



UMB SYSTEMS

Universal- Measurement- Bus

- Compact design
- Easy commissioning
- RS232 or RS485 data transfer
- GPRS data transfer over modem option
- Easy software updates
- Standard protocol for all UMB components
- Free UMB configuration software
- SmartView3 support (web visualization)



UMB TECHNOLOGY

The UMB (Universal Measurement Bus) system is new technology for recording environmental data.

Regardless of whether in the form of a standard weather station or road ice warning equipment, the modular system excels due to easy commissioning, free firmware updates and data transfer over RS232, RS485 or GPRS modem. UMB offers flexibility, modularity and web-based visualization and polling software.

The UMB sensor library provides a comprehensive range of environmental sensors for recording temperature, relative humidity, precipitation, visibility and road conditions. The new WS series compact weather stations, in particular, are outstanding due to their unrivaled price-performance ratio. The top-of-the-range model, WS600-UMB, incorporates sensors for temperature, humidity, precipitation, air pressure, wind direction and wind speed.

The electrical connection for all UMB sensors is made via a standard plug connector system. This keeps installation and service costs to a minimum.

Third party sensors and existing analog sensors can be integrated into the UMB system using the ANACON-UMB module.

All UMB sensors can be polled by means of a standard protocol. Once data polling has been incorporated for one sensor, additional sensors can be added by way of easy parameterization of the data polling system. Channel-oriented sensor data polling delivers a large number of computed variables in metric and US format. Thus there is no need for conversion by the user. Sensors can be configured, equipment tested and firmware updated with the free configuration software (UMB-Config-Tool).

In addition Lufft offers a variety of software packages from data retrieval from weather stations (COLLECTOR) to web visualization (SmartView3).



WS400-UMB, WS600-UMB COMPACT WEATHER STATIONS

From the WS product family of professional intelligent measurement transducers with digital interface for environmental applications.

Integrated design with ventilated radiation protection for measuring:

- Air temperature
- Relative humidity
- Precipitation intensity
- Precipitation type
- Precipitation quantity
- Air pressure
- Wind direction (WS600 only)
- Wind speed (WS600 only)

Relative humidity is measured by means of a capacitive sensor element; a precision NTC measuring element is used to measure air temperature.

Precipitation is measured by way of a 24 GHz Doppler radar, which measures the drop speed of an individual drop of rain/snow.

Precipitation quantity and intensity are calculated from the correlation between drop size and speed.

The difference in drop speed determines the type of precipitation (rain/snow).

Maintenance-free measurement offers a major advantage over the common tipping spoon and tipping bucket processes.

Ultrasound sensor technology is used to take wind measurements (WS600 only).

Measurement data are available for further processing in the form of a standard protocol (Lufft-UMB protocol).

WS600-UMB (available from 4th quarter 2008)



Technical data	Ref.No.
WS400-UMB Compact weather station	8369.U01 EU, USA, Canada
WS400-UMB Compact weather station	8369.U02 UK
Dimensions	Ø ca. 150mm, height ca. 200mm, weight ca. 2kg
Precipitation amount	
Resolution	0.01mm
Measuring range drop size	0.3...5mm
Reproducibility	Typical >90%
Precipitation Type	Rain/snow
Temperature	
Principle	NTC
Measuring range	-30...70°C
Accuracy	±0.2°C
Relative humidity	
Principle	Capacitive
Measuring range	0...100 % RH
Accuracy	±2% RH
Air Pressure	
Principle	MEMS capacitive
Measuring range	300...1200 hPa
Accuracy	±1.5hPa
General	
Interface	RS485, 2-wire, half-duplex
Operating power consumption	24VDC +/- 10% <3VA
Operating humidity range	0...100%
Operating temperature range	-30...70°C
Heating voltage	25VA at 24VDC
Technical data	Ref.No.
WS600-UMB technical data as 8369.U01	8370.U01 EU, USA, Canada
WS600-UMB technical data as 8369.U02	8370.U02 UK
Dimensions	Ø ca. 140mm, height ca. 270mm, weight ca. 2.2kg
Wind direction	
Principle	Ultrasonic
Measuring range	0...360°
Accuracy	± 3°
Wind speed	
Principle	Ultrasonic
Measuring range	0...60m/s
Accuracy	± 0.3m/s or 3% of measurement, highest value applies
Heating	50VA at 24VDC



IRS31-UMB INTELLIGENT ROAD SENSOR

Passive road sensor IRS31 is flush-mounted in the road. The two part housing design allows the combined sensor/electronics unit to be removed for maintenance or calibration at any time.

