



1 cable gland with a filler plug for test connection of the restricted breathing test according to EN 60079-15 (to run min. once a year). Have a look to our document Z9915422.

## 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 Δp-pressure and indicated on the display. If the Δp-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 Δp-pressure increases with the filter pollution and Δp-set point **CONTROL max** is reached, the cleaning process starts with a shorter **INTERVAL 1**, programmable from 5 - 240 s. During the cleaning, the Δp-pressure falls and finally Δp-set point **CONTROL min** is reached, the longer **INTERVAL 2** being activated again. If the Δp-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 Δp-pressure increases to the Δp-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 **CONTROLLER** is working.

All Δp-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 Δp-pressure decreases or increases due to wrong cleaning or a compressed air deficiency, this condition can be indicated by a relay for which two Δp-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 Δp-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 Δp-ranges by the user are possible, within the 3 unit-Δps:
  - Group 1 : 0 - 2 mbar to 0 - 10 mbar
  - Group 2 : 0 - 20 mbar to 0 - 100 mbar
  - Group 3 : 0 - 200 mbar to 0 - 1000 mbar
- Δp-Damping, programmable : ca. 0 s to 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 Δp-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 Δp-set points
- Programmable delay time from 1 s - 999 s for the Δp-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
- EX-protection conform ATEX Zone 2
- Option: 4 keys in the cover for service from outside
- Option: Analogue input 4-20 mA for external Δp-Transmitter **DMC\***
- Fulfils Machine guideline 2006/42/EG, main-power guideline 2006/95/EG and EMV guideline 2004/108/EG
- High reliability due to "burn in-function"
- Marking: Ex II 3G Ex nR IIC T6 Gc X. For special operating conditions have a look to Pressure Media

# MIKRO-MESS-GMBH

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**TECHNISCHE DATEN / TECHNICAL DATA**

<b>Messbereiche</b> $\Delta p$	: 0-2 - 0-10 Messspanne / measuring range	<b>Gruppe - Messbereich: / Group - range:</b>	<b>1 - 10.....mbar.....ORDER-INDEX: -group-mbar-</b>
Pressure ranges $\Delta p$	: 0-20 - 0-100 Messspanne / measuring range	<b>2 - 100....mbar.....ORDER-INDEX: -group-mbar-</b>	
	: 0-200 - 0-1000 Messspanne / measuring range	<b>3 - 1000..mbar.....ORDER-INDEX: -group-mbar-</b>	
	: 0-2.00 - 0-1000 Anzeigebereich / Display-range	<b>4 - x.....mbar.....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 / programmable: ca. 0 s bis / to 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>	: -20°C bis +40°C.
Temperature error	: +50°F up to +122°F : 0.025 % F.S. / K	<b>Operating temperature</b>	: - 4°F to +104°F.
<b>Lagertemperatur</b>	: -20°C bis +50°C bei Geräten für den Einsatz in Ex-Zonen.	Sondergeräte: -40°C bis +50°C	
Storage temperature	: - 4°F to +122°F for units installed in Ex-Zones.	Special units : -40°F to +122°F	
<b>Druckmedium</b>	: Nicht brennbare Gase, Luft, die Acetalharz, Polyamid, Polyetherimide, POM, PVC, Silizium, Silicon, Aluminium, Messing, Nickel, Edelstahl und Gold nicht angreifen.		
Pressure Media	: uninflammbare gases, air, not corroding acetal resins, polyamide, polyetherimide, POM, PVC, gold, silicon, aluminium, brass, nickel, stainless steel and silicone.		
<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		
	: <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 Ventilerweiterung: Normalfunktion / Normal function. Mit Ventilerweiterung für externe TRANS-FILTER-SCANNER TFS-73:		
Programmability	: Expanderfunktion / Extension function: more valve-output with external TRANS-FILTER-SCANNER TFS-73		
	Ventile / Valves : 2 bis / to 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: ..... <b>ORDER-INDEX: -VDC-</b>		
<b>Nennleistung/Nom.power</b>	: 60 VA		
<b>Elektr. Anschluss</b>	: Schraubklemmen, max. Drahtquerschnitt 2,5 mm $^2$		
Electric connection	: Screw terminal, max cross section of wire AWG 14		
<b>Druckanschluss</b>	: 2x MS-Schlauchverschraubungen mit Überwurfmutter / 2x brass-tube connector with connector nut:		
Pressure connection	: Schlauchgrößen: Da/OD = 6 mm, Di/ID = 4 mm :..... <b>ORDER-INDEX: -64MS-</b>		
<b>Gehäuse für Ex-Zone 2</b>	: Abmessungen / dimensions: 360 x 160 x 90 mm, B x H x T (Width x Height x Depth). Schutzart / protection class : IP 65.		
Housing for Ex-Zone 2	: Material / material : <b>Aluminium</b> . Farbe / colour: grau / grey. Gewicht / weight : 3300 g		
	mit Herstellerbescheinigung / with Manufacturer Certificate.		
<b>Kabelverschraubungen</b>	: Kabelverschraubungen zur Sammelverdrahtung der Ventilleitungen /		
Cable glands	: Cable glands for a common wiring of the valve-lines: 2x M32..... <b>ORDER-INDEX: -AL2-EEx-nR-IIC-T6</b>		
	Kabelverschraubungen zur Einzelverdrahtung der Ventilleitungen, geben Sie bitte die Anzahl xx an 2 - 12 x M20		
	z.B. AL2-12 / Cable glands for a separate wiring of the valve-cables, please order the right number xx of cable-glands: 2 - 12 x M20 e.g. AL2-12..... <b>ORDER-INDEX: -AL2-xx-EEx-nR-IIC-T6</b>		
<b>Vorschriften / Rules</b>	: EN 60 204-1, EN 61010, EN 61326-1, EN 61326-2-3, EN 60079-15. BGV A2.		

Bestell-Nr.	: DFS-73 Gruppe-Messbereich - Strom - Volt - AC - Ventile - Anschluss -Gehäuse - CE
	<b>group - mbar - Input - DC - VENT -</b>
ORDER-INDEX	: 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 - 12 - 64MS -AL2-12-EEx-nR-IIC-T6 - CE</b>
<b>Beispiel 2 / example 2</b>	: <b>DFS-73 - 2 - 100 - 420 - 24 - DC - 25 - 0 -AL2-EEx-nR-IIC-T6 - CE</b>

Änderungen vorbehalten / subject to change Z0754001\_003\_DFS73\_AL2\_GB

umes-Made in Germany