <REC>

SET Job



JOB

JOB JOB

SET JOB .

JOB1

JOB10 JOB1 JOB .

JOB

: JOB

JOB

" / ":



: JOB

JOB

JOB ◀

JOB selection  
: JOB1  
Coord search JOB  
: JOB  
LIST

JOB selection  
JOB01 46  
\*ATUGI 254  
JOB03 0  
JOB04 0  
JOB05 0▼

JOB Memory

"JOB Selection"

<JOB Selection>

JOB .

{◀}/{▶}

[LIST]

.

JOB

JOB

“\*”

JOB

{-}

JOB

JOB

< JOB selection>

<Coord search JOB [LIST]

>

{-}

JOB

JOB



JOB

JOB ◀

Memory " JOB"

JOB

JOB



"JOB name edit"

{-}

< JOB>



( ) :JOB

JOB name edit

JOB03

A

A B C D

JOB	
-----	--

JOB . JOB

( \* )

JOB .



JOB deletion  
JOB01 46  
ATUGI 254  
\*JOB03 0  
JOB04 0  
JOB05 0

Memory "JOB"

"Job deletion"

JOB

JOB

JOB

JOB01  
deletion  
Confirm ?  
NO YES

{-} JOB

JOB [YES]

<JOB

deletion>

JOB

Back sight

JOB

•

:

•

"

"



"

SDR

"



JOB

•

SET

•

"Comms setup" <Known data>

"inch"



"known data" Momory

JOB

•

"key in coordinate"

{-}

JOB

		rec 3991	
N	567.950		
E	-200.820		
Z	305.740		
Pt1.	5		
1	2	3	4

		rec 2641
N	567.950	
E	-200.820	
Z	305.740	
Pt.	5	
Recorded		

<Known Data> {ESC}



Comms input  
Format SDR  
Receiving 12

SET  
<Known Data , Memory>  
JOB  
"Comms Input"

<Known Data>  
{ESC}

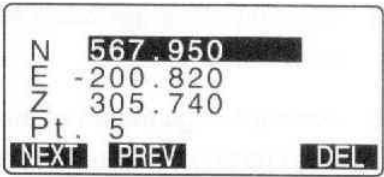
<Known Data> {ESC}



Pt. 0  
Pt. 1  
Pt. 12345678  
Pt. 12345679  
Pt. SOKKIA  
P TOP LAST SRCH

<Known Data , Memory>

"Deletion"

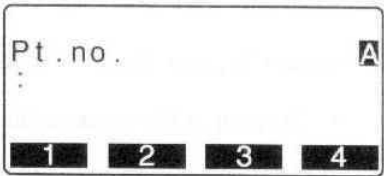


{↵}

[↑↓. . P] •

{▲}/{▼}

[TOP] •



[LAST]

[SRCH] •

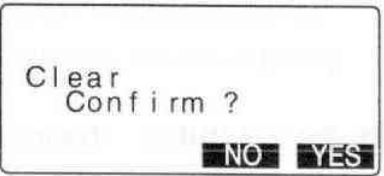
"Pt. NO"

[DEL]

[PREV] •

[NEXT] •

{ESC} <Known data>



Memory

"Known data"

{↵}

"Clear"

<Known Data>

[YES]

JOB



Memory "Known data"

Pt. 0  
Pt. 1  
Pt. 12345678  
Pt. 12345679  
Pt. SOKKIA  
N P TOP LAST SRCH

JOB  
"view"

N 567.950  
E -200.820  
Z 305.740  
Pt. 5  
NEXT PREV DEL

{↵}

{ESC}

/



Codes Memory

Code A  
: Pole  
E F G H

"Key in code"

{↵}

<code>



( ) : .  
: .



