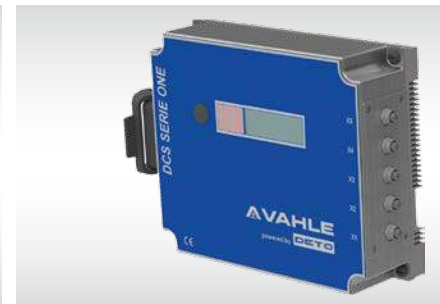
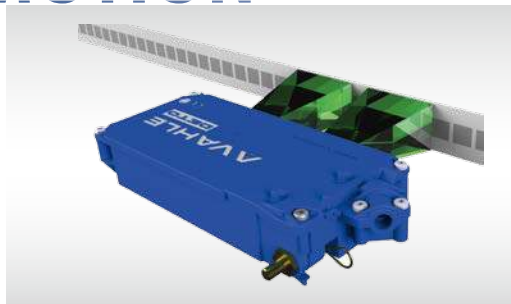
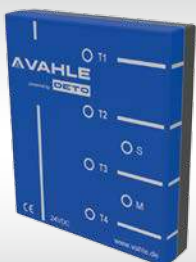


**AVAHLE**  
powered by **DETO**

**Mobile Control Systems for  
Rail Guided Vehicles**

## SYSTEMS IN MOTION



Being the market leader in the field of electrification systems for the automotive sector the components contained in this catalog provide an ideal addition to our product range. Our customers benefit from the opportunity of purchasing many of the components from a single source:

**Positioning System Series: ISENS APOS optics**

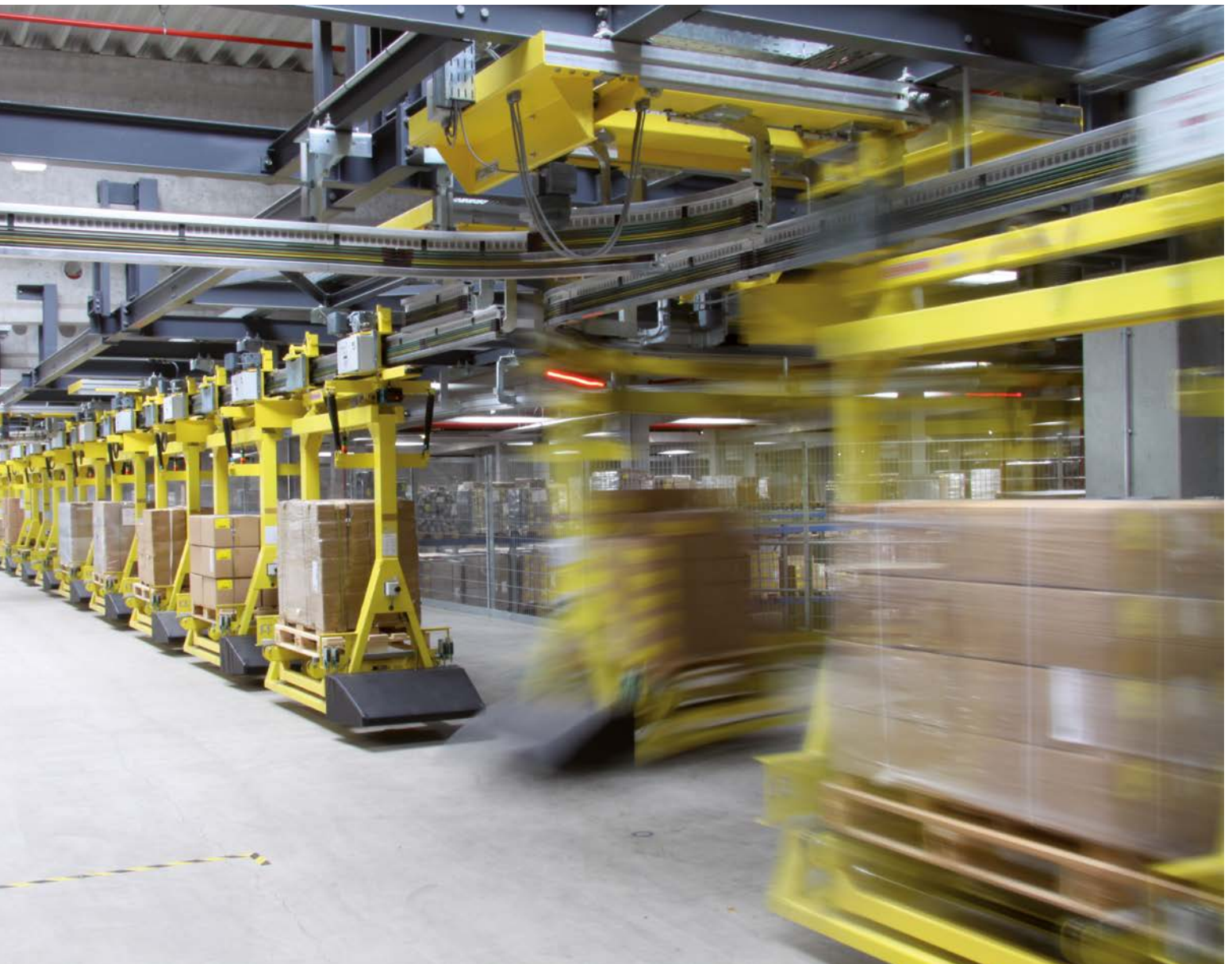
- Integration with the current collector
- Dual camera housing for redundancy and also to bridge code gaps of up to 40mm (1.57")

