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1 Menu and parameter lists

AZL5... menu structure with parameter definitions

For each line, a parameter is defined for the AZL5... menu.

Name of column	Description
Menu level	This parameter name or this submenu level corresponds to the name on the menu
Description	Brief explanation of the parameter or of the submenu level
Value range	Definition of setting limits within which the parameter can be changed
Access rights	Definition of access rights. Parameters can be set by: User: Plant operator Service: Heating engineer OEM: Boiler / burner manufacturer
Basic parameter setting	Factory-set parameter
LMV51...	Line marked with an x: Line displayed with the LMV51... system
LMV52...	Line marked with an x: Line displayed with the LMV52... system

The parameter list shown on the next pages represents the preselection for the following type of system:

- LMV52.200A2
- SQM45...



WARNING

The basic parameter settings made in the factory can vary, depending on customer- or country-specific requirements.

The preselected values listed are valid for the following parameter set:

- Parameter set code: 20
- Parameter set version: 400

If required, the code or version of the parameter set can be displayed on the AZL5... In that case, select menu item "Factory ID" from the menu of the relevant device.

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
OperationalStat						Menu level for displaying normal operation		User		x	x
	Normal Operation					Display of actual values, setpoints, load and flame signal		User		x	x
	Status/Reset					Shows the current error (or no fault), lockout reset function		User		x	x
	FaultHistory					Last 21 error messages		User		x	x
	LockoutHistory					Storing the last 9 lockout indications with date and time of day		User		x	x
	Alarm act/deact					Activation / deactivation of horn in the event of an alarm	activated deactivated	User	---	x	x
Operation						Menu level for operating the key functions		User		x	x
	BoilerSetpoint							User		x	x
		SetpointW1				Internal setpoint W1, in °C Internal setpoint W1, in bar	0...2000 °C 0...100 bar	User	---	x	x
		SetpointW2				Internal setpoint W2, in °C Internal setpoint W2, in bar	0...2000 °C 0...100 bar	User	---	x	x
	UserMaxload							User		x	x
		UserMax LoadMod				Other restrictions of start up the maximum load, modulating operation	0...100%	User	100%	x	x
		UserMax LoadStg				Other restrictions of start up the maximum load, multistage operation	S1 S2 S3	User	S3	x	x
	Fuel					Displaying and selecting the type of fuel		User		x	x
		CurrentFuel				Information about the type of fuel currently burnt (read only)	Gas Oil	User	---	x	x
		FuelSelect				Fuel selection via AZL5.... when fuel selector is set to <i>Internal</i>	Gas Oil	User	Gas	x	x
	Date/TimeOf Day					Displaying and setting the time of day and the date		User		x	x
		DisplayClock						User		x	x
			Date			Display of date (Day.Month.Year or Month-Day-Year)	01.01.00...31.12.99 01-01-00...12-31-99	User	---	x	x
			TimeOfDay			Display of time of day (Hour:Minute)	00:00...23:59	User	---	x	x
			Weekday			Display of day of week	Sunday Monday Tuesday Wednesday Thursday Friday Saturday	User	---	x	x
		SetClock						User		x	x
			Date			Setting the display of date (Day.Month.Year or Month-Day-Year)	01.01.00...31.12.99 01-01-00...12-31-99	User	---	x	x
			TimeOfDay			Setting the time of day (Hour:Minute)	00:00...23:59	User	---	x	x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
			Weekday			Setting the display of day of week	Sunday Monday Tuesday Wednesday Thursday Friday Saturday	User	---	x	x
	HoursRun					Displaying the current operating hour meter		User		x	x
		GasFiring				Operating hours gas (selectable)	0...999999 h	User	0	x	x
		OilStage1/Mod				Operating hours oil stage 1 or modulating (selectable)	0...999999 h	User	0	x	x
		OilStage2				Operating hours oil stage 2 (selectable)	0...999999 h	User	0	x	x
		OilStage3				Operating hours oil stage 3 (selectable)	0...999999 h	User	0	x	x
		TotalHoursReset				Operating hours total (can be reset)	0...999999 h	User	0	x	x
		TotalHours				Operating hours total (read only)	0...999999 h	User	0	x	x
		SystemOnPower				Operating hours device live (read only)	0...999999 h	User	0	x	x
	StartCounter					Displaying the start meter		User		x	x
		GasStartCount				Number of startups gas, start meter (selectable)	0...999999	User	0	x	x
		OilStartCount				Number of startups oil, start meter (selectable)	0...999999	User	0	x	x
		Total Start CountR				Total number of startups, start meter (can be reset)	0...999999	User	0	x	x
		TotalStartCount				Total number of startups, start meter (read only)	0...999999	User	0	x	x
	Fuel Meter					Displaying the current counter readings		User		x	x
		Curr Flow Rate				Current fuel throughput	0...6553,4	User	---	x	x
		Volume Gas				Fuel volume gas (read only)	0...199999999,9 m³ 0...1999999999 ft³	User	0	x	x
		Volume Oil				Fuel volume oil (read only)	0...199999999,9 l 0...199999999,9 gal	User	0	x	x
		Volume Gas R				Fuel volume gas (resettable)	0...199999999,9 m³ 0...1999999999 ft³	User	0	x	x
		Volume Oil R				Fuel volume oil (resettable)	0...199999999,9 l 0...199999999,9 gal	User	0	x	x
		Reset Date Gas				Reset date fuel volume gas	01.01.00...31.12.99 01-01-00...12-31-99	User	0	x	x
		Reset Date Oil				Reset date fuel volume oil	01.01.00...31.12.99 01-01-00...12-31-99	User	0	x	x
	LockoutCounter					Total number of lockouts that occurred (read only)	0...65535	User	0	x	x
	O2 Module							User			x
		Actual O2 Value				Actual O2 value	0...100%	User	---		x
		O2 Setpoint				O2 setpoint	0...25%	User	---		x
		SupplyAirTemp				Supply air temperature in °C	-100...923 °C	User	---		x
		FlueGas Temp				Flue gas temperature in °C	-100...923 °C	User	---		x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
		CombEfficiency				Combustion efficiency	0...200%	User	---		x
	BurnerID					Identification of burner	4...15 characters	User	invalid	x	x
	OptgMode Select					Operating mode selection of AZL5... for serial port and eBus		User		x	x
		InterfacePC				Setting the serial port (RS-232) of the AZL5... to interface operation for PC tool		User		x	x
		GatewayBASon				Activating the eBus port on the AZL5... for BAS		User		x	x
		GatewayBASoff				Deactivating the eBus port on the AZL5...		User		x	x
		Type of Gateway					eBus Modbus	User	Modbus	x	x
	O2Ctrl activate					Activating the O2 controller	deactivated activated	User	---		x
ManualOperation						Menu level for activating manual operation with the preselected load		User		x	x
	SetLoad					Set target load	0...100%, S1, S2, S3	User	---	x	x
	Autom/Manual/Off					Selection of manual or automatic operation	Automatic Burner on Burner off	User	Automatic	x	x
Params & Display						Menu level for making the parameter settings		User		x	x
	BurnerControl					Setting the burner control parameters		User		x	x
		Times						Service		x	x
			TimesStartup1			Burner control startup times 1		Service		x	x
				MinTmeStartRel		Minimum time for start release	0.2...63 s	OEM	1 s	x	x
				FanRunupTme		Fan runup time	0.2...63 s	Service	2 s	x	x
				PrepurgeTmeGas		Prepurge time gas	MinT_PrepurgeGas...63 min	Service	20 s	x	x
				PrepurgeTmeOil		Prepurge time oil	MinT_PrepurgeOil..63 min	Service	15 s	x	x
				MinT_PrepurgeGas		Minimum prepurge time gas	0.2...63 min	OEM	20 s	x	x
				MinT_PrepurgeOil		Minimum prepurge time oil	0.2...63 min	OEM	15 s	x	x
				Prepurge Safe Gas		Prepurge time after safety shutdown gas	MinT_PrepurgeGas...63 min	OEM	20 s	x	x
				PrepurgeSafeOil		Prepurge time after safety shutdown oil	MinT_PrepurgeOil...63 min	OEM	15 s	x	x
				PrepurgePt1Gas		Prepurge part 1 gas	0,2 s...63 min	Service	0.2 s	x	x
				PrepurgePt3Gas		Prepurge part 3 gas	0,2 s...63 min	Service	0.2 s	x	x
				PrepurgePt1Oil		Prepurge part 1 oil	0,2 s...63 min	Service	0.2 s	x	x
				PrepurgePt3Oil		Prepurge part 3 oil	0,2 s...63 min	Service	0.2 s	x	x
				PreIgnitionTGas		Preignition time gas	0.2...63 s	Service	2 s	x	x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens											
Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
				PrelgnitionTOil		Preignition time oil	0.2...44 s	Service	2 s	x	x
				MinOnTme OilPump		Minimum on time of oil pump	0.2...63 s	Service	1 s	x	x
			TimesStartup2			Burner control startup times 2		Service		x	x
				SafetyTme1Gas		Safety time 1 gas	1 s...MaxSafetyTGas	OEM	EU = 3 s US = 10 s	x	x
				SafetyTme1Oil		Safety time 1 oil	1 s...MaxSafetyTOil	OEM	EU = 5 s US = 15 s	x	x
				Interval1Gas		Interval 1 (TSA1-TSA2) gas	0.2...63 s	Service	2 s	x	x
				Interval1Oil		Interval 1 (TSA1-TSA2) oil	0.2...63 s	Service	2 s	x	x
				SafetyTme2Gas		Safety time 2 gas	1 s...MaxSafetyTGas	OEM	2 s	x	x
				SafetyTme2Oil		Safety time 2 oil	1 s...MaxSafetyTOil	OEM	2 s	x	x
				Interval2Gas		Interval 2 (TSA2 operation) gas	0.2...630 s	Service	2 s	x	x
				Interval2Oil		Interval 2 (TSA2 operation) oil	0.2...630 s	Service	2 s	x	x
				PressReacTme		Response time to lack of pressure in TSA1 and TSA2	0.2 s...MaxSafetyTGas	OEM	2 s	x	x
			Times Shutdown			Burner control shutdown times		Service		x	x
				MaxTmeLowFire		Maximum time to low-fire in operation 2	0.2...630 s	Service	45 s	x	x
				AfterburnTme		Afterburn time	0.2...63 s	Service	8 s	x	x
				PostpurgeT1Gas		Postpurge time 1 gas	0.2...63 min	Service	0.2 s	x	x
				PostpurgeT1Oil		Postpurge time 1 oil	0.2...63 min	Service	0.2 s	x	x
				PostpurgeT3Gas		Postpurge time 3 gas	0.2...63 min	Service	5 s	x	x
				PostpurgeT3Oil		Postpurge time 3 oil	0.2...63 min	Service	5 s	x	x
				MinTmeHome-Run		Minimum time in home run phase	0.2...63 s	OEM	1 s	x	x
				DelayLackGas		Basic waiting time in the event of lack of gas	MinTmeHomeRun...63 s	OEM	10 s	x	x
			TimesGeneral			General times of burner control		Service		x	x
				AlarmDelay		Time to alarm in the event of start prevention and heat request	0.4...630 s	Service	35 s	x	x
				DelayStartPrev		Time until message on start prevention and heat request is delivered	0.4...630 s	Service	35 s	x	x
				Postpurge Lockout		Postpurge in lockout position	0.2...63 min	Service	0.2 s	x	x
				MaxTmeStartRel		Maximum phase holding time start release (timeout)	0.2...63 min	OEM	120 s	x	x
		Configuration						User		x	x
			ConfigGeneral			General parameters of burner control		Service		x	x
				AlarmStartPrev		With / without alarm in the event of start prevention and heat request	Deactivated Activated	Service	deactivated	x	x
				ShutdownStby OnErr		Activating safety shutdown in standby when there is no heat request	deactivated activated	OEM	deactivated	x	x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
				NormDirectStart		Normal / direct start in the event of heat request in phase 78	NormalStart DirectStart	Service	NormalStart	x	x
				OilPumpCoupling		Configuration for coupling the oil pump	Magnetcoupl Directcoupl	Service	Magnet- coupl	x	x
				IgnOilPumpStart		Switch-on time of ignition and oil pump	on in Ph38 on in Ph22	OEM	on in Ph22	x	x
				ForcedIntermit		With / without forced intermittent operation	deactivated activated	Service	activated	x	x
				SkipPrepurge Gas		Start without prepurge to EN 676	deactivated activated	Service	deactivated	x	x
				SkipPrepurge Oil		Start without prepurge	deactivated activated	OEM	deactivated	x	x
				Continuous Purge		Configuration for normal or continuous fan operation	deactivated activated	Service	deactivated	x	x
				FuelTrainGas		Fuel train when firing on gas	DirectIgnG Pilot Gp1 Pilot Gp2	OEM	invalid	x	x
				FuelTrainOil		Fuel train when firing on oil	LightOilLO HeavyOilHO LO w Gasp SO w Gasp	OEM	invalid	x	x
				FuelTrainReset		Resetting the fuel train to invalid value		OEM		x	x
					FuelTrainGas			OEM		x	x
					FuelTrainOil			OEM		x	x
				ContPilotGas		Continuous pilot gas	deactivated activated	OEM	deactivated		x
