

Flow sensors SFAM

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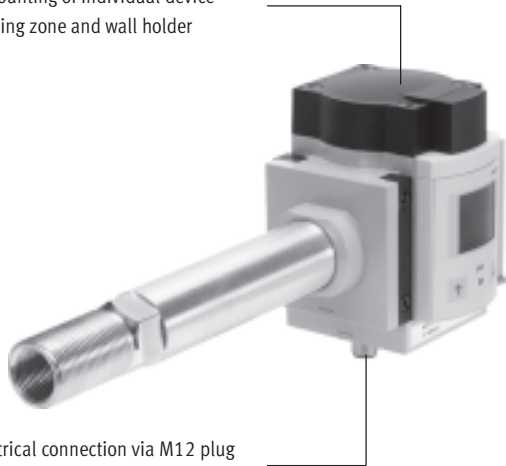
Flow sensors SFAM

Key features

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At a glance

Threaded mounting of individual device with stabilising zone and wall holder



Central electrical connection via M12 plug

Lockable with MS6 series service unit combination



- Illuminated LCD display with blue background and white 9-segment display
- Bar graph visualises the current measured value
- Switching point-dependent colour changes

Compact and capable of high flow rates

This modular flow sensor can operate either as a standalone unit or can be ideally combined with the MS series service units.

The sensor provides:

- Absolute flow information
 - with threshold values and
 - convenient switching point adjustment via a display
- Accumulated air consumption measurement
- Patented adjustable consumption-based switching impulse for accumulated air consumption measurement via the switching output

Systematically more reliable

With its highly dynamic response of 1:100, the sensor covers an extensive measuring range with a specified accuracy.

It can provide precise information even when flow conditions are fluctuating and unreliable.

Easy to operate

- A large, illuminated LCD display increases the operational safety and makes the currently displayed flow rate and consumption values easy to read
- Measured values outside of the measuring range are visualised – flow rates are displayed flashing
- NPN/PNP can be switched via the software
- Values that fall below or exceed the threshold values can be identified even over long distances or if the sensor is inaccessible by means of a colour change in the display
- Simple checking of the current sensor settings in SHOW mode
- Simple switching between consumption and flow data indicator
- Values shown in the display:
 - can be shown for different standard conditions (DIN 1343, ISO 2533, ISO 6358)
 - can be filtered/averaged independently of the analogue output in the case of high measurement dynamics

Convenient

- Plug and work solution
- Clear and fast menu navigation
- Fast commissioning thanks to easy-to-use, intuitive teach-in function
- Manual consumption measurement with start/stop and reset functionality

Easy to combine

With MS6 series service unit combination thanks to innovative prism clamping technology. This saves additional installation time.

Flexible installation

The SFAM has an extremely compact, space-saving design optimised for flow performance.

Right or left?

The fluid stream of the unidirectional flow sensor can be set from left to right or from right to left.

