FANLESS INDUSTRIAL COMPUTERS

Rugged Box PCs for automation industry
Many options of I/O interfaces to find
the optimal solution for the application,
highest reliability
because of fanless design,
Watchdog built-in

- Anti-vibration & shock
- Embedded OS
- Wide input voltage range
- Compact size
- Wide operating temperature
- Strong metal housing
- Low power consumption
- Long life and availability
- Operating time: 24h/7days a week

Full HD & Ultra HD Digital Signage Solutions
Wide range of industrial media players designed to 24/7h operation,
Perfect graphic performance, Various video outputs

In-vehicle computers and displays
Variety wireless communication: GPS, GSM,WLAN
Flexible ignition control, easy adaption to car power-system,
Additional IP-65 housing

All-In-One Panel PCs with up to IP67 protection
With Intel and AMD processors
Various touch options available

Embedded boards
Cost-effective reliable mini-ITX & 3.5" boards,
Latest Intel Atom/Celeron/Pentium/I3/I5/I7 processors,
Only Japan-made high-quality Conductive
Polymer Capacitors used,
Min. 5 Years product availability,
Various form factor Single Board Computers,
Extended operating temperature

Wide range of high quality monitors
Great viewing angles and exceptional color clarity,
AMVA3 / MVA / IPS panel technology with Full HD & Ultra HD resolution,
Projective Capacitive, Infrared or Optical Multi-Touch Technology,
Durable and professional design,
Open frame mounting,
Compatible with NEXCOM OPS players

ISM PRODUCTS

Wireless M-Bus modules and devices
868MHz and 169MHz
for metering applications
Modules, Modems & USB Dongles
for 868MHz, 169MHz, 2.4MHz
Long range (~2km) with 2.4GHz
Certified industrial Bluetooth modules and Stacks
BT 2.1,BT 4.0 and BT 4.2 (BLE), Class 1 & 2,
with medical certificates
Modules with dedicated MCU for built-in
applications
Wi-Fi modules
Ultra compact (10x14x3.8mm) LILY-W1 modules with
integrated antenna and LTE filter
Multiradio modules
Wi-Fi, Classic BT and BT 4.0 (BLE) combined in
one module
Wi-Fi (b/g/n/ac), Classic BT, BT 4.1 & NFC in
one module

NINA-B112
Bluetooth 4.2 module
with MCU for
customer applications
10.0x14.0x5.7 mm

SARA-U201 - the smallest
UMTS+GPRS module with
worldwide band coverage

ODIN-W260
BT 2.1+BT 4.0+Wi-Fi
Multiradio module
22.3x14.8mm

AMB8426-M & AMB8466
Wireless M-Bus
module and repeater

AMB2621
BLE v.4.2 module

OBS421
dual-mode
Bluetooth module

State of the art GNSS modules
based on the latest u-bloxM8/u-blox8 technology,
GPS/GALILEO/Glonass/BeiDou/QZSS support
Form factors: MAX, NEO, LEA, EVA, SAM, CAM
Qualified for in vehicle use (ISO16750)
High performance GNSS receivers, sensitivity: -167dBm
Extremely low power: 4.5mA/3V (fix GPS every 1s)
Position accuracy (CEP, SBAS): 2.0m
Built in active antenna support (power, monitor)
High in-band jamming immunity, Jammer detection
Assisted GNSS: GPS as well as Glonass supported
High precision NEO-M8P, accuracy < 0.025m
Dedicated modules for timing, RAW data
Miniature modules with built-in antenna (CAM/SAM)
Built in sensors for navigation without sky view (NEO-M8L/U)

LEON-G1, SARA-G3 GSM/GPRS modules
Embedded TCP/UDP/IP, FTP/HTTP/SMTP stack
Version with ATEX certificate
Low power consumption (<0.9mA idle, 2.9mA active mode)
Built-in Assisted GNSS client to support GNSS modules
BIP, SSL, DTMF, SIM card detection
One PCB design for GSM, UMTS,
LTE (including Cat.1, Cat.M1
and NBIoT) modules

