



DRA-12

Precipitation Sampler

Product Information

Introduction

The DIGITEL DRA-12 is a microprocessor controlled automatic sampler for the sampling of wet depositions (rain, snow) for later assessment and analysis in the laboratory. The device is mounted in an air-conditioned compact field housing. The collection funnel, which is coated with Teflon, has a surface of 500 cm². (d = 252 mm).

Design and Operation

When it's dry, the collection funnel is closed by a lid. This avoids contamination of the funnel with leaves, dust etc. A rain sensor opens the lid, the precipitation accumulates in the funnel and flows via a short vertical Teflon pipeline directly into the current bottle. Snow and ice rain are defrosted by an integrated heating, which also prevents the freezing of the funnel lid. The turnable bottle plate contains 12 sampling bottles with 1l each, 32 sampling bottles with 250ml each or two bottles with 5l each. The exchange of the bottle takes place automatically, time and/or event controlled. When a bottle is full, it is automatically exchanged by a new one. Full / empty bottles that are not in the sampling line are automatically closed. The air-conditioned bottle chamber ensures the storage of the precipitation samples at a constant temperature.

All events (precipitation begin/end, bottle exchange etc.) are logged. The wet-only sampler is completely remote controlled via a RS232C or Ethernet interface.

GOOD TO KNOW

- ◆ 12x1000ml, 32x250ml or 2x5000ml polyethylene bottles
- ◆ Automatic change of bottles when bottles are full (capacitive sensor)
- ◆ Electronic protocol of bottle number
- ◆ Flexible software to meet any sampling schedule
- ◆ Precipitation-controlled funnel lid with selectable opening and closing times
- ◆ Automatic closing of the empty and full bottles



Korean Wet Sampling Network © KNJ Engineering Inc.



Swiss National Air Pollution Monitoring Network (NABEL) Magadino

Easy Programming

The touch screen allows simple and user friendly programming. The current state of the sampling course (e.g. program status, status periods, failure indication messages) is shown on the display. In case of power failure, all settings are stored. The time program is then internally running in the standard presetting and continued once the power is back. Therefore, programmed bottle change times are not postponed in case of power interruptions. The Digitel DRA-12 has a RS-232C interface which is used for data transmission with different protocols and for the remote control. The internal memory has the ability to store data during several months of daily sampling. Alternatively, the measuring data is saved on a flash drive which can be attached to a USB interface. The DRA-12 also has an Ethernet interface, which enables connections to any TCP/IP network. This allows data collection via FTP and remote control of the DRA-12 (integrated HTTP-Server). Software-Updates can be performed via USB or Ethernet interface.

FUNCTIONS

- ◆ Manually controllable movements over touch screen
- ◆ Programmable time control of bottle exchange
- ◆ Response time of lid closing and minimal sampling time can be determined
- ◆ Recording of total sampling time per sample, lid opening times etc. on internal memory and USB
- ◆ Customer specific programs on request

