COM1 – Oil Regulator 24V and 230V

COM1 Oil Management: **The electronic oil level regulation system with alarm function and compressor shut-down. Flexible with a 24 VAC and a 230 VAC Version.** RoHS 2011/65/EU CE cTP "Made in Germany"	**Product highlights:** • Sophisticated operating principle, stand-alone controller for Oil supply with oil level sensor and solenoid valve • Optimized energy consumption by special Design of Solenoid Valve and Coil • High-precision sensor technology allows a very precise level detection • Float calibrated for POE Lubricants • No incorrect measurements by foaming oil or incidence of light • Conforms to CE, Gost • Protection class IP 54 , electrical connection with molded plugs and cable • Easy to fit to existing oil sight glass connection

Technical Data

CE mark in compliance with Low-Voltage Directive, EMC Directive	2006 / 95 / EC 2004 / 108 / EC	**Time delay**	Alarm: 90 s Fill: 10 s
Applicable standards	EN 12284, EN 378, EN 61010-1:2010, EN 61326, EN 61000-6-2:2005, EN 61000-6-3:2007 + A1:2011	**Alarm contact**	max. 3A, 230V AC, floating
Pressure rating:	Max. operating pressure PS 45 bar Test pressure PT 50 bar Burst pressure: 225 bar	**Media Compatibility**	HFC, CO2, mineral, synthetic and ester oil, other refrigerants on request.
Power supply voltage, Current	**COM1-24**: 24VAC, 50/60Hz, +10/-15%, 0,4 A **COM1-230**: 230VAC, 50/60Hz +10/-15%, 0,04 A	**Materials**	Housing and Adapter (EN AW 6081, 6082) Oil Conn.: CW617N Sight Glass: 11SMnPb37 Screws: stainless steel
Vibration resistance	max. 4g, 10... 250Hz, (EN 60068-2-6)	**Protection class**	IP 54 (IEC529 / EN 60529)
MOPD solenoid valve	24 bar	**Oil connection**	7/16"-20 UNF male
Media/Storage temperature: **Ambient temperature:**	-40 … 80°C -40 … 50°C (static)		

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Description

Adequate oil level is an important requirement for long life of the compressor. Depending on the system design (eg. in rack applications) the correct oil level control under different operating conditions is possible only using an active regulation system. The passive systems are problematic because they only operate satisfactorily under constant operating conditions, but due to seasonal variations this is not possible.
Variations in operating conditions and defrost cycles may be covered by an active oil regulation, ensuring reliable operation. Active systems monitor the oil level in compressors and generate an alarm for low oil level. Even without built-in compressor oil pump and oil differential pressure switch (for example, scroll compressor), the oil supply to the compressor can only be monitored with an active control.
A Hall sensor and a built-in magnet in the float system measure the oil level in the compressor. Depending on the oil level and the consequent changes in magnetic field strength results in a variable voltage induced into the Sensor. This is evaluated by an electronic unit and accordingly, the LED's and the solenoid valve will be actuated. If the oil level is in the Alarm Range (see Operation), the COM1 switches with a delay time of 90 seconds the relays contact into the alarm state. This signal can be used to shut down the compressor or for data processing. During the alarm condition oil is permanently fed in the compressor, with the target to bring the oil level to normal. If successful, the alarm is reset.

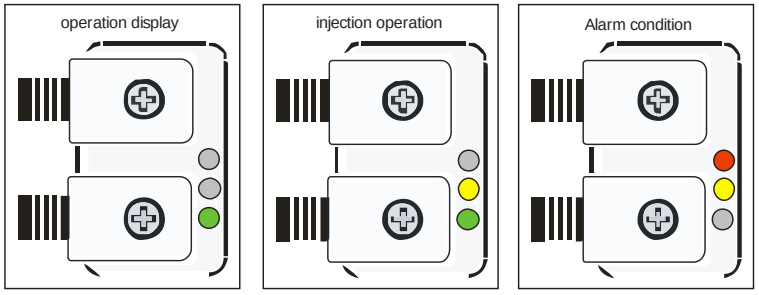
Operation

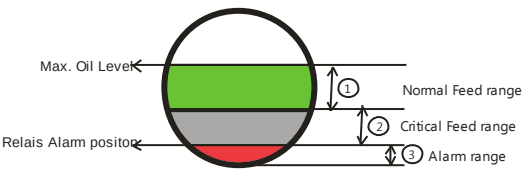
The oil sight glass is divided into ranges:

Normal Oil Level: 40-60% sight glass height
Critical Oil Level: 25-40% sight glass height and
Alarm Level: from <25% sight glass height.