SARA-G/U
2G (GSM/GPRS)
3G (UMTS/HSPA)
or 2G+3G platform

LARA-R
LTE Cat.1
LTE+2G or LTE+3G
platform

SARA-R
LTE Cat.M1

SARA-U2 family of compact GSM/UMTS/HSPA modules
Form factor as small as
16.0x26.0x3.0mm
Worldwide version, all 2G+3G
band
Pin compatible to GSM, LTE
(including Cat.1, Cat.M1 and
NBIoT) modules
Built in sensors for navigation without sky view (NEO-M8L/U)

SARA-N
LTE Cat.NB1
new NBIoT
platform

V2X transceiver modules
Vehicle to vehicle (V2V) and vehicle to infrastructure (V2I)
wireless technology, collectively known as V2X, improves road
safety, reduces traffic congestion and enhances the overall
passenger experience.

THEO-P1 (10.0x6.0x4 mm)
Host based V2X module with
AEC-Q100 and ISO 16750-4 automotive certificates

CAM
Miniature GPS+Glonass module
with built-in antenna (9.6x14.0x1.95mm)

NEO   MAX   EVA
7x7x1mm

u-blox07/6/5 modules
are pin compatible

NEO-M8U
Dead Reckoning with the new
NEO-M8L and NEO-M8U
Using built-in sensors (gyro,
accelerometer, temperature)

NEO-M8P
High precision combined
with NEO-M8P modules
acting as base and as moving
rover
utilizing u-blox Real Time
Kinematic (RTK) technology
Accuracy:
0.025 m + 1 ppm CEP

NEO-M8P-2 (Base)   NEO-M8P-0 (Rover)

The UNTHETHERED DEAD
RECKONING feature
NEO-M8U requires no
additional connection,
only GNSS signal

UDR+GNSS
GNSS only   GNSS only   UDR only

AMBER WIRELESS / u-blox

AEG ID INTELLIDENTIFICATION™

LUX

ISO Cards, Key Fobs, Wrist Bands, PET laminates
RFID system solutions for:Access control,
Animal indentification(Pet, bird and livestock),
Industry and logistic (also KEG and waste ID)

The use of u-blox modules does not lead to consequences from
infringement of patents and copyrights

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locate, communicate, accelerate

Reliable, field proven
GNSS and GSM/UMTS/LTE/NBIoT

High performance GSM, UMTS, LTE, NBIoT modules
Navigation without GPS, based on GSM network
eCall ready products with in-band modem
LTE low Cat (Cat.1, Cat.M1, Cat.NB1) support

New

LARA family:
LTE Low cat.
LTE modules

TOBY family:
LTE modules

SARA-G/U
2G (GSM/GPRS)
3G (UMTS/HSPA)
or 2G+3G platform

LARA-R
LTE Cat.1
LTE+2G or LTE+3G
platform

SARA-R
LTE Cat.M1

SARA-N
LTE Cat.NB1
new NBIoT
platform

MPCI family:
LTE/HSPA+/GPRS
Mini PCIe modules

Nested design available at u-blox, SARA, LARA or TOBY
can be alternatively mounted on the same PCB

SARA-N2xx - breaking point
NBIoT / LTE Cat.NB1 modules
u-blox is the market leader in development of the latest,
Narrow Band IoT technology
Standardized by 3GPP as LTE Cat.NB1
Using the current GSM network (global coverage)
Low power (10 years on battery)
Min. 20dB better link budget than GSM
(2 levels more under the ground)
Long service availability (LTE bands)
Over 50k devices in one cell
Dedicated to M2M, no voice
Pin compatible to GSM, UMTS, LTE (Cat.1, Cat.M1) modules