Part overview

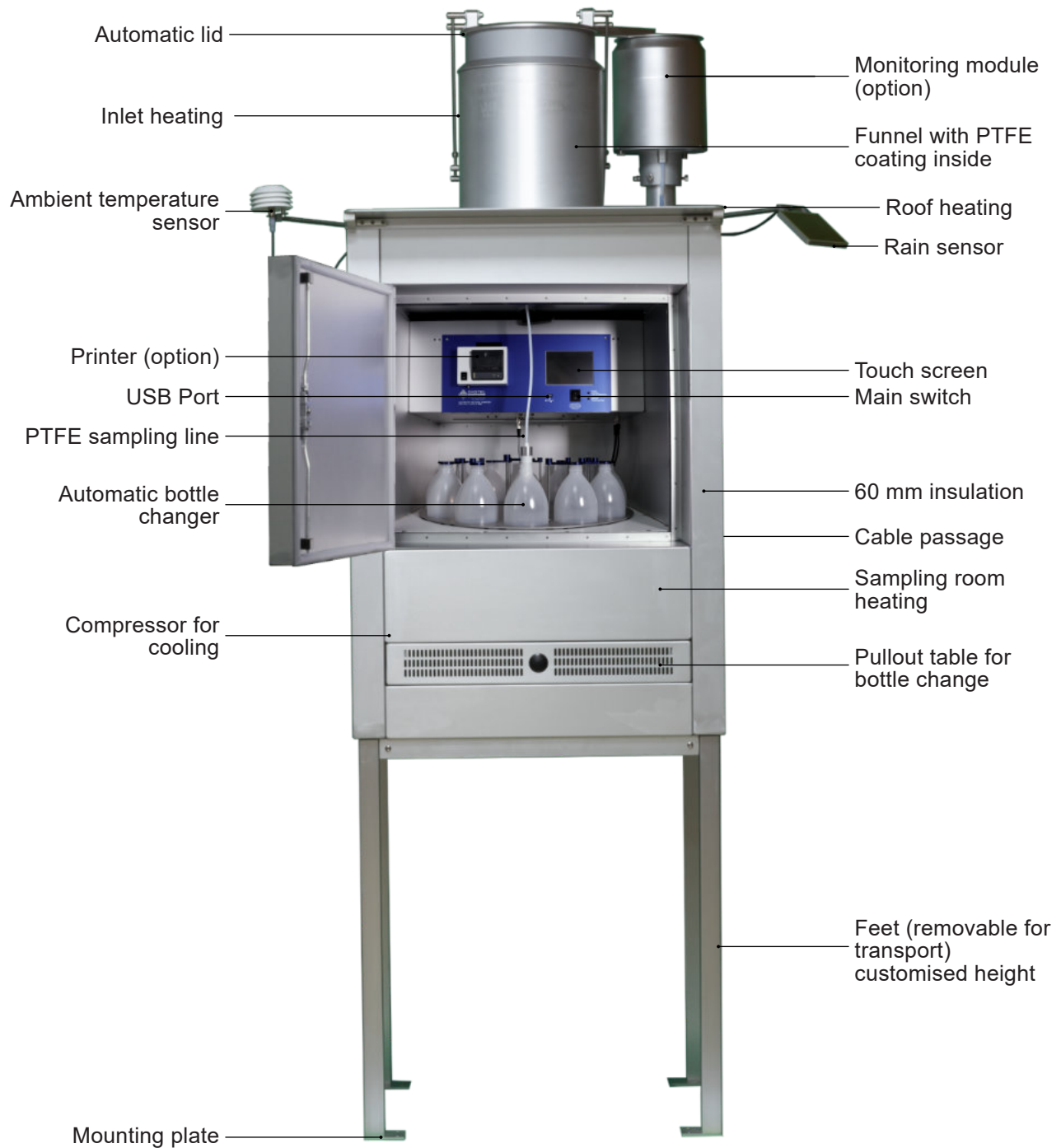


Figure 2: Part overview DRA-12

Superior materials

The sampling line is made of PTFE or PTFE coated aluminium as a standard, bottles are made of HDPE as a standard. Other materials such as glass funnels and glass bottles or HDPE funnels are available as an option.

All mechanical components in gears and drives are of highest quality materials such as stainless steel, anodised aluminium and industry grade POM. The DIGITEL DRA-12 is equipped with a protection class IP54 field housing. It is suitable for direct open-air installation. The field housing is double-walled with a 60 mm XPS insulation, to lower the energy consumption of the highly effective compressor cooler.

Monitoring Module

The monitoring module measures precisely the rain amount and intensity and gives an indication on pH value and conductivity of the sample. This module is fed by a separate sampling line, which is closed with a lid during dry periods.

FACTS & FIGURES

- ◆ Light weight but robust and weather proof
- ◆ Low energy consumption
- ◆ Low maintenance cost
- ◆ Easy programming with touchscreen
- ◆ Easy bottle handling
- ◆ Wide range of options and accessories