The following variables are recorded:

- Road surface temperature
- Water film height up to 4 mm
- Freezing temperature for different ice melting materials
- Road condition (dry/damp/wet/ice or snow/residual salt/freezing rain)

The sensors are addressable and can therefore be networked.

The measurement data are digitally transferred over the RS485 interface for further processing (logger, PLC, UMB etc.).

Technical data	Ref.No.
IRS31-UMB Intelligent road sensor	8510.U050
Measuring range temperatures	-30°C...+70°C
Accuracy temperatures	+/- 0.2°C (-10°C...+10°C), otherwise +/-0.5°C
Measuring range water film height	0...4mm
Accuracy water film height	+/- 0.1mm + 20% of measurement
Freezing temperature graphs	1...10 (standard: NaCl, CaCl, MgCl)
Measuring range freezing temperature	-20°C...0°C
Accuracy freezing temperature	+/-1°C for t>-10°C
Road conditions	Dry/damp/wet/ice or snow/residual salt/freezing rain
Dimensions	Ø 120mm, installation height 50mm
Weight	ca. 800g
Cable length	50m
Protection type	IP 68
IRS31-UMB with other cable lengths or additional depth temperature sensors:	
2 depth temperature sensors, 50 m cable	8510.U052
100 m cable	8510.U100
2 depth temperature sensors, 100 m cable	8510.U102
Housing road sensor without ext. temperature	8510.G050
Housing road sensor 1 ext. temperature, 50m	8510.G051
Housing road sensor 2 ext. temperature, 50m	8510.G052
Housing road sensor without ext. temperature	8510.G100
Housing road sensor 1 ext. temperature, 100m	8510.G101
Housing road sensor 2 ext. temperature, 100m	8510.G102
Accessories	
UMB interface converter ISOCON	8160.UISO
Road sensor cover (electronics)	8510.DEC



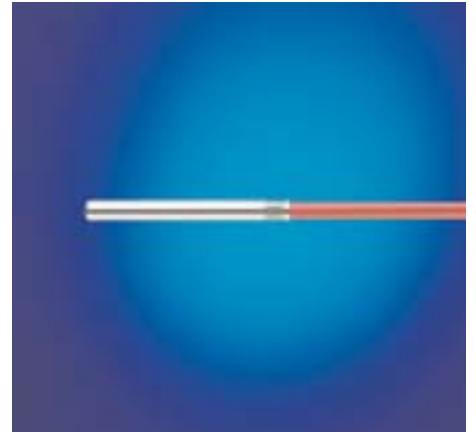
Order-no.: 8510.DEC

Replaceable sensor electronics
Polling via RS485 interface
Low energy consumption
(solar operation)
Radar procedure to measure water film

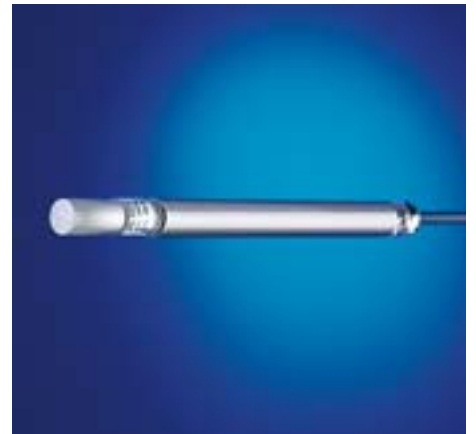


TEMPERATURE / HUMIDITY PROBES

Technical data	Ref.No.
Temperature probe	8160.TF
Dimensions	Length 50mm, Ø 6mm
Output signal	Resistance
Weight	370g
Cable length	10m
Protection type	IP68
Connector	COMBICON Phoenix
Operating temperature range	-50...150°C
Operating humidity range	0...100% RH
Temperature	
Principle	Pt100
Measuring range	-50...150 °C
Accuracy	±0.2°C (-30...70°C), otherwise ±0.4°C, + 1 digit



Technical data	Ref.No.
Temperature/RH probe	8160.TFF10, 10m cable length
Temperature/RH probe	8160.TFF50, 50m cable length
Dimensions	Length 185mm, Ø 16mm
Output signal	Resistance, frequency
Operating voltage	6...15V
Operating current	ca. 10mA
Weight	400g
Protection type	IP54
Connector	COMBICON Phoenix
Operating temperature	-30...70°C
Operating humidity range	0...100% RH
Relative humidity	
Principle	Capacitive
Measuring range	0...100 % RH / accuracy ±2% RH
Temperature	
Principle	Pt1000
Measuring range	-30...70 °C / accuracy ±0,2°C
Accessories	Ref.No.
Measuring head for 8160.TFF10 and 8160.TFF50	8160.HC
Radiation shield	8150.SCHUW
Calibration ampoule 50%	8151.E50
Calibration kit	8151.KAL



