JEF300

Laser Measurement Sensor with integrated LEVEL CONTROL application (detecting)

Intended use

The JEF300 is a non-contact proximity intelligent measurement sensor. In standalone stationary operation, it is able to detect a number of separated objects, of which the dimensions are know and the alignment of which corresponds to a rectangular matrix. Objects are detected automatically from above. To do so, the matrix is defined by volume elements in columns and rows in the operating range of the JEF300 and then given one or more column-specific height switching levels (tresholds).

The device uses this, for example, to check if conveyor-fed or stationary containers are complete, contain homogenous loads per column or are empty, and the filling levels of bulk materials.

An object trigger controls the start and finish of the detection process, for example, an external photo-electric switch. The JEF300 outputs the result via 2 switching outputs when the defined conditions are met. This refers to overshooting or undercutting of the switching levels for the elements of the entire matrix or a range. On request, the result is also available via one of its data interfaces as an event. It encompasses the entire matrix and contains additional object height values, which refer to the configured Cartesian coordinate origin.

The JEF300 is designed for inside use with a scanning range of 0.4 to 2 m (1.31 to 6.56 ft) at a constant depth of focus.

These operating instructions serve to quickly and easily commission the JEF300. They allow the user to obtain initial output of detection results with the default setting.

Detailed information about the mechanical and electrical installation as well as the data output format for the detection results are provided in *Technical Information JEF300/500*. In-depth information about the configuration is available in the online help of the SOPAS ET configuration software. The information can be accessed on the enclosed data carrier (DVD) or on the *JEF300 product site on the web (www.mysick.com/en/jef300)*

Safety information

- Read these instructions before commissioning the JEF300 in order to familiarize yourself with the device and its functions.
- The JEF300 corresponds to laser class 2. The human eye is not at risk when accidentally exposed to the laser radiation for short periods of time (up to 0.25 s). When intentionally exposed to the laser beam for longer periods of time, the retina of the eye may be damaged (➜ see *„Laser radiation danger!, page 4“*).
- Electrical connections between the JEF300 and other devices may only be made when there is no power to the system. Otherwise, the devices may be damaged.
- Turn the swivel connector unit with the electrical connections max 180° from end position to end position.
- Conducting cross sections of the supply cable from the customer's power system should be designed in accordance with the applicable standards. If the supply voltage for the JEF300 is not supplied via the optional CDB620 connection module, the JEF300 must be protected by a 0.8 A slow-blow external fuse at the beginning of the supply cable.
- The electrical circuits connected to the JEF300 must be implemented as SELV or PELV electrical circuits (SELV = **S**afety **E**xtra **L**ow **V**oltage; PELV = **P**rotective **E**xtra **L**ow **V**oltage).
- Only use the device under reliable environmental conditions (➜ see *„Technical specifications, page 6“* and *„Danger of potential equalization currents, page 6“*).
- Opening the screws of the JEF300 housing will invalidate any warranty claims against SICK AG.
- The JEF300 does not constitute personal protection equipment in accordance with the respective applicable safety standards for machines.

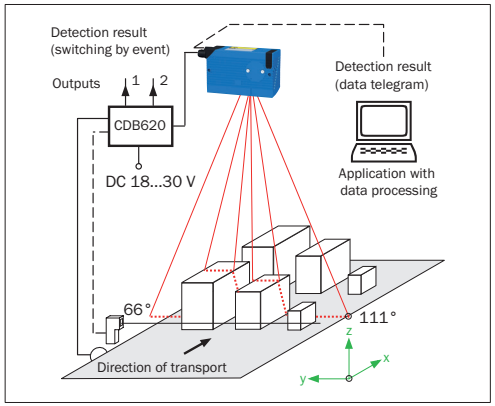
Commissioning and configuration

Operating principle of the JEF300

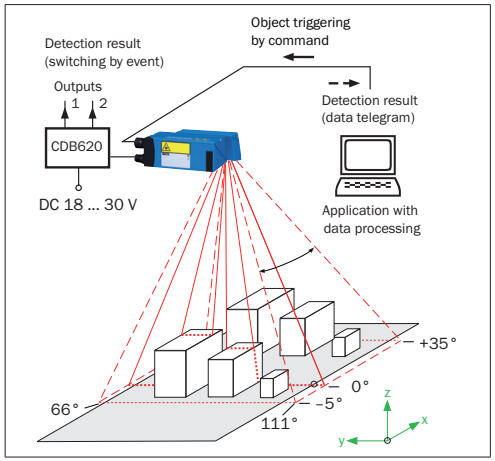
The JEF300 deflects a laser beam repeatedly in a circular scan on a plane at a high rotary frequency. If the laser beam scans adjacent objects, then a red scan line (as seen by the human eye) is generated on the objects as an active row. By remission, the objects return part of the transmitted light.

From this process, the JEF300 calculates the height of the individual objects at scanned, defined angular positions of the beam deflection. In its 45° field of view (circular sector), the JEF300 thereby detects the contour in the row, e.g. the objects in a two dimensional manner.

The JEF300 is available in two versions for application solutions. The **line scanner** (2D) records the matrix of **mutually moving objects**, which pass its scan line positioned rectangulary to the direction of transport. The conveying process causes the scanner to pass over the adjacent rows of the matrix. At a constant feed rate > 0, the configured device generates internal ticks. If the feed rate is irregular, for example, an attached incremental encoder continuously feeds movement information to the device as a reference base.



Line scanner JEF300: Detection of moving objects



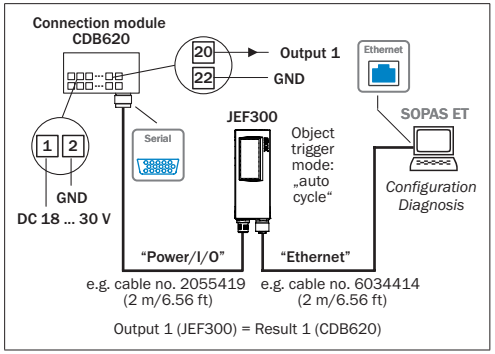
Line scanner JEF300 with oscillating mirror: Detection of stationary objects

The **line scanner with oscillating mirror** (3D) allows automatic scanning of the matrix with the laser beam when the objects are stationary or moving at low speed. It also deflects the laser beam **rectangularly to the scanning direction** with a defined angular speed in a range of max 40° asymmetrically around the zero position.

