YK06-0044-EQ-003-10

G-TRAN Series 1-Channel Display Unit Model ISG1 Quick Manual

Introduction

This quick manual is for quick check of operation and display of the product. Please refer to instruction manual in the ULVAC website (https://www.ulvac.co.jp/download/en/instruction-manual/?category=1009) in advance for detailed information about operation, precautions and safety for proper use.

This manual is for the following gauges. Serial No. 09501 and higher

Model	Serial numbers
ST2-1 Multi Ionization Gauge	00901~
SH2-1 Multi Ionization Gauge	06001~
ST200-A Multi Ionization Gauge	00001~
SH200-A Multi Ionization Gauge	00001~
SC1 Cold-Cathode Ion Gauge	02300G~
SW100-A Pirani Vacuum Gauge	00001~
SW1-1 Pirani Vacuum Gauge	00001~
SP1 Pirani Vacuum Gauge	00001~
CCMT-D series Ceramic Capacitance Manometer	00001~

1. Selection of Sensor Unit: PLEASE CHECK

The currently selected sensor unit blinks for 3 seconds after power is applied to this unit. Press the \bigcirc (up arrow) key while the sensor unit is blinking and, when the sensor unit is displayed, press the (enter) key.



nc	nc	not set
SP ?	SP2	Pirani vacuum gauge SW100-A, SW1-1
5N ¹	Sn1	Hot cathode gauge BMR2
ЕЛЗ	Cn3	Capacitance manometer CCMT-1000A/1000D, CCMH-1000A
ЕП 2	Cn2	Capacitance manometer CCMT-100A/100D, CCMH-100A
ЕП ′	Cn1	Capacitance manometer CCMT-10A/10D, CCMH-10A
ЕП П	Cn0	Capacitance manometer CCMT-1D, CCMH-1A
5 P U	SPU	Multi-Ionization SH200-A/ST200-A, SH2-1/ST2-1 (SPU Combination mode)

5A U	SAU	Multi-Ionization SH200-A/ST200-A, SH2-1/ST2-1 (SAU/SWU Combination mode)
56 /	SC1	Cold cathode gauge SC1
5P (SP1	Pirani vacuum gauge BPR2, SP1
5h 2	Sh2	Multi-Ionization SH200-A/ST200-A, SH2-1/ST2-1

2. Front Panel Key

2 1 Name Functi			VILVAC SET-1 SET-2 S ERRO DEG ZERO PROG ZERO GEMRIN		•3
N	Jame	Functi	ons of menu		functions
1) 1)	PROG	Enters i	nto the program	u mode	Tunctions
2	Δ	Unward	arrow key	Changes a	value
2)	ZERO	Zero key		Zero point switch	adjustment ON/OFF
0	\Box	Rightward arrow key		Changes a r	numeric value.
3)	DEG	Degassing key		Switch that degassing	turns ON/OFF
	Ģ	Enter ke	ey	Enter key	
4)	FIL	Filamen	t key	Switch that filament SW100-A/S point/atmos	turned ON/OFF the SW1-1 zero spheric pressure

3. Key Operation in Measurement

				Sensor unit	name	
Nota- tion	SP1 BPR2	SW100-A SW1-1	SC1	SH200-A, ST200-A, SH2-1,ST2-1 BMR2	SH200-A/ST200-A, SH2-1/ST2-1 (SPU,SWU,SAU Combination mode)	CCM series
ZERO	-	-	-	-	-	Zero point adjustment
DEG	-	-	-	Degas	Degas	-
FIL	-	adjustment	HV ON	FIL ON	FIL OFF	-

3.1. SP1, BPR2

Not use the key

3.2. SW100-A, SW1-1

Adjustment: Hold down the "FIL" switch for 1 second or more. Adjustment reset: Hold down the "FIL" switch for 5 seconds or more.

3.3. SH200-A, ST200-A, SH2-1, ST2-1, BMR2

The first press on the key turns on the filament and a second press turns it off. The first press on the key turns on degassing and a second press turns it off.

3.4. SH200-A, ST200-A, SH2-1, ST2-1

(SPU / SAU / SWU Combination mode)

The first press on the key turns off the filament and a second press turns it on. The first press on the key turns on degassing and a second press turns it off.

3.5. SC1

The first press on the key turns on the High Voltage and a second press turns it on.

3.6. CCM

Adjustment: Hold down the "ZERO" switch for 1 second or more. Adjustment reset: Hold down the "ZERO" switch for 3 seconds or more.

4. Front Panel Operation

4.1. Description of Front Panel Keys				
Notation	Name	Function		
PROG	Program key	Enters into the program mode Also a key for shifting to each setting.		
\bigcirc	Upper arrow key	Key that changes a numeric value		
\Box	Right arrow key	Used when changing settings		
ک	Enter key	Press at the end of an input		
Pres $Pres$ VG VG VG VG VG VG VG VG	PROG ** Setpoint 1 setting : S ** Setpoint 2 setting : S ** Setpoint 3 setting : S ** ** Setpoint 3 setting : S **	ET-1 LED blinks ET-2 LED blinks ET-3 LED blinks tting : Refer to the manual er to the manual effer to a separate section etting : Refer to the manual y range setting : Refer to the manual etting the sensor er to the manual		
	PKUG			

5. Setpoint

Setpoint can be set on the front panel or through RS485.

5.1. Setpoint Setting Range

The setpoint setting range of all sensors is the same. The setpoint range assumes the CALCULATION function. Setpoint setting range: 4.9×10^{-11} to $1.4 \times 10^{+8}$ 10^{-10} is "A (A of capital letter)", 10^{-11} is "b (B of small letter)". Please note "b (B of small letter)" to make a mistake as '6' of the figure.

5.1.1. How to Set Setpoint from Front Panel



6. Interlock Function

This function locks the front panel button controls, under certain condition.

6.1. Interlock Setting

Interlock setting can only be changed from the front panel control.

methou	Operation
Setting	PROG, set the interlock "In" to "o"
	When "In" is "F", interlock is OFF.
unlocking	Hit any key on the front panel while displaying the pressure value so that the numbers start blinking.
	Hold PROG more than 5 seconds after the blink, in
	order to reset the interlock.

7. Setting Operation (Example SH200-A, SH2-1, BMR2)

7.1. Setting Overview

The following settings are available for turning on the filament or degassing and for changing over the filament 1/2.