If the green LED is on the COM1 is in operation and the oil level is within normal range. If the oil level for longer than 10 seconds is below the normal range, the solenoid valve is switched on, so that oil can be filled up to 60% sight glass height (maximum filling height). The valve closes again. The time delay of 10 seconds may be useful for certain types of compressors and applications since during the start of the compressor oil level varies and without a delay the filling of oil would start although enough Oil is present. With this delay an overfilling of the compressor can be avoided.
If the oil level in a low pressure system in spite of active oil filling moves into the "critical area", this could be a result of a compressor throwing more Oil into the system than the COM1 can re-fill. In such a case, the differential pressure (oil pressure minus suction pressure) has to be increased to such an extent that sufficient oil can flow back. This can be achieved by the use of an ORV valve that is available with 1,5, 3 and 5bar differential pressure.
To avoid oil shortage DEKA Controls recommends to leave the COM1 in operation even during compressor is in off condition.

The LED's and their meaning for the operating condition





Models

Type	P/N	Supply Voltage	Max. Operating Pressure (bar)	Description	Weight incl. Coil (g)
COM1-24/118-18	12035	24 VAC	45	Base Unit with Solenoid Valve and Adapter	635
COM1-24/034-14	12034				620
COM1-24/000	12033				680
COM1-24/114	12038				665
COM1-24/134	12037				695
COM1-230/118-18	12045	230 VAC			635
COM1-230/034-14	12046				620
COM1-230/000	12047				680
COM1-230/114	12048				665
COM1-230/134	12039				695
Type Adapter	**P/N**	**Connection**	**Max. Operating Pressure (bar)**	**Description**	**Weight (g)**
COM-AD-118-18	12005	1-1/8“-18 UNEF	45	Adapter for COM1	75
COM-AD-034-14	12004	¾“-14 NPTF			60
COM-AD-000	12003	Universal Adapter			125
COM-AD-114	12008	Rotalock 1-1/4“			105
COM-AD-134	12007	Rotalock 1-3/4“			135

Cable Connection with Plugs

Type	P/N	Supply Voltage	Length (m)	Temperature Range °C (static)	Description	Weight (g)
COM-P300	12023	24 and 230 VAC	3,0 m	-40 ... +80°C	Supply Voltage	150
COM-P600	12025		6,0 m			250
COM-S300	12024	230 VAC	3,0 m		Relais-connection	130
COM-S600	12026		6.0 m			230

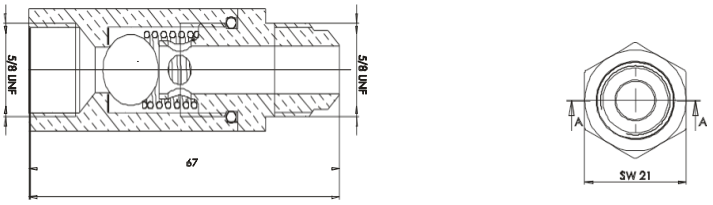
Accessories

Type	P/N	Description	Connection	Weight (g)
TEA-20VA	14002	Transformer 230VAC/24VAC, 15 VA		795
TEA-60VA	14001	Transformer 230VAC/24VAC, 60 VA		1.180
ADR-34-2	12010	Al Gasket set (10 pcs.)	for Dorin 1-1/8”-18 Adapter	13
ORV-015H ORV-035H ORV-050H	13004 13005 13006	Differential Pressure Valve, PS: 45 bar 1,5 bar 3,5 bar 5 bar	3/8” SAE (Inlet 5/8”- UNF female, Outlet 5/8”- UNF male)	46
DO-053	16600	Oil filter (max. PS: 31 bar)	3/8“ x 3/8“ SAE	305
DO-054	16601		½“ x ½“ SAE	330
DO-053S	16602		Braze 3/8” ODF	290
DO-054S	16603		Braze ½“ ODF	292