The JEF300 attains the matrix by measuring the **height values** in all defined volume elements of the matrix and analyzes from this the column-specific occurrence of overshot or undershot switching level.

Step 1: Electrical installation

1. Connect the PC directly to the communication interface of the JEF300 (recommendation: Ethernet, 4-pin M12 socket).
2. Turn on and start the PC.
3. Supply power to the JEF300 (17-pin M12 plug). After successful initialization and self-test, the "Ready" LED illuminates green.



Block diagram for initial commissioning with the default settings

Step 2: Mounting and alignment

1. Depending on the country of use, cover the US-English laser warning label with one of the provided language versions (German or French).
2. Optional: Mount the JEF300 to a mounting accessory ordered separately (mounting kit 1, 2 or 3), see the "Mounting" chapter in the *Technical Information*. The kits allow for fine adjustment in 2 or 3 axes.
3. Otherwise, mount the JEF300 at the site of installation with at least two M5 screws on a prepared mounting above the reference base (e.g. conveyor belt). Use the threaded mounting hole in the housing in pairs (top or bottom next to the connections, ➜ see *„Description of the device, page 3“*). Insert the screws into the threaded mounting holes max 5 mm (0.19 in).
4. Observe the following conditions for the JEF300:
   - Mount as shock and vibration-free as possible.
   - Ensure there is a clear view to the object to be measured and the reference base.
   - Line scanner: Scan line at a right angle to the direction of transport with the measurement window vertically downwards.

- Line scanner with oscillating mirror: Device plane-parallel to the level ground, measurement window vertically downwards.
- Distance to the nearest object min 400 mm (1.31 ft)
- Position of the 90° beam (vertically downwards) centered over the conveyor system width to minimize measurement shadowing by the radial scanning.
- Prevent the laser beam from shining on glossy or reflective objects (e.g. stainless steel). This can produce measured value jumps in the measurement results.
- Illumination by ambient light max 2,000 lx
- Avoid direct sunlight (window, skylight) or other sources of heat. This causes the temperature in the device to increase improperly.

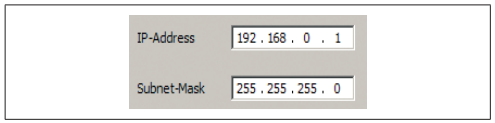
5. To **demonstrate the operating principle** of the JEF300 with the default settings, temporarily mount the device **1,000 mm** above the reference base.

Step 3: Display and configuration

The SOPAS ET configuration software is used by default to adjust the JEF300 parameters to the application and according to the diagnostics in case of error.
The JEF300 outputs its current scan line in support to SOPAS ET (SOPAS ET requirement: V2.34 Build 4562 Setup 5002 or higher).

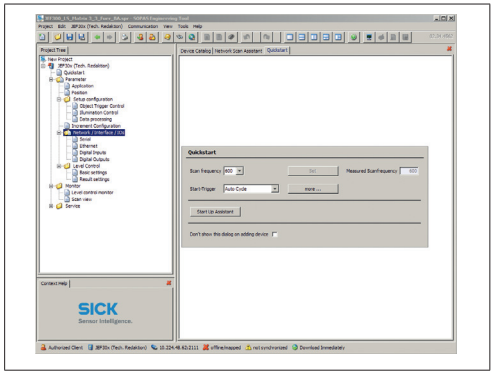
a. Install and launch the SOPAS ET configuration software

1. Install the software on the PC from the enclosed "Software & Manuals Identification & Measuring" DVD (alternatively, download and install it from the website "*www.sick.com/software*", SOPAS ET software type).
   In this case, select the "Complete" option as selected by the install wizard. Administrator rights may be required on the PC to install the software.
2. Start the "**SOPAS**" program option after completing the installation.
   Path: Start > Programs > SICK > SOPAS Engineering Tool > SOPAS.
3. Establish communication between SOPAS ET and JEF300 via Ethernet.
   The connection wizard (WELCOME TO SOPAS) automatically launches and searches for attached SICK devices. Select the JEF300 check box and click the ADD button.
4. Follow the steps in the connection wizard.
   Default IP address of the JEF300:



5. Assign the required IP address / subnet mask to the JEF300 and close the wizard. The IP address / subnet mask should correspond to the address space of the later application.
6. Select the JEF300 from the list of available devices (ADD).
   SOPAS ET establishes communication with the JEF300 and loads its current device description of the device (parameters) for display in the program window.
   The device QUICK START window appears on the right.
   The currently measured scan frequency of the JEF300 also appears on the right.

SOPAS ET program window for JEF300

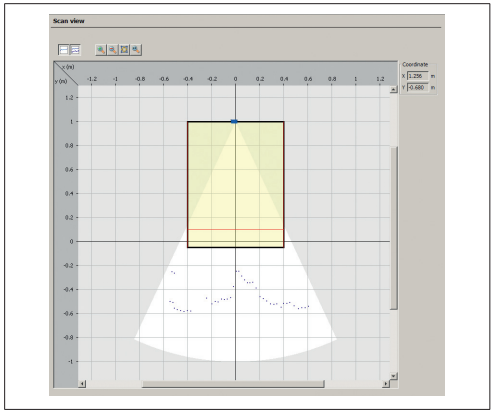


Navigation tree (left) and device QUICK START window (right)

Call up the scan display

By default, the JEF300 has an active measuring range with a single column (width 800 mm, height 1,000 mm, depth 1,000 mm) with the switching level 100 mm above the reference base. The 90° laser beam (vertically downwards) lies on position 0. The detection result (output condition "above switching level") is output via switching output 1 as well as optically in color in the Level Control Monitor of the SOPAS ET configuration software.

1. Click the SCAN VIEW entry in the navigation tree.
   When the window opens, SOPAS ET sends an output of measured values request to the JEF300.