Setting	Overview
RS-485 communication	Only RS-485 communication is
mode	available
Front panel operation mode	Only front panel operation is available
External I/O operation mode	Only external I/O operation is
-	ovoilable

7.2. RS-485 Communication Operation Setting "L1", "L2"

Selects if filament ON/OFF, degassing ON/OFF or filament 1/2 changeover is to be operated through RS-485 communication. Refer to Section 19 for more information about the detailed setting of RS-485.

Display	Details	Remarks
"L1"	Operation on the front panel and external I/O	RS-485: Pressure reading only
"L2"	Only operation through RS485 communication	

7.3. Front Panel, External I/O Operation Setting 7.3.1. Filament Operation Setting "Fi"

Selects whether filament ON/OFF is to be operated on the front panel or with external I/O. This function will be invalidated if it is set at RS-485 communication.

Display	Detail
"F"	Operation on the front panel only
"0"	Operation of external I/O only

7.3.2. Degas Operation Setting "dE"

Selects whether degassing ON/OFF is to be operated on the front panel or with external I/O. This function will be invalidated if RS485 communication is set.

Display	Detail
"F"	Operation on front panel only
"o"	Operation of external I/O only

7.3.3. Filament Changeover Setting "FL"

Selects whether selection of filament 1/2 is to be operated on the front panel or with external I/O. This function will be invalidated if it is set at RS-485 communication. Also the filament set on the front panel will be invalidated when operation is changed over to external I/O.

Display	Detail
"0"	Operation of external I/O only
"1"	Setting of filament 1
"2"	Setting of filament 2

8. Installation

8.1. Installation DIN Panel





8.3. Power Supply Connector (Phoenix Model MSTB 2.5/3-GF-5.08)



9. External I/O Signal

	9.1.	I/O Connector	(D-sub 15pin	connector pin)
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	1/0		
$\bigcirc \overbrace{(3,3,4,5,5,5,6,5)}^{1/6} \bigcirc \bigcirc$			
No	Description	Remarks	
2	Output signal	Lo when actuated, $DC30V_{MAX}$, $50mA_{MAX}$, $70mW$	
3	Setpoint 1 signal	Lo when actuated, $DC30V_{MAX}$, $50mA_{MAX}$, $70mW$	
4	Output signal	Emission Valid, HV check, etc Lo when actuated, DC30V _{MAX} , 50mA _{MAX} , 70mW	
5	Input signal	Filament ON, Adjust, etc Actuated when shorted to GND	
6	Input signal	Select Filament 1/2, etc Actuated when shorted to GND	
7	Setpoint 3 signal	Lo when actuated, $DC30V_{MAX}$, $50mA_{MAX}$, $70mW$	
8	Pressure signal output+	DC0V to 10 V	
9	Signal GND	GND of pressure signal, filament disconnect signal, setpoint, etc.	
10	RS485 -	Serial communication RS485 – output	
11	Setpoint 2 signal	Lo when actuated, DC30V _{MAX} , 50mA _{MAX} , 70mW	
12	RS485 +	Serial communication RS485 + output	
13	Input signal	Degas ON Actuated when shorted to GND	
15	Signal GND	GND of pressure signal, burnout signal, setpoint, etc.	
Case	FG	Frame ground	
* Do no	* Do not wire the No.1 and No.14, which is used for the internal circuit.		

9.2. Output Signal





Actuated when shorted to GND.