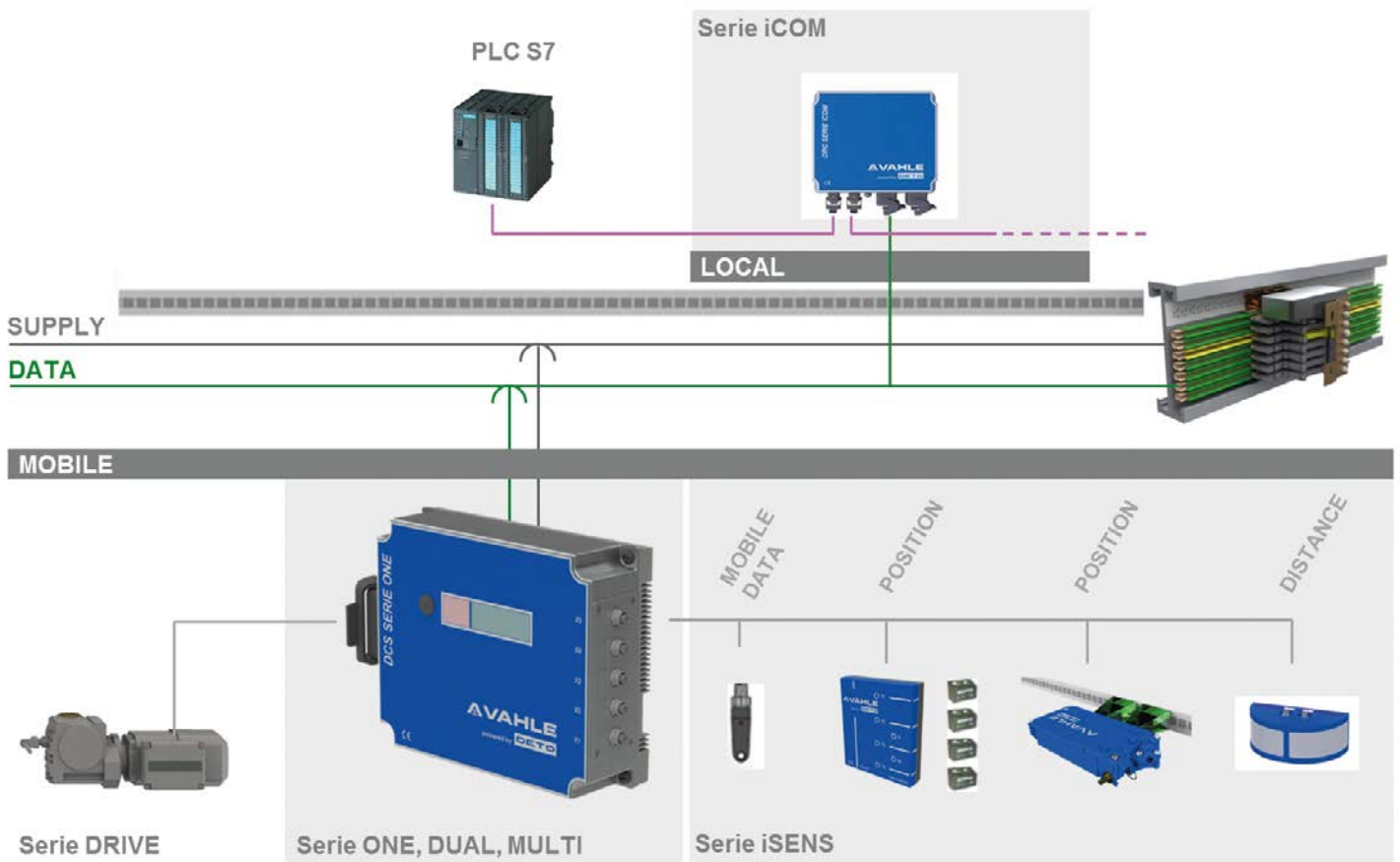
**Controller Series: ONE | DUAL | MULTI**