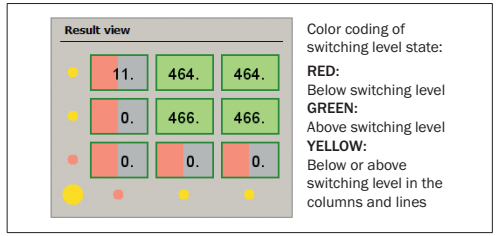


Zoomed view: Active measuring range (yellow rectangle with red border) and vertical switching level (red) of the default setting on the JEF300 as well as the current status the scan line (blue)

   The "auto cycle" object trigger mode (default setting) causes the JEF300 to continuously repeat the detection process. SOPAS ET does **not** display the scan data in real time and always restricted to one-twentieth of the current scan frequency. Optionally, the data is loaded with a median filter (JEF300 default).
2. If you now introduce an object in the field of view, e.g. a hand, and playfully change its position, the course of the displayed scan line also changes. If the hand is below or above the red line of the switching level, then the displayed image changes in the results display of the LEVEL CONTROL MONITOR.

Query the results display in the Level Control Monitor

3. Click the LEVEL CONTROL MONITOR entry in the navigation tree. SOPAS ET displays the volume elements as rectangles depending on the specified matrix with their associated height measurement values (in mm) for the detected objects. In this case, the matrix is comprised of 3 x 3 elements instead of the default setting.



Results display for switching threshold evaluation in a 3 x 3 matrix.

Small colored circles in the horizontal axis indicate the respective status of a column above each of the rows and in the vertical axis the status of a row is shown to the right above each of the columns. The large circle at the bottom left designates the entire matrix. A gray semi-section to the right in the element indicates the specified error status.

b. Configure the application (overview)

To avoid losing any parameters changed during the configuration, do **not** turn off the supply voltage to the JEF300.

In the navigation tree of SOPAS ET under PARAMETERS, edit the entries for the required device pages. The user is automatically registered at the "Authorized client" user level on the JEF300 after starting the program (see *status bar* below in the program window). SOPAS ET immediately transmits any changed parameters (default) to the JEF300. All changed parameters are only temporarily stored in the device for the time being and are not stored in the computer at all.

Mount, align and locate the device

1. Mount the JEF300 in the z-axis as far as possible above the detection point to use the full operating range (➜ see *„Measuring field diagrams, page 6“*).
2. Align the longer side of the measuring window parallel to the rows to be formed. Align the JEF300 precisely in all three axes (angle alpha = 90°, beta = 0° and gamma = 0°) as shown under the POSITION entry.
3. Locate the JEF300 with its internal coordinate system to the world coordinate system of the reference base (e.g. conveyor system when using a line scanner).
   To do so, click the APPLICATION entry in the navigation tree. Enter the x-position (position of measurement origin) and all three angles of the JEF300. Launch the **Start Up Assistant** and follow the steps provided. The wizard calculates the actual alpha angle as well as the z and y positions of the JEF300 in the world coordinates system. The JEF300 may rotate the position of its coordinates system (angle gamma) internally to align itself parallel to the reference base.
   Once completed, check the values under POSITION.

Configure Level Control

4. Under LEVEL CONTROL, click the BASIC SETTINGS option.
   - Define the required measuring range in the z-axis. To check it, switch to SCAN VIEW.
   - Define the required number of columns (y-axis) and rows (x-axis) to form the matrix.
     Define the column widths and distances to each other via incrementing y-values (from – to +).
     Determine the height switching level (z-axis) per column. To check it, switch to SCAN VIEW. The rows in the x-axis are not displayed.
5. Under LEVEL CONTROL, click the RESULT SETTINGS option.
   - Define how invalid values in volume elements are handled.
   - Switching outputs: Define result output conditions and their reference to the matrix (source).

Configure further device settings

6. Perform the following settings for:
   - Object trigger control, increment configuration (for line scanners), data processing (scan frequency)
   - Type-dependent oscillating mirror (mode)
   - Function of switching inputs
7. For moving objects with an irregular feed rate, mount an incremental encoder in the conveyor segment of the measuring point if necessary and connect directly to one of the two physical switching inputs of the JEF300. Configure the debounce time of the input to 0 ms.
8. Test and if necessary modify the settings made when operating the system under real conditions.