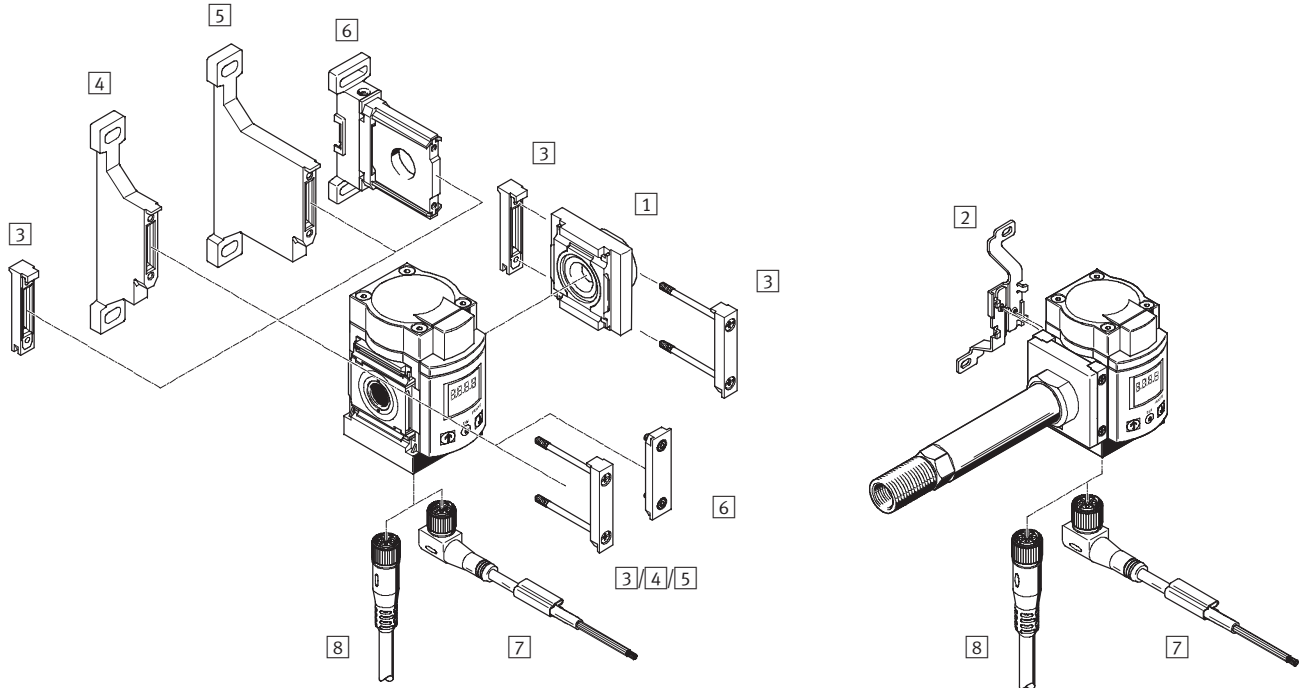
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Peripherals overview

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For service unit combination
with laminar flow cartridge

For individual mounting
with connecting plates and stabilising zone



Mounting attachments and accessories		In MS series service unit combination	Individual device	→ Page/Internet
1	Connecting plate MS6-AG...	■	■ Included in scope of delivery	ms6-ag
2	Mounting bracket MS6-WB	–	■ Included in scope of delivery	ms6-wb
3	Module connector MS6-MV	■	–	ms6-mv
4	Mounting bracket MS6-WP	■	–	ms6-wp
5	Mounting bracket MS6-WPB	■	–	ms6-wpb
6	Mounting bracket MS6-WPM	■	–	ms6-wpm
7	Connecting cable NEBU-M12W5, angled socket	■	■	11
8	Connecting cable NEBU-M12G5, straight socket	■	■	11

Note

Additional accessories:

- Module connector for combination with size MS4/MS6 or size MS9
→ Internet: amv, rmv, armv
- Adapter for mounting on profiles
→ Internet: ipm-80, ipm-40-80, ipm-80-80

Flow sensors SFAM

Type codes

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		SFAM	-	62	-	1000	L	-	T	G12	-	2SA	-	M12
Type														
SFAM	Flow sensor													
Grid dimension														
62	Grid dimension 62 mm													
Flow measuring range [l/min]														
1000	Max. 1000													
3000	Max. 3000													
5000	Max. 5000													
Flow input														
L	Unidirectional from left													
Type of mounting														
M	Manifold assembly													
T	Threaded mounting													
Pneumatic connection														
G12	Female thread G $\frac{1}{2}$													
Electrical output														
2SA	2x PNP or NPN, 1 analogue output 4 ... 20 mA													
2SV	2x PNP or NPN, 1 analogue output 0 ... 10 V													
Electrical connection														
M12	Straight plug, M12x1, 5-pin													

Additional variants can be ordered using the modular system → 10

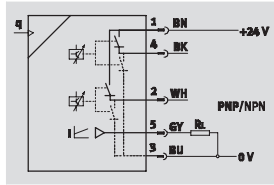
- Flow input
- Type of mounting
- Pneumatic connection
- Electrical accessories
- Certification EU (ATEX)

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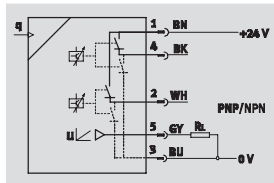
Technical data

