
Securities and Exchange Commission

Washington, D.C. 20549

Schedule 13G

(Rule 13d-102)

Information to be Included in Statements Filed Pursuant
to § 240.13d-1(b), (c) and (d) and Amendments Thereto Filed
Pursuant to § 240.13d-2

UNDER THE SECURITIES EXCHANGE ACT OF 1934
(Amendment No.)*

MKS Instruments, Inc.

(Name of Issuer)

Common Stock, no par value
(Title of Class of Securities)

55306N104
(CUSIP Number)

August 17, 2022
(Date of Event Which Requires Filing of this Statement)

Check the appropriate box to designate the rule pursuant to which this Schedule is filed:

- Rule 13d-1(b)
- Rule 13d-1(c)
- Rule 13d-1(d)

* The remainder of this cover page shall be filled out for a reporting person's initial filing on this form with respect to the subject class of securities, and for any subsequent amendment containing information which would alter the disclosures provided in a prior cover page.

The information required in the remainder of this cover page shall not be deemed to be "filed" for the purpose of Section 18 of the Securities Exchange Act of 1934 ("Act") or otherwise subject to the liabilities of that section of the Act but shall be subject to all other provisions of the Act (however, see the Notes).

1	Names of Reporting Persons The Carlyle Group Inc.	
2	Check the Appropriate Box if a Member of a Group (a) <input type="checkbox"/> (b) <input type="checkbox"/>	
3	SEC Use Only	
4	Citizenship or Place of Organization Delaware	
Number of Shares Beneficially Owned by Each Reporting Person With	5	Sole Voting Power 0
	6	Shared Voting Power 8,482,732
	7	Sole Dispositive Power 0
	8	Shared Dispositive Power 8,482,732
9	Aggregate Amount Beneficially Owned by Each Reporting Person 8,482,732	
10	Check if the Aggregate Amount in Row (9) Excludes Certain Shares Not Applicable	
11	Percent of Class Represented by Amount in Row 9 12.8%	
12	Type of Reporting Person CO	

1	Names of Reporting Persons Carlyle Holdings II GP L.L.C.	
2	Check the Appropriate Box if a Member of a Group (a) <input type="checkbox"/> (b) <input type="checkbox"/>	
3	SEC Use Only	
4	Citizenship or Place of Organization Delaware	
Number of Shares Beneficially Owned by Each Reporting Person With	5	Sole Voting Power 0
	6	Shared Voting Power 8,482,732
	7	Sole Dispositive Power 0
	8	Shared Dispositive Power 8,482,732
9	Aggregate Amount Beneficially Owned by Each Reporting Person 8,482,732	
10	Check if the Aggregate Amount in Row (9) Excludes Certain Shares Not Applicable	
11	Percent of Class Represented by Amount in Row 9 12.8%	
12	Type of Reporting Person OO (Limited Liability Company)	

1	Names of Reporting Persons Carlyle Holdings II L.L.C.	
2	Check the Appropriate Box if a Member of a Group (a) <input type="checkbox"/> (b) <input type="checkbox"/>	
3	SEC Use Only	
4	Citizenship or Place of Organization Delaware	
Number of Shares Beneficially Owned by Each Reporting Person With	5	Sole Voting Power 0
	6	Shared Voting Power 8,482,732
	7	Sole Dispositive Power 0
	8	Shared Dispositive Power 8,482,732
9	Aggregate Amount Beneficially Owned by Each Reporting Person 8,482,732	
10	Check if the Aggregate Amount in Row (9) Excludes Certain Shares Not Applicable	
11	Percent of Class Represented by Amount in Row 9 12.8%	
12	Type of Reporting Person OO (Limited Liability Company)	

1	Names of Reporting Persons CG Subsidiary Holdings L.L.C.	
2	Check the Appropriate Box if a Member of a Group (a) <input type="checkbox"/> (b) <input type="checkbox"/>	
3	SEC Use Only	
4	Citizenship or Place of Organization Delaware	
Number of Shares Beneficially Owned by Each Reporting Person With	5	Sole Voting Power 0
	6	Shared Voting Power 8,482,732
	7	Sole Dispositive Power 0
	8	Shared Dispositive Power 8,482,732
9	Aggregate Amount Beneficially Owned by Each Reporting Person 8,482,732	
10	Check if the Aggregate Amount in Row (9) Excludes Certain Shares Not Applicable	
11	Percent of Class Represented by Amount in Row 9 12.8%	
12	Type of Reporting Person OO (Limited Liability Company)	