Memory

"Code"

"Deletion"

Pole  
A001  
TREE01LEFT  
POINT01  
POINT02  
P TOP LAST DEL

[DEL]

{ESC}

[YES]

"CLEAR LIST"

Memory

"Code"

"Code view"

Pole  
A001  
Point 001  
TREE01LEFT  
POINT01  
P TOP LAST

{ESC} <Code>

JoB

" "

SDR

"

Job

SET

<JOB>

"Comms Setup"

SET

"inch"

◀

\* JOB01  
ATUGI  
**JOB03**  
JOB04  
JOB05

Out  
254  
Out  
0  
0▼  
**OK**

Comms output  
**SDR**  
Printed output

SET

Memory

"Job"

"Comms setup"

Job

{-}

Job

"Out"

Job

Job

Job

"\*"

[OK]

{-}

Job

Job

"Printed ouput"



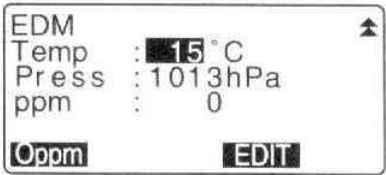
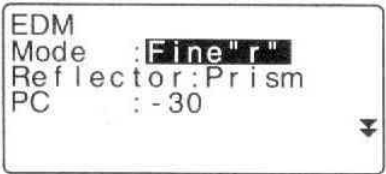


Meas

EDM

\*(  
) EDM

[EDM] Meas



: [EDIT]  
: [0ppm]  
.

Fine "r"\*, Fine AVG (Setting: 1 to 9 times), : ( ) Mode  
Fine "s", Rapid "r", Rapid "s", Tracking  
Prism\*/Sheet : Reflector  
(-30\*) 99 -99 : ( ) PC

(15\*) 60°C -30 :( ) Temp  
1050mmHg(760\*) 300 1400hPa(1013\*) 500 :  
(0\*) 499 -499 :( ) ppm



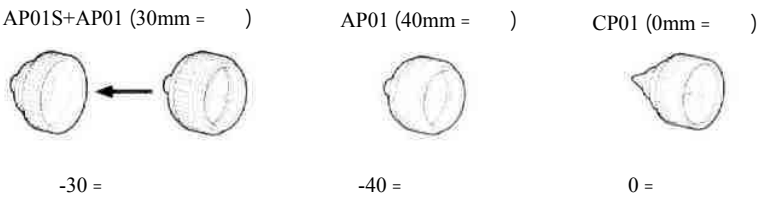
SET

SET

15°C 1013hPa

$$\text{ppm} = \frac{0.2904 \times (\text{hPa})}{1 + 0.003661 \times (\text{°C})}$$

ppm



( ) Config

“Obs. Condition” Config

Dist mode:	Sdist
Tilt crn :	Yes (H,V)
coll.crn :	Yes
C&R crn. :	No
V index :	AUTO
H index :	AUTO

V.obs :	Zenith
Ang.reso. :	5"
Coord :	N-E-Z

Sdist\*, Hdist, Vdist : Dist mode

YES\*(H,V), YES (V), NO : ( ) Tilt Crn

YES\*,No : ( ) Coll. Crn

No\*,K=0. 142,K=0. 20 :C&R Crn.

Auto\*, Manual : V index

Auto\*, Manual : H index

Zenith\*, VerticalT Vert 90° (Vertical  $\pm 90^\circ$ ) : ( ) : V. Obs

1", 5" ( ) :Ang. Reso.

N-E-Z\*, E-N-Z : Coord

: 

( )

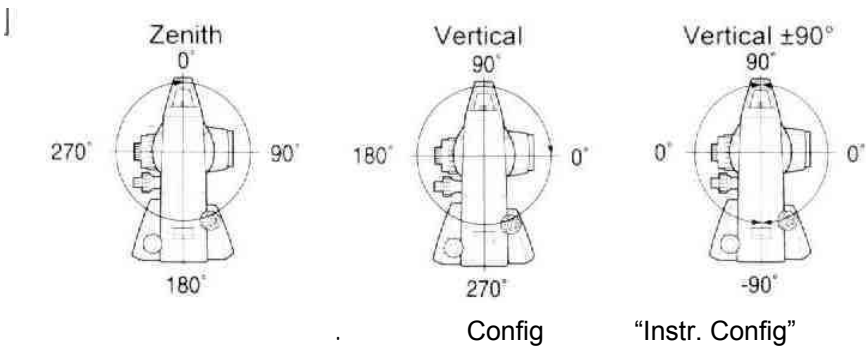
= +

( ) nadir Zenith

: 

SET

:( ) V 




Config "Instr. Config"

Power off: 30min\*, NO  
Reticle lev: 0° to 5 level (3°)  
Contrast: on, off  
Resume: Off  
EDM standby: on, off  
EDM ALC: Hold\* Free

