Руководство по эксплуатации плотномера LQ500

TOSHIBA CORPORATION

LQ500 (, LQ500).

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LQ500.

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LQ500   –
UL/CUL.

–   ,   Class 1,
Division 2, Group A, B, C, D   .

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                        Toshiba   .
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LQ500,

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❗ − (NEC, ANSI/NFPA 70) (CEC, CAN/CSA – C22.1) , (, (UL/CUL)	**⊘** − . (UL/CUL)
	⊘ − , (class I division 2). . (UL/CUL)

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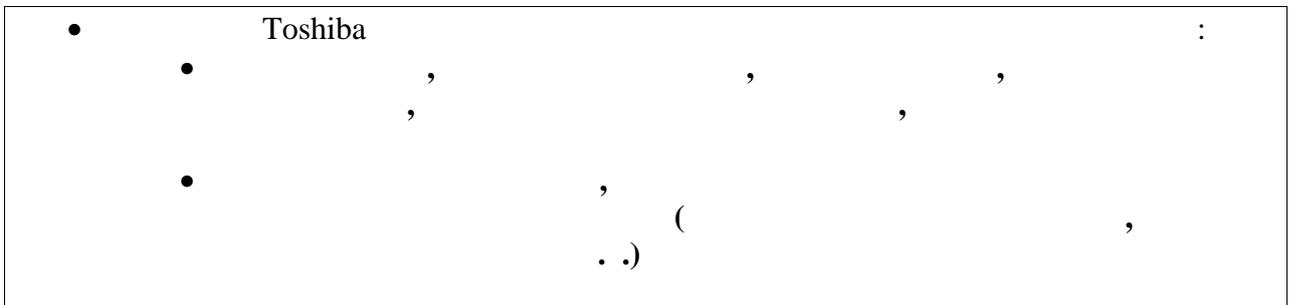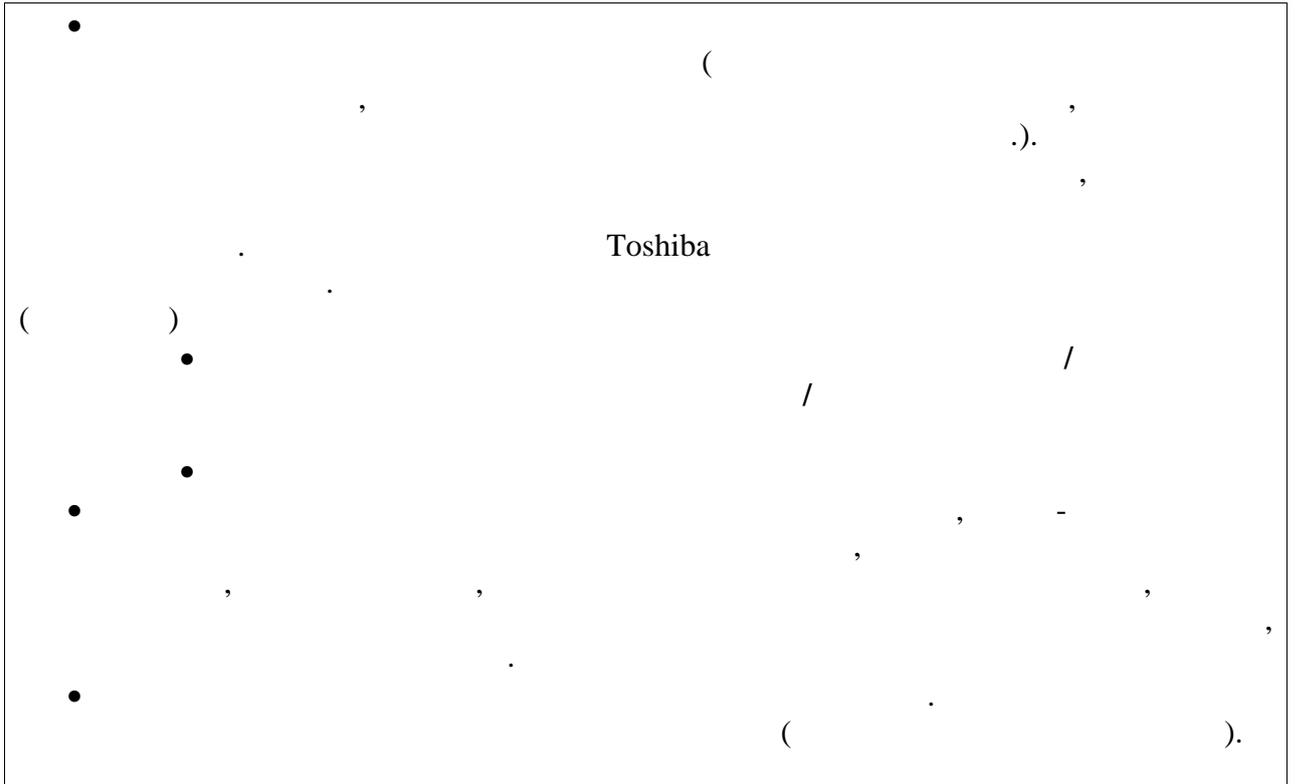
LQ500

LQ500.

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$\Delta \theta = \theta_2 - \theta_1$

$\Delta \theta$.

Рис. 1.1 Принцип сдвига угла фаз

1.2

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(9)   AF100LQ3   -   ,

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(10)   50% TS.

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(1)   : 1   (1   1   )
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                                                   AF 100 (AF 100LQ4   3,
                    6F8A0763).

2.2

2.1

		-
		10
	: 11-13 JCS 258 C 2- CVV-S	
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	: 11-13 JCS 258 C 4- CVV-S	
	2 A (T), 250 5.2 x 20	2
	( )	1

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3.1

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(NEC, ANSI/NFPA 70)

(CEC, CAN/CSA – C22.1)

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(

UL/CUL)

(NEC, ANSI/NFPA 70)

,

(class I
division 2).

(

UL/CUL)

(CEC, CAN/CSA – C22.1) , , .	
$\bigcirc$: ● ● , $(SO_2 \quad H_2S)$ ● ● - ● ● ● , (UL/CUL)	$\bullet$, . . .

3.2

[   ]:

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(9)   –   SCS14A (
316 SS)

500

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3.3

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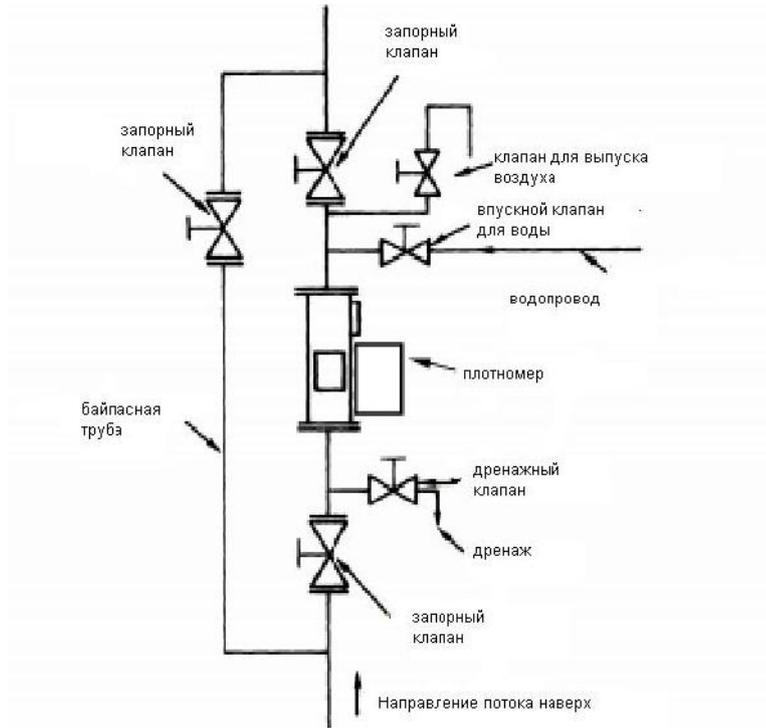
Рис. 3.3.4 Установленный вертикально плотномер

[   ]:

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          2   (/2+   /2,   ).

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Рис. 3.3.5 Подъем плотномера лебедкой

3.4

<table>
<tr><td colspan="2" align="center">⚠</td></tr>
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100)

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(NEC, ANSI/NFPA 70)

(CEC, CAN/CSA – C22.1)

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UL/CUL)</td>
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</table>

' (UL/CUL)	
UL/CUL. , (250 [ ] , 10 ,). .	
Yellow ⚠ . , Yellow ⚡ .	

3.5

. 3.5.1   .

. 3.5.2 –   .

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[   ]

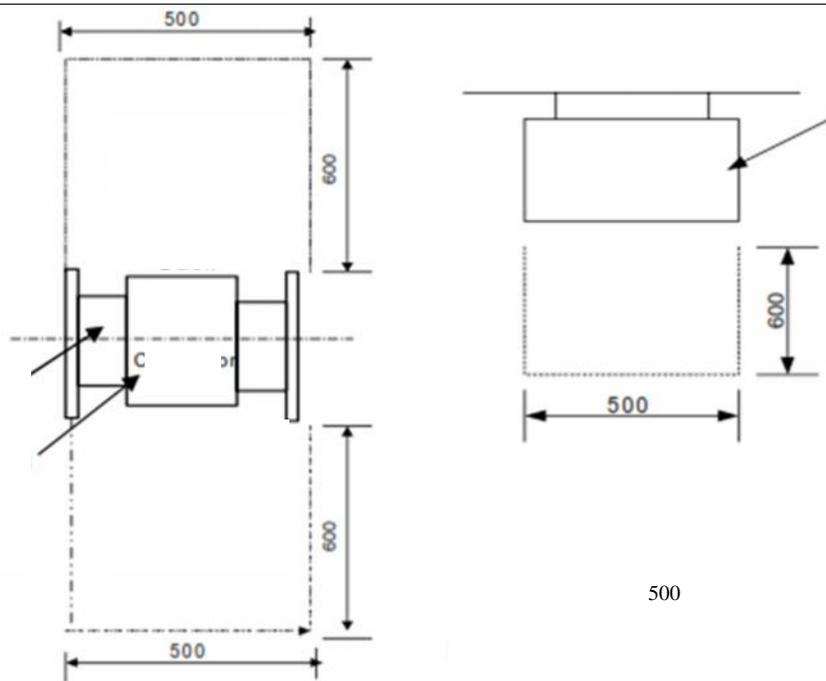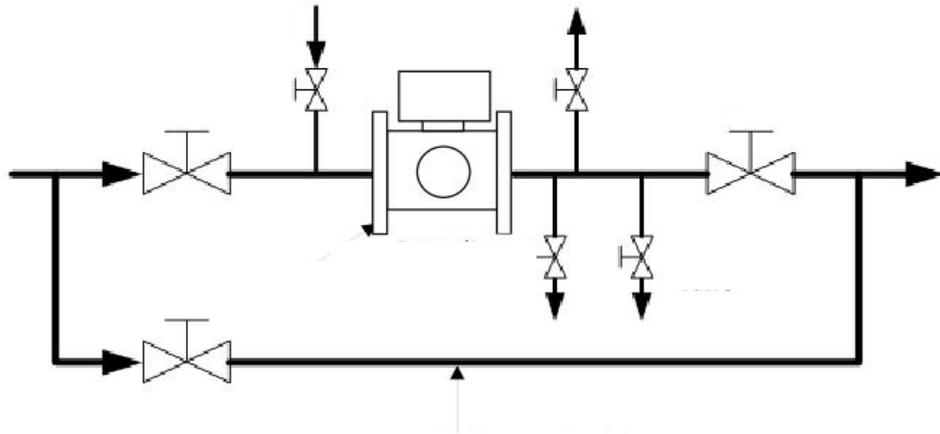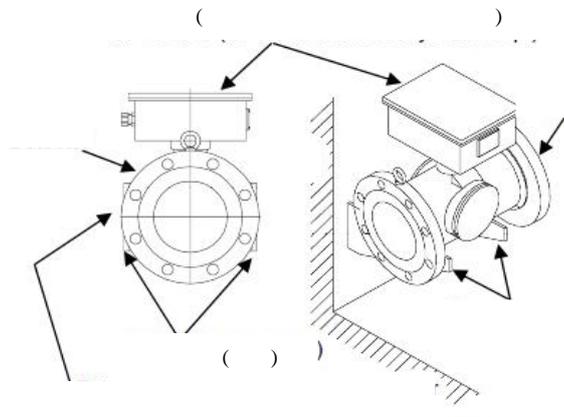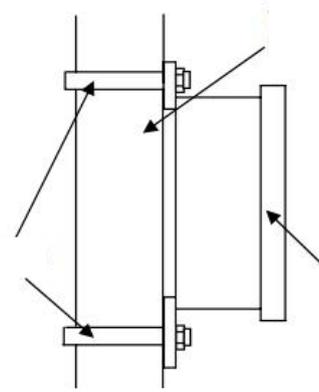| |
| --- |
| (1)   .

                                                                                   .
                              –   24   (100   ), 35   (240
).
(2)   –   100   ,
                                                                                                .
(3)   ,   ,
                                                      .

                              (   )   .
(4)   2 ^{2},   — 2
      (   ).   ,   4
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(5)   .
(6)
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                                                      .
(7)   ,   (4-20   ),
                                                      (CVVS 2 ^{2}),
                                                            .

      (CVVS 2 ^{2})   ,
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(8)   ;   ,
                                                                                                                                          .
                                    11-13   .   ,
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(9)   .
                                          1,2   ·   (1.4   ·   MAX).
(10)   .
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(11)   ,   ,
                                                                                                                                              .
                                                                                          Division 2 hazardous location
                                                                                                    .
                                                    21   .   ,
                                                (
                        UL/CUL). |

[   ]

UL/CUL.   ,
                                                              (250   ,
                              10   ,   ).

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[   ] Class I,
Division 2 (
UL/CUL)

Ec+
Ec⁻   (4-20
FG
Tx+   CVVS
Tx⁻
Rx+
Rx⁻
SG
FG   Com------tion
FG
+24V   CVVS
0V
FG

Tx+
Tx⁻
Rx+
Rx⁻
SG
FG
+24V
0V
FG

L1
L2

DI
COM
COM1
DO1
FG
AO+
AO⁻
COM2
DI2
DI3

CVV
100-240
, 50/60
(   )   :   100

CVV
(24   ,   1)

(125   , 0,1)

CVVS
(4-20   ,   750   ,
)

(: 20-30   , L: 2
                                3
)

(
.   100   )

:

FG   FG
A, B

. 3.5.1

| +24V | 0V | Tx+ | Rx+ | NC | (FG) | DI | DO1 | DI2 | DI3 | AO+ | L1 | L 2 |
| FG | Tx⁻ | Rx⁻ | SG | (FG) | COM | COM1 | (FG) | COM2 | AO⁻ | ⏚ | | |

DI, COM

DO1, COM1

DI2, DI3, COM2

AO (+, -)
4-20

. 3.6

+24V	0V	Tx+	Rx+	FG	EC+	NC
	FG	Tx-	Rx-	SG	EC-	FG

(4 ~ 20   )

. **3.5.3**

[   ]

                                                                    (1)

        (2).

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[   ]

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4.

4.1

LQ500   .