- Modular design of the control system
- OLED Display shows plain test for easy troubleshooting
- Diagnostics via remote maintenance for all controll systems are possible

**Communication Series: iCOM**

- Short-circuit-proof conductor rail contacts and monitoring of the bus transmission performance
- Bus communication via Profinet interface
- Firmware and parameter download for all mobile control systems



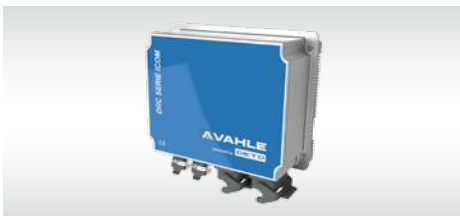


## Series ONE | DUAL | MULTI



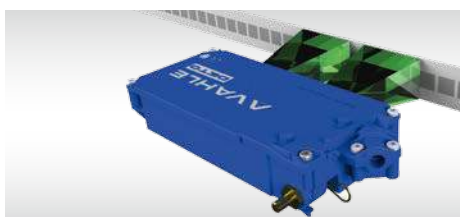
This newly designed product line offers the ultimate flexibility for future control system requirements. The modular supply of components allows for simple system modifications or upgrades with standard off the shelf (quick available) components.

## Series iCOM



VAHLE has a long history of experience with 'conductor bar systems' and DETO has a similar expertise with 'conductor bar communication systems'. By combining the knowledge and experience of both companies VAHLE-DETO has developed the PCM and Bus Communication Modules. These modules offer the possibility for comprehensive diagnostic and maintenance functions (including remote diagnostics).

## Series iSENS

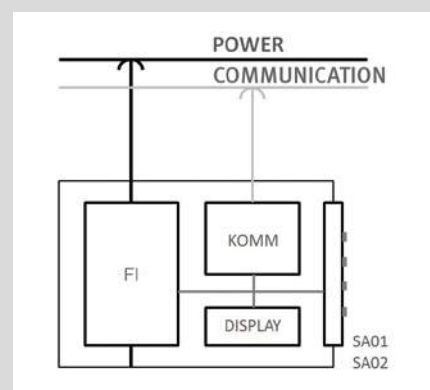


Due to the increasing requirement for sensor technology in the mobile applications industry we developed new essential products including; the electronic magnetic switch, the distance sensor and the absolute positioning sensor.

