

Quadrupole Mass Spectrometers

Vacuum components

M-070QA-TDF
M-101QA-TDF
M-101/201QA-TDM
M-080QA-HPM
M-401QA



Quadrupole mass spectrometers (transducer type)

M-070QA-TDF, M-101QA-TDF, M-101/201QA-TDM



■ Summary

Our product line features a variety of models that can handle up to a mass number of 200 for a broad range of purposes, from research to industrial.

They are suitable for every customer's usage environment and needs. They are also environment-conscious products, conforming to both CE and RoHS standards.

■ Features

1. High sensitivity • High functionality

- Uses a secondary electron multiplier tube for the detector (M-101/201QA-TDM)
- Two types of filaments are available: yttria coated iridium (Y) and tungsten (W)
- Wide dynamic range
- Compatible with leak test mode

2. Low outgassing analyzer tube

- Uses a low gas emission ion source
- Provides a degassing function^{※1}

※ 1 Excluding M-070QA-TDF.

3. QUADVISION3

- Easy to use Japanese/English control software -
- Multicontroller control
(Can control up to eight units at the same time)
- Measured data can be converted to CSV

4. Standard equipped with a variety of I/O functions

- Auto measurement signal
- Analog signal input
- Set point output (2 points)

■ Selection guide

Application field	Detector	M-070QA-TDF	M-101QA-TDF	M-101QA-TDM	M-201QA-TDM
		FC	FC	FC / SEM	FC / SEM
Residual gas monitoring in high vacuum equipment	◎	◎	◎	◎	◎
High-accuracy gas analysis	○	○	○	○	○
Organic gas analysis ^{※2}	—	—	—	○	○
Inorganic gas analysis	○	○	○	○	○
Thermobalance / Thermodesorption gas analysis	○	○	○	○	○
Specific surface analysis	—	○	○	○	○
Catalyst analysis	—	○	○	○	○
Exhaust gas analysis	—	○	○	○	○
Furnace analysis	—	○	○	○	○
Residual gas monitoring in PVD process equipment	—	—	—	—	—
Leak test	◎	◎	◎	◎	◎

◎:Best, ○:Good, FC:Faraday cup SEM:secondary electron multiplier

※ 2 The M-401QA is recommended for organic gas analysis

● Filament selection

Application \ filaments	Yttria-coated iridium filaments (Y)	Tungsten filaments(W) ^{※3}
Main applications	General purpose, residual gas analysis, atmospheric/oxidized gas analysis	Reducing gas, reactive gas analysis

※ 3 Only the M-101QA/M-201QA can be selected

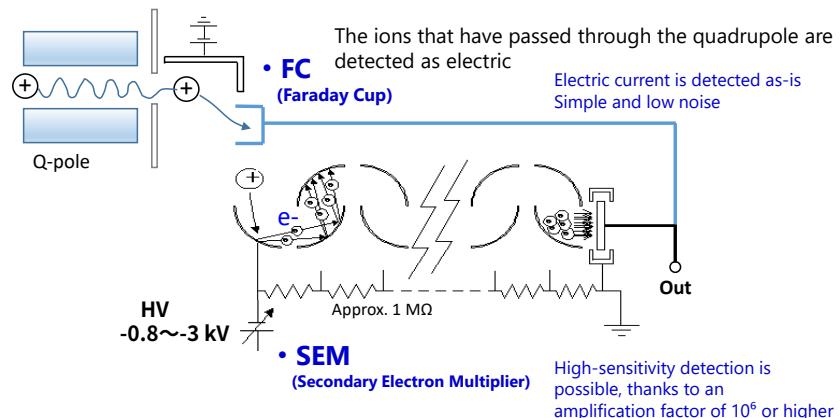
■ Specifications

Model name		Standard model		High-sensitivity model			
		M-070QA-TDF	M-101QA-TDF Y/W	M-101QA-TDM Y/W	M-201QA-TDM Y/W		
Basic performance	Measurable range of mass numbers	1 ~ 70		1 ~ 100			
	Resolution	M / Δ M ≥ 2M @ 50% of peak height (M / Δ M ≥ 1M @ 10% of peak height)					
	Sensitivity (N ₂)	FC ^{※1}	1.5 × 10 ⁻⁶ A / Pa or more	7.0 × 10 ⁻⁶ A / Pa or more	2.5 × 10 ⁻⁶ A / Pa or more		
		SEM ^{※1}	—		2.5 A / Pa or more		
	Minimum detectable partial pressure	6.7 × 10 ⁻⁹ Pa or less		1.0 × 10 ⁻¹² Pa or less	1.0 × 10 ⁻¹² Pa or less		
	Operating pressure	2.7 × 10 ⁻² Pa or lower		1.3 × 10 ⁻² Pa or lower			
Specifications	Dynamic range	6 digits		7 digits			
	Detector	FC	○				
		SEM	—				
	Filament type	Yttria-coated iridium (Y)		Yttria-coated iridium (Y)、Tungsten (W)			
	Baking temperature	250°C (Analyzer tube only)					
	Degassing function	—		Electron bombardment			
	Connection flange	φ 70 ICF					
	Rated input voltage	AC100 V ~ AC240 V					
	Maximum power consumption	60 W		90 W			
	Weight	Analyzer tube	1.5 kg	1.4 kg	1.6 kg		
		Controller	2.1 kg	2.2 kg			
	Communication interface	RS-232C (Cross cable) / 485 ^{※2}					
	Standard software	QUADVISION3					
Conformity		CE marking, RoHS					