(2)   (1)

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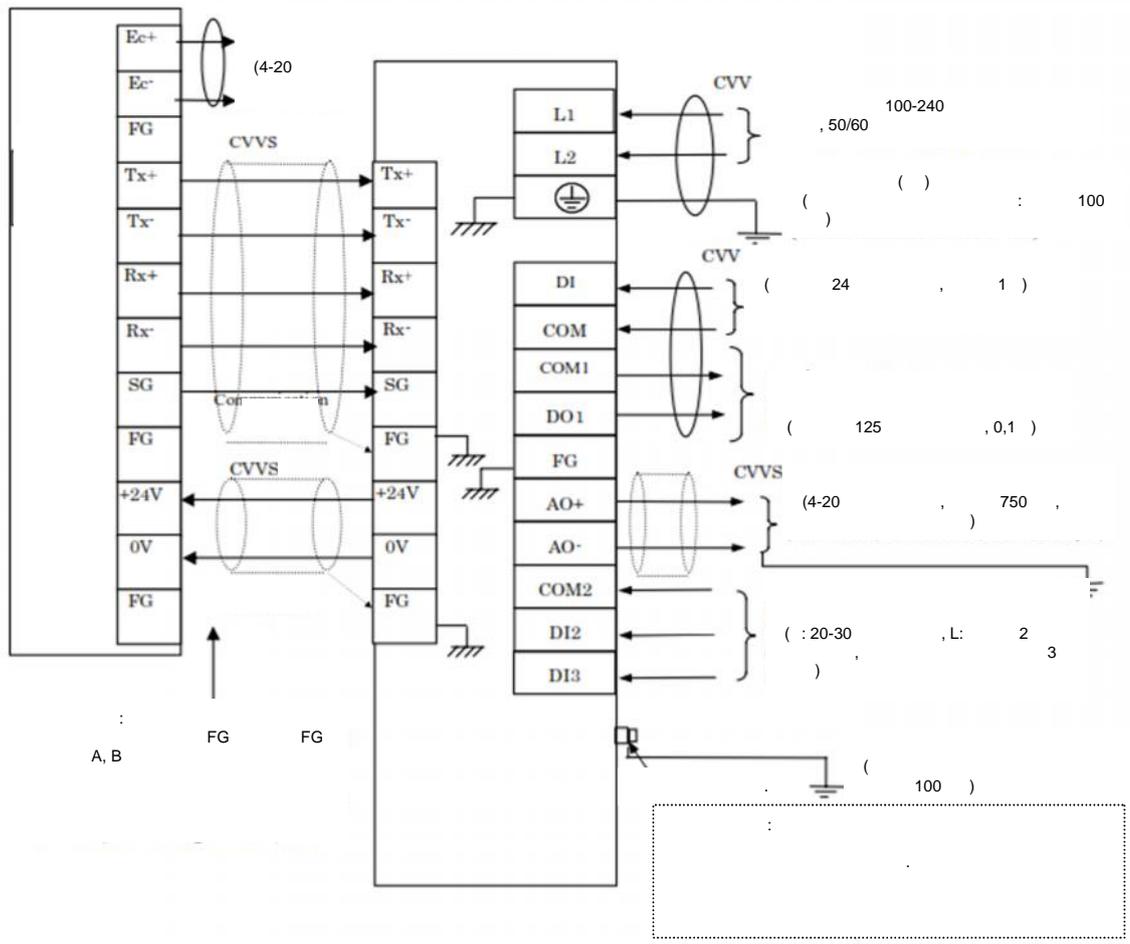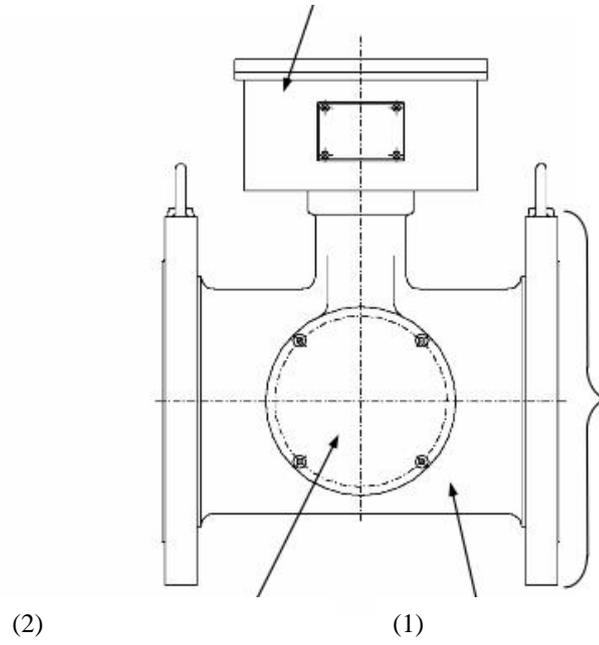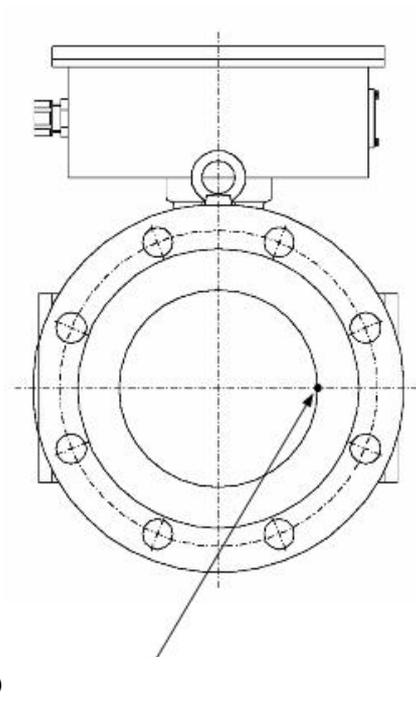
. 4.1.1

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4.2

LQ500   –

                                            UL/CUL.   . 4.2
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(3)

(4)

[MEASURE]

[POWER]

(5)
[ALARM]

(6)   -

(7)

(1)
[POWER]

(2)   Fuse
            2A(T)
            250 V

(8)

(9)
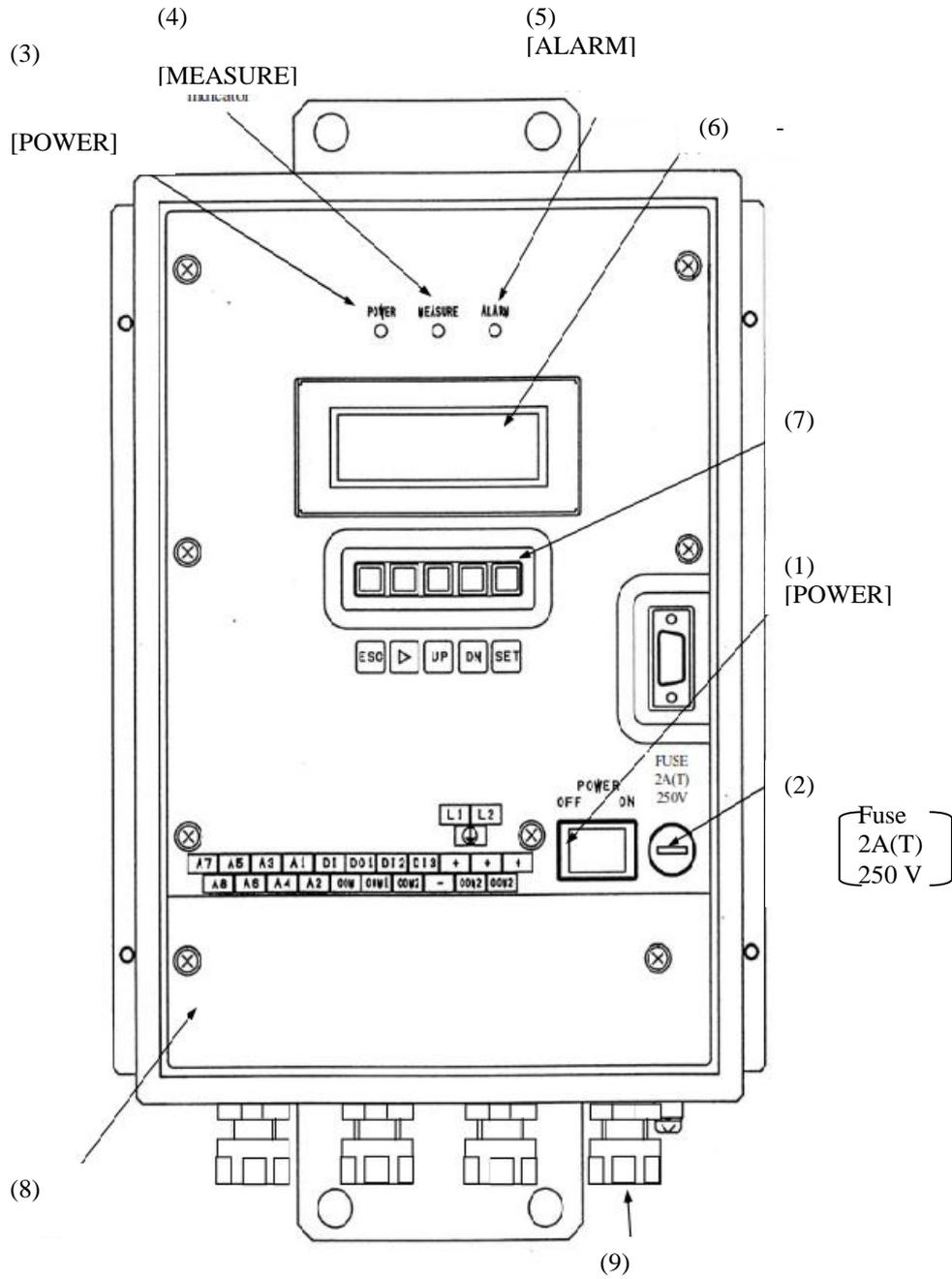
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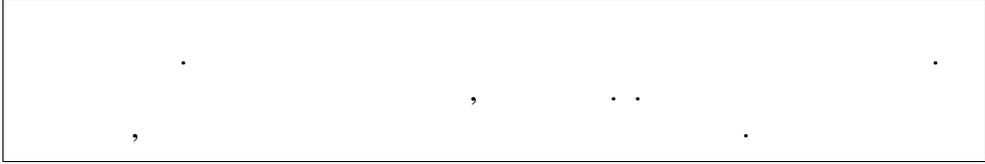
(1)   **[POWER]**

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(2)

2   ( ), 250   .

(3)   **[POWER] (**)

                                                                                                                    .

(4)   **[MEASURE] (**)

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(5)   **[ALARM] (**
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(6)   **-**

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(7)
                    [ESC], [   ], [UP], [DN], [SET] -   -
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                                UL/CUL

                        UL/CUL.
        (250   ,   10   ,
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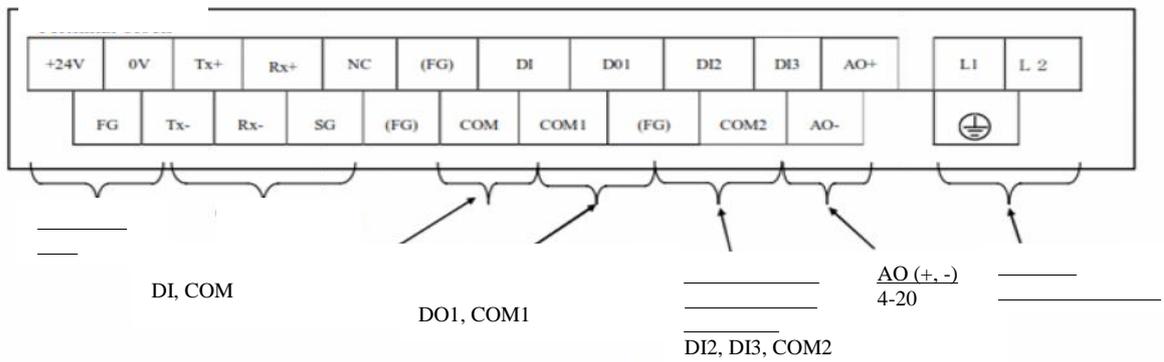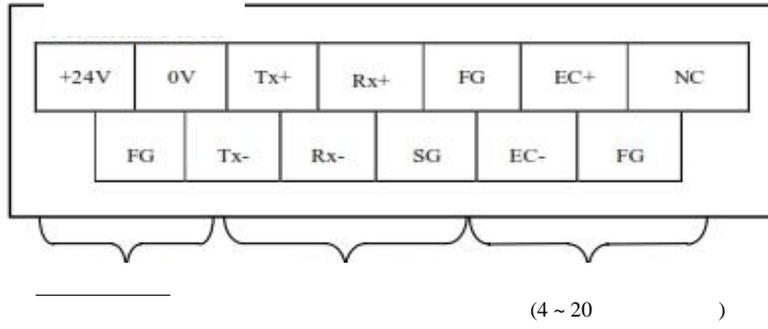   .

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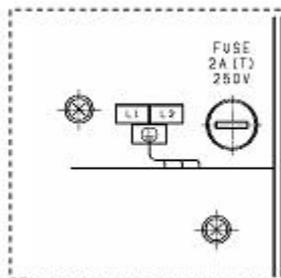
5.

5.1

5.1.1

5.1.1

	·		
Density multiplier (　　　　　　　　　　) (C)	-	1.000 (　　　　　　)	0.00 ~ 9.99
Upper density measurement range (　　　　　　　　　　　) (UR)	%TS		1.0 ~ 99.9
Lower density measurement range (　　　　　　　　　　) (LR)	%TS		0.0 ~ 99.5
Density line slope (　　　　　　　　　　　) (a)	%TS	5.1.2	-0.2000 ~ 0.2000
Density intercept (　　　　) (b)	%TS	0.00 (　　　　　　)	-99.99 ~ 99.99
Density test output during setting mode (　　　) (ot)	%TS	50%　　　　　FS (　　　　)	0.0 ~ 99.9
Delayed time in external synchronized operation (　　　　　　　　　　) (dt)		0.5 (　　)	0.1 ~ 99.9
Zero-point phase $_1$ (　　　　$_1$) (zp)			0.00 ~ 359.99
Zero-point fluid temperature T_0 (　　　　　　$T_{0)}$) (zT)	°C		0.00 ~ 100.00
RF correction factor (　　　　　　　　) (cG)	-		-9.99 ~ 9.99
Zero-point RF data (　　　　　) (zG)	-		0.00 ~ 100.00
Moving average times (　　　　　) (ma)	-	1 (　　　　　　)	1 ~ 999
Permissible width of change-rate limit (　　　　　) (dx)	%TS	0.00 (　　)	0.00 ~ 9.99
Limit times of change-rate limit (　　　　) (HL)	-	0 (　　)	0 ~ 99
Upper angle of angle rotation correction (　　　　　　　) (UH)		260	240 ~ 360
Upper angle of angle rotation correction (　　　　　　) (SH)		100	0 ~ 120

Linearizer densityA (A) (LA)	%TS	0.60 ( )	0.00 ~ 99.99
Linearizer density ( ) (LB)	%TS	1.00 ( )	0.00 ~ 99.99
Linearizer inclination ( ) (K1)	-	1.00 ( )	0.00 ~ 9.99
Linearizer inclination ( ) (K2)	-	1.00 ( )	0.00 ~ 9.99
Linearizer inclination ( ) ( )	-	1.00 ( )	0.00 ~ 9.99

Electric conductivity correction function
Switching
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)
(   )
(EI)
	-	OFF ( ) (
		                              )
			OFF/IN./EXT.

Electric conductivity correction factor
(
)
 (r)
	(
	        /)
		00 (
		                    )
			0.00 ~ 99.99

Zero-point electric conductivity Eo (Eo) (zE)	/	0.00	0.00 ~ 10.00
Measured object electric conductivity ( ) (EC)	/	0.00	0.00 ~ 10.00

Availability of additives correction
(
)
(AF)
	-	(
		                              )
			OFF / ON

Display density type of additives correction ( ) (Ad)	-	TOTAL ( )	TOTAL / MAIN
Output density type of additives correction ( ) (Ac)	-	TOTAL ( )	TOTAL / MAIN
Parameter set No. of additives correction (No.) (Ap)	-	1	1 ~ 10
Main-object sensitivity ( ) (sO)	-	1.00	-9.99~9.99
Additives sensitivity ( ) (s1)	-	0.00	-9.99~9.99
Additives sensitivity ( ) (s2)	-	0.00	-9.99~9.99
Additives sensitivity ( ) (s3)	-	0.00	-9.99~9.99
Additives sensitivity ( ) (s4)	-	0.00	-9.99~9.99

Additives sensitivity ( ) (s5)	-	0.00	-9.99~9.99
Loading additive ratio ( ) (R1)	-	0.000	0.000 ~ 1.999
Loading additive ratio ( ) (R2)	-	0.000	0.000 ~ 1.999
Loading additive ratio ( ) (R3)	-	0.000	0.000 ~ 1.999
Loading additive ratio ( ) (R4)	-	0.000	0.000 ~ 1.999
Loading additive ratio ( ) (R5)	-	0.000	0.000 ~ 1.999
Output at contact OFF in external synchronized operation (OFF) (ho)		4	4 A;
Availability of density multiplier switching ( ) (D1)	-	OFF ( )	ON / OFF
Density multiplier at DI (DI) (C2)	-	1.000	0.000 ~ 9.999
Density multiplier at DI (DI) (C3)	-	1.000	0.000 ~ 9.999
Density multiplier at DI (DI) (C4)	-	1.000	0.000 ~ 9.999
Availability of automatic adjustment of angle rotation ( ) (NA)	-	ON	ON /OFF
(Phase angle rotation at measurement start) (NB)	-	OFF	ON / OFF
N (Number of phase angle rotations N at measurement start) (NC)	-	0	ON / OFF
Switching between continuous operation and external synchronized operation ( ) (OP)	-	CONT	CONT ( )/ EXT( )

:   5.1.1   «   …»   ,
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5.1.2 Density line slope

( )

( )	
50	0.168
80	0.105
100	0.084
150	0.056
200	0.042
250	0.034
300	0.028

5.2

                                            -          .
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5.2.1

SET,   .
,   .   5.2.1
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<main menu>

```
1 : MONITORING MENU
2 : SETTING MENU
3 : MEASURING MODE
```

5.2.1.   **<main menu>** (   )

	1: MONITORING MENU **1:**	**2: SETTING MENU** **2:**	**3: MEASURING MODE** **3:**
	( ),	( ),	:
(4~20)			
-			
[MEASURE]	.	.	.