1	Names of Reporting Persons	
	TC Group Cayman Investment Holdings, L.P.	
2	Check the Appropriate Box if a Member of a Group	
	(a) <input type="checkbox"/> (b) <input type="checkbox"/>	
3	SEC Use Only	
4	Citizenship or Place of Organization	
	Cayman Islands	
Number of Shares Beneficially Owned by Each Reporting Person With	5	Sole Voting Power
		0
	6	Shared Voting Power
		8,482,732
	7	Sole Dispositive Power
		0
	8	Shared Dispositive Power
		8,482,732
9	Aggregate Amount Beneficially Owned by Each Reporting Person	
	8,482,732	
10	Check if the Aggregate Amount in Row (9) Excludes Certain Shares	
	Not Applicable	
11	Percent of Class Represented by Amount in Row 9	
	12.8%	
12	Type of Reporting Person	
	PN	

1	Names of Reporting Persons	
	TC Group Cayman Investment Holdings Sub L.P.	
2	Check the Appropriate Box if a Member of a Group	
	(a) <input type="checkbox"/> (b) <input type="checkbox"/>	
3	SEC Use Only	
4	Citizenship or Place of Organization	
	Cayman Islands	
Number of Shares Beneficially Owned by Each Reporting Person With	5	Sole Voting Power
		0
	6	Shared Voting Power
		8,482,732
	7	Sole Dispositive Power
		0
	8	Shared Dispositive Power
		8,482,732
9	Aggregate Amount Beneficially Owned by Each Reporting Person	
	8,482,732	
10	Check if the Aggregate Amount in Row (9) Excludes Certain Shares	
	Not Applicable	
11	Percent of Class Represented by Amount in Row 9	
	12.8%	
12	Type of Reporting Person	
	PN	

1	Names of Reporting Persons TC Group VI Cayman, L.L.C.	
2	Check the Appropriate Box if a Member of a Group (a) <input type="checkbox"/> (b) <input type="checkbox"/>	
3	SEC Use Only	
4	Citizenship or Place of Organization Delaware	
Number of Shares Beneficially Owned by Each Reporting Person With	5	Sole Voting Power 0
	6	Shared Voting Power 5,180,030
	7	Sole Dispositive Power 0
	8	Shared Dispositive Power 5,180,030
9	Aggregate Amount Beneficially Owned by Each Reporting Person 5,180,030	
10	Check if the Aggregate Amount in Row (9) Excludes Certain Shares Not Applicable	
11	Percent of Class Represented by Amount in Row 9 7.8%	
12	Type of Reporting Person OO (Limited Liability Company)	

1	Names of Reporting Persons TC Group VI Cayman, L.P.	
2	Check the Appropriate Box if a Member of a Group (a) <input type="checkbox"/> (b) <input type="checkbox"/>	
3	SEC Use Only	
4	Citizenship or Place of Organization Cayman Islands	
Number of Shares Beneficially Owned by Each Reporting Person With	5	Sole Voting Power 0
	6	Shared Voting Power 5,180,030
	7	Sole Dispositive Power 0
	8	Shared Dispositive Power 5,180,030
9	Aggregate Amount Beneficially Owned by Each Reporting Person 5,180,030	
10	Check if the Aggregate Amount in Row (9) Excludes Certain Shares Not Applicable	
11	Percent of Class Represented by Amount in Row 9 7.8%	
12	Type of Reporting Person PN	

1	Names of Reporting Persons	
	Carlyle Partners VI Cayman Holdings, L.P.	
2	Check the Appropriate Box if a Member of a Group	
	(a) <input type="checkbox"/> (b) <input type="checkbox"/>	
3	SEC Use Only	
4	Citizenship or Place of Organization	
	Cayman Islands	
Number of Shares Beneficially Owned by Each Reporting Person With	5	Sole Voting Power
		0
	6	Shared Voting Power
		5,180,030
	7	Sole Dispositive Power
		0
	8	Shared Dispositive Power
		5,180,030
9	Aggregate Amount Beneficially Owned by Each Reporting Person	
	5,180,030	
10	Check if the Aggregate Amount in Row (9) Excludes Certain Shares	
	Not Applicable	
11	Percent of Class Represented by Amount in Row 9	
	7.8%	
12	Type of Reporting Person	
	PN	

1	Names of Reporting Persons CEP IV Managing GP Holdings, Ltd.	
2	Check the Appropriate Box if a Member of a Group (a) <input type="checkbox"/> (b) <input type="checkbox"/>	
3	SEC Use Only	
4	Citizenship or Place of Organization Cayman Islands	
Number of Shares Beneficially Owned by Each Reporting Person With	5	Sole Voting Power 0
	6	Shared Voting Power 2,259,743
	7	Sole Dispositive Power 0
	8	Shared Dispositive Power 2,259,743
9	Aggregate Amount Beneficially Owned by Each Reporting Person 2,259,743	
10	Check if the Aggregate Amount in Row (9) Excludes Certain Shares Not Applicable	
11	Percent of Class Represented by Amount in Row 9 3.4%	
12	Type of Reporting Person CO	

