

CONTAMINATION MONITORS

CSI-C-11 Series

ConditionSensor Interface



Description

The ConditionSensor Interface CSI-C-11 is an easy-to-use, compact condition monitoring system for fluid-based machine condition monitoring.

Depending on the device configuration, up to two HYDAC HSI SMART (fluid) sensors and four analog sensors can be connected to the CSI-C-11 via M12 connectors and supplied with voltage. Once the sensor measurement values and signals have been read, they are stored on the integrated data logger, evaluated in terms of their plausibility and monitored to check whether limit values have been exceeded. Limit values can be set to custom values, or with a selection wizard per ISO:12669. If a limit value is exceeded, the CSI-C-11 will automatically send out an alarm via email or via the integrated Ethernet and fieldbus interface (Modbus®). This makes it possible to transfer the measured values to higher-level company networks, condition monitoring systems (CMs), control systems (PLCs) and the HYDAC CMX (cloud).

Applications

- Construction Equipment
- Agricultural Machinery
- Test Benches
- Industrial Hydraulic Systems
- Combination with Filter Unit
- Power Units
- Any hydraulic system that requires on-line monitoring
- Mobile and Stationary Mining Equipment

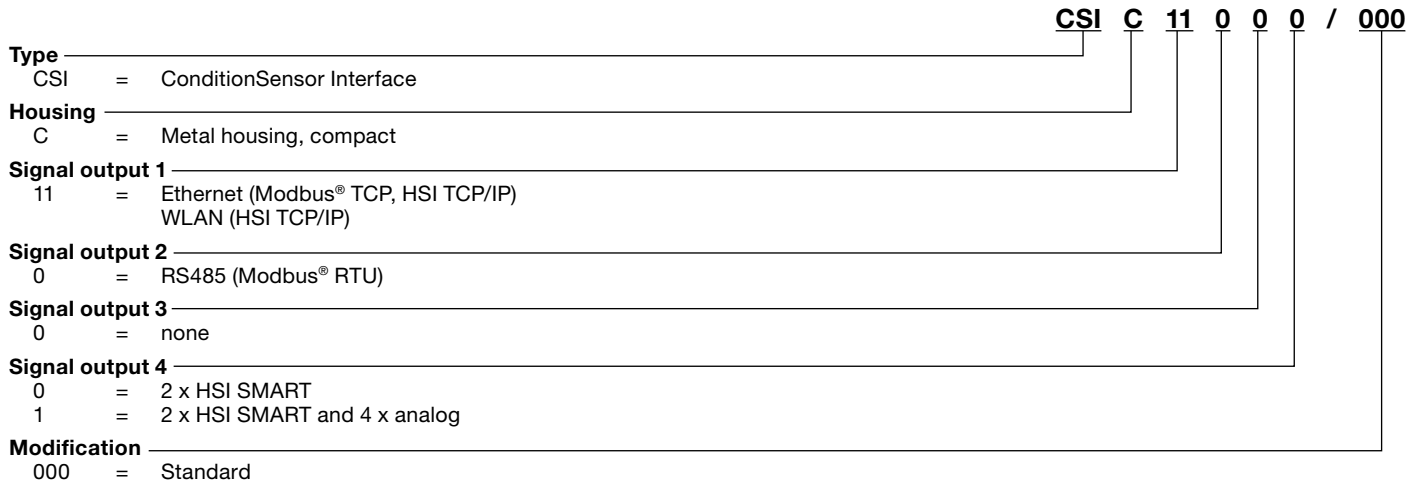
Features

- Two input channels for HYDAC HSI SMART sensors (e.g. fluid sensors)
- Four input channels for analog sensors (optional)
- Sensors and network cables are directly connected via M12x1 connectors
- Sensor readings can be transferred and displayed via wireless local area network (WLAN), Ethernet and Fieldbus (Modbus®)
- The CSI-C-11 stores the measurement data
- An integrated algorithm checks the plausibility of the measured values
- A selection wizard helps to set alarm limits of fluid sensors according to ISO:12669
- Notifications can be received via e-mail or the network in the event of an alarm
- High protection class with IP 66 – no switch cabinet is required

