Time Reference Systems

Made in Germany

Because every fraction of a second counts.

History

hopf Elektronik GmbH was founded in 1972 and is your reliable and competent partner in the field of time synchronization. For more than 40 years *hopf* Elektronik GmbH has been developing, manufacturing and selling highly-precise time reference systems.

Our in-house development, production and sales as well as our lean organization and short lines of communication guarantee the consistent high quality of our products.

Our innovative products are used by well-known companies across the globe to implement highly-precise signals for the synchronization and time stamping of industrial applications, computer networks, industrial networks or to successfully run complex industrial projects.

By constant communication with our customers, continuous cooperation and support in all matters and through a network of like-minded partners, we remain at the cutting edge of customer needs worldwide.

Whether we are talking about the Metro in Guangzhou or Bangkok or the pipeline in Ingolstadt, whether our business partner is ABB, Siemens, Honeywell or YOU:

**Our customers are our partners –
whatever we can do for them – we do!**
And that's quite a lot after more than 40 years.

Key competences

- **Industrial time reference systems**
  master and submaster clock systems for the output of highly-precise signals for synchronization and time stamping of industrial applications, protection relays, SCADA systems and networks

- **Network time server appliances**
  for accurate synchronization of computer and automation networks (e.g. IEC 61850)

- **Signal and protocol converters**
  for distribution and conversion of electrical and optical signals or time protocols

- **Antennas and accessories**
  for receiving highly-precise time signals from terrestrial and GNSS-based signal sources

- **Analogue clocks and digital displays**
  for displaying information about time and date

Precision

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Our claim

Perfektion
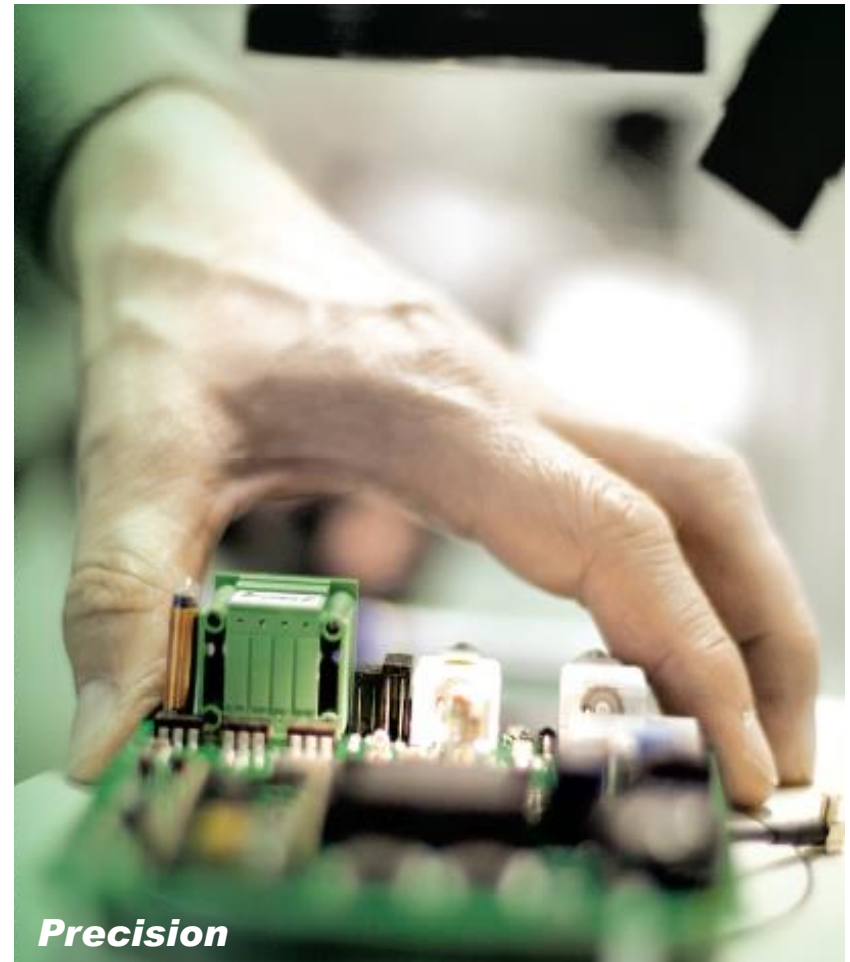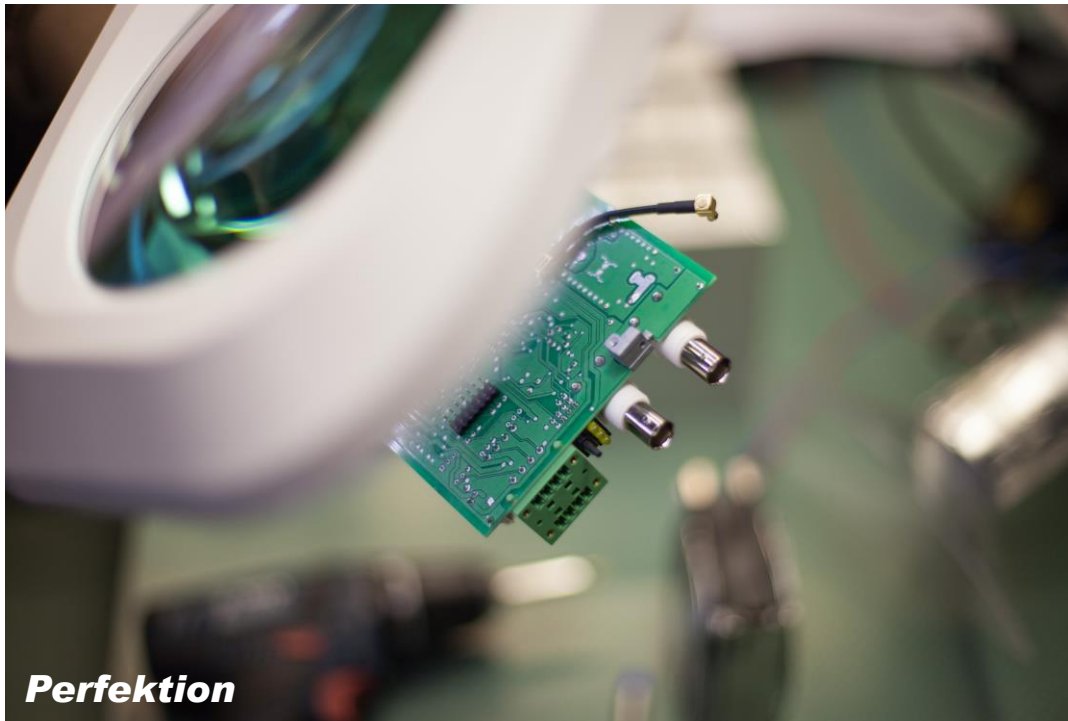
✓ Maximum quality