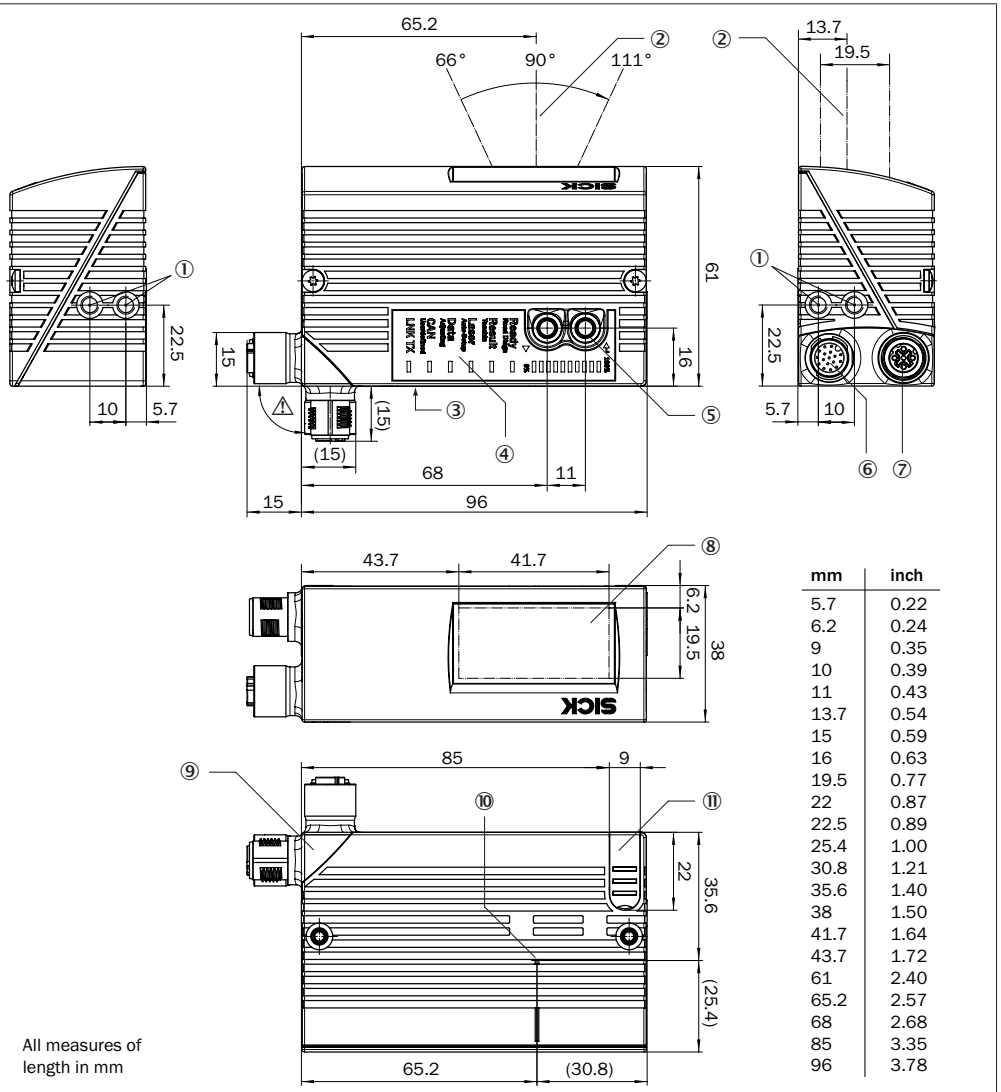
Complete the configuration

➢ Finally, in order to permanently store the overall configuration of the JEF300:
- Parameter set in the JEF300: Click the button.
- Parameter set as configuration file on the PC: Click the button and specify an intuitive file name and location in the dialog.

8014670/2012-02-24 • Subject to change without notice • SICK AG • Waldkirch • Germany • www.sick.com

Description of the device

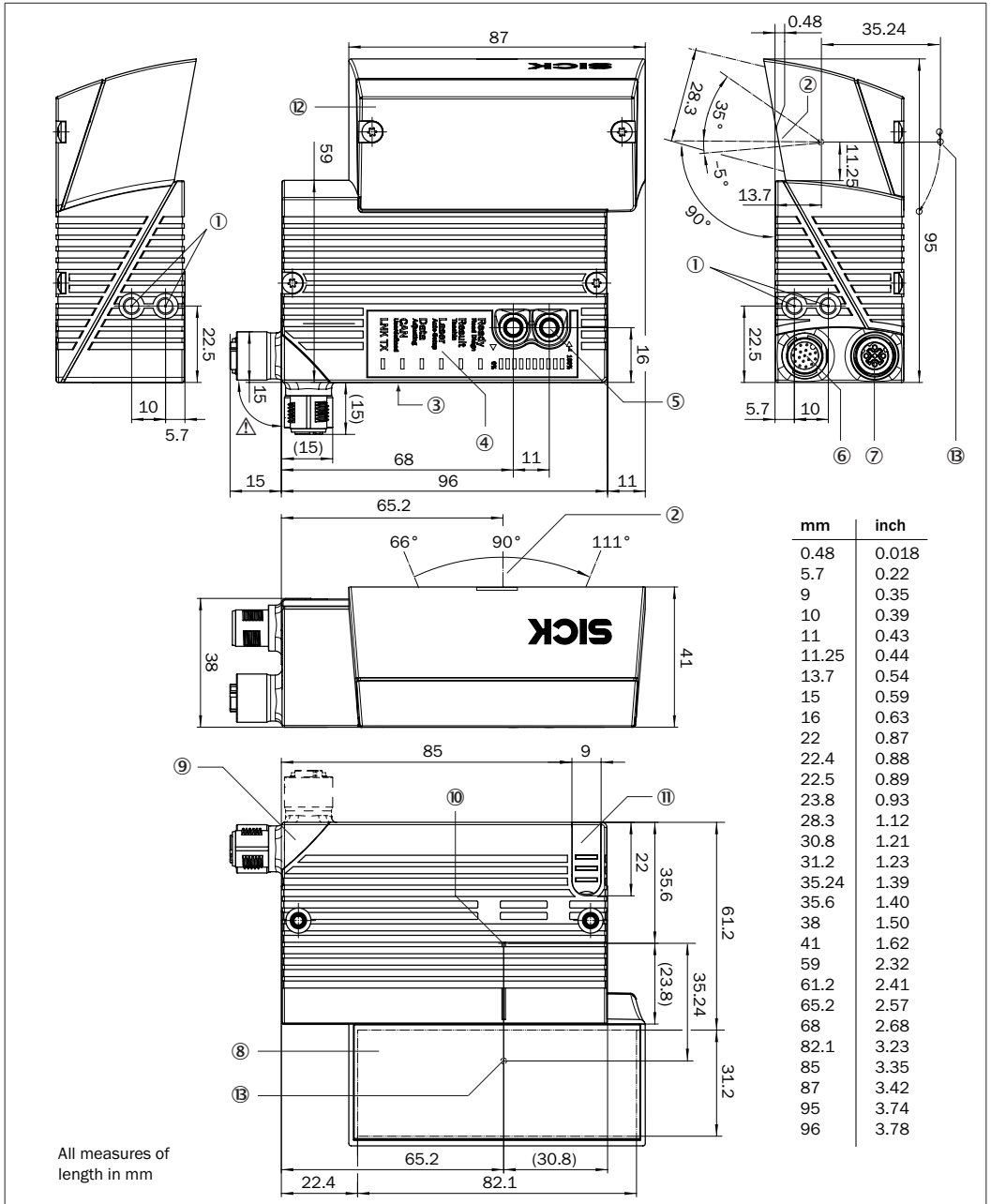
Line scanner device structure with frontal measurement window (JEF300-00000)



mm	inch
5.7	0.22
6.2	0.24
9	0.35
10	0.39
11	0.43
13.7	0.54
15	0.59
16	0.63
19.5	0.77
22	0.87
22.5	0.89
25.4	1.00
30.8	1.21
35.6	1.40
38	1.50
41.7	1.64
43.7	1.72
61	2.40
65.2	2.57
68	2.68
85	3.35
96	3.78

