



Lett electronic oil level controller



COM1 – Oil Regulator 24V and 230V

<p>COM1 Oil Management:</p> <p>The electronic oil level regulation system with alarm function and compressor shut-down. Flexible with a 24 VAC and a 230 VAC Version.</p>  	<p>Product highlights:</p> <ul style="list-style-type: none"> • 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)		

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:

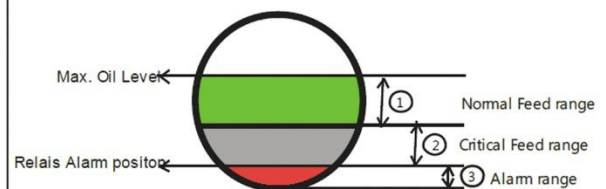
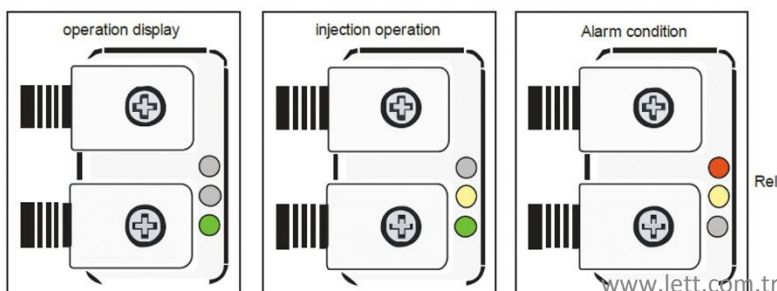
- Normal Oil Level: 40-60% sight glass height
- Critical Oil Level: 25-40% sight glass height and
- Alarm Level: from <25% sight glass height.

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 ORV valve that is available with 1,5, 3 and 5bar differential pressure.

To avoid oil shortage LETT 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	3/4"-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

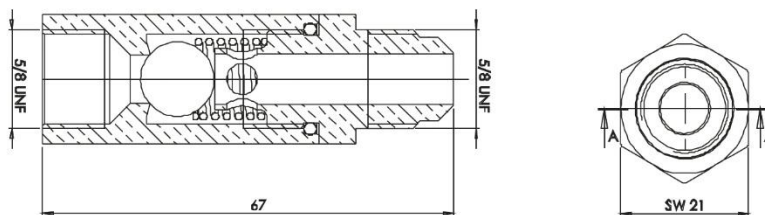
Accessories

Type	P/N	Description	Connection	Weight (g)
TEA-20VA	14002	Transformer 230VAC/24VAC, 15 VA		795
TEA-60VA	14001	Transformer 230VAC/24VAC, 60 VA		1180
ORV-015H ORV-035H ORV-050H	13004 13005 13006	Differential Pressure Valve, PS: 45 bar 1,5 bar 3,5 bar 5 bar	(Inlet 5/8"- UNF female, Outlet 5/8"- UNF male)	46

Spare Parts

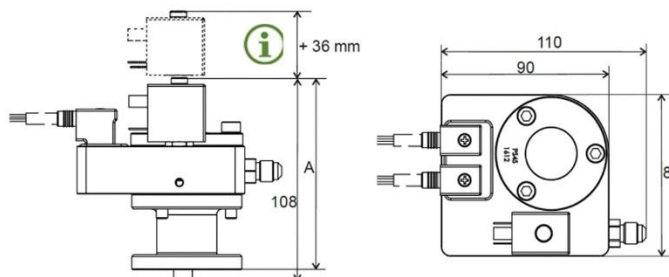
Type	P/N	Description	Weight (g)
COM1-R (24V, 230V)	12042	Repair Kit COM1 (all Gaskets, Oil connection, Sight Glass)	185
24 VAC 50/60 Hz	12043	Solenoid 24 VAC, 50/60 Hz with Clip	65
230 VAC 50/60Hz	12044	Solenoid 230 VAC, 50/60 Hz with Clip	65

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



*these types are ready for installation

Masse COM1 Adapter (mm)

