



AUTOMOTIVE & RAILWAY ELECTRONICS



Quality All





ABOUT US

ERA WAS FOUNDED IN 1968 AND FROM THE VERY BEGINNING, BECAME THE SYMBOL OF QUALITY AND THE TRADITION OF DESIGNING INNOVATIVE, CREATIVE AND COST EFFECTIVE ELECTRONIC PRODUCTS.

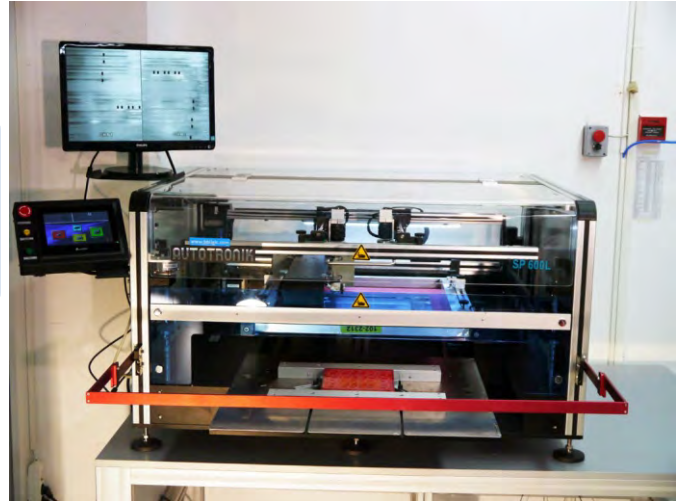
ERA IS THE LEADING SUPPLIER OF GLOBAL AUTOMOTIVE AND RAILWAY VEHICLE MANUFACTURERS. ERA HAS MORE THAN 50 YEARS OF EXPERIENCE IN DESIGNING AND DEVELOPING INTERIOR LIGHTING SYSTEMS FOR AUTOMOTIVE AND RAILWAY VEHICLES.

ERA EXPORTS ITS PRODUCTS MAINLY TO EUROPE AND 56 OTHER COUNTRIES WORLDWIDE.

OUR PLANT

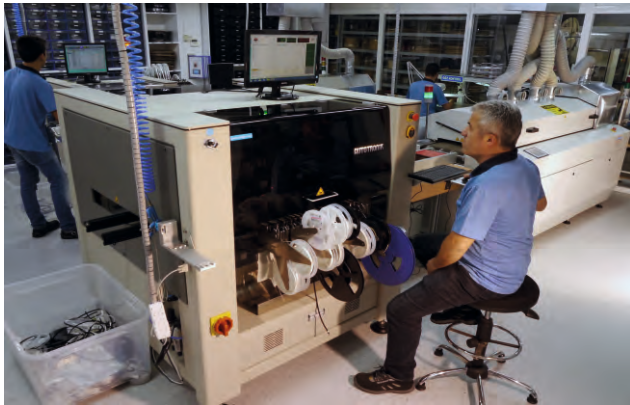
- ❖ **CLOSED AREA:** 5200 m², 4 floors
- ❖ **PRODUCTION ENVIRONMENT:**
 - CONDUCTIVE FLOOR
 - TEMPERATURE, DUST & HUMIDITY CONTROLLED CLIMATE SYSTEM
- ❖ **PRODUCTION CAPACITY:**
 - COMPONENTS INSERT CAPACITY: 21,000,000 PCS/YEAR
- ❖ **SOLDERING CAPACITY:** 630,000 FRAMES /YEAR (SIZE: 230X380 MM)
 - EQUIPMENT CAPACITY: 810,000 UNITS/YEAR