① 4 x threaded mounting hole M5, 5 mm (0.19 in) deep for mounting the JEF300
② Position of the laser beam (oscillating mirror: at deflection angle 0°)
③ Laser warning label class 2 / type plate
④ 6 x LEDs for status indicators (3 of which used for the JEF300) and bar graph (no function for JEF300)
⑤ 2 x function buttons (no function for JEF300)
⑥ "Power/Serial Data/I/O" connection, 17-pin M12 plug
⑦ "Ethernet" connection, 4-pin M12 socket
⑧ Measurement window (light inlet and outlet)
⑨ Swivel connector unit with electrical connections ⑥ and ⑦
⑩ Physical measurement origin on the mirror wheel (measuring zero point for line scanner), scanning vertex: pivot point of the scanning laser beam
⑪ Slot for MicroSD memory card, behind the black rubber cover
⑫ Oscillating mirror attachment (deflection of the scan line transverse to the direction of the beam deflection)
⑬ Virtual measuring zero point of the line scanner with oscillating mirror at deflection angle 0° (outside the housing), offset by 34.25 mm (1.39 in) from the physical measurement origin

Line scanner device structure with oscillating mirror attachment and side measurement window (JEF300-60000)



mm	inch
0.48	0.018
5.7	0.22
9	0.35
10	0.39
11	0.43
11.25	0.44
13.7	0.54
15	0.59
16	0.63
22	0.87
22.4	0.88
22.5	0.89
23.8	0.93
28.3	1.12
30.8	1.21
31.2	1.23
35.24	1.39
35.6	1.40
38	1.50
41	1.62
59	2.32
61.2	2.41
65.2	2.57
68	2.68
82.1	3.23
85	3.35
87	3.42
95	3.74
96	3.78

NOTE

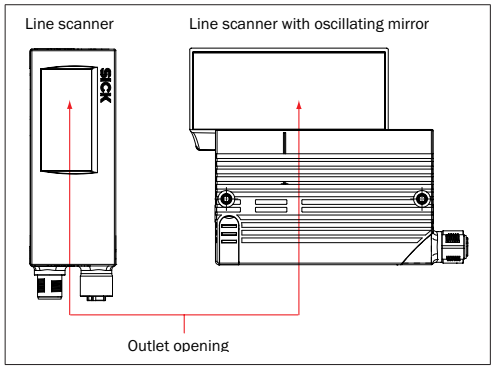
Risk of damaging the swivel connector unit

The connector unit may be turned max 180° from end position to end position.

⚠ CAUTION

Laser radiation danger!

The JEF300 uses a red laser diode and corresponds to laser class 2.
The entire measurement window is an outlet opening for the visible laser radiation.



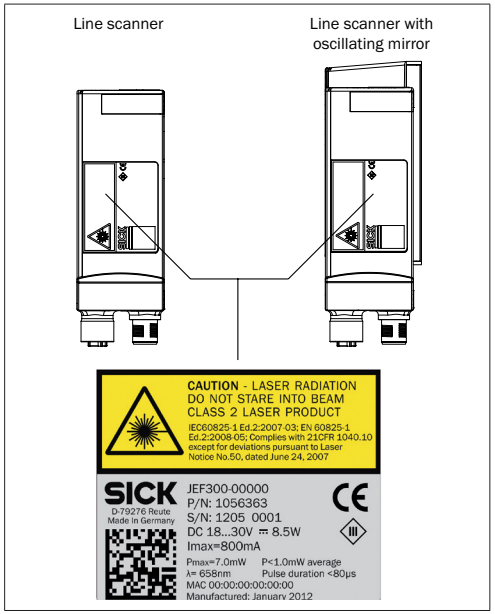
Outlet opening of the laser radiation on the measurement window of the JEF300

The human eye is not at risk when accidentally exposed to the laser radiation for short periods of time (up to 0.25 s). When intentionally exposed to the laser beam for longer periods of time, the retina of the eye may be damaged. The emitted radiation is harmless to human skin.

Caution – incorrect use can lead to the user being exposed to dangerous radiation.

- ➢ Never look directly into the beam path (similar to sunlight).
- ➢ Never point the laser beam at the eyes of people.
- ➢ When mounting and aligning the JEF300, avoid reflections of the laser beam off reflective surfaces.
- ➢ Do not open the closed JEF300 housing because this operation does not interrupt possible activation of the laser diode.
- ➢ Comply with the latest version of the applicable provisions on laser protection.

Important
Maintenance is not necessary to ensure compliance with laser class 2.



Design of the combination of black and yellow laser warning label (condition as delivered: English text) and type plate with performance data. Installation site of the plate

The JEF300 includes two self-adhesive laser warning labels in German and French for replacement as required.

Controlling the laser diode

In real operation (pulsing detection mode), the JEF300 turns the laser diode on and off for moving objects with the trigger signal of the conveyor system (object in field of view). Triggering occurs via the switching inputs of the JEF300 or by a command via one of the data interfaces.
A laser timeout configured with SOPAS ET (device page ILLUMINATION CONTROL) can be used to automatically switch off the laser diode for this type of object trigger control e.g. cycle stopped too long (conveyor system stopped). If the function is activated, the laser timeout is 10 min (default).

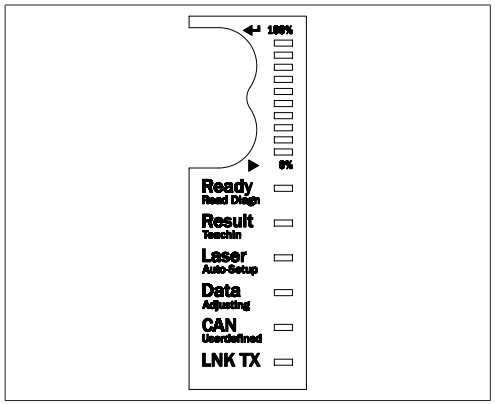
In the temporary "free running" pulsing mode used for purposes of configuration/diagnostics (no detection result), or "auto cycle", the laser diode is continuously or cyclically active and any configured timeout will be ineffective.

The "Laser" LED on the JEF300 illuminates while the laser diode is on. The JEF300 independently monitors beam generation and automatically shuts down the laser diode in the event of irregularities. In such case, the "Ready" LED illuminates red. The JEF300 will then no longer output any detection results.

Important

Continuous measurement ("Free running") negatively impacts the life of the laser diode.
It is recommended to only start the measurement in the process when there are objects to be detected. Control detection by command from the application or by external object triggering of the system.