1	Names of Reporting Persons CEP IV Managing GP, L.P.	
2	Check the Appropriate Box if a Member of a Group (a) <input type="checkbox"/> (b) <input type="checkbox"/>	
3	SEC Use Only	
4	Citizenship or Place of Organization Scotland	
Number of Shares Beneficially Owned by Each Reporting Person With	5	Sole Voting Power 0
	6	Shared Voting Power 2,259,743
	7	Sole Dispositive Power 0
	8	Shared Dispositive Power 2,259,743
9	Aggregate Amount Beneficially Owned by Each Reporting Person 2,259,743	
10	Check if the Aggregate Amount in Row (9) Excludes Certain Shares Not Applicable	
11	Percent of Class Represented by Amount in Row 9 3.4%	
12	Type of Reporting Person PN	

1	Names of Reporting Persons Carlyle Europe Partners IV, L.P.	
2	Check the Appropriate Box if a Member of a Group (a) <input type="checkbox"/> (b) <input type="checkbox"/>	
3	SEC Use Only	
4	Citizenship or Place of Organization England and Wales	
Number of Shares Beneficially Owned by Each Reporting Person With	5	Sole Voting Power 0
	6	Shared Voting Power 2,259,743
	7	Sole Dispositive Power 0
	8	Shared Dispositive Power 2,259,743
9	Aggregate Amount Beneficially Owned by Each Reporting Person 2,259,743	
10	Check if the Aggregate Amount in Row (9) Excludes Certain Shares Not Applicable	
11	Percent of Class Represented by Amount in Row 9 3.4%	
12	Type of Reporting Person PN	

1	Names of Reporting Persons	
	CEP IV Participations, S.à r.l. SICAR	
2	Check the Appropriate Box if a Member of a Group	
	(a) <input type="checkbox"/> (b) <input type="checkbox"/>	
3	SEC Use Only	
4	Citizenship or Place of Organization	
	Luxembourg	
Number of Shares Beneficially Owned by Each Reporting Person With	5	Sole Voting Power
		0
	6	Shared Voting Power
		2,259,743
	7	Sole Dispositive Power
		0
	8	Shared Dispositive Power
		2,259,743
9	Aggregate Amount Beneficially Owned by Each Reporting Person	
	2,259,743	
10	Check if the Aggregate Amount in Row (9) Excludes Certain Shares	
	Not Applicable	
11	Percent of Class Represented by Amount in Row 9	
	3.4%	
12	Type of Reporting Person	
	OO (Luxembourg Limited Liability Company)	

1	Names of Reporting Persons	
	CAP IV, L.L.C.	
2	Check the Appropriate Box if a Member of a Group	
	(a) <input type="checkbox"/> (b) <input type="checkbox"/>	
3	SEC Use Only	
4	Citizenship or Place of Organization	
	Delaware	
Number of Shares Beneficially Owned by Each Reporting Person With	5	Sole Voting Power
		0
	6	Shared Voting Power
		1,042,959
	7	Sole Dispositive Power
		0
	8	Shared Dispositive Power
		1,042,959
9	Aggregate Amount Beneficially Owned by Each Reporting Person	
	1,042,959	
10	Check if the Aggregate Amount in Row (9) Excludes Certain Shares	
	Not Applicable	
11	Percent of Class Represented by Amount in Row 9	
	1.6%	
12	Type of Reporting Person	
	OO (Limited Liability Company)	

1	Names of Reporting Persons CAP IV General Partner, L.P.	
2	Check the Appropriate Box if a Member of a Group (a) <input type="checkbox"/> (b) <input type="checkbox"/>	
3	SEC Use Only	
4	Citizenship or Place of Organization Cayman Islands	
Number of Shares Beneficially Owned by Each Reporting Person With	5	Sole Voting Power 0
	6	Shared Voting Power 1,042,959
	7	Sole Dispositive Power 0
	8	Shared Dispositive Power 1,042,959
9	Aggregate Amount Beneficially Owned by Each Reporting Person 1,042,959	
10	Check if the Aggregate Amount in Row (9) Excludes Certain Shares Not Applicable	
11	Percent of Class Represented by Amount in Row 9 1.6%	
12	Type of Reporting Person PN	