- ✦ TEMPERATURE AND HUMIDITY CONTROLLED, ESD PROTECTED SMD ROOM
- ✦ AUTOMATIC SMD PICK & PLACE AND SOLDERING



Solder Paste Screening Machine

- ✦ AUTOMATIC COMPONENT INSERTION PROCESS



SMD Pick & Place Machine

- ✦ COIL & TRANSFORMER MANUFACTURING



Coil & Transformer Winding

- ✦ COMPONENT LEAD FORMING PROCESS
- ✦ AUTOMATIC CABLE CUTTING & STRIPPING AND CRIMPING PROCESS



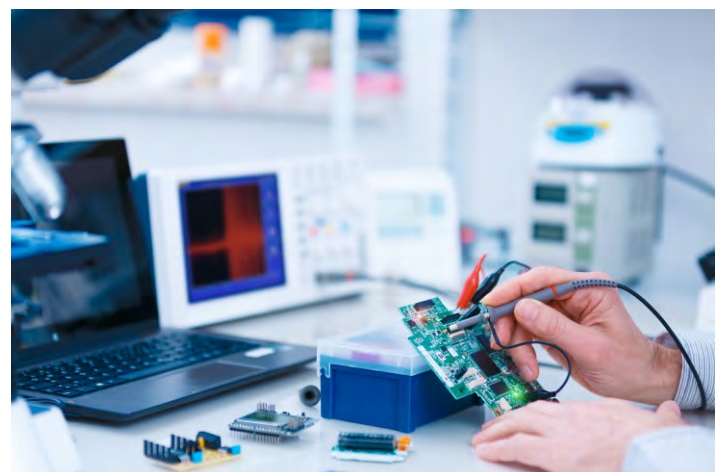
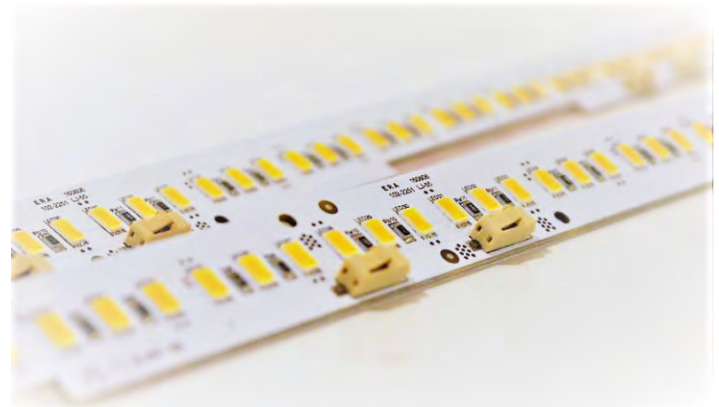
Cable Cutting & Stripping and Crimping

- ✦ PCB MANUAL ASSEMBLY & SOLDERING PROCESS
- ✦ PCB CLEANING PROCESS
- ✦ DOUBLE WAVE LEAD-FREE SOLDERING



QUALITY ASSURANCE SYSTEM

- ✦ IATF16949:2016 CERTIFIED
- ✦ IRIS CERTIFIED ISO/TS 22163:2017
- ✦ ISO 9001:2015 CERTIFIED
- ✦ ISO14001:2015 CERTIFIED
- ✦ 2002/95/EC ROHS COMPLIED
- ✦ EC/1907/2006 REACH COMPLIED
- ✦ RAILWAY STANDARTS (EN/50155:2007, EN50121-3-2, CEN/TS-45545 , EN60529, EN 61373, EN 60068-2-1, EN 60068-2-2)
- ✦ APQP ADVANCED PRODUCTION QUALITY PLANNING
- ✦ PPAP PRODUCTION PARTS APPROVAL PROCESS
- ✦ PROCESS FMEA FAILURE MODE EFFECT ANALYSIS
- ✦ MSA MEASUREMENT SYSTEM ANALYSIS
- ✦ PRODUCTION FUNCTIONAL TESTS FORMS: APPLIED 100%
- ✦ LIFE AND AGING TESTS
- ✦ LIGHT LEVEL AND CHROMATICITY MEASUREMENTS
- ✦ ON DELIVERY, QUALITY COMPLIANCE TESTS
- ✦ TEST FAILURE REPORTS ANALYSIS FORMS
- ✦ SUPER CONTROL TESTS FORMS: APPLIED BY SAMPLING METHOD
 - FUNCTIONAL AND SPECIFICATIONS TESTS
 - ERA STANDARD SPECIFICATIONS TESTS
 - ISO16750 TEST (WHEN DESIGN CHANGES)
 - EMC TESTS (WHEN DESIGN CHANGES)
 - LIFE TESTS
 - ENVIRONMENTAL TESTS
 - ARRHENIUS METHOD LIFE TEST