                :   «Zero calibration» (   )
   «Span calibration» (   )   -
                       ,   .   ,
                                     .
                             (4~20   ),
                 ,   .

5.2.2

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5.2.2

ESC	[ESC]	, . .
►	[ ]	. . , . (setting menu) [SET] , . - , [ ], . , [ ] .
UP	[UP]	( ). , , . : «0», «1», «2», ···· , «9», «-» ( ), «.» ( ), «0», «1», «2», ···· : «-» ( ) «9» . (, /)
DN	[DN]	( ). , , . : «0», «.» ( ), «-», «9», «8», ···· , «1», «0». : «-» ( ) «.» ( ) . (, /)

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SET	[SET]	, .

5.2.3

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5.2.3

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5.2.3.
5.2.4.   ,
5.2.3   ,
-        .

5.2.3   (1)

1	2	3	4
Monitor menu ( )	Read parameters ( )	Density multiplier ( ) ( )	
		Upper density measurement range ( ) (UR)	
		Lower density measurement range ( ) (LR)	
		Density line slope ( ) (a)	
		Density intercept ( ) (b)	
		Density test output ( ) (ot)	
		Delayed time in external synchronized operation ( ) (dt)	
		Zero-point phase $_1$ ($_1$) (zp)	
		Zero-point fluid temperature T_O (T_O) (zT)	
		RF correction factor ( ) (cG)	

		Zero-point RF data ( ) *(zG)*	
		Moving average times ( ) *(ma)*	
		Permissible width of change-rate limit ( ) *(dx)*	
		Limit times of change-rate limit ( ) *(HL)*	
	Measured value ( )	Phase $_2$ *(p)*, fluid temperature *(T)*, ambient temperature *(A)*, density *(X)* ($_2$ ( ), ( ), ( ), ( ))	
	Self-diagnosis data ( )	Operation Status ( ) *(ST)*	
		Microwave signal level ( ) *(SL)*	
		Microwave factor ( ) *(F)*	
		RF data ( ) *(G)*	
		+5 V power supply voltage (+5) *(J)*	
		Reference phase error ( ) *(pd)*	
		Memory check ( ) *(Mc)*	

5.2.3   **(2)**

Setting menu ( )	Parameter setting ( )	Upper density measurement range ( ) *(UR)*	*(UR)*
		Lower density measurement range ( ) *(LR)*	*(LR)*
		Density line slope ( ) *(a)*	*(a)*
		Density intercept ( ) *(b)*	*(b)*
		Density test output ( ) *(ot)*	*(ot)*
		Delayed time in external synchronized operation ( ) *(dt)*	*(dt)*
		Zero-point phase ( ) 1 *(zp)*	1 *(zp)*
		Zero-point fluid temperature ( ) T_0 *(zT)*	T_0 *(zT)*
		RF correction factor ( ) *(cG)*	*(cG)*
		Zero-point RF data ( ) *(zG)*	*(zG)*
		Moving average times ( ) *(ma)*	*(ma)*
		Permissible width of change-rate limit ( ) *(dx)*	*(dx)*
		Limit times of change-rate limit ( ) *(HL)*	*(HL)*
	Zero calibration ( )	Zero calibration ( )	
	Span calibration ( )	Density multiplier ( ) (1)	(1)
	Angle rotation correction (	Upper angle ( ) *(UH)*	*(UH)*

		Lower angle ( ) *(SH)*	*(SH)*
		Angle rotation ( ) *(N)*	*(N)*
	Linearizer / Electric conductivity correction (/)	Linearizer density A (A) *(LA)*	A *(LA)*
		Linearizer density B (B) *(LB)*	B *(LB)*
		Linearizer line slope ( ) *(1)*	*(1)*
		Linearizer line slope ( ) *(2)*	*(2)*
		Linearizer line slope ( ) *(3)*	*(3)*
		Electric conductivity correction function Switching ( ) *(EI)*	.
		Electric conductivity correction factor ( ) *(r)*	*(r)*
		Zero-point electric conductivity E_0 (E_0) *(zE)*	E_0 *(zE)*
		Measured object electric conductivity ( ) *(EC)*	*(EC)*

5.2.3   **(3)**

Setting menu ( )	Addictives correction ( )	Availability of additives correction ( ) *(AF)*	*(AF)*
		Display density type ( ) *(Ad)*	*(Ad)*
		Output density type ( ) *(Ac)*	*(Ac)*
		Parameter set No. (No.) *(Ap)*	No. *(Ap)*
		Main-object sensitivity ( ) *(sO)*	*(sO)*
		Additives sensitivity ( ) *(s1)*	*(s1)*
		Additives sensitivity ( ) *(s2)*	*(s2)*
		Additives sensitivity ( ) *(s3)*	*(s3)*
		Additives sensitivity ( ) *(s4)*	*(s4)*
		Additives sensitivity ( ) *(s5)*	*(s5)*
		Loading additive ratio ( ) *(R1)*	*(R1)*
		Loading additive ratio ( ) *(R2)*	*(R2)*
		Loading additive ratio ( ) *(R3)*	*(R3)*
		Loading additive ratio ( ) *(R4)*	*(R4)*
		Loading additive ratio ( ) *(R5)*	*(R5)*
		Output at contact OFF in external synchronized operation (OFF)	OFF *(ho)*

		(ho)	
		Availability of density multiplier switching ( ) *(D1)*	*(D1)*
		Density multiplier at DI (DI) *(C2)*	DI *(C2)*
		Density multiplier at DI (DI) *(C3)*	DI *(C3)*
		Density multiplier at DI (DI) *(C4)*	DI *(C4)*
		Availability of automatic adjustment of angle rotation ( ) *(NA)*	*(NA)*
		Phase angle rotation at measurement start ( ) *(NB)*	*(NB)*
		(Number of phase angle rotations N at measurement start) N *(NC)*	N *(NC)*
Measuring mode ( )	Continuous operation and external synchronized operation ( ) *(OP)*	Switching between continuous operation and external synchronized operation ( ) *(OP)*	

5.2.4 Monitoring Menu:

```
┌─────────────────────────┐
│ LQ500 Ver.*.**          │
│ Copyright               │
│ TOSHIBA 2004            │
│ All Rights Reserved     │
│                         │
└─────────────────────────┘
```

,
.

.

:

```
┌─────────────────────────┐
│                         │
│         2.50            │
│                         │
│                         │
└─────────────────────────┘
```

[ESC]   .

.   [SET],   [Main Menu]

```
┌─────────────────────────┐
│ 1: MONITORING MENU      │
│ 2: SETTING MENU         │
│ 3: MEASURING MODE       │
│                         │
└─────────────────────────┘
```

[ESC]
.   [ ]   ┌─────────────────────────┐
                               "1"   [SET]   │   :   │
                                                                   │   │
                                                                   │   │
                                                                   └─────────────────────────┘

```
┌─────────────────────────┐                [  ]
│ 1: READ PARAMETERS      │                        [SET]
│ 2: MEASURED VALUES      │
│ 3: SELF-DIAGNOSIS       │
│                         │              ┌─────────────────────────┐
│                         │              │                         │
└─────────────────────────┘              │ 「1: READ PARAMETERS」   │
                                         │                         │
                                         └─────────────────────────┘

                    [ESC]
                      .                  ┌─────────────────────────┐
                                         │                         │
                                         │ 「2: MEASURED VALUES」   │
                                         │                         │
                                         └─────────────────────────┘

                                         ┌─────────────────────────┐
                                         │                         │
                                         │ 「3: SELF-DIAGNOSIS」    │
                                         │                         │
                                         └─────────────────────────┘
```

5.2.5 Setting Menu:

```
1: MONITORING MENU
2: SETTING MENU
3: MEASURING MODE
```

[ESC]

.

[   ]   "2"   [SET]
[2: SETTING MENU (-
)]   -
,   -
.   [2: SET-
TING MENU (   )]   -
.   -
[   ] ,
[2: SETTING MENU (   )].
[   ]   [2: SETTING MENU (
)]
[2: SETTING MENU (   )],
"8000".
.   [DN] 4
,   "8",   [SET],
[2: SETTING MENU (   )].
,
.
,
.

```
Test output will be
valid.
[→] : CONTINUE
[ESC]: CANCEL
```

```
Input password
PASSWORD
    :0000
[SET]SET, [ESC]CANCEL
```

[ESC]

.

```
5: SET PARAMETERS
6: ZERO CALIBRATION
7: SPAN CALIBRATION
8: ANGLE ROTATION
```

[ESC]

.

```
PASSWORD ERROR
PUSH ANY KEY.
```

[DN]   [UP]

.   .

[   ]
,
[SET]

```
9: LINEARIZ/CNDUCTVTY
10: ADDITIVES CORRECT
11: OTHERS
```

[ESC]

.

[DN]   [UP]

.   .

```
1: READ PARAMETERS
2: MEASURED VALUES
3: SELF-DIAGNOSIS
```

[ESC]

.

5.2.6 Measuring Mode:

```
┌─────────────────────────────┐
│ 1: MONITORING MENU          │
│ 2: SETTING MENU             │
│ 3: MEASURING MODE           │
│                             │
│                             │
└─────────────────────────────┘
```

[ESC]
.

[ ]   "3"   [SET] .

```
┌─────────────────────────────┐         SET        ┌─────────────────────────────┐
│ OP: MEASURING MODE          │ ─────────────────> │ OP: MEASURING MODE          │
│ DATA: CONT                  │         SET        │ RANGE: CONT/EXT             │
│ [SET] CHANGE                │ <───────────────── │ DATA: CONT                  │
│ [ESC] RETURN                │         ESC        │ [SET] SET, [ESC]CANCEL      │
│                             │ <───────────────── │                             │
└─────────────────────────────┘                    └─────────────────────────────┘
```

[UP]   [DN]
CONT/EXT,   .
CONT –   ,   EXT –
.   6.7
.

5.2.7 Read Parameters:

```
┌─────────────────────────────┐
│ 1: READ PARAMETERS          │
│ 2: MEASURED VALUES          │
│ 3: SELF-DIAGNOSIS           │
│                             │
└─────────────────────────────┘
```

[ ]   "1"   [SET]
 [1: READ PARAMETERS (   )]

```
┌─────────────────────────────┐
│ C: DENSITY MULTIPLIER       │
│ DATA: 1.000(C1)             │
│                             │
│ [ESC] RETURN                │
│                             │
└─────────────────────────────┘
```

/ C:

DENSITY MULTIPLIER,

2, 3   4,   -

(DI)

[ESC]

.

[DN]   [UP]

.   .

```
┌─────────────────────────────┐
│ UR: UPPER RANGE             │
│ DATA: 3.0                   │
│                             │
│ [ESC] RETURN                │
│                             │
└─────────────────────────────┘
```

/ UR: UPPER RANGE (

20   )

[ESC]

.

[DN]   [UP]

.   .

```
┌─────────────────────────────┐
│ LR: LOWER RANGE             │
│ DATA: 0.0                   │
│                             │
│ [ESC] RETURN                │
│                             │
└─────────────────────────────┘
```

/ LR: LOWER RANGE (-

4   )

[ESC]

.

[UP]

.

```
                    ┌──────────────────────────┐
                    │ a: DENSITY LINE SLOPE    │                                    -
                    │ DATA: 0.0840             │                          / a: DEN-
◄───────────────────┤                          │          SITY LINE SLOPE
      [ESC]         │ [ESC] RETURN             │
                    │                          │                       ,    . .
                    └──────────────────────────┘
            [DN]                      [UP]                                        /
             .                         .
                    ┌──────────────────────────┐          b: DENSITY INTERCEPT
                    │ b: DENSITY INTERCEPT     │
                    │ DATA: 0.0                │                       ,
◄───────────────────┤                          │                        . .
      [ESC]         │ [ESC] RETURN             │                       .
                    │                          │
                    └──────────────────────────┘
            [DN]                      [UP]
             .                         .                    [2: SETTING MENU (
                    ┌──────────────────────────┐          )]                    -
                    │ ot: DENSTY TEST OUT      │
                    │ DATA: 1.5                │                         .
◄───────────────────┤                          │                                -
      [ESC]         │ [ESC] RETURN             │                      / ot: DENSTY
                    │                          │          TEST OUT  (         : %TS)
                    └──────────────────────────┘
            [DN]                      [UP]
             .                         .
                    ┌──────────────────────────┐
                    │ dt: DELAYED SYNC.TIME    │                                 /
                    │ DATA: 0.5                │           dt: DELAYED SYNC.TIME
◄───────────────────┤                          │             (        :        ),
      [ESC]         │ [ESC] RETURN             │
                    │                          │                       .
                    └──────────────────────────┘                                  6.7
            [DN]                      [UP]
             .                         .
                    ┌──────────────────────────┐
                    │ zp: ZERO POINT PHASE     │
                    │ DATA: 80.00              │                                 -
◄───────────────────┤                          │          / zp: ZERO POINT PHASE
      [ESC]         │ [ESC] RETURN             │
                    │                          │
                    └──────────────────────────┘
            [DN]                      [UP]
             .                         .
                    ┌──────────────────────────┐
                    │ zT: ZERO WATER TEMP.     │                                 -
◄───────────────────┤ DATA: 25.00              │
      [ESC]         │                          │                          / zT:
                    │ [ESC] RETURN             │          ZERO WATER TEMP.
                    │                          │
                    └──────────────────────────┘
                              [UP]
                               .
```

[DN]   .

/ RF correction factor ,
                                                                                          .

```
cG: RF COEF.
DATA: 0.00

[ESC] RETURN
```

[ESC]   .

                                                                              ,

[DN]   [UP]   .
     .   .

```
zG: ZERO RF DATA
DATA: 50.00

[ESC] RETURN
```

[ESC]   DATA   / zG: ZERO RF
                                                                        .

[DN]   [UP]
     .   .

```
ma: AVERAGING TIMES
DATA: 1

[ESC] RETURN
```

[ESC]   AVERAGING TIMES   / ma:

[DN]   [UP]
     .   .

```
dx: CHANGE-RATE LIMIT
DATA: 0.00

[ESC] RETURN
```

[ESC]   dx: CHANGE-RATE LIMIT   (%TS)
                                                                     /

[DN]   [UP]
     .   .

```
HL: LIMIT TIMES
DATA: 0

[ESC] RETURN
```

[ESC]   TIMES   / HL: LIMIT

[DN]   [UP]
     .   .

```
OI: OUTPUT INTERVAL
DATA: HART 0s

[ESC] RETURN
```

[ESC]   HART[*1]   RS232C,   -
                               / OI: OUTPUT INTERVAL

[DN]   [UP]
     .   .

```
C: DENSITY MULTIPLIER
DATA: 1.000

[ESC] RETURN
```

[ESC]

```
            *1:
      HART .          ,
            0       .
HART
                AF100,
```

5.2.8 Measured Values:

```
┌─────────────────────────────┐
│ 1: READ PARAMETERS          │
│ 2: MEASURED VALUES          │
│ 3: SELF-DIAGNOSIS           │
│                             │
│                             │
└─────────────────────────────┘
```

[ ]   "2"   [SET],
[2: MEASURED VALUES (   )]

[ESC]

```
┌─────────────────────────────┐
│ MEASURED VALUES *           │
│ p PHASE:  123.56 N=0        │
│ T TEMP:  30.00  °C          │
│ X DENSITY:  2.34   %TS      │
│                             │
└─────────────────────────────┘
```

(
N),
.   [*]
,   .

