



## DESCRIPTION

Compact **Δp - CONTROL - FILTER - SCANNER DFS-73** qualified by a multitude of functions that can be programmed easily, fulfils all requirements for an economic operation of modern filter-plants.

**Examples: JET - Filter** - plants, where filters are cleaned by compressed air-pulses through valves.

The filter pollution is measured as a  $\Delta p$ -pressure and indicated on the display. If the  $\Delta p$ -pressure is low, that means the filters are clean, the SCANNER runs with a long **INTERVAL 2**, programmable from 5 s - 60 min and cares for occasional cleaning **PULSES** - separately programmable for each **INTERVAL 1** til 4 - between 20 ms - 5 s, indicated by the LED CONTROL. The times of PULSE and INTERVAL are programmable very precise by the pushbuttons PAR, ENT, ↓ and ↑.

When the  $\Delta p$ -pressure increases with the filter pollution and  $\Delta p$ -set point **CONTROL max** is reached, the cleaning process starts with a shorter **INTERVAL 1**, programmable from 5 - 240 s. During the cleaning, the  $\Delta p$ -pressure falls and finally  $\Delta p$ -set point **CONTROL min** is reached, the longer **INTERVAL 2** being activated again. If the  $\Delta p$ -pressure do not falls during cleaning with **INTERVAL 1** because more dust comes in the filter or the programmed time for **INTERVAL 1** is too long so that the  $\Delta p$ -pressure increases to the  $\Delta p$ -set point **CONTROL above-max** the cleaning process changed to a third **INTERVAL 3** programmable from 5 - 240 s. During the cleaning process it will be shown by LEDs with which **INTERVAL** the CONTROLER is working.

All  $\Delta p$ -pressure set points - also the set points for activating the **INTERVALS 1 and 2 - CONTROL max and min** - are programmable with the pushbuttons PAR, ENT, ↓ and ↑. While working process of the DFS-73, with this pushbuttons the programmed data are recalled quickly. With the programmable **Δp-DAMPING**, the influence of pressure peaks of the filter-bags can be reduced. If the  $\Delta p$ -pressure decreases or increases due to wrong cleaning or a compressed air deficiency, this condition can be indicated by a relay for which two  $\Delta p$ -set points - **ALARM max and min** - are programmable and visualised by the LEDs ALARM. A special **Valve-Control-System** gives off an **ALARM** in the case of: line-break, short circuit and no JET-air pulses.

Aftercleaning with **INTENSIVE-CLEANING-CYCLE - I-C-C** with **IMPULSE 4** and **INTERVAL 4** - starts, when the process air is disconnected and detected by the  $\Delta p$ -set point **I-C-C**. The number of further cleaning cycles to be carried out can easily be programmed from 1 to 200. At the end of the cleaning cycle, the DFS-73 stops and restarts automatically as soon as the process air is connected again.

The **Δp-CONTROL-FILTER-SCANNER DFS-73** causes a longer service life of the filters and an economic handling of energy. Compressed air is being saved for the cleaning process and an economic operation of the filter plant is made possible.

## FEATURES

- 25 filter valve outputs, 24 VDC loadable with 46 W e.g. 50 valves with 23 W. The number of valve outputs is programmable
- Extension function : extension with TFS-73 TRANS-FILTER-SCANNER
- Pressure sensor overload-safe and temperature compensated, with manual zero point calibration function
- Programmable  $\Delta p$ -ranges by the user are possible, within the 3 unit-groups:
  - Group 1 : 0 - 2 mbar til 0 - 10 mbar
  - Group 2 : 0 - 20 mbar til 0 - 100 mbar
  - Group 3 : 0 - 200 mbar til 0 - 1000 mbar
- $\Delta p$ -Damping, programmable : ca. 0 s til 240 s
- Valve - control : wire break, short circuit, no JET-air-pulses
- PULSE 1 - 4 : 20 ms - 5 s, separately programmable for each **INTERVAL 1 - 4**
- **INTERVAL 1** : 5 s - 240 s
- **INTERVAL 2** : 5 s - 60 min
- **INTERVAL 3** : 5 s - 240 s
- **INTERVAL 4 for I-C-C** : 5 s - 240 s
- 6  $\Delta p$ -set points are programmable: **CONTROL min, CONTROL max, CONTROL above-max, I-C-C, ALARM min and ALARM max**
- Programmable minimum signal period from 3 s - 999 s for the  $\Delta p$ -set points
- Programmable delay time from 1 s - 999 s for the  $\Delta p$ -set points
- **INTENSIVE-CLEANING-CYCLE I-C-C**, programmable 1 - 200 cycles
- Signal inputs for remote control: **HAND, I-C-C, STOP**
- Analogue output 0-10 V, 0-20 mA or 2-10 V, 4-20 mA, short-circuit safe
- 2 types of housings: **AB** or **PG**. EX-protection conform **ATEX** available.
- Option: Analogue input 4-20 mA for external  $\Delta p$ -Transmitter **DMC\***
- Fulfils Machine guideline 98/37/EG, main-power guideline 73/23/EWG and EMV guideline 89/336/EWG
- High reliability due to "burn in-function"