Spare Parts

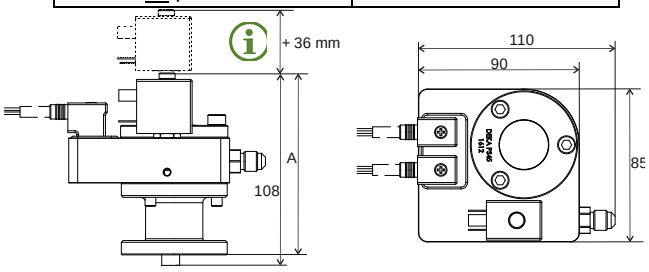
Type	P/N	Description	Weight (g)
COM1-R (24V, 230V)	12042	Repair Kit COM1 (all Gaskets, Oil connection, Sight Glass)	185
24 VAC 50/60 Hz	12043	Solenoid 24 VAC, 50/60 Hz with Clip	6
230 VAC 50/60Hz	12044	Solenoid 230 VAC, 50/60 Hz with Clip	6

Dimension ORV



Dimension COM1 (mm)

Type	A (mm) installed
COM1-__ / 118-18	85
COM1-__ / 034-14	81
COM1-__ / 000	101
COM1-__ / 114	96
COM1-__ / 134	100



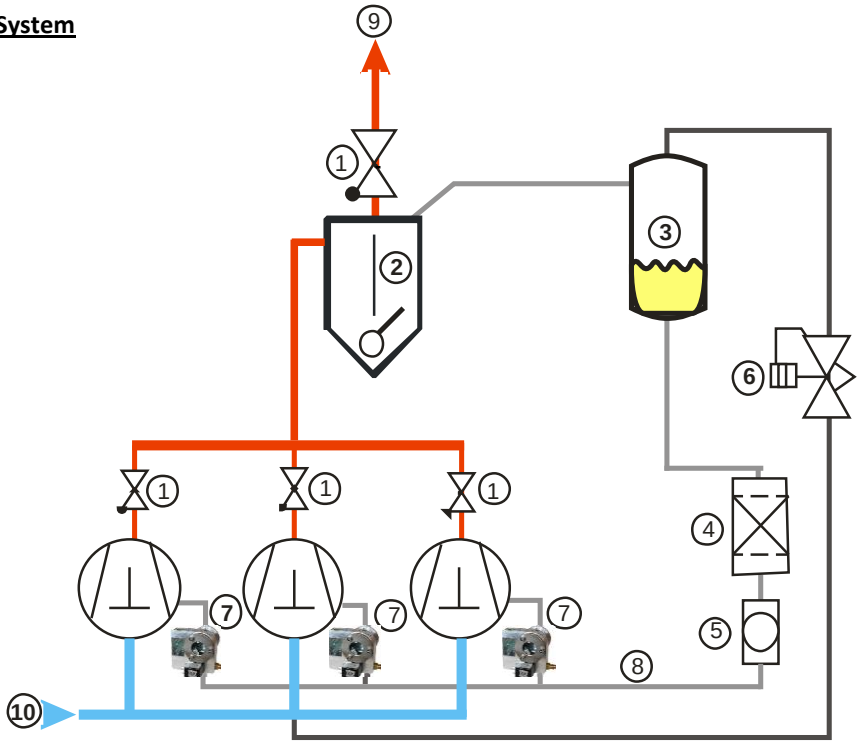
Selection of Adapter Type acc. Manufacturer and Compressor Model