SARA-R4
LTE Cat.M1 modules
LTE technology dedicated to lower
data rate applications
Data rate up to 1 Mbps
Significant cost reduction comparing to LTE Cat.4 / Cat.1
Better link budget then GSM/LTE Cat.4
Long service availability due to LTE bands (2G/3G replacement)
Pin compatible to GSM, UMTS, LTE (Cat.1, Cat.NB1/NBIoT) modules

LARA-R2
LTE Cat.1 modules
Data rate up to 10 Mbps
Significant cost reduction comparing to LTE Cat.4
Version LTE Cat.1 + 2G to protect coverage
Pin compatible to GSM, UMTS, LTE (Cat.M1,
Cat.NB1/NBIoT) modules

TOBY-L2/MPCI-L2
LTE Cat.4 modules and mPCI cards
GSM/GPRS/HSPA+/LTE Cat.4
Up to 150Mb/s data rate
LISA-U2
GSM/UMTS/HSPA+ modules
HSDPA (21.1Mb/s), HSUPA (5.76Mb/s)
Worldwide module

WIRELESS ACCESSORIES
GSM, GPS, GLONASS, Iridium,
WiFi, ISM antennas
Helical GPS & GLONASS antennas
L1 & L2 band antennas
HF connectors, adapter cables
Evaluation kits and software

GCT
Global Connector Technology

Reliable interconnect products

SIM / Nano SIM /
Pico SIM connectors
Memory Card Connectors
USB Connectors
Board to board connectors
FFC connectors
Dedicated white
connectors for LED boards

DC Power Jacks

Modular Jacks

CAMDENBOSS

Components
Terminal Blocks, PCB mounted,
pluggable and other
Interconnection solutions, Fuses &
Fuse-holders, Batteries, LEDs &
Indicators, Miniature Switches,
Limit & Safety Switches, DIN Rail
mounted Interface Modules,
Control Products and Transformers

Enclosures
Universal Housings, Hand-held Enclosures, Die-cast
Boxes, Potting Boxes, Desktop Cases, Instrument
Cases, DIN rail Enclosures or Interface Supports

Full customisation service for all enclosures
With custom colours, surface coating & RFI shielding,
engraving & silk-screening, labels & membrane
Keypads, as well as milling for
all types of connectors and
control components

Custom enclosures
Designed, prototyped and
manufactured to specific and exacting requirements
with rapid lead-times using Flat Sheet Plastic
Technology process, a solution for unique enclosure
requirements without tooling costs

Week 1   Week 2   Week 3-4

Fischer CONNECTORS

Push-pull circular connectors and cable assembly solutions

○ **Core Series**
ANY SIZE, ANY CONFIGURATION
ANY APPLICATION

○ **Ultimate Series**
RUGGED, COMPACT
LIGHTWEIGHT

○ **Fiberoptic Series**
ROBUST, OPTICAL PERFORMANCE
EASY CLEANING

○ **Minimax Series**
HIGH DENSITY, SIGNAL & POWER
MINIATURIZATION

ALPS

Wide range of electromechanical solutions

Tact Switches
Snap-in types
available in 4.5x4.5mm to
12x12mm sizes
Surface Mount types
available in 2.8x2.4mm to
10x10mm sizes
Sharp and Soft feeling types
Waterproof operating force versions
(stem color coding)
Dust proof & water proof versions
available

Encoders

Rotary and slide potentiometers,
industrial and pro-audio types
available

Multicontrol Devices

Power Switches

Memory and SIM card connectors also
dedicated for automotive market

Detector switches

Magnetic, MEMS and capacitive
sensors

Thermal Printers

METZ CONNECT

Terminal blocks
SPRINGCON - spring type
RIACON - screw type
PLUGCON - pin strips
IDCON - IDC - PCB connectors
Data communication solutions
including RJ45 & fiberoptic connectors
Ethernet M12 connectors
Patch cords