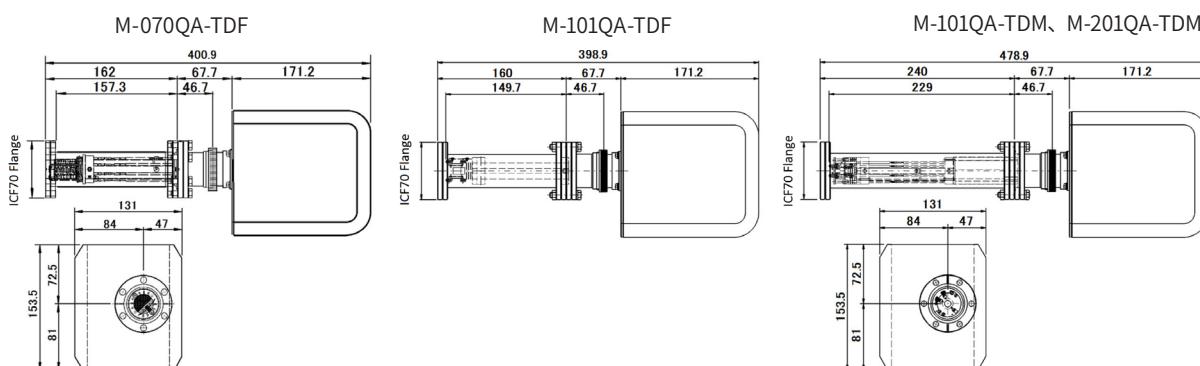
※1 The differences between a FC (Faraday Cup) and SEM (Secondary Electron Multiplier) are described below.

※2 When using a converter for communication, be sure to use the specified product.RS-232 :COM-1 (USB) H, UPORT1110 RS-485:COM-1PD(USB) H

< Differences between FC and SEM >



■ Dimensions diagram



■ Ordering information

Part Number	Model name	Product name	Remarks	code
8B1-0013-955	M-201QA-TDM (W)	Quadrupole mass spectrometer	200 amu, M type, W-FIL, an AC adapter included, no communication cable ^{*1}	20090
8B1-0013-954	M-201QA-TDM (Y)	Quadrupole mass spectrometer	200 amu, M type, Y-FIL, an AC adapter included, no communication cable ^{*1}	20091
8B1-0013-960	M-101QA-TDM (W)	Quadrupole mass spectrometer	100 amu, M type, W-FIL, an AC adapter included, no communication cable ^{*1}	20092
8B1-0013-959	M-101QA-TDM (Y)	Quadrupole mass spectrometer	100 amu, M type, Y-FIL, an AC adapter included, no communication cable ^{*1}	20093
8B1-0014-049	M-101QA-TDF (W)	Quadrupole mass spectrometer	100 amu, F type, W-FIL, an AC adapter included, no communication cable ^{*1}	20094
8B1-0014-050	M-101QA-TDF (Y)	Quadrupole mass spectrometer	100 amu, F type, Y-FIL, an AC adapter included, no communication cable ^{*1}	20095
8B1-0036-813	M-070QA-TDF	Quadrupole mass spectrometer	100 amu, F type, Y-FIL, an AC adapter included, no communication cable ^{*1}	20096
8B1-0017-917		RS-232C cable (1.5 m)	Cross cable	20393
8V1-2006-701		RS-232C cable (3 m)	Cross cable	20294
8V1-2006-990		RS-232C cable (5 m)	Cross cable	20295
8V1-2006-924		RS-232C cable (10 m)	Cross cable	20293
8V1-2009-639	COM-1 (USB) H	USB-RS-232C Converter ^{*2}	Comes with driver CD	20430
8B1-0036-315	UPORT1110	USB-RS-232C Converter ^{*2}	No driver CD, can be downloaded from manufacturer's website	20432
8B1-0014-119		RS-485 cable (5 m)	RS-485 cable (5 m) + Y cable(0.2 m)	20296
8B1-0014-120		RS-485 cable (10 m)	RS-485 cable (10 m) + Y cable(0.2 m)	20297
8B1-0014-121		RS-485 cable (15 m)	RS-485 cable (15 m) + Y cable (0.2 m)	20298
8B1-0014-122		RS-485 cable (20 m)	RS-485 cable (15 m) + Y cable(0.2 m) ^{*3}	20299
8B1-0017-427	COM-1PD/USB/H	USB-RS485 Converter ^{*2}	Comes with driver CD	20392
8B1-0014-094		AC adapter	Comes with M-070/080/101/201QA standards	20195
8B1-0014-138		AC adapter extension cable (5 m)	For M-070/080/101/201QA.	20395
8B1-0019-326		AC adapter extension cable (10 m)	For M-070/080/101/201QA.	20396
8B1-0014-140		AC adapter extension cable (15 m)	For M-070/080/101/201QA.	20397
8B1-0013-852	TD-W-FIL	W filament	For M-101/201	20490
8B1-0013-802	TD-Y-FIL	Y filament	For M-101/201	20491

*1 The quadrupole mass spectrometer includes dedicated software QUADVISION (CD version).