# Series ONE

## Product Features

- Compact design
- Modular construction
- OLED display for presentation of vehicle status
- Remote maintenance is possible with the use of a conductor bus module
- Radio interface for on-site diagnostics
- Integrated distance measurement is available as an option



## Drive systems

Discription	Type	DCS 1-050	DCS 1-075	DCS 1-110	DCS 1-150	DCS 1-220
<b>Drive modules</b>						
Frequency converter module 0,5 kW	FM050	●				
Frequency converter module 0,75 kW	FM075		●			
Frequency converter module 1,1 kW	FM110			●		
Frequency converter module 1,5 kW	FM150				●	
Frequency converter module 2,2 kW	FM220					●
<b>EMS communication modules:</b>						
Half-wave evaluation	HWES	●	●	●	●	●
Puls code modulation	PCM	○	○	○	○	○
Power CANBUS	PCB	○	○	○	○	○
<b>Sensor adapter</b>						
6 x M12 ( data stick, RS485, 4 x I/O )	SA01	○	○	○	○	○
5 x M12 / 1 x M8 ( data stick, RS485, EMD 4 2 x I/O )	SA02	–	–	○	○	○



## Accessories

Discription	Type
Remote control	MC 8/10M
External data stick	DS M12

## Series iCOM

### Stationary communication modules



Discription	Designation
Half-wave transmission module	IC HW 8K
PCM Transfer- and receive module	IC PCM
PowerCAN - module	IC PCB 2K