5.2.9 Self-Diagnosis:

```
┌─────────────────────────────┐
│ 1: READ PARAMETERS          │
│ 2: MEASURED VALUES          │
│ 3: SELF-DIAGNOSIS           │
│                             │
└─────────────────────────────┘
```

[   ]   "3"   [SET],
[3: SELF-DIAGNOSIS (   )]

```
┌─────────────────────────────┐
│ ST: STATUS: GOOD            │
│                             │
│                             │
│ [ESC] RETURN                │
│                             │
└─────────────────────────────┘
```

[ESC]   ,
.   / ST: STATUS.

[DN]   [UP]
.   .

```
┌─────────────────────────────┐
│ SL: MICROWAVE SIG.LVL       │
│ DATA: -53  dBm              │
│                             │
│ [ESC] RETURN                │
│                             │
└─────────────────────────────┘
```

[ESC]   / SL: MICROWAVE SIG.LVL.
.   -45   -75
.

[UP]
.

[DN]

```
┌─────────────────────────┐
│ F: MICROWAVE COEF.      │
│ DATA: 1910              │
│                         │        / F: MICROWAVE COEF,
│ [ESC] RETURN            │            1825    1975.
└─────────────────────────┘
```

[ESC]

[DN]   [UP]

```
┌─────────────────────────┐
│ G: RF DATA.             │
│ DATA: 50.00             │                                    / G:
│                         │        RF DATA  (
│ [ESC] RETURN            │                          ).              ,
└─────────────────────────┘            10    70.
```

[ESC]

[DN]   [UP]

```
┌─────────────────────────┐
│ DATA: 5.00              │
│                         │
│ [ESC] RETURN            │
│                         │        5    / J: +5V POWER SUPPLY
└─────────────────────────┘
```

[ESC]

[DN]   [UP]

```
┌─────────────────────────┐
│ pd: REF PHASE           │
│ DATA: 0.0               │
│                         │
│ [ESC] RETURN            │        / pd: REF PHASE
└─────────────────────────┘
```

[ESC]

[DN]   [UP]

```
┌─────────────────────────┐
│ Mc: MEMORY CHECK:       │
│ GOOD                    │
│ EPROM: GOOD             │
│ RAM: GOOD               │        / Mc: MEMORY CHECK.
│  EEPROM: GOOD           │
└─────────────────────────┘
```

[ESC]

[DN]   [UP]

```
┌─────────────────────────┐
│ ST: STATUS: GOOD        │
│                         │
│ [ESC] RETURN            │
└─────────────────────────┘
```

[ESC]

5.2.10 Set Parameters:

```
┌─────────────────────────┐
│ 5: SET PARAMETERS       │
│ 6: ZERO CALIBRATION     │
│ 7: SPAN CALIBRATION     │
│ 8: ANGLE ROTATION       │
└─────────────────────────┘
```

[   ]   "5"   [SET],
                    [5: SET PARAMETERS (   )]

```
┌─────────────────────────┐   [SET] (              )   ┌─────────────────────────┐
│ UR: UPPER RANGE         │                            │ UR: UPPER RANGE         │
│ DATA: 3.0               │   [SET] (            )      │ RANGE: 1.0-99.9 %TS     │
│ [SET] CHANGE            │                            │ DATA: 0.30              │
│ [ESC] RETURN.           │   [ESC] (       )          │ [SET] SET, [ESC] CANCEL │
└─────────────────────────┘                            └─────────────────────────┘
```
[ESC]
                                                                / UR: UPPER
   [DN]   [UP]   RANGE (20   )

```
┌─────────────────────────┐   [SET] (              )   ┌─────────────────────────┐
│ LR: LOWER RANGE         │                            │ LR: LOWER RANGE         │
│ DATA: 0.0               │   [SET] (            )      │ RANGE: 0.0-99.5 %TS     │
│ [SET] CHANGE            │                            │ DATA: 00.0              │
│ [ESC] RETURN            │   [ESC] (      )           │ [SET] SET, [ESC] CANCEL │
└─────────────────────────┘                            └─────────────────────────┘
```
[ESC]
                                                                / LR: LOWER
   [DN]   [UP]   RANGE (4   )

```
┌─────────────────────────┐   [SET] (              )   ┌─────────────────────────┐
│ a: DENSITY LINE SLOPE   │                            │ a: DENSITY LINE SLOPE   │
│ DATA: 0.0840            │   [SET] (            )      │ RANGE: -0.2000-0.2000   │
│ [SET] CHANGE            │                            │ DATA: 0.0840            │
│ [ESC] RETURN            │   [ESC] (     )            │ [SET] SET, [ESC] CANCEL │
└─────────────────────────┘                            └─────────────────────────┘
```
[ESC]
                                                    / a: DENSITY LINE SLOPE   -
   [DN]   [UP]   ,   -
                                          5.1.2.   .

```
┌─────────────────────────┐   [SET] (              )   ┌─────────────────────────┐
│ b: DENSITY INTERC       │                            │ b: DENSITY INTERCEPT    │
│ DATA: 0.00              │   [SET] (            )      │ RANGE: -99.99-99.99     │
│ [SET] CHANGE            │                            │ DATA: 00.00             │
│ [ESC] RETURN            │   [ESC] (       )          │ [SET] SET, [ESC] CANCEL │
└─────────────────────────┘                            └─────────────────────────┘
```
[ESC]
                            / DENSITY INTERCEP
   [DN]   [UP]   ,   -
                                        ,   -
                                                          .

```
┌─────────────────────────┐   [SET] (              )   ┌─────────────────────────┐
│ ot: DENSTY TEST OUT.    │                            │ ot: DENSTY TEST OUT.    │
│ DATA: 1.5               │   [SET] (            )      │ RANGE: 0.0-99.9 %TS     │
│ [SET] CHANGE            │                            │ DATA: 01.5              │
│ [ESC] RETURN            │   [ESC] (      )           │ [SET] SET, [ESC] CANCEL │
└─────────────────────────┘                            └─────────────────────────┘
```
[ESC]
                                        [2 : SETTING MENU (   )]
         [UP]
                                                                                 -
                                                            «% TS».
```

[DN]     .

| dt: DELAYED  SYNC. TIME<br>DATA: 0.5<br>[SET] CHANGE<br>[ESC] RETURN | [SET] (<br>[SET] (            )<br>[ESC] (        ) | dt: DELAYED SYNC.TIME<br>RANGE: 0.1-99.9 min<br>DATA: 00.5<br>[SET] SET, [ESC] CANCEL |

[ESC]

.

[DN]          [UP]
.                      .

/ dt: DELAYED SYNC.TIME.
6.7

| zp: ZERO POINT PHASE<br>DATA: 80.00<br>[SET] CHANGE<br>[ESC] RETURN | [SET] (            )<br>[SET] (            )<br>[ESC] (        ) | zp: ZERO POINT PHASE<br>RANGE: 0.00-359.99<br>DATA: 080.00<br>[SET] SET, [ESC] CANCEL |

[ESC]

.

[DN]          [UP]
.                      .              ZERO POINT PHASE.                      / zp:

| zT: ZERO WATER TEMP<br>DATA: 25.00<br>[SET] CHANGE<br>[ESC] RETURN | [SET] (            )<br>[SET] (            )<br>[ESC] (        ) | zT: WATER TEMP./ZERO<br>RANGE: 0.00-100.00 (C<br>DATA: 025.00<br>[SET] SET, [ESC] CANCEL |

[ESC]

.

[DN]          [UP]
.                      .

zT: WATER TEMP./ZERO.

.

| cG: RF COEF.<br>DATA: 0.00<br>[SET] CHANGE<br>[ESC] RETURN | [SET] (            )<br>[SET] (            )<br>[ESC] (        ) | cG: RF COEF.<br>RANGE: -9.99-9.99<br>DATA: 0.00<br>[SET] SET, [ESC] CANCEL |

[ESC]

.

[UP]                                                    / cG: RF COEF,    -
.                                              ,          .          -
                                                                     -
.                                            ,              .

[DN]

```
zG: ZERO RF DATA          [SET] (              )    zG: ZERO RF DATA
DATA: 50.00               [SET] (          )        RANGE: 0.00-100.00 (C
[SET] CHANGE              [ESC] (        )          DATA: 050.00
[ESC] RETURN                                        [SET] SET, [ESC] CANCEL
```

[ESC]

[DN]   [UP]   / zG: ZERO RF DATA.

```
ma: AVERAGING TIMES       [SET] (              )    ma: AVERAGING TIMES
DATA: 1                   [SET] (          )        RANGE: 1-99
[SET] CHANGE              [ESC] (        )          DATA: 01
[ESC] RETURN                                        [SET] SET, [ESC] CANCEL
```

[ESC]

[DN]   [UP]   / ma:
                          AVERAGING TIMES.   ,   ,   ,

                              5   10.

```
dx: CHANGE RATE LIMIT     [SET] (              )    dx: CHANGE RATE LIMIT
DATA: 0.00                [SET] (          )        RANGE: 0.00-9.99 °
[SET] CHANGE              [ESC] (        )          DATA: 0.00
[ESC] RETURN                                        [SET] SET, [ESC]
                                                    CANCEL
```

[ESC]

                                                                         -
                                                                         -
[DN]   [UP]   -

                                                            "%TS".

```
HL: LIMIT TIMES           [SET] (              )    HL: LIMIT TIMES
DATA: 0                   [SET] (          )        RANGE: 0-99
[SET] CHANGE              [ESC] (        )          DATA: 00
[ESC] RETURN                                        [SET] SET, [ESC] CANCEL
```

[ESC]

                                                                         -
[DN]   [UP]   dx(%TS),   -
                                                 ,   HL   (HL   -
)   .   HL
                                    =0   -

```
UR: UPPER RANGE
DATA: 3.0
[SET] CHANGE             [SET] (                )
[ESC] RETURN
```

```
[               ]:              ,                  ,        VALUE OUT OF RANGE
                          ,                              UR: UPPER RANGE
            ,                                            PRESS ANY KEY TO
                  .                                      RETURN
                      .
```

5.2.11 Zero Calibration:

```
5: SET PARAMETERS
6: ZERO CALIBRATION
7: SPAN CALIBRATION
8: ANGLE ROTATION
```

             [   ]   "6"   [SET],

[6: ZERO CALIBRATION (   )]

```
ZERO CAL          *
p PHASE:    87.93 ° N=0
T TEMP.:    26.55 °C
X DENSITY: 0.02 %TS
```

[SET] (   ) →

```
ZERO POINT
CALIBRATION
HAS BEEN COMPLETED
```

[ESC]

.

[SET]   .   .   N

.

:   .

5.2.12 Span Calibration:

```
5: SET PARAMETERS
6: ZERO CALIBRATION
7: SPAN CALIBRATION
8: ANGLE ROTATION
```

             [   ]   "7"   [SET],

[7: SPAN CALIBRATION (   )]

```
C1: DensityMultiplier
DATA: 1.000
[SET] CHANGE
[ESC] RETURN
```

[SET] (   ) →

[SET] (   )

[ESC] (   )

```
C1: DensityMultiplier
RANGE: 0.000-9.999
DATA: 1.000
[SET] SET, [ESC]CANCEL
```

[ESC]

C1: Density Multiplier   -

,   ,

.

6.5

60

5.2.13 Angle Rotation:

```
┌─────────────────────────┐
│ 5: SET PARAMETERS       │
│ 6: ZERO CALIBRATION     │
│ 7: SPAN CALIBRATION     │
│ 8: ANGLE ROTATION       │
└─────────────────────────┘
```

[   ]   "8"   [SET],
[8: ANGLE ROTATION (   )]

```
┌─────────────────────────┐   [SET] (            )   ┌─────────────────────────┐
│ UH: UPPER ANGLE         │   [SET] (          )     │ UH: UPPER ANGLE         │
│ DATA: 260               │ ─────────────────────►   │ RANGE: 240-360 °        │
│ [SET] CHANGE            │   [ESC] (        )       │ DATA: 260               │
│ [ESC] RETURN            │ ◄─────────────────────   │ [SET] SET, [ESC] CANCEL │
└─────────────────────────┘                          └─────────────────────────┘
```

[ESC]

[DN]   [UP]   -   ,   260

```
┌─────────────────────────┐   [SET] (            )   ┌─────────────────────────┐
│ SH: LOWER ANGLE         │   [SET] (            )   │ SH: LOWER ANGLE         │
│ DATA: 100               │ ─────────────────────►   │ RANGE: 0-120            │
│ [SET] CHANGE            │   [ESC] (        )       │ DATA: 100               │
│ [ESC] RETURN            │ ◄─────────────────────   │ [SET] SET, [ESC] CANCEL │
└─────────────────────────┘                          └─────────────────────────┘
```

[ESC]

[DN]   [UP]   -   ,   100

```
┌─────────────────────────┐   [SET] (            )   ┌─────────────────────────┐
│ N: ROTATION             │   [SET] (          )     │ N: ROTATION             │
│ DATA: 0                 │ ─────────────────────►   │ RANGE: -10 - 10         │
│ [SET] CHANGE            │   [ESC] (        )       │ DATA: 00                │
│ [ESC] RETURN            │ ◄─────────────────────   │ [SET] SET, [ESC] CANCEL │
└─────────────────────────┘                          └─────────────────────────┘
```

[ESC]

[DN]   [UP]   N   ,

```
┌─────────────────────────┐
│ UH: UPPER ANGLE         │
│ DATA: 260               │
│ [SET] CHANGE            │
│ [ESC] RETURN            │
└─────────────────────────┘
```

[ESC]

5.2.14 Lineariz/Cnductivity:

```
┌─────────────────────────┐
│ 9: LINEARIZ/CNDUCTVTY   │
│ 10: ADDITIVES CORRECT   │
│ 11: OTHERS              │
└─────────────────────────┘
```

[ ]   "9"   [SET],
[9: LINEARIZ/CNDUCTVTY (/   )]

```
┌─────────────────────┐   [SET] (              )   ┌─────────────────────────────┐
│ LA: DENSITY A       │   [SET] (            )     │ LA: DENSITY A               │
│ DATA: 0.60          │   [ESC] (        )         │ RANGE: 0.00-99.99           │
│ [SET] CHANGE        │                            │ DATA: 00.60                 │
│ [ESC] RETURN        │                            │ [SET] SET, [ESC] CANCEL     │
└─────────────────────┘                            └─────────────────────────────┘
```
[ESC]

[DN]   [UP]

```
┌─────────────────────┐   [SET] (                )  ┌─────────────────────────────┐
│ LB: DENSITY B       │   [SET] (            )      │ LB:DENSITY B                │
│ DATA: 1.00          │   [ESC] (        )          │ RANGE :0.00-99.99           │
│ [SET] CHANGE        │                             │ DATA : 01.00                │
│ [ESC] RETURN        │                             │ [SET] SET, [ESC] CANCEL     │
└─────────────────────┘                             └─────────────────────────────┘
```
[ESC]

[DN]   [UP]

```
┌─────────────────────┐   [SET] (              )    ┌─────────────────────────────┐
│ K1: COEF.           │   [SET] (             )     │ K1: COEF.                   │
│ DATA: 1.00          │   [ESC] (          )        │ RANGE: 0.00-9.99            │
│ [SET] CHANGE        │                             │ DATA: 1.00                  │
│ [ESC] RETURN        │                             │ [SET] SET, [ESC] CANCEL     │
└─────────────────────┘                             └─────────────────────────────┘
```
[ESC]

[DN]   [UP]   1

```
┌─────────────────────┐   [SET] (              )    ┌─────────────────────────────┐
│ K2: COEF.           │   [SET] (             )     │ K2: COEF.                   │
│ DATA: 1.00          │   [ESC] (         )         │ RANGE: 0.00-9.99            │
│ [SET] CHANGE        │                             │ DATA: 1.00                  │
│ [ESC] RETURN        │                             │ [SET] SET, [ESC] CANCEL     │
└─────────────────────┘                             └─────────────────────────────┘
```
[ESC]

[DN]   [UP]   2