				ContPilotOil		Permanent pilot oil	deactivated activated	OEM	deactivated		x
				MainsFrequency		Selection of mains frequency 50 / 60 Hz	50 Hz 60 Hz	OEM	50 Hz	x	x
			ConfigIn/Output			Configuring the inputs and outputs		Service		x	x
				StartReleaseGas		Input start release gas active	deactivated StartRelGas CPI Gas CPI Gas + Oil CPI Oil	OEM	StartRelGas	x	x
				StartReleaseOil		Input start release oil active	deactivated activated	OEM	activated	x	x
				AirPressureTest		Assess / ignore air pressure signal	deactivated activated	OEM	activated	x	x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens											
Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
				PS-VP/CPI		Configuration of input on pressure switch valve proofing or CPI	PS-VP CPI Gas CPI Gas + Oil CPI Oil	OEM	PS-VP	x	x
				FGR-PS/FCC		Configuration of input for fan conductor contact (FCC) or flue feedback (FRG) pressure switch	FCC FGR-PS deactivated	OEM	FCC	x	x
				InputController		Input controller active	deactivated activated	OEM	activated	x	x
				GasPressureMin		Input minimum gas pressure (+start release gas) active	deactivated activated deact xOGP	OEM	activated	x	x
				GasPressure-Max		Input maximum gas pressure active	deactivated activated	OEM	activated	x	x
				OilPressureMin		Input minimum oil pressure active	deactivated activated act from ts	OEM	activated	x	x
				OilPressureMax		Input oil pressure max. active	deactivated activated	OEM	Activated	x	x
				HeavyOilDirStart		Input immediate heavy oil start active	deactivated activated	OEM	activated	x	x
				Start/PS-Valve		Configuration of output for start signal or pressure switch relief valve	StartSignal PS Relief PS Reli_Inv	Service	StartSignal	x	x
			ConfigFlameDet			Configuring the flame detector		User		x	x
				ReacExtranLight		Reaction in the event of extraneous light in standby	Lockout Startblock	OEM	Startblock	x	x
				ExtranLightTest		Release of extraneous light test	deactivated activated	OEM	activated	x	x
				FlameSignal		Configuring the flame signal		User		x	x
					Standardize	Standardizing the flame signal		OEM		x	x
					StandardFactor	Reading / resetting the standard factor		OEM		x	x
					FlameSig QRI_B	Flame signal QRI_B	0...255	User	---		x
					FlameSig ION	Flame signal ION	0...255	User	---		x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
				SensExtranlGas		QRI(QRB) or ionization with plausibility check, only 1 flame detector connected QRI (QRB) OR ionization QRI (QRB) AND NOT ionization QRI (QRB) – ionization input will not be evaluated Ionization AND NOT QRI (QRB) Ionization – QRI (QRB) input will not be evaluated	1 Sensor QRI_B / ION QRI_B & / ION QRI_B ION & / QRI_B ION	OEM	1 sensor		x
				SensPilotPhGas		QRI(QRB) or ionization with plausibility check, only 1 flame detector connected QRI (QRB) OR ionization QRI (QRB) AND NOT ionization QRI (QRB) – ionization input will not be evaluated Ionization AND NOT QRI (QRB) Ionization – QRI (QRB) input will not be evaluated QRI (QRB) AND ionization	1 sensor QRI_B / ION QRI_B & / ION QRI_B ION & / QRI_B ION QRI_B & ION	OEM	1 sensor		x
				SensOperPhGas		QRI(QRB) or ionization with plausibility check, only 1 flame detector connected QRI (QRB) OR ionization QRI (QRB) AND NOT ionization QRI (QRB) – ionization input will not be evaluated Ionization AND NOT QRI (QRB) Ionization – QRI (QRB) input will not be evaluated QRI (QRB) AND ionization	1 sensor QRI_B / ION QRI_B & / ION QRI_B ION & / QRI_B ION QRI_B & ION	OEM	1 sensor		x
				SensExtranlOil		QRI(QRB) or ionization with plausibility check, only 1 flame detector connected QRI (QRB) OR ionization QRI (QRB) AND NOT ionization QRI (QRB) – ionization input will not be evaluated Ionization AND NOT QRI (QRB) Ionization – QRI (QRB) input will not be evaluated	0 = 1 sensor QRI_B / ION QRI_B & / ION QRI_B ION & / QRI_B ION	OEM	1 sensor		x
				SensPilotPhOil		QRI(QRB) or ionization with plausibility check, only 1 flame detector connected QRI (QRB) OR ionization QRI (QRB) AND NOT ionization QRI (QRB) – ionization input will not be evaluated Ionization AND NOT QRI (QRB) Ionization – QRI (QRB) input will not be evaluated QRI (QRB) AND ionization	1 sensor QRI_B / ION QRI_B & / ION QRI_B ION & / QRI_B ION QRI_B & ION	OEM	1 sensor		x
				SensOperPhOil		QRI(QRB) or ionization with plausibility check, only 1 flame detector connected QRI (QRB) OR ionization QRI (QRB) AND NOT ionization QRI (QRB) – ionization input will not be evaluated Ionization AND NOT QRI (QRB) Ionization – QRI (QRB) input will not be evaluated QRI (QRB) AND ionization	1 sensor QRI_B / ION QRI_B & / ION QRI_B ION & / QRI_B ION QRI_B & ION	OEM	1 sensor		x
			RepetitCounter					Service		x	x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens											
Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
				LossOfFlame		Repetition counter: Loss of flame	1...2	OEM	2	x	x
				HeavyOil		Repetition counter: Immediate start heavy oil Caution: Changes become active only after reset (power on / reset)!	1...16	Service	3	x	x
				StartRelease		Repetition limit value: Start prevention Caution: Changes become active only after reset (power on / reset)!	1...16	Service	10	x	x
				SafetyLoop		Repetition limit value: Safety loop Caution: Changes become active only after reset (power on / reset)!	1...16	Service	16	x	x
		ValveProving				Settings for valve proving		OEM		x	x
			ValveProving Type			Type or time of valve proving test	No VP VP startup VP shutdown VP stup/shd	OEM	VP shutdown	x	x
			Config_PM-VP/CPI			Configuration of input on pressure switch valve proofing or CPI	PS-VP CPI Gas CPI Gas + Oil CPI Oil	OEM	PS-VP	x	x
			VP_EvacTme			Leakage test evacuation time	0.2...MaxSafetyTme_Gas	OEM	3 s	x	x
			VP_TmeAtm Press			Leakage test time atmospheric pressure	MinT_VP_AtmosphPress...63 s	OEM	10 s	x	x
			VP_FillTme			Leakage test filling time	0.2...MaxSafetyTme_Gas	OEM	3 s	x	x
			VP_Tme_Gas Press			Leakage test time gas pressure	MinT_VP_GasPress...63 s	OEM	10 s	x	x
		ProductID				Displaying the burner control's hardware version		User		x	x
			ASN			Product no.	1...15 characters	User	LMV52.200 B2	x	x
			ProductionDate			Production date	01.01.00...31.12.99 01-01-00...12-31-99	User	---	x	x
			SerialNumber			Identification number	0...65535	User	---	x	x
			ParamSet Code			Preselected parameter set: Customer code	0...255	User	1	x	x
			ParamSet Vers			Preselected parameter set: Version	0...65535	User	510	x	x
		SW Version				Software version of burner control	0...65535	User	---	x	
		SW Version					0...65535	User	---		x
	RatioControl					Parameter settings for fuel / air ratio control		User		x	x
		GasSettings				Parameter settings for firing on gas		Service		x	x
			Special Positions			Setting the special actuator positions for firing on gas		Service		x	x
				HomePos		Setting the normally closed positions for firing on gas		Service		x	x
					HomePosGas	Normally closed position of fuel damper (gas)	0...90°	Service	0°	x	x
					HomePosAir	Normally closed position of air damper (gas)	0...90°	Service	0°	x	x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
					HomePosAux1	Normally closed position of auxiliary damper (gas)	0...90° 0...100%	Service	0°	x	x
					HomePosAux2	Normally closed position of auxiliary damper 2	0...90°	Service	0°		x
					HomePosAux3	Normally closed position of auxiliary damper 3	0...90°	Service	0°		x
					HomePosVSD	Normally closed position of VSD	0...100%	Service	0%		x
				PrepurgePos		Setting the prepurge positions for firing on gas		Service		x	x
					PrepurgePosAir	Prepurge position of air damper (gas)	0...90°	Service	90°	x	x
					PrepurgePosAux1	Prepurge position of auxiliary damper (gas)	0...90° 0...100%	Service	90°	x	x
					PrepurgePosAux2	Prepurge position of auxiliary damper 2	0...90°	Service	90°		x
					PrepurgePosAux3	Prepurge position of auxiliary damper 3	0...90°	Service	90°		x
					PrepurgePosVSD	Prepurge position of VSD	10...100%	Service	100%		x
				IgnitionPos		Setting the ignition positions for firing on gas		Service		x	x
					IgnitionPosGas	Ignition position of fuel damper (gas)	0...90°	Service	invalid	x	x
					IgnitionPosAir	Ignition position of air damper (gas)	0...90°	Service	invalid	x	x
					IgnitionPosAux1	Ignition position of auxiliary damper (gas)	0...90° 0...100%	Service	invalid	x	x
					IgnitionPosAux2	Ignition position of auxiliary damper 2	0...90°	Service	invalid		x
					IgnitionPosAux3	Ignition position of auxiliary damper 3	0...90°	Service	invalid		x
					IgnitionPosVSD	Ignition position of VSD	10...100%	Service	invalid		x
				PostpurgePos		Setting the postpurge positions for firing on gas		Service		x	x
					PostpurgePosGas	Postpurge position of fuel damper (gas)	0...90°	Service	15°	x	x
					PostpurgePosAir	Postpurge position of air damper (gas)	0...90°	Service	15°	x	x
					PostpurgePosAux1	Postpurge position of auxiliary damper (gas)	0...90° 0...100%	Service	25°	x	x
					PostpurgePosAux2	Postpurge position of auxiliary damper 2	0...90°	Service	25°		x
					PostpurgePosAux3	Postpurge position of auxiliary damper 3	0...90°	Service	25°		x
					PostpurgePosVSD	Postpurge position of VSD	10...100%	Service	50%		x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens											
Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
				ProgramStop		Program stop	deactivated 24 PrePurgP 32 PreP FGR 36 IgnitPos 44 Interv 1 52 Interv 2 72 PostPPos 76 PostPFGR	Service	deactivated	x	x
				ResetIgnitPos		Resetting the ignition positions to invalid value		Service		x	x
					IgnitionPosGas			Service		x	x
					IgnitionPosAir			Service		x	x
					IgnitionPosAux1			Service		x	x
					IgnitionPosAux2			Service			x
					IgnitionPosAux3			Service			x
					IgnitionPosVSD			Service			x
			CurveParams					Service		x	x
			LoadLimits			Setting the minimum and maximum load limits		Service		x	x
				MinLoadGas		Minimum load <i>Low-fire</i> (gas)	0...MaxLoadGas	Service	0%	x	x
				MaxLoadGas		Maximum load <i>nominal load</i> (gas)	MinLoadGas...100%	Service	100%	x	x
			Load mask out			Setting the load range to be hidden		Service		x	x
				LoadMask LowLimit		Lower limit of load range, to be hidden	0...LoadMaskHighLim	Service	0%	x	x
				LoadMask HighLim		Upper limit of load range, to be hidden	LoadMaskLowLim...100%	Service	0%	x	x
			AuxActuator			Auxiliary actuator for firing on gas: Deactivate / activate / VSD operation	deactivated damper act VSD active	OEM	deactivated	x	
			AirActuator			Air actuator for firing on gas: Deactivate / activate / air-regulating	deactivated activated air influen	OEM	air influen		x
			AuxActuator 1			Auxiliary actuator 1 for firing on gas: Deactivate / activate / air-regulating	deactivated activated air influen	OEM	air influen		x
			AuxActuator 2			Auxiliary actuator 2 for firing on gas: Deactivate / activate / air-regulating	deactivated activated air influen	OEM	deactivated		x
			AuxActuator 3			Auxiliary actuator 3 for firing on gas: Deactivate / activate / air-regulating	deactivated activated air influen	OEM	deactivated		x
			VSD			VSD for firing on gas: Deactivate / activate / air-regulating	deactivated activated air influen	OEM	air influen		x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
			GasActuator			Fuel actuator for firing on gas: Deactivate / activate	deactivated activated	OEM	activated		x
		OilSettings				Parameter settings for firing on oil		Service		x	x
			Special Positions			Setting the special actuator positions for firing on oil		Service		x	x
				HomePos		Setting the normally closed positions for firing on oil		Service		x	x
					HomePosOil	Normally closed position of fuel damper (oil)	0...90°	Service	0°	x	x
					HomePosAir	Normally closed position of air damper (oil)	0...90°	Service	0°	x	x
					HomePosAux1	Normally closed position of auxiliary damper (oil)	0...90° 0...100%	Service	0°	x	x
					HomePosAux2	Normally closed position of auxiliary damper 2	0...90°	Service	0°		x
