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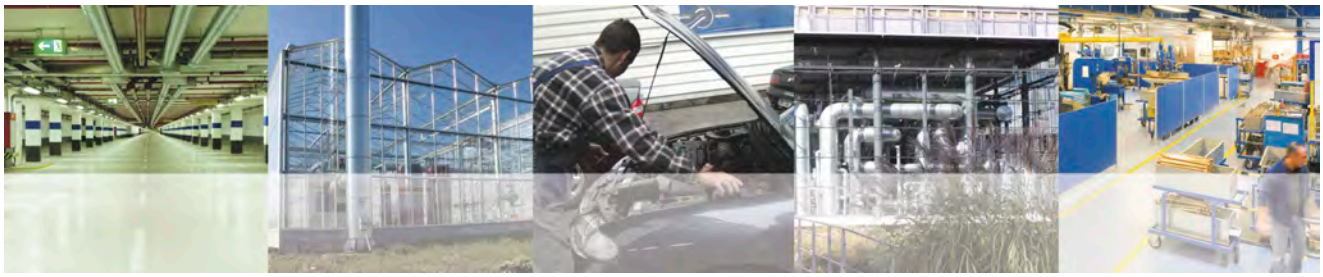
Specialists by Competence.

Product information

Flow - Manifold Block



Characteristics

System
- Manifold block

Nominal widths
- DN 15..40

Media
- Water, Oils

Pressure resistance
- max. 25 bar

Temperature
- -20..+110 °C

Applications

- **Flow recording, monitoring, and control in oil, lubrication, and cooling equipment**

Device overview

Device	System	Number of measurement points	Nominal width	Pressure resistance in bar	Medium temperature	Page
VB	Manifold block with integrated valve	1..8	DN 15..20	PN 25	-20..+110 °C	4
VB2	Manifold block	8	DN 40	DN 40	-20..+110 °C	5
DIS-.	Manifold block	1-10	G 1	G 1	0..+60 °C	6

Errors and technical modifications reserved.

Manifold VB

For NJ / NJV / VL

Photo - valve block VB-020GA3 flow indicator NJVK1-020WM020

Characteristics

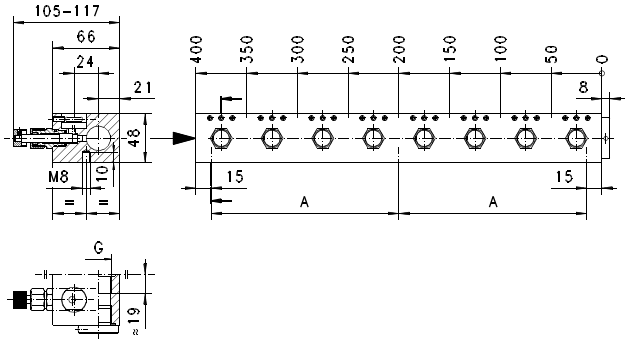
Manifold for single or multiple place systems and integrated needle valve for manual flow regulation.

Technical data

Nominal width	DN 15..20	
Process connection	female thread G $^{3}/_{4}$, optional G $^{1}/_{2}$	
Number of measurement points	1..8	
Pressure resistance	NJ /NJV	PN 25 bar
	VL	PN 10 bar
Medium temperature	NJ /NJV	-20..+110 °C
	VL	-20..+100 °C
Ambient temperature	-20..+70 °C	
Materials medium-contact	aluminium anodised, NBR, CW614N nickelled, CW614N	
Weight	see table "Dimensions and weights"	

Dimensions and weights

Number of measure-ment points	Types	Length (excluding stoppers)	Number of fixing holes	A	Weight kg
1	VB-020GA1	50	2	-	0.6
2	VB-020GA2	100	2	-	1.1
3	VB-020GA3	150	2	-	1.6
4	VB-020GA4	200	2	-	2.1
5	VB-020GA5	250	2	-	2.4
6	VB-020GA6	300	3	135	3.0
7	VB-020GA7	350	3	160	3.4
8	VB-020GA8	400	3	185	3.8



Ordering code

	1.	2.	3.	4.
VB -		**G**		

❍=Option

1.	**Nominal width**		
	015	❍	DN 15 - G $^{1}/_{2}$
	020		DN 20 - G $^{3}/_{4}$
2.	**Process connection**		
	G		female thread
3.	**Connection material**		
	A		aluminium
	K	❍	stainless steel (1.4305)
	M	❍	brass (CW614N nickelled)
4.	**Number of measurement points**		
	1		1
	2		2
	3		3
	4		4
	5		5
	6		6
	7		7
	8		8