Function

Current output 2SA



Voltage output 2SV



- Analogue output 0 ... 10 V, adjustable switching outputs 2x PNP or 2x NPN
- Analogue output 4 ... 20 mA, adjustable switching outputs 2x PNP or 2x NPN
- Freely selectable pulse output for consumption measurement

Flow rate

10 ... 1,000 l/min
30 ... 3,000 l/min
50 ... 5,000 l/min

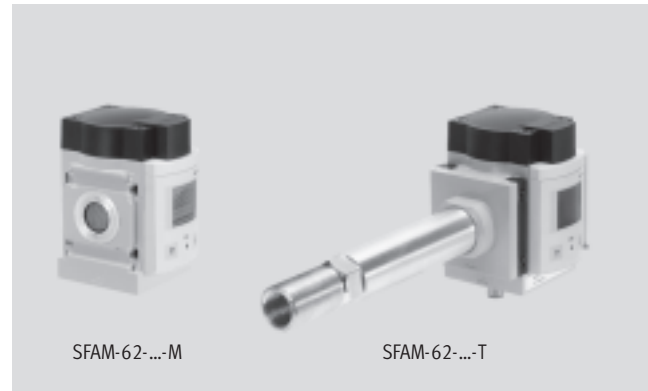
Temperature range

0 ... 50 °C



Operating pressure
0 ... 16 bar

- Analogue filter for setting the rise time
- Digital filter for smoothing the display values



Note

To comply with the specified accuracies, the SFAM-62-...-T must be supplied via a connection with an inside diameter of at least 10 mm and the SFAM-62-...-M must be supplied via a pneumatic connection of at least G $\frac{1}{2}$.

Note

To comply with the specified accuracies, a branching module MS6-FRM must be installed downstream of a filter regulator MS6-LFR or pressure regulator MS6-LR and upstream of the flow sensor SFAM.

General technical data	
Certification	C tick c UL us - Recognized (OL)
CE mark (see declaration of conformity)	To EU EMC Directive ¹⁾ To EU Explosion Protection Directive (ATEX)
Note on materials	RoHS-compliant

1) For information about the applicability of the component see the manufacturer's EC declaration of conformity at: www.festo.com → Support → User documentation.
If the component is subject to restrictions on usage in residential, office or commercial environments or small businesses, further measures to reduce the emitted interference may be necessary.

Input signal/measuring element		-1000	-3000	-5000
SFAM-62				
Measured variable		Flow rate, consumption		
Direction of flow	-L	Unidirectional P1 → P2		
Direction of flow	-R	Unidirectional P2 ← P1		
Measuring principle		Thermal		
Flow measuring range	[l/min]	10 ... 1000	30 ... 3000	50 ... 5000
Operating pressure	[bar]	0 ... 16		
Nominal pressure	[bar]	6		
Operating medium		Air quality class 5:4:3 to DIN ISO 8573-1 Nitrogen		
Temperature of medium	[°C]	0 ... 50		
Ambient temperature	[°C]	0 ... 50		
Nominal temperature	[°C]	23		

Flow sensors SFAM

Technical data

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Output, general ^{1), 2)}		
Accuracy zero point ±FS	[%]	0.3
Accuracy margin ±FS	[%]	3
Repetition accuracy zero point ±FS	[%]	0.2
Repetition accuracy margin ±FS	[%]	0.8
Temperature coefficient margin ±FS/K	[%]	≤0.1
Pressure dependency margin ±FS/bar	[%]	0.5

1) Accuracy under rated conditions (6 bar, 23 °C and horizontal mounting position)

2) % FS = % of the measuring range final value (full scale)

Switching output		
Switching output	2x PNP or 2x NPN, adjustable	
Switching function	Window comparator or threshold comparator, adjustable	
Switching element function	N/C or N/O contact, adjustable	
Switch-on time	Adjustable (factory setting: approx. 60 ms)	
Switch-off time	Adjustable (factory setting: approx. 60 ms)	
Max. output current	[mA]	100
Voltage drop	[V]	Max. 1.5
Inductive protective circuit	Adapted to MZ, MY, ME coils	