*2 Please use a designation product by all means if customer use a converter for communication. RS-232 :COM-1 (USB) H, UPORT1110 RS-485:COM-1PD(USB) H

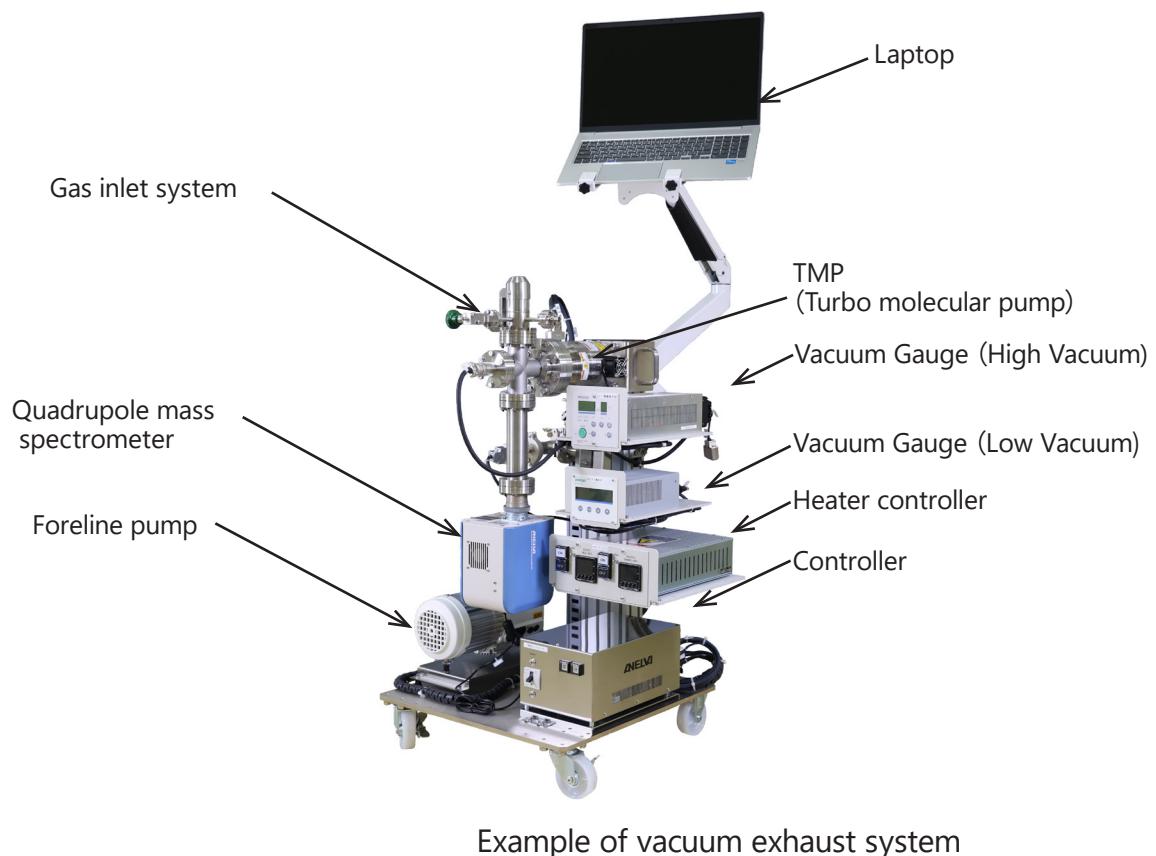
*3 Contact us if you need the cable longer than 20m

■ Gas Analysis System

By combining a quadrupole mass spectrometer with a vacuum exhaust system (foreline pump + TMP), gas analysis outside the operating range pressure of the quadrupole mass spectrometer is possible.

For the vacuum exhaust system, the optimal gas-introducing part is selected according to the external shape and form of the object under measurement and the pressure of the gas being measured, in order to meet the needs of the application.

(Photograph is for reference only)



Example of vacuum exhaust system

■ Examples of supported applications

- Vacuum equipment residual gas analysis
- Thermobalance emission gas analysis
- Thermodesorption gas analysis
- Furnace gas analysis & monitoring
- Charged gas analysis
- Exhaust gas analysis
- Vacuum heat treatment furnace gas analysis
 - Reactors, vacuum heat treatment furnaces,
carburizing furnaces, etc.
- Testing & evaluation equipment
 - Atmospheric gas concentration analysis,
pump evaluation equipment, etc.

Process gas monitor (transducer type)