Manifold VB2

For HD / MR / NJ / NJV / VL

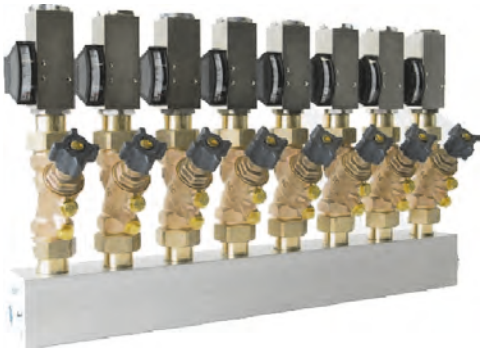


Photo - valve block VB2-020GA8 with valves and flow switch M1O1

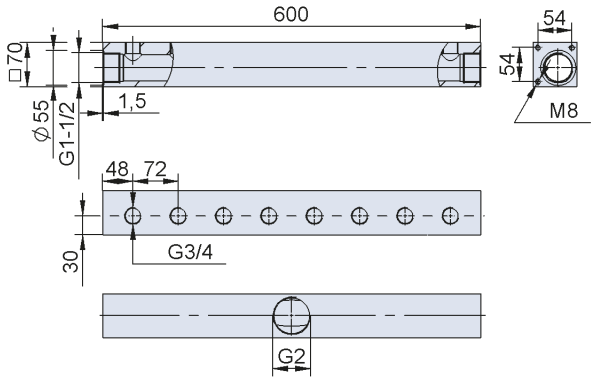
Characteristics

Manifold for monitoring, display, and manual regulation in cooling water applications with up to eight measurement and control points.

Technical data

Nominal width	DN 20
Process connection	female thread G $^{3}/_{4}$
Number of measurement points	8
Pressure resistance	PN 16 bar
Medium temperature	-20..+110 °C
Ambient temperature	-20..+70 °C
Materials medium-contact	aluminium anodised, CW614N nickelled, NBR
Weight	5.2 kg

Dimensions



Ordering code

	1.	2.	3.	4.
VB2 -	**040**	**G**	**A**	**8**

1.	**Nominal width**	
	040	DN 40 - G $1^{1}/_{2}$
2.	**Process connection**	
	G	female thread
3.	**Connection material**	
	A	aluminium
4.	**Number of measurement points**	
	8	8

Optional

- Valves
- 1..7 measurement points

Modular flow distributor DIS-..

- **Universal oil lubrication distributor**
- **Modular block construction up to 10 units**
- **Highest overload protection**
- **Bypass system enables replacement of measuring electronics during operation**
- **Very low pressure loss**
- **Various connections in the modular system**
- **Compact size**

Characteristics

In addition to the sensor with 4 – 20 mA and a switching or frequency output, the distributor section for the system oil lubrication combines an adjusting valve for the oil quantity and a switching valve with the settings "Measure oil", "Stop oil", "Bypass oil around the measuring device".
The bypass enables the replacement of the measuring device while the lubrication point receives oil. The oil quantity is the same in the bypass position and measurement position and does not need to be readjusted after switching the measuring device. The measuring device itself is an independently calibrated part and can be easily inspected or cleaned. A diaphragm curved by the oil flow moves a magnet which is detected outside the flow chamber by an analogue Hall sensor. No wear whatsoever arises during operation, and thus a very long service life is guaranteed.
With the spring-like properties of the diaphragm and a shaped end stop, even the hardest impact from liquid is withstood.

The lowest number of media contact parts guarantees faultless operation and a low tendency to contamination.
Since the diaphragm only operates over the bend without a bearing, there are no friction effects and very small hysteresis, as well as good reproducibility of the measured values and switching point as a result.
The low mass and the evaluation of the entire flow cross-section ensure the quick reaction time and problem-free pipework routeing .

Figure: The extremely flexible diaphragm is fit on an end stop and therefore can never over-expand due to flow impact.

Installation

The installation position of the block is optional!
All values can be pre-adjusted at the factory, if desired. Otherwise, the metering range and the switching point can be programmed with all attributes and parameters via an interface with configurator software on the PC. See the separate description for FLEX-XF, OMNI-XF and device configurator ECI-1.

Despite its low bulk, the dynamic diaphragm is very robust; nevertheless it should not be buckled or compressed through force during installation and removal.
The complete oil distributor is held together by means of a threaded rod between the inflow adapter and end piece. The valve and the measurement insert can be replaced extremely quickly.
(use a size10 Allen Key, size 24 open-ended spanner, 6 mm screwdriver or the offered service set)

Replacing the measuring insert:

1. Set the valve to bypass (tool: socket)
2. Pull off the fixing bracket of the measuring insert (tool: apply leverage with universal hexagon adjusting pin)
3. Pull out the measuring insert
4. Insert a new measuring insert (make sure that the position of the cross hole is correct!)
5. Insert clamp
6. Adjust any available valve for volume flow (tool: universal hexagon key)