10. Specifications and Components 10.1. Specifications

Number 1 pc. of sensor units 1 pc. Sensor G-Tran series Pirani sensor unit SP1 4.0×10 ⁻¹ to 3.0×10 ⁻³ Pa Pirani sensor unit 5.0×10 ⁻² SW100-A to 1.0×10 ⁻⁵ Pa Pirani sensor unit 5.0×10 ⁻² SW10-A to 1.0×10 ⁻⁵ Pa Pirani sensor unit 5.0×10 ⁻² SW1-1 to 1.0×10 ⁻⁶ Pa Pirani sensor unit 5.0×10 ⁻³ gauge SC1 to 1.0×10 ⁻⁶ Pa Hot cathode ionization 5.0×10 ⁻⁸ gauge BMR2 to 9.9×10 ⁻⁶ Pa Multi-Ionization 5.0×10 ⁻⁸ SH200-A, SH2-1 to 1.0×10 ⁻¹⁶ Pa Multi-Ionization 5.0×10 ⁻⁸ SH200-A, SH2-1 to 1.0×10 ⁻¹⁶ Pa Multi-Ionization 1.0×10 ⁻⁵ ST200-A, ST2-1 to 1.0×10 ⁻⁹ Pa Multi-Ionization 1.0×10 ⁻⁵ ST200-A, ST2-1 to 1.0×10 ⁻⁹ Pa Multi-Ionization 1.0×10 ⁻⁵ ST200-A, ST2-1 to 1.0×10 ⁻⁹ Pa Multi-Ionization 1.0×10 ⁻⁵ ST200-A, ST2-1	N	ame	1-channel dig	ital display unit ISG1	
Name Primation 1,02. of sensor G-Tran Pirani sensor unit SPI 4,0×10 ⁻¹ unit series Pirani sensor unit SPI 5,0×10 ⁻² Pirani sensor unit 5,0×10 ⁻² Pirani sensor unit S,0×10 ⁻³ Pa Pirani sensor unit 5,0×10 ⁻² SW10-A to 1,0×10 ⁻⁵ Pa Old cathode ionization 5,0×10 ⁻³ Pa Pirani sensor unit S,0×10 ⁻³ SW1-1 to 1,0×10 ⁻⁵ Pa Cold cathode ionization 5,0×10 ⁻⁸ gauge BMR2 to 9,9×10 ⁻⁹ Pa Multi-Ionization 5,0×10 ⁻⁸ SH200-A, SH2-1 to 1,0×10 ⁻¹⁰ Pa Multi-Ionization 5,0×10 ⁻⁸ SH200-A, SH2-1 to 1,0×10 ⁻¹⁰ Pa Multi-Ionization 5,0×10 ⁻⁸ SH200-A, SH2-1 to 1,0×10 ⁻¹⁰ Pa Multi-Ionization 5,0×10 ⁻⁸ SH200-A, SH2-1 to 1,0×10 ⁻¹⁰ Pa Multi-Ionization 1,0×10 ⁻⁵ ST200-A, ST2-1 to 1,0×10 ⁻⁶ SU Combination mode) SU Combination mode) (SPU Combination mode) (SPU Combination mode) ST200-A, ST2-1 to 1,0×10 ⁻⁵ (SAU Combination mode) (SWU Combination mode) SU CMT-100A/100D 00×10 ⁻¹	Num	her	1 nc		
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Construction1.0×10gauge SC1to $1.0\times10^{+0}$ PaHot cathode ionization $5.0\times10^{+8}$ gauge BMR2to $9.9\times10^{+0}$ PaMulti-Ionization 5.0×10^{-8} SH200-A, SH2-1to $1.0\times10^{+1}$ PaMulti-Ionization 5.0×10^{-8} SH200-A, SH2-1to $1.0\times10^{+1}$ PaMulti-Ionization 5.0×10^{-8} SH200-A, SH2-1to $1.0\times10^{+5}$ Pa(SPU Combination mode)Multi-IonizationMulti-Ionization $1.0\times10^{+5}$ Pa(SWU Combination mode)Multi-IonizationMulti-Ionization $1.0\times10^{+5}$ Pa(SPU Combination mode)Multi-IonizationMulti-Ionization $1.0\times10^{+5}$ Pa(SPU Combination mode) $0.0\times10^{+5}$ Pa(SPU Combination mode) $0.0\times10^{+5}$ Pa(SPU Combination mode) $0.0\times10^{+5}$ Pa(SAU Combination mode) $0.0\times10^{+5}$ Pa(CCMT-100A/100D $0.0\times10^{+1}$ CCMT-100A/10DD $0.0\times10^{+1}$ CCMT-10A/10D $0.0\times10^{+2}$ CCMT-10A/10D $0.0\times10^{+2}$ CCMT-10A/10D $0.0\times10^{+2}$ CCMT-10A/10D $0.0\times10^{+2}$ CCMT-10A/10D 0.0×10^{-2} CCMT-10A/10D $0.13\times10^{+2}Pa^{+1}$ CCMT-10A/10D $0.1\times10^{-2}Pa^{+1}$ CCMT-10A/10D $0.1\times10^{-2}Pa^{+1}$ CCMT-10A/10D $0.$				Cold cathode ionization	1.0×10-5
$gauge BMR2$ $10 \cdot 1.0 \times 10^{-1} ta$ to $9.9 \times 10^{-0} Pa$ to $9.9 \times 10^{-0} Pa$ Multi-Ionization 5.0×10^{-8} to $9.9 \times 10^{-0} Pa$ Multi-Ionization 5.0×10^{-8} to $1.0 \times 10^{-1} Pa$ Multi-Ionization 5.0×10^{-8} to $1.0 \times 10^{-1} Pa$ Multi-Ionization 5.0×10^{-8} to $1.0 \times 10^{-19} Pa$ Multi-Ionization 5.0×10^{-8} to $1.0 \times 10^{-19} Pa$ Multi-Ionization 5.0×10^{-8} to $1.0 \times 10^{-19} Pa$ Multi-Ionization 1.0×10^{-5} ST200-A, ST2-1 to 1.0×10^{-5} ST200-A, ST2-1 to $1.0 \times 10^{-5} Pa$ Multi-Ionization 1.0×10^{-5} ST200-A, ST2-1 to $1.0 \times 10^{-5} Pa$ Multi-Ionization 1.0×10^{-5} ST200-A, ST2-1 to $1.0 \times 10^{-5} Pa$ Multi-Ionization 1.0×10^{-5} ST200-A, ST2-1 to $1.0 \times 10^{-5} Pa$ Multi-Ionization 1.0×10^{-5} ST200-A, ST2-1 to $1.0 \times 10^{-5} Pa$ Ceramic capacitance manometerCCMT-100A/100D CCMH-100A CCMT-100A/10DD CCMH-100A to $1.3 \times 10^{+2} Pa^{+1}$ CCMT-10A to $1.3 \times 10^{+2} Pa^{+1}$ Analog input HeresingReading the analog signal (voltage) from the sensorUpdate time Pa70ms Internal processing 5 times moving average ResolutionPressure range Pressure range of each sensor unit Update time200ms 20×10^{-1} CCM second the pressure value from the measurement unit $* 20 \times 11$ digit against the pressure value from the measurement unit <td></td> <td></td> <td></td> <td>gauge SC1</td> <td>1.0×10^{-1}</td>				gauge SC1	1.0×10^{-1}
Inder Califord 5.0×10^{-1} 5.0×10^{-9} Inder Califord 5.0×10^{-8} 5.0×10^{-8} Multi-Ionization 5.0×10^{-8} $5.1200 - A, SH2 - 1$ $to 1.0 \times 10^{-1}$ PaMulti-Ionization 5.0×10^{-8} $to 1.0 \times 10^{-14}$ Pa(SPU Combination mode) 5.0×10^{-8} $to 1.0 \times 10^{-5}$ PaMulti-Ionization 5.0×10^{-8} $to 1.0 \times 10^{-5}$ Pa(SAU Combination mode) 5.0×10^{-8} $to 1.0 \times 10^{-5}$ Pa(SAU Combination mode) 1.0×10^{-5} $to 1.0 \times 10^{-5}$ Multi-Ionization 1.0×10^{-5} $to 1.0 \times 10^{-5}$ ST200-A, ST2-1 $to 1.0 \times 10^{-5}$ $to 1.0 \times 10^{-5}$ ST200-A, ST2-1 $to 1.0 \times 10^{-5}$ $to 1.0 \times 10^{-5}$ Multi-Ionization 1.0×10^{-5} $to 1.0 \times 10^{-5}$ ST200-A, ST2-1 $to 1.0 \times 10^{-5}$ $to 1.0 \times 10^{-5}$ (SAU Combination mode) $(SWU Combination mode)$ $(SWU Combination mode)$ (SWU Combination mode) $(SWU Combination mode)$ $(CCMT-100A/100D)$ (SAU Combination mode) $(CCMT-10A/10D)$ (0.0×10^{-1}) (CCMT-10A/10D) (0.0×10^{-1}) $(CCMT-10A/10D)$ (CCMT-10A/10D) (0.0×10^{-1}) $(CCMT-10A/10D)$ (CCMT-10A/10D) (0.0×10^{-1}) $(0.1 \times 10^{-2} Pa^{-1})$ Analog inputReading the analog signal (voltage) from the sensor $Update time$ Update time70ms $To = 1 \times 10^{-1}$ Internal processing5 times moving average $Resolution$ DisplayDigital display of mantiss				Hot cathoda ionization	to 1.0×10 1 a
Barlow109.7×101aMulti-Ionization 5.0×10^{-8} SH200-A, SH2-1to 1.0×10^{-1} PaMulti-Ionization 5.0×10^{-8} SH200-A, SH2-1to 1.0×10^{-4} Pa(SPU Combination mode)Multi-IonizationMulti-Ionization 5.0×10^{-8} SH200-A, SH2-1to 1.0×10^{-5} Pa(SAU Combination mode)Multi-IonizationMulti-Ionization 1.0×10^{-5} Pa(SPU Combination mode)Multi-IonizationMulti-Ionization 1.0×10^{-5} ST200-A, ST2-1to 1.0×10^{-5} Pa(SPU Combination mode)Multi-IonizationMulti-Ionization 1.0×10^{-5} Pa(SPU Combination mode) 0.0×10^{-1} CeramicCCMT-1000A/100DcapacitanceCCMT-100A/100DmanometerCCMH-100ACCMH-100A $1.3 \times 10^{-5} Pa^{+1}$ CCMH-10A $1.3 \times 10^{-2} Pa^{+1}$ Analog inputReading the analog signal (voltage) from the sensorUpdate time70msInternal processing5 times moving averageResolution0.2mVDisplayDigital display of mantissa part 2 digits, exponential part 1 digit $\Box \Box \times 10^{-1}$ Update time200msAccuracy $\pm 2\% \pm 1$ digit against the pressure value from the measurement unit				gauge BMR2	5.0×10^{-9}