Status indicators, functions



Status indicators on the first display level

LED	Display	Color	Status
Ready	–	–	No supply voltage
	●	Green	Device ready
	●	Red	Hardware fault
Result	–	–	(No function)
Laser	●	Green	Laser diode on
Data	–	–	(No function)
CAN	–	–	(No function)
LNK TX	●	Green	Physical Ethernet connection
Bar graph	–	–	(No function)

● = illuminated; ✹ = flashes

The "Ready" LED goes out while parameters are transmitted to or from the JEF300.

Status indicators for the second display level, bar graph and function buttons

No function for JEF300.

Possible assignment for switching level evaluation – switching outputs

The JEF300 outputs the result at the end of an object trigger via max 2 physical switching outputs, always related to **all** of the defined elements of the matrix. It is possible to independently signal switching levels per output as a fulfilled condition optionally as overshooting or undercutting (z-axis) for the following 4 areas:

- Entire matrix (all elements)
- Row No. x (all elements of the row over max 15 columns)
- Column No. x (all elements of the column over max 15 rows)
- Individual element No. x (1 to 225)

Output level

The switching outputs keep the active signal level (HIGH or LOW) depending on the selection:

- Internal timer-controlled
- Until object triggering is started next externally
- Until a command is received from the outside
- Permanent ("Device Ready")

Switching inputs

Both switching inputs of the JEF300 can be assigned one of the following functions independent of each other:

- Start, Stop or Start/Stop of the internal reading interval by signals of an external object trigger, e.g. photo-electric switch or PLC.
- Signal processing of a single-channel incremental encoder (no direction detection), max switching frequency 300 Hz.

For a detailed description of the setting options for switching inputs and outputs, see *online help in SOPAS ET*.

Additional inputs and outputs

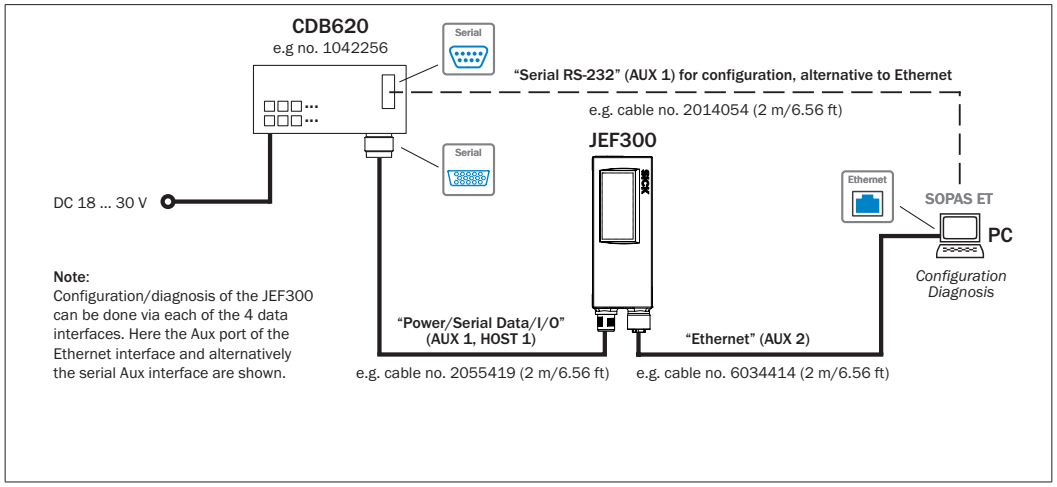
If the CDB620 connection module is also equipped with parameter cloning module CMC600, then the JEF300 will have each two additional external switch inputs and outputs available on the CDB620. They are software-controlled via the AUX serial interfaces of the JEF300 and have the same functionality as described above. However, they are not suitable for time critical applications such as connecting an incremental encoder.

Default settings for LEVEL CONTROL

Parameter	Value
Scanning frequency	600 Hz
Number of columns/rows (lines)	1 /1 (1 Element)
Measuring range, width (y-axis)	800 mm (±400 mm)
Measuring range, height (x-axis)	1,000 mm
Row length (x-axis)	1,000 mm
Height of switching level (x-axis) beyond reference base	100 mm
Object trigger	Auto cycle
Result output	Switching output 1 Active high. "above switching level" (Source: entire matrix) Dwell time 100 ms
Line scanner with oscillating mirror, additionally:	
Operating mode	Free-running, oscillating (–5° to 0° to +35° in x-axis)
Number of periods	1
Cycle duration	2,000 ms
Phase 1/phase 2 ratio	10

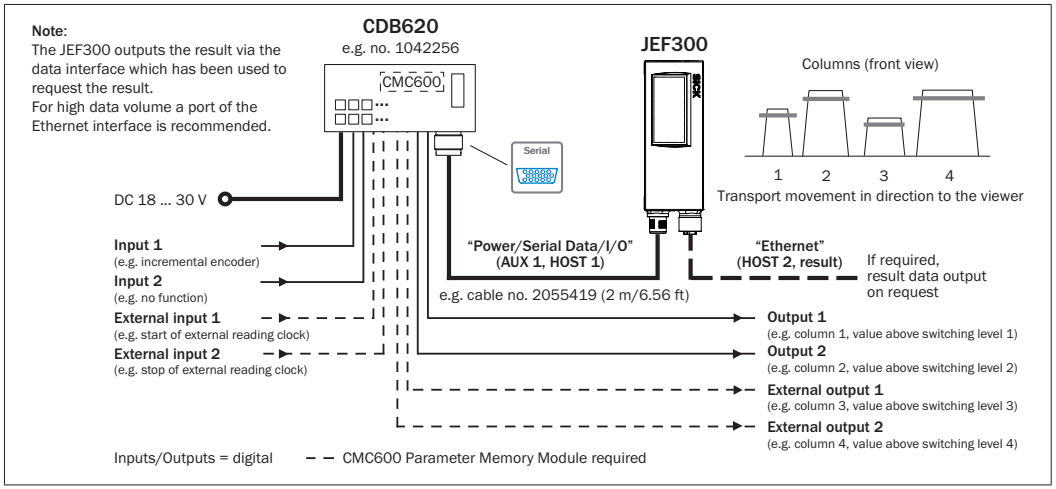
Overview of all interfaces and connection options

Configuration/diagnostics



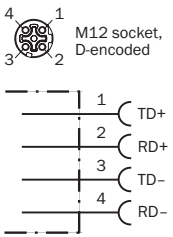
Note:
Configuration/diagnosis of the JEF300 can be done via each of the 4 data interfaces. Here the Aux port of the Ethernet interface and alternatively the serial Aux interface are shown.