PRECIPITATION

Technical data	Ref.No.
Rain gauge 0.1 mm heated	8353.01
Dimensions	Ø 225mm, height 480mm
Connection type	Open cable ends
Collecting area	200cm ²
Resolution	0.1 mm
Weight	7.5kg
Heating	24 VDC/AC, 55W
Mounting type	On mast, Ø 50mm
Operating temperature range	-20...60°C



Accessories	Ref.No.
Power supply for heated probes for 8353.01	8161.SV4
Stand, height 1m	8353.FUS

Technical data	Ref.No.
Rain gauge 0.1 mm unheated	8353.02
Dimensions	Ø 225mm, height 480mm
Connection type	Open cable ends
Collecting area	200cm ²
Resolution	0.1 mm
Weight	7.5kg
Mounting type	On mast, Ø 50mm
Operating temperature range	-20...60°C



Accessories	Ref.No.
Stand, height 1m	8353.FUS

Technical data	Ref.No.
Rain gauge 0.2 mm unheated	8353.04
Dimensions	Ø 165mm, height 255mm
Connection type	Open cable ends
Collecting area	200cm ²
Resolution	0.2 mm (tipping bucket)
Weight	380g
Mounting type	On mast, Ø 50mm



Technical data	Ref.No.
Rain gauge 1 mm unheated	8353.05
Dimensions	100x50mm, height 100mm
Connection type for 8353.05	Open cable ends
Collecting area	50cm ²
Resolution	1 mm (tipping bucket)
Weight	300g
Mounting type	On mast, Ø 50mm



PRESSURE / WIND

Technical data	Ref.No.
Pressure sensor	8355.03
Dimensions	100mm x 65mm x 41mm
Connection type	Cable clips
Output signal	4...20mA
Operating voltage	7...15VDC
Operating current	4mA
Weight	ca. 360g
Protection type	IP54
Operating temperature range	-40...60°C
Max. burden	<(UB-7V)/20mA
Operating humidity range	0...95% RH (non-condensing)
Absolute pressure	
Principle	Capacitive ceramic
Measuring range	0...1200 hPa
Accuracy	±0.5hPa, for T=20°C and 600hPa <Pabs <1100hPa
Absolute pressure	
Principle	Capacitive ceramic
Measuring range	0...1200 hPa
Accuracy	±1.5hPa, for 0°C <T <40°C and 600hPa <Pabs <1100hPa
Absolute pressure	
Principle	Capacitive ceramic
Measuring range	0...1200 hPa
Accuracy	±2.0hPa, for -20°C <T <45°C and 600hPa <Pabs <1100hPa
Absolute pressure	
Principle	Capacitive ceramic
Measuring range	0 ... 1200 hPa
Accuracy	±3.0hPa, for -40°C <T <60°C and 600hPa <Pabs <1100hPa



Technical data	Ref.No.
Wind sensor unheated	8368.01
Dimensions	Traverse 1m
Start-up value	0.9m/s
Connection type	Open cable ends
Weight	2.5kg
Cable length	10m
Protection type	IP65
Wind direction	2° open at south
Operating temperature range	-30...70°C
Wind speed	
Principle / Measuring range	Generator / 0.9...50 m/s
Wind direction	
Principle / Measuring range	Potentiometer / 0...358 °
Wind sensor heated	8368.02
Accessories	Ref.No.
Power supply for heated probes	8161.SV4



Technical data	Ref.No.
Wind sensor unheated technical data as 8368.01	8368.03
Wind sensor heated technical data as 8368.02	8368.04
Heating	40W, 24VDC/AC
Accessories	Ref.No.
Power supply for heated probes	8161.SV4



LCOM (LUFFT COMMUNICATOR)

The LCOM (Lufft-Communicator) is an industrial PC with the Windows-CE operating system. The following interfaces are available for communication purposes:

- USB
- GPRS modem (RS232)
- Partyline modem (RS232)
- UMB bus (RS485)