					HomePosAux3	Normally closed position of auxiliary damper 3	0...90°	Service	0°		x
					HomePosVSD	Normally closed position of VSD	0...100%	Service	0%		x
				PrepurgePos		Setting the prepurge positions for firing on oil		Service		x	x
					PrepurgePosAir	Prepurge position of air damper (oil)	0...90°	Service	90°	x	x
					Prepurge PosAux1	Prepurge position of auxiliary damper (oil)	0...90° 0...100%	Service	90°	x	x
					Prepurge PosAux2	Prepurge position of auxiliary damper 2	0...90°	Service	90°		x
					Prepurge PosAux3	Prepurge position of auxiliary damper 3	0...90°	Service	90°		x
					Prepurge PosVSD	Prepurge position of VSD	10...100%	Service	100%		x
				IgnitionPos		Setting the ignition positions for firing on oil		Service		x	x
					IgnitionPosOil	Ignition position of fuel damper (oil)	0...90°	Service	invalid	x	x
					IgnitionPosAir	Ignition position of air damper (oil)	0...90°	Service	invalid	x	x
					IgnitionPosAux1	Ignition position of auxiliary damper (oil)	0...90° 0...100%	Service	invalid	x	x
					IgnitionPosAux2	Ignition position of auxiliary damper 2	0...90°	Service	invalid		x
					IgnitionPosAux3	Ignition position of auxiliary damper 3	0...90°	Service	invalid		x
					IgnitionPosVSD	Ignition position of VSD	10...100%	Service	invalid		x
				PostpurgePos		Setting the postpurge positions for firing on oil		Service		x	x
					PostpurgePosOil	Postpurge position of fuel damper (oil)	0...90°	Service	0°	x	x
					PostpurgePosAir	Postpurge position of air damper (oil)	0...90°	Service	15°	x	x
					Postpurge PosAux1	Postpurge position of auxiliary damper (oil)	0...90° 0...100%	Service	25°	x	x
					Postpurge PosAux2	Postpurge position of auxiliary damper 2	0...90°	Service	25°		x
					Postpurge PosAux3	Postpurge position of auxiliary damper 3	0...90°	Service	25°		x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
					Postpurge PosVSD	Postpurge position of VSD	10...100%	Service	50%		x
				ProgramStop		Program stop	deactivated 24 PrePurgP 32 PreP FGR 36 IgnitPos 44 Interv 1 52 Interv 2 72 PostPPos 76 PostPFGR	Service	deactivated	x	x
				ResetIgnitPos		Resetting the ignition positions to invalid value		Service		x	x
					IgnitionPosOil			Service		x	x
					IgnitionPosAir			Service		x	x
					IgnitionPosAux1			Service		x	x
					IgnitionPosAux2			Service			x
					IgnitionPosAux3			Service			x
					IgnitionPosVSD			Service			x
			CurveParams			Setting the curve parameters of fuel / air ratio control for firing on oil		Service		x	x
				Curve Settings				Service		x	x
				Operation Mode		Selection of burner operating mode (multistage or modulating) for fuel oil	Two-stage Three-stage Modulating	OEM	modulating	x	x
			LoadLimits			Setting the minimum and maximum load limits		Service		x	x
				MinLoadOil		Minimum load <i>Low fire</i> (oil)	0...MaxLoadOil	Service	0%	x	x
				MaxLoadOil		Maximum load <i>nominal load</i> (oil)	MinLoadOil...100%	Service	100%	x	x
			Load mask out			Setting the load range to be hidden		Service		x	x
				LoadMask LowLimit		Lower limit of load range, to be hidden	0...LoadMaskHighLim	Service	0%	x	x
				LoadMask HighLim		Upper limit of load range, to be hidden	LoadMask-LowLimit...100%	Service	0%	x	x
			AuxActuator			Auxiliary actuator for firing on oil: Deactivate / activate / VSD operation	deactivated damper act VSD active	OEM	deactivated	x	
			AirActuator			Air actuator for firing on oil: Deactivate / activate / air-regulating	deactivated activated air influen	OEM	air influen		x
			AuxActuator 1			Auxiliary actuator 1 for firing on oil: Deactivate / activate / air-regulating	deactivated activated air influen	OEM	air influen		x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
			AuxActuator 2			Auxiliary actuator 2 for firing on oil: Deactivate / activate / air-regulating	deactivated activated air influen	OEM	deactivated		x
			AuxActuator 3			Auxiliary actuator 3 for firing on oil: Deactivate / activate / air-regulating	deactivated activated air influen	OEM	deactivated		x
			VSD			VSD for firing on oil: Deactivate / activate / air-regulating	deactivated activated air influen	OEM	air influen		x
			OilActuator			Fuel actuator for firing on oil: Deactivate / activate	deactivated activated	OEM	activated		x
		Autom/Manual/Off				Selection of manual or automatic operation	Automatic Burner on Burner off	User	Automatic	x	x
		Times						Service		x	x
			OperatRampMod			Duration operating ramp fuel / air ratio control modulating operation	30...120 s	Service	30 s	x	x
			OperatRampStage			Duration operating ramp fuel / air ratio control multistage operation	10...60 s	Service	10 s	x	x
			TimeNoFlame			Duration ramp in prepurge and ignition position	10...120 s	Service	10 s	x	x
		NumFuel Actuators				Number of fuel actuators	1..2	OEM	2	x	x
		ShutdownBehav				This parameter determines the way the fuel / air ratio control system behaves in the lockout phase	Unchanged PostpurgeP HomePos	Service	HomePos	x	x
		ProgramStop				Program stop	deactivated 24 PrePurgP 32 PreP FGR 36 IgnitPos 44 Interv 1 52 Interv 2 72 PostPPos 76 PostPFGR	Service	deactivated	x	x
	O2Contr/Guard					Parameter settings for O2 trim control and monitor function		User			x
		GasSettings				Parameter settings for firing on gas		User			x
			OptgMode			Operating mode of O2 controller / monitor when firing on gas	auto deact man deact O2 Limiter O2 Control conAutoDeac	Service	man deact		x
			O2 Control			Parameter settings for O2 trim control		Service			x
			O2 Monitor			Parameter settings for O2 monitor		Service			x
			Control Param					User			x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens											
Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
				P Low-Fire		P-part of O2 controller with low-fire	3...500%	Service	invalid		x
				I Low-Fire		I-part of O2 controller with low-fire	0...500 s	Service	invalid		x
				Tau Low-Fire OEM		Time constant Tau of O2 controller's controlled system with low-fire	1...27 s	OEM	invalid		x
				Tau Low-Fire		Time constant Tau of O2 controller's controlled system with low-fire	1...27 s	User	invalid		x
				P High-Fire		P-part of O2 controller with nominal load	3...500%	Service	invalid		x
				I High-Fire		I-part of O2 controller with nominal load	0...500 s	Service	invalid		x
				Tau High-Fire OEM		Time constant Tau of O2 controller's controlled system with nominal load	1...27 s	OEM	invalid		x
				Tau High-Fire		Time constant Tau of O2 controller's controlled system with nominal load	1...27 s	User	invalid		x
			O2 CtrlThreshold			Minimum load O2 trim control (gas)	0...100%	Service	0%		x
			Lowfire AdaptPtNo			Point number for low-fire adaption of O2 trim control	2	Service	2		x
			Type of Fuel			Selection of type of gas	user def naturalGasH naturalGasL propane butane	Service	naturalGasH		x
			Fuel user def			User-defined setting of the fuel parameters		Service			x
				V_LNmin		Air volume under standard conditions and lambda = 1	0.00...40.00	Service	9.90		x
				V_afNmin		Flue gas volume wet under standard conditions and lambda = 1	0.00...40.00	Service	10.93		x
				V_atrNmin		Flue gas volume dry under standard conditions and lambda = 1	0.00...40.00	Service	8.89		x
				A2		Adjustable constant for calculating the combustion efficiency (gas)	0.40...0.80	Service	0.65		x
				B/1000		Adjustable constant for calculating the combustion efficiency (gas)	1...20	Service	9		x
			O2 Content Air			Oxygen content of air	0...30%	OEM	20.9%		x
			Type ofAir-Change			Impact of air density change on O2 value	like theory like P air	Service	like theory		x
			O2 OffsetGas			O2 offset during change of load gas	0...5%	Service	0%		x
			LoadCtrlSuspend			Difference between delayed and current load	0...25%	Service	5%		x
			FilterTimeLoad			Filter time for delayed load	4...10	Service	5		x
		OilSettings				Parameter settings for firing on oil		User			x
			OptgMode			Operating mode of O2 controller / limiter when firing on oil	auto deact man deact O2 Limiter O2 Control conAutoDeac	Service	man deact		x
			O2 Control			Parameter settings for O2 trim control		Service			x
			O2 Monitor			Parameter settings for O2 monitor		Service			x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
			Control Param					User			x
				P low-fire		P-part of O2 controller with low-fire	3...500%	Service	invalid		x
				I low-fire		I-part of O2 controller with low-fire	0...500 s	Service	invalid		x
				Tau Low-Fire OEM		Time constant Tau of O2 controller's controlled system with low-fire	1...27 s	OEM	invalid		x
				Tau low-fire		Time constant Tau of O2 controller's controlled system with low-fire	1...27 s	User	invalid		x
				P nominal load		P-part of O2 controller with nominal load	3...500%	Service	invalid		x
				I nominal load		I-part of O2 controller with nominal load	0...500 s	Service	invalid		x
				Tau High-Fire OEM		Time constant Tau of O2 controller's controlled system with nominal load	1...27 s	OEM	invalid		x
				Tau nominal load		Time constant Tau of O2 controller's controlled system with nominal load	1...27 s	User	invalid		x
			O2 CtrlThreshold			Minimum load O2 trim control (oil)	0...100%	Service	0%		x
			Lowfire AdaptPtNo			Point number for low-fire adaption of O2 trim control	2	Service	2		x
			Type of Fuel			Selection of type of oil	user def oil EL oil H	Service	oil EL		x
			Fuel user def					Service			x
				V_LNmin		Air volume under standard conditions and lambda = 1	0.00...40.00	Service	11.2		x
				V_afNmin		Flue gas volume wet under standard conditions and lambda = 1	0.00...40.00	Service	12.02		x
				V_atrNmin		Flue gas volume dry under standard conditions and lambda = 1	0.00...40.00	Service	10.53		x
				A2		Adjustable constant for calculating the combustion efficiency (oil)	0.40...0.80	Service	0.65		x
				B/1000		Adjustable constant for calculating the combustion efficiency (oil)	1...20	Service	9		x
			O2 Content Air			Oxygen content of air	0...30%	OEM	20.9%		x
			Type Air Change			Impact of air density change on O2 value	like theory like P air	Service	like theory		x
			O2 OffsetOil			O2 offset during change of load oil	0...5%	Service	0%		x
			LoadCtrl Suspend			Difference between delayed and current load	0...25%	Service	5%		x
			FilterTimeLoad			Filter time for delayed load	4...10	Service	5		x
		Process Data						User			x
			CombEfficiency			Combustion efficiency	0...200%	User	---		x
			ManVar O2 Ctrl			Manipulated variable of O2 controller	-35...35%	User	---		x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens											
Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
			State O2 Ctrl			Release O2 controller 10 x τ Step precontrol Locking time load adjustment Temporarily deactivated	deactivated locked LockTStart InitContr LockTLoad active LockTCAct	User	---		x
			Air-related Load				0...100%, S1, S2, S3	User	---		x
			Diag Reg State			Diagnostic code when controller is locked	0...255	User	---		x
	LoadController					Settings for the internal load controller		User		x	x
		Controller Param				Setting the controller parameters		User		x	x
			ContrlParam List			PID control parameters		User		x	x
				StandardParam		Selection of standard parameter sets for the load controller	Adaption very fast fast normal slow very slow	User	---	x	x
				P-Part (Xp)		Controller parameter proportional band	2..500%	User	15%	x	x
				I-Part (Tn)		Controller parameter integral part	0..2000 s	User	320 s	x	x
				D-Part (Tv)		Controller parameter differential part	0..1000 s	User	40 s	x	x
			MinActuatorStep			Minimum actuator step possible	0.5..10%	User	1%	x	x
			SW_FilterTme Con			Software filter time constant	1..10 s	User	3 s	x	x
			SetpointW1			Internal setpoint W1, in °C Internal setpoint W1, in bar	0..2000 °C 0...100 bar	User	---	x	x
			SetpointW2			Internal setpoint W2, in °C Internal setpoint W2, in bar	0...2000 °C 0..100 bar	User	---	x	x