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$				Multi Ionization	t0 9.9×10 1 a
Image: Structure in the initial initi initial initial initial initial				SH200-A SH2-1	5.0×10^{-5}
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$				Multi Lonization	10 1.0×10 ⁻¹ Fa
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$				$SH200_{-}A$ $SH2_{-}1$	5.0×10^{-5}
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SH200-A, SH2-1 (SAU Combination mode) (SWU Combination mode)to $1.0 \times 10^{+5}$ PaMulti-Ionization ST200-A, ST2-1 Multi-Ionization ST200-A, ST2-1 (SPU Combination mode) 1.0×10^{-5} to $1.0 \times 10^{+4}$ PaMulti-Ionization ST200-A, ST2-1 (SPU Combination mode) 1.0×10^{-5} to $1.0 \times 10^{+4}$ PaCeramic capacitance manometerCCMT-100A/100D CCMT-100A/100D $0.0 \times 10^{+1}$ to $1.3 \times 10^{+5}$ Pa ⁺¹ CCMT-100A/100D 0.0×10^{-6} Ceramic cCMT-100A/10D CCMT-100A/10D CCMT-10A/10D CCMT-1D 0.0×10^{-6} to $1.3 \times 10^{+2}$ Pa ⁺¹ CCMT-10A/10D 0.0×10^{-4} Analog inputReading the analog signal (voltage) from the sensorUpdate time Internal processing Resolution O.2mV $0.2mV$ DisplayDigital display of mantissa part 2 digits, exponential part 1 digit $200ms$ AccuracyUnit Pa Passure rangePressure range of each sensor unit $100m$ sensor unit $100m$ sensor unit $100m$				Multi-Ionization	5.0×10 ⁻⁸
(SAU Combination mode) (SWU Combination mode)(SAU Combination mode)Multi-Ionization ST200-A, ST2-1 (SU Combination mode) 1.0×10^{-5} to $1.0 \times 10^{+0}$ PaMulti-Ionization (SPU Combination mode) 1.0×10^{-5} to $1.0 \times 10^{+4}$ Pa(SPU Combination mode) $(SPU Combination mode)$ Multi-Ionization (SPU Combination mode) 1.0×10^{-5} to $1.0 \times 10^{+5}$ PaCeramic capacitance manometerCCMT-1000A/1000D (CCMT-1000A/100D $0.0 \times 10^{+1}$ to $1.3 \times 10^{+5}$ Pa*1 (CCMT-100A/10D to $1.3 \times 10^{+5}$ Pa*1 (CCMT-10A/10D to $1.3 \times 10^{+2}$ Pa*1 (CCMT-1DAnalog inputReading the analog signal (voltage) from the sensorUpdate time Internal processing70ms times moving average exponential part 1 digitUpdate time Internal processing70ms times moving average Pressure rangeUnit PaPaPressure range Pressure rangePressure range of each sensor unit Update time 200ms AccuracyUpdate time Pa200ms 4ccuracyAccuracy $\pm 2\% \pm 1$ digit against the pressure value from the measurement unit \pm CCM series: 1/10 or lass of the full scala				SH200-A, SH2-1	to $1.0 \times 10^{+5}$ Pa
SWU Combination mode)Multi-Ionization 1.0×10^{-5} Multi-Ionization 1.0×10^{-5} ST200-A, ST2-1to 1.0×10^{-5} Multi-Ionization 1.0×10^{-5} ST200-A, ST2-1to 1.0×10^{-5} Multi-Ionization 1.0×10^{-5} Multi-Ionization 1.0×10^{-5} Multi-Combination mode)Multi-IonizationMulti-Ionization 1.0×10^{-5} Multi-Ionization 1.0×10^{-5} ST200-A, ST2-1to $1.0 \times 10^{+5}$ Pa(SAU Combination mode) $0.0 \times 10^{+1}$ CeramicCCMT-1000A/100DcapacitanceCCMT-100A/100DmanometerCCMT-100ACCMT-10A/10D 0.0×10^{-9} CCMT-10Ato $1.3 \times 10^{+3} Pa^{*1}$ CCMH-10Ato $1.3 \times 10^{+3} Pa^{*1}$ CCMT-1Dto $1.3 \times 10^{+3} Pa^{*1}$ CCMT-1Dto $1.3 \times 10^{+2} Pa^{*1}$ Analog inputReading the analog signal (voltage) from the sensorUpdate time70msInternal processing5 times moving averageResolution $0.2 mV$ DisplayDigital display of mantissa part 2 digits, exponential part 1 digitUpdate time200msAccuracy $\pm 2\% \pm 1$ digit against the pressure value from the measurement unit * CCM series: 1/10 or lace of the full coala				(SAU Combination mode)	10 1.0 × 10 1 1
Multi-Ionization 1.0×10^{-5} to $1.0 \times 10^{+0}$ PaMulti-Ionization 1.0×10^{-5} to $1.0 \times 10^{+4}$ PaMulti-Ionization 1.0×10^{-5} to $1.0 \times 10^{+5}$ PaMulti-Ionization 0.0×10^{-1} to $1.0 \times 10^{+5}$ PaCeramic capacitance manometerCCMT-1000A/100DCCMT-100A 0.0×10^{-1} to $1.3 \times 10^{+5}$ Pa*1 CCMT-100A/10DDCCMH-10A 0.0×10^{-1} to $1.3 \times 10^{+2}$ Pa*1 CCMT-10A/10DCCMH-10A 0.0×10^{-2} to $1.3 \times 10^{+2}$ Pa*1Analog inputReading the analog signal (voltage) from the sensorUpdate time70msInternal processing5 times moving average ResolutionResolution $0.2mV$ DisplayDigital display of mantissa part 2 digits, exponential part 1 digitUpdate time200msAccuracy $\pm 2\% \pm 1$ digit against the pressure value from the measurement unit * CCM series: $1/10$ or lace of the full coala				(SWU Combination mode)	
ST200-A, ST2-1to $1.0 \times 10^{+0}$ PaMulti-Ionization 1.0×10^{-5} ST200-A, ST2-1to 1.0×10^{-5} ST200-A, ST2-1to 1.0×10^{-5} Multi-Ionization 1.0×10^{-5} ST200-A, ST2-1to 1.0×10^{-5} CarrentCCMT-1000ACART-1000Ato 1.3×10^{-5} Pa*1CCMT-100A/100D 0.0×10^{-1} CCMT-10Ato 1.3×10^{-2} Pa*1CCMH-10Ato 1.3×10^{-2} Pa*1CCMT-10Ato 1.3×10^{-2} Pa*1Analog inputReading the analog signal (voltage) from the sensorUpdate time70msInternal processing5 times moving averageResolution $0.2mV$ DisplayDigital display of mantissa part 2 digits, exponential part 1 digitUnitPaPressure rangePressure range of each sensor unitUp				Multi-Ionization	1.0×10-5
Multi-Ionization 1.0×10^{-5} to 1.0×10^{-4} PaST200-A, ST2-1 (SPU Combination mode) 1.0×10^{-5} to 1.0×10^{-5} to 1.0×10^{-5} PaMulti-Ionization 1.0×10^{-5} to 1.0×10^{-5} PaST200-A, ST2-1 (SAU Combination mode) 1.0×10^{-5} to 1.0×10^{-5} PaCeramic capacitance manometerCCMT-1000A/1000D 0.0×10^{-1} to 1.3×10^{-5} Pa *1CCMH-100Ato 1.3×10^{-5} Pa *1CCMH-10Ato 1.3×10^{-5} Pa *1CCMH-10Ato 1.3×10^{-5} Pa *1CCMH-10Ato 1.3×10^{-9} Pa *1CCMH-10Ato 1.3×10^{-9} Pa *1CCMH-10Ato 1.3×10^{-9} Pa *1CCMH-10Ato 1.3×10^{-2} Pa *1CCMH-10Ato 1.3×10^{-2} Pa *1Reading the analog signal (voltage) from the sensorUpdate time70msInternal processing5 times moving average ResolutionResolution 0.2 mVDisplayDigital display of mantissa part 2 digits, exponential part 1 digitUnitPaPressure rangePressure range of each sensor unit Update timeUpdate time200msAccuracy $\pm 2\% \pm 1$ digit against the pressure value from the measurement unit * CCM series: 1/10 or lass of the full scala				ST200-A, ST2-1	to 1.0×10+0 Pa