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fischer elektronik

Heatsinks
Machined extruded heatsinks
Heatsinks for LEDs
Extruded heatsinks with
retaining springs for PCB
mounting
Heatsinks and fan coolers for
processors, PGA & BGA
components
Cooling aggregates
Thermal conductive materials

Cases
Miniature aluminum cases
Combination cases
Desk consoles and shell cases
19" system cases

Connectors
Hi precision board-to-board
connectors
IDC connectors
D-SUB connectors
DIL PGA, PLCC sockets

Services
Precision CNC machining of
heatsinks, cases, front
panels
Powder coating
Screen printing
YAG laser engraving

MEDIKabel.de

Industrial Cables
VDE/UL/CSA/MIL
approvals
DIN standards
Single, multiple, fine,
ultra-fine wire
Single, double, triple coloured
Insulation: PVC/PE/TPE/silicone/
PP/PA Tefzel/Teflon/PUR/
Glass filament/EVA etc.
Temperature range: -200°C to 1200°C
Halogen free/flame-resistant/lead-free

*excluding Hungary and Slovenia

HARNESS MAKING, ASSEMBLING, MACHINES AND TOOLS

Harness making
Crimping all typical connectors,
half or full automatic process
Cutting and stripping
from AWG32(0,05 mm²)
up to AWG8 (8.00 mm²)
Lead free tin plating

Machines for:
Benchtop Crimping & Stripping
Cutting to Length & Stripping
Full Process Crimping
Marking
Prefeeding
Coiling/Collection
Spare parts

Hand tools
for cutting
and crimping

WEZAG WERKZEUG · TOOLS

Pneumatic
and hydraulic presses
with dedicated dies

compatible with WEZAG hand
tool dies

JST The Quality Connection

Terminal blocks
Wire to PCB connectors
PCB to PCB connectors
Wire to wire connectors
Jumpers
Memory cards and PCMCIA
connectors
Serial, parallel, USB
Wide range of terminals
Strips and cables
Customized harness

LEAR CORPORATION

GROTE & HARTMANN

Automotive connectors
RAST connectors 2.5 and 5.0
Chain terminals 2.8-4.8-6.3-7.7-
9.3mm
Ring tongue and other
solderless terminals and splices
Tools

Applicators
Presses
for all types of
connectors

**Other tools
& applicators**
for RAST connectors

Applicators for:
JST, LEAR, TYCO, JAE, FCI
Testing tools

WDT WIRE PROCESSING SYSTEMS

Pneumatic presses
with replaceable dies

Tools for various
connectors

With replaceable dies

Pneumatic and
manual tools for cable cutting

NEXCOM

AAEON

ASRock Industrial

iiyama

AMBER WIRELESS

u-blox

LIGHTING PRODUCTS

SEOUL SEMICONDUCTOR — SEOUL

ACRICH3 - the third version of Seouls' proprietary solution. Supplied directly from 230VAC. Luminous flux of one module up to 11500lm (105W module), and up to 140lm/W efficacy (10W module). Modules available in many sizes for different applications. Possibility to buy only chips.

Z-POWER LED - super bright power LEDs. Efficacy up to 170lm/W Industry standard 3535 package. CRI 70 for streetlighting, 80 as standard and 90+ available.

SIDE, TOP, CHIP, LAMP - available as through hole and SMD, ultrabright, multicolor, full-color (RGB), efficacy of 5630D LED up to 220lm/W (@65mA)

COB - from 4W up to 100W standard sized modules, with up to 11800lm per array, and 149lm/W

MJT (Multi Junction Technology) - HV LEDs for ease of design, cost effective mid-power in the standard 5630 package with up to 210lm/W, the 1.2W 3030 package - power LED for the cost of a mid-power and high power (i.e.5050) packages for streetlighting and high bays

Wicop2

WICOP2 - new phosphor-on-chip power LED, with high performance and low cost. Small size, high power density and low thermal resistance