			SD_ModOn			2-position controller switching differential burner ON modulating referred to the current setpoint (Wcurrent)	-50...+50% Wcurrent	User	1.0%	x	x
			SD_ModOff			2-position controller switching differential burner OFF modulating referred to the current setpoint (Wcurrent)	0...+50% Wcurrent	User	10%	x	x
			SD_Stage1On			2-position controller switching differential burner ON multistage referred to the current setpoint (Wcurrent)	-50...+50% Wcurrent	User	-2%	x	x
			SD_Stage1Off			2-position controller switching differential stage 1 OFF referred to the current setpoint (Wcurrent)	0...+50% Wcurrent	User	10%	x	x
			SD_Stage2Off			2-position controller switching differential stage 2 OFF referred to the current setpoint (Wcurrent)	0...+50% Wcurrent	User	8%	x	x
			SD_Stage3Off			2-position controller switching differential stage 3_1 OFF referred to the current setpoint (Wcurrent)	0...+50% Wcurrent	User	6%	x	x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
			ThreshStage2On			Reaction threshold Q2 for switching on stage 2 (integral control deviation time)	0...1000	User	300	x	x
			ThreshStage3On			Reaction threshold Q3 for switching on stage 3 (integral control deviation time)	0...1000	User	600	x	x
		TempLimiter				Settings for the temperature limiter function		Service		x	x
			TL_ThreshOff			Temperature limiter OFF threshold, in °C	0...2000 °C	Service	95 °C	x	x
			TL_SD_On			Temperature limiter switching differential ON	-50...0% TL_Thresh_Off	Service	-5%	x	x
		ColdStart				Settings for the cold start (thermal shock protection)		User		x	x
			ColdStartOn			Cold start thermal shock protection, activate / deactivate	deactivated activated	Service	deactivated	x	x
			ThresholdOn			Cold start thermal shock protection activation level referred to the current setpoint (Wcurrent)	0...100% Wcurrent	Service	20%	x	x
			StageLoad			Cold start thermal shock protection load step (modulating)	0..100%	Service	15%	x	x
			StageSetp_Mod			Cold start thermal shock protection setpoint step (modulating) referred to the current setpoint (Wcurrent)	1...100% Wcurrent	Service	5%	x	x
			Stage Setp_Stage			Cold start thermal shock protection setpoint step (multistage) referred to the current setpoint (Wcurrent)	1...100% Wcurrent	Service	5%	x	x
			MaxTmeMod			Cold start thermal shock protection, max. time per step (modulating)	1...63 min	Service	3 min	x	x
			MaxTmeStage			Cold start thermal shock protection, maximum time per step (multistage)	1...63 min	Service	3 min	x	x
			ThresholdOff			Cold start thermal shock protection deactivation level referred to the current setpoint (Wcurrent)	0...100% Wcurrent	Service	80%	x	x
			AdditionalSens			Select extra sensor for cold start thermal shock protection	deactivated Pt100 Pt1000 Ni1000	Service	deactivated	x	x
			Temp ColdStart			Display of temperature acquired by extra sensor for the cold start thermal shock protection function	0...2000 °C	User	---	x	x
			Setpoint AddSensor			Setpoint for extra sensor for cold start thermal shock protection	0...450 °C	Service	60 °C	x	x
			Release Stages			Cold start thermal shock protection load step stage mode (multistage operation)	no release release	Service	release	x	x
		Configuration				General configuration of the load controller		User		x	x
			LC_OptgMode			Operating mode with load controller	ExtLC X5-03 Int LC Int LC Bus Int LC X62 Ext LC X62 Ext LC Bus	User	IntLC	x	x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens											
Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
			Sensor Select			Select actual value input E1 → Pt100, temperature limiter active E4 → Pt1000, temperature limiter active E4 → Ni1000, temperature limiter active E2 → Temp, temperature limiter inactive E2 → Pressure, temperature limiter inactive E1 → Pt100 for controller + temperature limiter and E4 → Pt1000 for temperature limiter E1 → Pt100 for controller + temperature limiter and E4 → Ni1000 for temperature limiter No input	Pt100 Pt1000 Ni1000 Temp sensor Press sensor Pt100Pt1000 Pt100Ni1000 NoSensor	Service	Pt100	x	x
			Measure RangePtNi			End of measurement range for temperature sensor at input X60	150 °C / 302 °F 400 °C / 752 °F 850 °C / 1562 °F	Service	150 °C / 302 °F	x	x
			var. RangePtNi			End of measuring range for temperature sensor at input X60	0...850 °C	Service	850 °C	x	x
			Ext Inp X61 U/I			Configuration of external input X61	4...20 mA 2...10 V 0...10 V 0...20 mA	Service	0..10 V	x	x
			MRange Temp Sens			End of temperature measuring range for input X61	0...2000 °C	Service	90 °C	x	x
			MRange Press Sens			End of pressure measuring range for input X61	0...99.9 bar	Service	2 bar	x	x
			Ext Inp X62 U/I			Configuration of external input X62	4...20 mA 2...10 V 0...10 V 0...20 mA	Service	4...20 mA	x	x
			Ext MinSetpoint			Accepted preselected minimum external setpoint for X62 / bus	0...100% ScaleHlcurrent	Service	0%	x	x
			Ext MaxSetpoint			Accepted preselected maximum external setpoint for X62 / bus	0...100% ScaleHlcurrent	Service	60%	x	x
			AnalogOutput			Selection Analog output		Service			x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
				OutValue Selection		<p>Selection analog output</p> <p>When selecting <i>Output</i>, the output mapped on the analog output signal (4...20 mA) is 0...100%. This means: 4 mA = 0% output, and 20 mA = 100% output</p> <p>With all other selections, both the lower current threshold of 0...4 mA and scaling can be set. For example, when selecting <i>Output 0</i>, the assignment can be set - 20 mA = 85% output, and 4 mA = 20% output</p>	Load Load 0 O2 Pos Air Pos Fuel Pos Aux1 Pos Aux2 Pos Aux3 Speed VSD Flame Temp Pt1000 Temp Ni1000 Temp Pt100 Temp X61 Press X61	Service	Load		x
				CurrMode 0/4mA		Selection minimum output current 0 or 4 mA	0...20 mA 4...20 mA	Service	0...20 mA		x
				Scale20 mA perc		Assignment of percentage to 20 mA	0...999.9%	Service	100%		x
				Scale20mA temp		Assignment of temperature to 20 mA	0...2000 °C	Service	850 °C		x
				Scale20mA press		Assignment of pressure to 20 mA	0...99.9 bar	Service	2		x
				Scale20mA angle		Assignment of angle to 20 mA	0...90°	Service	90 °		x
				Scale 0/4mA		Assignment of value to lower load value (percentage of end value)	0...999.9%	Service	0%		x
		Adaption				Adapting the controlled system		User		x	x
			StartAdaption					User		x	x
			AdaptionLoad			Adaption load	40..100%	User	100%	x	x
		SW Version				Software version of internal load controller	0..65535	User	---	x	x
	AZL					Settings for the display and operating unit		User		x	x
		Times				AZL5...-specific time settings		User		x	x
			PasswordTime			Validity of password	10..480 min	OEM	120 min	x	x
			Sum/WinterTime			Setting the summer-/wintertime	Manual Automatic	User	Automatic	x	x
			Time EU/US			Setting the summer-/wintertime US / EU	S / W time EU S / W time US	User	S / W time EU	x	x
		Language				Selection of language	English German Language 3 Language 4 Language 5 Language 6	User	English	x	x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens											
Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
		DateFormat				Selection of date format (Day.Month.Year or Month-Day-Year)	DD.MM.YY MM-DD-YY	User	DD.MM.YY	x	x
		PhysicalUnits				Selection of unit °C / bar or °F / psi	°C / bar °F / psi	User	°C / bar	x	x
		eBUS						User		x	x
			Address			eBus address of LMV5...	1...8	User	1	x	x
			SendCycleBU			Cycle time for sending the burner control's operating data to BAS	10...60 s	User	30 s	x	x
		Modbus						User		x	x
			Address			Modbus address of LMV5...	1...247	User	1	x	x
			Baudrate			Modbus rate of transmission	19200 bit/s 9600 bit/s	User	19200 bit/s	x	x
			Parity			Modbus parity for LMV5...	no even odd	User	no	x	x
			Timeout			Maximum time with no communication. When this period of time has elapsed, <i>Remote</i> changes to <i>Local</i>	0...7200 s	User	30 s	x	x
			Lokal / Remote			Change of operating mode local / remote	local remote	User	---	x	x
			Remote Mode			Operating mode: Remote <i>off</i> / remote <i>on</i> / W3	Automatic Burner on Burner off	User	---	x	x
			W3			External setpoint W3, in °C External setpoint W3, in bar	0...2000 °C 0...100 bar	User	---	x	x
		Display Contrast						User		x	x
		ProductID				Displaying the hardware version of the AZL5...		User		x	x
			ASN			Product no.	1...15 characters	User	AZL52.00B1	x	x
			ProductionDate			Production date	01.01.00...31.12.99 01-01-00...12-31-99	User	---	x	x
			SerialNumber			Serial number	0...65535	User	---	x	x
			ParamSet Code			Preselected parameter set: customer code	0...255	User	1	x	x
			ParamSet Vers			Preselected parameter set: version	0...65535	User	510	x	x
		SW Version				Software version of AZL5...	0...65535	User	---	x	x
	Actuators					Settings for the actuators		User		x	x
		Addressing				Addressing unaddressed actuators		Service		x	x
			1 AirActuator			Actuator to be addressed becomes the air actuator		Service		x	x
			2 GasActuat(Oil)			Actuator to be addressed becomes the gas actuator, or the fuel actuator for dual fuel burners with one fuel actuator		Service		x	x
			3 OilActuator			Actuator to be addressed becomes the oil actuator		Service		x	x
			4 AuxActuator			Actuator to be addressed becomes the auxiliary actuator		Service		x	x
			5 AuxActuator2			Actuator to be addressed becomes the auxiliary actuator		Service			x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
			6 AuxActuator3			Actuator to be addressed becomes the auxiliary actuator		Service			x
		DirectionRot						Service		x	x
			DeleteCurves					Service		x	x
			1 AirActuator			Direction of rotation of the respective actuator	standard reversed	OEM	standard	x	x
			2 GasActuat(Oil)			Direction of rotation of the respective actuator	standard reversed	OEM	standard	x	x
			3 OilActuator			Direction of rotation of the respective actuator	standard reversed	OEM	standard	x	x
			4 AuxActuator			Direction of rotation of the respective actuator	standard reversed	OEM	standard	x	x
			5 AuxActuator2			Direction of rotation of the respective actuator	standard reversed	OEM	standard		x
			6 AuxActuator3			Direction of rotation of the respective actuator	standard reversed	OEM	standard		x
		ProductID				Displaying the actuators' hardware version		User		x	x
			1 AirActuator					User		x	x
				ASN		Product no.	1...15 characters	User	SQM45.29x A9	x	x
				ProductionDate		Date of production	01.01.00...31.12.99 01-01-00...12-31-99	User	---	x	x
				SerialNumber		Serial number	0...65535	User	---	x	x
				ParamSet Code		Preselected parameter set: Customer code	0...255	User	1	x	x
				ParamSet Vers		Preselected parameter set: Version	0...65535	User	510	x	x
			2 GasActuat (Oil)					User		x	x
				ASN		Product no.	1...15 characters	User	SQM45.29x A9	x	x
				ProductionDate		Date of production	01.01.00...31.12.99 01-01-00...12-31-99	User	---	x	x
				SerialNumber		Serial number	0...65535	User	---	x	x
				ParamSet Code		Preselected parameter set: Customer code	0...255	User	1	x	x
				ParamSet Vers		Preselected parameter set: Version	0...65535	User	510	x	x
			3 OilActuator					User		x	x
				ASN		Product no.	1...15 characters	User	SQM45.29x A9	x	x
				ProductionDate		Date of production	01.01.00...31.12.99 01-01-00...12-31-99	User	---	x	x
				SerialNumber		Serial number	0...65535	User	---	x	x
				ParamSet Code		Preselected parameter set: Customer code	0...255	User	1	x	x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens											
Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
				ParamSet Vers		Preselected parameter set: Version	0...65535	User	510	x	x
			4 AuxActuator					User		x	x
				ASN		Product no.	1...15 characters	User	SQM45.29x A9	x	x
				ProductionDate		Date of production	01.01.00...31.12.99 01-01-00...12-31-99	User	---	x	x
				SerialNumber		Serial number	0...65535	User	---	x	x
				ParamSet Code		Preselected parameter set: Customer code	0...255	User	1	x	x