Brand	Compressor model	Adapter type
Bitzer	4VC, 4TC, 4PC, 4NC, 4J, 4H, 4G, 6J, 6H, 6G, 6F, 8GC, 8FC,4VHC-10K, 4THC-12K, 4PHC-15K, 4NHC-20K Ecoline: 4VES-7Y…4NES-20(Y), 4VE-7Y…4NE-20(Y), 4JE-13Y…4FE-35(Y)	COM-AD-000
	2KC, 2JC, 2HC, 2GC, 2FC, 2EC, 2DC,2CC, 4FC, 4EC, 4DC, 4CC2KHC, 2JHC, 2HHC, 2GHC, 2FHC, 2EHC, 2DHC, 2CHC, 4FHC, 4EHC, 4DHC, 4CHC Ecoline: 2KES-05(Y)…2FES-3(Y), 2EES-2(Y)…2CES-4(Y), 4FES-3(Y)…4CES-9(Y)	COM-AD-118-18
Bock	HA, HG, O-Series, HGX4/310-4, 385-4, 464-4, 555-4 (CO2)	COM-AD-000
	HA12/22/34, HG12/22/34 HGX12P/40-4, 50-4, 60-4,75-4 (CO2) HGX22P110-4, HGX22P125-4, HGX22P/160-4, HGX22P/190-4 (CO2), HGX34P/215-4, HGX34P/255-4 (CO2	COM-AD-118-18
Copeland	D2, D3, D4, D6, D9, 4CC, 6CC	COM-AD-000
	ZB, ZF, ZS, ZO34, ZO45, ZO58, ZO104 ZP 103/120/137, ZP 90/154/182	COM-AD-034-14
	ZB 50, 58, 66, 76, 95, 114, ZR 108/125/144, ZR 94/160/190, ZP 103/120/137, ZP 90/154/182	COM-AD-114
	ZR250 … ZR380, ZO 235/295/385 **from Mai 2012:** ZB56KCE-TW … ZB11MCE-TW, ZS56K4E-TW … ZS11M4E-TW, ZF24K4E-TW … ZF48K4E-TW, ZF24KVE-TW … ZF48KVE-TW	COM-AD-134
Danfoss	LFZ, MFZ, MLZ, MLM	COM-AD-118-18 + P/N 12009
Dorin	all KP, K sizes (except those under COM-AD-118-18) SCC 500B, 750B, 1500B, 1900B, 2000B, 2500B	COM-AD-000
	all H, K100CC/CS, K150CC/CS, K180CC/CS, K200CC, K230CS, K235CC, K240SB, K40CC, K50CS, K75CC/CS- SCC 250B, 300B, 350B, 380B	COM-AD-118-18*
Frascold	Series A, B, D, F, S, V, Z Series A-SK, D-SK, F-SK, Q-SK, S-SK	COM-AD-000

* Needs a Special Aluminum Gasket (P/N 12010)

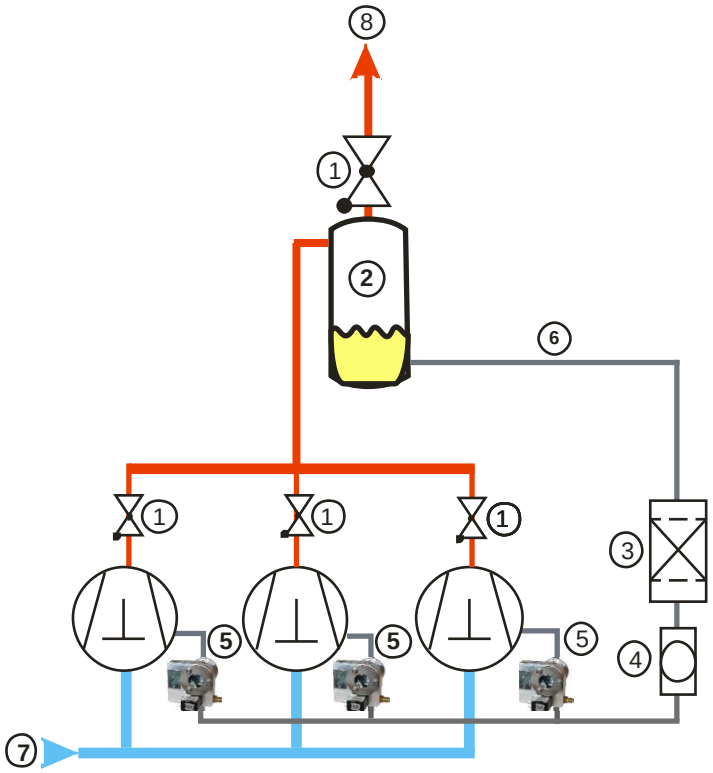
Oil Management: Typical Low Pressure System

1 Check Valves
2 Oil Separator TOH
3 Oil Receiver
4 Oil Filter DO
5 Sight Glass SIB
6 Differential Valve ORV
7 Oil Management COM1
8 Oil Line
9 Discharge Line
10 Suction Line



Oil Management: Typical High Pressure System

1 Check Valves
2 Oil Separator TOR
3 Oil Filter DO
4 Sight Glass SIB
5 Oil Management COM1
6 Oil Line
7 Suction Line
8 Discharge Line



Other DEKA Controls products