

Appendix to the manual

AP-370 CE

Analyzers

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1. Overview

We made for you an appendix to the manual. In this manual are all important information's about the measuring network adapter, serial interface (RS232) and maintenance intervals. You don't have to observe the maintenance interval from the manual.

We produce the measuring network adapter in our office (Tulln), this is the reason why the description of this adapter in the manual is not correct.

The standard protocol for the serial interface is the Bayern-Hessen-protocol, but it is possible to change to Horiba-protocol by a software command.

2. MAINTENANCE INTERVAL AND HOUR METER

The hour meter shows how long the analyzer was in operation since the last maintenance. If you replace parts, you have to reset the respective value in the menu 3/7 *hourmeter*. In menu *lamp history*, you can see the history of the lamp intensity in a diagram.

We recommend you to use following maintenance intervals to get perfect operation of your analyzer.

2.1. Maintenance of APSA

Parts name	Hour-meter	Interval
Sample filter		2 week
Scrubber ESU-050A	SCR-1	2 years
Pump diaphragm	P-1-D	2years
Air filter 0,3 μ	F-2	2 years
HC-Cutter	CUT-1	If necessary
Xenon-lamp	LAMP	If necessary
Pump unit (double head)	P-1-B	If necessary
Internal Zero SO₂ Permeation		
Activated Carbon		1 years
DFU filter		If necessary
Permeations tube SO ₂		If necessary
Internal/ external H₂S Converter		
SO _x Scrubber Filling		1 year
H ₂ S Converter Filling		2 years

You have to clean the filter sponge from the cover.

2.2. Maintenance of APOA

Parts name	Hour-meter	Interval
Sample filter		2 weeks
Pump diaphragm	P-1-D	2 years
Catalyzer DO-5g	DO-1	2 years
Solenoid valve (Sample/Ref.-gas)	SV-2	If necessary
UV-lamp (Analyzer)	LAMP	If necessary
Pump unit (single head)	P-1-B	If necessary
Internal Zero/Ozone Generator		
Activated carbon		1 year
DFU filter		If necessary
UV lamp for Ozone prod.		If necessary

You have to clean the filter sponge from the cover.

2.3. Maintenance of APNA

Parts name	Hour-meter	Interval
Sample filter		2 weeks
Air filter 0,3 μ		2 years
Catalyzer DO	DO-1	2 years
Pump diaphragm	P-1-D	2 years
Silica gel for Dryer Units	D-1	2 years
Catalyzer NO ₂ -NO (ca.3ml)	COM-1	4 years
Gas Cleaner BAA		4 years
Dehumifier unit	PPD-1	If necessary
UV lamp with PTFE Liner	OGU	If necessary
Pump unit (double head)	P-1-B	If necessary
Solenoid valve (NO _x -line)	SV-2	If necessary
Solenoid valve (NO-line)	SV-3	If necessary
Solenoid valve (Referenz-line)	SV-4	If necessary
Internal Zero NO₂ Permeation		
Activated carbon		1 year
DFU filter		If necessary
Permeations tube NO ₂		If necessary
Internal Zero/NO Dilution		
Activated carbon		1 year

You have to clean the filter sponge from the cover.

2.3.1 Converter efficiency check

After maintenance of APNA you have to check and adjust the converter efficiency:

- Change to Supervisor Modus 9/11 FACTORY CALIBRATION
- Introduce zero gas and calibrate zero point
- Introduce NO span gas and calibrate span point
- Introduce GPT this means NO is converted to NO₂ by using ozone
- If the measured value is stable, adjust the number of the EFFICIENCY until the NO_x value is the same like before without GPT.

2.4. Maintenance of APMA

<i>Parts name</i>	<i>Hour-meter</i>	<i>Interval</i>
Sample filter		2 weeks
Pump diaphragm	P-1-D	2 year
Catalyzer Filling CO	CAT-1	2 year
Mist catcher BAA	MC-1	2 year
DFU filter		If necessary
Solenoid valve (Sample/Ref.-gas)	SV-2	If necessary
Pump unit (double head)	P-1-B	If necessary

You have to clean the filter sponge from the cover.

2.4.1. Watersteam adjustment

After yearly maintenance of APMA you have to check and adjust compensation for watersteam:

- Change to Supervisor Modus 8/9 FACTORY CALIBRATION
- bypass mistcatcher BAA and catalyzer
- introduce zero gas and calibrate zero point
- bypass mistcatcher BAA, reinstall catalyzer and insert bubbler at the outlet of catalyzer
- if the measured value is stable, press AS key and the adjustment for watersteam will be done automatic
- exit Supervisor Modus and restore the original piping.
- calibrate analyzer (zero and span)

2.5. Maintenance of APHA

<i>Parts name</i>	<i>Hour-meter</i>	<i>Interval</i>
Sample filter		2 week
Pump diaphragm	P-1-D	2 year
Air filter 0,3μ	F-2	2 year
Silica gel for Dryer Units	D-1	2 year
Non-Methane-Cutter	NMC-1	2 year
Purifier	PUR-1	2 year
Solenoid valve (Methane-line)	SV-2	If necessary
Solenoid valve (THC-line)	SV-3	If necessary
Solenoid valve (Referenz-line)	SV-4	If necessary
Pump unit (double head)	P-1-B	If necessary
DFU filter		If necessary

You have to clean the filter sponge from the cover.