WICOP Technology
enables system level cost savings

TAIWAN SEMICONDUCTOR

High quality semiconductors available with AECQ-101 certificates
Transient Voltage Suppressors (up to 3000W)
Zener and switching diodes
Rectifier diodes
Schottky diodes
Rectifier bridges
ESD diodes and arrays
BJT transistors
MOSFET transistors
Transoptors
Linear and switching voltage regulators
Amplifiers and comparators
Voltage references
LED drivers: DC boost, DC buck, Current Regulator

Historical standard and future packages:
0201, 0402, 0603, 0805, 1005, 1206, 2510, SOD-923F, SOD-723F, SOD-523F, SOD-323F, Micro SMA, SOD-123, SOT-323, SOT-363, SOT-23, SOT-25, SOT-26, SOT-223, Sub SMA, SMB, SMC, **SMPC, SMPC 4.0, PDFN33, PDFN56,** TSSOP-8, SOP-8, D-PAK, D2-PAK, MBS, ABS, DBLS and many others
Industry standards:
78(9)xx, 78(9)Lxx, LM317, LM339, LM358, LM431, LM810, SMAJ, SMBJ, SMCJ, P4KE, P6KE, 1.5KE, BAV, BAS, BAT and many others

BRIGHTEK

Taiwanese cost-effective LEDs
Wide portfolio of signalling LEDs
Double color (warm + cool) power LEDs
Standard form factors
Ultraviolet (UV) LEDs
Infrared (IR) LEDs
Aluminium and ceramic COBs
Power LED matrix modules
Ready modules
High efficacy EMC packages
(over 150lm/W)