1	Names of Reporting Persons Carlyle Asia Partners IV, L.P.	
2	Check the Appropriate Box if a Member of a Group (a) <input type="checkbox"/> (b) <input type="checkbox"/>	
3	SEC Use Only	
4	Citizenship or Place of Organization Cayman Islands	
Number of Shares Beneficially Owned by Each Reporting Person With	5	Sole Voting Power 0
	6	Shared Voting Power 1,042,959
	7	Sole Dispositive Power 0
	8	Shared Dispositive Power 1,042,959
9	Aggregate Amount Beneficially Owned by Each Reporting Person 1,042,959	
10	Check if the Aggregate Amount in Row (9) Excludes Certain Shares Not Applicable	
11	Percent of Class Represented by Amount in Row 9 1.6%	
12	Type of Reporting Person PN	

1	Names of Reporting Persons Gamma Holding Company Limited	
2	Check the Appropriate Box if a Member of a Group (a) <input type="checkbox"/> (b) <input type="checkbox"/>	
3	SEC Use Only	
4	Citizenship or Place of Organization Cayman Islands	
Number of Shares Beneficially Owned by Each Reporting Person With	5	Sole Voting Power 0
	6	Shared Voting Power 1,042,959
	7	Sole Dispositive Power 0
	8	Shared Dispositive Power 1,042,959
9	Aggregate Amount Beneficially Owned by Each Reporting Person 1,042,959	
10	Check if the Aggregate Amount in Row (9) Excludes Certain Shares Not Applicable	
11	Percent of Class Represented by Amount in Row 9 1.6%	
12	Type of Reporting Person CO	

ITEM 1. (a) Name of Issuer:

MKS Instruments, Inc. (the "Issuer")

(b) Address of Issuer's Principal Executive Offices:

2 Tech Drive, Suite 201, Andover, Massachusetts 01810

ITEM 2. (a) Name of Person Filing:

Each of the following is hereinafter individually referred to as a "Reporting Person" and collectively as the "Reporting Persons." This statement is filed on behalf of:

The Carlyle Group Inc.
Carlyle Holdings II GP L.L.C.
Carlyle Holdings II L.L.C.
CG Subsidiary Holdings L.L.C.
TC Group Cayman Investment Holdings, L.P.
TC Group Cayman Investment Holdings Sub L.P.
TC Group VI Cayman, L.L.C.
TC Group VI Cayman, L.P.
Carlyle Partners VI Cayman Holdings, L.P.
CEP IV Managing GP Holdings, Ltd.
CEP IV Managing GP, L.P.
Carlyle Europe Partners IV, L.P.
CEP IV Participations, S.à r.l. SICAR
CAP IV, L.L.C.
CAP IV General Partner, L.P.
Carlyle Asia Partners IV, L.P.
Gamma Holding Company Limited

(b) Address or Principal Business Office:

The address for each of TC Group Cayman Investment Holdings, L.P., TC Group Cayman Investment Holdings Sub L.P., TC Group VI Cayman, L.P., Carlyle Partners VI Cayman Holdings, L.P., CEP IV Managing GP Holdings, Ltd., CAP IV General Partner, L.P., Carlyle Asia Partners IV, L.P. and Gamma Holding Company Limited is c/o Walkers, 190 Elgin Avenue, George Town, Grand Cayman KY1-9001, Cayman Islands. The address for CEP IV Participations, S.à r.l. SICAR is c/o The Carlyle Group, 2, avenue Charles de Gaulle, L-1653 Luxembourg, Luxembourg. The address for each of the remaining Reporting Persons is c/o The Carlyle Group Inc., 1001 Pennsylvania Avenue NW, Suite 220 South, Washington, D.C. 20004-2505.

(c) Citizenship of each Reporting Person is:

Each of TC Group Cayman Investment Holdings, L.P., TC Group Cayman Investment Holdings Sub L.P., TC Group VI Cayman, L.P., Carlyle Partners VI Cayman Holdings, L.P., CEP IV Managing GP Holdings, Ltd., CAP IV General Partner, L.P., Carlyle Asia Partners IV, L.P. and Gamma Holding Company Limited is organized under the laws of the Cayman Islands. Carlyle Europe Partners IV, L.P. is organized under the laws of England and Wales. CEP IV Managing GP, L.P. is organized under the laws of Scotland. CEP IV Participations, S.à r.l. SICAR is organized under the laws of Luxembourg. Each of the remaining Reporting Persons is organized under the laws of the State of Delaware.

(d) Title of Class of Securities:

Common Stock, no par value ("Common Stock").

(e) CUSIP Number:

55306N104

ITEM 3.

Not applicable.