Detection mode

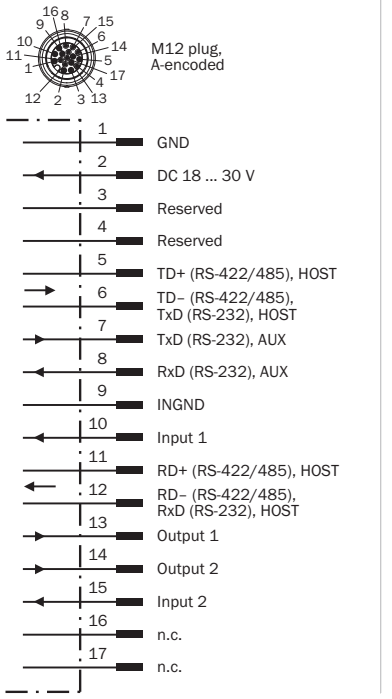


Overview of pin assignment

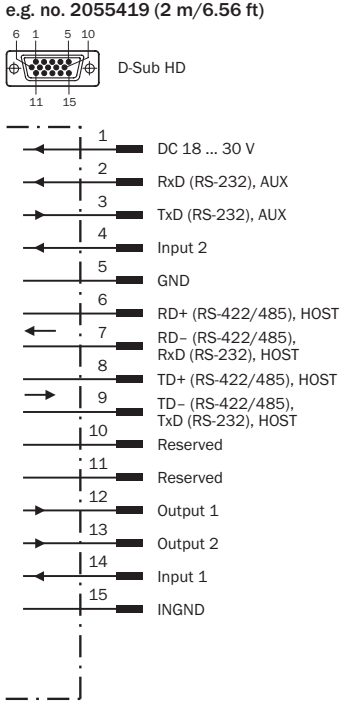
"Ethernet" connection



"Power/Serial Data/I/O" connection



Plug of the connection cable e.g. no. 2055419 (2 m/6.56 ft)



Input = digital switching input Output= digital switching output

MicroSD memory card (optional accessory)

A memory card is not included in the scope of delivery.

Function

If a memory card is plugged into the JEF300, it saves any permanent change to the current parameter set to the memory card (Parameter Cloning).
For the security concept, see *online help in SOPAS ET*.

Insert memory card

Only use types approved by SICK to ensure reliable function of the memory card. The JEF300 supports memory cards up to max 1 GB.

The card slot (➜ see ⑪ in *„Description of the device, page 3“*) can be accessed on the JEF300 behind the black rubber cover.

NOTE

Risk of damage due to moisture

➢ Protect the JEF300 against moisture and dust when the cover is open. To adhere to the IP 65 protection class during operation, the black rubber cover must be flush mounted on the housing.

1. Turn off the supply voltage to the JEF300.
2. Insert the memory card into the slot with the contacts towards the back and top (with the "MicroSD" lettering being the top). Carefully slide the cart into the slot until it engages.

NOTE

Risk of data loss or irreparable damage to the memory card

When writing to the memory card, do not turn off the supply voltage or remove!

Remove the memory card

1. Make sure that data is not being written to the memory card due to a permanent change in the parameter set ("Device Ready" LED goes out briefly during the write operation).
2. Switch off the supply voltage to the JEF300 and remove the card once it is released.

8014670/2012-02-24 • Subject to change without notice • SICK AG • Waldkirch • Germany • www.sick.com

Technical specifications

Model name	JEF300-00000 (part no. 1056363) JEF300-60000 (part no. 1056364)
Scanning range	0.4 ... 2 m (1.2 m at 10 % reflectivity) 1.31 ... 6.56 ft (3.93 ft at 10 % reflectivity)
Scan angular range	≤ 45° (x-axis)
Scanning method	JEF300-00000: Line scanner JEF300-60000: Line scanner with oscillating mirror
Deflection angle of the oscillating mirror	Only JEF300-60000: –5° to 0 to + 35° (y-axis)
Scanning frequency	600 ... 700 Hz
Angular resolution	1° (fixed)
Response time	≥ 1 ms
Object reflectivity[1]	10 ... 130 %
Object shape	Virtually any object shape can be measured
Matrix structure	Rectangular comprised of max 15 columns and max 15 rows. Position and width of the columns freely positionable, row distance to each other freely configurable
Minimum column width	JEF300-00000: 43 mm JEF300-60000: 85 mm
Smallest object size (W x L x H)	JEF300-00000: 43 mm x 43 mm x 60 mm JEF300-60000: 85 mm x 85 mm x 85 mm
Smallest height threshold	60 mm above container base (reference base)
Evaluation	Overshooting or undercutting of the switching level per column, per element or over the entire matrix
Result output	On completion of the detection cycle Switching outputs: Overshooting or undercutting of the switching levels for the selected range Data interface: Overshooting or undercutting of the switching levels for matrix + height values of the objects
Measuring error	Systematic: ±25 mm Static (1 s): ±25 mm (depending on reflectivity and distance) Temperature drift: 0.5 mm/K
Ambient light safety	2,000 lx
Light source	Laser diode, visible red light (λ = 650 nm)
Laser class of the device	Laser class 2 acc. EN/IEC 60825-1 and 21 CFR 1040.10. Publication date of the standards, see warning label on the device
Host interface	Serial RS-232/RS-422/485 and Ethernet port[2] Serial: 300 Bd ... 500 kBd
Aux interface	Serial RS-232 and Ethernet port[2] Serial: 57.6 kBd
Switching input	2 x inputs (V_{in} = max 32 V, I_{in} = max 5 mA), opto-decoupled, max switching frequency 300 Hz Function, debouncing time, etc. configurable with SOPAS ET
Switching outputs	2 x outputs (each I_{OUT} ≤ 100 mA), not electrically isolated from the supply voltage, short-circuit proof/temperature protected, function adjustable with SOPAS ET
Electrical connections	2 x M12 cylindrical connectors (17-pin plug/4-pin socket) in connector unit (can be rotated 180°)
Optical indicators	3 x LED
Supply voltage	DC 18 ... 30 V, SELV/PELV acc. IEC 60364-4-41: 2005-12
Power consumption	JEF300-00000: typically 8.5 W[3] JEF300-60000: typically 9.5 W[3]
Housing	Aluminum die-cast, measurement window: glass