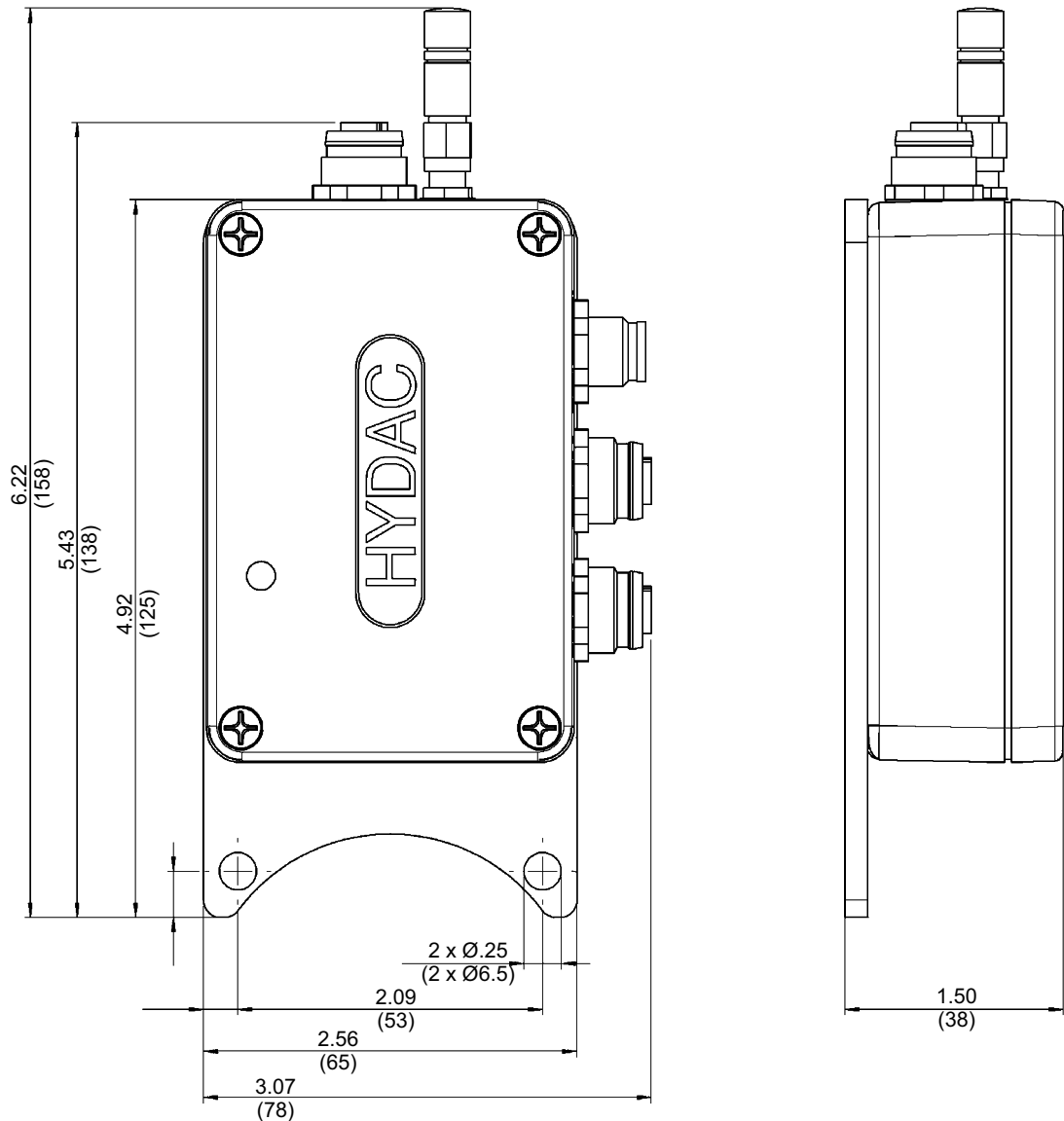
Technical Specifications

Input data	
HSI interface	HYDAC Sensor Interface (HSI) for the connection of two digital HSI SMART fluid sensors
Analog Interface	Sensor Interface for the connection of four analog sensors (type can be selected): – Current: 4 to 20 mA (ohmic resistance 500 Ω) 0 to 20 mA (ohmic resistance 500 Ω) – Voltage: 0 to 10 V, 0 to 5 V, 2 to 10 V, 1 to 5 V Measurement inaccuracy < 0.2% full scale (FS)
Output data	
Ethernet (ETH) 10 Base-T / 100 Base-TX	Protocol: – HSI TCP/IP (Port 49322) – Modbus® TCP (Port 502) – HTTP (port 80) – FTP (port 20/21) – SMTP (port 25) – MQTT – REST-API
W-LAN (HSI only) 2.4 GHz, IEEE 802.11 b/g/n	– HSI TCP/IP (port 49322)
RS485 (2 wire, half duplex)	– Modbus® RTU
Environmental conditions	
Operating temp. range	-13 to 185°F (-25 to 85°C)
Storage temp. range	-22 to 185°F (-30 to 85°C)
Relative humidity	0 ... 70%, non-condensing
CE marked	EN 61000-6-2, EN 61000-6-4
Protection class according to DIN 40050	IP 66
Other data	
Supply voltage	12 ... 24 V DC ± 10 %
Current consumption (module)	100 mA (plus connected sensors)
Sensor supply	12 ... 24 V DC (looped through)
Electrical connection	– Supply voltage: male connector, M12, 5-pin – HSI SMART sensor 1 and analog sensors 1–4: female connector, M12, 8-pin – HSI SMART sensor 2: female connector, M12, 5-pin – LAN: female connector, M12, 4-pin, D-coded (in accordance with IEC61076-2-101) – WLAN antenna: connector, RP SMA socket, female
Housing Dimensions	5.2" x 3.1" x 1.4" (131 x 77.5 x 35.5 mm)
Housing	Aluminium housing
Weight	0.79 lb. (≈ 360 g)
Internal measurement data memory	
Size	64 MB
Measurement interval 60 s	> 1300 days (with CS1000 + HLB1400)
Measurement interval 60 min	> 83000 days (with CS1000 + HLB1400)