M-080QA-HPM

Both sputtering process monitoring and residual gas analysis



■ Summary

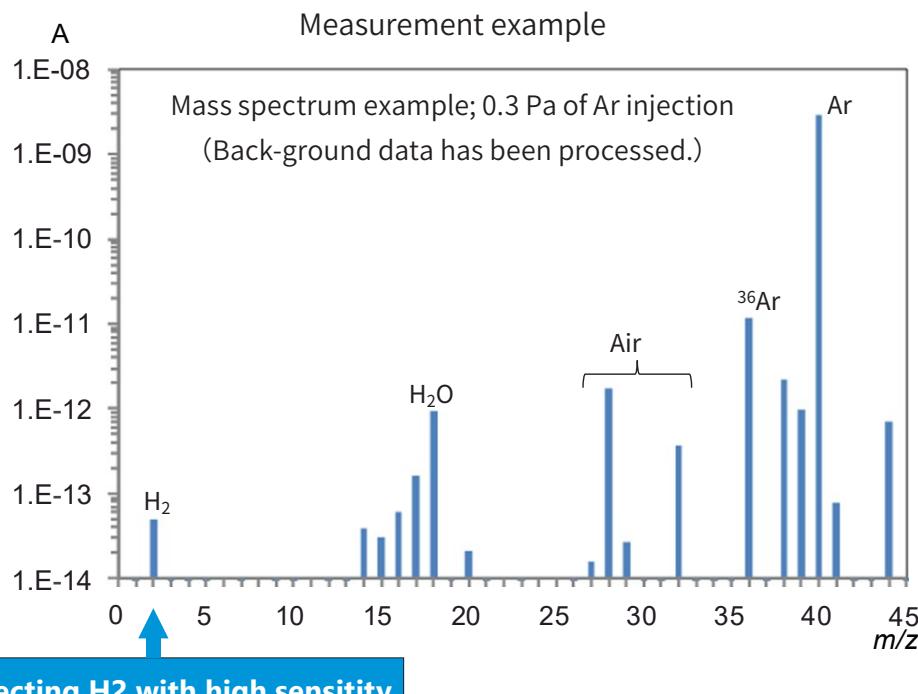
A process gas monitor that can operate from ultra-high vacuum to the pressure range during the sputtering process with our proprietary technology. The ability to monitor the partial pressure during the process allows for gas abnormalities, leaks, and other problems to be detected, preventing product defects caused by process abnormalities.

■ Features

- Operating pressure range: 2.0 Pa and lower
- High-sensitivity measurement over a broad pressure range
 - From sputtering pressure range to ultra-high vacuum
- Highly sensitive, in-process detection of impurities and hydrogen
- Software that is useful for both equipment control and quality control

■ Application

- Quality control during deposition process
- ※ An oxygen process type is also available
- Residual gas analysis
- Leak check



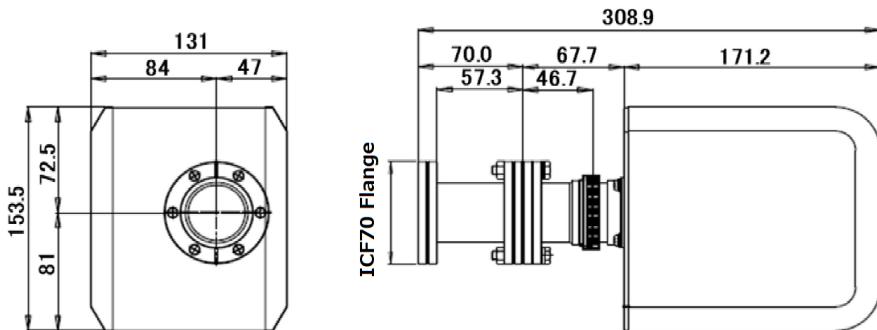
Specifications

Model name		M-080QA-HPM
Basic Performance	Measurable range of mass numbers	1 ~ 80
	Resolution	$M/\Delta M \geq 1M$ @ 10% of peak height
	Sensitivity (Ar)	$7.5 \times 10^{-9} A / Pa$ or more
	SEM	$7.5 \times 10^{-5} A / Pa$ or more
	Minimum Detection Limits	5 ppm (Without H ₂) H ₂ :100 ppm
Operating pressure		2.0 Pa or lower (linear operating pressure 1.3 Pa or lower)
Specifications	Detector	FC <input checked="" type="radio"/> SEM <input type="radio"/>
	Filament type	Yttria-coated iridium (1 set) ^{*1}
	Baking temperature	200°C (Analyzer tube only)
	Connection flange	φ 70 ICF
	Rated input voltage	AC 100 V ~ AC 240 V
	Maximum power consumption	90 W
	Weight	Analyzer tube 1.1 kg Controller 2.2 kg
	Communication interface	RS-232C (Cross cable) / 485 ^{*2}
	Standard software	QUADVISION3
Conformity		RoHS

*1 For use in an oxygen process, please consult with us separately

*2 When using a converter for communication, be sure to use the specified product.RS-232 :COM-1 (USB) H, UPORT1110 RS-485:COM-1PD(USB) H

Dimensions diagram



Ordering information

Part Number	Model	Description	Remarks	Code
8B1-0011-259	M-080QA-HPM	Process Gas Monitor	AC adapter and QUADVISION included, no communication cable	20097
8B1-0017-917		RS-232C Cable (1.5 m)	Cross cable	20393
8V1-2006-701		RS-232C Cable (3 m)	Cross cable	20294
8V1-2006-990		RS-232C Cable (5 m)	Cross cable	20295
8V1-2006-924		RS-232C Cable (10 m)	Cross cable	20293
8V1-2009-639	COM-1 (USB) H	USB-RS-232C Converter ^{*1}	Comes with driver CD	20430
8B1-0036-315	UPORT1110	USB-RS-232C Converter ^{*1}	No driver CD, can be downloaded from manufacturer's website	20432
8B1-0014-119		RS-485 Cable (5 m)	RS-485 cable (20 m) + Y cable (0.2 m)	20296
8B1-0014-120		RS-485 Cable (10 m)	RS-485 cable (10 m) + Y cable (0.2 m)	20297
8B1-0014-121		RS-485 Cable (15 m)	RS-485 cable (15 m) + Y cable (0.2 m)	20298
8B1-0014-122		RS-485 Cable (20 m)	RS-485 cable (20 m) + Y cable (0.2 m) ^{*2}	20299
8B1-0017-427	COM-1PD (USB) H	USB-RS485 Converter ^{*1}	Comes with driver CD	20392
8B1-0014-094		AC Adapter	Comes with M-070/080/101/201QA standards	20195
8B1-0014-138		AC Adapter Extension Cable (5 m)	For M-070/080/101/201QA	20395
8B1-0019-326		AC Adapter Extension Cable (10 m)	For M-070/080/101/201QA	20396
8B1-0014-140		AC Adapter Extension Cable (15 m)	For M-070/080/101/201QA	20397