				ParamSet Vers		Preselected parameter set: Version	0...65535	User	510	x	x
			5 AuxActuator2					User			x
				ASN		Product no.	1...15 characters	User	SQM45.29x A9		x
				ProductionDate		Date of production	01.01.00...31.12.99 01-01-00...12-31-99	User	---		x
				SerialNumber		Serial number	0...65535	User	---		x
				ParamSet Code		Preselected parameter set: customer code	0...255	User	1		x
				ParamSet Vers		Preselected parameter set: version	0...65535	User	510		x
			6 AuxActuator3					User			x
				ASN		Product no.	1...15 characters	User	SQM45.29x A9		x
				ProductionDate		Date of production	01.01.00...31.12.99 01-01-00...12-31-99	User	---		x
				SerialNumber		Serial number	0...65535	User	---		x
				ParamSet Code		Preselected parameter set: Customer code	0...255	User	1		x
				ParamSet Vers		Preselected parameter set: Version	0...65535	User	510		x
		SW Version				Displaying the actuators' software version		User		x	x
			1 AirActuator			Software version of actuator	0...65535	User	---	x	x
			2 GasActuat(Oil)			Software version of actuator	0...65535	User	---	x	x
			3 OilActuator			Software version of actuator	0...65535	User	---	x	x
			4 AuxActuator			Software version of actuator	0...65535	User	---	x	x
			5 AuxActuator2			Software version of actuator	0...65535	User	---		x
			6 AuxActuator3			Software version of actuator	0...65535	User	---		x
	VSD Module					Settings for the VSD module		User		x	x
		Configuration						User		x	x
			ReleaseContct VSD			Behavior of VSD module's release contact when no-load position = 0% during home run	closed open	Service	closed	x	x
			TolQuick Shutdown			Tolerance for VSD quick shutdown	0...100%	OEM	10%	x	x
			Speed					User		x	x
				Num Puls per R		Number of pulses per revolution	3..6	Service	3	x	x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
				Standardization		Standardization process for fan speed	deactivated activated	Service	---	x	x
				StandardizedSp		Standardized speed: Speed corresponding to 100%	1...6300	Service	1	x	x
				AbsoluteSpeed		Absolute speed	0...6553,5	AB	---	x	x
				Setpoint Output		Configuration of analog interface	0...20 mA 4...20 mA	Service	4...20 mA	x	x
				Setteling Time		Time between speed readjustment and speed acquisition for long run commands	200...5000 ms	OEM	16	x	x
			Fuel Meter			Fuel meter		Service		x	x
				PulseValueGas		Number of pulses per volume unit gas	0...9999.9999 Imp/m³ 0...999.99999 Imp/ft³	Service	1	x	x
				PulseValueOil		Number of pulses per volume unit oil	0...9999.9999 Imp/l 0...9999.9999 Imp/gal	Service	1	x	x
		Process Data						User		x	x
			Max Stat Dev			Maximum speed deviation at the end of a run command	0...100%	User	---	x	x
			Max Dyn Dev			Maximum speed deviation when accelerating	0...100%	User	---	x	x
			Num Dev >0.3%			Number of speed deviations >0.3 % at the end of a run command	0...255	User	---	x	x
			Num Dev >0.5%			Number of speed deviations >0.5 % at the end of a run command	0...255	User	---	x	x
			Absolute Speed			Absolute speed	0...6553.5	User	---	x	x
		ProductID						User		x	x
			ASN			Product no.	1...15 characters	User	---	x	x
			ProductionDate			Date of production	01.01.00...31.12.99 01-01-00...12-31-99	User	---	x	x
			SerialNumber			Serial number	0...65535	User	---	x	x
			ParamSet Code			Preselected parameter set: customer code	0...255	User	1	x	x
			ParamSet Vers			Preselected parameter set: version	0...65535	User	510	x	x
		SW Version				Software version of VSD	0...65535	User	---	x	x
	O2 Module					Settings for the O2 module		User			x
		Configuration						Service			x
			O2 Sensor			Configuration of oxygen sensor	no sensor QGO20	Service	QGO20		x
			SupAirTemp-Sens			Configuration of supply air temperature input	no sensor Pt1000 Ni1000	Service	no sensor		x
			FlueGasTemp-Sens			Configuration of flue gas temperature input	no sensor Pt1000 Ni1000	Service	no sensor		x
			Max-TempFIGasGas			Switch-off limit of flue gas temperature	0...400 °C	Service	400 °C		x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens											
Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
			Max-TempFGasOil			Switch-off limit of flue gas temperature	0...400 °C	Service	400 °C		x
		Displayed Values						User			x
			Actual O2 Value			Actual O2 value	0..100%	User	---		x
			O2 Setpoint			O2 setpoint	0...25%	User	---		x
			SupplyAirTemp			Supply air temperature in °C	-100...923 °C	User	---		x
			FlueGasTemp			Flue gas temperature in °C	-100...923 °C	User	---		x
			CombEfficiency			Combustion efficiency	0...200%	User	---		x
			QGO Sensor-Temp			Sensor temperature of QGO20... in °C	-100...923 °C	User	---		x
			QGO Heating-Load			Control value of QGO20... heating in 0.1 %	0...100%	User	---		x
			QGO Resistance			Internal resistance of QGO20... Nernst cell	0...1000 Ohm	User	---		x
		ProductID						User			x
			ASN			Product no.	1...15 characters	User	PLL52.110A 200		x
			ProductionDate			Date of production	01.01.00...31.12.99 01-01-00...12-31-99	User	---		x
			SerialNumber			Serial number	0...65535	User	---		x
			ParamSet Code			Preselected parameter set: customer code	0...255	User	1		x
			ParamSet Vers			Preselected parameter set: version	0...65535	User	510		x
		SW Version				Software version of O2 module	0...65535	User	---		x
	Flue Gas Recirc							User			x
		FGR-Mode				Flue gas feedback mode	deactivated time temperature	Service	deactivated		x
		FGR-sensor				Temperature sensor for flue gas feedback function	PLL_Pt1000 LC_Pt1000 LC_Ni1000	Service	PLL_Pt1000		x
		actTmpFGR-sensor				Temperature value of the selected flue gas feedback temperature sensor	0...850 °C	User	---		x
		ThresholdFGR Gas				Switch-on temperature when Aux3 is positioned	0...850	Service	400		x
		DelaytimeFGR Gas				Time to elapse after start of operation for Aux3 to be positioned	0...63 min	Service	300 s		x
		ThresholdFGR Oil				Switch-on temperature when Aux3 is positioned	0...850	Service	400		x
		DelaytimeFGR Oil				Time to elapse after start of operation for Aux3 to be positioned	0...63 min	Service	300 s		x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
	SystemConfig					Settings for LMV5... system configuration		User		x	x
		LC_OptgMode				Operating mode with load controller	ExtLC X5-03 Int LC Int LC Bus Int LC X62 Ext LC X62 Ext LC Bus	User	IntLC	x	x
		Ext Inp X62 U/I				Configuration of external input X62	4...20 mA 2...10 V 0...10 V 0...20 mA	Service	4...20 mA	x	x
		TempLimiter						Service		x	x
			TL_Thresh_Off			Temperature limiter OFF threshold, in °C	0...2000 °C	Service	95 °C	x	x
			TL_SD_On			Temperature limiter switching differential ON	-50...0% TL_Thresh_Off	Service	-5%	x	x
			Sensor Select			Select actual value input E1 → Pt100, temperature limiter active E4 → Pt1000, temperature limiter active E4 → Ni1000, temperature limiter active E2 → Temp, temperature limiter inactive E2 → Pressure, temperature limiter inactive E1 → Pt100 for controller + temperature limiter and E4 → Pt1000 for temperature limiter E1 → Pt100 for controller + temperature limiter and E4 → Ni1000 for temperature limiter No input	Pt100 Pt1000 Ni1000 Temp sensor Press sensor Pt100Pt1000 Pt100Ni1000 NoSensor	Service	Pt100	x	x
			Measure RangePtNi			End of measuring range for sensor at input X60	150 °C / 302 °F 400 °C / 752 °F 850 °C / 1562 °F	Service	150 °C / 302 °F	x	x
		O2Ctrl/LimitrGas				Operating mode of O2 controller / limiter when firing on gas	auto deact man deact O2 Limiter O2 Control conAutoDeac	Service	man deact		x
		O2Ctrl/LimitrGas				Operating mode of O2 controller / limiter when firing on gas	auto deact man deact O2 Limiter O2 Control conAutoDeac	Service	man deact		x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens											
Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
		LC Analog Output				Selection analog output	Load Load 0 O2 Pos Air Pos Fuel Pos Aux1 Pos Aux2 Pos Aux3 Speed VSD Flame Temp Pt1000 Temp Ni1000 Temp Pt100 Temp X61 Press X61	Service	Load		x
		Max.Perm.Poti Diff				Permitted tolerance between the 2 potentiometer values	1...1.5°	Service	1°	x	x
	HoursRun							User		x	x
		GasFiring				Hours of operation gas (selectable)	0...999999 h	User	0	x	x
		OilStage1/Mod				Hours of operation oil stage 1 or modulating (selectable)	0...999999 h	User	0	x	x
		OilStage2				Hours of operation oil stage 2 (selectable)	0...999999 h	User	0	x	x
		OilStage3				Hours of operation oil stage 3 (selectable)	0...999999 h	User	0	x	x
		TotalHoursReset				Hours of operation total (can be reset)	0...999999 h	User	0	x	x
		TotalHours				Hours of operation total (read only)	0...999999 h	User	0	x	x
		SystemOnPower				Hours of operation device live (read only)	0...999999 h	User	0	x	x
		Reset				Resetting the hour meter of operation		User		x	x
			GasFiring			Hours of operation gas (selectable)	0...999999 h	User	0	x	x
			OilStage1/Mod			Hours of operation oil stage 1 or modulating (selectable)	0...999999 h	User	0	x	x
			OilStage2			Hours of operation oil stage 2 (selectable)	0...999999 h	User	0	x	x
			OilStage3			Hours of operation oil stage 3 (selectable)	0...999999 h	User	0	x	x
			TotalHoursReset			Hours of operation total (can be reset)	0...999999 h	User	0	x	x
	StartCounter							User		x	x
		GasStartCount				Number of startups gas, start counter (selectable)	0...999999	User	0	x	x
		OilStartCount				Number of startups oil, start counter (selectable)	0...999999	User	0	x	x
		TotalStart CountR				Total number of startups, start counter (can be reset)	0...999999	User	0	x	x
		TotalStartCount				Total number of startups, start counter (read only)	0...999999	User	0	x	x
		Reset				Resetting the start counters		User		x	x
			GasStartCount			Number of startups gas, start counter (selectable)	0...999999	User	0	x	x
			OilStartCount			Number of startups oil, start counter (selectable)	0...999999	User	0	x	x
			TotalStart CountR			Total number of startups, start counter (can be reset)	0...999999	User	0	x	x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
	Fuel Meter							User		x	x
		Curr Flow Rate				Current fuel throughput	0...6553.4	User	---	x	x
		Volume Gas				Fuel volume gas (read only)	0...199999999.9 m³ 0...199999999.9 ft³	User	0	x	x
		Volume Oil				Fuel volume oil (read only)	0...199999999.9 l 0...199999999.9 gal	User	0	x	x
		Volume Gas R				Fuel volume gas (resettable)	0...199999999.9 m³ 0...199999999.9 ft³	User	0	x	x
		Volume Oil R				Fuel volume oil (resettable)	0...199999999.9 l 0...199999999.9 gal	User	0	x	x
		Reset DateGas				Reset date fuel volume gas	01.01.00...31.12.99 01-01-00...12-31-99	User	0	x	x
		Reset DateOil				Reset date fuel volume oil	01.01.00...31.12.99 01-01-00...12-31-99	User	0	x	x
Updating								User		x	x
	Passwords					Changing the passwords		OEM		x	x
		Service Password				Service password (not included in parameter backup)	3...8 characters	OEM	---	x	x
		OEM Password				OEM password (not included in parameter backup)	4...8 characters	OEM	---	x	x
	BurnerID					Identification of burner	4...15 characters	OEM	invalid	x	x
	ParamBackup							User		x	x
		BackupInfo						User		x	x
			Date			Date of backup	01.01.00...31.12.99 01-01-00...12-31-99	User	0	x	x
			TimeOfDay			Time of day of backup	00:00...23:59	User	0	x	x
			BU included?			Information: LMV5... included in last backup YES / NO	No Yes	User	No	x	x
			AZL included?			Information: AZL5... included in last backup YES / NO	No Yes	User	No	x	x
			LC included?			Information: Load controller included in last backup YES / NO	No Yes	User	No	x	x
			ACT1 included?			Information: Actuator 1 included in last backup YES / NO	No Yes	User	No	x	x
			ACT2 included?			Information: Actuator 2 included in last backup YES / NO	No Yes	User	No	x	x
			ACT3 included?			Information: Actuator 3 included in last backup YES / NO	No Yes	User	No	x	x
			ACT4 included?			Information: Actuator 4 included in last backup YES / NO	No Yes	User	No	x	x