Model Code



Dimensions

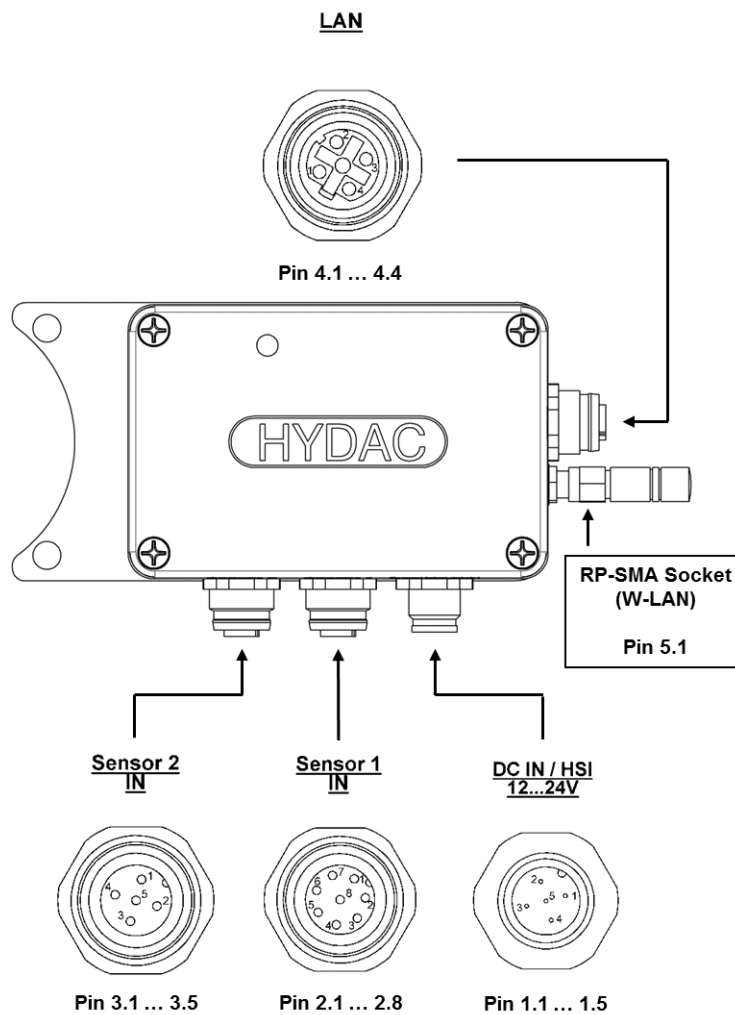


Dimensions are inches (millimeters) and for general information only.

CONTAMINATION MONITORS

Plug Pin Assignment

Pin	Signal	Description	
1.1	Vin 12 ... 24 V DC	Device (CSI-C-11)	Supply voltage +
1.2	RS485 -	Fieldbus (RS485)	RS485 port for data transmission -
1.3	GND	Device (CSI-C-11)	GND supply voltage
1.4	RS485 +	Fieldbus (RS485)	RS485 port for data transmission +
1.5	HSI	Device (CSI-C-11)	Parameterization
2.1	S1 12 ... 24 V DC	HSI SMART sensor 1	Supply voltage +
2.2	A1	Analog sensor 1	Analog input 1
2.3	S1 GND	HSI SMART sensor 1	GND supply voltage
2.4	A2	Analog sensor 2	Analog input 2
2.5	S1 HSI	HSI SMART sensor 1	HSI signal input
2.6	A3	Analog sensor 3	Analog input 3
2.7	A4	Analog sensor 4	Analog input 4
2.8	A1-A4 GND	Analog sensor 1-4	GND supply voltage
3.1	S2 12 ... 24 V DC	HSI SMART sensor 2	Supply voltage +
3.2	---	---	Not allocated
3.3	S2 GND	HSI SMART sensor 2	GND supply voltage
3.4	---	---	Not allocated
3.5	S2 HSI	HSI SMART sensor 2	HSI signal
4.1	ETH TX+	Network (LAN)	Ethernet port data transmission +
4.2	ETH RX+	Network (LAN)	Ethernet port data reception +
4.3	ETH TX-	Network (LAN)	Ethernet port data transmission -
4.4	ETH RX-	Network (LAN)	Ethernet port data reception -
5.1	ANT	Network (WLAN)	RP SMA socket WLAN-antenna



Accessories

Designation	Part-No.
Supply voltage	
PS5, power supply unit 100–240 V AC, 50–60 Hz, 1.1 A, IP40; female connector M12, 5-pin	3399939
ZBE47S-05, connection cable, female connector, 5-pin, with cable, length = 5 m	3527626
ZBE48S-05 connection cable, male connector, 5-pin, with cable, length = 8 m	6070712

Sensor connection cables	
ZBE43-005, connection cable CSI-C-11, male / female 8-pin, length = 0.5 m	4193544
ZBE43-05, connection cable CSI-C-11, male / female 8-pin, length = 5 m	3281240
ZBE30-005, connection cable CSI-C-11, male / female 5-pin, length = 0.5 m	4193586
ZBE30-05, connection cable CSI-C-11, male / female 5-pin, length = 5 m	6040852

Network cable (LAN)	
ZBE 45-05 network cable (patch), female connector, 4-pin, D-coded / RJ45 male connector, length = 5 m	3346100
ZBE 45-10, network cable (patch), female connector, 4-pin, D-coded / RJ45 male connector, length = 10 m	3346101

Connection adapter for additional sensors	
ZBE CSI 60, sensor connection adapter, 4 x analog mating connector, 8-pin, cable length = 1 m	4420372

Preferred Models

Designation	Part-No.
CSI-C-11-0-0-0/-000	4066011
CSI-C-11-0-0-1/-000	4247534

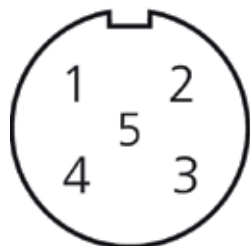
CONTAMINATION MONITORS

ZBE CSI 60 connection adapter – connection overview

The ZBE CSI 60 has connections for up to six sensors (4x analog sensors and 2x HSI SMART sensors) with the following connections.