ST200-A, ST2-1 (SPU Combination mode)to $1.0 \times 10^{+4}$ PaMulti-Ionization ST200-A, ST2-1 (SAU Combination mode) 1.0×10^{-5} to $1.0 \times 10^{+5}$ PaCeramic capacitance manometerCCMT-1000A/1000D CCMT-100A/100D $0.0 \times 10^{+1}$ to $1.3 \times 10^{+5}$ Pa*1 CCMT-100A/100DCCMT-100A/100D CCMT-100A/100D 0.0×10^{-1} to $1.3 \times 10^{+4}$ Pa*1 CCMT-10A/10D 0.0×10^{-1} to $1.3 \times 10^{+4}$ Pa*1 CCMT-10A/10DAnalog inputReading the analog signal (voltage) from the sensorReading the analog signal (voltage) from the sensorUpdate time Internal processing Resolution70ms 5 times moving average Pressure range $0.2 mV$ DisplayDigital display of mantissa part 2 digits, exponential part 1 digit $\Box \Box \times 10^{\Box}$ Update time Internal processingPressure range of each sensor unit Update time $200ms$ Accuracy $\Delta curacy$ $\pm 2\% \pm 1$ digit against the pressure value from the measurement unit * CCM series: 1/10 or lass of the full scala				Multi-Ionization	1.0×10-5
(SPU Combination mode)Multi-Ionization 1.0×10^{-5} ST200-A, ST2-1to $1.0 \times 10^{+5}$ Pa(SAU Combination mode) $(SWU Combination mode)$ CeramicCCMT-1000A/1000D $0.0 \times 10^{+1}$ capacitanceCCMT-100A/100D $0.0 \times 10^{+1}$ manometerCCMT-100A/100D $0.0 \times 10^{+0}$ CCMT-100A/10D 0.0×10^{-1} CCMT-10A/10D 0.0×10^{-1} CCMT-10A/10D 0.0×10^{-1} CCMT-10A/10D 0.0×10^{-1} CCMT-10A/10D 0.0×10^{-1} CCMT-10Ato $1.3 \times 10^{+3}$ Pa ⁺¹ CCMT-1Dto $1.3 \times 10^{+2}$ Pa ⁺¹ Analog inputReading the analog signal (voltage) from the sensorUpdate time70msInternal processing5 times moving averageResolution $0.2 mV$ DisplayDigital display of mantissa part 2 digits, exponential part 1 digitUnitPaPressure rangePressure range of each sensor unitUpdate time200msAccuracy $\pm 2\% \pm 1$ digit against the pressure value from the measurement unit* CCM series: 1/10 or lass of the full scala				ST200-A, ST2-1	to 1.0×10+4 Pa
Multi-Ionization 1.0×10^{-5} to $1.0 \times 10^{+5}$ PaST200-A, ST2-1to $1.0 \times 10^{+5}$ Pa(SAU Combination mode) $(SWU Combination mode)$ CeramicCCMT-1000A/1000D $0.0 \times 10^{+1}$ capacitanceCCMT-100A/100D $0.0 \times 10^{+0}$ CCMT-100A/100D $0.0 \times 10^{+0}$ CCMT-10A/10D 0.0×10^{-1} CCMH-10Ato $1.3 \times 10^{+3} Pa^{+1}$ CCMH-10Ato $1.3 \times 10^{+3} Pa^{+1}$ CCMT-1D 0.0×10^{-1} CCMT-1Dto $1.3 \times 10^{+2} Pa^{+1}$ Analog inputReading the analog signal (voltage) from the sensorUpdate time70msInternal processing5 times moving averageResolution $0.2 mV$ DisplayDigital display of mantissa part 2 digits, exponential part 1 digitUnitPaPressure rangePressure range of each sensor unitUpdate time200msAccuracy $\pm 2\% \pm 1$ digit against the pressure value from the measurement unit * CCM series: 1/10 or lass of the full scala				(SPU Combination mode)	
ST200-A, ST2-1 (SAU Combination mode) (SWU Combination mode)to $1.0 \times 10^{+5}$ PaCeramic capacitance manometerCCMT-1000A/1000D CCMH-1000A $0.0 \times 10^{+1}$ to $1.3 \times 10^{+5}$ Pa*1CCMH-100A CCMH-100Ato $1.3 \times 10^{+5}$ Pa*1CCMH-10A CCMH-10Ato $1.3 \times 10^{+9}$ Pa*1CCMH-10A CCMH-10Ato $1.3 \times 10^{+3}$ Pa*1CCMH-10A CCMH-10Ato $1.3 \times 10^{+3}$ Pa*1Analog inputReading the analog signal (voltage) from the sensorUpdate time Internal processing Resolution70ms 5 times moving average 0.2mVDisplayDigital display of mantissa part 2 digits, exponential part 1 digitUnit Update timePa 200ms 4ccuracyComs 4ccuracy200ms 42%±1 digit against the pressure value from the measurement unit * CCM series: 1/10 or lass of the full scala				Multi-Ionization	1.0×10 ⁻⁵
Ceramic capacitance manometer(SAU Combination mode) (SWU Combination mode)Ceramic capacitance manometerCCMT-1000A/1000D $0.0 \times 10^{+1}$ CCMH-100Ato $1.3 \times 10^{+5} Pa^{*1}$ CCMH-100ACCMH-100Ato $1.3 \times 10^{+4} Pa^{*1}$ CCMT-10A/10DCCMH-10Ato $1.3 \times 10^{+3} Pa^{*1}$ CCMH-10Ato $1.3 \times 10^{+3} Pa^{*1}$ CCMH-10Ato $1.3 \times 10^{+3} Pa^{*1}$ CCMH-10Ato $1.3 \times 10^{+2} Pa^{*1}$ Analog inputReading the analog signal (voltage) from the sensorUpdate time Internal processing5 times moving average S times moving averageResolution $0.2 mV$ DisplayDigital display of mantissa part 2 digits, exponential part 1 digitUnit Update timePaPressure range AccuracyPressure range of each sensor unit $\pm 2\% \pm 1$ digit against the pressure value from the measurement unit * CCM series: 1/10 or lass of the full scala				ST200-A, ST2-1	to 1.0×10+5 Pa
Ceramic capacitance manometerCCMT-1000A/1000D CCMH-1000A $0.0 \times 10^{+1}$ to $1.3 \times 10^{+5} Pa^{*1}$ CCMT-100A/100D 0.0×10^{-0} CCMT-100A/10D 0.0×10^{-0} CCMT-10A/10D 0.0×10^{-1} CCMT-10A/10D 0.0×10^{-1} CCMT-10A $to 1.3 \times 10^{+3} Pa^{*1}$ CCMT-10A $to 1.3 \times 10^{+3} Pa^{*1}$ CCMT-10A $to 1.3 \times 10^{-2} Pa^{*1}$ Analog inputReading the analog signal (voltage) from the sensorUpdate time70msInternal processing5 times moving averageResolution $0.2 mV$ DisplayDigital display of mantissa part 2 digits, exponential part 1 digitUnitPaPressure rangePressure range of each sensor unitUpdate time200msAccuracy $\pm 2\% \pm 1$ digit against the pressure value from the measurement unit* CCM series: 1/10 or lass of the full scala				(SAU Combination mode)	
Ceramic capacitance manometerCCMI+1000A/1000D 0.0×10^{-1} to $1.3\times10^{+5}$ Pa*1CCMH-100Ato $1.3\times10^{+5}$ Pa*1CCMT-10A/10D $0.0\times10^{+0}$ CCMT-10A/10D $0.0\times10^{+1}$ CCMT-10A/10D $0.0\times10^{+1}$ CCMT-10A/10D $0.0\times10^{+1}$ CCMT-10A/10D $0.0\times10^{+1}$ CCMT-10A/10D $0.0\times10^{+1}$ CCMT-10Ato $1.3\times10^{+3}$ Pa*1CCMT-1Dto $1.3\times10^{+2}$ Pa*1Analog inputReading the analog signal (voltage) from the sensorUpdate time70msInternal processing5 times moving averageResolution $0.2mV$ DisplayDigital display of mantissa part 2 digits, exponential part 1 digitUnitPaPressure rangePressure range of each sensor unitUpdate time200msAccuracy $\pm 2\% \pm 1$ digit against the pressure value from the measurement unit * CCM series: 1/10 or lass of the full scala			a :	(SWU Combination mode)	0.0 1011