Representation of parameters based on the AZL5... menu structure – OEM level – as supplied by Siemens

Menu level 1	Menu level 2	Menu level 3	Menu level 4	Menu level 5	Menu level 6	Description	Value range	Access rights	Default parameter setting	LMV51	LMV52
			ACT5 included?			Information: Actuator 5 included in last backup YES / NO	No Yes	User	No		x
			ACT6 included?			Information: Actuator 6 included in last backup YES / NO	No Yes	User	No		x
			VSD included?			Information: VSD included in last backup YES / NO	No Yes	User	No	x	x
			O2 included?			Information: O2 included in last backup YES / NO	No Yes	User	No		x
		LMV5x → AZL				Saving the parameters of the system on the AZL5...		Service		x	x
		AZL → LMV5x				Transferring the parameters saved on the AZL5... to the system		Service		x	x
	Load_SW_from_PC					Updating the AZL5... software via the serial port with the PC tool		Service		x	x
PW Login						Obtaining access right via the password (access times can be parameterized)		User		x	x
PW Logout						Canceling the last access right obtained via password		Service		x	x
SafetyCheck-Funct						TÜV test		User		x	x
	LossFlameTest					Loss of flame test		Service		x	x
	SLT Test					Safety limit thermostat test	deactivated activated	User	---	x	x
	SLT-Testload Mod					Load for safety limit thermostat test, modulating	0...100%	User	100%	x	x
	SLT-Testload Stg					Load for safety limit thermostat test, multistage	S1 S2 S3	User	S3	x	x