```
┌─────────────────────┐   [SET] (              )    ┌─────────────────────────────┐
│ K1: COEF.           │   [SET] (            )      │ K3: COEF.                   │
│ DATA: 1.00          │   [ESC] (      )            │ RANGE: 0.00-9.99            │
│ [SET] CHANGE        │                             │ DATA: 1.00                  │
│ [ESC] RETURN        │                             │ [SET] SET, [ESC] CANCEL     │
└─────────────────────┘                             └─────────────────────────────┘
```
[ESC]

[UP]   2

[DN]

EI: EC COMP. SELECTION
MODE: OFF
[SET] DATA
[ESC] RETURN

[SET] (   )
[SET] (   )
[ESC] (   )

EI: EC COMP. SELECTION
MODE: OFF/INT./EXT.
DATA: OFF
[SET] SET, [ESC] CANCEL

[ESC]

[DN]   [UP]

=0.00

r: CNDUCTVTY. COEF.
RANGE: 0.00
[SET] DATA
[ESC] RETURN

[SET] (   )
[SET] (   )
[ESC] (   )

r: CNDUCTVTY. COEF.
RANGE: 0.00-99.99
DATA: 00.00
[SET] SET, [ESC] CANCEL

[ESC]

[DN]   [UP]

=0.00

zE: CNDUCTVTY. /ZERO
DATA: 0.00
[SET] CHANGE
[ESC] RETURN

[SET] (   )
[SET] (
«LINE»)
[ESC] (   )

MANU/LINE SELECTION
RANGE: MANU/LINE
DATA: (LINE)
[SET] SET, [ESC] CANCEL

[ESC]

MANU/LINE   -
[UP] [DN],

«LINE»
[SET] (   )

MANU/LINE SELECTION
RANGE: MANU/LINE
DATA: (MANU)
[SET] SET, [ESC] CANCEL

[ESC]
(Cancel)

[UP]

«MANU»
[SET] (
)

zE: CNDUCTVTY. /ZERO
RANGE: 0.00-10.00
DATA: 00.00
[SET] SET, [ESC] CANCEL

[SET]

MANU

[DN]

EC: CONDUCTIVITY
DATA: 1.23(LINE)
[SET] CHANGE
[ESC] RETURN

[ESC]

[SET] (   )
[SET] (
        «LINE»)
[ESC] (   )

MANU/LINE SELECTION
RANGE: MANU/LINE
DATA: (LINE)
[SET] SET, [ESC] CANCEL

MANU/LINE
        [UP]   [DN],   -

        «LINE»   -
[SET] (   )
                    -
                    -

MANU/LINE SELECTION
RANGE: MANU/LINE
DATA: (MANU)
[SET] SET, [ESC] CANCEL

[ESC]
(   )

«MANU» (
)   [SET]

EC: CONDUCTIVITY
RANGE: 0.00-10.00
DATA: 00.00
[SET] SET, [ESC] CANCEL

[UP]

[DN]

[SET]

MANU

LA: DENSITY A
DATA: 0.60
[SET] CHANGE
[ESC] RETURN

[ESC]

5.2.15 Addictives Correction:

```
9: LINEARIZ/CNDUCTVTY
10: ADDITIVES CORRECT
11: OTHERS
```

[   ]   "10"   [SET],
[10: ADDITIVES CORRECT (   )]

```
AF: ADDITIVES COMP.          [SET] (                    )      AF: ADDITIVES COMP.
DATA: ON                     [SET] (               )          RANGE: OFF/ON
[SET] CHANGE                 [ESC] (          )              DATA: ON
[ESC] RETURN                                                 [SET] SET, [ESC] CANCEL
```

[ESC]

.

                                                    [UP]   [DN]
                                    OFF/ON,
                                                    .   OFF

```
Ad: DISPLAY DENSITY          [SET] (                    )      Ad: DISPLAY DENSITY
DATA: TOTAL                  [SET] (               )          RANGE: TOTAL/MAIN
[SET] CHANGE                 [ESC] (          )              DATA: TOTAL
[ESC] RETURN                                                 [SET] SET, [ESC] CANCEL
```

[ESC]

.   [DN]   [UP]   [UP]   [DN]
                                    TOTAL/MAIN,
                                    .   .
                                    TOTAL
                                            ,   MAIN
                                            ,   .

```
Ac: OUTPUT DENSITY           [SET] (                    )      Ac: OUTPUT DENSITY
DATA: TOTAL                  [SET] (               )          RANGE: TOTAL/MAIN
[SET] CHANGE                 [ESC] (          )              DATA: TOTAL
[ESC] RETURN                                                 [SET] SET, [ESC] CANCEL
```

[ESC]

.   [UP]   [UP]   [DN]
                                    TOTAL/MAIN,
                                    .   .
                                    TOTAL
                                            ,   MAIN
                                            ,   .

[DN]

[SET] (   )

Ap: PARAMETER SET NO.
DATA: 01
[SET] CHANGE
[ESC] RETURN

[SET] (   )

[ESC] (   )

Ap: PARAMETER SET NO.
RANGE: 1 - 10
DATA: 01
[SET] SET, [ESC] CANCEL

[ESC]

[DN]   [UP]

10   (

)

[SET] (   )

s0: MAIN OBJ. SENS.
DATA: 1.00
[SET] CHANGE
[ESC] RETURN

[SET] (   )

[ESC] (   )

s0: MAIN OBJ. SENS.
RANGE: -9.99 - 9.99
DATA: 1.00
[SET] SET, [ESC] CANCEL

[ESC]

[DN]   [UP]

(   ) 0

[SET] (   )

s1: ADDITIVE SENS.
DATA: 0.00
[SET] CHANGE
[ESC] RETURN

[SET] (   )

[ESC] (   )

s1: ADDITIVE SENS.
RANGE: -9.99 - 9.99
DATA: 0.00
[SET] SET, [ESC] CANCEL

[ESC]

[DN]   [UP]

1.

2 - 5.

[SET] (   )

s2: ADDITIVE SENS.
DATA: 0.00
[SET] CHANGE
[ESC] RETURN

[SET] (   )

[ESC] (   )

s2: ADDITIVE SENS.
RANGE: -9.99 - 9.99
DATA: 0.00
[SET] SET, [ESC] CANCEL

[ESC]

[DN]   [UP]

[SET] (   )

s3: ADDITIVE SENS.
DATA: 0.00
[SET] CHANGE
[ESC] RETURN

[SET] (   )

[ESC] (   )

s3: ADDITIVE SENS.
RANGE: -9.99 - 9.99
DATA: 0.00
[SET] SET, [ESC] CANCEL

[ESC]

[DN]   [UP]

[SET] (   )

s4: ADDITIVE SENS.
DATA: 0.00
[SET] CHANGE
[ESC] RETURN

[SET] (   )

[ESC] (   )

s4: ADDITIVE SENS.
RANGE: -9.99 - 9.99
DATA: 0.00
[SET] SET, [ESC] CANCEL

[ESC]

[UP]

[DN]

```
s5: ADDITIVE SENS.          [SET] (                    )    s5: ADDITIVE SENS.
DATA: 0.00                                                   RANGE: -9.99 - 9.99
[SET] CHANGE                [SET] (          )              DATA: 0.00
[ESC] RETURN                [ESC] (     )                  [SET] SET, [ESC] CANCEL
```

[ESC]

[DN]   [UP]

```
R1: ADDITIVE RATIO          [SET] (                    )    R1: ADDITIVE RATIO
DATA: 0.000                 [SET] (              )          RANGE: 0.000 - 1.999
[SET] CHANGE                [ESC] (       )                 DATA: 0.000
[ESC] RETURN                                               [SET] SET, [ESC] CANCEL
```

[ESC]

[DN]   [UP]

1 (

0).

2 - 5

```
R2: ADDITIVE RATIO          [SET] (                    )    R2: ADDITIVE RATIO
DATA: 0.000                 [SET] (              )          RANGE: 0.000 - 1.999
[SET] CHANGE                [ESC] (      )                  DATA: 0.000
[ESC] RETURN                                               [SET] SET, [ESC] CANCEL
```

[ESC]

[DN]   [UP]

```
R3: ADDITIVE RATIO          [SET] (                    )    R3: ADDITIVE RATIO
DATA: 0.000                 [SET] (              )          RANGE: 0.000 - 1.999
[SET] CHANGE                [ESC] (      )                  DATA: 0.000
[ESC] RETURN                                               [SET] SET, [ESC] CANCEL
```

[ESC]

[DN]   [UP]

```
R4: ADDITIVE RATIO          [SET] (                    )    R4: ADDITIVE RATIO
DATA: 0.000                 [SET] (              )          RANGE: 0.000 - 1.999
[SET] CHANGE                [ESC] (      )                  DATA: 0.000
[ESC] RETURN                                               [SET] SET, [ESC] CANCEL
```

[ESC]

[DN]   [UP]

```
R5: ADDITIVE RATIO          [SET] (                    )    R5: ADDITIVE RATIO
DATA: 0.000                 [SET] (              )          RANGE: 0.000 - 1.999
[SET] CHANGE                [ESC] (      )                  DATA: 0.000
[ESC] RETURN                                               [SET] SET, [ESC] CANCEL
```

[ESC]

[DN]   [UP]

```
AF: ADDITIVES COMP.
DATA: ON
[SET] CHANGE
[ESC] RETURN
```

[ESC]

67

5.2.16 Others: «   »

```
9: LINEARIZ/CNDUCTVTY
10: ADDITIVES CORRECT
11: OTHERS
```

[ ]   "11"   [SET],
[11: OTHERS (   )]

```
ho: 4-20mA IN [EXT]        [SET] (                    )      ho: 4-20mA IN [EXT]
DATA: 4mA                 [SET] (              )             RANGE: LAST/4mA/TEST
[SET] CHANGE                                                 DATA: 4mA
[ESC] RETURN              [ESC] (          )                 [SET] SET, [ESC] CANCEL
```

[ESC]

.   [DN]   [UP]   OFF
        .   .   [UP], [DN]
                                      LAST VALUE (   ),
                4   TEST OUTPUT (0-99.9%TS
).   [SET]

```
DI: C CHANGE. ON/OFF      [SET] (                    )      DI: C CHANGE. ON/OFF
DATA: OFF                [SET] (              )             RANGE: ON/OFF
[SET] CHANGE                                                DATA: OFF
[ESC] RETURN            [ESC] (        )                   [SET] SET, [ESC] CANCEL
```

[ESC]
        .   [DN]   [UP]
                .   .   4
                                                                        (DI).
                                      ON/OFF   [UP]   [DN]

```
C2: DensityMultiplier    [SET] (                    )      C2: DensityMultiplier
DATA: 1.000             [SET] (              )             RANGE: 0.000-9.999
[SET] CHANGE                                                DATA: 1.000
[ESC] RETURN            [ESC] (          )                 [SET] SET, [ESC] CANCEL
```

[ESC]
        .

        [DN]   [UP]
                .   (DI).
                                                                        .

```
C3: DensityMultiplier    [SET] (                    )      C3: DensityMultiplier
DATA: 1.000             [SET] (                )           RANGE: 0.000-9.999
[SET] CHANGE                                                DATA: 1.000
[ESC]  [ESC] RETURN     [ESC] (        )                  [SET] SET, [ESC] CANCEL
```

        [UP]
                .

[DN]

```
C4: DensityMultiplier
DATA: 1.000
[SET] CHANGE
[ESC] RETURN
```

[SET] (   )
[SET] (   )
[ESC] (   )

```
C4: DensityMultiplier
RANGE: 0.000-9.999
DATA: 1.000
[SET] SET, [ESC] CANCEL
```

[ESC]

[DN]   [UP]

```
NA: N AUTO ADJUSTMENT
DATA: ON
[SET]: CHANGE
[ESC]: RETURN
```

[SET] (   )
[SET] (   )
[ESC] (   )

```
NA: N AUTO ADJUSTMENT
RANGE: ON/OFF
DATA: ON
[SET] SET, [ESC] CANCEL
```

[ESC]

[DN]   [UP]

```
NB: EXT N FIX RESTART
DATA: ON
[SET]: CHANGE
[ESC]: RETURN
```

[SET] (   )
[SET] (   )
[ESC] (   )

```
NB: EXT N FIX RESTART
MODE: ON/OFF
DATA: ON
[SET]: SET, [ESC]: CANCEL
```

[ESC]

OFF;   ON
            N   (OFF).
ON;   ON
        N (NC; -10 - +10)
              NB (ON),   NC.

[DN]   [UP]

```
NC: EXT N ROTATION
DATA: 0
[SET]: CHANGE
[ESC]: RETURN
```

[SET] (   )
[SET] (   )
[ESC] (   )

```
NC: EXT N ROTATION
RANGE: -10 - 10
DATA: 00
[SET]: SET, [ESC]: CANCEL
```

[ESC]

[DN]   [UP]