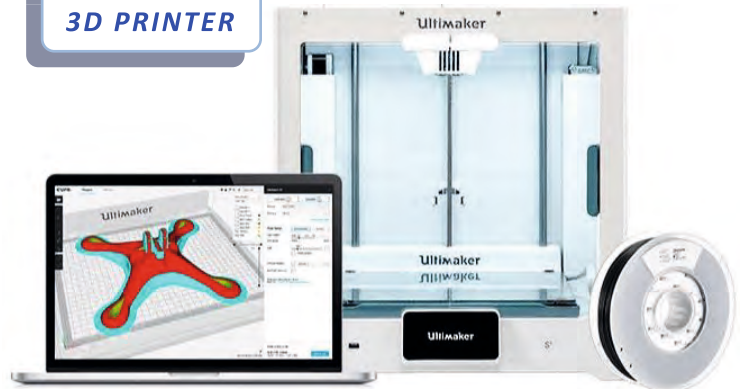




EXTENSIVE IN-HOUSE RESEARCH & DEVELOPMENT

- ✦ AUTOCAD 2D DESIGNING
- ✦ EASYPC PCB DESIGNING
- ✦ UNIGRAPHICS UGS 3D DESIGNING
- ✦ 3D PRINTER - ULTIMAKER
- ✦ ELECTRONIC LABORATORY TEST EQUIPMENT
- ✦ LIGHTING SIMULATION ANALYSIS - DIALUX
- ✦ CUSTOM DESIGN PROJECTS

ULTIMAKER 3D PRINTER

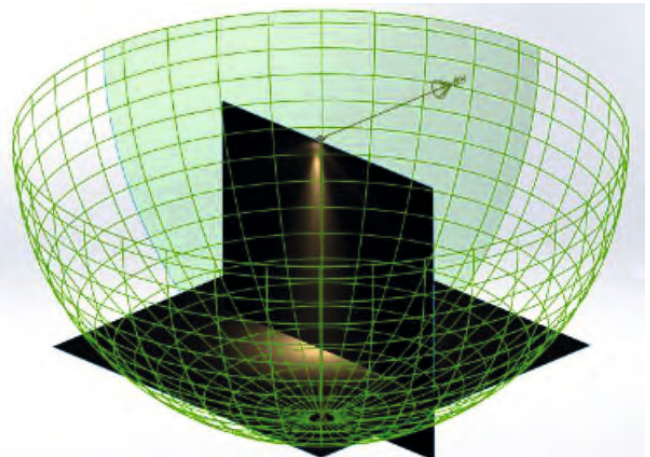


LPKF PCB FAST PROTOTYPING

- ✦ MILLING & DRILLING CIRCUIT BOARD PROTOTYPES
- ✦ CircuitCAM LITE AND BOARDMASTER SOFTWARE
- ✦ CAD PACKAGE
- ✦ DOUBLE SIDED BOARD DESIGN

PHOTOPIA OPTICAL DESIGN SOFTWARE

- ✦ LUMINAIRE OPTICAL DESIGN
- ✦ ILLUMINATION OPTICAL DESIGN
- ✦ NON-IMAGING OPTICAL DESIGN
- ✦ UV CURING AND DISINFECTION OPTICAL DESIGN
- ✦ SOLAR AND DAYLIGHTING OPTICAL DESIGN
- ✦ IR IRRADIATION OPTICAL DESIGN





IP67 9-32VDC 150Lux@30cm

AISLE & STEP LIGHT

- ✦ Suitable for aisle lighting, step lighting, plate lighting, WC lighting, baggage lighting
- ✦ Guided lighting up to 15°, vertically
- ✦ Mounting Options – metal cover, spring holder, surface mounting
- ✦ Color Options – White, Red, Green, Blue, Amber, etc.
- ✦ Low and High illumination options

DIGITAL BUS CLOCK

- ✦ Suitable for coaches, intercity buses and public vehicles
- ✦ Optional Features – 12H Mode, "WC", "STOP", "Temperature"
- ✦ Display area - 1.5" (38mm) red LED Display
- ✦ Real Time Clock option



IP50 12VDC 0.75W LED
IP50 24VDC 0.75W LED



BUS SIGN UNIT

- ✦ Suitable for coaches, intercity buses and public vehicles
- ✦ Sign Options – "STOP", "WC", "WC Occupied", "EXIT", "Fasten Seat Belt"
- ✦ Suitable for any text or sign
- ✦ Display area options - 155 x 48mm or 2 x (77 x 48mm)

