

## Check Box S6 - Intelligent chart recorder for compressed air and gases

### Features & Benefits

- ▶ Clear layout: 7" color screen with touch panel-
- ▶ Versatile: Up to 12 optional sensors can be connected
- ▶ Suitable for industrial applications: Metal housing IP 65 or panel mounting
- ▶ Data available through world wide web: Network-compatible and remote transmission via webservice
- ▶ Intelligent: Daily/weekly/monthly reports-
- ▶ Mathematical function for internal calculations
- ▶ Totalizer function for analogue signals
- ▶ Saves time and costs during installation

Measurement - control - indication - alarm - recording - evaluation



### Options



Flow sensors



Dew point sensors



Pressure sensors



Temperature sensors



Compressed air quality measurement



Current/effective power meters

From recording of the measured data, indication on a big color screen, alerting, storage up to remote read-out via webserver- this is all possible with Check Box S6. By means of the webserver software alarms can be sent via SMS or e-mail.

All measured values, measured curves and threshold exceeding are indicated. The curve progressions from the beginning of the measurement can be viewed by an easy slide of the finger.

Daily/weekly/monthly reports with costs in € and counter reading in m<sup>3</sup> for each consumption sensor are completing the sophisticated system concept. The big difference to ordinary paperless chart recorders reveals in the easy initiation and in the evaluation of the measured data. All sensors are identified directly and powered by Check Box S6. Everything is matched and tuned.

Mathematical function for internal calculations, e.g. the typical figures of a compressed air plant:

- costs in € per generated m<sup>3</sup> air
- kWh/m<sup>3</sup> generated air
- consumption of single lines including summation

Totalizer function for analogue signals (e.g. 0/4-20 mA, 0-10 V). In case of third-party sensors which e.g. only give a 4-20 mA signal for the actual flow in m<sup>3</sup>/h a total counter reading in m<sup>3</sup> can be generated by means of the totalizer function.

No time consuming studying of the instruction manual- this saves time. Internal voltage supply of all sensors, no wiring of external mains units - this saves additional costs.

**At 12 freely assignable sensor inputs all our sensors can be connected as well as any optional third-party sensors and meters with the following signal outputs:**

4-20 mA, 0-20 mA | 0-1 V / 0-10 V / 0-30 V | Pt 100 (2- or 3-wire), Pt 1000 (2- or 3-wire), KTY | pulse outputs (e.g. of gas meters) frequency output | Modbus protocol.

 **Flow sensors**

- Installation and removal under pressure via standard 1/2" ball valve
- A safety ring avoids the uncontrolled ejection in case of installation/removal under pressure
- Usable for different gases: compressed air, nitrogen, argon, CO<sub>2</sub>, oxygen

 **Dew point sensors**

- Extremely long-term stable
- Quick adaption time
- Large measuring range (-80° to +20°Ctd)
- For all driers: Desiccant driers, membrane driers, refrigeration driers
- Easy installation under pressure via the standard measuring chamber with quick coupling

 **Pressure sensors**

- Large selection of pressure sensors with different measuring ranges for each measuring purpose
- Quick installation under pressure by quick coupling
- Pressure sensors 0-10/16/40/100/250/400/600 bar overpressure
- Pressure sensors -1 - +15 bar (under-/overpressure)
- Differential pressure 0-1,6 bar
- Absolute pressure 0-1.6 bar (abs:)

 **Temperature sensors**

- Large selection of temperature sensors e.g. for measurement of the ambient temperature or gas temperature
- Pt100 (2-wire or 3-wire)
- Pt1000 (2-wire or 3-wire)
- KTY sensors
- Temperature sensors with measuring transducer (4-20 mA output)

 **Compressed air quality measurement**

- Monitoring the compressed air according to ISO 8773
- Residual oil, particle, residual moisture

 **Current/effective power meters**

- PMH ENERIUM 30 current/effective power meters for panel mounting with external current transformer for big machines and plants
- External current transformers for encompassing the phases (max. 2000 A)
- Measures KW, kWh, cos phi, kVar, kVA
- Data transfer Check Box S6 via Modbus

By means of the intelligent chart recorder Check Box S6, all measuring data of a compressor station can be recorded, indicated and evaluated.

# Measured values, statistics, curves with the 7" color screen touch panel

## Real time measured values

- ▶ All measured values can be seen at a glance. Threshold exceeding are indicated in red color.
- ▶ A „measuring site name“ can be allocated to each sensor.

A1 Compressed Air		A2 Compressed Air		A3 Compressed Air		A4 Compressed Air	
A1a	237.7 m³/h	A2a	729.702 m³/h	A3a	537.0 m³/h	A4a	254.7 m³/h
—	34108 m³	—	13423271 m³	—	153132 m³	—	55234063 m³
B1 Nitrogen		B2 Nitrogen		B3 Nitrogen		B4 Nitrogen	
B1a	337.7 l/min	B2a	657.7 l/min	B3a	15.7 l/min	B4a	237.7 l/min
—	27734 ltr	—	240841 ltr	—	34131 ltr	—	235322 ltr
C1 Oxygen		C2 Oxygen		C3 Oxygen		C4 Oxygen	
C1a	17.7 l/min	C2a	37.7 l/min	C3a	223.7 l/min	C4a	75.8 l/min
—	4080 ltr	—	234108 ltr	—	3749 ltr	—	43584 ltr

Real time measured values

## Graphic display

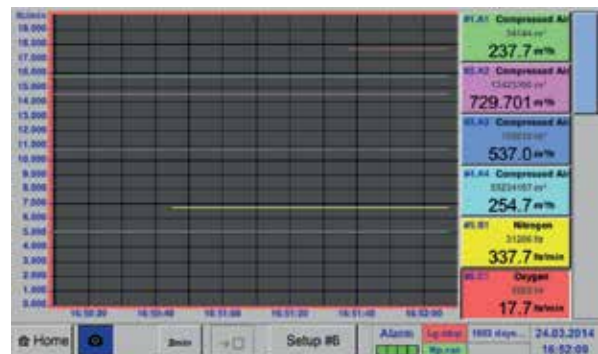
- ▶ This display replaces the former evaluation of ordinary paper chart recorders and offers lots of advantages. The time axis can be moved by a finger slide.
- ▶ The „zoom function by finger movement“ which enables an analysis of peak values is unique.