*1 When using a converter for communication, be sure to use the specified product.RS-232 :COM-1 (USB) H, UPORT1110 RS-485:COM-1PD(USB) H

*2 Contact us if you need the cable longer than 20m

Quadrupole Mass Spectrometer

M-401QA



■ Summary

A compact mass spectrometer that can measure mass numbers 1 to 410 with our proprietary technology
High-speed and high-sensitivity measurement compared to transducer type quadrupole mass spectrometers

■ Features

1.High-speed Measurement

(M-401QA-MGS /MUS)

- Obtains m/Z=1 to 410 data at 1-second intervals

2.High-sensitivity (M-401QA-MGH /MUH)

- Minimum detectable partial pressure
 $\leq 1.0 \times 10^{-12}$ Pa

8-digits dynamic range (M-401QA-MGH)

※ The square at the end of the model name differs depending on the filaments.

3.Two types of ion source

- Gas introduction type (box type) and UHV type (cage type) are available

Gas introduction type: Stable measurement with gas introduction, general analytical applications

UHV type: Residual gas analysis in an ultra-high vacuum

4. Low gas emission analyzer tube

- Uses a low gas emission ion source
- Provides a degassing function

■ Selection guide

Application Area	Detector	High-speed type		High-sensitivity type	
		M-401QA-MGSY/W Gas introduction type	M-401QA-MUSY/W UHV type	M-401QA-MGHY/W Gas introduction type	M-401QA-MUHY/W UHV type
Ultra-high vacuum equipment residual gas analysis		○	○	○	○
Organic gas analysis		○	○	○	○
Inorganic gas analysis		○	○	○	○
Thermobalance • thermodesorption gas analysis		○	○	○	○
Trace gas analysis		○	○	○	○
PFC gas analysis		○	○	○	○

○ : Best, ○ : Good,

● Filament selection

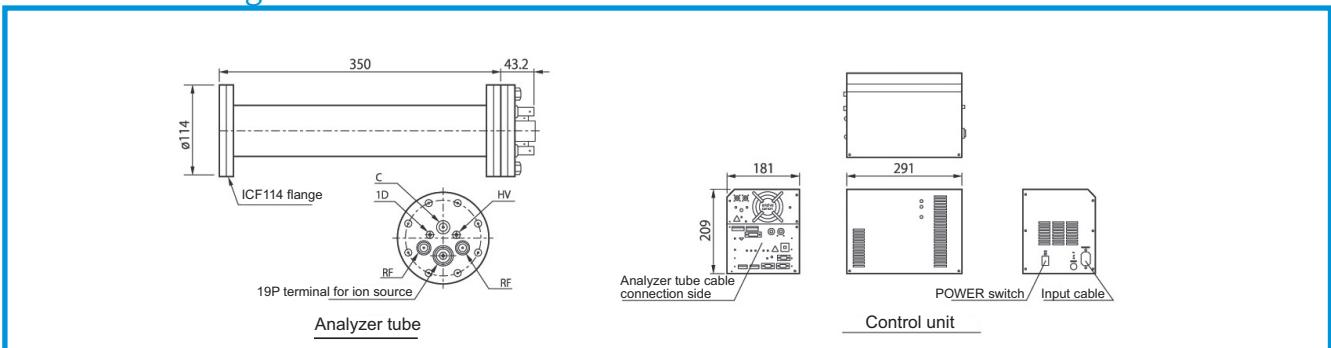
Application \ Filament	Yttria-coated iridium filaments (Y)	Rhenium tungsten (ReW)
Main applications	General purpose, residual gas analysis, atmospheric/oxidized gas analysis	Reducing gas, reactive gas analysis