Analogue output				
SFAM-62		-1000	-3000	-5000
Characteristic flow rate curve	[l/min]	0 ... 1000	0 ... 3000	0 ... 5000
Output characteristic curve – current	[mA]	4 ... 20		
Output characteristic curve – voltage	[V]	0 ... 10		
Rise time	[ms]	15, 30, 60 (factory setting), 125, 250, 500, 999 adjustable		
Max. load resistance of current output	[ohms]	500		
Min. load resistance of voltage output	[kohms]	10		

Output, other data	
Protection against short circuit	Yes
Protection against overloading	Yes

Electronics	
Operating voltage range DC	[V] 15 ... 30
Protection against polarity reversal	For all electrical connections

Electromechanical components	
Electrical connection	Straight plug, M12x1, 5-pin
Max. length of connecting cable	[m] <10

Mechanical components						
SFAM-62	-1000		-3000		-5000	
	-M	-T	-M	-T	-M	-T
Mounting position	Horizontal ±5°					
Pneumatic connection	–	G1/2	–	G1/2	–	G1/2
	–	NPT1/2	–	NPT1/2	–	NPT1/2
Product weight	[g] 600	1100	600	1100	600	1100
Note on materials: Housing	Reinforced PA, die-cast aluminium					

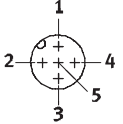
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Technical data

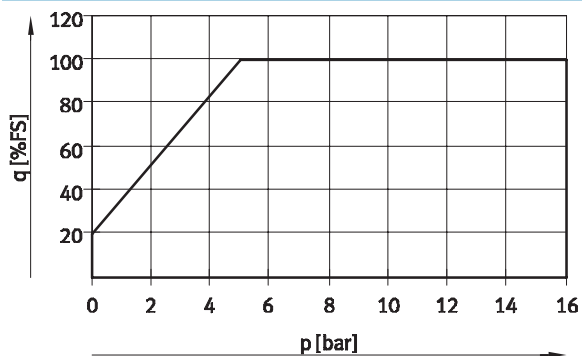
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Display/operation				
SFAM-62		-1000	-3000	-5000
Indicator type		Illuminated LCD, blue		
Displayable units		l/min, scfm, l, m ³ , scf		
Setting range threshold value flow rate		1%FS ... 100%FS		
Setting range threshold value consumption impulse	[l]	3 ... 19999	10 ... 19999	15 ... 19999
	[m ³]	1 ... 19999		
	[scf]	0.1 ... 1999.9	0.4 ... 1999.9	0.5 ... 1999.9
Hysteresis setting range		0%FS ... 90%FS		

Immissions/emissions	
Storage temperature	[°C] -20 ... +80
Protection class	IP65
Pressure drop	[mbar] <100
Electrical protection class	III

Pin allocation		
Plug, M12x1, 5-pin	Pin	Meaning
	1	Operating voltage +24 V DC
	2	Binary output B
	3	0 V
	4	Binary output A
	5	Analogue output C

Flow measuring range¹⁾ qn as a function of operating pressure p1



- 1) For an operating pressure of more than 5 bar, the flow sensor can determine measured values with the specified accuracy over the entire measuring range. For an operating pressure below 5 bar, the measuring range with the specified accuracy is reduced as shown in the diagram.