2 List of fault status messages of LMV5... system

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
01	01	LMV5...	Internal Fault Basic Unit	ROM error	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective <i>unit</i>
02	#	LMV5...	Internal Fault Basic Unit	RAM error	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective <i>unit</i>
02	01	LMV5...	Internal Fault Basic Unit	RAM error in register bank 0 (LMV51...)	
02	02	LMV5...	Internal Fault Basic Unit	RAM error in IDATA area (LMV51...)	
02	03	LMV5...	Internal Fault Basic Unit	RAM error in XDATA area (LMV51...)	
02	04	LMV5...	Internal Fault Basic Unit	RAM error of variables used	
02	05	LMV5...	Internal Fault Basic Unit	RAM error variable consistency	
02	06	LMV5...	Internal Fault Basic Unit	RAM error reading back test pattern	
02	07	LMV5...	Internal Fault Basic Unit	Error RAM test code run	
03	#	LMV5...	Internal Fault Basic Unit	Error in connection with data comparison (internal communication) between μ C1 and μ C2	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective <i>unit</i>
03	01	LMV5...	Internal Fault Basic Unit	TimeOut during program run synchronization prior to data transmission	
03	02	LMV5...	Internal Fault Basic Unit	TimeOut during data transmission	
03	03	LMV5...	Internal Fault Basic Unit	CRC error during data transmission	
03	05	LMV5...	Internal Fault Basic Unit	TimeOut during program run synchronization with initialization	
03	10	LMV5...	Internal Fault Basic Unit	Error counter Flame intensity outside tolerance has elapsed	
03	11	LMV5...	Internal Fault Basic Unit	Error counter Target phase unequal has elapsed	
03	12	LMV5...	Internal Fault Basic Unit	Error counter Reset-lockout input unequal has elapsed	
03	40	LMV5...	Internal Fault Basic Unit	Fuel train unequal	
03	41	LMV5...	Internal Fault Basic Unit	Relay control word unequal	
03	42	LMV5...	Internal Fault Basic Unit	ROM-CRC signature unequal	
03	43	LMV5...	Internal Fault Basic Unit	Phase unequal	
03	44	LMV5...	Internal Fault Basic Unit	(Key + main loop counter) unequal	
04	-	LMV5...	Internal Fault Basic Unit	Unsuccessful synchronization of the 2 μ Cs	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective <i>unit</i>
05	#	LMV5...	Fault Flame Detector Test	Fault during test of the flame signal amplifier	If fault occurs sporadically: Improve EMC If fault occurs constantly: Replace flame detector or defective basic unit. Detector cable lay separately, additional shielding as necessary and earth the shield in the control cabinet.
05	01	LMV5...	Fault Flame Detector Test	Fault during test of the flame signal amplifier	
05	02	LMV5...	Fault Flame Detector Test	Crosstalk fault between test pin and flame signal amplifier channel (with LMV52... FSV channel QRI... / QRB...)	