Capacitance manometerCCMIT-100Ato $1.3 \times 10^{-9} Pa^{-1}$ CCMT-100A/100D $0.0 \times 10^{+0}$ CCMT-10A/10D 0.0×10^{-1} CCMH-10A $to 1.3 \times 10^{+4} Pa^{+1}$ CCMH-10A $to 1.3 \times 10^{+3} Pa^{+1}$ CCMH-10A 0.0×10^{-2} CCMT-1D $to 1.3 \times 10^{+2} Pa^{+1}$ Analog inputReading the analog signal (voltage) from the sensorUpdate time70msInternal processing5 times moving averageResolution $0.2 mV$ DisplayDigital display of mantissa part 2 digits, exponential part 1 digitUnitPaPressure rangePressure range of each sensor unitUpdate time200msAccuracy $\pm 2\% \pm 1$ digit against the pressure value from the measurement unit* CCM series: $1/10$ or lass of the full scala			Ceramic	CCMI 1000A/1000D	$0.0 \times 10^{+1}$
InamoneterCCMT-100A 100D 0.0×10^{10} CCMH-100Ato $1.3\times10^{+4} Pa^{*1}$ CCMH-10A 0.0×10^{-1} CCMH-10Ato $1.3\times10^{+3} Pa^{*1}$ CCMH-10Ato $1.3\times10^{+2} Pa^{*1}$ Analog inputReading the analog signal (voltage) from the sensorUpdate time70msInternal processing5 times moving average ResolutionResolution $0.2mV$ DisplayDigital display of mantissa part 2 digits, exponential part 1 digitUnitPaPressure rangePressure range of each sensor unit Update timeUpdate time200msAccuracy $\pm 2\% \pm 1$ digit against the pressure value from the measurement unit * CCM series: 1/10 or lass of the full scala			capacitance	CCMT 1004/100D	to 1.3×10 ¹⁰ Pa
Image: Construct the construction of the construc			manometer	CCMH 100A	0.0×10^{10}
Image: CCMT-10A 10D 0.0×10^{-1} to $1.3\times10^{+3} Pa^{*1}$ CCMH-1ACCMH-1A 0.0×10^{-2} to $1.3\times10^{+2} Pa^{*1}$ Analog inputReading the analog signal (voltage) from the sensorInternal processing5 times moving average ResolutionResolution $0.2mV$ DisplayDigital display of mantissa part 2 digits, exponential part 1 digitInter PaPressure rangePressure rangePressure range of each sensor unit Update timeUpdate time200ms AccuracyAccuracy $\pm 2\% \pm 1$ digit against the pressure value from the measurement unit * CCM series: 1/10 or lass of the full scala				CCMT 104/10D	10 1.5×10 Pa
ION				CCMH-10A	0.0×10^{-1} to 1.3 × 10 ⁺³ Pa ^{*1}
OUX10 ⁻¹ OUX10 ⁻¹ CCMT-1Dto $1.3 \times 10^{+2} Pa^{*1}$ Analog inputReading the analog signal (voltage) from the sensorUpdate time70ms70msInternal processing5 times moving averageResolution0.2mVDisplayDigital display of mantissa part 2 digits, exponential part 1 digit $\Box \cdot \Box \times 10^{\Box}$ UnitPaPressure rangePressure range of each sensor unitUpdate time200msAccuracy $\pm 2\% \pm 1$ digit against the pressure value from the measurement unit* CCM series:1/10 or less of the full scala				CCMH-1A	0.0×10 ⁻ Pa ⁻
Analog input Reading the analog signal (voltage) from the sensor Update time 70ms Internal processing 5 times moving average Resolution 0.2mV Display Digital display of mantissa part 2 digits, exponential part 1 digit Unit Pa Pressure range Pressure range of each sensor unit Update time 200ms Accuracy ±2%±1 digit against the pressure value from the measurement unit * CCM series: 1/10 or less of the full scala				CCMT-1D	to $1.3 \times 10^{+2} P_{2}^{*1}$
Internal processing File analog signal (vortage) from the sensor Update time 70ms Internal processing 5 times moving average Resolution 0.2mV Display Digital display of mantissa part 2 digits, exponential part 1 digit Unit Pa Pressure range Pressure range of each sensor unit Update time 200ms Accuracy ±2%±1 digit against the pressure value from the measurement unit * CCM series: 1/10 or less of the full scala	Anol	og innu	t .	Reading the analog sign	(voltage) from
Update time 70ms Internal processing 5 times moving average Resolution 0.2mV Display Digital display of mantissa part 2 digits, exponential part 1 digit Unit Pa Pressure range Pressure range of each sensor unit Update time 200ms Accuracy ±2%±1 digit against the pressure value from the measurement unit * CCM series: 1/10 or less of the full scale	2 x 11 d	use inpu		the sensor	
Internal processing 5 times moving average Resolution 0.2mV Display Digital display of mantissa part 2 digits, exponential part 1 digit Unit Pa Pressure range Pressure range of each sensor unit Update time 200ms Accuracy ±2%±1 digit against the pressure value from the measurement unit * CCM series: 1/10 or less of the full scala		Update	e time	70ms	
Resolution 0.2mV Display Digital display of mantissa part 2 digits, exponential part 1 digit Unit Pa Pressure range Pressure range of each sensor unit Update time 200ms Accuracy ±2%±1 digit against the pressure value from the measurement unit * CCM series: 1/10 or less of the full scale		Interna	al processing	5 times moving average	
Display Digital display of mantissa part 2 digits, exponential part 1 digit D I I I I I I I I I I I I I I I I I I I		Resolu	ition	0.2mV	
exponential part 1 digit $\Box . \Box \times 10^{\Box}$ UnitPaPressure rangePressure range of each sensor unitUpdate time200msAccuracy $\pm 2\% \pm 1$ digit against the pressure value from the measurement unit * CCM series: 1/10 or less of the full scale	Disp	lay		Digital display of mantissa part 2 digits,	
Unit Pa Pressure range Pressure range of each sensor unit Update time 200ms Accuracy ±2%±1 digit against the pressure value from the measurement unit * CCM series: 1/10 or less of the full scale	1	-		exponential part 1 digit $\Box . \Box \times 10^{\Box}$	
Pressure range Pressure range of each sensor unit Update time 200ms Accuracy ±2%±1 digit against the pressure value from the measurement unit * CCM series: 1/10 or less of the full scale		Unit		Pa	
Update time200msAccuracy±2%±1 digit against the pressure value from the measurement unit * CCM series: 1/10 or less of the full scale		Pressu	re range	Pressure range of each sensor unit	
Accuracy $\pm 2\% \pm 1$ digit against the pressure value from the measurement unit * CCM series: 1/10 or less of the full scale		Update	e time	200ms	
the measurement unit * CCM series: 1/10 or less of the full scale		Accura	acy	$\pm 2\% \pm 1$ digit against the pressure value from	
* CCM series: 1/10 or lass of the full scale				the measurement unit	
cem series. 1/10 of ress of the full scale				* CCM series: 1/10 or less of the full scale	
±4 digits				±4 digits	
Analog output DC0V to 10V pseudo-log. output, log,	Analog output		out	DC0V to 10V pseudo-log. output, log,	
linear output				linear output	., , ,
Note: The output differs with each unit.				Note: The output differs v	with each unit.
Update time 70ms		Update	e time	/Ums	
		Kesoli	nion	1111 V	