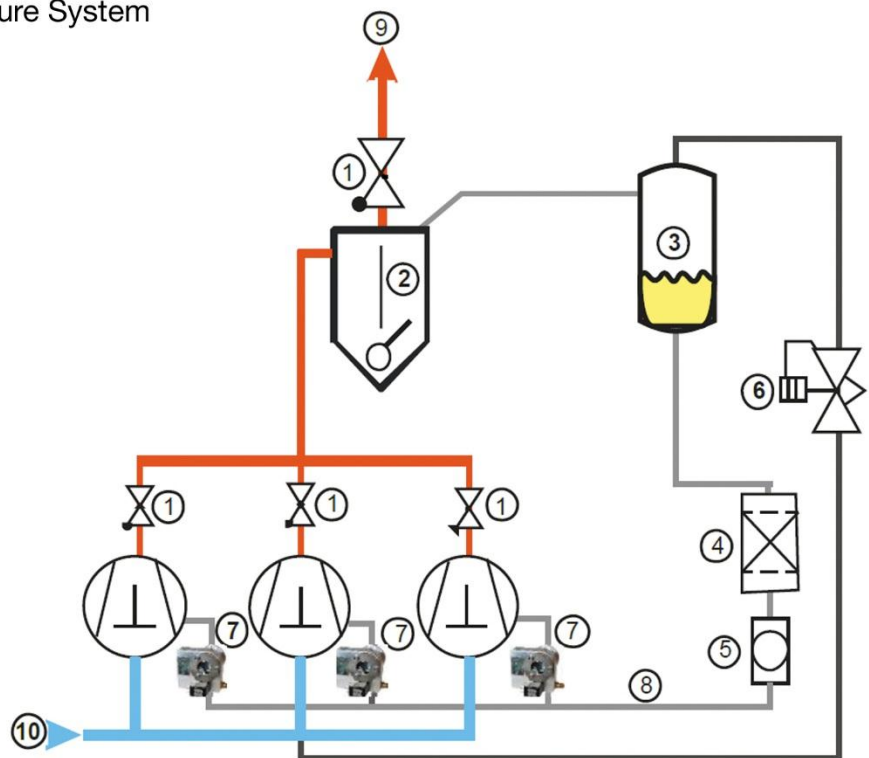
Type	P/N	Dimension (mm)
COM-AD-118-18	12005	
COM-AD-034-14	12004	
COM-AD-000	12003	
COM-AD-114	12008	
COM-AD-134	12007	

Selection of Adapter Type acc. Manufacturer and Compressor Model

Type of Adapter for COM 1	Manufacturer and Type of Compressor	
COM-AD-000	Arctic Circle	G2, G4, G6
	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)
	Bock	HA, HG (except HG/HA-12/22/34, see COM-AD-118-18), O-Series HGX4/310-4, 385-4, 464-4, 555-4 (CO2)
	Copeland	D2, D3, D4, D6, D9, 4CC, 6CC
	Dorin	all KP, K Types (except those under COM-AD-118-18), SCC 500B, 750B, 1500B, 1900B, 2000B, 2500B
	Frascold	Series A, B, D, F, S, V, Z Series A-SK, D-SK, F-SK, Q-SK, S-SK
COM-AD-118-18	Bitzer	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)
	Bock	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)
	Dorin	all H, K100CC/CS, K150CC/CS, K180CC/CS, K200CC, K230CS, K235CC, K240SB, K40CC, K50CS, K75CC/CS- SCC 250B, 300B, 350B, 380B
	L'Unite Hermetique	TAH, TAG
	Maneurop	LT, MT, SM, SZ
COM-AD-034-14	Bitzer	ZL, ZM
	Copeland	ZB, ZF, ZS, ZO34, ZO45, ZO58, ZO104 ZP 103/120/137, ZP 90/154/182 (see also types under COM-AD-134)
COM-AD-114	Copeland	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-134	Copeland	ZR250 ... ZR380, ZO 235/295/385 from May 2012: ZB56KCE-TW ... ZB11MCE-TW, ZS56K4E-TW ... ZS11M4E-TW, ZF24K4E-TW ... ZF48K4E-TW, ZF24KVE-TW ... ZF48KVE-TW

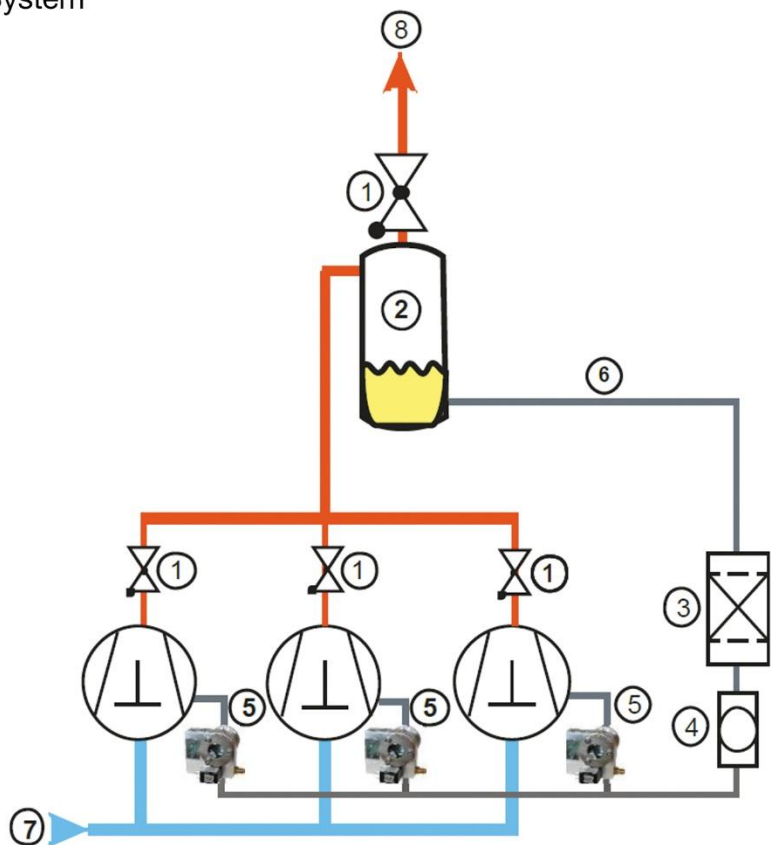
Oil Management: Typical Low Pressure System