```
ho: 4-20mA IN [EXT]
DATA: 4mA
[SET] CHANGE
[ESC] RETURN
```

[ESC]

6.

6.1

, :

	6.2 (1)
	6.2 (2)
	6.2 (3)
	6.3.1 (1)
	6.3.1 (2)
	6.3.1 (1) 6.3.1 (2)
(0%)	6.4 (2) – (10)
	, 6.4 (11) – (15)
	, 6.5
	6.6, 6.7
	6.6

[ ]	UL/CUL. , (250 , 10 ,). .
[ ]	Class I, Division 2 (UL/CUL)

6.2

(1) .

, ,

. .

3.3 « »

(2) .

, , ,

, .

(3) .

, ,

(100).

ON/OFF , .

6.3

6.3.1

(1) .

, ([POWER]),

- .

(2)

30 .

6.3.2 .

(1)

,

.

-

( ). :

① .

, -

0 3 %TS.

.

, , . ,

.

② .

- "CONT".

, . .

"EXT" (

, /).

-

delayed time (dt) ( ) output at contact OFF

(ho) (   ).   ,
                                                              .

③   .

                                                              (2 SETTING MENU (   ))
                                                              ;
                                                              ((ot)),
                                                              .   -
            «1,5%TS» (50%
            ),   .

④

            -   1   (
).   ,
      10.   ,
                              .

                              ,   .

⑤   ,
                                                              .

[   ]   «10   »
                              LQ500.   ,
                                                              .

      (2)

                        ,   (1).

6.4

(₁
₀).

,

,

,   .

5.2.11

(1)   (**5.2.5)**

[ESC] (,   ,
),   .
[   ]   «2» («2 SETTING MENU
(   )»),   [SET]   «TEST OUTPUT WILL BE
VALID (   )».
[   ],   [«2 SETTING MENU (   )»].
,
.

(2)

,
,   .

● :

,
,   .

/   ,
,
.

(3)   .

.
.   .

,
,   ,   ,   .

(4)   .

.

(5)

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,
.   .
.

(6)

(7)

(,

)   .

(8)   .

                                                                                     ,

                                    .

                                                                (7)   (8)   ,

          . (   ).

(9)   .

                                                 ,   ,

        .   ,

                                      .

(10)

                                                                15   .

                                              ,   (2)   (10)

                    ,   .

                                      15   .

(11)   (**5.2.5**)

              ,   «2 SETTING MODE (

)»   (1),   [   ]   «6»

(«6 ZERO CALIBRATION (   )»)   [SET].

(12)   (**5.2.11**)

                                                                                                                 .

                                                  [-0.00],   .

(13)   (**5.2.11**)

                                      ,   [SET].   ($_1$, $_0$, zG)

                                ,   N   ,

                                    .   ($_1$, $_0$, zG)

                                                                ,

                        (monitoring menu).   –

          .

                                                                 ,

[ESC].

(14)   .

                                                                                                             ,   ,

                                                                                      ,

                                    ,   ,   .

                                                                            ,   ,

                    .

(15)   .

                                    [ESC]   ,   -

                                                    .

ON, ,
,
.

ON, ,
.

6.5

.

,   5.2.12.

(1)

(,   -
0,1%),   1   -
100   .

(2)

,   ,
-                            1-   .   -
.

[   ]   ,
.

 (3)

100-   ,
.

(4)

$= /(/ ')$

–   ,   (
)

–   ,
' –

('   1.000,   -   )

,   =4.0%TS, A=4.8%TS,   '=1.000,

C=4.8/(4.0/1)=4.8/4.0=1.2

,

1.000,   :

,   =4.8%TS, A=4.2%TS, $_0$=1.2,

C=4.2/(4.8/1.2)=4.2/4=1.050

(5)

(5-1)   (5.2.5)

[ESC] (,   ,
),   .
[ ]   «2» («2 SETTING MENU
(   )»),   [SET]   «TEST OUTPUT WILL BE
VALID (   )».   -
[ ],   [«2 SETTING MENU (   )»].

76

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(5-2)   (5.25)
                                                  5   8.   [   ]
                                «7: SPAN CALIBRATION (   )»,
                [SET],   .

(5-3)   .
            ,   «DATA: 1.000».
            .

(5-4)

                    [SET],
                    ,   ,   (4).
[   ]   .   [UP]   [DN]
                                                  .   [SET]
                                                                  .   ,
            .

(5-5)

            [ESC]   ,
                                                  .   ,   .
            ,
            .

                                                                                  ,
                    ON,   ,
                                          .

(6)
            ,   .

[   ] +---+
                                   | , |
                                   | . |
                                   | |
                                   | . |
                                   +---+

6.6

(1) (**5.2.5)**

(1:
MONITORING MENU (   )),   .
(2: SETTING MENU (   )),
[ESC]   -   (
).

,
ON,   ,
.

(2)

(
;   ;   -
)

(3)   (**5.2.5)**
(2: SETTING MENU (   ))
,   .
,   ,
.

OFF,   .

6.7.

[   ]
,   ,

,   ,
6,7

,   ,
,   .
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(,
,   ).
,   .
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78

6.7

, , .
.
, (
) .

6.7.1

	OFF ON OFF
( )	
( )	( ) ( ) ( )

. 6.7.1.

,   . 6.7.1,
,
.
.

①   , .
②   .
,   ,   ,   , .

.
, ,
. , ,
, .
,
: «4 », « »
« ». - «4 ». ,
, .

6.7.2.

(1)   (**5.2.10)**

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(1-1)   (5.2.5)

[ESC] (,   ,
                                              ),
.   [   ]   «2»
(«2: SETTING MENU (2:   )»),   [SET]
                    «TEST OUTPUT WILL BE VALID (   )».
                                        -   [   ],
                      «2: SETTING MENU (2:   )» .
                                                  ,   .

(1-2)   (5.25)

5   8.   [   ]
                                        «5: SET PARAMETERS (5:
) »   [SET],   .

(1-3)   (
5.2.10)

[UP]   ,
                                            (dt: DELAYED SYNC. TIME).
        [SET],   (,
).
                                                                                  [   ].
                  [UP]   [DN]   .
                                          [SET]
                                    .   ,
.

(2)   (
OFF) (5.2.16)

(
OFF),   ,
6.7.1.   ,   .

6.7.1   ,   ,

	,	**(4-20)**
«4 » ( )	%TS	4
«TEST»		
«LAST»		

(2-1)   «OTHERS»   (5.2.5).

– (1).   [ESC],   ,   5 –
8.   [UP],   9 –
11.   [   ]   «11: OTHERS (11:   )
»   [SET],   .

80

(2-2)   OFF
(5.2.16)

                                    OFF   «ho:
4-20mA IN [EXT]»   «11: OTHERS (11:   ) ».
                    [SET].   [UP]   [DN]
        «LAST» (   ), «4   »   «TEST»(
).
        [SET].   ,
                                                    .

(3)   (
ON) (5.2.16)

                        (ON)
                              (6.7.2).   ,
              ,   .

                        6.7.2

OFF	N
ON	N (- 10 – 10)

(3-1)   (
ON) (5.2.16)

                    – (2),   [UP],
            (setting menu)   (NB: EXT
N FIX RESTART).   (ON)
            (OFF)   .
                    [SET].
[UP]   [DN]   ON   OFF.
                ON   OFF   [SET].
                                            .   ,
                                      .

                        ON   [UP]
            (setting menu)   N
            (NC: EXT N ROTATION).   [SET].
        [   ]   ,   [UP]
        [DN]   .
                                                    [SET].
                    ,   .

[   ] | | (NB)
|---|
| (OFF) ,   N (NC)
| . |

        (3-2)

                [ESC]   ,
                                          .

(4)

(4-1) (5.2.6)

[ ] «3» («3 MEASURING

MODE (3) »)   [SET],   .

(4-2)

«DATA»   -   . «CONT»

,

,   «EXT»   .

«CONT»,   [SET],

,   [UP]   [DN],

«EXT»,   [SET]   .

,

.

(5)

/

ON/OFF,   .

6.7.1

6.8 ,

LQ500

,   ,

,   ,   ,   ,

,   .

10.

7.

7.1   ,

⚠	
DO OFF , .	**DO** OFF . .
DO . OFF. .	**DON'T** . .
⚠ ⚠	. , .

7.2

(7.1).

(7.2).

7.1

,		
(,		
)		

[   ]

, ,).

6.5

, ,

(6.4 6.5)

( ).

7.2

		-
		2 .
	2 ( ), 250 , ,	
	5,2 ( ) 20 ( )	

[   ]

(:   3   ).

,

.

.   – 10
20 °   3   50 ° .

.

Toshiba.

, ,
-                          .   -,

, ,
· Toshiba.
( ),
( ).
( )
, 5 ,
, ·
/
·
·

8.

8.1

8.1

,

,

.

8.1

1.			[L1] [L2] . , .
		(2)	.
2.	ALARM;		(8.2) . ALARM , .
3.		.	. . 6.7 ( ).
4.		, , .	
5.			6.5 ,
		. , .	.

			,
			.
			,
			.
		.	.
			.
			.
			(0.1)
		.	
			,
			.
			(0.1).
			.
		.	
6.	,		.
			.
	,		.
7.			,
			6.4,
			,
			6.5
8.			.
			,

		.
	.	
		.

8.2

[ALARM].

,

:

(1)   (5.2.4)

[ESC] (,   ,
),   .
[ ]   «1» («1 MONITORING MODE (1
) »)   [SET]. («1»).

(2)   (5.2.7)

[ ]   «3» («3: SELF-DIAGNOSIS (3:
) »)   [SET].

(3)   (5.2.9)

[   ].

8.2   .

(4)

[ESC],
.

,   ,
.

.   ,
.

8.2

-			(; ,)
ST	[STATUS]	• [GOOD] • [WARNING.]	
SL	[MICROWAVE SIG. LVL]		• : -90 -40 ( )
F	[MICROWAVE COEF.]		• : 1825 ~ 1975
G	[RF DATA]		• : +10.0 ~ +80.0 (°)
J	+5 [+5 V POWER SUPPLY]		• : 4.5 ~ 5.5 ( )
pd	[REF PHASE]		• : -9.9 ~ +9.9 (°)
P	[MEMORY CHECK]	• [GOOD] • [N.G.]	EPROM, RAM, EEPROM

9.

,   ,

.

.

9.1

$_1$ (0%) $_2$

, Δ (= $_2$ - $_1$)   .   ( )

:

= × (× Δ)+b,

:   (%TS)

Δ : Δ = $_2$ - $_1$(   )

:

b :

:   (   )

9.2

9.2.1

0   360   .   360
,   0   ,
.   0   ,   360   ,
.   ,
,   ,
.   ,
0   360 ’   ,
.

$_2$,

$_2$’.

(1   )   (
9.2.1),   .

.

9.2.1   : 1.000

	50	80	100	150	200	250	300
1.0	16.8	10.5	8.4	5.6	4.2	3.4	2.8

$_2$ = $_2$’ + N × 360 (   ),

N :   .

N=0   ,
$_1$.

$_2$’   360   ,
N=1. $_2$’   360   ,
N=2.

(N   2).
, $_2$’   (0   ),
,   N   (1).   ,
0   -1,   N=-1;   1
0,   N=0.

:   .

.

. .

,   9.3.

9.2.2

.   ,
Δ $_2$
:

$=\{_2- (T-T_0)\}-_1$

[   ]

$_2$ [   ]

$_1$ (   )

(,   )

(/°C)

T   (°C)

T_0 (°C)

(,   )

9.2.3

.

Δ $_2$:

$=\{_2- (T-T_0)- (G-G_0)\}-_1$

[   ]

$_2$ [   ]

$_1$ (   )

(,   )

(/°C)

T   (°C)

T_0 (°C)

(,   )

G

G_0

(,   )

9.2.4

.

Δ

$_2$:

<   >:

,

«0.00».

$=\{_2- (T-T_0)- (G-G_0) (- _0)\}-_1$

(   )

2   (   )

1   (   )

(,   )

(/°C)

T   (°C)

T$_0$ (°C)

(,   )

G

G$_0$

(,   )

(/°C)

(°C)

0

(,   )

9.3 ()

,
.
,
.

9.3.1

9.2.1, N
. ,

.
, ,
,
. N
.
N .

9.3.2

.
, OFF
, ,
N
.

9.3.3

« ».
N
. .
N .
,
N,
N,
.
, .
,
.

9.3.4

9.3.1
9.3.1
$X_{max}=$ (UR)

	N
$X_{min}=$ -4 (%TS)	(N=N+1)
$-4 \sim C \times a \times 360$ (%TS)	

X$_{max}$= C × a × 360 (%TS)	(N=N-1)
X$_{max}$=	(UR)
	N
X$_{min}$= -4 (%TS)	(N=N+1)
-4 ~ (UR) +4(%TS)	
(UR) +4(%TS)	(N=N-1)

9.3.1

:   (   )
:   (   )
                    =1, 0.7   1.8   X$_{max}$,   N
                            ,   9.3.2.
   =1,   9.3.2,   .

9.3.2   X$_{max}$ (%TS)

	50	80	100	150	200	250	300
0.7	42.34	26.46	21.17	14.11	10.57	8.57	7.06
1.0	60.48	37.80	30.24	20.16	15.12	12.24	10.08
1.8	108.86	68.04	54.43	32.29	27.22	22.03	18.14

9.3.5

                    .   ,
                                                              .
<   >   200   ,   40%TS,
                            1.0.
            360   15.12%TS.
                                    15.12%TS,
                                              N.
                                              40   (%TS),
                                                        ,   40 (%TS).
            9.3.1,   15.12%TS
            .

9.3.6

                    (,
      6.5),   (
      : 1).   ,   (
).   ,
            ,   (1
).

95

:

(1) (5.2.5)

[ESC] (, ,), .

[ ] «2» («2: SETTING MENU
(2:) »), [SET] «TEST OUTPUT WILL
BE VALID ( )». -
[ ], [«2: SETTING MENU (2:
) »]. ,
.

(2) **OTHERS** (5.2.5)

5 8. [UP],
9 11. [ ]
«11: OTHERS (11:) » [SET],
.

(3) /
(ON/OFF) (5.2.16)

[DN] [UP] ,
«NA: N AUTO ADJUSTMENT (N)».
(ON) (OFF)
.

[SET], .
[UP] [DN], ON OFF. OFF,
[SET] .
, .

(4)

[ESC] ,
.

9.3.7

, (6.5)
. ON
, OFF
9.3.6.

9.3.8 .

,
.

:

(1) (5.2.5)

[ESC] (, ,), .

96

[ ]   «2» («2: SETTING MENU
(2:   ) »),   [SET]   «TEST OUTPUT WILL
BE VALID (   ) ».   -
[ ],   [2: SETTING MENU (2:
)].   ,
.

(2)   **«ANGLE ROTATION (   )»**
(5.2.5)

5   8.   [ ],
8 «8: ANGLE ROTATION (8:   ) »
[SET],   .

(3)   (**5.2.13)**

[DN]   [UP]   ,
«N: ROTATION (N:)».   [SET],
,   .
[UP]   [DN]
«-»,   [   ]   ,
[UP]   [DN].
[SET]   .

:   N=0.
1.

-1.   0, 1   -1,   ,
.

(4)

[ESC]
.

begin

(Additives correction)	, , ( ),	
6) (Linearizer)	, , , , . .	10.6
7) (Density multiplier switching by external signal)	/ (DI). .	10.7

10.2

10.2.1

,   «n»   .

,   ,   .

,   .

«n»   1   999.   «n»=1,
.

10.2.2

(1)   (5.2.5)

[ESC]   (,   ,
),
.   [   ]   «2» («2: SETTING
MENU (2:   ) »),   [SET]   «TEST OUTPUT
WILL BE VALID (   )».
-                                       [   ],   [«2: SETTING
MENU   (2:   )   »].
,   .

(2)   (5.2.10)

5   8.   [   ]
«5: SET PARAMETERS (5:   ) »
[SET],   .

(3)   (5.2.10)

[DN]   [UP]   ,
«ma: AVERAGING TIMES (   )».
.

[SET]   .
[   ],
[UP]   [DN].   [SET]
.

(4)

[ESC]   .

10.2.3

.   ,   ,
,   .

10.3

10.3.1

-

. .

.   ,

          ,   .

                                                                                    0.00
    9.99 (%TS)
        0   99.   ,   ,
            .

10.3.2

                                                    .

< _____ >
*   : 0.5% TS
*   :
                                        .

        ①   0.5% TS
        ②   0.5% TS ,
                                                                          .

        ③   0.5% TS,

                                        .

                    1.

Fig.10.3.1 Original Signal

Fig.10.3.2 Output Signal After Variation Factor Restriction

        . 10.3.1
                            .   1   4   ,
            5   6   0.5% TS   4.
    7   10   .

                                                                                    .

10.3.2.   5   6   0.5% TS
        4,   4.   7   .
        8 -   10   0.5% TS,
            .

                2:

Fig.10.3.3 Original Signal

Fig.10.3.4 Output Signal After change-rate limit

. 10.3.3

.

.   1 -   4   ;
5   0.5%TS,   6-   10   ,   5.

.

10.3.4.   5   6   0.5%TS
4,   4.   7-   10,

,   .

10.3.3

(1)

0.00   9.99 (%TS).

,

,

.   ,

.

(2)

,   -   . .,

.

,   ,   ,

.

,   2,

.

,   .

10.3.4

(1)   (5.2.5)

[ESC] (,   .

),

[   ]   «2» («2: SETTING MENU

(2:   ) »),   [SET]   «TEST OUTPUT WILL

BE VALID (   ) ».   -

[   ],   [2: SETTING MENU (2:

)].   ,

.

102

(2)   (5.2.5)

                                                 5   8.   [   ]
                        «5: SET PARAMETERS (5:   )»
            [SET],   .

(3)   (
    5.2.16)

                        [DN]   [UP]
            «dx: CHANGE RATE LIMIT (   ) ».
                                                                                   .

                                        [SET]   .   [   ]
            [UP]   [DN].   [SET]   ,
                                        .

(4)
    (5.2.16)

                        (3).   [UP]   ,
            «HL: LIMIT TIMES (   )».
                                                                                   .

                                        [SET]   .   [   ]
            [UP]   [DN].   [SET]   ,
                                        .

            .   ,
                                                       .

(5)

                                                                              [ESC]
            .

10.4

10.4.1

        .   0.15%TS   1   /   ,
                                                       .
                                   ,
                                        .

            LQ500
            .

(1)   (Internal conductivity correction)
                                    (   )
                                    LQ500.   ,

            . (   ).

,

«   ».

(2)   (External conductivity corection)

.

,   .

((OFF),

).

	EI		
	(1) "OFF"	(2) "Int."	(3) "Ext."
Internal conductivity correction	–	○	–
External conductivity correction	–	–	○

,   ,   9,

.

$=\{ \text{\textsubscript{2}}- (T-T_0)- (G-G_0)- (A-A_0)- (E-E_0)\}- \text{\textsubscript{1}}$

(   )

$_2$ (   )

$_1$ (   )

(   )

(/ °)

T   (°)

T_0

(   )

G

G_0

(   )

(/ °)

A   (°)

A_0

(   )

(/ (/   ))

E   (/   )

E_0 (/   )

      -   [   ]
                                                   .   ,
                                                                              . 3.5 «
            »,   [
                    ]

            10.4.1   «   »
                         «   ( )»,   ,
                         . «   »
                                                                                                            0   10   /   .

10.4.1
            (**0   10**
      /   )   ( )

		( )
50	0.168	0.9
80	0.105	1.4
100	0.084	1.8
150	0.056	2.7
200	0.042	3.6
250	0.034	4.5
300	0.028	5.4

                                                                                                                                    ,

            0   10   /   .   ,
                                                                                                                                    :

   $= (R/10) \times {}_0$
      ${}_0$ -
   (9.1)
   R-   .
          ,   150
                                                                                          2.7,
                                                   0   5   /   .
   $= (R/10) \times {}_0$
   $= (5 / 10) \times 2.7$
   $= 1.35$
                                                                              .

[   ]

> , 10.4.1,
> / .
>
> ,
>
> . 10.4.2
> ,
> ( ) 0.

10.4.2

,

(1) 1.000

(1.1) (5.2.5)

[ESC] (, ,
),
. [ ] «2» («2:
SETTING MENU (2:) »), [SET]
«TEST OUTPUT WILL BE VALID ( )».
- [ ], [2:
SETTING MENU (2:)].
, .

(1.2) (5.2.5)
5 8. [ ]
«7: SPAN CALIBRATION (7:)»,
[SET], .

(1.3)
(5.2.12)
, «DATA: 1.265».
.

(1.4) «1.000» (5.2.12)
[SET],
«1.000».
[ ]. [UP] [DN]
.
[SET] . ,
.

(2) (
0.00)

(2-1)
(1-4), . [ESC]
, 5 8 .

(2-2) / (5.2.5)

[UP]   ,
9   11.   [   ],   9 «9:
LINEARIZ/CNDUCTVTY (9:   /   )»
[SET],   .

(2-3)   0.00
(5.2.14)

[DN]   [UP]   ,
«r: CNDUCTVTY COEF (   ) ».
[SET]

0.00.

[UP]   [DN]   «-»,
[   ]   ,
[UP]   [DN].   [SET]
.   ,
.

(3)

(3-1)   (5.2.4)

[ESC]   .   [   ]
«1» («2: MONITORING MENU (1:   ) »)
[SET].

(3-2)

1   3.   [   ]
2 «2: MEASURED VALUES (2:
) »   [SET]   .

(3-3)   .

(1)
,   -

(1).   .

(₂)   (₂).   ,
.

₁, ₂   (/   )

₁, ₂   (%TS)

(4)

( )

$=$ $/($ $\times$ $)$

:   (9.1,
)

:   (₂ - ₁)

:   (₂ - ₁)

150 , =0.056.

( )

: ₁=1 / ₁=4.0%TS

: ₂=2 / ₂=4.2%TS

DE=1 /

DM=0.2%TS

= 0.2 / (0.056 × 1)

= 3.57

(5)

«0-10 / »,

10.4.1,

(6)

(4) (5)

, (2).

(7)

(1), ,

(8)

[ESC]

10.5

10.5.1

( ),

-

, 10 ,

–

( ) ,

, .

«10.5.5

».

10.5.1

. 1		(. 2)				(. 3)		
. 0	s0	-9.99	+9.99	1.00	--	--		--
. 1	s1	-9.99	+9.99	0.00	R1	0.000	1.999	0.00
. 2	s2	-9.99	+9.99	0.00	R2	0.000	1.999	0.00
. 3	s3	-9.99	+9.99	0.00	R3	0.000	1.999	0.00
. 4	s4	-9.99	+9.99	0.00	R4	0.000	1.999	0.00
. 5	s5	-9.99	+9.99	0.00	R5	0.000	1.999	0.00

(1). 0 – . 1 5 - 1
- 5.

(2). 0 - 5 –
10 . , s, 0
«1.000».

10.5.2. s1 – s5

. , 10.5.2,
Toshiba. ,
. ,
(/ ,
)

10.5.2

	0.45
	0.13
	0.12
	0.61

(3). 10
1 - 5. –
0 ( ) .

10.5.2

(1) ON ( ) /OFF ( )

( ) : OFF

(2) ON .

( ) , (TOTAL)

( )   (MAIN)

                    (2)   (
            4-20   )   ( ),   ( ).

*   –   ,   TOTAL
( )   .

( )

                                        (,   9.1.3).

     =   × (×   )+b,

       :

       :   ,

      :

    b: (   )

      :

( )   ,   ,   (TOTAL)

$$Xb = \frac{1 + R1 + R2 + R3 + R4 + R5}{s0 + s1 \cdot R1 + s2 \cdot R2 + s3 \cdot R3 + s4 \cdot R4 + s5 \cdot R5} \times C \times (a \times \Delta\Theta) + b$$

        Xb

     s0

     s1   1 R1   1

     s2   2 R2   2

     s3   3 R3   3

     s4   4 R4   4

     s5   5 R5   5

     $\Delta\Theta$,

      :

     b: (   )

       :

( )   ,

            (MAIN)

$$Xc = \frac{1}{s0 + s1 \cdot R1 + s2 \cdot R2 + s3 \cdot R3 + s4 \cdot R4 + s5 \cdot R5} \times C \times (a \times \Delta\Theta) + b$$

        :

                    –   . ( )

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(　　　　　　).　　　　　　　　　　　　　　　　　　( )　　( ),

1.000.

．

，

，　　　　　　　　　　　　　　　　　　　　　　　　．

10.5.3

(　.　　　　　10.5.2)

．

(s0 – s5)

(R1-R5)

(　.6.4　　　　　　　　)

1.000

ON

(TOTAL　　MAIN)

，

(　　　　　　　　　)

(　)

(　)

，　　　　　　　　　　　　　　(　　　　　　　　　　　　　　　　　　　)

=(　/　)×1 (　　　　　　　　=1)

10.5.4

(1)   (5.2.5)

[ESC] (,   ,
),   .
[   ]   «2» («2: SETTING MENU (2:
)»)   [SET],   «TEST OUTPUT WILL BE
VALID (   )».   -
[   ],   [«2: SETTING MENU (2:   )»
].   ,
.

(2)   (5.2.5)

5   8.   [UP]
,   9   11.   [   ]
«10: ADDITIVES CORRECT (10:   )»,
[SET],   .

(3)   (5.2.15)

(3-1)   OFF/ON

«AF: ADDITIVES COMP. (   )».
OFF   ,   ,
.
[SET],   OFF   ON
.   [UP]   [DN],   «OFF»   «ON»
.   «ON»,   [SET]
.   ,
.

(3-2)   (10.5.2)

(3-1).   [UP],   «Ad: DISPLAY
DENSITY».
.   TOTAL
,   MAIN
.   [SET],
,   [UP]   [DN]   «TOTAL»,
«MAIN».   [SET]   .

(3-3)   (10.5.2)

(3-2).   [UP],   «Ac: OUTPUT
DENSITY».   4-20
,   (TOTAL)
(MAIN).   [SET],
,   [UP]   [DN]
«TOTAL»,   «MAIN».   [SET]
.

(3-4)   (   )

(3-3).   [UP],   «Ap:
PARAMETR SET NO.».   .
[SET],

112

. [ ] ,
[UP] [DN] .
, [SET]
, .

(3-5)

(3-4). [UP], «s0: MAIN OBJ
SENS», [SET], ,
(0). [ ]
, [UP] [DN]
. ,
[SET] .
. , .
[UP].
1-5 ( ) s0
– s5 1-5 R1-R5.

(4)

[ESC] .

10.5.5

,
.
(
). ( )
.
,
. 10 .
.
10.5.1 – 10.5.3 10.5.4 « ».

•

| 1.000 |

| CALCULATION MODE ( ) … NO |
| (correction) ( ). |

| | 6.4 |

| =( )/(,) |

| s0 |
| 0 . 1. |

113