IP50 12VDC 0.75W LED
IP50 24VDC 0.75W LED

DC-DC SWITCH MODE CONVERTER (LED DRIVER)

- ✦ Suitable for all 12VDC appliances with 24VDC operating voltage
- ✦ 10A @ 14VDC on full mode
- ✦ Back-Up Output
- ✦ One step or continuous dimming



IP51 18-32VDC 140W DIM



BUS INTERCOM SYSTEM

- ✦ Suitable for bus, minibus, ambulance
- ✦ 2 or 3 stations

IP50 12VDC 2.8Wmax 300Hz-3kHz
IP50 24VDC 2.8Wmax 300Hz-3kHz

All Automotive products are compliant with the certificates and standards below.
ISO 16752 , ECE-R118, ECE-R10 ~ EMC



LED LIGHTING FIXTURES

- ✦ Suitable for ceiling & main lighting
- ✦ No dot effect, No dark area
- ✦ Aluminium extrusion chassis and PC lens
- ✦ Recessed mounting, surface mounting types
- ✦ Dim and Night light options
- ✦ Customized length and function options

| | | | |
|------|----------|------|---------------|
| IP62 | 9-16VDC | 7.2W | 260lux@1meter |
| IP62 | 18-32VDC | 7.2W | 260lux@1meter |



| | | | |
|--------|----------|-------|---------------|
| 717mm | 12/24VDC | 11.5W | 190LUX@1meter |
| 1317mm | 12/24VDC | 23W | 300LUX@1meter |

LGP LED LIGHTING FIXTURES

- ✦ LED Lighting with Light Guide Panel
- ✦ Suitable for ceiling & main lighting
- ✦ Homogeneous lighting across the surface
- ✦ Aluminum extrusion and Multi Color PC Lens
- ✦ Low surface height of 20mm
- ✦ Dim and Night light options
- ✦ Customized length and function options

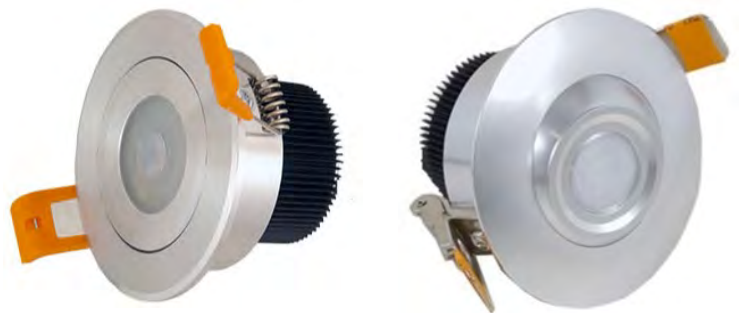


CUSTOM DESIGN LIGHTING UNITS

- ✦ Suitable for different and special purposes
- ✦ Suitable for ceiling, main lighting and night light
- ✦ No dot effect, No dark area
- ✦ Optional adjustable CCT(K) value (3000-6000K)
- ✦ Aluminium extrusion, plastic body and multi color pc lens
- ✦ Recessed mounting, Surface mounting
- ✦ 100% to 10% light level continuous dim control
- ✦ Integrated loud speakers

FIXED AND 360° MOVABLE HEAD SPOT LIGHTS

- ✦ Suitable for certain area lighting (reading light, door and driver area lighting, WC lighting)
- ✦ Fixed and 360° movable head
- ✦ Cool White or Warm White options



| | | | |
|------|---------|------|---------------|
| IP50 | 9-32VDC | 4.2W | 600lux@1meter |
|------|---------|------|---------------|

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 ISO 16752, ECE-R118, ECE-R10 ~ EMC

IRIS
Certification



IP51 77-137.5VDC 144W DIM

DC-DC SWITCH MODE CONVERTER (LED DRIVER)

- ✦ Suitable for all appliances with 110VDC & 72VDC battery
- ✦ 110VDC to 24VDC
- ✦ Short circuit protection , high output current protection
- ✦ 50% one step dim, Optional: 30% to 90% dim adjustable preset
- ✦ 6A @24VDC on full mode
- ✦ Efficiency better than 90%