3. Alarm limits

	APOA	APSA	APNA	APMA	APHA
FS 0	Calibration	Calibration	Calibration	Calibration	Calibration
FS 1	Battery	Battery	Battery	Battery	Battery
FS 2	Flow 0,7 ± 0,3 l/min	Flow 0,7 ± 0,3 l/min Overflow* <0,5l/min	Flow 1,05 ±0,45 l/min Overflow* <1,0l/min	Flow 1,5 ± 0,5 l/min Overflow* <1,2l/min	Flow 0,9 ± 0,4 l/min Overflow* <0,8l/min
FS 3	Pressure 42,5± 22,5 kPa	Pressure 42,5± 22,5 kPa	Pressure 75 ± 15 kPa	Pressure 42,5± 22,5 kPa	Pressure 75 ± 15 kPa 17,5 ± 12,5 kPa
FS 4	Deozonizer < 95 °C	H2S Converter 300±20°C	Converter < 120 °C	Catalyzer < 120 °C	Purifier ± 30 °C
FS 5	Temp ISGG 70 ± 2 °C	Temp ISGG 50 ± 2 °C			NMHC ± 10 °C
FS 6	Lamp <50mV	Lamp < 50mV			Flame
FS 7	-	-	-	-	-

Overflow*: only with Spangas cylinder

H2S Konverter*: only with H2S Converter

Temp IPGG*: only with Internal Spangasgenerator

Calibration

The alarm appears if the required set value of calibration cannot be reached.

In this case the calibration value will not be changed. The zero or span coefficient is flashing. You can delete the alarm by moving the cursor into the flashing figure and over write .

Battery

The battery is only for the clock.

Flow

The first value is the nominal flow rate. The second value is used if you have direct connection to the span gas cylinder. It shows the overflow from calibration gas. When the flow is outside from the range you get alarm.

Press

This alarm appears when the vacuum is to low for a correct work from the orifice.

Deozonizer, Catalyzer, Converter, Purifier

This alarm appears when the temperature form the converter, etc. is to low.

Temp ISGG, NMHC

This alarm appears when the temperature from the ISGG or NMHC is to low

Lamp

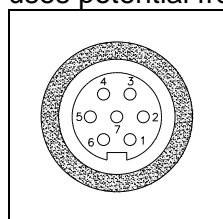
This alarm appears when the lamp signal is lower then 50mV.

4. Remote Control of calibration unit

The analyzer can control the calibration unit with potential free contacts or with +24V. The control voltage should be loaded with 20mA maximum. Potential free contacts can be loaded with max. 30VDC, AC and 1A.

Change the remote control signal

To change the remote control signal you need switch S2 on the measuring network adapter. If the switch is in upper position remote control signal is +24V, if it is in the lower position it uses potential free contacts.



Pin	Function
3	Zerogas
4	Spangas
7	Common

5. Serial Interface

You can have serial interface on your AP-370. Therefore we install an additional interface card called SIO-370. This interface converts Japanese protocol into Bayern-Hessen protocol which is standard in Europe.

5.1. Component identification and Multidrop Address

The serial interface is also designed to work in multidrop operation. This means you can connect up to 5 analyzers parallel to one serial interface of your data acquisition. Then each request for datas has to be done additional with multidrop address.

That means we have on multidrop address for each instrument and one component identification for each component. You can see in the table below. (Of course you can use other).

analyzer	address	component	characteristic
APNA	1	NO	11
		NO2	12
		NOx	13
APHA	2	CH4	21
		NMHC	22
		THC	23
APMA	3	CO	31
APSA	4	SO2	41
APOA	5	O3	51
APSA+CU-1	7	SO2	70
		H2S	71
APNA+CU-2	8	NOx	80
		NH3	81
		NOx + NH3	82

5.2. Operatingstatus

	AP-370
OS 0	
OS 1	Maintenance
OS 2	Zerogas
OS 3	Spangas
OS 4	
OS 5	
OS 6	
OS 7	

5.3. Errorstatus

	APOA-370	APSA-370	APNA-370	APMA-370	APHA-370
ES 0	Calibration	Calibration	Calibration	Calibration	Calibration
ES 1	Battery	Battery	Battery	Battery	Battery
ES 2	Flow	Flow	Flow Overflow*	Flow Overflow*	Flow Overflow*
ES 3	Press	Press	Press	Press	Press
ES 4	Deozonator	Converter H2S*	Converter	Catalysator	Purifier
ES 5	Temp ISGG*	Temp ISGG*	Temp ISGG*		NMHC
ES 6	Lamp	Lamp			Flamme
ES 7					

Overflow* : Only with Spangas cylinder
 Converter H2S*: Only with internal H2S Converter
 Temp IPGG *: Only with internal Spangasgenerator