Replacing the valve:

1. This can only take place with the oil flow switched off (supply and outlet of the entire block)!
2. After switching off the oil flow, pull off the fixing bracket
3. Pull out the valve
4. Insert a new valve
5. Secure with the fixing bracket

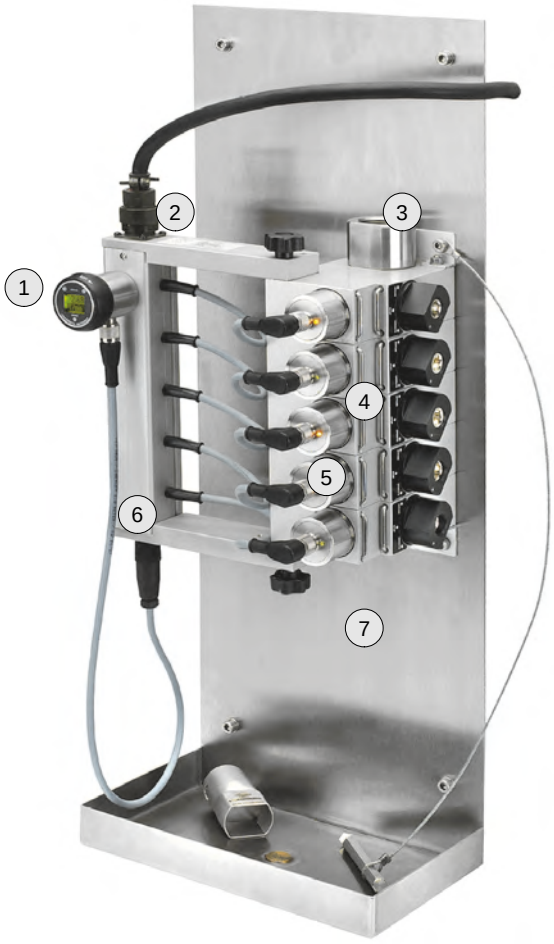
Monitoring possibility for the measuring devices:
The measuring devices are subject to cyclical inspection in some types of operation.

1. The upstream electric valve briefly interrupts the oil flow (simulates a malfunction):
   Error message must appear for each channel. Analogue outputs must go to 4 mA.

2. The measuring device is disconnected via the bypass and removed in order to be tested on a calibration module. The calibration module (KAL) is comprised of a spring scale which exerts a specific force on the dynamic measuring diaphragm. A defined measurement flow must be displayed with this force. If the sensor meets the specified tolerance, it is reinstalled; if not, it is replaced.

Summarisation of signals (one error message per distributor).

HONSBERG offers an electric distributor (EV) in which all error signals of the channels of a distributor are incorporated. If one or multiple channels detect an oil shortage, only one signal is sent to the control for this block.



1.	OMNI-EV display
2.	Central electrical supply and signal output (outputs)
3.	Oil inlet, can also be mounted on the opposite side
4.	DIS oil distributor
5.	FLEX-DIS
6.	EV electric distributor can be pivoted around the DIS oil distributor in order to gain better access to the oil outlets
7.	DIS wall panel with oil catch pan

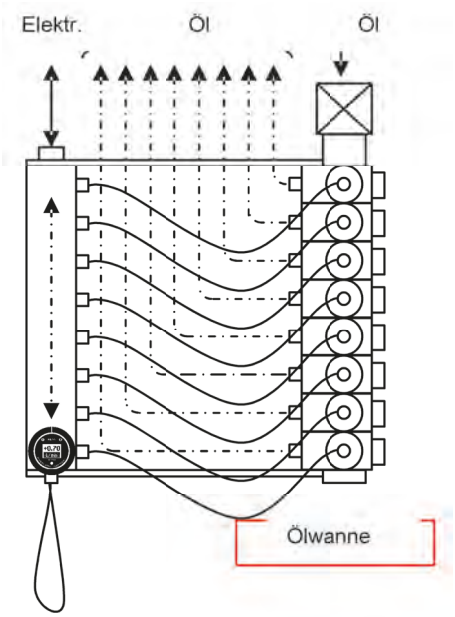


Figure: Possible setup of DIS oil distributor with EV electric distributor and OMNI-EV display.

Then it can be determined on site which device cause the error message (LED is off). At the same time, the strip also enables the connection of an "OMNI" display (2) (see OMNI-EV description), which automatically displays the flow of the respective channel by means of magnetic force. This is required for the adjustment of the channels! The electric distributor is hermetically sealed and suffices the hard environmental conditions.