	Output error	±10mV	
	Impedance	100Ω	
	Accuracy	±10mV against the vo of pressure display	oltage converted value
Cont	rol input signal	Actuated by open col logic	lector input, negative
		Filament, etc. ON/O	FF signal, zero point
		adjustment signal, etc	
Cont	rol output signal	Open collector output [Rating: DC30V _{MAX} ,	, negative logic 50mA _{MAX} , 70mW]
		Signal of error, filame	ent and other on signal
		and others	ç
		Setpoints 1, 2, 3	
LED display		ERROR	SET-1
		DGS	SET-2
		ZERO	SET-3
Com	munication	RS-485	
	Baud rate	9600/19200/38400 bp	S
	Number of nodes	32 (including host)	
	Distance	1200m*2	
	Memory function	Set value by communi	cation is backed up by
	5	EEPROM.	1 9
CAL	function	Arbitrary value [1.0]	×10 ⁻³ to 1.0×10 ⁺³] is
		multiplied by the me	easurement value and
		displayed.	
Line voltage		DC24V±1V Ripple an	d noise below 1%
Current consumption		2W (display unit al	one) Maximum 30W
	I I I I I I I I I I I I I I I I I I I	(when BRM2 is used)	
		Note: Power cons	sumption by other
		interfaced units is to be added.	
Corresponding standard		CE standard, UKCA s	tandard
Over	-voltage category	Category I: Connected to a circuit that holds	
		down transient over-voltage at a sufficiently	
		low level	
I/O connector			
	Sensor unit side	D-sub15pin connector	female M2.6 screw
	Control host side	D-sub 15pin connecto	r male M2.6 screw
	Power supply	Phoenix Model MSTE	2.5/3-GF-5.08
Connected cable length		Length of cable from	this unit to the sensor
		unit, calculated with 24	4AWG.
		SP1	up to 50 m
		BPR2	up to 100 m
		SW100-A, SW1-1	up to 100 m
		SC1	up to 100 m
		BMR2	up to 10 m
		SH200-A/ST200-A	up to 40 m
		SH2-1/ST2-1	
		SH200-A/ST200-A	up to 40 m
		SH2-1/ST2-1	
		(SPU Combination)	
		SH200-A/ST200-A	up to 40 m
		SH2-1/ST2-1	
		(SAU / SWU Combinatio	on)
		CCMT series	up to 100 m
		CCMH series	up to 15 m
Opera	ating temperature range	10 to 40°C	
Oper	ating humidity range	15 to 80% (not conde	ns1ng)
Storage		-20 to 65°C (not condensing)	
Weight		250 g	
Outside dimensions		DIN 48 × 96 mm, basic unit 70 mm deep	
		JIS rack size 50×10	0mm is also available
		as option.	
*1: Pro	essure display of CCM s	eries: The minimum digit	are 1.0, 2.0 9.0, the
de	cimal point is not display	yed.	
*2: Pl	ease check a specific	ation of remote host a	nd an environmental
no	ise if you use the cab	le of 30m or more.	