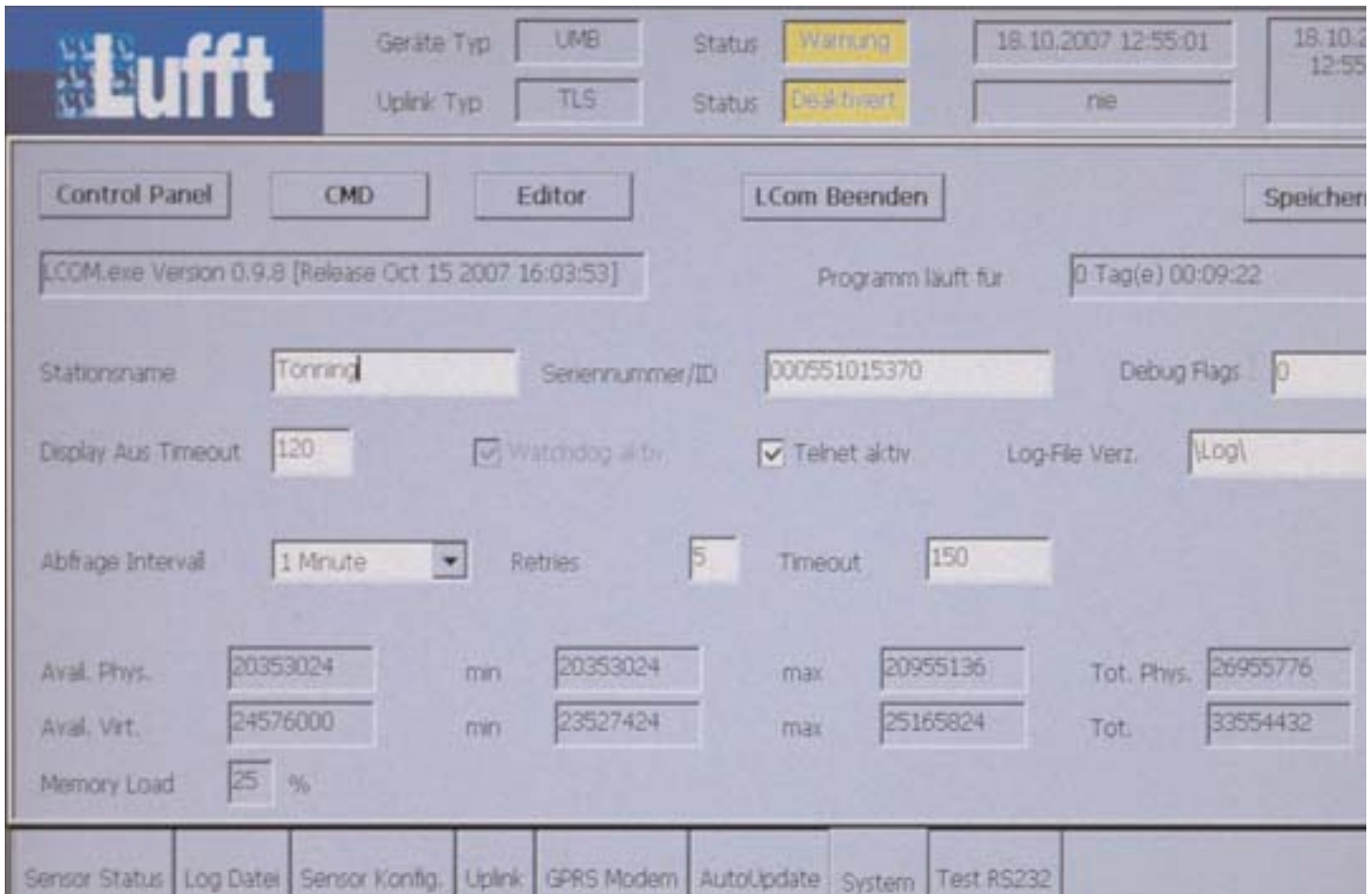
Conversion to the following standard protocols can be made in combination with the UMB technology:

- TLS
- NTCIP
- TLS over IP with GPRS (Asfinag)
- DGT (in planning)
- Synop (in planning)

The equipment is configured and measurement data presented on the built-in 7 inch touch screen display. A service PC is therefore no longer required.

Remote access is available for software uploads and data analysis on the LCOM and UMB modules over the GPRS modem.

Technical data	Ref.No.
LCOM Lufft Communicator	8510.EAK
Operating Conditions	
Power supply	20...28VDC
Power consumption	10VA
Ambient temperature	-30°C ... +60°C
Relative humidity	<90% RH
Protection type	IP20
Dimensions	230mm x 130mm x 50mm
USB interface	USB2.0B
GPRS modem interface	RS232 on Wago Cage Clamp
Partyline modem interface	RS232 on Wago Cage Clamp
UMB bus interface	RS485 on Wago Cage Clamp
Display size	7 inch
Display resolution	800 x 480 pixel
Storage conditions	
Ambient temperature	-30°C ...+60°C
Relative humidity	<95% RH
Accessories	
Power supply 230VAC/24VDC (100VA)	8366.USV1
GPRS/GSM modem	8160.GSM



CONFIGURATION EXAMPLES

Community Weather Station

Temp / Humidity
8160.TFF10

Wind speed /
direction 8368.01

Precipitation
8367.U01

Data collection on
polling server

Communication via
wireless modem
(CDMA/GPRS)