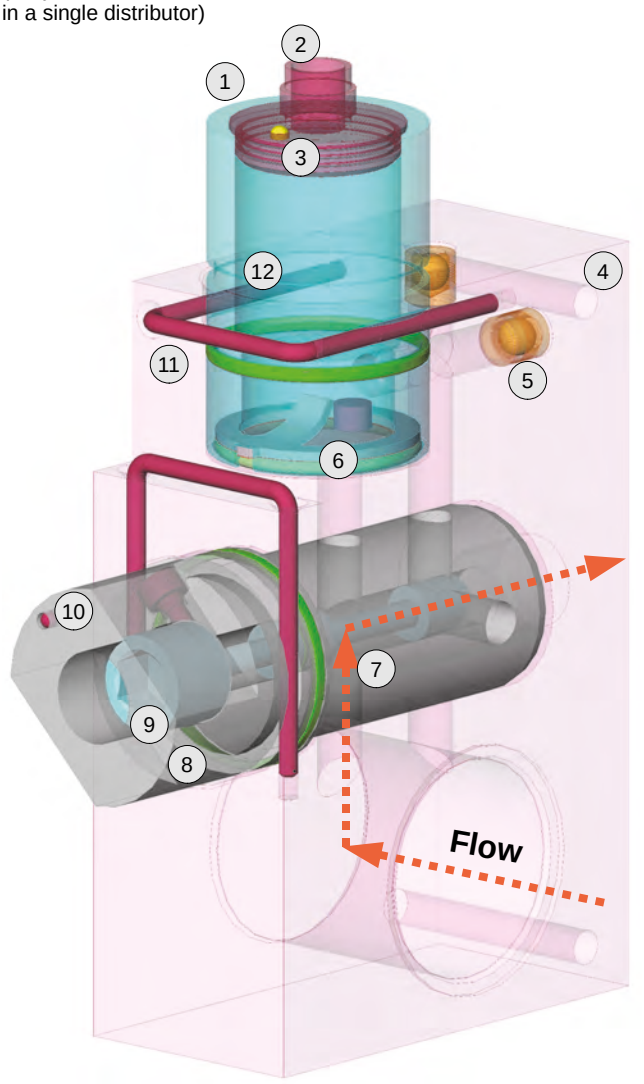
For wall mounting, a stainless steel wall panel with oil catch pan is offered (DIS wall panel)

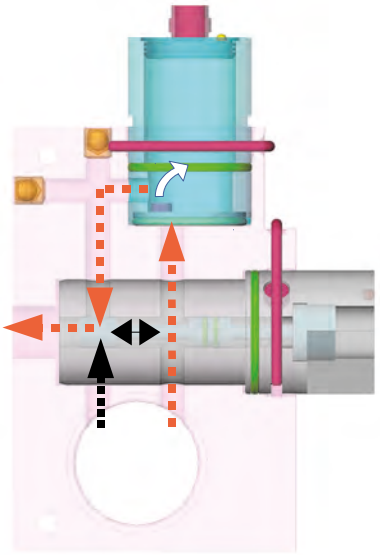
Filtration of the oil with 50 µm is recommended. Ferritic abrasion should be collected with a magnetic filter at the intake port of the oil tank.

Regulation of the oil pressure upstream from the distributor should take place with a pressure constant set to a maximum of 16 bar.

Technology at a glance

(Only one section shown, 1 – 10 sections can be installed in rows in a single distributor)





Measuring active = oil is measured by sensor.

Bypass and measuring path inactive = oil stop

Oil through bypass = sensor can be replaced.

Switching valve switches between oil through measuring path, oil stop, oil through bypass

Coaxial regulating valve adjusts the oil quantity (turning of the Allen screw)

Dynamic diaphragm is deflected in the measuring path by the oil flow.

1.	Complete sensor can be replaced during operation when the switching valve is set to bypass
2.	Switch of frequency + 4 – 20 mA output. M12x1, 4-pin
3.	LED on = OK / LED blinking = deficiency / LED off = fault
4.	Fastening hole
5.	Plug with metal / metal seal
6.	Dynamic measuring diaphragm with magnet and end stop
7.	Stop screw for 90° limiting of the switching valve and depth stop for regulating valve
8.	The switching valve is switched with a size 20 open-ended spanner
9.	Coaxial regulating valve. Adjusts the oil quantity independently from the switch position of the switching valve. With a replacement of the sensor, readjustment does not have to take place each time. The oil quantity remains the same in bypass setting. Simple switching with a tool.
10.	Switching valve with function positions.
11.	Durable distributor body made of anodised aluminium
12.	Retaining bracket, extremely fast installation element