Dimensions diagram

Model		High-speed type		High-sensitivity type	
		M-401QA-MGSY/W	M-401QA-MUSY/W	M-401QA-MGHY/W	M-401QA-MUHY/W
Basic performance	Measurable range of mass numbers	1 ~ 410			
	Resolution	$M/\Delta M \geq 2M$ @ 50% of peak height ($M/\Delta M \geq 1M$ @ 10% of peak height)			
	Sensitivity (N ₂)	SEM	4.0×10 ⁻¹ A/Pa	4.0 A/Pa	4.0×10 ⁻¹ A/Pa
	Minimum detected partial pressure	$\leq 5.0 \times 10^{-12}$ Pa			$\leq 1.0 \times 10^{-12}$ Pa
	Operating pressure	1.3×10^{-2} Pa or lower			
	Dynamic range (high-speed)	7 digits		8 digits	7 digits
Specifications	Ion source shape		Gas introduction type (box type)	UHV type (cage type)	Gas introduction type (box type)
	Filament type		Yttria coated iridium (Y)、Rhenium tungsten (ReW)		
	Baking temperature		300°C (Analyzer tube only)		
	Degas function		Ion source heater	Electron bombardment	Ion source heater
	Sweep speed		1 ms/amu ~		10 ms/amu ~
	Connection flange		$\phi 114$ ICF		
	Rated input voltage		AC100 V ~ AC240 V		
	Maximum power consumption		300 W		
	Weight	Analyzer tube	5.1 Kg		
		Controller	6.2 Kg		
	Communication interface		RS-485/USB ^{※1}		
	Standard software		QUADVISION3		
Conformity		RoHS			

※1 When using a converter for communication, be sure to use the specified product.RS-485:COM-1PD(USB) H

Dimensions diagram



Ordering information

Part Number	Model	Description	Remarks	code
8B1-0015-975	M-401QA-MGSY	Quadrupole Mass Spectrometer (Gas Introduction type Ion source)	410amu, gas introduction type (box type),high-speed type, Y203-FIL, no communication cable. ^{※1}	20110
8B1-0015-977	M-401QA-MUSY	Quadrupole Mass Spectrometer (UHV Type Ion source)	410amu, UHV type (cage type), high-speed type, Y203-FIL, no communication cable ^{※1}	20111
8B1-0015-970	M-401QA-MGHY	Quadrupole Mass Spectrometer (Gas Introduction type Ion source)	410amu, gas introduction type (box type),high-sensitivity type, Y203-FIL, no communication cable ^{※1}	20112
8B1-0015-972	M-401QA-MUHY	Quadrupole Mass Spectrometer (UHV Type Ion source)	410amu, UHV type (cage type), high-sensitivity type, Y203-FIL, no communication cable ^{※1}	20113
8B1-0015-974	M-401QA-MGSW	Quadrupole Mass Spectrometer (Gas Introduction type Ion source)	410amu, gas introduction type (box type),high-speed type, ReW-FIL, no communication cable ^{※1}	20114
8B1-0015-976	M-401QA-MUSW	Quadrupole Mass Spectrometer (UHV Type Ion source)	410amu, UHV type (cage type),high-speed type, ReW-FIL, no communication cable ^{※1}	20115
8B1-0015-969	M-401QA-MGHW	Quadrupole Mass Spectrometer (Gas Introduction type Ion source)	410amu, gas introduction type (box type),high-sensitivity type, ReW-FIL, no communication cable ^{※1}	20117
8B1-0015-971	M-401QA-MUHW	Quadrupole Mass Spectrometer (UHV Type Ion source)	410amu, UHV type (cage type), high-sensitivity type, ReW-FIL, no communication cable ^{※1}	20118
8B1-0014-119		RS485 Y Cable Set (5 m)	RS-485 cable 5m + Y cable (0.3m)	20296
8B1-0014-120		RS485 Y Cable Set (10 m)	RS-485 cable 10m + Y cable (0.3m)	20297
8B1-0014-121		RS485 Y Cable Set (15 m)	RS-485 cable 15m + Y cable (0.3m)	20298
8B1-0014-122		RS485 Y Cable Set (20 m)	RS-485 cable 20m + Y cable (0.3m) ^{※2}	20299
8B1-0017-427	COM-1PD/USB/H	USB-RS485 Converter ^{※3}	Comes with driver CD	20392
8B1-0013-249	401G-Y203-FIL	Y Filament for M-401QA (box type)		20130
8B1-0014-385	401U-Y203-FIL	Y Filament for M-401QA (cage type)	Replacement and installation are performed by us	20131
8B1-0012-169	401G-REW-FIL	ReW Filament for M-401QA (box type)		20320
8B1-0015-948	401U-REW-FIL	ReW Filament for M-401QA (cage type)	Replacement and installation are performed by us	20323

※ 1 The quadrupole mass spectrometer includes dedicated software QUADVISION (CD version).

※ 2 Contact us if you need the cable longer than 20m

※ 3 When using a converter for communication, be sure to use the specified product.RS-485:COM-1PD(USB) H