EPSON — EXCEED YOUR VISION

Timing and Sensing quartz based devices

Crystal units
 kHz Range
 MHz Range

Oscillators
 SPXO kHz & MHz range
 TCXO
 VCXO
 SAW Oscillators

SAW Filters
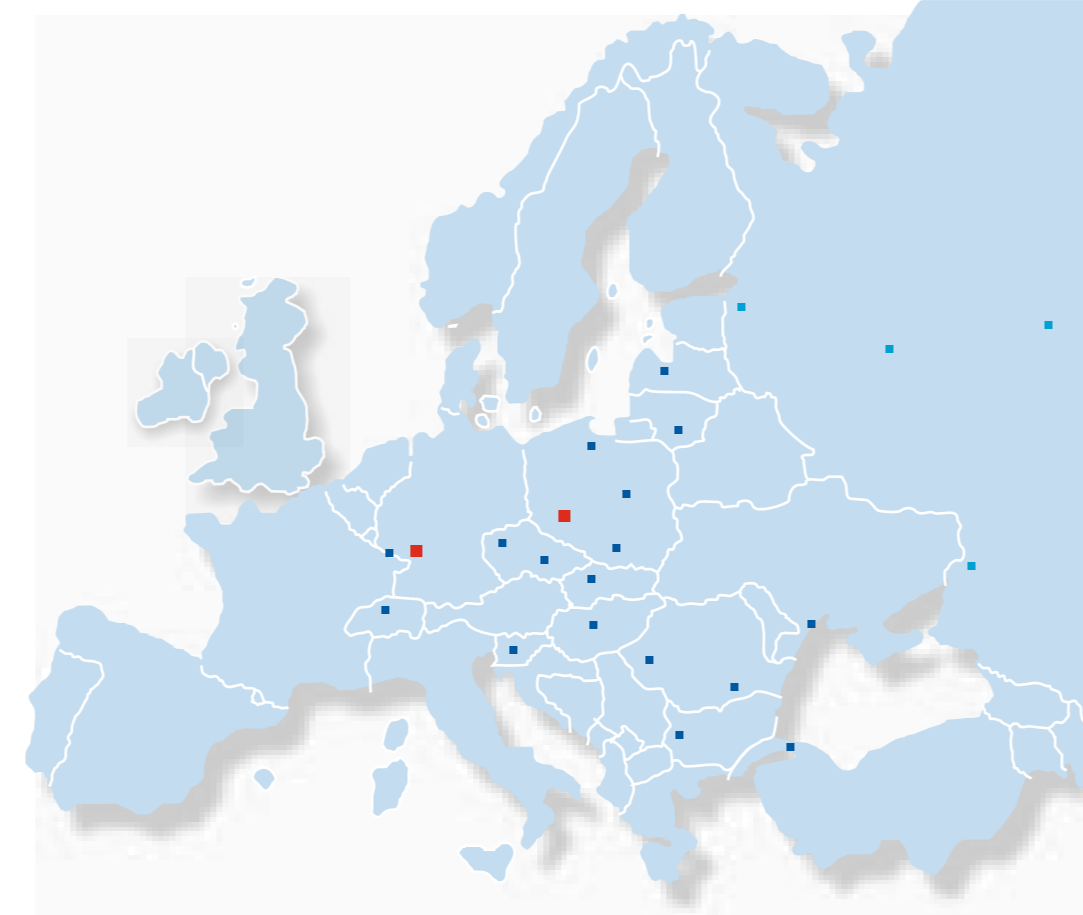
RTC Modules

Gyro sensors

Programmable Oscillators
 Customer specified frequency (1.000MHz to 166.000MHz)
 Customer specified logic (5V, 3.3V, 2.5V, 1.8V)
 10 sizes available including THT, SMD plastic
 package or SMD ceramic package

Available within 24h from stock!

QUARTZ+MEMS
High accuracy and high stability

QMEMS is a combination of 'Quartz', a crystal material with excellent characteristics such as high stability and high precision, and "MEMS" (a microfabrication technology). To a semiconductor MEMS material, EPSON applies precision microprocessing based on quartz material to create a quartz device called 'QMEMS' which offers high performance in a compact package.
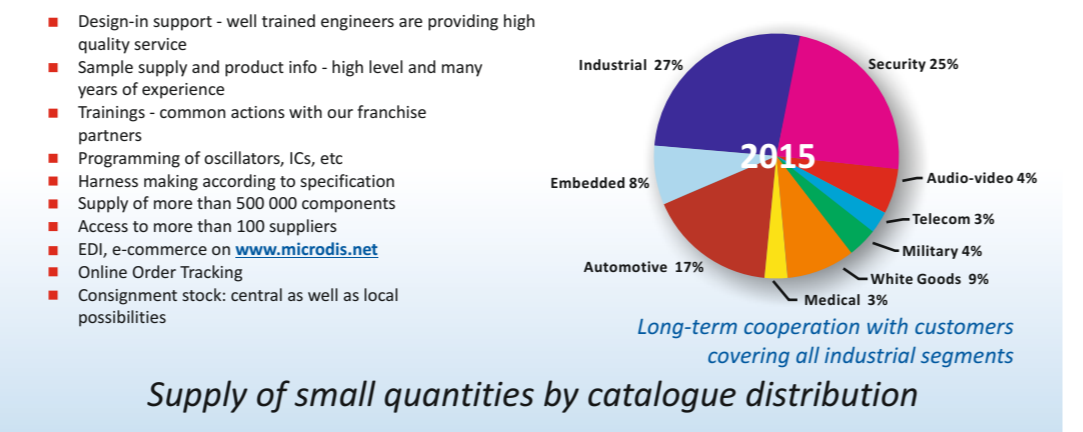
Customized solutions & accessories

LED modules:
square and round modules in different sizes
Modules based on Wicop2 LED
LED strips
Acrich modules
Lighttubes
Lenses, reflectors
& holders