UMB modules
24V power supply
and GPRS modem

Standard ARWIS Configuration

Data collection
on site (EAK)

Temperature /
Humidity
8160.TFF10

R2S-UMB
Precipitation
8367.U01

Wind speed /
direction
8368.01

VS20-UMB
Visibility
8366.U50

IRS31-UMB
Intelligent
road sensor
8510.U050

IRS31-UMB
Intelligent
road sensor
8510.U050

Possibility to
connect a camera

Wired or wireless
data transmission



NTCIP / TLS
compliance with
EAK unit



EAK unit (LCOM)

ANACON
8160.UANA

ISOCON
8160.UISO

ANACON
8160.UANA

ISOCON
8160.UISO

ISOCON
8160.UISO

ISOCON
8160.UISO

UMB CONFIGURATION-SOFTWARE

UMB configuration-software

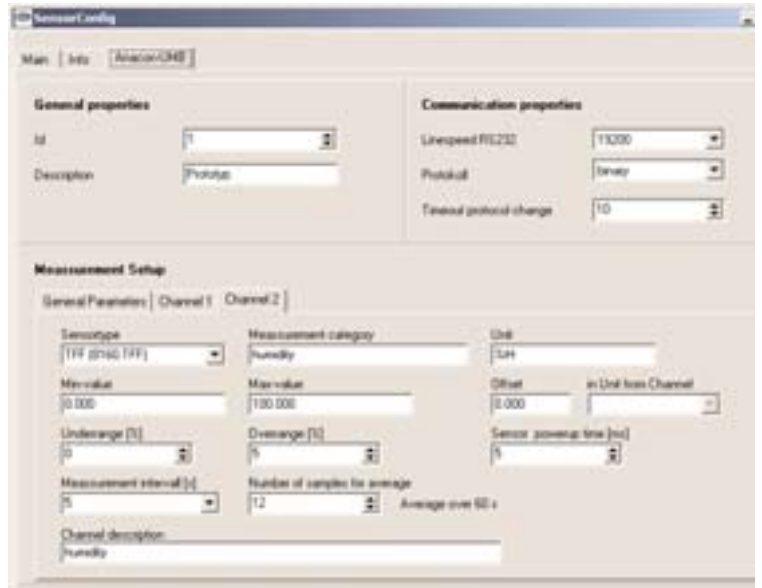
Functions

- Configuration of sensors
- On-site calibration of sensors
- Indication of current measurement values
- Firmware update for UMB-sensors and UMB-modules