```
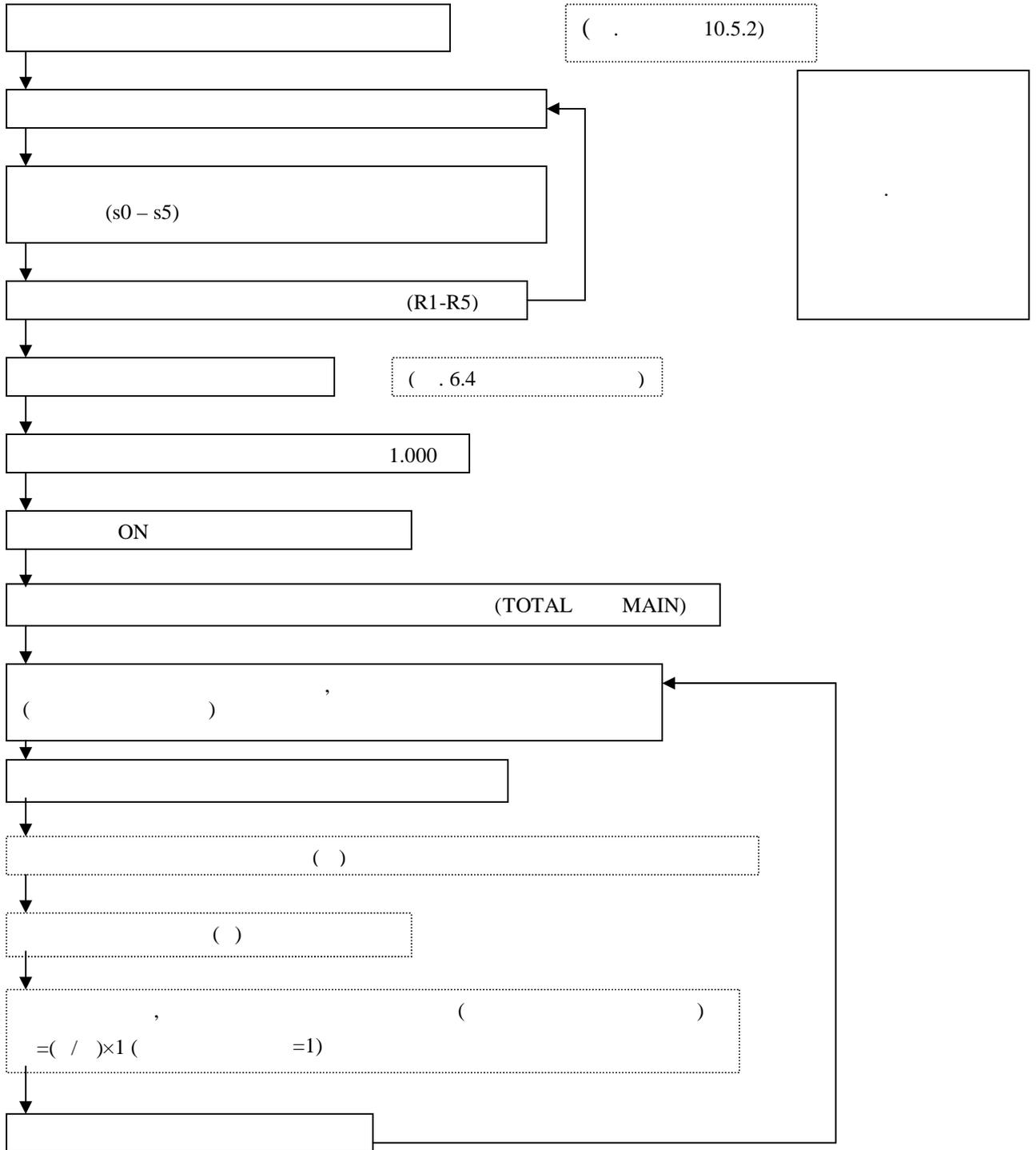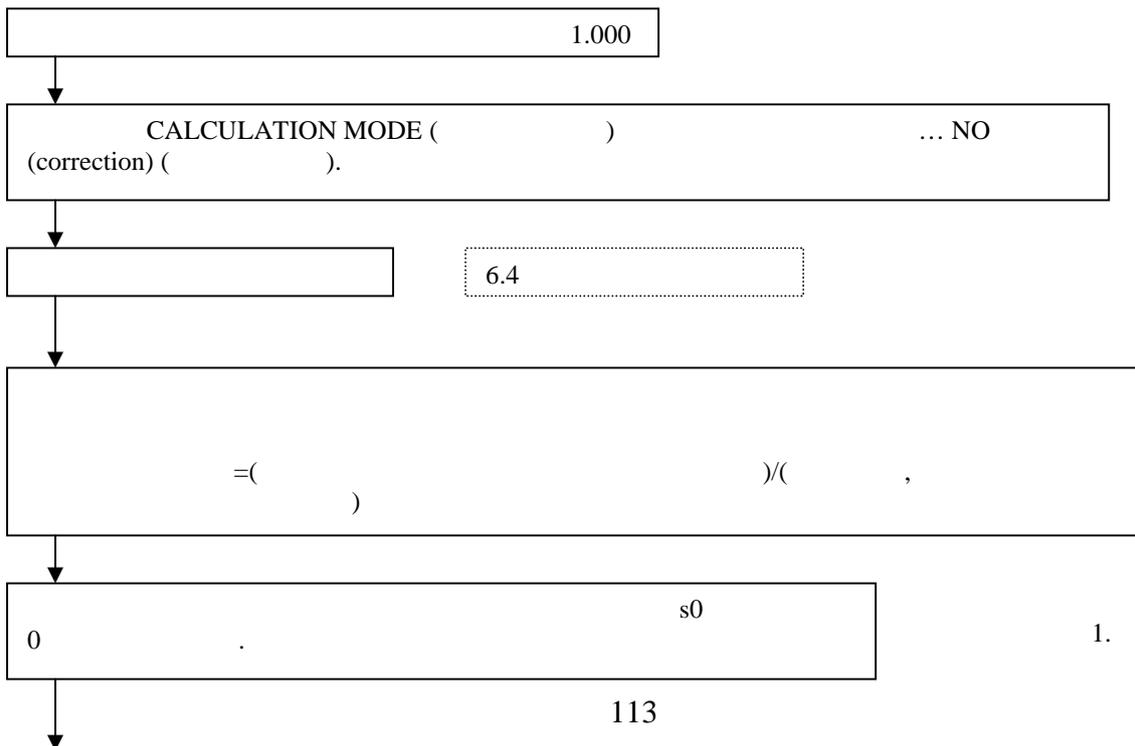┌─────────────────────────────────────────────────────────────┐
│           (TOTAL) –                                          │
│ (calculation mode).                                          │
└─────────────────────────────────────────────────────────────┘
          │
          ▼
┌─────────────────────────────────────────────────────────┐◄──┐
│                              (                        )  │   │
└─────────────────────────────────────────────────────────┘   │
          │                                                    │
          ▼                                                    │
┌───────────────────────────────────────────┐                 │
│                                            │─────────────────┘
└───────────────────────────────────────────┘
```

(1).   0.00   0.000
                                                    1-5 (
).

10.6   .

10.6.1.

                                                      ,   ,
          ,   ,   ,
          .   ,   1%
                          0.5%   ,   1.5%.
–   .   ,
                                                  .
                        .   ,   . 10.6.1,
                                   (,   1.000)
                                    .   ,
                                     .   ,
                        ,   .

Fig. 10.6.1

X_0

,   —   .

,   1, 2   3   .

X_0 (1.000)

.

$X_0 \leq$ A $X = C (K_1 X_0)$

A $< X_0 \leq$ B $X = C \{K_1 A + K_2(X_0 - A)\}$

B$< X_0$ $X = C \{K_1 A + K_2(B-A) + K_3(X_0-B)\}$

:   .

                                                        :

(1)

(X_0)   1.000   ,

                    ,   Fig. 10.6.1.

(2)

                                ,   .

(3)

                            (X_0)

                    .

(4)

                                                            1, 2, 3

K_1=d/a

$K_2=e/b$

$K_3=f/c$

-                                    : =0.60, =1.00, $_1$=1.00, $_2$=1.00, $_3$=1.00

                           (. 10.6.1)

    =0.60 (%), =1.00(%)

    $_1$=0.8/0.6=1.33, $_2$=0.4/0.4=1.00, $_3$=0.3/0.5=0.6

10.6.2

(1)   (5.2.5)

                     [ESC]   (,   ,

                                ),

        .   [ ]   «2» («2:

SETTING MENU (2:   )») ,   [SET],   «TEST

OUTPUT WILL BE VALID (   )».

       -                  [ ],   [«2: SETTING

MENU (2:   )»].

           ,   .

(2)   /   (5.2.5)

                               5   8.   [UP]

    ,   9   11.   [ ],

                  9   «9:   LINEARIZ/CNDUCTVTY   (9:

         /   )»   [SET],

       .

(3)   (5.2.14)

        9 «9:   LINEARIZ/CNDUCTVTY (/   )»

                        .   [SET]

«LA: DENSITY A»,   .

        [ ]   ,

              [UP]   [DN].   [SET]

                 .   ,

        .   ,

        [UP].

   $_1$, $_2$ $_3$.

(4)

                                 [ESC]

       .

(5)

                                   ,

                6.5.

10.7

10.7.1

.

'   ,

.

,   1 – 4,

.

10.7.1

.

10.7.1

DI2	DI3	
L	L	C1 (
		)
H	L	C2
L	H	C3
H	H	C4

H: 20-30

L: 2

10.7.2

(1)   (5.2.5)

                    [ESC]   (,   ,
                                             ),
             .   [   ]   «2» («2:
    SETTING MODE (2:   )»),   [SET],   «TEST
    OUTPUT WILL BE VALID (   )».
             -                              [   ],   .   [
    «2: SETTING MODE (2:   )»].
                    ,   .

(2)   OTHERS   (5.2.5)

                                                            5   8.   [UP],
                              9-11.   [   ]
    «11: OTHERS (11:   )»   [SET],
    .

(3)   ON/OFF (5.2.16)

                    [UP]   ,   «DI: C CHANGE
    ON/OFF».   [SET].
    [UP]   [DN],   «ON»   «OFF»   .

«ON»   [SET]

.   ,   .

(4)   2,   3   4

[UP]   ,   «C2: DensityMultiplier».

[SET],

2.   [   ]   ,

[UP]   [DN].

[SET]   .

,   .

,   [UP].   3   4.

1   «6.5

».

(5)

[ESC]   .

10.8

10.8.1

(1)   RS232C

RS232C.

RS232C

(1-1800   ).

RS232C.

(2)   256   .

256   (1

– 1800   ).   10   ,

42   .

10.8.2

.   ,

.

-                                      RS232C
-

                         ,

                         ,

10.8.3   RS232C

                                                                   RS232C

LQ500.

                               (Hyper Terminal   Windows 95

)   .   ,   9-   D-sub   -

                                                .

<   >

                                                    :

-                : 9600   /

-                   : 8

-               :
-                      : 1

10.8.4

(
)   .

(1)

                                                        10.8.1.

10.8.2.

		0 (HART comm.)	0-1800	
	( )			HART 0
	( )	0 ( )	0-1800	
				0

(2)

    ,   ,
    10.8.2

10.8.2

10:OUTPUT INTERVAL	
14:SAVE INTERVAL	
15:CLEAR SAVE DATA	
16:SAVE DATA LIST	

(3)

                                    ,
                    .
                                    ,
        .

★

①

                                    ,   [SET]
                                    .

                        120

·

, ·

·

, ·

②

, [ESC], [ ] [DWN]

4 . [SET],

· [ ] ·

[SET] 2 , -

·

·

, ·

·

·

. 10.8.1
(reset)

( ): ,

·

-

0 . -

4 . -

,

·

·

(reset)

(reset)

0

4

<   >   <   >

<Power ON>

1: MONITOR MENU
2: SETTING MENU
3: OPERATION MODE

4
[ESC], [   ] [DWN]

CONVERTER RESET

[SET]:RESET
[ESC]:CANCEL

[ESC]

[SET],

CONVERTER WILL BE
INITIALIZED!!!
[   ]:CONTUINUE
[ESC]:CANCEL

[ESC]

[SET]

. [SET]

?

[SET]   [SET]

LQ600 Ver.*.**
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LQ600 Ver.*.**
Copyright
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All Rights Reserved

1: MONITOR MENU
2: SETTING MENU
3: OPERATION MODE

10: OUTPUT INTERVAL
14: SAVE INTERVAL
15:CLEAR SAVE DATA
16:SAVE DATA LIST

<   >   <   >

. 10.8.1

4)

①   (   )

                                    HART   RS232C,

RS232C   1   .

0   HART.

5.1 «   »

    1:                                     ,

                               .

    2:                                   Save Interval (   )

(Data Save Interval (   ))   .

      /   Data Save (   )   Data Save Interval

(   ),   «14: SAVE

INTERVAL (14:   )».