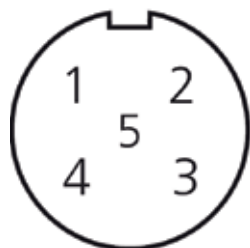


A1 / A2 – analog connection, 5-pin



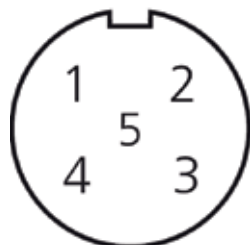
Pin	Designation	Description
1	Signal+	Analog current signal + (e.g. 4 to 20 mA)
2	n.c.	Not allocated
3	Signal-	Analog current signal - (e.g. 4 to 20 mA)
4	n.c.	Not allocated
5	n.c.	Not allocated

A3 – analog connection, 5-pin



Pin	Designation	Description
1	+24V DC	Supply voltage +24 V DC
2	n.c.	Not allocated
3	GND	GND supply voltage
4	Signal	Analog voltage signal (e.g. 0 to 10V)
5	n.c.	Not allocated

A4 – analog connection, 5-pin



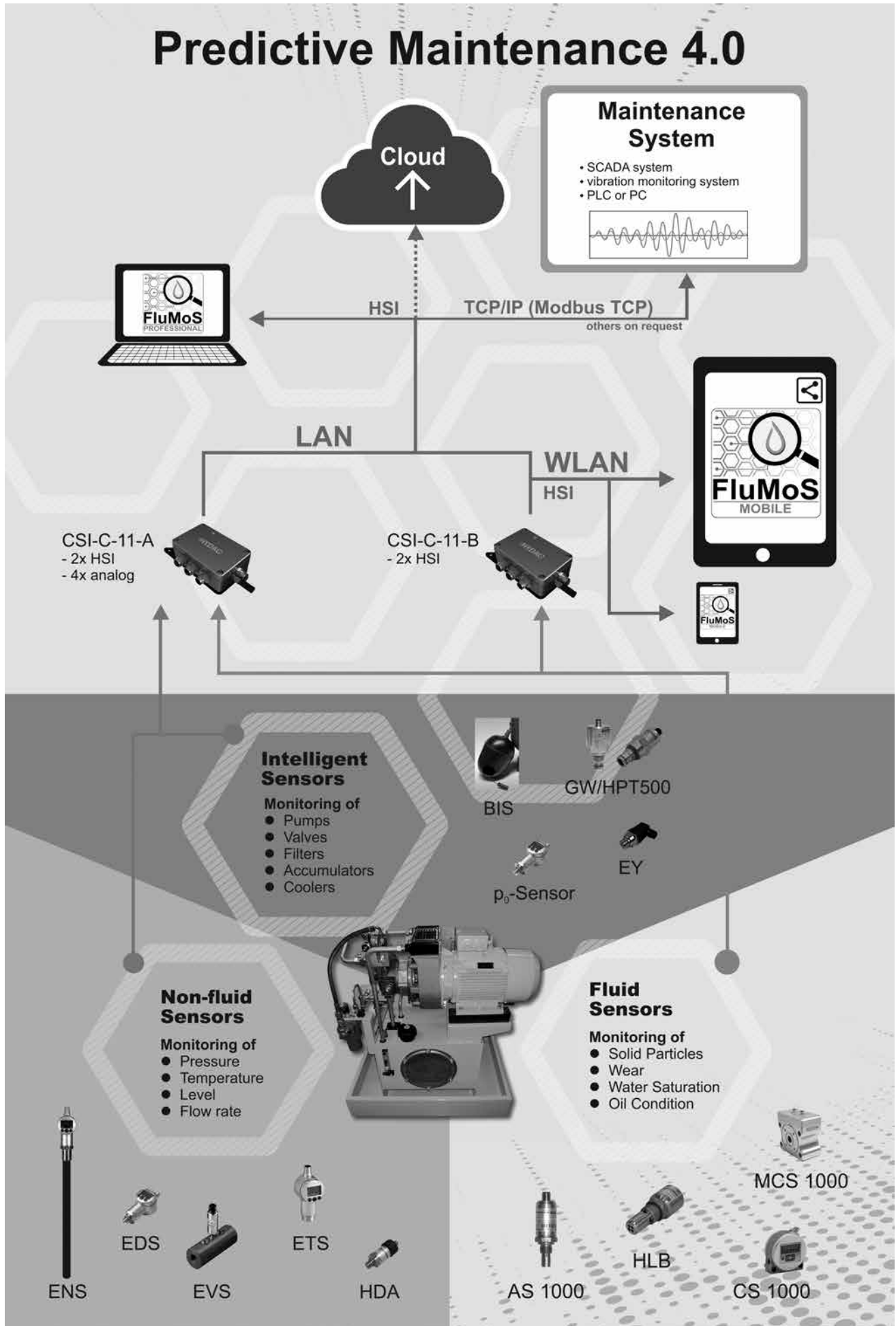
Pin	Designation	Description
1	+24V DC	Supply voltage +24 V DC
2	n.c.	Analog voltage signal (e.g. 0 to 10V)
3	GND	GND supply voltage
4	Signal	Not allocated
5	n.c.	Not allocated