Technical data

Sensor	Dynamic diaphragm	
Measurement ranges		0.1..3 l/min (at 73 mm²/s) Other ranges available on request
Measurement uncertainty		3% measurement between 10% and 100% of the measuring range or 0.1 l/min
Reproducibility	1 %	
Pressure resistance	PN 16	
Pressure loss	max. 0.1 bar at max. flow and with open valve	
Media temperature	0.. +60 °C (avoid frost and dew)	
Ambient temperature	0.. +70 °C	
Storage temperature	-20.. +80 °C	
Materials medium-contact	Stainless steel 1.4404, FKM, aluminium, plastic, nickel-plated samarium-cobalt magnet	
Materials, non-medium-contact	Electronics housing	Stainless steel 1.4305
Power supply	12.. 24 V DC	
Current requirement	approx. 120 mA	
Analogue output	4.. 20 mA or 0.. 10 V DC	
Switching output	Transistor output "push-pull" (resistant to short circuits and polarity reversal) I_{out} = 100 mA max.	
Switching hysteresis	adjustable (please state when ordering)	
Display	yellow LED (on = normal / off = alarm / blinking = 10% over switching value)	
Electrical connection	for round plug connector M12x1, 4pole	
Ingress protection	IP 67	
Weight		approx. 0.32 kg approx. 0.32 kg approx. 0.42 kg
Conformity	CE	

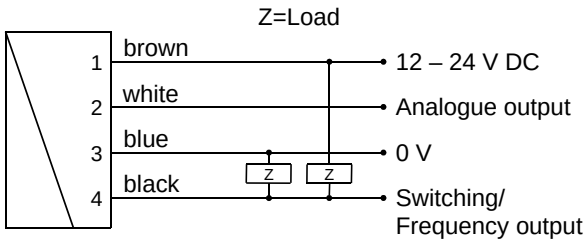
EV Electronics for DIS

Supply voltage	18...24 VDC
Quiescent current consumption /channel	1.5 W incl. FLEX or OMNI
Switching output	Relay contact (5 V..30 V) 6 A max. (gold-plated silver contact)
Plug connector supply of switching outputs	
Plug connector for Omni-EV-DIS connection	M12x1 (4-pin)
Ingress protection	IP 65
Conformity	CE

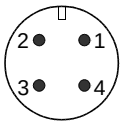
Wiring

Before the electrical installation, it must be ensured that the supply voltage corresponds with the data sheet!

FLEX-DIS

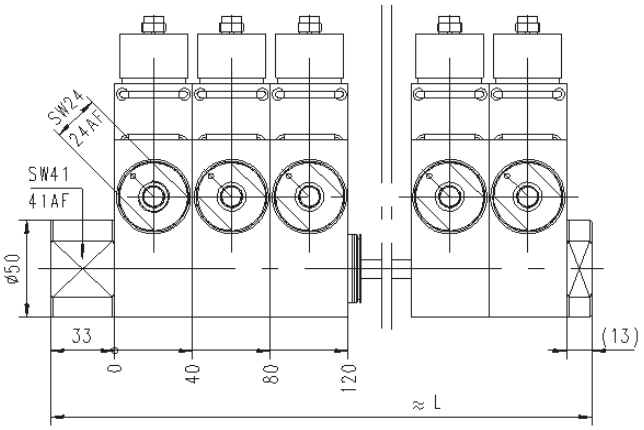


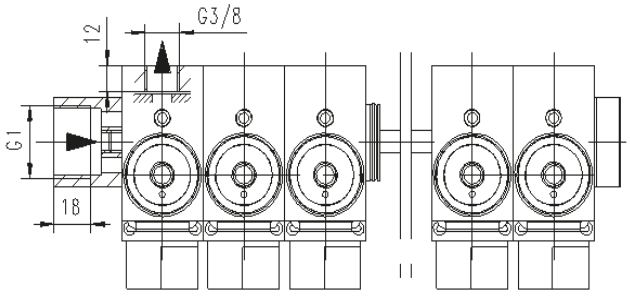
Connection example: PNP NPN



It is recommended to use screened wiring.
The push-pull output can as desired be switched as a PNP or an NPN output.

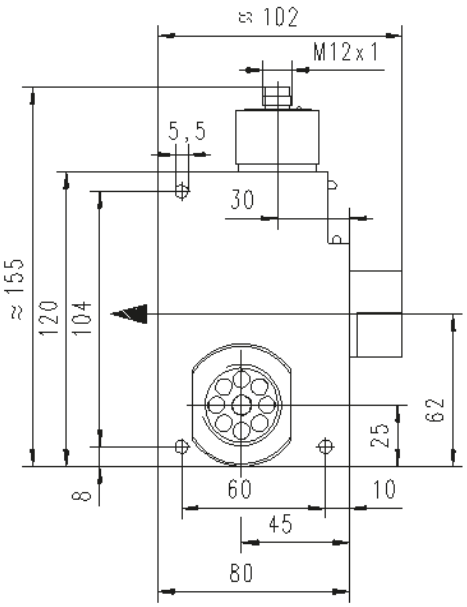
Dimensions

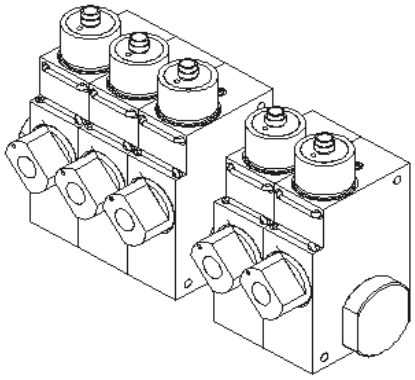




Number of valves	1	2	3	4	5	6	7	8	9	10
Length in mm	86	126	166	206	246	286	326	366	406	446