Flow sensors SFAM

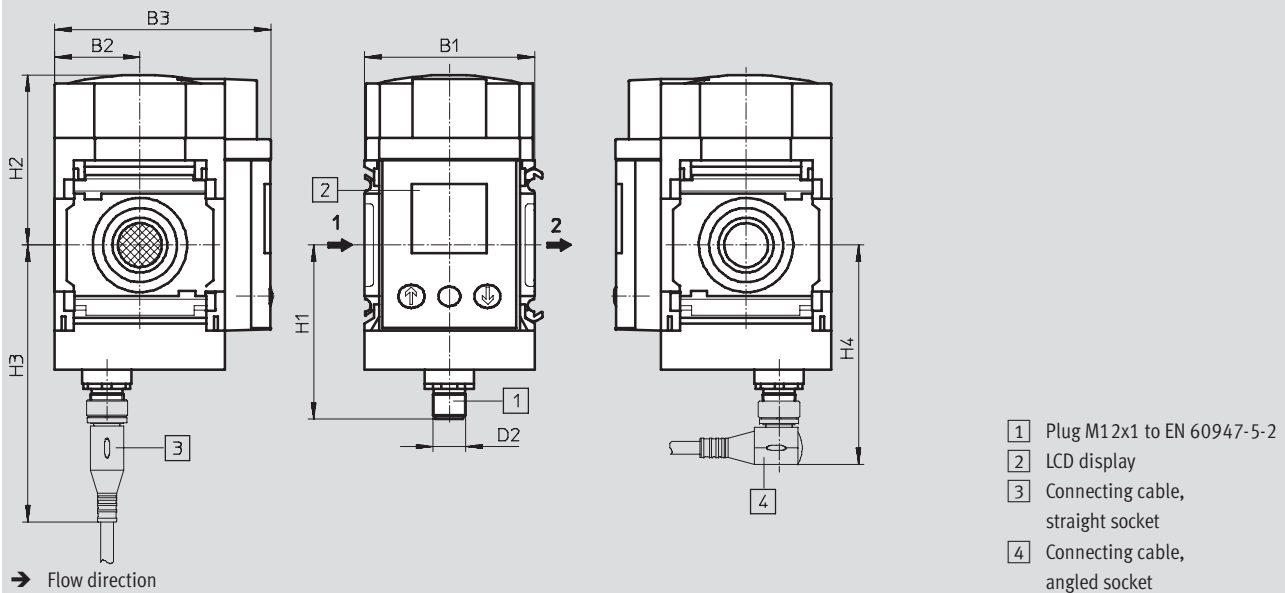
Technical data

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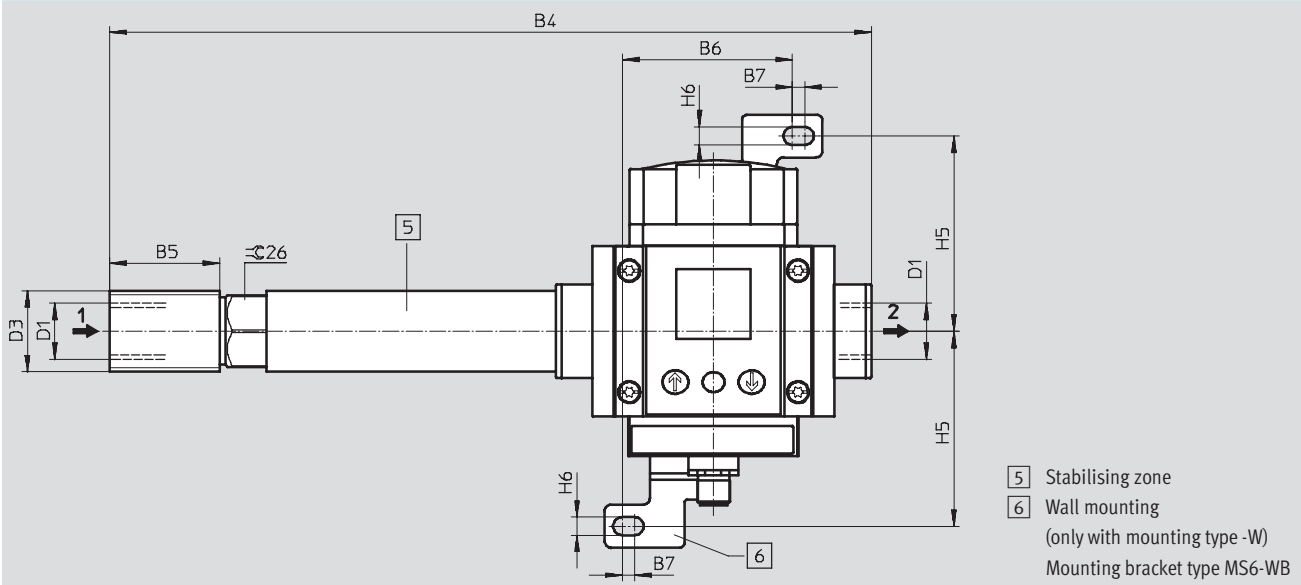
Dimensions