Design support and contract manufacturing

Microdis — Innovation & Reliability

🇧🇬	**Bulgaria**	Bulgaria@microdis.net
🇭🇷	**Croatia**	Croatia@microdis.net
🇨🇿	**Czech Rep.**	Czech@microdis.net
🇪🇪	**Estonia**	Estonia@microdis.net
🇫🇷	**France***	France@microdis.net
🇭🇺	**Hungary**	Hungary@microdis.net
🇱🇻	**Latvia**	Latvia@microdis.net
🇱🇹	**Lithuania**	Lithuania@microdis.net
🇵🇱	**Poland**	Poland@microdis.net
🇷🇴	**Romania**	Romania@microdis.net
🇷🇺	**Russia**	Russia@microdis.net
🇷🇸	**Serbia**	Serbia@microdis.net
🇸🇰	**Slovak Rep.**	Slovakia@microdis.net
🇸🇮	**Slovenia**	Slovenia@microdis.net
🇹🇷	**Turkey**	Turkey@microdis.net
🇺🇦	**Ukraine**	Ukraine@microdis.net
other countries	**Other countries**	microdis.de@microdis.net

Electromechanical Competence Center for France

SERVICES FOR OEMS AND CEMS IN EASTERN EUROPE

- Design-in support - well trained engineers are providing high quality service
- Sample supply and product info - high level and many years of experience
- Trainings - common actions with our franchise partners
- Programming of oscillators, ICs, etc
- Harness making according to specification
- Supply of more than 500 000 components
- Access to more than 100 suppliers
- EDI, e-commerce on www.microdis.net
- Online Order Tracking
- Consignment stock: central as well as local possibilities

2015 pie chart: Industrial 27%, Security 25%, Audio-video 4%, Telecom 3%, Military 4%, White Goods 9%, Medical 3%, Automotive 17%, Embedded 8%

Long-term cooperation with customers covering all industrial segments

Supply of small quantities by catalogue distribution

Microdis — Distribution & support

Wireless
GNSS, GSM, UMTS, LTE, BLUETOOTH, WiFi, ISM modules, antennas & accessories

Embedded
Industrial fanless PCs, All-in-one panels, embedded boards, displays with touchscreen

E-mech
Enclosures, heatsinks, connectors, harnesses, switches

Lighting
Low, mid and high power LEDs, COBs, LED modules, drivers and lenses

Semicon
Transistors, diodes, ICs, quartzes and oscillators
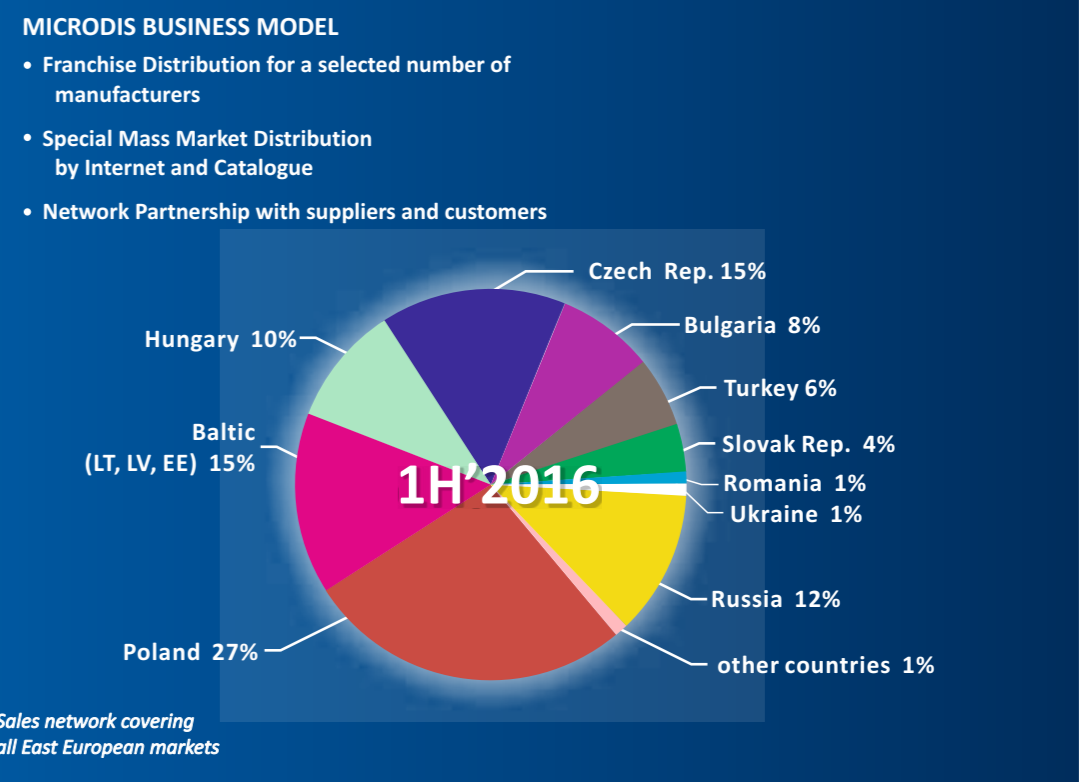
Harness making & tools