Software dedicated to quadrupole mass spectrometers

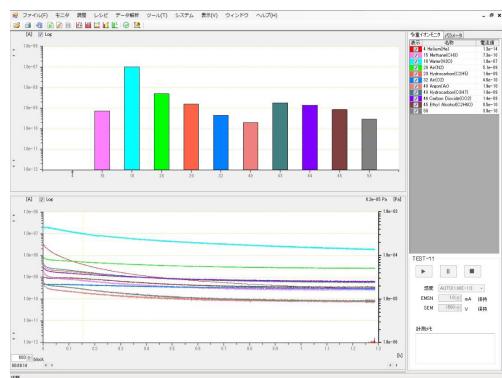
QUADVISION3

Simple operations, easy measurements

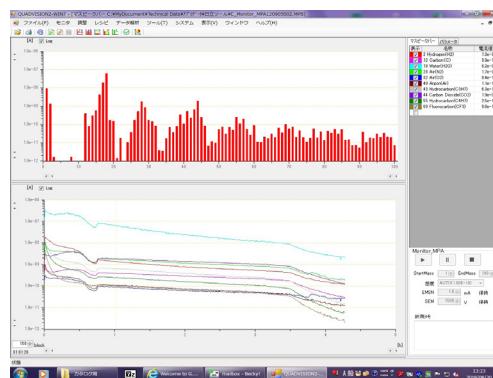
Remote control available

Measurement mode

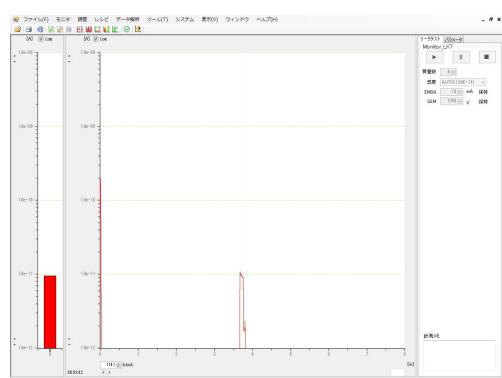
- ① Selected Ion Monitor (SIM)
- ② Mass Peak Monitor (MPM)
- ③ Leak Test (LT)
- ④ Partial Press Monitor (PPM)



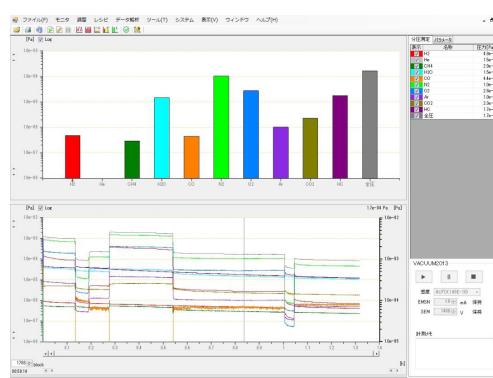
① Selected Ion Monitor (SIM)



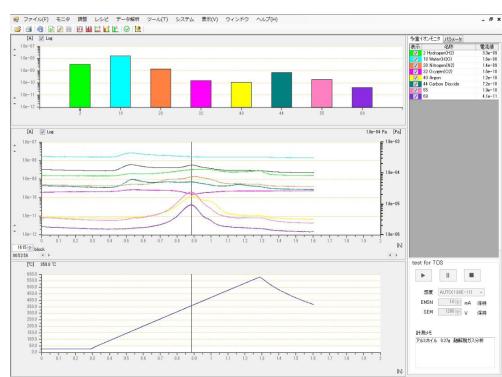
② Mass Peak Monitor (MPM)



③ Leak test (LT)



④ Partial Press Monitor (PPM)



Temperature reading (optional)



Settings screen

■ QUADVISION specifications

Applicable quadrupole mass spectrometers	M-070QA-TDF M-101/201QA Series M-080QA-HPM M-401QA Series	RS-232C/485 communication ^{*1} USB/RS-485 communication ^{*1}
Measurement mode	Selected Ion Monitor (SIM)	Trend monitor of mass numbers with up to 16 channels
	Mass Peak Monitor (MPM)	Continuous measurement of mass spectra within a specified range
	Leak Test (LT)	Leak test using a specified mass number
	Partial Press Monitor (PPM) ^{*2}	Partial pressure measurement of 10 fixed components (H ₂ , He, CH ₄ , H ₂ O, CO, N ₂ , HC, O ₂ , Ar, CO ₂ , and total pressure)
Other functions	Recipe function	
	Area calculation	
	Adjustment mode (Mass number calibration, waveform adjustment)	
	Conversion of saved data into CSV format	
	Status check	
	Automatic measurement, analog input (0 to 10 V), set point output	
	Reading of pressure	Pressure values can be loaded into QUADVISION3 via RS-232C communication. ^{*3}
	Reading of temperature	Temperature values can be loaded into QUADVISION3 via RS-232C communication. ^{*4}
Option	NIST conversion	Saved data can be converted to a format searchable in the NIST library.
Personal computer specifications	OS	Windows 7, 8.1, 10, 11
	Interface	RS-232C (9P Cross) /485 Port/USB ^{*1}

*1 When using a converter for communication, be sure to use the specified product.RS-232 :COM-1 (USB) H, UPORT1110 RS-485:COM-1PD(USB) H

*2 M-080QA-HPM not applicable

*3 Reading the pressure requires our specific vacuum gauge and cable.

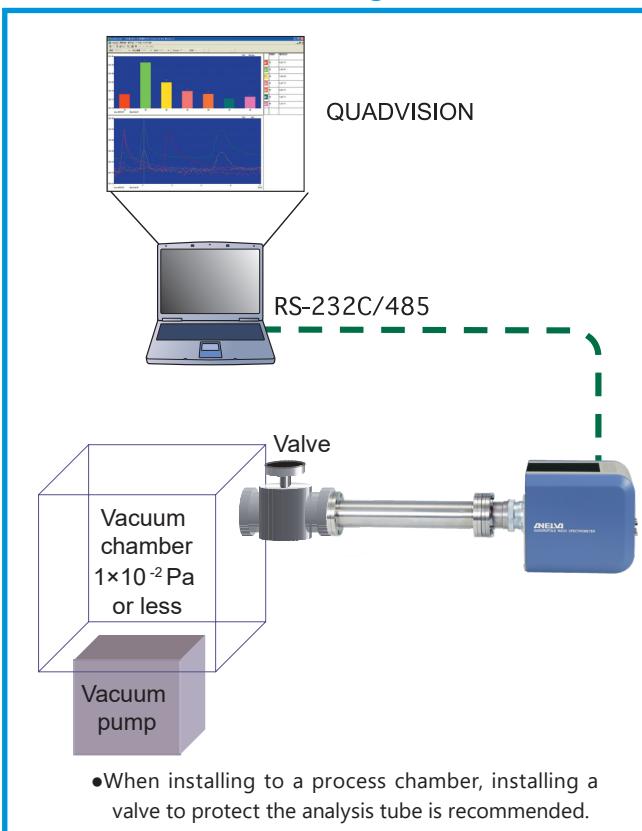
*4 Reading the temperature requires our specific temperature controller and cable.