Download CAD Data → www.festo.com/us/cad

Manifold assembly in MS series service unit combination



Threaded mounting of individual device


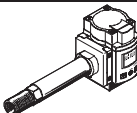


Type	B1	B2	B3	B4	B5	B6	B7	D1	D2	D3	H1	H2	H3	H4	H5	H6
SFAM-...-M	62	31	78.7	—	—	—	—	—	M12x1	—	63.5	62.1	101	80	—	—
SFAM-...-T	62	31	78.7	277	40	—	—	G½	M12x1	G¾	63.5	62.1	101	80	—	—
SFAM-...-W						61.9	4.5								71	6.6

Flow sensors SFAM

Technical data

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Ordering data				
Version	Electrical output	Flow measuring range [l/min]	Part No.	Type
Manifold assembly in MS series service unit combination				
	2x PNP or 2x NPN, 1 analogue output 4 ... 20 mA	10 ... 1000	564930	SFAM-62-1000L-M-2SA-M12
		30 ... 3000	564934	SFAM-62-3000L-M-2SA-M12
		50 ... 5000	564938	SFAM-62-5000L-M-2SA-M12
	2x PNP or 2x NPN, 1 analogue output 0 ... 10 V	10 ... 1000	564932	SFAM-62-1000L-M-2SV-M12
		30 ... 3000	564936	SFAM-62-3000L-M-2SV-M12
		50 ... 5000	564940	SFAM-62-5000L-M-2SV-M12
Threaded mounting of individual device				
	2x PNP or 2x NPN, 1 analogue output 4 ... 20 mA	10 ... 1000	565375	SFAM-62-1000L-TG12-2SA-M12
		30 ... 3000	565379	SFAM-62-3000L-TG12-2SA-M12
		50 ... 5000	565383	SFAM-62-5000L-TG12-2SA-M12
	2x PNP or 2x NPN, 1 analogue output 0 ... 10 V	10 ... 1000	565376	SFAM-62-1000L-TG12-2SV-M12
		30 ... 3000	565380	SFAM-62-3000L-TG12-2SV-M12
		50 ... 5000	565384	SFAM-62-5000L-TG12-2SV-M12

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Ordering data – Modular product

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Ordering table				
		Condition s	Code	Enter code
M	Module No.		563796	
	Function		Flow sensor	SFAM
	Grid dimension [mm]		62	-SFAM
	Flow measuring range l/min.		Max. 1000	62
			Max. 3000	
			Max. 5000	
	Flow input		Unidirectional, from left	
			Unidirectional, from right	
	Type of mounting		Manifold assembly	
			Threaded mounting	
			Wall mounting	
O	Pneumatic connection		Not specified	
			G $\frac{1}{2}$	
			$\frac{1}{2}$ " NPT	
M	Electrical output		2x PNP or NPN, 1 analogue output 4 ... 20 mA	
			2x PNP or NPN, 1 analogue output 0 ... 10 V	
	Electrical connection		Plug M12, A-coded	
O	Electrical accessories		Not specified	
			Angled plug socket, cable 2.5 m	
			Straight socket, cable 2.5 m	
			Angled plug socket, cable 5 m	
			Straight socket, cable 5 m	
	EU certification		Not specified	
			II 3GD	



1 G12, N12 Not with mounting type M
Mandatory data for mounting type T, W

Transfer order code

563796 SFAM - - - -U - - - - M12 - - - -

Flow sensors SFAM

Accessories

Ordering data – Connecting cables			Technical data → Internet: nebu	
	Number of wires	Cable length [m]	Part No.	Type
M12x1, straight socket				
	5	2.5	541330	NEBU-M12G5-K-2.5-LE5
		5	541331	NEBU-M12G5-K-5-LE5
M12x1, angled socket				
	5	2.5	567843	NEBU-M12W5-K-2.5-LE5
		5	567844	NEBU-M12W5-K-5-LE5

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