- 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

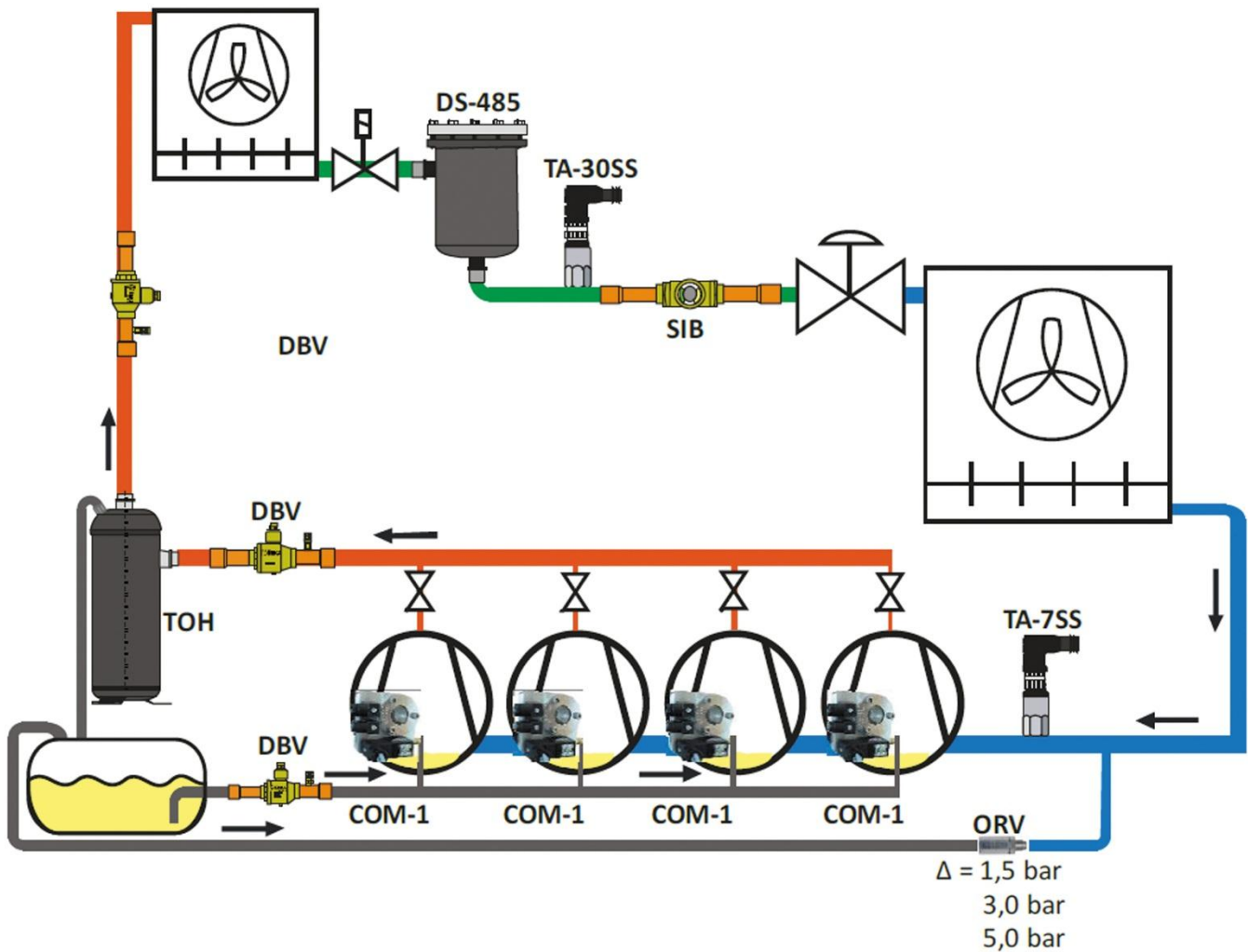


Oil Management: Typical High Pressure System

- 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 LETT Controls products



LETT Controls will not accept responsibility for possible errors in Technical literature and other printed material. LETT Controls reserves the right to change his products without notice. This applies also to products already on order provided that such changes can be made without sub sequential changes being necessary in specifications already agreed