View of the oil connection inflow:





Handling and operation

Programming

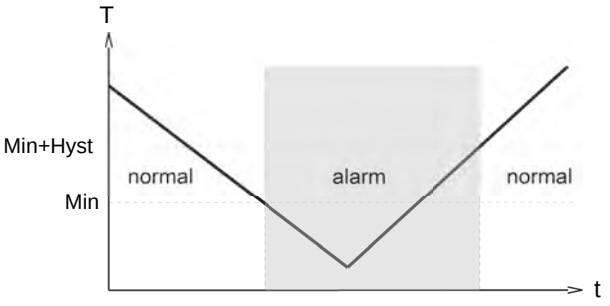
The FLEX electronics contain a magnetic contact, with the aid of which different parameters can be programmed. Programming takes place when a magnet clip is applied for a period between 0.5 and 2 seconds to the marking located on the label. If the contact time is longer or shorter than this, no programming takes place (protection against external magnetic fields).

After the programming ("teaching"), the clip can either be left on the device, or removed to protect data.
The device has a yellow LED which flashes during the programming pulse. During operation, the LED serves as a status display for the switching output.
In order to avoid the need to transit to an undesired operating status during "teaching", the device can be provided ex-works with a "teach-offset". The "teach-offset" value is added to the currently measured value before saving (or is subtracted if a negative value is entered).

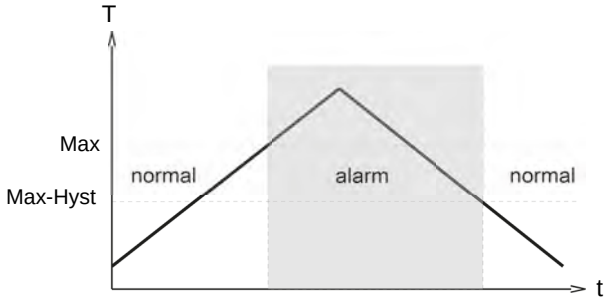
Example: The switching value is to be set to 70 % of the measurement range, because at this flow rate a critical process status is to be notified. However, only 50% can be achieved without danger. In this case, the device would be ordered with a "teach offset" of +20 %. At 50 % in the process, a switching value of 70 % would then be stored during "teaching".

Normally, programming is used to set the limit value switch. However, if desired, other parameters such as the end value of the analogue or frequency output may also be set.

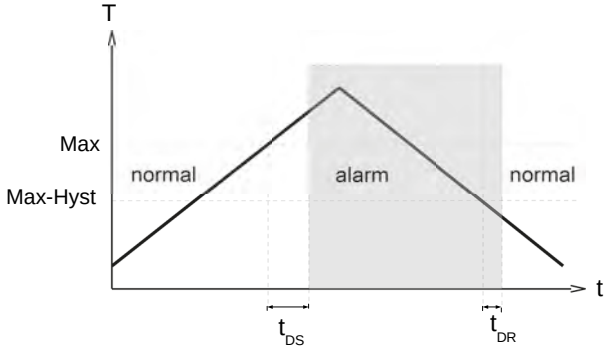
The limit switch can be used to monitor minima or maxima.
With a minimum-switch, falling below the limit value causes a switchover to the alarm state. Return to the normal state occurs when the limit value plus the set hysteresis is once more exceeded.



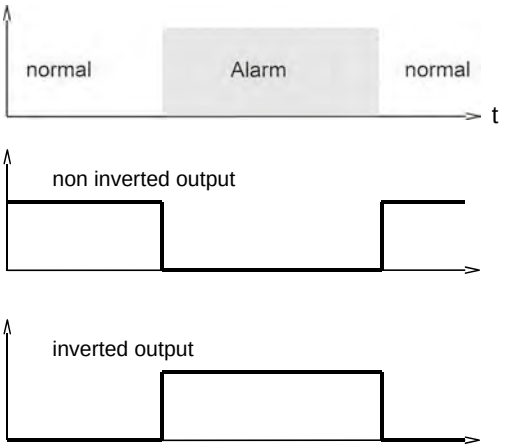
With a maximum-switch, exceeding the limit value causes a switchover to the alarm state. Return to the normal state occurs when the measured value once more falls below the limit value minus the set hysteresis.