Power off	: 30min
Reticle lev	: 3
Contrast	: 5
Resume	: Off
EDM standby	: <b>Off</b>
EDM ALC	: Free

: 

30min


Resume 

On Resume


Resume

Cancel,



Standby      EDM      ON      EDM Standby 

[DIST]

EDM ALC 

EDM

"Free"      EDM ALC      •

(   )      •

(   )

Signaloff

Hold      EDM ALC      •

Signaloff

EDM



Config “Comms setup” 


Baud rate: 9600bps  
Data bits: 8bit  
Parity : Not set  
Stop bit : 1bit  
Check sum: No  
Xon/Xoff : Yes

Baud rate: 1200bps, 2400 bps,9600 bps,19200 bps,38400bps  
Data bits: 8 bit ,7 bit  
Parity: NOT SET , Odd, Even  
STOP bit: 1bit ,2 bit  
Check Sum: YES, NO  
xon /xoff: YES , NO

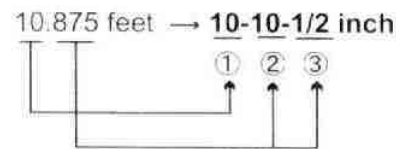
Config “Unit” 

Temp : °C  
Press : hPa  
Angle : degree  
Dist : meter

Temp( ) : °C\*, °F  
Press: hpa\* , mmHg, inch Hg  
Angle: degree\* , gon, mil  
Dist: meter ,feet, inch

( ) Inch 

:  
:



- ① 10.000
- ② 0.845 فوت x 12 = 10.5 inch
- ③ 0.5 inch = 1/2 inch



inch

Feet

Feet



Meas

User Setting 1

User Setting 2    User Setting 1

User Setting 2



Page 1 [DISTJ] [SHV] [OSET] [COORD]  
Page2 [MENU] [TILT] [H. ANG] [EDM]  
Page3 [MLM] [OFFSET] [REC] [S-O]

[DIST] :  
[ ◀ SHV]:  
[OSET]  
[COORD]:  
[REP]:  
[MLM]:  
[S-O]:  
[OFFSET]:

[REC]:

[EDM]: EDM

[H. ANG]:

[TILT]:

[MENU] :

[REM] :

[RESEC]:

[R/L] /

[ZA / %]:

[HOLD]: /

[RCL]:

[D-OUT]:

[AIM]:

[AREA]:

[F/ M]: /

[S- O LINE]:

[P- PROJ]:

[---]

: .

.( )

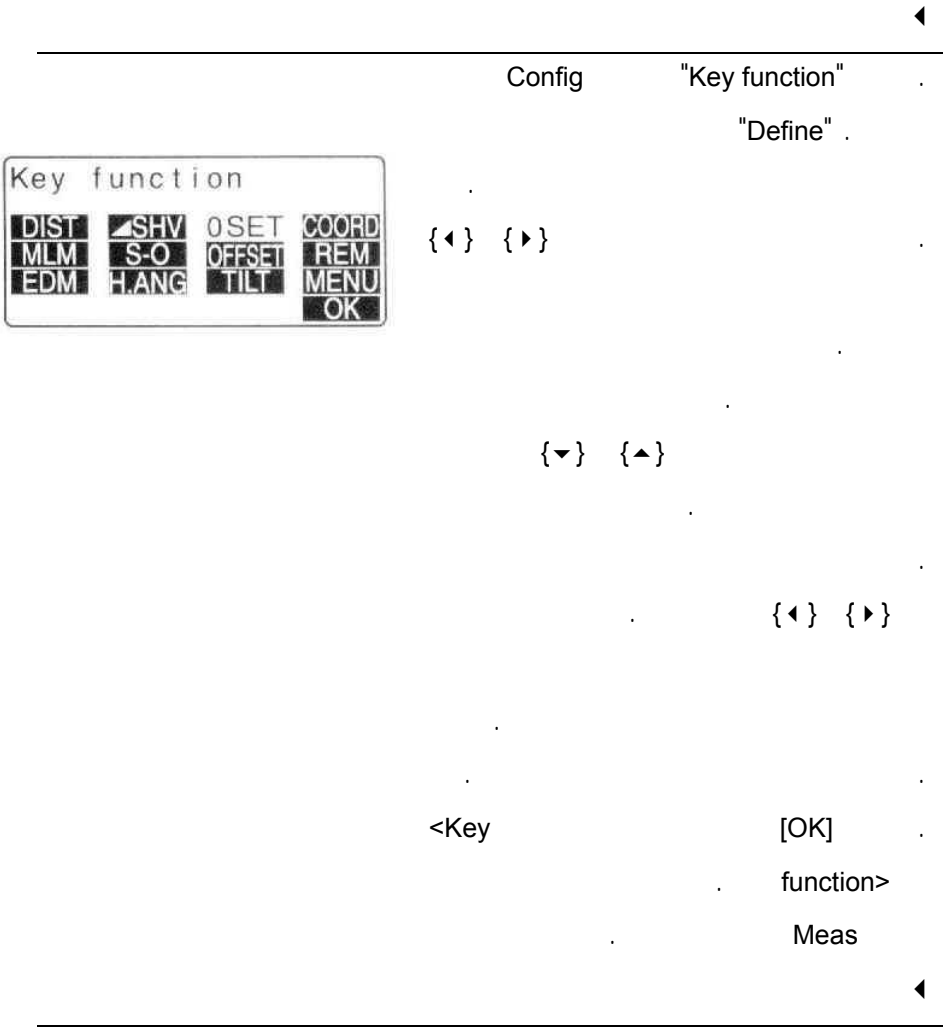
( ) .( )