ITEM 4. Ownership.**(a-c)**

The ownership information presented below represents beneficial ownership of shares of Common Stock of the Issuer as of August 17, 2022, based upon 66,492,257 shares of Common Stock outstanding, according to information provided by the Issuer regarding its outstanding shares as of August 17, 2022.

Reporting Person	Amount beneficially owned	Percent of class:	Sole power to vote or to direct the vote:	Shared power to vote or to direct the vote:	Sole power to dispose or to direct the disposition of:	Shared power to dispose or to direct the disposition of:
The Carlyle Group Inc.	8,482,732	12.8%	0	8,482,732	0	8,482,732
Carlyle Holdings II GP L.L.C.	8,482,732	12.8%	0	8,482,732	0	8,482,732
Carlyle Holdings II L.L.C.	8,482,732	12.8%	0	8,482,732	0	8,482,732
CG Subsidiary Holdings L.L.C.	8,482,732	12.8%	0	8,482,732	0	8,482,732
TC Group Cayman Investment Holdings, L.P.	8,482,732	12.8%	0	8,482,732	0	8,482,732
TC Group Cayman Investment Holdings Sub L.P.	8,482,732	12.8%	0	8,482,732	0	8,482,732
TC Group VI Cayman, L.L.C.	5,180,030	7.8%	0	5,180,030	0	5,180,030
TC Group VI Cayman, L.P.	5,180,030	7.8%	0	5,180,030	0	5,180,030
Carlyle Partners VI Cayman Holdings, L.P.	5,180,030	7.8%	0	5,180,030	0	5,180,030
CEP IV Managing GP Holdings, Ltd.	2,259,743	3.4%	0	2,259,743	0	2,259,743
CEP IV Managing GP, L.P.	2,259,743	3.4%	0	2,259,743	0	2,259,743
Carlyle Europe Partners IV, L.P.	2,259,743	3.4%	0	2,259,743	0	2,259,743
CEP IV Participations, S.à r.l. SICAR	2,259,743	3.4%	0	2,259,743	0	2,259,743
CAP IV, L.L.C.	1,042,959	1.6%	0	1,042,959	0	1,042,959
CAP IV General Partner, L.P.	1,042,959	1.6%	0	1,042,959	0	1,042,959
Carlyle Asia Partners IV, L.P.	1,042,959	1.6%	0	1,042,959	0	1,042,959
Gamma Holding Company Limited	1,042,959	1.6%	0	1,042,959	0	1,042,959

Includes 5,180,030 shares held by Carlyle Partners VI Cayman Holdings, L.P., 2,259,743 shares held by CEP IV Participations, S.à r.l. SICAR, and 1,042,959 shares held by Gamma Holding Company Limited.

The Carlyle Group Inc., which is a publicly traded entity listed on Nasdaq, is the sole member of Carlyle Holdings II GP L.L.C., which is the managing member of Carlyle Holdings II L.L.C., which, with respect to the securities reported herein, is the managing member of CG Subsidiary Holdings L.L.C., which is the general partner of TC Group Cayman Investment Holdings, L.P., which is the general partner of TC Group Cayman Investment Holdings Sub L.P., which is the sole shareholder of TC Group VI Cayman, L.L.C., which is the general partner of TC Group VI Cayman, L.P., which is the general partner of Carlyle Partners VI Cayman Holdings, L.P.

TC Group Cayman Investment Holdings Sub L.P. is also the sole shareholder of CEP IV Managing GP Holdings, Ltd. and the sole member of CAP IV, L.L.C. CEP IV Managing GP Holdings, Ltd. is the general partner of CEP IV Managing GP, L.P., which is the managing general partner of Carlyle Europe Partners IV, L.P., which is the majority shareholder of CEP IV Participations, S.à r.l. SICAR.

CAP IV, L.L.C. is the general partner of CAP IV General Partner, L.P., which is the general partner of Carlyle Asia Partners IV, L.P., which is the majority shareholder of Gamma Holding Company Limited.

Accordingly, each of these entities may be deemed to share beneficial ownership of the securities held of record by Carlyle Partners VI Cayman Holdings, L.P., CEP IV Participations, S.à r.l. SICAR and Gamma Holding Company Limited. Each of them disclaims beneficial ownership of such securities.

ITEM 5. Ownership of Five Percent or Less of a Class.

Not applicable.

ITEM 6. Ownership of More than Five Percent on Behalf of Another Person.

Not applicable.

ITEM 7. Identification and Classification of the Subsidiary Which Acquired the Security Being Reported on By the Parent Holding Company.

Not applicable.

ITEM 8. Identification and Classification of Members of the Group.