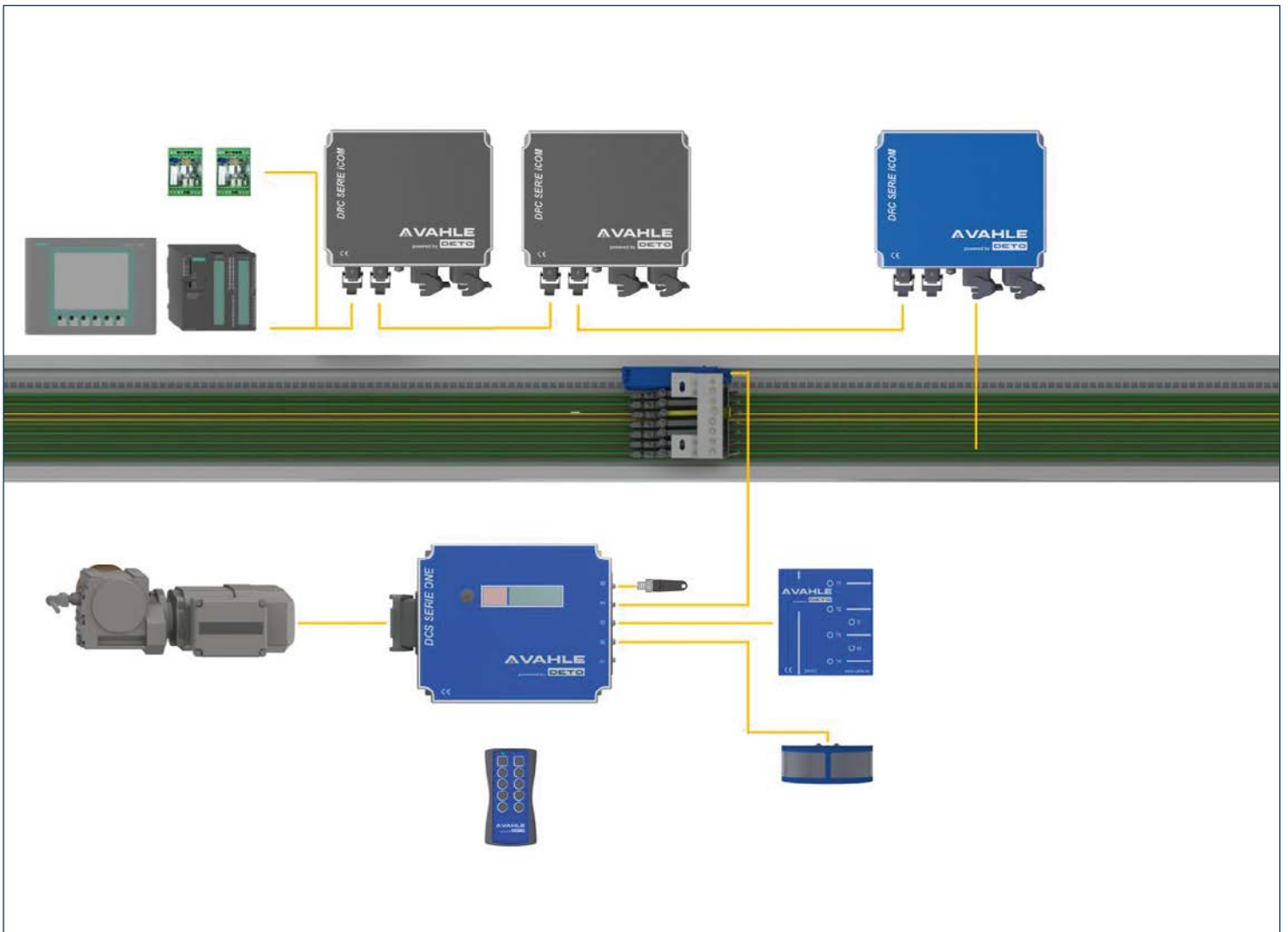
## Series iSENS

### Mobile Sensorik



Discription	Type
Positioning system	APOS OPTIC
Electronic magnetic field detector	EMD4P
Distance sensor	IS DIS 6

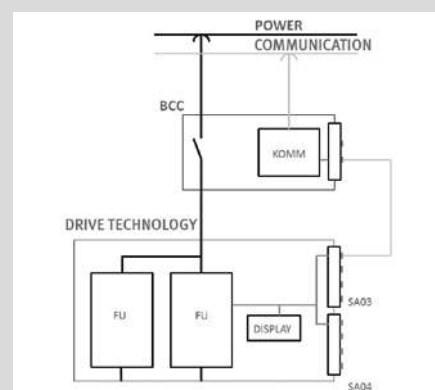
## System design



# Series DUAL

## Product features

- 2 frequency inverters up to 2,2 kW combinable
- OLED display for displaying vehicle status
- Remote maintenance in conjunction with a conductor railbus module
- Radio interface for additional online diagnostics on site
- Central control module CBM for conductor rail communication



## 2 Drive systems

Discription	Type	DCS 2-050	DCS 2-075	DCS 2-110	DCS 2-150	DCS 2-220
<b>Drive modules</b>						
Frequency converter module 0,5 kW	FM050	●				
Frequency converter module 0,75 kW	FM075		●			
Frequency converter module 1,1 kW	FM110			●		
Frequency converter module 1,5 kW	FM150				●	
Frequency converter module 2,2 kW	FM220					●
<b>Safety control systems:</b>						
Bus Center Control POWER	BCC-P	●	●	●	●	●
Bus Center Control LOGIC	BCC-L	○	○	○	○	○
<b>Sensor adapters:</b>						
Sensor connection module–CAN Master/SSI/8xIO/ON-OFF	SA03	●	●	●	●	●
Sensor connection module– SSI / 8 x IO / ON-OFF	SA04	○	○	○	○	○



## Accessories

<b>Serie ONE   DUAL   MULTI</b>	Type
Remote control	MC 8/10M
External data stick	DS M12