: P1 [DIST][ ◀ SHV][H. ANG][EDM]

P2 [DIST][ ◀ SHV][H. ANG][EDM]

: P1 [DIST][DIST][ ◀ SHV][ ◀ SHV]

: P1 [DIST][ ◀ SHV][---][---]



Config "Key function"

"Registration"

"User 2" "User 1"

Key function  
User's 1  
User's 2  
Registered to 1

{↵}

user 2    user 1



"Key function"    Config

Key function  
User's 1  
User's 2  
Default

Recall

Default, user 2 , user 1

{↵}

<Key    function>

Meas

-    (                    )                    Config                    EDM

Job



{F4}

{ON}



{BS} {F3} {F1}  
{ON}

"

"



Bad condition

Calculation error  
Resection

Checksum error

Communication error

Flash write error

Invalid baseline

Memory is full

Job

Need 1st OBS



MLM

[OBS]

Need 2nd OBS

MLM

Need offset Pt

[OBS]

Need Prism OBS

[OBS]

No data

No Solution

Out of range

Out of value

(±1000% )

(±89°C)

REM

9999. 999





0. (Scale factor)

9. 999999

10000

Job

(

)

Print or send first  
Job

RAM Clear

(

)

Resume

Cancel

ON Resume

Re 0Set

Same Coordinate

SET

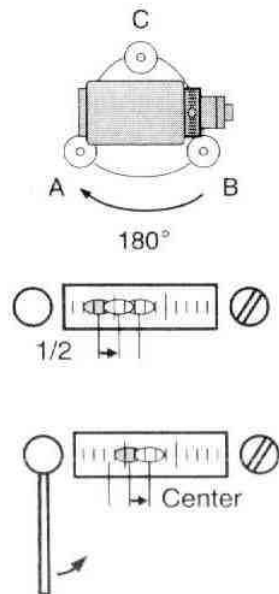
Signal off

SET

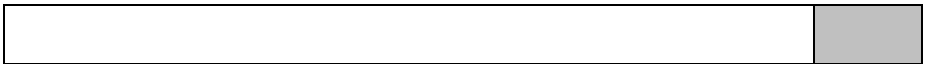
- 
- 



" "



C



"

"





[0SET]

Meas

<Tilt offset>

config

Instr const

Y ( ) X

( )

{-}

"Tilt XY"

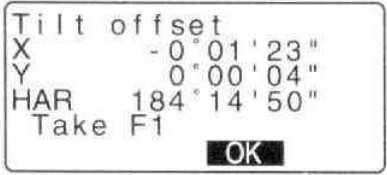
) Y X

(

Instr.const

Tilt X 400 Y 400

Collimation



Y1 X1

: 180°

180°

Y2 X2

X offset =  $(X_1 + X_2) / 2$   
Y offset =  $(Y_1 + Y_2) / 2$

(Y offset , X

20" offset)