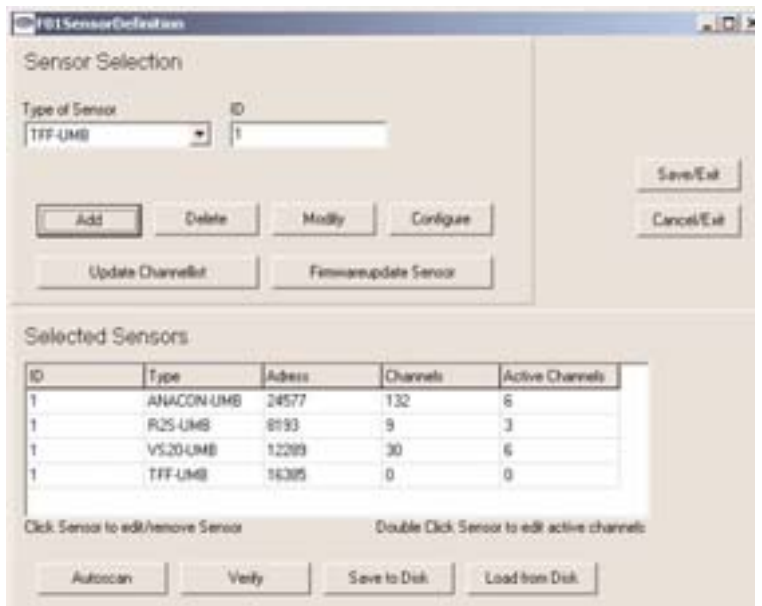
Coming soon

- Multi lingual user interface
- "trace function", interface recorder

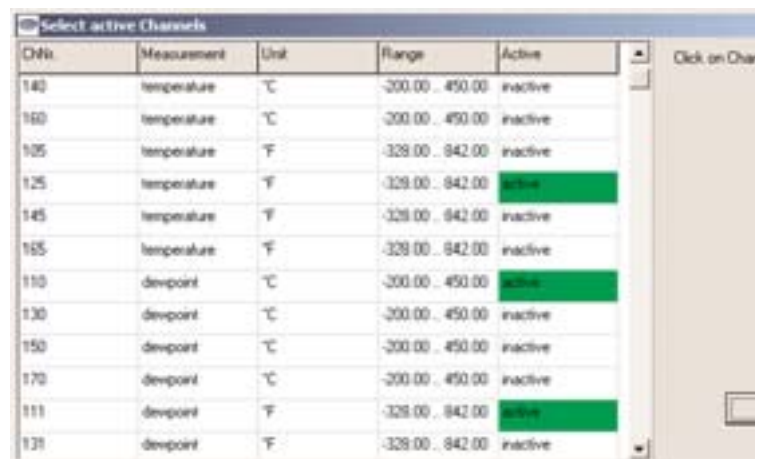
Configuration of analog sensors



Selection list of sensors



Selection list of sensor channels (temporary data request)



SOFTWARE Collector / SmartView3

Functions

Web based visualisation and data collection software for Luft dataloggers/transmitters

Storage of data in database

Flexible export and import functions for integration of external/third party software / data (CSV and XML)

Simultaneous data collection via unlimited communication modules (e.g.modems)

Integration of webcam pictures (via TCP / IP-FTP)

Basis version Collector
(Collector for up to 5 stations)
Order-no: 8160.COLLECT05

Unlimited version Collector
(unlimited quantity of stations)
Order-no: 8160.COLLECT

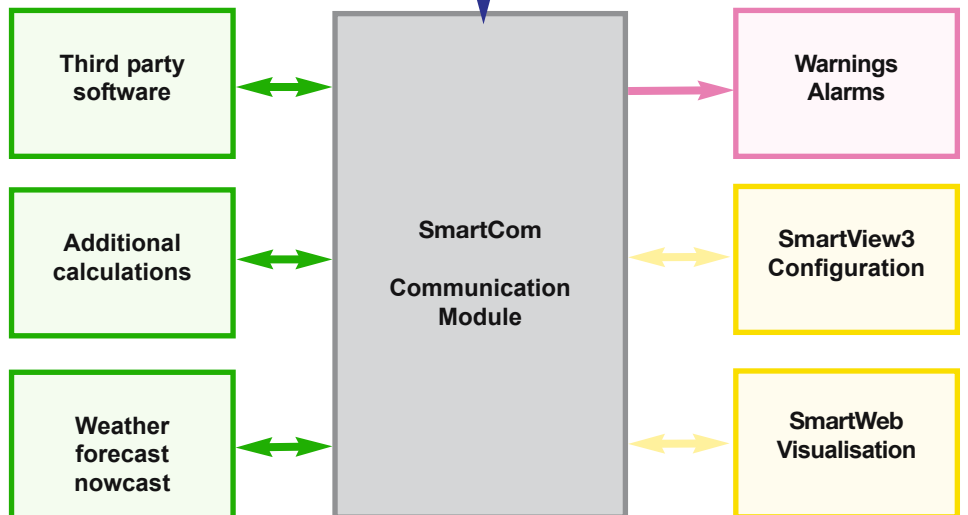
SmartView3 incl. Collector
up to 5 stations
Order-no: 8040.SV05