A changeover delay time (t_{DS}) can be applied to switching to the alarm state. One switch-back delay time (t_{DR}) of several can likewise be applied to switching back to the normal state.



In the normal state the integrated LED is on, in the alarm state it is off, and this corresponds to its status when there is no supply voltage.
In the non-inverted (standard) model, while in the normal state the switching output is at the level of the supply voltage; in the alarm state it is at 0 V, so that a wire break would also display as an alarm state at the signal receiver. Optionally, an inverted switching output can also be provided, i.e. in the normal state the output is at 0 V, and in the alarm state it is at the level of the supply voltage.



A PowerOn delay function (ordered as a separate option) makes it possible to maintain the switching output in the normal state for a defined period after application of the supply voltage.

Ordering code

The following should be ordered: basic unit, e.g. DIS-xxx with evaluation electronics, e.g. FLEX-DIS-xxx, the VE installation unit, the EV electrical distributor, display for EV electrical distributor and possible the calibration for FLEX- for or OMNI-DIS.

Oil distributor system block

	1.	2.	3.	4.
DIS -	**10**	**J**	**A**	**E**

❍ = Option

1.	**Nominal width**	
	010	Output connection G 3/8 female thread
2.	**Process connection**	
	J	System connection
3.	**Housing material**	
	A	Anodised aluminium housing, POM control valve
4.	**Connection for**	
	E	FLEX-DIS evaluation electronics

Other nominal widths available on request

On site electronics for DIS-

	1.	2.	3.	4.	5.
FLEX-DIS -		**-73**			

1.	**Range**	
	030	Range 0.1..3 l/min
	060	Range 0.3..6 l/min
	080	Range 0.5..8 l/min
2.	**Viscosity**	
	-073	
3.	**Analogue output**	
	I	Current output 4..20 mA
	U	Voltage output 0..10 V
4.	**Functioning of the switching output**	
	L	Minimum switch
	H	Maximum switch
	R	Frequency output
5.	**Switching signal**	
	O	Standard output
	I	Inverted output

Options

Special range for analogue output: ___ l/min
(not greater than the sensor's working range)

Special range for frequency output: ___ l/min
(not greater than the sensor's working range)

End frequency (max. 2000 Hz) ____ Hz

Switching delay ___,__ s
(from Normal to Alarm)

Switchback delay ___,__ s
(from Alarm to Normal)

Power-On delay ___ s
(After connecting the supply, time during which the switching output is not activated)

Switching output fixed ___ l/min

Special hysteresis (standard = 2% EW) ___ %

Installation unit connects x channels (spare part)

	1.	2.	3.	4.
VE -		**G**	**K**	**10**

1.	**Nominal input width**	
	025	G 1 female thread
	❍	Special connection on request
2.	**Connection**	
	G	G 1 female thread
3.	**Connection material**	
	K	stainless steel
4.	**Number of channels**	
	010	1 to 10 channels

Special versions on request

Electric distributor

	1.	2.	3.
EV -		**A**	**1**

1.	**Number of channels**	
	02	
	03	
	04	
	05	
	06	
	07	
	08	
	09	
	10	
2.	**Material**	
	A	Aluminium
3.	**Plug connector**	
	1	ITT 19-pin

Display for electric distributor

	1.	2.
OMNI-EV-DIS -		**S**

1.	**Analogue output**	
	I	Current output 0/4..20 mA
	U	Voltage output 0/2..10 V
2.	**Electrical connection**	
	S	Round plug connector M12x1, 5-pin

Can be combined

The oil distributor can be combined with the FLEX-DIS electronics.

FLEX electronics:
Provides 4 20 mA or 0 – 10 V linear analogue output and an additional programmable switching point.

The **OMNI-EV-DIS electronics** show the respective l/min value of the channel on the electrical distributor. Is required for the adjustment
of the oil quantity / channel

Spare parts

- **EV electrical distributor** links the signals of the individual lubricating channels in an "or-link" to a collecting line and is mounted directly on the manifold.

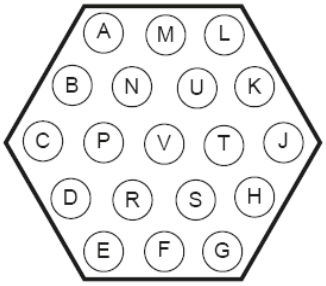
- **OMNI-EV-DIS** shows the current measured value per channel, simply by means of magnetic attachment at the respective position of the EV electrical distributor.