"Instr. Const" {ESC}

Tilt offset  
Current X400 Y400  
New X408 Y396  

NO YES

: Y2 X2

[OK]

"Take F2"

180°

Y1 X1

X1

[YES]

Y1

400±30

[YES]

"Instr Const"

[NO]

"Instr. Const"

```
"Instr. Const"          {ESC}
( Xoffset                .
                        , Yoffse )
```



<Collimation>

Config "Instr. Const"  
Collimation

0 set  
ZA 0set  
HAR 60°48'00"

Collimation  
ZA 30°00'43"  
HAR 60°48'00"  
Take F1  
OK

[OK]

Collimation  
EL : -0°00'15"  
V off.: 0°00'10"  
NO YES

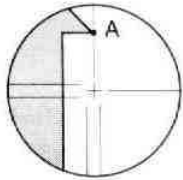
180°

[OK]

[YES]

[OK] <Collimation>

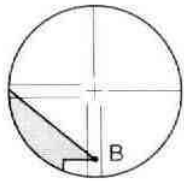




( )

A

B



:



Meas

B1 A1

:

18° 34' 00" = A1

90° 30' 20" = B1



B2      A2

:

$$198^{\circ} 34' 20'' = A2$$

$$269^{\circ} 30' 00'' = B2$$

$$B2+B1, A2-A1$$

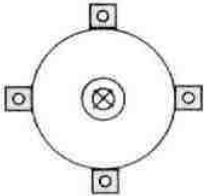
$$B2+B1 \quad 180^{\circ} \pm 40'' \quad A2-A1$$

$$360^{\circ} \pm 40''$$

:

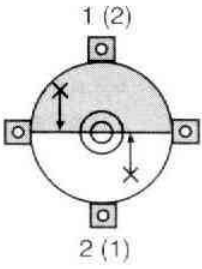
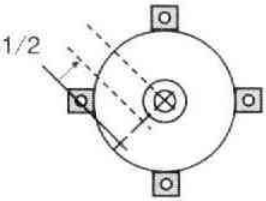
$$A2-1=198^{\circ} 34' 20'' - 18^{\circ} 34' 00'' = 180^{\circ} 00' \\ ( \quad ) 20''$$

$$B2-B1 = 269^{\circ} 30' 00'' + 90^{\circ} 30' 20'' = 360^{\circ} \\ ( \quad ) 00' 20''$$



180°

:



( )

:

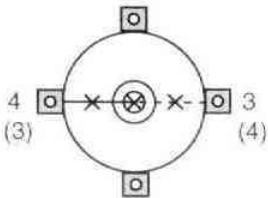
( )

( )

( )

( )

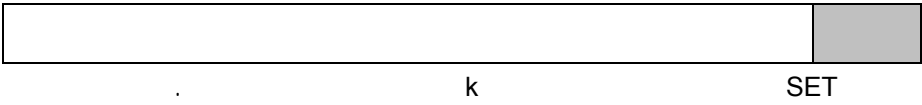
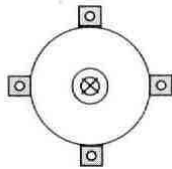
:



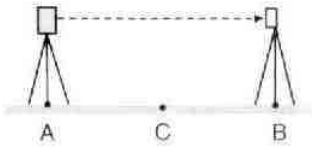
( )

( )