Not applicable.

ITEM 9. Notice of Dissolution of Group.

Not applicable.

ITEM 10. Certification.

By signing below I certify that, to the best of my knowledge and belief, the securities referred to above were not acquired and are not held for the purpose of or with the effect of changing or influencing the control of the issuer of the securities and were not acquired and are not held in connection with or as a participant in any transaction having that purpose or effect, other than activities solely in connection with a nomination under § 240.14a-11.

SIGNATURE

After reasonable inquiry and to the best of my knowledge and belief, I certify that the information set forth in this statement is true, complete and correct.

Date: August 29, 2022

The Carlyle Group Inc.

By: /s/ Anne Frederick, attorney-in-fact

Name: Curtis L. Buser

Title: Chief Financial Officer

Carlyle Holdings II GP L.L.C.

By: The Carlyle Group Inc., its sole member

By: /s/ Anne Frederick, attorney-in-fact

Name: Curtis L. Buser

Title: Chief Financial Officer

Carlyle Holdings II L.L.C.

By: /s/ Anne Frederick, attorney-in-fact

Name: Curtis L. Buser

Title: Managing Director

CG Subsidiary Holdings L.L.C.

By: /s/ Anne Frederick, attorney-in-fact

Name: Curtis L. Buser

Title: Managing Director

TC Group Cayman Investment Holdings, L.P.

By: CG Subsidiary Holdings L.L.C., its general partner

By: /s/ Anne Frederick, attorney-in-fact

Name: Curtis L. Buser

Title: Managing Director

TC Group Cayman Investment Holdings Sub L.P.

By: TC Group Cayman Investment Holdings, L.P., its
general partner

By: CG Subsidiary Holdings L.L.C., its general partner

By: /s/ Anne Frederick, attorney-in-fact

Name: Curtis L. Buser

Title: Managing Director

TC Group VI Cayman, L.L.C.

By: /s/ Jeremy W. Anderson

Name: Jeremy W. Anderson

Title: Authorized Person

TC Group VI Cayman, L.P.

By: TC Group VI Cayman, L.L.C., its general partner

By: /s/ Jeremy W. Anderson

Name: Jeremy W. Anderson

Title: Authorized Person

Carlyle Partners VI Cayman Holdings, L.P.

By: TC Group VI Cayman, L.P., its general partner

By: TC Group VI Cayman, L.L.C., its general partner

By: /s/ Jeremy W. Anderson

Name: Jeremy W. Anderson

Title: Authorized Person

CEP IV Managing GP Holdings, Ltd.

By: /s/ Anat Holtzman

Name: Anat Holtzman

Title: Manager

CEP IV Managing GP, L.P.

By: CEP IV Managing GP Holdings, Ltd., its general partner

By: /s/ Anat Holtzman

Name: Anat Holtzman

Title: Manager

Carlyle Europe Partners IV, L.P.

By: CEP IV Managing GP, L.P., its general partner

By: CEP IV Managing GP Holdings, Ltd., its general partner

By: /s/ Anat Holtzman

Name: Anat Holtzman

CEP IV Participations, S.à r.l. SICAR

Represented by Andrew Howlett-Bolton, and William Cagney, as Managers

By: /s/ Andrew Howlett-Bolton

Name: Andrew Howlett-Bolton

By: /s/ William Cagney

Name: William Cagney

CAP IV, L.L.C.

By: /s/ Kevin Gasque

Name: Kevin Gasque

Title: Authorized Person

CAP IV General Partner, L.P.

By: CAP IV, L.L.C., its general partner

By: /s/ Kevin Gasque

Name: Kevin Gasque

Title: Authorized Person

Carlyle Asia Partners IV, L.P.

By: CAP IV General Partner, L.P., its general partner

By: CAP IV, L.L.C., its general partner

By: /s/ Kevin Gasque

Name: Kevin Gasque

Title: Authorized Person

Gamma Holding Company Limited

By: /s/ Kevin Gasque

Name: Kevin Gasque

Title: Director

LIST OF EXHIBITS

<u>Exhibit No.</u>	<u>Description</u>
24	Power of Attorney.
99	Joint Filing Agreement.

POWER OF ATTORNEY

The undersigned understands that, from time to time, the Carlyle Companies (defined below) are required to prepare, execute, and file certain federal and state securities laws filings.