```
┌─────────────────────────┐
│ 10: OUTPUT INTERVAL     │
│ 14: SAVE INTERVAL       │
│ 15: CLEAR SAVE DATA     │
│ 16: SAVE DATA LIST      │
└─────────────────────────┘
```

              [ESC]   [ ]   14

                                              [SET]

                          [SET]

```
┌─────────────────────────┐              ┌────────────────────────────┐
│ 14: SAVE INTERVAL       │  [SET]       │ 14: SAVE INTERVAL          │
│ DATA: 1                 │  ◄───────    │ RANGE: 0 – 1800 (min)      │
│ [SET]: CHANGE           │              │ DATA: 0001                 │
│ [ESC]: RETURN           │              │ [SET] SET, [ESC] CANCEL    │
└─────────────────────────┘              └────────────────────────────┘
```

                          [ESC] -

② **Save Interval (** **) (Data Save Interval (** **))**

1 .

0 .
10.8.5 (2) « ».
. Output Interval ( ) (Data Output
Interval ( )) .
, «10: OUTPUT
INTERVAL (10:)»

```
┌────────────────────────┐
│ 10: OUTPUT INTERVAL    │
│ 14: SAVE INTERVAL      │
│ 15:CLEAR SAVE DATA     │
│ 16:SAVE DATA LIST      │
└────────────────────────┘
```

[ ]   14
[SET]

[ESC]

[SET]

```
┌────────────────────────┐        ┌────────────────────────────┐
│ 14: SAVE INTERVAL      │        │ 14: SAVE INTERVAL          │
│ DATA: 1                │ [SET]  │ RANGE: 0 – 1800 (min)      │
│ [SET]: CHANGE          │        │ DATA: 0001                 │
│ [ESC]: RETURN          │        │ [SET] SET, [ESC] CANCEL    │
└────────────────────────┘        └────────────────────────────┘
```

[ESC] -

③ **Save Data Interval (** **) (** **Clear Save Data)**

.

: ,
.

```
┌────────────────────────┐
│ 10: OUTPUT INTERVAL    │
│ 14: SAVE INTERVAL      │
│ 15:CLEAR SAVE DATA     │
│ 16:SAVE DATA LIST      │
└────────────────────────┘
```

[ ]
15

[ESC]

```
┌────────────────────────┐        ┌────────────────────────┐
│ 15: CLEAR SAVE DATA    │        │ CLEARING SAVE          │
│                        │ [SET]  │ DATA LIST ON           │
│ CLEAR: [SET]           │        │ EEPROM                 │
│ END: [ESC]             │        │                        │
└────────────────────────┘        └────────────────────────┘
```

124

④   **Save Data List**

.

10.8.5 (1)«   »

:

RS232C.   ,   Output Interval (   )   «0».

```
┌─────────────────────────┐
│ 10: OUTPUT INTERVAL      │
│ 14: SAVE INTERVAL        │
│ 15:CLEAR SAVE DATA       │
│ 16:SAVE DATA LIST        │
└─────────────────────────┘
```

[ESC]   [ ]   16
                                                                          [SET]

```
┌─────────────────────────┐              ┌──────────────────────────┐
│ 16: SAVE DATA LIST       │  [SET] –     │ SENDING                  │
│                          │              │ SAVE DATA LIST NOW!!     │
│ PRINT: [SET]             │              │                          │
│ END: [ESC]               │              │                          │
└─────────────────────────┘              └──────────────────────────┘
```

④   Save Data List

10.8.5

(1)

RS232C   .

F630A , C , 081CD , E , 00F85 , 5 , FC296 , F , 217.99 , 0001.048 , 129.57 , 129.57 , -59.28 , 045.80 , 000
   ①   ②   ③   ④   ⑤   ⑥   ⑦   ⑧   ⑨   ⑩   ⑪   ⑫   ⑬   ⑭   ⑮

① : Ir phase value,
② : Ir status
③ : Im phase value
④ : Im status
⑤ : Qr phase value,
⑥ : Qr status
⑦ : Qm phase value
⑧ : Qm status

Note: Data items (1) to (8) are used to obtain the data (9) "Measurement phase value."

⑨ : Measurement phase value [degree]
⑩ : Density [%]
⑪ : Liquid temperature [°C]
⑫ : Ambient temperature [°C]
⑬ : RF section input signal level [dBm]
⑭ : RF section constant
⑮ : Number of rotations N

10.8.4 (3) ④ «
        (   )»   1   1800   .
      «0»,   HART.

(2)

          LQ500   256   .
            256   ,   ,
         .   ,
                              ,
                           .

①   : 1-256
②   [   ]
③   [%]
④   [°C]
⑤   [°C]
⑥   [   ]
⑦
⑧   N

(3)

RS232C.   : 1 –   ,
                                    –   .

Save interval (   )= 0002
(   )
[1]:   ,
[2]:   ,
[3]:   ,
[4]:   ,
[5]:   ,
[6]:   ,
[7]:   ,
[8]: N,

```
001,035.88,2.207,25.00,25.00,-053.07,041.13,001
 ①    ②     ③     ④     ⑤      ⑥      ⑦    ⑧
```

```
247,035.14,2.201,25.11,25.26,-053.33,041.13,001
248,035.93,2.233,25.24,25.73,-053.18,041.13,001
249,035.38,2.226,25.22,25.34,-053.28,041.13,001
250,035.23,2.245,25.33,25.45,-053.72,041.13,001
251,035.33,2.243,25.15,25.19,-053.33,041.13,001
252,035.38,2.244,25.63,25.26,-053.01,041.13,001
253,035.10,2.209,25.18,25.69,-053.02,041.13,001
254,035.58,2.257,25.28,25.15,-053.03,041.13,001
255,035.92,2.344,25.16,25.36,-053.07,041.13,001
256,035.73,2.244,25.33,25.34,-053.11,041.13,001
```

①: : 1 - 256 max.
②: [degree]
③: [%]
④: [°C]
⑤: [°C]
⑥:
            [   ]
⑦:
⑧: N

11.

11.1

:

:

    (,   4 A)   (-
    ,   20 A),   ,   -
    .   -
    . -
    ,

Toshiba.

: 0 - 49%TS

: 1 - 50%TS

: 0 - 50%TS

: 0.1%TS

1:   TS (   ) =   + -
    ,   =   -
    −

2:     50 ,

: 0 - 48%TS

: 2 - 50%TS

: 2 - 50%TS

3:
    . -
    ,   Toshiba.

4:     50%TS,   Toshiba.

:   2%TS   , ±2%FS

    2%TS   , ±4%TS

:   5%
    .

:   −

:   50 ,
  2%TS

:   2%TS   , ±2%FS

    2%TS   , ±4%TS

:   5%
    .

:   50 ,
  2%TS

: 0.001%TS

: -

: 0.05%TS

,

-

.

, ,

. . .

: 50 , :

0.002%TS

-

: 0.1%TS

: 0 50 °C (: −20

50 °C)

: 5 90 %

( )

: (IP67:

)

(IP65: -

)

: . -

: (1) 5 150 -

x, y z ( ) 30

, 90 , -

.

:

• : 25 / ^{2}

• r: 4.9 / ^{2}

(2) 5 150 -

(1) 10 x, y

z ( ) 3 , 90

, -

.

2000

: . 1 « »

: 10

11.2

: 50 , 80 , 100 , 150 , 200 , 250 , 300

JIS 10K(JIS B 2238 10K)	1
ANSI150	1
DIN10　BS 10	1
DIN 16	1.6

: 0　100°C (　　　　　　　)

:

50	20　/
80	16　/
100	15　/
150	10　/
200	8　/
250	6　/
300	6　/

:

,

,　　　　　　　　　　　　　　-

.

.　　　　　　　　　　　　　　　　　　Toshiba.

:

: SCS14A (　　　　　　316SS)

: (SUS 316)

:

: (　　　)

: ,

,　　　　　　　　　　　.　　　　　　　　-

Toshiba.

: /

: RTD (　　　　　　　　　　　　) (Pt100)

: (　-

.　　«　　　»)

130

11.3

:

: 4 – 20 (

750 ;)

:

125 , 0.1 A

( )

, , .

* (

), .

:

4 – 20 A

(HART*1).

*1 HART: Highway Addressable Remote Transducer

( ),

, HCF

(HART Communication Foundation).

:

( ) 4-20

. -

AF100.

:

24 1A.

.

:

.

:

.

: 20-30 .

L: 2 .

: 3

-

.

:

4-20 A (0

10 /)

.

: 1

: 1 999
1 .

, -

: : 0.00
9.99%TS, : 0 99.

- . .
, -
. -
, -

,

.

: 10
.

-
.

: -
(Internal conductivity correction)
( )
LQ500. (-
). -

,
(External conductivity
correction).

: 256
(1 - 1800). 10 , -
42 .

:
.

( ):

, -
.

: - 20 (-
)

: 100 - 240 ; 50/60

(: 85 - 264 -
)

: 25 A (100) ,
35 A (240)

:

:

132

11.4

11.1

12 345	6	7 8	9	10	11	12	
LQ500	A						
		0 5 0 8 1 0 1 5 2 0 2 5 3 0					50 80 100 150 200 250 300
			E F G				JIS10K (JIS 2238 10K) ANSI 150 DIN 10 DIN 16 BS 10
				A			UL/CUL
					A		SCS14A cast (316SS) ( ) SCS14A cast (316SS)
					D		SCS14A cast(to 316SS) : HasteloyC (. 1)
						A D E	( ) (10) 20 30 40 50

1.
UL/CUL.   (250
,   10   ,   ).

1.

. 1 «   »

[Unit: mm]

250

190

The center of gravity

H

⌀C

n - ⌀h

W

T

T

⌀D

B

300

C: Bolt pitch circle
n: Number of bole holes
h: Bolt diameter

F

Enlarged view of B

(   )

JIS10K	( )	H . .	W	D	T	F		(x)	n- h	( )
	50	225	170	155	16	2	120	M16X60	4-19	. 21
	80	225	200	185	18	2	150	M16X65	8-19	. 26
	100	240	220	210	18	2	175	M16X65	8-19	. 29
	150	260	270	280	22	2	240	M20X75	8-23	. 42
	200	290	320	330	22	2	290	M20X75	12-23	. 48
	250	315	300	400	24	2	355	M22X80	12-25	. 64
	300	340	360	445	24	3	400	M22X85	16-25	. 76
ANSI150	50	225	170	152.4	19.1	1.5	120.7	M16X60	4-19.1	. 21
	80	225	200	190.5	23.9	1.5	152.4	M16X70	4-19.1	. 31
	100	240	220	228.6	23.9	1.5	190.5	M16X70	8-19.1	. 34
	150	260	270	279.4	25.4	1.5	241.3	M20X80	8-22.4	. 44
	200	290	320	342.9	28.4	1.5	298.5	M20X80	8-22.4	. 54
	250	315	300	406.4	30.2	1.5	362.0	M22X90	12-25.5	. 68
	300	340	360	482.6	31.8	1.5	431.8	M22X90	12-25.4	. 99
DIN10 & BS10	50	225	170	165	18	3	125	M16X60	4-18	. 22
	80	225	200	200	20	3	160	M16X70	8-18	. 30
	100	240	220	220	20	3	180	M16X70	8-18	. 31
	150	260	270	285	22	3	240	M20X80	8-22	. 43
	200	290	320	340	24	3	295	M20X80	8-22	. 54
	250	315	300	395	26	3	350	M22X90	12-22	. 65
	300	340	360	445	26	4	400	M22X90	12-22	. 78
DIN16	50	225	170	165	18	3	125	M16X60	4-18	. 22
	80	225	200	200	20	3	160	M16X70	8-18	. 30
	100	240	220	220	20	3	180	M16X70	8-18	. 31
	150	260	270	285	22	3	240	M20X80	8-22	. 43
	200	290	320	340	24	3	295	M20X80	12-22	. 52
	250	315	300	405	26	3	355	M22X90	12-26	. 68

300	340	360	460	28	4	410	M22X90	12-26	. 85

. 2 «   »

4-φ12 mounting holes

[Unit:

Converter communication port
Converter power supply cable port
Contact signal I/O (1) port
Density signal output port
Contact signal I/O (2) port
Rerserved
Grounding terminal

Mass: approx.7kg

In the case of wall mounting

4-M10

In the case of 50A mounting

Marine-use steel pipe mounting U bolt

Steel pipe (50A)

2

LQ500
(EMC　directive　89/336/EEC)
(low voltage directive 93/68/EEC).

.

・   (Generic emission standard　EN50081-2 : 1994)
EN55011　　　　A (Radiated RF Emission EN55011 Class A)
EN55011　　　　A (Conducted RF Emission
EN55011 Class A)

EN61000-3-2 (Limits for harmonic current emissions
EN61000-3-2)
・   Generic immunity standard　EN50082-2 : 1995
(Radiated RF Immunity　ENV50140)
(Conducted RF Immunity　ENV50141)
(Radiated RF Immunity　ENV50204)
(Electrostatic Discharge Immunity EN61000-4-2)
(Electrical Fast Transient
Immunity EN61000-4-4)
(Low voltage directive)
EN61010-1, /A2

,

(　　.) (Safety
requirements for electrical equipment for measurement control and laboratory use (amended))
II (Over voltage category II)
2 (POLLUTION DEGREE 2)
:　　　　2000

3

TOSHIBA

DENSITY METER

DETECTOR

MODEL LQ5********＊＊

POWER 24VDC

WEIGHT _____ kg

SER. NO. 03*******

TAG NO. _____

TOSHIBA CORPORATION

MADE IN JAPAN

3Z8A3822P004

0038 CE

LQ500*******

		2003	( )
,	2003	( )
,	2003	( )
,	2004	( )
,	2005	( )
,	2006	( )
,	2009	( )
,	2011	( )
,	2011	( )
,	2012	( )
,	2012	( )
:	Toshiba Corporation, 1-1, Shibaura 1-chome, Minato-ku, Tokyo 105-0023, Japan		

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