Graphic display

## Actual measurement values and graphic

- ▶ Additionally to the measurement curves the real time value is indicated as well.



Actual measurement values and graphic

## Statistic and reports

- ▶ Different to ordinary chart recorders the Check Box S6 offers not only the recording of the measured data but also the evaluation of all flow sensors optionally as daily/weekly/monthly report at the push of a button.
- ▶ It is no longer necessary to read-out the counter and transfer the values manually into a list. The reports can be imported to every PC into Excel® by means of a USB stick and after that they can be printed out without any additional software. This saves time and money and simplifies the evaluation enormously.

Consumption report						
Month/Year	"A1" Hall 1.1 compressed air					Total
	Consumption per month m³	Costs €	max value m³/h	min value m³/h	average m³/h	
2010 May	7257	109	3.7	35.8	15.8	398
2010 June	9530	143	3.8	36.1	18.9	402
2010 July	7325	110	3.9	37.2	14.5	327
2010 August	9099	121	3.9	37.1	16.1	353
2010 September	7842	118	3.9	36.8	15.6	367
2010 October	6167	93	3.9	37.3	12.2	291
2010 November	9030	136	3.9	37.5	17.9	311
2010 December	9062	136	3.9	37.5	18.0	388
2010 Total	97953	1469	3.8	37.1	16.3	4154
2011 January	8880	133	3.6	37.7	17.6	412

Statistic and reports

## Technical data of the Check Box S6

Technical data Check Box S6	
Dimensions of housing	280 x 170 x 90 mm, IP 65
Connections	18 x PG 12 for sensors and supply
Version panel mounting	Cutout panel 250 x 156 mm
Weight	7.3 Kg
Material	Die cast metal, front screen polyester
Sensor inputs	4/8/12 sensor inputs for analogue and digital sensors freely allocatable. See options Digital PMH sensors for dew point and consumption with SDI interface FA/VA series, digital third-party sensors RS 485 / Modbus RTU, other bus systems realizable on request. Analogue PMH Sensors for pressure, temperature, clamp-on ammeters pre-configured. Analogue third-party sensors 0/4-20 mA, 0-1/10/30V, pulse, Pt 100 / Pt 1000, KTY
Power supply for sensors	24 VDC, max. 130 mA per sensor, integrated mains unit max. 24 VDC, 25 W. In case of version 8/12 sensor inputs, 2 integrated mains units each max. 24 VDC, 25 W.
Interfaces	USB stick, Ethernet / RS 485 Modbus RTU / TCP, SDI other bus systems on request, WEB server optionally
Outputs	4 relays (changeover contact 230 VAC, 6 A), alarm management, relays freely programmable, collective alarm Analogue output, pulse in case of sensors with own signal output looped, like e.g. VA/FA series
Memory card	Memory size 4 GB SD memory card standard
Power supply	100-240 VAC / 50-60 Hz, special version 24 VDC
Color screen	7" touch panel TFT transmissive, graphics, curves, statistics
Accuracy	see sensor specifications
Operating temperature	0-50°C
Storage temperature	-20-70°C
Optionally	Webserver
Optionally	Option „energy and flow report“ statistics, daily/weekly/monthly report

Description	Order no.
Check Box S6 - intelligent chart recorder in basic version (4 sensor inputs)	2255332462
Option: 4 additional sensor inputs for Check Box S6	2255332463
Option: 8 additional sensor inputs for Check Box S6	2255332464
Option: Integrated webserver	2255460218
Option: „energy and flow report“ statistics, daily/weekly/monthly report	2255460220
Option: version for panel mounting	2255332465
Option: power supply 24 VDC (instead of 100-240 VAC)	2255332466
Option: „Mathematics calculation function“ for 4 freely selectable „virtual“ channels, (mathematical functions: addition, subtraction, division, multiplication)	2255460221
Option: „Totalizer function for analogue signals“	2255460222
External Gateway Profibus	2255332467
PMH Basic – data evaluation graphically and in tabular form - reading of the measured data via USB or Ethernet, license for 2 workstations	2255332468

Input signals	
<b>Current signal</b> Internal or external power supply	(0-20mA/ 4-20mA)
Measuring range	0-20 mA
Resolution	0.0001 mA
Accuracy	± 0.03 mA ± 0.05 %
Input resistance	50 Ω
<b>Voltage signal</b> Measuring range	(0-1 V) 0-1 V
Resolution	0.05 mV
Accuracy	± 0.2 mV ± 0.05 %
Input resistance	100 kΩ
<b>Voltage signal</b> Measuring range	(0-10 V / 30 V) 0-10 V
Resolution	0.5 mV
Accuracy	± 2 mV ± 0.05 %
Input resistance	1 MΩ
<b>RTD Pt 100</b> Measuring range	-200-850°C
Resolution	0.1°C
Accuracy	± 0.2°C (-100-400°C) ± 0.3°C (further range)
<b>RTD Pt 1000</b> Measuring range	-200-850°C
Resolution	0.1°C
Accuracy	± 0.2° (-100-400°C)
<b>Pulse</b> Measuring range	min. pulse length 500 µs frequency 0-1 kHz max. 30 VDC

Matching sensors can be found e.g. on pages 16 to 18