✓ High reliability

✓ Well-balanced
  cost-benefit ratio

✓ Flexible and highly
  customizable solutions

✓ Excellent customer service
  and support based on more
  than 40 years of experience

Selected solutions

Because every fraction of a second counts.
The flexible way of time synchronization

7273RC
10 / 100 MBit

8030HEPTA Network Time Server

Time Server with up to 5 isolated and mutually independent network time server modules

- ✓ 1 network time server module is integrated in the base system by default with
  - ✓ 2 Ethernet interfaces 10/100/1000 Mbit/s autosensing
  - ✓ Network Time Protocol Version 4 (RFC5905)
- ✓ Option: 4 expansion slots with isolated and mutually independent modules for enhanced security:
  - ✓ Network Time Server 8030NTS/M
  - ✓ Modulated (analogue) IRIG-B
  - ✓ Unmodulated (digital) IRIG-B
  - ✓ PPS / cyclic pulses
  - ✓ DCF77 pulse
  - ✓ Serial data strings
- ✓ At-A-Glance status LEDs

- ✓ Optional activations:
  - ✓ SINEC H1 time datagram
  - ✓ Static Routing Table
  - ✓ Alarming and management
  - ✓ Network Interface Bonding/Teaming
  - ✓ IEC 62439-3 Parallel Redundancy Protocol (PRP)
  - ✓ IEEE 802.1Q Tagged VLAN
  - ✓ IEEE 1588 Precision Time Protocol (PTP)

- ✓ Time sources:
  - ✓ GPS Module 8024
  - ✓ IRG-B Module 8023
  - ✓ NTP/PTP Module 8030NTC

- ✓ Power supply options:
  - ✓ 100 – 240V AC
  - ✓ 110 – 250V DC
  - ✓ 24V DC (18 – 36V DC)
  - ✓ 48V DC (36 – 76V DC)

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8030NTS Network Time Server

Time Server with up to 2 isolated and mutually independent network time server modules