Model name	JEF300-00000 (part no. 1056363) JEF300-60000 (part no. 1056364)
Weight	JEF300-00000: Approx. 250 g (8.82 oz.) JEF300-60000: Approx. 350 g (12.35 oz.)
Electrical safety	Acc. EN 60950-1:2006-04 / A11:2009-03
Protection class	III acc. EN 61140: 2006-08
Enclosure rating	IP 65 (EN 60529: 1991-10/A2: 2000-02)
EMC	Radiated emission: Residential area acc. EN 61000-6-3: 2007-01 Electromagnetic immunity: Industrial environment acc. EN 61000-6-2: 2005-08
Vibration resistance	Acc. EN 60068-2-6: 1995
Shock resistance	Acc. EN 60068-2-27: 1993
Ambient temperature	Operation: 0 ... +40 °C (+32 ... +104 °F) Storage: –20 ... +70 °C (–4 ... +158 °F)
Relative humidity	Max 90 %, non-condensing

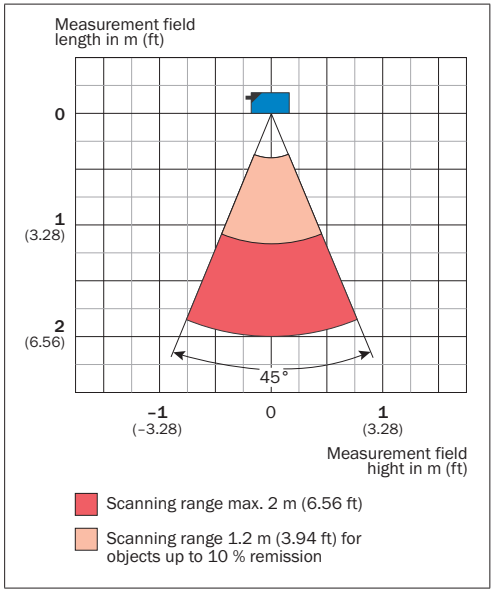
1) Outside of the specified remission values, the JEF300 outputs the object height 0 mm

2) Ethernet 10/100 MBit/s

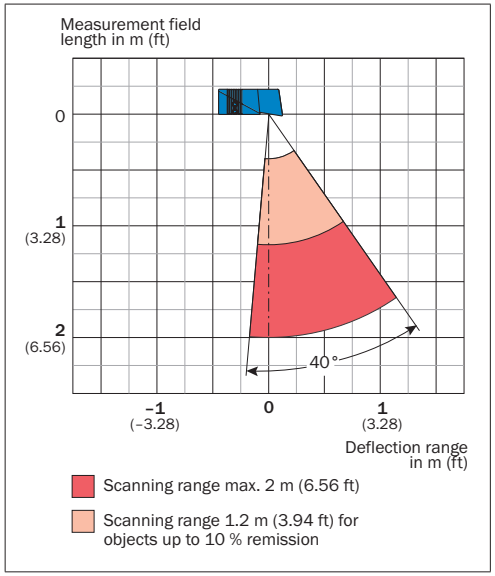
3) Without load on the output signal switching devices

For further technical specifications, see the *Online data sheet* on the product site on the web (*www.mysick.com/en/jef300*).

Measuring field diagrams



Operating range of the JEF300



Deflection width of the JEF300 line scanner with oscillating mirror

Explanation of electrical safety

⚠ WARNING

Danger of potential equalization currents

The JEF300 is designed to be operated in a system with proficient grounding of all connected devices and mounting surfaces to the same ground potential. If this condition is not met, potential equalization currents may flow across the cable shields under certain circumstances and lead to the following hazards: Dangerous contact voltage on the metal housing, malfunction or destruction of the JEF300 and heating of the cables up to spontaneous ignition.

➢ See the "*Electrical installation*" chapter in the *Technical information* on the enclosed DVD or on the product site on the web (*www.mysick.com/en/jef300*) for measures to eliminate hazards.

Scope of delivery

- JEF300 in the version ordered, Ethernet connection (M12 socket) with protective plug
- 1 set laser warning labels in German/US English and French/US English to cover the English/US English plate as required
- "Software & Manuals Identification & Measuring" DVD (no. 2039442)
- Printed operating instructions in German and English; in other languages as PDF on the DVD if available
- Optionally ordered accessories if available

Maintenance and care

The JEF300 does not contain any components that require maintenance. Maintenance is not necessary to ensure compliance with laser class 2.

Important

➢ Regularly check the measurement window (glass) for soiling (e.g. dust, abrasion, moisture, etc.).

➢ To maintain full detection performance, gently clean the window in case of soiling with a soft, damp cloth (mild cleaning agent). Avoid scratches and smudges on the window.

Sources for obtaining additional information

Additional information about the JEF300 and its optional accessories can be found in the following places:

"Software & Manuals Identification & Measuring" DVD (no. 2039442)

- JEF300/500 technical information (supplementary information, e.g. for installation, electrical installation)
- These operating instructions in German and English
- SOPAS ET configuration software with integrated online help
- Ordering information in the JEF300/500 product information
- Detection and Ranging Solutions product catalog
- Publications dealing with the accessories

Product web page for the JEF300 (www.mysick.com/en/jef300)

- Suitable accessories
- Detailed technical specifications (online data sheet)
- Dimensional drawing and 3D CAD dimension models in various electronic formats
- Detection and Ranging Solutions product catalog
- JEF300/500 product information
- JEF300 operating instructions in German and English, in other languages if available
- EC-Declaration of Conformity
- SOPAS ET configuration and software updates
- All publications contained on the aforementioned DVD (via links)

Documents on request

- Overview of JEF300 command strings

Support is also available from your sales partner: *www.sick.com/worldwide*.

8014670/2012-02-24 · 8M/MC/TEO · Printed in Germany (2012-04) · All rights reserved · Subject to change without notice