SmartView3 incl. Collector
unlimited
(Web visualisation)
Order-no: 8040.SV300



Data collection / polling / GPRS

MYSQL Database




MEASURING DATA

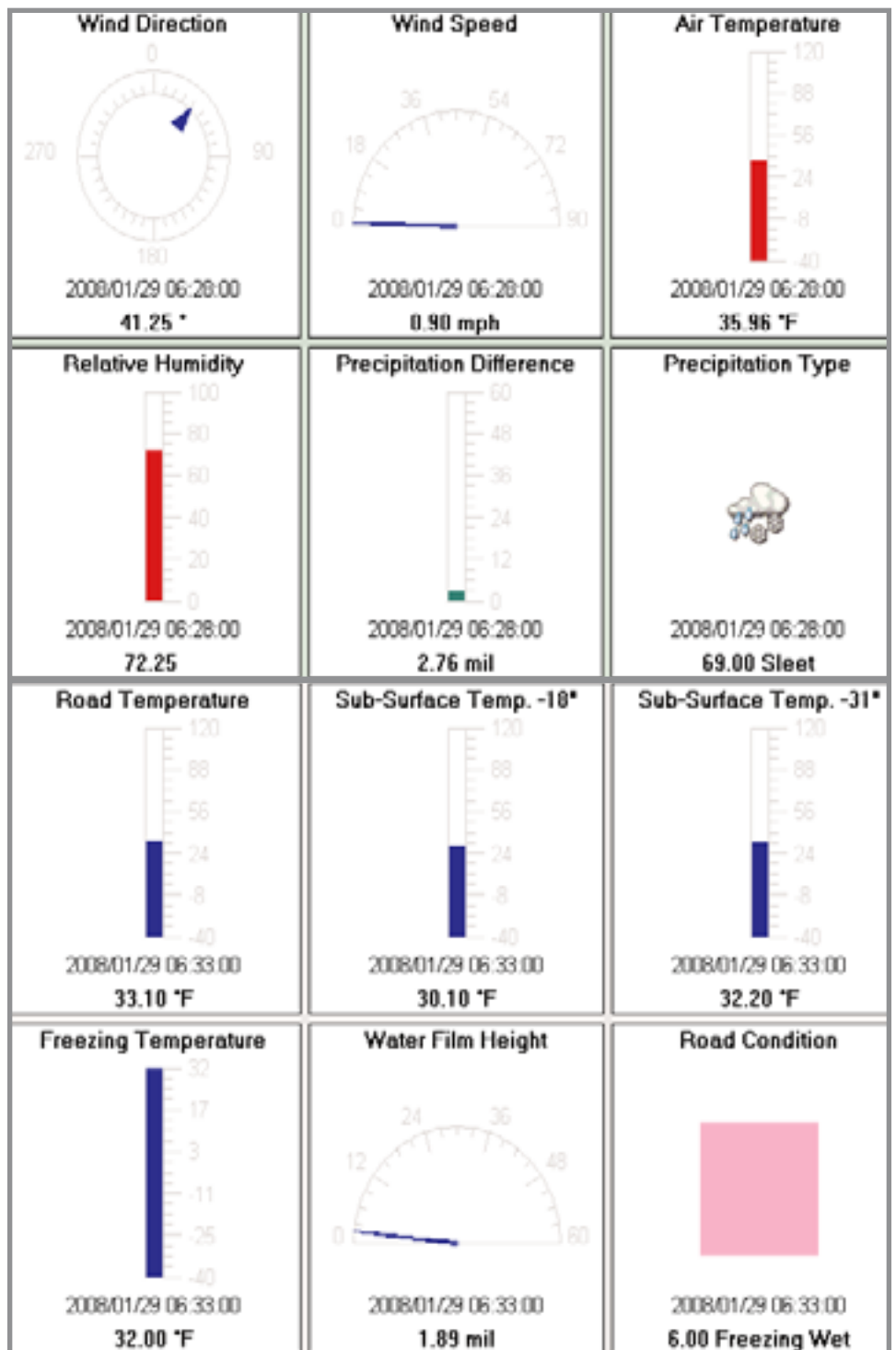


Current measurements displayed in the form of an indicator

Integration of a camera image into the visualization

Graphic displays (day and week charts)

Measurement data in tabular form



WEATHER STATIONS WORLD-WIDE



COLLECTOR / SmartView3 FUNCTIONS

Functions of SmartView3				
		Basis version	Complete version	SmartView3 with Collector
		Max. 5	Unlimited	Unlimited
Data Transfer	Quantity of weather stations			
	Lufft dataloggers/transmitters			
	Opus200 (Online and Offline)	x	x	x
	Opus2 (Online and Offline)	x	x	x
	UMB (Online)	x	x	x
	HP100 (Offline)	x	x	x
	Read sensor configurations	All types	All types	All types
	Change sample and storage rate and memory mode (Min/Max/ave)	Opus200	Opus200	Opus200
	Transfer camera picture via FTP	x	x	x
Connections				
	Direct (RS232)	x	x	x
	TCP/IP (Station with COM Server or CDMA/GPRS Modem with fixed IP address or DynDNS support)	x	x	x
	Modem (TAPI)	x	x	x
	PPP (camera picture only)	x	x	x
Intervals				
	Fixed (e.g. every 20 minutes)	x	x	x
	No transfer at special night periods (e.g. not between 10.00 p.m. and 5.00 a.m.)	x	x	x
	Special times	x	x	x
Modem poll				
	Max quantity of modems	Unlimited	Unlimited	Unlimited
	"Modem Pools" (poll stations with dedicated modems)	x	x	x
Recalculation of values				
	Re-scale data before storing in the database	x	x	x
	Mapping of data before storing in the database (e.g. change of road conditions codes)	x	x	x
Clock synchronisation				
	device needs the corresponding software function, device clock can be UTC or local time (with or without summertime adjustment)	x	x	x
Calculation channel				
	Calculation of sensor data as "calculation channel" according to delivered raw data. Immediately: scale of raw data for a configurable coefficient, generation of sum/average/minimum value/maximum value for a specific period of time; mapping of the values	x	x	x
Backup/archive of data				
	Time-controlled automatic backup of full database	x	x	x
	Time-controlled deletion of old data in database (including backup of data before deletion starts)	x	x	x
	Time-controlled compression of data in the database including backup before compression starts (reduction of data down to one value per hour/day)	x	x	x
	Time-controlled deletion of "old" camera pictures in the database (including backup of data before deletion starts)	x	x	x
	Restore of backup-data - including deletion of compressed data before restoring process starts (if the backup is the result of a data compression)	x	x	x
	Automatic transfer of backup-file onto a server via FTP	x	x	x
User access administration				
	Administration of users / functions and user groups	x	x	x
	Admission to functions for users/groups	x	x	x
	Create/delete stations	x	x	x
	Edit/view configuration of a station	x	x	x
	Create/delete website	-	-	x
	Change configuration of website	-	-	x
	Edit/view configuration of website	-	-	x
	Create/change user	x	x	x
	Change configuration data of software	x	x	x
Export/Import				
	Manual export/import	-	-	x
	Automatic export/import	-	-	x
	Export of configurable values of one or more stations in one file			
	Export in "CSV" format incl. parameter settings	-	-	x
	Import in "CSV" format incl. parameter settings	-	-	x
	Export in "XML" format incl. parameter settings	-	-	x
	Scale of data for export (e.g. recalculation of m/s into km/h)	-	-	x
	Mapping of data for export (e.g. recalculation of road conditions codes)	-	-	x
	Scale of import-data before storing the data in the database	-	-	x
	Mapping of import-data before storing the data in the database	-	-	x