10.2. Standard Accessories

to.2. Standard Accessor		
Power connector	MSTB2.5/3-STF-5.08 (PHOENIX)	1pc.
DIN panel fixing tools	fitting	1 set
Quick Manual	this paper	1copy

10.3. Options OUTPUT:DC24V、INPUT:AC90~264V AC adapter JIS rack size type Display unit cable 2, 5, 10 m long (between the basic unit and sensor unit) Sensor unit, sensor head D-sub15 pin connector socket M2.6mm screw, for sensor connector M2.6mm screw, for I/O connector D-sub15 pin connector pin JCSS alibration certificate Only combination with sensor unit Calibration certificate Only combination with sensor unit Inspection certificate

Traceability certificate	

11. Warranty

This product was shipped after rigid company inspection. However, in case any failure occurs under ULVAC's responsibility, such as defect in manufacturing and damage during transportation, Buyer shall inform ULVAC, Inc. or the local ULVAC representatives. ULVAC will repair or exchange it at free of charge.

Warrantable Items: This unit

Duration of guarantee: Within 1 year from the date of delivery.

Warrantee scope

- 1) Domestic business in Japan: Product, which has damage, caused by a failure on delivery.
- 2) Direct export transaction: Product, which has damage, caused by a failure on delivery. The warrantee scope shall confirm to the new INCOTERMS.
- 3) Products not satisfying meet the standard specifications although the product is used under the normal service conditions such as temperature range and power etc.

Response procedure

- 1) Domestic business in Japan: ULVAC send a replacement or Buyer return the defective items to ULVAC, Inc. or to the local ULVAC representatives for repair. If field service is required, Buyer shall ask ULVAC, Inc. or the local ULVAC representatives.
- 2) Direct export transaction: ULVAC send a replacement or Buyer return the defective items to ULVAC, Inc. or to the local ULVAC representatives for repair. Return charge shall be paid by Buyer.

Disclaimer

- 1) Failure occurred after expiration of warranty period
- 2) Failure caused by force majeure, such as fire, storm and flood damage, earthquake, lightning strike, war etc
- 3) Failure occurred due to carelessness handling or faulty usage
- 4) Products remodeled, disassembled or repaired without ULVAC's acceptance
- 5) Failure occurred under abnormal environment, such as intense electromagnetic field, radiation, high-temperature, high-humidity, flammable gases, corrosive gases, dust etc.
- 6) Failure occurred by noise
- 7) Product deficiency or secondary damnification occurred to Buyer, from law suit to ULVAC by third party for patent infringement.
- 8) Sensor head being used (expiration of life, measurement error, etc.)
 9) Sensor head cable being used (cable burnout due to improper installation, poor contact, etc.)

Others

- In case, special agreement or memorandum for specifications is made individually, the descriptions are prior to this article "13 Product Warranty".
- 2) Buyer shall inform ULVAC when this product is exported out of Japan. In the meantime, Buyer shall take necessary procedures according to Foreign Exchange and Foreign Trade Law.
- 3) As for the question and consultation, Buyer shall check the model and serial number and ask the local representative or ULVAC, Inc.
- 4) The content of this document is subject to change without notice in future.

12. Certificate of Decontamination

All material must be certified as decontaminated and this certificate must be submitted to your closest local ULVAC service center or sales office prior to shipment. Please use the Certificate of decontamination format at the end of the ISG1 instruction manual.

13. Network

ULVAC, Inc: <u>http://www.ulvac.co.jp/en/</u> Service Centers: <u>http://www.ulvac.co.jp/en/support_info/service/</u> Sales Offices: <u>http://www.ulvac.co.jp/en/support/sales_office/</u>

14. Drawing

Please refer to an ULVAC website.

ULVAC, Inc. Components Division, http://www.ulvac.co.jp/en/