# Series iCOM

## Stationary communication modules



Discription	Type
PowerCAN - module	IC PCB 2K

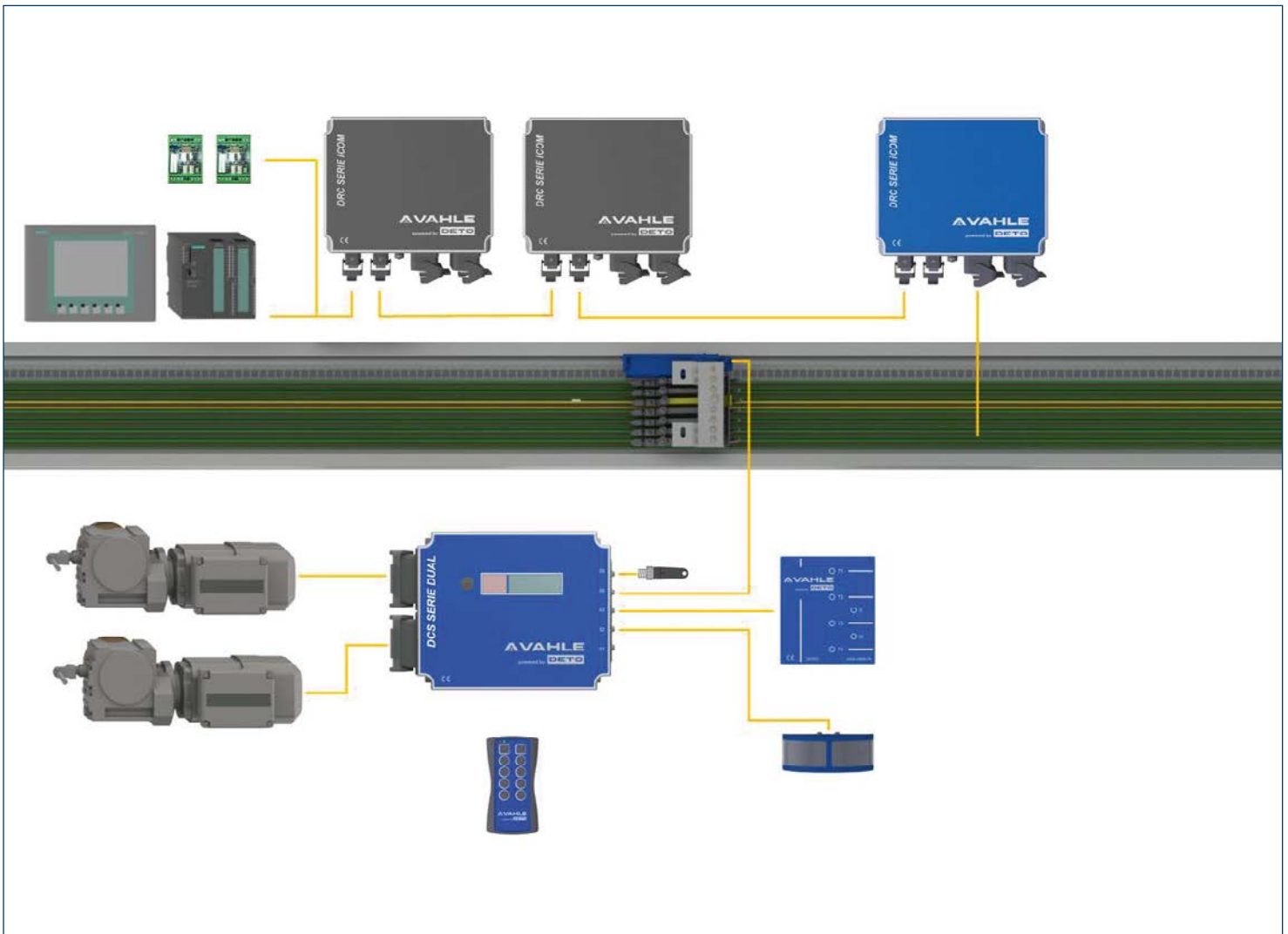
# Series iSENS

## Mobile sensors



Discription	Type
Apos OPTIC	LDC8K
Electronic magnetic field detector	EMD4P
Distance sensor	IS DIS 6

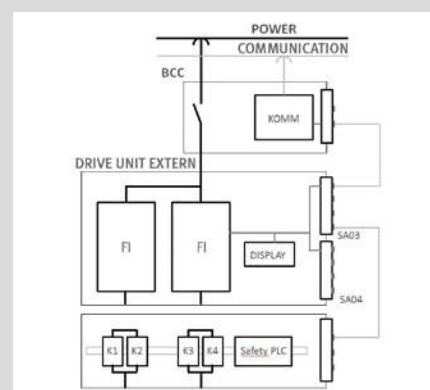
## System design



# Series MULTI

## Product features

- Two or more frequency inverters can be integrated
- Integration of frequency inverter multivendor-capability
- Additional safety features can be integrated optionally
- OLED display shows vehicle status
- Remote maintenance in conjunction with a conductor bus module possible
- Radio interface for additional online diagnostics on site
- Central control module CBM for conductor communication