COLLECTOR / SmartView3 FUNCTIONS

Calculation channel				
	Internal calculation of sensor data as "calculation channel" according to imported raw data. Immediately: scale of raw data for a configurable coefficient, generation of sum/average/minimum value/maximum value for a specific period of time; mapping of the	-	-	x
	Dew point calculation with an external program	-	-	x
	Peronospora calculation with an external program	-	-	x
	Venturia calculation with an external program	-	-	x
	Botrytis calculation with an external program	-	-	x
	Oidium calculation with an external program	-	-	x
Control of automatic export/import				
	Export if new data have been stored	-	-	x
	Time-controlled export (e.g. every 5 minutes)	-	-	x
	Flexible definition of time-interval for export based on start-up-time	-	-	x
	Export and execution of a software program	-	-	x
	Export and automatic transfer of a file via FTP	-	-	x
	Export and execution of a software program and import of the calculated result (e.g. disease model calculation)	-	-	x
	FTP transfer of files before import starts	-	-	x
	Time-controlled FTP transfer of files including "Wildcard" support	-	-	x
	Automatic deletion of files transferred via FTP after transfer has been finished	-	-	x
	Import of files including "Wildcard" support	-	-	x
	Automatic deletion of import files after import has been finished	-	-	x
Visualisation of data as "website"				
	Indication of station's status (last data transfer, transfer success) in a table	-	-	x
	Indication of station's status (last data transmission, transfer success) on a static map	-	-	x
	Indication of (selected) sensor data in a "pop-up" window by "scroll over" with the mouse on a station, on the static map	-	-	x
	Indication of status-information and current values of stations on "stations-page" per station	-	-	x
	Indication of camera-picture on "stations-page" of a station	-	-	x
	Graphic indication of the current value on the "station page" in the form of an analog-instrument	-	-	x
	Indication of reports (day/month/year) with sum/average and extreme values during the report period of time, on the "station page"	-	-	x
	Automatic generation of "data pages" to indicate the data in the given time interval, day/week/month/year (diagram and table)	-	-	x
	Selectable "data pages" including current values from sensors of different stations and different storage intervals (day/week/month/year) on one page	-	-	x
	Selectable line and status (bar) diagrams on "data-pages"; line diagrams with up to 4 different Y-axes (units). Scale of line diagrams manually or automatically	-	-	x
	Indication of reports (depending on configured period for the station pages) with average/sum and extreme values on the period of time, on the station page	-	-	x
	Management of "pages-archive" for data pages (historic measurements)	-	-	x
	Automatic transfer of admission rights on to website/webserver (via .htaccess - function has to be active on web-server)	-	-	x
	Automatic erasure of archive pages prior to configured period of time	-	-	x
Warnings/alarms				
	Configuration of high and low threshold per sensor; generation of warnings/alarms if value is out of limits	-	-	x
	Alarm message if station cannot be polled	-	-	x
	Alarm message if import file cannot be used	-	-	x
	In case of alarms, generation of email message (station could not be polled, sensor delivers error, sensor delivers error value/import, sensor delivers error /import, sensor delivers alarm value) to one or more destination addresses	-	-	x

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