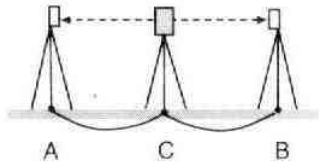




k



A  
A C B  
B



A

AB

B A

C

SET

CB CA

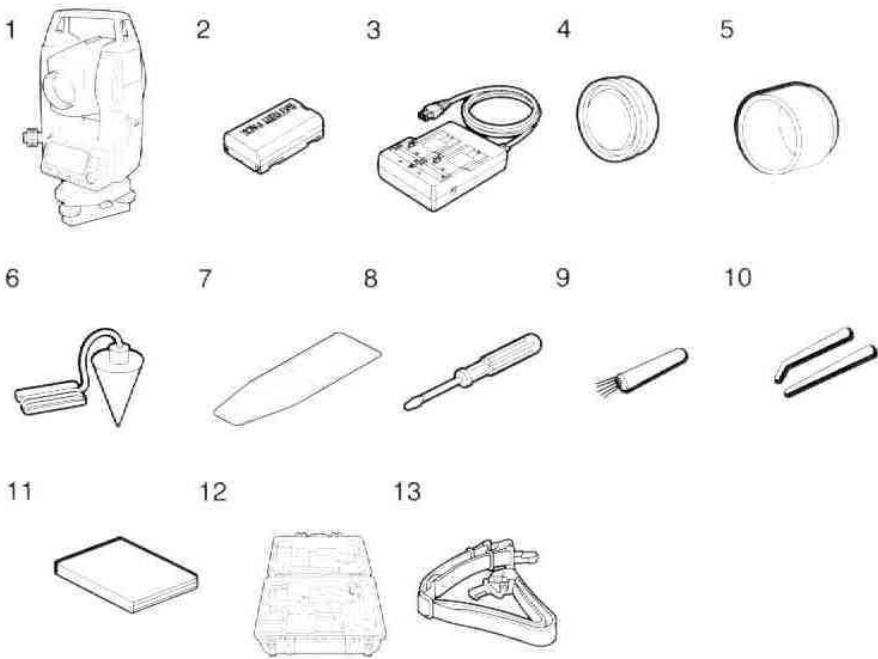
K

$$K=AB-(CA+CB)$$

K

43mm

•



.....		..... SET
.....	-	( BDC46 )
.....	-	..... (SET 310/510)
.....	-	.....(SET 610)
.....	-	
.....	-	..... (CDC 61/62/64)
.....(SC181)	-	.....
.....	-	.....



"

( CP7 )

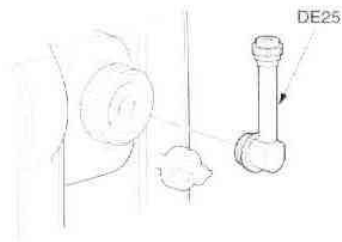


( SCRC2 )

•

CF

SET310/510



( EL6 )

•

30x :

SET610

3 " :

( DE25 )

•

30X :

SET

" :

☞

"

( OF3A )

•



( DOC46 )

•

DOC46

SET

ESC/PTM



SET

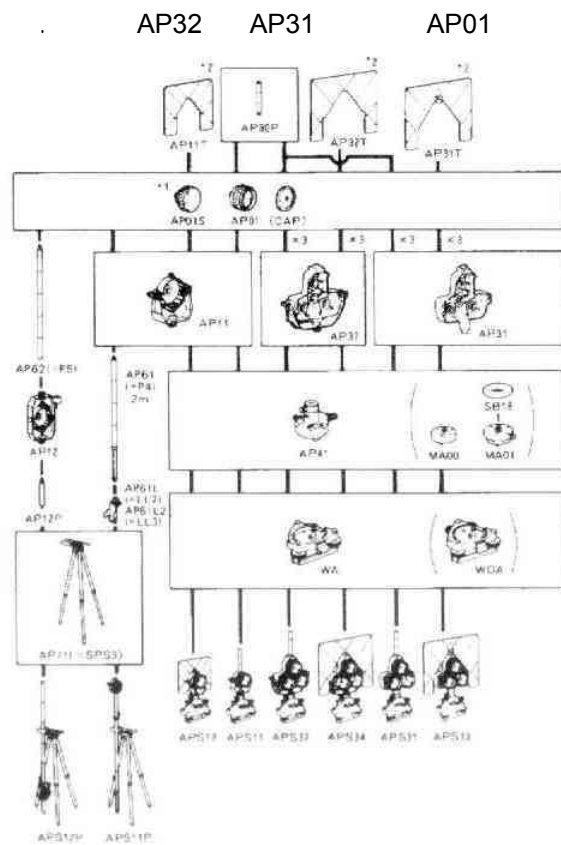




:

SET

m : : RS-232c : DOC26 : : DOC27	DOC26	IBMPC/AT
	DOC27	
	DOC1	





( 2RT500 )



( AP41)