## Multiple-axle drives

Discription	Type	DCS 3-300	DCS 3-550	DCS 3-750	DCS 3-1000
<b>Drive modules:</b>					
Frequency converter module 3,0 kW	FM300	●			
Frequency converter module 5,5 kW	FM550		●		
Frequency converter module 7,5 kW	FM750			●	
Frequency converter module 10,0 kW	FM1000				●
<b>EMS communication modules:</b>					
Bus Center Control POWER	BCC-P	●	●	●	●
Bus Center Control LOGIC	BCC-L	○	○	○	○
<b>Sensor adapters</b>					
Sensor connection module-CAN Master/SSI/8xIO/ON-OFF	SA03	●	●	●	●
Sensor connection module-SSI/8xIO/ON-OFF	SA04	○	○	○	○
<b>Safety control systems:</b>					
Safety hardware	ST 01	○	○	○	○



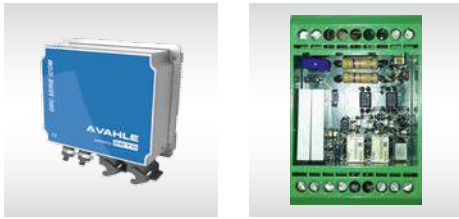
## Accessories

Beschreibung	Type
Remote control	MC 8/10M
External data stick	DS M12



## Series iCOM

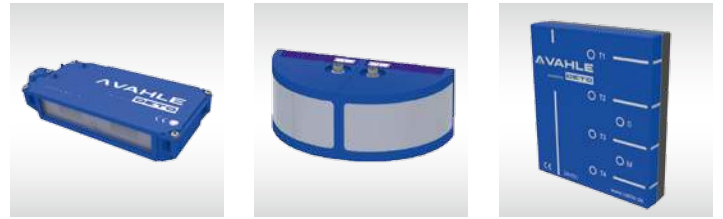
### Stationary communication modules



Discription	Type
PowerCAN - module	IC PCB 2K

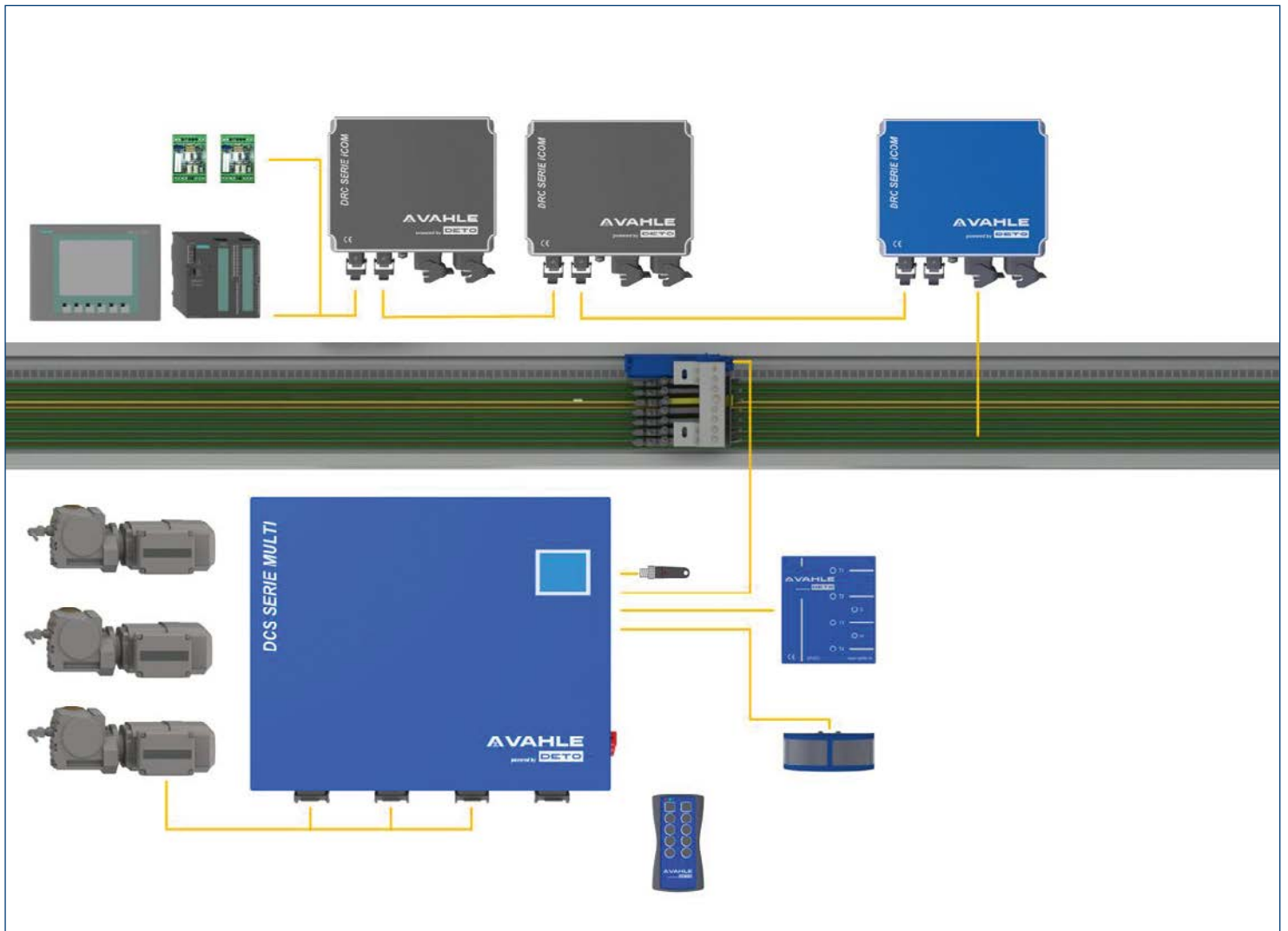
## Series iSENS

### Mobile sensors



Discription	Type
Apos OPTIC	LDC8K
Electronic magnetic field detector	EMD4P
Distance sensor	IS DIS 6

## System design



**Notes:**

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# Products and Service