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**TECHNISCHE DATEN / TECHNICAL DATA**

<b>Messbereiche</b> $\Delta p$	:	0-2 - 0-10 Messspanne / measuring range	<b>1</b> - <b>10.....mbar.....</b>	<b>ORDER-INDEX: -group-mbar-</b>
Pressure ranges $\Delta p$	:	0-20 - 0-100 Messspanne / measuring range	<b>2</b> - <b>100....mbar.....</b>	<b>ORDER-INDEX: -group-mbar-</b>
	:	0-200 - 0-1000 Messspanne / measuring range	<b>3</b> - <b>1000..mbar.....</b>	<b>ORDER-INDEX: -group-mbar-</b>
	:	0-2.00 - 0-1000 Anzeigebereich / Display-range	<b>4</b> - <b>x.....mbar.....</b>	<b>ORDER-INDEX: -group-mbar-</b>
Gruppe 4 gilt nur, wenn der Strom-Messbereich 4 - 20 mA ORDER-INDEX: -420- gewählt wird. Group 4 is only valid by chosen current-input 4 - 20 mA ORDER-INDEX: -420-				
<b>Wählen Sie eine Gruppe aus für die Messbereiche, die im Gerät verfügbar sein sollen.</b> <b>Please choose out of one group for the ranges, which should be integrated in the unit.</b>				
<b>Anzeige, Display</b>	:	Digital 3-stellig, 7-Segment-LED rot, 14 mm hoch. Digital, 3-digit, 7-segment - LED, red, 14 mm high		
<b><math>\Delta p</math>-Dämpfung, Damping</b>	:	Programmierbar / programmabel: ca. 0 s bis / til 240 s		
<b>Überlastbarkeit</b>	:	<b>Statischer Gleichdruck einseitig / Static balanced pressure on one side:</b>		
Overload capacity	:	Messbereich / range, bis / up to: 2 - 10 mbar: pmax = 250 mbar		
	:	Messbereich / range, bis / up to: 20 - 100 mbar: pmax = 1 bar		
	:	Messbereich / range, bis / up to: 200 - 1000 mbar: pmax = 2 bar		
	:	<b>Statischer Gleichdruck beidseitig / Static balanced pressure on two sides:</b>		
	:	Messbereich / range, bis / up to: 2 - 10 mbar: pmax = 600 mbar		
	:	Messbereich / range, bis / up to: 20 - 100 mbar: pmax = 5 bar		
	:	Messbereich / range, bis / up to: 200 - 1000 mbar: pmax = 5 bar		
<b>Gesamtfehler</b>	:	Linearität + Hysterese + Reproduzierbarkeit : $\pm$ 2% F.S. bis / up to $\leq$ 2 mbar Messbereich / range		
Total error	:	Linearity + hysteresis + reproducibility : $\pm$ 1% F.S. ab / from $\geq$ 3 mbar Messbereich / range		
<b>Langzeitstabilität</b>	:	0,1 % F.S. / Jahr (F.S. = vom Messbereich / Full Scale)	<b>Long term stability</b> : 0,1% F.S. / year	
<b>Temperaturfehler</b>	:	+10°C bis +50°C : 0,025 % F.S. / K (K = Kelvin)	<b>Betriebstemperatur</b> : $\pm$ 20°C bis +60°C.	
Temperature error	:	+50°F up to +122°F : 0.025 % F.S. / K	<b>Operating temperature</b> : -4°F to +140°F.	
<b>Druckmedium</b>	:	Nicht brennbare Gase und Luft, die Acetalharz, Polyamid, Polyetherimide, POM, PVC, Silizium, Silicon, Edelstahl, Messing, Aluminium und Gold nicht angreifen.		
Pressure media	:	Not flammable gases and air, not corroding acetal resins, polyamide, polyetherimide, POM, PVC, silicon, silicone, stainless steel, brass, aluminium and gold.		
<b>Zeitbereiche</b>	:	<b>IMPULS 1-4 / PULSE 1-4:</b> 20 ms - 5 s	<b>PAUSE 1 / INTERVAL 1</b> : 5 s - 240 s für Schaltpunkt / for set point CONTROL max	
Time ranges	:	für jede PAUSE 1-4 programmierbar / programmable for each INTERVAL 1-4.	<b>PAUSE 2 / INTERVAL 2</b> : 5 s - 60 min für Schaltpunkt / for set point CONTROL min	
	:		<b>PAUSE 3 / INTERVAL 3</b> : 5 s - 240 s für Schaltpunkt / for set point CONTROL above-max	
	:		<b>PAUSE 4 / INTERVAL 4</b> : 5 s - 240 s für Schaltpunkt / for set point I-C-C	