AP41

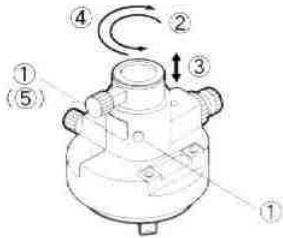
"



AP41

SET

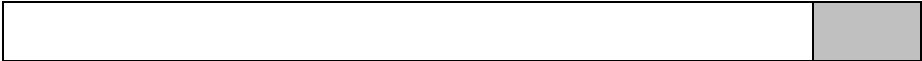
" 236mm "



: ( WA2)

"





SET



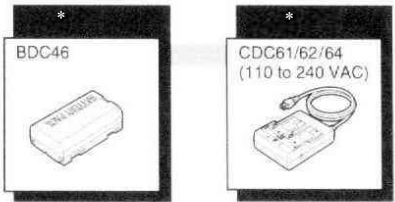
•

SET

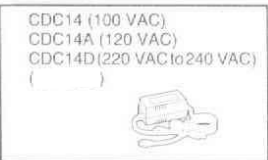
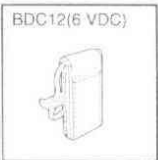
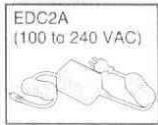
•

\*

.( ) SET310/510



AC





( ) •

BDC46 EDC12 EDC2A EDC14 •

12VDC •

EDC14 •



SET310/310S	SET310	SET			
	SET610/610S	SET610	SET510/510S	SET510	

	mm	:
( mm : ) mm	:	
x : SET310/510	:	
x : SET610	:	
	:	
" : SET310/510	:	
/ " : SET610	:	
° -	:	
/	:	
	:	
	:	
	:	
( . )	:	
( ) / /	:	
( 1 mgon / 5. 02 mil ) 5 " / ( 5. 2 mgon / 5. 005 mil ) 1 "	:	
( )	:	
150 / DIS 12857-2 (1997) 1 mgon ) 3 " : SET310	:	
150 / DIS 12857-2 (1997) 1 mgon ) 5 " : SET510	:	
150 / DIS 12857-2 (1997) 1 mgon ) 6 " : SET610	:	
0. 5	:	
/ ( / )	:	
( )	:	
	:	
	:	
± 3 /	:	
	: Meas	
( ) /	:	
( ) ± °	:	



( ) :

: SET310/510

: RS90N

: RS50N

: RS10N

: CP01

: AP

: AP

: OR1PA

: SET610

: RS90N

: RS50N

: RS10N

: CP01

: AP

: AP

: OR1PA

0.001 :

0.01 :

:

( ) :

$\pm(2+2\text{ppm} \times D)$  mm

$\pm(5+5\text{ppm} \times D)$  mm

( )

$(4+3\text{ppm} \times D)$  mm

$(5+5\text{ppm} \times D)$  mm

( : D)

( / / ) :

( / )

( )

```

:
/ + ( ) /
:
/ + ( ) /
:
/ + ( ) /
EDM Standby : ( ) ^
( IEC825-1:1993 1 ) LED
:
:
( °C ) °C -
:
( 1hpa ) hpa
( 1mmHg ) mmHg
: ppm
( ppm ) ppm -
( mm ) mm -
:
( )
k=5020 YES k=5142 NO
:
BDC46 -
4
:
) °C
CDC61/64 )
:
/ v : ( BDC46 )
mAh
°C -
:
:
( CDC61/62/64 )
/ Hz: V AC 110
:
°C
:
°C
:

```





LCD :  
192 × 80

:SET 310/510  
:SET610

:( )

( / )

) ON :

/ (

( ) Off

: SET310/510/610 :

:

( DOC46 ) RS232C

ESC / P<sup>tm</sup>

30 " / 2mm: SET310 :

40 " / 2mm :SET510

60 " / 2mm :SET610

10' / 2mm :

:

3x :

0. 3m :

:

° - ° :

°

IP66(IEC529:1989) :

:

(w) × (d) × (h) :

5. 2 kg : SET310/510/610S :

5. 1 kg: SET610

5. 3 kg : SET310 / 510

( )



( )

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[www.iransokkisha.com](http://www.iransokkisha.com) :  
[info@iransokkisha.com](mailto:info@iransokkisha.com) :