Catalog No.

<b>1 Open conductor systems</b>	
Open conductor systems	1a
<b>2 Insulated conductor systems</b>	
U10	2a
FABA 100	2b
U15, U25, U35	2c
U20, U30, U40	2d
<b>3 Compact conductor systems</b>	
VKS 10	3a
VKS - VKL	3b
VMT	3c
<b>4 Enclosed conductor systems</b>	
KBSL - KSL	4a
KBH	4b
MKH	4c
LSV - LSVG	4d
<b>5 Contactless power supply</b>	
Contactless power supply (CPS®)	5a
<b>6 Data transmission</b>	
VAHLE Powercom®	6a
Slotted Microwave Guide (SMG)	6b
<b>7 Positioning systems</b>	
VAHLE APOS®	7a
VAHLE APOS Optic	7b
<b>8 Festoon systems and cables</b>	
Festoon systems for □ -tracks	8a
Festoon systems for flat cables on I-track	8b
Festoon systems for round cables on I-track	8c
Festoon systems for ◇-track	8d
Cables	8e
<b>9 Reels</b>	
Spring operated cable reels	9a
Motor powered cable reels	9b
<b>10 Other</b>	
Battery charging systems	10a
Heavy enclosed conductor systems	10b
Tender	10c
Contact wire	10d
<b>Assemblies / Commissioning</b>	
<b>Spare parts / Maintenance service</b>	



certified by DQS according to Din EN  
ISO 9001:2008 OHSAS 18001:2007  
(Reg. Nr. 003140 QM 08/BSOH)

 **VAHLE**  
ELECTRIFICATION SYSTEMS