✦ FIXED AND 360° MOVABLE HEAD SPOT LIGHTS

- ✦ Suitable for ceiling lighting, cabin lighting, step lighting, WC lighting
- ✦ 360° movable head
- ✦ Cool White or Warm White options
- ✦ Optional: Single axis +20°/-20°movable head



IP30 9-32VDC 3.8W 600lux@1meter
IP30 77-127.5VDC 3.8W 600lux@1meter



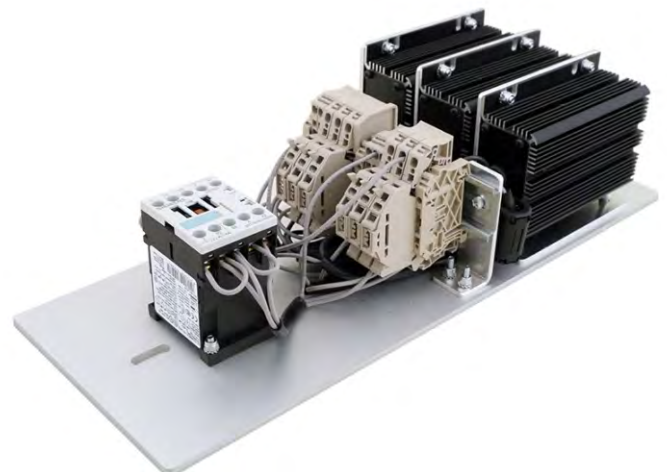
IP30 18-32VDC 8.8W 250lux@1meter
IP30 77-137.5VDC 8.8W 250lux@1meter

CABIN LIGHT

- ✦ Suitable for ceiling lighting, cabin lighting, step lighting, WC lighting
- ✦ No dot effect
- ✦ Beam Angle: 100°
- ✦ 50% one step dim, Optional: Stepless dimming

CONVERTER (LED DRIVER) GROUP

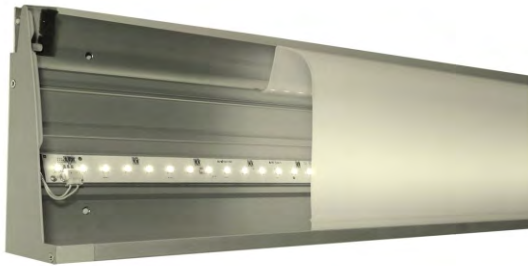
- ✦ Combination of our own Converters with relay control
- ✦ Automated lighting control using sensors for complete interior lighting solution with added dim mode control
- ✦ Powerful enough for an entire rail car
- ✦ Customizable for each and every customer
- ✦ Aluminium chassis for grounding and heat transfer



IP30 24VDC to 12VDC

All Rail products are compliant with the certificates and standards below.

ISO / TS 22163, EN 50121-2-3, EN50155,



CUSTOM DESIGN LIGHTING UNIT

- ✦ Suitable for ceiling & main light
- ✦ No dot effect, No dark area
- ✦ Optional adjustable CCT(K) value (3000-6000K) with VARIO LED system
- ✦ Aluminium extrusion chassis and pc lens profile
- ✦ Recessed and surface mounting types
- ✦ PWM controller for VARIO, Dim and RGB Colours
- ✦ 100% to 10% light level dim control

| | | | |
|------|--------|-------|---------------|
| IP50 | 24VDC | 19.2W | 150lux@1meter |
| IP50 | 110VDC | 19.2W | 150lux@1meter |

INDICATOR LIGHTS

- ✦ EN 45545 certified semitransparent mono block PC body
- ✦ 7 different color selection
- ✦ Adjustable brightness level with external PWM signal
- ✦ Surface and Recessed mounting option
- ✦ Front or back side mounting option
- ✦ High reliability & efficiency and vibration resistant



| | | |
|------|-------|---------|
| IP54 | 24VDC | 1.2Wmax |
|------|-------|---------|



CUSTOM DESIGN CONTINUOUS LIGHTING SYSTEMS

- ✦ Suitable for ceiling & main lighting
- ✦ No dot effect, No dark area
- ✦ Aluminum extrusion chassis and pc lens
- ✦ Recessed mounting, surface mounting types
- ✦ Dim and Night light options
- ✦ Customized length and function options

All Rail products are compliant with the certificates and standards below.