Know all by these presents, that the undersigned hereby constitutes and appoints each of Jeffrey Ferguson, Jeremy Anderson, Chintan Bhatt, Anne Frederick, Kevin Gasque, Erica Herberg, Anat Holtzman, Joshua Lefkowitz, David Lobe, Elizabeth Muscarella, Sanket Patel, Robert Rosen, and Catherine Ziobro, or any of them signing singly, and with full power of substitution, the undersigned's true and lawful attorney-in-fact to:

- (1) prepare, execute in the name of each Carlyle Company and on behalf of each Carlyle Company, and submit to the U.S. Securities and Exchange Commission (the "SEC") a Form ID, including amendments thereto, and any other documents necessary or appropriate to obtain codes and passwords enabling the undersigned to make electronic filings with the SEC of Forms D ("Form D") required to be filed in accordance with Rule 503 ("Rule 503") promulgated with respect to Sections 4(2), 4(6) and 3(b) of the Securities Act of 1933, as amended (the "1933 Act") and reports required by Sections 13(d) and 16(a) of the Securities Exchange Act of 1934, as amended (the "1934 Act") or any rule or regulation of the SEC;
- (2) prepare and execute for and on behalf of each Carlyle Company, in the undersigned's capacity as a Chairman, authorized person, officer and/or director of each Carlyle Company, federal and state securities laws filings including without limitation Forms D pursuant to Rule 503 and Schedules 13D and 13G and Forms 3, 4, and 5 in accordance with Sections 13(d) and 16(a) of the 1934 Act and the rules thereunder;
- (3) do and perform any and all acts for and on behalf of each Carlyle Company that may be necessary or desirable to complete and execute any such federal and state securities laws filings including without limitation Forms D, Schedules 13D and 13G and Forms 3, 4, and 5, complete and execute any amendment or amendments thereto, and timely file such form with the SEC and the securities administrators of any state, the District of Columbia, the Commonwealth of Puerto Rico, Guam and the United States Virgin Islands or their designees and any stock exchange or similar authority; and
- (4) take any other action of any type whatsoever in connection with the foregoing which, in the opinion of such attorney-in-fact, may be of benefit to, in the best interest of, or legally required by, the undersigned, it being understood that the documents executed by such attorney-in-fact on behalf of the undersigned pursuant to this Power of Attorney shall be in such form and shall contain such terms and conditions as such attorney-in-fact may approve in such attorney-in-fact's discretion.

The undersigned hereby grants to each such attorney-in-fact full power and authority to do and perform any and every act and thing whatsoever requisite, necessary, or proper to be done in the exercise of any of the rights and powers herein granted, as fully to all intents and purposes

as the undersigned might or could do if personally present, with full power of substitution or revocation, hereby ratifying and confirming all that such attorney-in-fact, or such attorney-in-fact's substitute or substitutes, shall lawfully do or cause to be done by virtue of this power of attorney and the rights and powers herein granted, whether the same needs to be executed, taken or done by him in his capacity as a current or former member, partner, shareholder, director or officer of any company, partnership, corporation, organization, firm, branch or other entity connected with, related to or affiliated with any of the entities constituting the Carlyle Companies or entities that directly or indirectly hold interests in the Carlyle Companies.

The undersigned acknowledges that the foregoing attorneys-in-fact, in serving in such capacity at the request of the undersigned, are not assuming any of the undersigned's responsibilities to comply with federal and state securities laws, including without limitation Rule 503 of the 1933 Act or Section 13 and Section 16 of the 1934 Act.

This Power of Attorney and all authority conferred hereby shall not be terminated by operation of law, whether by the death or incapacity of the undersigned or by occurrence of any other event. Actions taken by an attorney-in-fact pursuant to this Power of Attorney shall be as valid as if any event described in the preceding sentence had not occurred, whether or not the attorney-in-fact shall have received notice of such event. Notwithstanding the foregoing, (i) in the event that an attorney-in-fact is no longer employed by The Carlyle Group Employee Co., L.L.C. or its affiliates, this Power of Attorney and all authority conferred hereby shall be immediately terminated with respect to such Attorney, and (ii) the undersigned may terminate or revoke this Power of Attorney at any time.

For purposes hereof, the "Carlyle Companies" shall consist of: (i) Carlyle Group Management L.L.C., The Carlyle Group Inc., Carlyle Holdings I GP Inc., Carlyle Holdings I GP Sub L.L.C., Carlyle Holdings I L.P., TC Group, L.L.C., Carlyle Holdings II GP L.L.C., Carlyle Holdings II L.L.C., CG Subsidiary Holdings L.L.C., TC Group Investment Holdings Limited Partner L.L.C., TC Group Investment Holdings, L.P., Carlyle Holdings III GP L.P., Carlyle Holdings III GP Sub L.L.C., Carlyle Holdings III L.P., TC Group Cayman L.P., TC Group Sub L.P., TC Group Investment Holdings Sub L.P., TC Group Cayman Investment Holdings, L.P., TC Group Cayman Investment Holdings Sub L.P., TC Group Cayman, L.P., TC Group Cayman Sub L.P., Five Overseas CG Investment L.L.C. and (ii) the subsidiaries and affiliates of the foregoing in clause (i), including without limitation investment funds sponsored directly or indirectly by one or more of the Carlyle Companies.