1. DIS coaxial valve
2. DIS valve body
3. FLEX-DIS sensor
4. Fastening clamp
5. Valve body connecting material
6. Inlet with fastening

Disassembled DIS distributor

Pin assignment:

Pin	Function
A	Voltage supply +24 VDC
B	GND
C	Collecting contact
D	Collecting contact
E	Common channel 1-10
F	Channel 1 contact
G	Channel 2 contact
H	Channel 3 contact
J	Channel 4 contact
K	Channel 5 contact
L	Channel 6 contact
M	Channel 7 contact
N	not connected
P	not connected
R	Channel 8 contact
S	not connected
T	not connected
U	Channel 9 contact
V	Channel 10 contact



Bus connections

Connection of the HONSBERG oil lubrication distributor to a Profibus or another bus can be achieved easily with components supplied by Murr.

4 – 20 mA => cube 67 (analogue input) => bus node => reduction from 16 lines to 1.

Accessories

- KAL calibration unit
- Device configurator ECI-1
- Tool: universal Allen key WUS1
- Tool: Bypass socket
- DIS wall mount with oil pan

GHMGROUP
Specialists by Competence.

Headquarter

GHM Messtechnik GmbH
GHM GROUP CORPORATE
Tenter Weg 2-8
42897 Remscheid | GERMANY
Phone +49 2191 9672-0
info@ghm-group.de
www.ghm-group.de

Centers of Competences

GHM Messtechnik GmbH
GHM GROUP – Greisinger
Hans-Sachs-Straße 26
93128 Regenstauf | GERMANY
Phone +49 9402 9383-0
info@greisinger.de | www.greisinger.de

GHM Messtechnik GmbH
GHM GROUP – Honsberg
Tenter Weg 2-8
42897 Remscheid | GERMANY

GHM Messtechnik GmbH
GHM GROUP – Martens
Kiebitzhörn 18
22885 Barsbüttel | GERMANY

GHM Messtechnik GmbH
GHM GROUP – Imtron
Carl-Benz-Straße 11
88696 Owingen | GERMANY

Delta OHM S.r.l. a socio unico
GHM GROUP – Delta OHM
Via Marconi 5
35030 Caselle di Selvazzano
Padova (PD) | ITALY
Phone +39 049 8977150
info@deltaohm.com
www.deltaohm.com

Valco srl
GHM GROUP – VAL.CO
Via Rovereto 9/11
20014 S. Ilario di Nerviano
Milano (MI) | ITALY
Phone +39 0331 53 59 20
valco@valco.it
www.valco.it

GHM GROUP International

Austria
GHM Messtechnik GmbH
Office Austria
Breitenseer Str. 76/1/36
1140 Vienna | AUSTRIA
Phone +43 660 7335603
a.froestl@ghm-messtechnik.de

Brazil & Latin America
GHM Messtechnik do Brasil Ltda
Av. José de Souza Campos, 1073, cj 06
Campinas, SP
13025 320 | BRAZIL
Phone +55 19 3304 3408
info@grupoghm.com.br

Czech Republic / Slovakia
GHM Greisinger s.r.o.
Ovci hajek 2 / 2153
158 00 Prague 5
Nove Butovice | CZECH REPUPLIC
Phone +420 251 613828
Fax +420 251 612607
info@greisinger.cz | www.greisinger.cz

Denmark
GHM Maaleteknik ApS
Maarslet Byvej 2
8320 Maarslet | DENMARK
Phone +45 646492-00
Fax +45 646492-01
info@ghm.dk | www.ghm.dk

France
GHM GROUP France SAS
Parc des Pivolles
9 Rue de Catalogne
69150 Décines-Charpieu (Lyon) | FRANCE
Phone +33 4 72 37 45 30
contact@ghm-group.fr

India
GHM Messtechnik India Pvt Ldt.
209 | Udyog Bhavan | Sonowala Road
Gregaon (E) | Mumbai - 400 063
INDIA
Phone +91 22 40236235
info@ghmgroup.in | www.ghmgroup.in

Italy for Greisinger & Delta OHM
GHM GROUP – Delta OHM
Via Marconi 5
35030 Caselle di Selvazzano
Padova (PD) | ITALY
Phone +39 049 8977150
a.casati@ghm-messtechnik.de

Italy for Honsberg, Martens, Val.co
GHM GROUP – Val.co
Via Rovereto 9/11
20014 S. Ilario di Nerviano
Milano (MI) | ITALY
Phone +39 0331 53 59 20
alessandro.perego@valco.it

Netherlands
GHM Meettechniek BV
Zeeltweg 30
3755 KA Eemnes | NETHERLANDS
Phone +31 35 53805-40
Fax +31 35 53805-41
info@ghm-nl.com | www.ghm-nl.com

South Africa
GHM Messtechnik SA (Pty) Ltd
16 Olivier Street
Verwoerdpark, Alberton 1453
SOUTH AFRICA
Phone +27 74 4590040
j.grobler@ghm-sa.co.za

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