<b>Druck-Schaltpunkte <math>\Delta p</math></b>	:	<b>CONTROL max</b> : Schaltet um von PAUSE 2 auf PAUSE 1 / switches between INTERVAL 2 and INTERVAL 1		
Pressure set points $\Delta p$	:	<b>CONTROL min</b> : Schaltet um von PAUSE 1 auf PAUSE 2 / switches between INTERVAL 1 and INTERVAL 2		
	:	<b>CONTROL above-max</b> : Schaltet um von PAUSE 1 auf PAUSE 3 / switches between INTERVAL 1 and INTERVAL 3		
	:	<b>I-C-C</b> : Startet Intensiv-Reinigungs-Zyklus I-C-C mit PAUSE 4 START, Intensive Cleaning Cycle I-C-C starts with INTERVAL 4		
	:	<b>ALARM max</b> : Differenzdruck zu hoch, Filter verunreinigt / diff.-pressure too high, filters are not clean.		
	:	<b>ALARM min</b> : Differenzdruck zu niedrig, Filter-Absaugung defekt, / diff.-pressure too low.		
<b>Programmierbarkeit</b>	:	Ohne Ventilerverweiterung: Normalfunktion / Normal function. Mit Ventilerverweiterung für externe TRANS-FILTER-SCANNER TFS-73:		
Programmability	:	Expanderfunktion / Extension function: more valve-output with external TRANS-FILTER-SCANNER TFS-73		
	:	Valve / Valves : 2 bis / til 25. Intensiv-Reinigungs-Zyklen I-C-C: 0 - 255 Zyklen / Intensive-Cleaning-Cycle I-C-C: 1 - 200 cycles		
<b>Signaleingänge</b>	:	<b>Analog:</b> - Strom-Messbereich : 4-20 mA Eingang für externen $\Delta p$ -SENSOR-TRANSMITTER DMC*..... <b>ORDER-INDEX: -420-</b>		
	:	Wenn das Gerät mit Stromeingang ausgerüstet ist, entfällt die interne $\Delta p$ -Messung. Das Gerät hat dann keine Druckanschlüsse.		
	:	<b>Digital</b> : - I-C-C Nachreinigung mit IMPULS 3 und PAUSE 3, Display zeigt: ICC		
	:	- HAND = Dauerabreinigung mit IMPULS 1 und PAUSE 1, Display zeigt: In1		
	:	- STOP Ventilansteuerung dauerhaft verriegelt, Display zeigt: Stp.		
	:	Aktivierung durch externen Kontakt, der 5 mA bei 5 VDC schalten kann oder durch eine externe Spannung 24 VDC, 10 mA.		
Signal inputs	:	<b>Analogue:</b> - Current-range input : 4-20 mA input for external $\Delta p$ -SENSOR-TRANSMITTER DMC*..... <b>ORDER-INDEX: -420-</b>		
	:	If the unit has a current-input 4-20 mA, the internal $\Delta p$ -measurement system is not installed. The unit has no pressure connectors.		
	:	<b>Digital</b> : - I-C-C Aftercleaning with Intensive-Cleaning-Cycle, display shows: ICC		
	:	- HAND, continues cleaning with PULSE and INTERVAL 1, display shows: In1		
	:	- STOP = valve activity is blocked, display shows: Stp		
	:	Activation with external switches which can switch 5 mA, 5 VDC, dependable or with external voltage 24 VDC, 10 mA.		
<b>Signalausgänge</b>	:	<b>Digital:</b>		
Signal output	:	2 - 25 Ventilausgänge, 24 V-, 46 Watt, kurzschlussfest. Anzahl der Ausgänge angeben..... <b>ORDER-INDEX: -VENT-</b>		
	:	2 - 25 valves, 24 V-, 46 Watt, short circuit safe. Indicate the number of valves..... <b>ORDER-INDEX: -VALV-</b>		
	:	Zwei programmierbare Grenzwerte ALARM min + max, auf ein Relais wirkend, 1x Öffnerkontakt.		
	:	Two adjustable set points, ALARM min + max, acting on one relay-output, 1x NC contact.		
	:	1x I-C-C Relaischliesserkontakt, während I-C-C geschlossen / 1x I-C-C-switch, NO, closed during I-C-C.		
	:	Belastung für alle Relais-Kontakte / load for all relay-switches: min 100 mA, max 2 A cos phi = 1, 24 - 255 V, 50 - 60 Hz, $\geq$ 24 VDC.		
	:	LED: CONTROL, ALARM, I-C-C, Ventile /Valves, IMPULS / PULSE, PAUSE / INTERVAL.		
	:	<b>Analog:</b> linear, programmierbar / <b>Analogue:</b> linear, programmable:		