IN WITNESS WHEREOF, the undersigned has caused this Power of Attorney to be executed as of this 5th day of August, 2022.

By: /s/ Curtis L. Buser
Name: Curtis L. Buser
Title: Chief Financial Officer

JOINT FILING AGREEMENT

In accordance with Rule 13d-1(k)(1) promulgated under the Securities Exchange Act of 1934, as amended, the undersigned hereby agree that they are jointly filing this statement on Schedule 13G. Each of them is responsible for the timely filing of such statement and any amendments thereto, and for the completeness and accuracy of the information concerning such person contained therein; but none of them is responsible for the completeness or accuracy of the information concerning the other persons making the filing, unless such person knows or has reason to believe that such information is inaccurate.

IN WITNESS WHEREOF, the undersigned hereby execute this Joint Filing Agreement as of August 29, 2022.

The Carlyle Group Inc.

By: /s/ Anne Frederick, attorney-in-fact

Name: Curtis L. Buser

Title: Chief Financial Officer

Carlyle Holdings II GP L.L.C.

By: The Carlyle Group Inc., its sole member

By: /s/ Anne Frederick, attorney-in-fact

Name: Curtis L. Buser

Title: Chief Financial Officer

Carlyle Holdings II L.L.C.

By: /s/ Anne Frederick, attorney-in-fact

Name: Curtis L. Buser

Title: Managing Director

CG Subsidiary Holdings L.L.C.

By: /s/ Anne Frederick, attorney-in-fact

Name: Curtis L. Buser

Title: Managing Director

TC Group Cayman Investment Holdings, L.P.

By: CG Subsidiary Holdings L.L.C., its general partner

By: /s/ Anne Frederick, attorney-in-fact

Name: Curtis L. Buser

Title: Managing Director

TC Group Cayman Investment Holdings Sub L.P.

By: TC Group Cayman Investment Holdings, L.P., its
general partner

By: CG Subsidiary Holdings L.L.C., its general partner

By: /s/ Anne Frederick, attorney-in-fact

Name: Curtis L. Buser

Title: Managing Director

TC Group VI Cayman, L.L.C.

By: /s/ Jeremy W. Anderson

Name: Jeremy W. Anderson

Title: Authorized Person

TC Group VI Cayman, L.P.

By: TC Group VI Cayman, L.L.C., its general partner

By: /s/ Jeremy W. Anderson

Name: Jeremy W. Anderson

Title: Authorized Person

Carlyle Partners VI Cayman Holdings, L.P.

By: TC Group VI Cayman, L.P., its general partner

By: TC Group VI Cayman, L.L.C., its general partner

By: /s/ Jeremy W. Anderson

Name: Jeremy W. Anderson

Title: Authorized Person

CEP IV Managing GP Holdings, Ltd.

By: /s/ Anat Holtzman

Name: Anat Holtzman

Title: Manager

CEP IV Managing GP, L.P.

By: CEP IV Managing GP Holdings, Ltd., its general partner

By: /s/ Anat Holtzman

Name: Anat Holtzman

Title: Manager

Carlyle Europe Partners IV, L.P.

By: CEP IV Managing GP, L.P., its general partner

By: CEP IV Managing GP Holdings, Ltd., its general partner

By: /s/ Anat Holtzman

Name: Anat Holtzman

CEP IV Participations, S.à r.l. SICAR

Represented by Andrew Howlett-Bolton, and William Cagney, as Managers

By: /s/ Andrew Howlett-Bolton

Name: Andrew Howlett-Bolton

By: /s/ William Cagney

Name: William Cagney

CAP IV, L.L.C.

By: /s/ Kevin Gasque

Name: Kevin Gasque

Title: Authorized Person

CAP IV General Partner, L.P.

By: CAP IV, L.L.C., its general partner

By: /s/ Kevin Gasque

Name: Kevin Gasque

Title: Authorized Person

Carlyle Asia Partners IV, L.P.

By: CAP IV General Partner, L.P., its general partner

By: CAP IV, L.L.C., its general partner

By: /s/ Kevin Gasque

Name: Kevin Gasque

Title: Authorized Person

Gamma Holding Company Limited

By: /s/ Kevin Gasque

Name: Kevin Gasque

Title: Director