Windows is a registered trademark or trademark of Microsoft Corporation in the United States and in other countries.

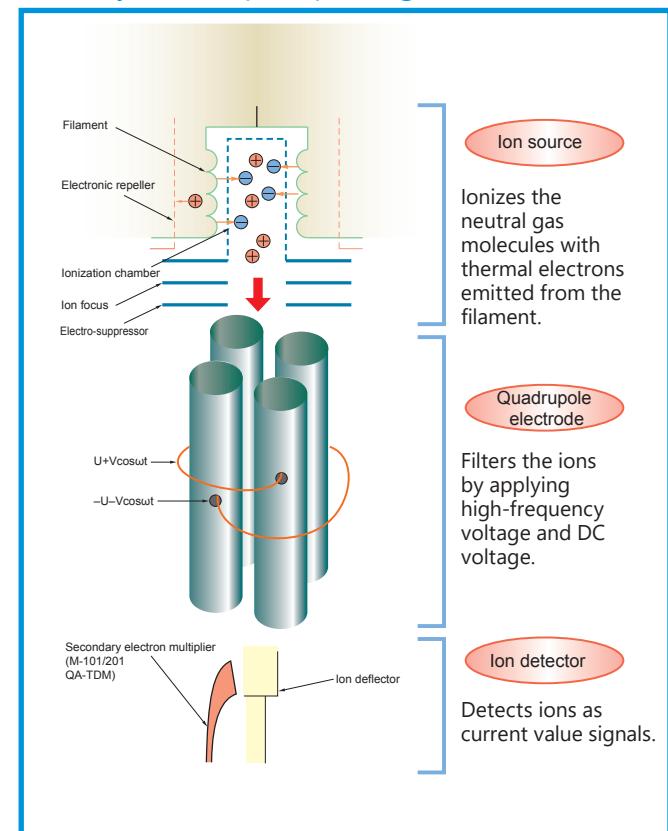
■ Ordering information

Part Number	Model name	Product name	Remarks	code
8B1-0018-295	QUADVISION3 (JP)	QUADRUPOLE MASS SPECTROMETER SOFTWARE (JP)	Comes standard with spectrometer	20424
8B1-0018-556	QUADVISION3 (EN)	QUADRUPOLE MASS SPECTROMETER SOFTWARE (EN)	Please specify when purchasing the spectrometer	20425
8B1-0019-087		NIST library data conversion software	For QUADVISION3	20427
8B1-0019-067		Temperature reading software	For QUADVISION3	20426

■ Mass filter connection diagram



■ Analyzer tube principle diagram



Canon CANON ANELVA CORPORATION



URL : <https://anelva.canon/en/>

Equipment Business Headquarters

2-5-1 Kurigi, Asao-ku, Kawasaki-shi, Kanagawa 215-8550, Japan
Canon U.S.A., Inc.

3300 North First Street San Jose, CA 95134 U.S.A.
Canon Europa N.V.

Bovenkerkerweg 59, 1185 XB Amstelveen, The Netherlands
Canon Semiconductor Engineering Korea, Inc.

Canon Tower 5-6F, 607, Teheran-ro, Gangnam-gu, Seoul, 06173, Korea
Canon Semiconductor Equipment Taiwan, Inc.

9F-2, No.25, Pu-Ding Road, Hsinchu, 300, Taiwan
Canon Singapore Pte. Ltd.

1 Fusionopolis place, #15-10 Galaxis Singapore 138522
Canon Optical Industrial Equipment (Shanghai) Inc.

3-4F, South Wing, Building 5, Innovation Galaxy,
No.210 Wenshui Rd, Jing'an District, Shanghai 200072, China

marketing@mail.canon

TEL: +1-408-468-2000 FAX: +1-408-468-2343

TEL: +31-20-545-8545 FAX: +31-20-545-8222

TEL: +82-2-6445-0013 FAX: +82-2-6445-0069

TEL: +886-3-668-6600 FAX: +886-3-668-6969

TEL: +65-6799-8888 FAX: +65-6271-4226

TEL: +86-21-2316-3200 FAX: +86-21-2316-3222

* Notes on export, transfer and disposal

When exporting a product listed in this catalog outside Japan, please inform our sales division in advance because decisions must be made based on the terms of the Foreign Exchange and Foreign Trade Act. Also note the transfer and disposal destination when transferring or disposing domestically.

* The specifications published in this catalog are subject to change without prior notice.