Dimensions

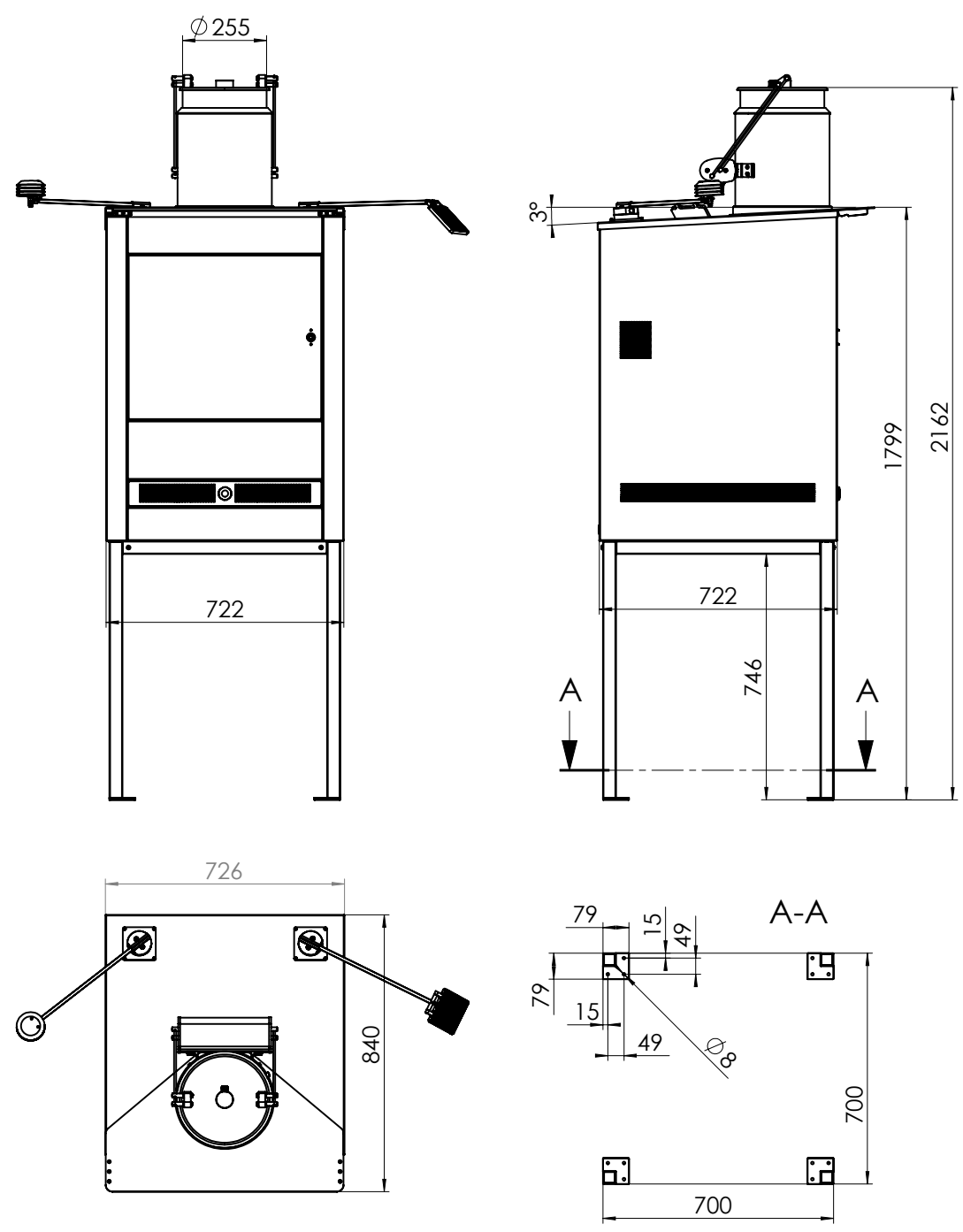


Figure 1: Dimensions of DRA-

Technical Data

Bottle changer configuration	32x250ml or 12x1000ml
Time programs	Work, Pause (0 to 59'999 minutes each) start time adjustable, using date and time
Instrument timing error	<4s/day, synchronising over network possible
Cooling capacity	
delay time of instrument opening lid	yes, user settable, 1s-60min
delay time of instrument closing lid	yes, user settable, 1s-60min
precipitation sensor heating	Yes, as a standard
Funnel opening (internal diameter (mm)) /sampling area	252mm +- 1mm / 500cm ²
Height of inlet from ground	As a standard 2.16m, available 1.5-2.5m
Average precipitation amount for initial monitoring	0.01 mm
Insulation of housing	60 mm XPS insulation
Leak protection	lid is closed when bottle is not in sampling position
Material of sampling line	PTFE coated aluminium / PTFE
Bottle material	PE, other materials (glass) on request
Memory	Battery backed internal memory
Interfaces	RS232C, USB, Ethernet, network interface (HTTP and FTP)
Interface protocols	DIGITEL, Bayern-Hessen, AK,
Recording	Protocols of lid opening and closing times, sampling time, error messages, temperatures. If options are connected: protocol of Option's outputs (pH, conductivity, temperature, amount, intensity)
Power supply	230 V, 50 / 60 Hz, max. 300 VA
Application range	-20° to 50°C; 0 % to 100 % RH, heating option for temperatures <0°C
Material	Coated aluminium
Noise level	<35dB at 1m
Mean time between failure	36'000 hours
Technical Data Options	
electrical conductivity working temperature	0-60°C
electrical conductivity measurement range	0-200,00 µs/cm
Precipitation measurement standards	WMO-No. 8 • VDI 3786 Bl. 7 • EN 61000-2, -4 • EN 61000-4-2, -3, -4, -5, -6, -11 NAMUR NE-21
Precipitation measurement principle	Weighing tipping bucket
Precipitation amount minimum resolution (mm)	0.001 mm
Precipitation amount accuracy	0.1mm

Table 1: Technical Data DRA-12

Figure 3: Dimensions DHA-80



Features

- Automatic bottle change
- Automatic closing of the empty and full bottles
- Changer failure recognition
- Manually controllable movements over touch screen
- Programmable time control of bottle exchange
- Response time of lid closing and minimal sampling time can be determined
- Recording of total sampling time per sample, lid opening times etc. on internal memory and USB
- Cooling compressor outside the sampling chamber
- Manual filter exchange option
- Empty magazine recognition
- Overload cut-off
- Operating hours counter
- Internal data memory
- Ethernet port for remote control and data query
- Weather-proof housing made of aluminium, protected with an extremely weather and seawater resistant powder coating
- Stainless steel gears
- 60mm insulation of sampling chamber
- Tower and bottom easily removable for transport and cleaning
- Easy fixation to the ground
- Sampling chamber lockable
- Drainage for condense water

Options

- Temperature controlled heating of lid, inlet and roof
- Online conductivity and pH measurement (indicative) (separate sampling line, closed with lid during dry periods)
- Precipitation amount and intensity measurement (separate sampling line)
- Text message module
- Internet router
- Printer

Customised Solutions

- Funnel, sampling line materials and bottles with customised materials
- Customised programming and communication
- Configuration avoiding certain materials (e.g. PTFE)
- Customer specific functions (e.g. wind controlled sampling)
- Customer specific interface protocols