- ✓ 1 network time server module is integrated in the base system by default with
  - ✓ 2 Ethernet interfaces 10/100/1000 Mbit/s autosensing
  - ✓ Network Time Protocol Version 4 (RFC5905)
- ✓ Option: 1 expansion slot for isolated and mutually independent modules for enhanced security:
  - ✓ Network Time Server 8030NTS/M
  - ✓ Modulated (analogue) IRIG-B
  - ✓ Unmodulated (digital) IRIG-B
  - ✓ PPS / cyclic pulses
  - ✓ DCF77 pulse
  - ✓ Serial data strings
- ✓ At-A-Glance status LEDs

- ✓ Optional activations:
  - ✓ SINEC H1 time datagram
  - ✓ Static Routing Table
  - ✓ Alarming and management
  - ✓ Network Interface Bonding/Teaming
  - ✓ IEC 62439-3 Parallel Redundancy Protocol (PRP)
  - ✓ IEEE 802.1Q Tagged VLAN
  - ✓ IEEE 1588 Precision Time Protocol (PTP)

- ✓ Time sources:
  - ✓ GPS Module 8024
  - ✓ IRG-B Module 8023
  - ✓ NTP/PTP Module 8030NTC

- ✓ Power supply options:
  - ✓ 100 – 240V AC
  - ✓ 110 – 250V DC
  - ✓ 24V DC (18 – 36V DC)
  - ✓ 48V DC (36 – 76V DC)

8029HEPTA Network Time Server

GPS synchronized, highly-precise NTP time server with extensive protocol support

- ✓ 1 NTP time server is integrated by default
  - ✓ 1 Ethernet interface 10/100 Mbit/s autosensing
  - ✓ Network Time Protocol Version 4 (RFC5905)

- ✓ Option: 6 expansion slots for isolated and mutually independent modules for enhanced security:
  - ✓ NTP time server 8029NTS/M
  - ✓ Modulated (analogue) IRIG-B
  - ✓ Unmodulated (digital) IRIG-B
  - ✓ PPS / cyclic pulses
  - ✓ DCF77 pulse
  - ✓ Serial data strings

- ✓ At-A-Glance status LEDs

- ✓ Power supply options:
  - ✓ 100 – 240V AC
  - ✓ 110 – 250V DC
  - ✓ 24V DC (18 – 36V DC)
  - ✓ 48V DC (36 – 76V DC)

8029NTS Network Time Server

GPS synchronized NTP time server for DIN rail mounting

- ✓ 1 NTP time server is integrated by default
    - ✓ 1 Ethernet interface 10/100 Mbit/s autosensing
    - ✓ Network Time Protocol Version 4 (RFC5905)

- ✓ Option: 1 expansion slot for isolated and mutually independent modules for enhanced security:
    - ✓NTP time server 8029NTS/M
    - ✓Modulated (analogue) IRIG-B
    - ✓Unmodulated (digital) IRIG-B
    - ✓PPS / cyclic pulses
    - ✓DCF77 pulse
    - ✓Serial data strings

- ✓ Power supply options:
    - ✓100 – 240V AC
    - ✓110 – 250V DC
    - ✓24V DC (18 – 36V DC)
    - ✓48V DC (36 – 76V DC)

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8024GPS Clock system

Cost-effective clock system with GPS module 8024 and up to 2 output modules each having 2 outputs

- ✓ Serial datagram
  - ✓ *hopf* Standard (6021)
  - ✓ *hopf* Master/Slave
  - ✓ *hopf* Binary String
  - ✓ IEC-103 (ASDU Type 6)
  - ✓ Trimble Time String (TSIP)
  - ✓ SINEC H1 Extended (Meinberg Standard String)
  - ✓ SAT 1703 / SICAM RTU
  - ✓ ABB Melody
  - ✓ ABB Freelance
- ✓ IRIG-B
  - ✓ B002 / B122
  - ✓ B003 / B123
  - ✓ B006 / B126
  - ✓ B007 / B127
  - ✓ IEEE C37.118 / IEEE 1344
  - ✓ AFNOR NF S87-500
- ✓ DCF77, PPS, cyclic pulses

- ✓ Power supply options :
  - ✓ 100 – 240V AC
  - ✓ 110 – 250V DC
  - ✓ 24V DC (18 – 36V DC)
  - ✓ 48V DC (36 – 76V DC)

- ✓ Time distribution via FO Multimode:
  - ✓ FO-Star Coupler 4811
    - ✓ Standard model with 4 or 7 outputs
  - ✓ FO-Signal Converter 4800
    - ✓ Standard model with 2/4/6 outputs
    - ✓ 5V active / TTL or 24V active
    - ✓ BNC or screw terminal