	:	0 - 10 V, Bürde / load = min. 10 k $\Omega$ , 0-20 mA, Bürde / load = max. 500 $\Omega$ .		
	:	2 - 10 V, Bürde / load = min. 10 k $\Omega$ , 4-20 mA, Bürde / load = max. 500 $\Omega$ .		
<b>Stromversorgung</b>	:	240 V $\approx$ , 50 - 60 Hz umschaltbar auf / changable to: 120 V $\approx$ , 50 - 60 Hz:..... <b>ORDER-INDEX: -VAC-</b>		
Power supply	:	24 VDC ( ohne Analogausgang / without analogue output )..... <b>ORDER-INDEX: -VDC-</b>		
<b>Nennleistung/Nom.power</b>	:	60 W		
<b>Elektr. Anschluss</b>	:	Schraubklemmen, max. Drahtquerschnitt 2,5 mm <sup>2</sup>		
Electric connection	:	Screw terminal, max cross section of wire AWG 14		
<b>Druckanschluss</b>	:	2x Schlauchverschraubungen mit Überwurfmutter / 2x tube connector with connector nut:		
Pressure connection	:	Schlauchgrößen: Da/OD = 6 mm, Di/ID = 4 mm ..... <b>ORDER-INDEX: -64-</b>		
	:	size of tube Da/OD = 8 mm, Di/ID = 6 mm ..... <b>ORDER-INDEX: -86-</b>		
	:	2x Schlauchtüllen / 2x tube connector without connector nut:		
	:	Schlauchgrößen: Di / ID = 6 mm - 7 mm ..... <b>ORDER-INDEX: -T6-</b>		
	:	size of tube Di / ID = 8 mm - 10 mm ..... <b>ORDER-INDEX: -T8-</b>		
<b>Gehäuse 2</b>	:	Abmessungen / dimensions: 278 x 188 x 130 mm, B x H x T (Width x Height x Depth). Schutzart / protection class : IP 65.		
Housing 2	:	Material / material : <b>Polycarbonat(e)</b> . Farbe / colour: grau / grey. Gewicht / weight : 2400 g		
<b>Kabelverschraubungen und Taster</b>	:	<b>1. ohne</b> Taster im Deckel / <b>without</b> pushbuttons in the cover. Schutzart / protection class : IP 65 :		
Cable-connectors and push-buttons	:	1.1. Kabelverschraubungen zur Sammelverdrahtung der Ventilleitungen / Cable-connectors for a common wiring of the valve-lines:2x M32..... <b>ORDER-INDEX: -PG-</b>		
	:	1.2. Kabelverschraubungen zur Einzelverdrahtung der Ventilleitungen, geben Sie bitte die <b>Anzahl xx</b> an 2 - 25 x M16 z.B. PG25 / Cable-connectors for a separate wiring of the valve-cables, please order the right <b>number xx</b> of cable-connectors: 2 - 25 x M16 e.g. PG25..... <b>ORDER-INDEX: -PGxx-</b>		
	:	<b>2. mit</b> Taster im Deckel / <b>with</b> pushbuttons in the cover. Schutzart / protection class : IP 65 :		
	:	2.1. Kabelverschraubungen zur Sammelverdrahtung der Ventilleitungen / Cable-connectors for a common wiring of the valve-lines: 2x M32..... <b>ORDER-INDEX: -PGPB-</b>		
	:	2.2. Kabelverschraubungen zur Einzelverdrahtung der Ventilleitungen, geben Sie bitte die <b>Anzahl xx</b> an 2 - 25 x M16 z.B. PG25PB / Cable-connectors for a separate wiring of the valve-cables, please order the right <b>number xx</b> of cable-connectors: 2 - 25 x M16 e.g. PG25PB..... <b>ORDER-INDEX: -PGxxPB-</b>		
<b>Vorschriften / Rules</b>	:	EN 60 204.1. EN 55011. EN 50 014:2000, EN 50281-1-1:1999, EN 50021. EN 61000-4-ff. EN 61010. IEC 60079-15. BGV A2.		
Bestell-Nr.	:	DFS-73 Gruppe-Messbereich - Strom - Volt - AC - Ventile - Anschluss - Gehäuse - CE		
	:	<b>group - mbar</b> - Input - - DC - VENT - -		
<b>ORDER-INDEX</b>	:	DFS-73 Group-range of group - Current - Volt - AC - Valves - Connection - Housing - CE		
<b>Beispiel 1 / example 1 :</b>	:	<b>DFS-73 - 2 - 100 - 0 - 240 - AC - 25 - 64 - PG25PB - CE</b>		
<b>Beispiel 2 / example 2 :</b>	:	<b>DFS-73 - 4 - x - 420 - 24 - DC - 25 - 0 - PG - CE</b>		