ISO / TS 22163, EN 50121-2-3, EN50155,
IEC 61373, EN 60529



EVOBUS E-CITARO



MERCEDES TRAVEGO



VOLVO 9700



MAN LION'S CITY



TAMLANS AMBULANCE



TEMSA MARATON



OTOKAR SULTAN



BOZANKAYA KAYSERI TRAM



DURMAZLAR E006 TRAM



BOZANKAYA GREENLINE BANGKOK METRO



METRO ISTANBUL



ISTANBUL ULASIM T4 TRAM



CRRC-MNG ANKARA METRO



CRRC-MNG ANKARA METRO



SIEMENS – AVENIO ULM TRAM



TCDD-E14000



CERTIFICATE

Management system as per
ISO 9001 : 2015

In accordance with TÜV NORD CERT procedures, it is hereby certified that



ERA Elektronik Sanayi ve Tic. A.Ş.
Dudullu O.S.B. 4. Cad., No 11, Y.Dudullu, Ümraniye,
TR-34776 İstanbul,
Turkey

applies a management system in line with the above standard for the following scope

Design and manufacturing of the electronic products

Certificate Registration No. 44 100 103526
Audit Report No. TR 1398

Valid from 2018-08-24
Valid until 2021-08-23
Initial certification 2010

Certification Body
at TÜV NORD CERT GmbH

Istanbul, 2018-08-24

This certification was conducted in accordance with the TÜV NORD CERT auditing and certification procedures and is subject to regular surveillance audits.

TÜV NORD CERT GmbH Langemannstraße 20 45141 Essen www.tuev-nord-cert.com



CERTIFICATE

Management system as per
IATF 16949:2016
(1st edition, 2016-10-01)

Evidence of conformity with the above standard has been furnished and is certified for

Era Elektronik Sanayi ve Tic. A.Ş.
Dudullu OSB, 4. Cad. No: 11, Ümraniye
34776 İstanbul
Turkey

Scope

Design and manufacturing of the electronic products

IATF Registration No. 0325606
Certificate Registration No. 44 111 100740

Issue date: 2018-08-27
Expiry date: 2021-08-26

Essen, 2018-08-27

This certification was conducted in accordance with the IATF „Rules for achieving and maintaining IATF recognition“.

TÜV NORD CERT GmbH Langemannstraße 20 45141 Essen www.tuev-nord-cert.de



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A13F2016 rev. 0001:17



ENVIRONMENTAL MANAGEMENT SYSTEM CERTIFICATE

Universal GmbH

This certificate is granted to the organization,

ERA ELEKTRONIK SANAYI VE TICARET A.S.

Dudullu Organize Sanayi Bolgesi 4.Cd. No:11
Umraniye/İSTANBUL/TURKEY

by review of SA2.004710 numbered report for the scope

**MANUFACTURING AND DESING OF ELECTRONIC PRODUCTS,
AUTOMOTIVE SPARE PARTS**

to certify that a management system in accordance with
standard's clauses is established and being implemented

DIN EN ISO 14001:2015

Certificate No : EMS 0317 005110

Original Certification Date : 2017-03-30

Issue / Revised Date : 2019-03-18

Expiry Date : 2020-03-29

Certification Period : 3 years (3rd year)



Universal GmbH

The authenticity of this certificate can be confirmed online or by e-mail to the Head Office via:
UNIVERSAL GmbH • Wilfried Diekmann Str., 20b, 44526 Lünen Germany • T: +49 (0) 231 9931 9960 • info@uni-cert.de • www.uni-cert.de



CERTIFICATE

awarded to

ERA ELEKTRONIK SAN. VE TIC. A.Ş.
DUDULLU O.S.B 4. CAD. NO:11 ÜMRANIYE
34176, İSTANBUL
Turkey

TÜV NORD CERT GmbH

confirms, as an IRIS Certification™ approved certification body, that the Management System of the
above organization has been assessed and found to be in accordance with the

**IRIS Certification™ rules:2017
and based on
ISO/TS 22163:2017**

for the activities of Design and Development and Manufacturing
for the scope of certification: 15 (Lighting)
Design and production of internal lighting parts

Certificate valid from: 25/07/2018

Certificate valid until: 30/01/2022*



Current date: 12/12/2018
Certificate-Register-No: 44739140008

* Providing that the subsequent surveillance audits are successful before the validity date of the previous audit.
Certification body address: Langemannstraße 20, 45141 Essen, Germany

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