One Stop Shop
Comprehensive portfolio with millions of components
Reliable source for high volume production,
as well as for few pieces prototyping

Find us on f
www.facebook.com/Microdis.Electronics/

The leading technical distributor of electronic components acting in Eastern Europe.

With years of experience and built up trust on the market.

Reliably providing local logistic and technical support to the most demading applications.

MICRODIS BUSINESS MODEL

- Franchise Distribution for a selected number of manufacturers
- Special Mass Market Distribution by Internet and Catalogue
- Network Partnership with suppliers and customers

1H 2016 pie chart: Czech Rep. 15%, Bulgaria 8%, Turkey 6%, Slovak Rep. 4%, Romania 1%, Ukraine 1%, Russia 12%, other countries 1%, Poland 27%, Baltic (LT, LV, EE) 15%, Hungary 10%

Sales network covering all East European markets

Microdis — Innovation & Reliability

ADVANCED EDI SYSTEM

- Access to components base with individual, quantity dependent, pricing
- Stock information
- Downloadable file with components base
- On-line ordering
- Order status and order/invoice history information
- Individual account for each employee

DEVELOPMENT STEPS OF THE MICRODIS ELECTRONICS GROUP

Year	Step
1989	**Foundation of the companies in Hungary and Germany**
1990	Foundation of sales companies in Poland and Slovakia
1992	Foundation of LSB Electronics later renamed to Microdis Plus Poland Restructuring from retail to distribution
1993	Foundation of Microdis KFT in Hungary
1995	Consolidation of all companies within the Eurodis Microdis Holding AG in Switzerland (60% Eurodis (later Eurodis Electron PLC) and 40% Microdis) Foundation of a subsidiary in Czech Republic
2000	Europartners Consultants proclaimed Eurodis Microdis No. 1 in Poland and No. 3 in Hungary. Start of catalogue distribution
2003	Microdis sells its 40% shares of the Eurodis Microdis Electronics AG to Eurodis Electron PLC and takes over entirely Eurodis Microdis Electronics in Germany
2006	Microdis obtained ISO 9001:2000 Certification
2007	Foundation of Microdis in Ukraine
2008	Foundation of Microdis in Latvia (EE)
2009	Foundation of Microdis in Bulgaria
2010	Microdis Group obtained ISO 9001/2008 Certification
2011	Foundation of Microdis Components Elektronik in Turkey (Istanbul)
2012	Logistic Center moved to the acquired building in Hockenheim, Germany
2013	Inauguration of Electromechanical Competence Center for France, in Sarrebruck
2014	25 years of Microdis' Innovation and Reliability on the market
2015	Relocation of the Logistic Center to Wrocław in Poland

ME Hockenheim, Germany

ME Suchy Dwór, Poland