FO Multimode

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Unparalleled flexibility

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Selected project references

- Seattle City Light — USA
- Cape Canaveral — USA
- Shenzhen Western Power Plant — China
- Metro Guangzhou — China
- Kowloon–Canton Railway Corporation (KCRC) — Hong Kong
- MRT Bangkok (รถไฟฟ้ามหานคร) — Thailand
- NTPC (राष्ट्रीय ताप विद्युत निगम लिमिटेड) — India
- National Air Traffic Control Services London — Great Britain
- European Space Operation Center (ESOC) — Germany
- Turów Power Plant — Poland
- TEIAS (Türkiye Elektrik İletim A.Ş.) — Turkey
- Australian and New Zealand Telecom — Australia
- ESKOM — South Africa
- Société Tunisienne de l'Electricité et du Gaz (STEG) — Tunisia
- KAHRAMAA (أكملت المؤسسة العامة القطرية للكهرباء والماء)) — Qatar
- Oman Electricity Transmission Company SAOC (OETC) — Oman
- SOHAR Power (شركة صحار للطاقة)) — Oman
- Rehab CCGT Power Plant — Jordan
- Dubai Electricity and Water Authority (هيئة كهرباء و مياه دبي)) — UAE
- Ministry of Electricity and Water — Kuwait
- Ulubelu Geothermal Power Plant — Indonesia

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Global customer confidence

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Certificates

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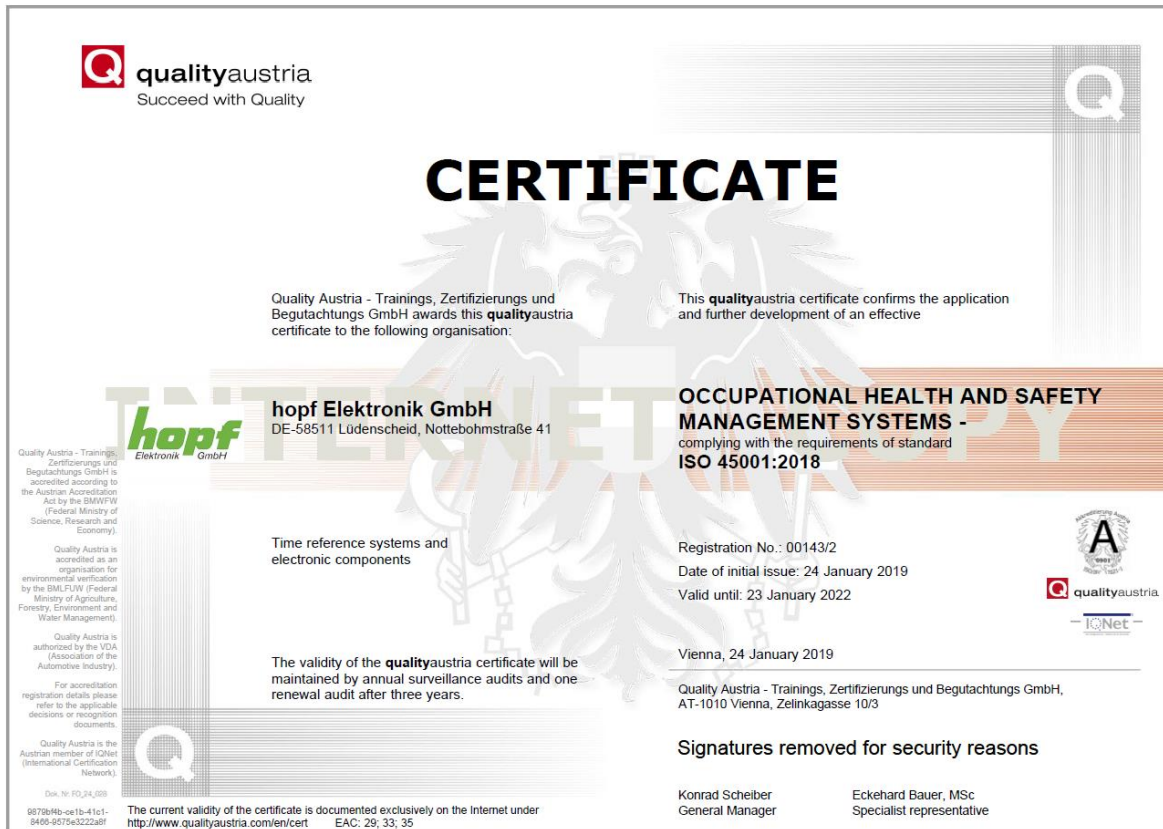
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