S1 / S2 – HSI SMART sensor connection, 8-pin



Pin	Designation	Description
1	+24V DC	Supply voltage +24 V DC
2	n.c.	Not allocated
3	GND	GND supply voltage
4	n.c.	Not allocated
5	HSI	HYDAC Sensor Interface
6	n.c.	Not allocated
7	n.c.	Not allocated
8	n.c.	Not allocated

Predictive Maintenance 4.0



FluidMonitoring Software FluMoS

FluidMonitoring Software FluMoS light

FluMoS Light fluid monitoring software is a software package for importing, displaying and processing data from HYDAC fluid sensors. 3 sensors can be connected at the same time!

FluMoS Light can be used in conjunction with the latest generation of HSI interface sensors (CS 1000, FCU 1000, MCS 1000, AS 1000, FMM, HYDACLab®) and the sensors without HSI interface (CS 2000, FCU 2000, FCU 8000).

The FluMoS Light software is used to:

- Online display of measured values on the PC in table and graphic formats
- Storage of log files on hard disk
- Display of log files from hard disk/diskette and storage as graphic file
- Processing of stored log files with Microsoft Excel
- Remote monitoring of values measured by sensors
- Condition-based maintenance planning



FluidMonitoring Software FluMoS mobile

HYDAC FluMoS Mobile for Android – Your Access to HYDAC's FluidControl Units

Get your fluid condition monitoring measurement data on your Android device!

FluMoS Mobile is a tool for displaying and downloading measurement data from the FluidControl Unit FCU 1310 and FCU1315 via Bluetooth connection as well as the SensorMonitoring Unit SMU 1200 to your Android device. When the CS1000, AS1008 and MCS and other smart sensors are used in conjunction with the CSI-C-11, the FluMoS Mobile App can be accessed via WiFi connection to display and download measured data.

FluMoS Mobile Features (Version 1.10)

- Displays current measurement values (solid particle contamination, water saturation and temperature) of your FluidControl Unit FCU1315 in table format.
- Displays measurement value progress (solid particle contamination, water saturation and temperature) of your FluidControl Unit FCU1315 in graphic format (one graphic per measurement channel)
- Selective download of log files in .dat format from the internal memory of the FCU1315 and FCU1310 or SMU 1200 to your Android device

[possible with successor version]

- Online storage of measurement data on your Android device

You can easily forward the .dat files per e-mail to other devices such as a PC.

The files can then be processed in FluMoS.

FluidMonitoring Software FluMoS mobile - Screenshot