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
05	03	LMV5...	Fault Flame Detector Test	(Only LMV52...) crosstalk fault between test pin and FSV channel ION	
06	#	LMV5...	Internal Fault Basic Unit	Fault internal hardware tests	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective <i>unit</i>
06	01	LMV5...	Internal Fault Basic Unit	Fault during test of the ignition relay	
06	02	LMV5...	Internal Fault Basic Unit	Fault during test of the safety relay	
06	03	LMV5...	Internal Fault Basic Unit	Fault during voltage supervision test	
06	04	LMV5...	Internal Fault Basic Unit	Relay voltage not switched off after reset	
10	#	LMV5...	Internal Fault Basic Unit	Basic unit has detected an inadmissible circuit at one of the outputs, a faulty diode, or a short-circuit in the power supply of the contact feedback network. The diagnostic code indicates the input affected	Maybe missing neutral conductor. The fault may be caused by capacitive loads which, with the relay deenergized, are the reason the voltage takes more than about 10 ms to drop to zero. Check wiring to the load If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective <i>unit</i>
10	01	LMV5...	Internal Fault Basic Unit	Load controller on / off	
10	02	LMV5...	Internal Fault Basic Unit	Fan contact	
10	03	LMV5...	Internal Fault Basic Unit	Selection of oil-firing	
10	04	LMV5...	Internal Fault Basic Unit	Selection of gas-firing	
10	05	LMV5...	Internal Fault Basic Unit	Reset	
10	06	LMV5...	Internal Fault Basic Unit	Pressure switch oil maximum	
10	07	LMV5...	Internal Fault Basic Unit	Pressure switch oil minimum	
10	08	LMV5...	Internal Fault Basic Unit	Pressure switch valve proving	
10	09	LMV5...	Internal Fault Basic Unit	Safety valve oil feedback	
10	0A	LMV5...	Internal Fault Basic Unit	Fuel valve 1 oil feedback	
10	0B	LMV5...	Internal Fault Basic Unit	Fuel valve 2 oil feedback	
10	0C	LMV5...	Internal Fault Basic Unit	Fuel valve 3 oil feedback	
10	0D	LMV5...	Internal Fault Basic Unit	Safety valve gas feedback	
10	0E	LMV5...	Internal Fault Basic Unit	Fuel valve 1 gas feedback	
10	0F	LMV5...	Internal Fault Basic Unit	Fuel valve 2 gas feedback	
10	10	LMV5...	Internal Fault Basic Unit	Fuel valve 3 gas feedback	
10	11	LMV5...	Internal Fault Basic Unit	Safety loop burner flange	
10	12	LMV5...	Internal Fault Basic Unit	Safety relay feedback	
10	13	LMV5...	Internal Fault Basic Unit	Pressure switch gas minimum	
10	14	LMV5...	Internal Fault Basic Unit	Pressure switch gas maximum	
10	15	LMV5...	Internal Fault Basic Unit	Ignition transformer feedback	
10	16	LMV5...	Internal Fault Basic Unit	Fan pressure switch	
10	17	LMV5...	Internal Fault Basic Unit	Start release oil	
10	18	LMV5...	Internal Fault Basic Unit	Heavy oil direct start	
10	19	LMV5...	Internal Fault Basic Unit	Load controller open	
10	1A	LMV5...	Internal Fault Basic Unit	Load controller closed	
10	1B	LMV5...	Internal Fault Basic Unit	Start release gas	

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
11	01	LMV5...	Internal Fault Basic Unit	Basic unit has detected a short-circuit in the contact feedback network	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective <i>unit</i>
15	#	SQM4... VSD module	Fault Positioning Actuator or Fan Speed not reached	Basic unit has detected a positioning error on 1 / several actuators (incl. the VSD module)	Check if actuator is overloaded. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the relevant actuators (refer to diagnostic code)
15	01...3F	SQM4...	Fault Positioning Actuator	The diagnostic value is made up of the following faults or their combinations (the individual diagnostic codes are added up in hexadecimal format)	
15	01	SQM4...	Fault Positioning Actuator	Positioning fault air actuator	
15	02	SQM4...	Fault Positioning Actuator	Positioning fault fuel actuator	
15	04	SQM4...	Fault Positioning Actuator	Positioning fault auxiliary actuator 1	
15	08	SQM4...	Fault Positioning Actuator	Positioning fault auxiliary actuator 2	
15	10	VSD module	Fan Speed not reached	The fan in combination with the VSD has not reached the required speed	
15	20	SQM4...	Fault Positioning Actuator	Positioning fault auxiliary actuator 3	
16	#	LMV5...	Internal Fault Basic Unit	Basic unit has detected a plausibility fault in the fuel / air ratio control system. The diagnostic code describes the cause of the fault	
16	00	LMV5...	Internal Fault Basic Unit	Fuel / air ratio curve of the air actuator is not fully defined	Check the curve to see if correct values have been entered for the air actuator. Readjust the fuel / air ratio curve, if required
16	01	LMV5...	Internal Fault Basic Unit	Fuel / air ratio curve of the fuel actuator is not fully defined	Check the curve to see if correct values have been entered for the fuel actuator. Readjust the fuel / air ratio curve, if required
16	02	LMV5...	Internal Fault Basic Unit	Fuel / air ratio curve of auxiliary actuator 1 is not fully defined	Check the curve to see if correct values have been entered for auxiliary actuator 1. Readjust the fuel / air ratio curve, if required
16	03	LMV5...	Internal Fault Basic Unit	Fuel / air ratio curve of auxiliary actuator 2 is not fully defined	Check the curve to see if correct values have been entered for auxiliary actuator 2. Readjust the fuel / air ratio curve, if required
16	04	LMV5...	Internal Fault Basic Unit	Fuel / air ratio curve of auxiliary actuator 3 is not fully defined	Check the curve to see if correct values have been entered for auxiliary actuator 3. Readjust the fuel / air ratio curve, if required
16	05	LMV5...	Internal Fault Basic Unit	VSD curve is not fully defined	Check the curve to see if correct values have been entered for the VSD. Readjust the fuel / air ratio curve, if required
16	0A	LMV5...	Internal Fault Basic Unit	Calculated P-part outside the permissible range	Check to see if correct values have been entered for the controller parameters. Readjust O2 trim control, if required, or repeat the settings
16	0B	LMV5...	Internal Fault Basic Unit	Calculated I-part outside the permissible range	Check to see if correct values have been entered for the controller parameters. Readjust O2 trim control, if required, or repeat the settings
16	0C	LMV5...	Internal Fault Basic Unit	Calculated system delay time outside the permissible range	Check to see if correct values have been entered for the controller parameters. Readjust O2 trim control, if required, or repeat the settings
16	0D	LMV5...	Internal Fault Basic Unit	Calculated O2 setpoint outside the permissible range	Check to see if correct values have been entered for the O2 setpoints. Readjust O2 trim control, if required, or repeat the settings
16	0E	LMV5...	Internal Fault Basic Unit	Calculated O2 min. value outside the permissible range	Check to see if correct values have been entered for the O2 min. values. Readjust O2 trim control, if required, or repeat the settings
16	0F	LMV5...	Internal Fault Basic Unit	Calculated O2 ratio value outside the permissible range	Check to see if the correct values have been entered for the O2 ratio values. Readjust O2 trim control, if required, or repeat the settings

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
16	03	LMV5...	Internal Fault Basic Unit	The load / point number predefined by the AZL5... lies outside the permissible range	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
16	14	LMV5...	Internal Fault Basic Unit	Calculated standardized value lies outside the permissible range	Check if the correct values have been entered for the standardized values. Readjust O2 trim control, if required, or repeat the settings
16	20	LMV5...	Internal Fault Basic Unit	With hysteresis compensation: Permissible target positioning range exceeded	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
16	21	LMV5...	Internal Fault Basic Unit	The load / point number predefined by the AZL5... lies outside the permissible range	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
16	22	LMV5...	Internal Fault Basic Unit	With a switch instruction, none of the defined cases was satisfied	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
16	23	LMV5...	Internal Fault Basic Unit	With the switch instruction, no defined ratio control phase has been identified	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
16	40	LMV5...	Internal Fault Basic Unit	Unplausible target positions	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
17	---	LMV5...	Internal Fault Basic Unit	(Internal) communication error of ELV	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
17	3F	LMV5...	Internal Fault Basic Unit	Detection of different data when making the data comparison	
17	01	LMV5...	Internal Fault Basic Unit	Timeout with program synchronization prior to data transmission	
17	02	LMV5...	Internal Fault Basic Unit	Timeout with data transmission	
17	03	LMV5...	Internal Fault Basic Unit	CRC fault during data transmission	
18	---	LMV5...	Invalid Curve Data	Invalid curve data	Checking the curve data for invalid entries: Valid load range: 0.0...100.0% Valid positioning range: 0.0...90.0° Valid speed range: 0.0...100% In the case of a deviation from the valid range when commissioning the unit: Readjustment to the valid value range. If fault occurs after the unit has previously worked correctly: Replace defective basic unit
19	#	SQM4...	Internal Fault Actuator	Basic unit (fuel / air ratio control system) has detected a fault when comparing potentiometer channels A and B. Diagnostic code shows on which actuator the fault occurred. See diagnostic code	Check CAN cabling. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the actuator (see diagnostic code)
19	01..2F	SQM4...	Internal Fault Actuator	The diagnostic value is made up of the following faults or their combinations (the individual diagnostic codes are added up in hexadecimal format)	
19	01	SQM4...	Internal Fault Actuator	Fault occurred on the air actuator when comparing potentiometer channels A and B	
19	02	SQM4...	Internal Fault Actuator	Fault occurred on the active fuel actuator when comparing potentiometer channels A and B	
19	04	SQM4...	Internal Fault Actuator	Fault occurred on auxiliary actuator 1 when comparing potentiometer channels A and B	
19	08	SQM4...	Internal Fault Actuator	Fault occurred on auxiliary actuator 2 when comparing potentiometer channels A and B	

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
19	20	SQM4...	Internal Fault Actuator	Fault occurred on auxiliary actuator 3 when comparing potentiometer channels A and B	
1A	1	LMV5...	Slope too steep	Slope of curve section is too steep	Check curve data. If there is a slope greater than - 3.6° per 0.1% (30-s ramp) - 1.8° per 0.1% (60-s ramp) - 0.9° per 0.1% (120-s ramp) load change between 2 curvepoints -> change load assignment of the curvepoints such that above condition will be satisfied
1B	#	LMV5...	Operation in Parameter Setting Mode quit	Programming mode is still active in phase 62 and the target positions (normal operation) have not been reached	When parameterizing the curve, the plant should be operated in manual mode with <i>Burner on</i> . This prevents the load controller from triggering the change to shutdown. Response of the temperature limiter can trigger the same action, however, but the value (curvepoint) currently handled can still be stored in standby or lockout
1C	#	LMV5...	Ignition Pos not defined	The relevant ignition positions have not been parameterized	Set the ignition positions
1C	01..3F	LMV5...	Ignition Pos not defined	The diagnostic value is made up of the following faults or their combinations (the individual diagnostic codes are added up in hexadecimal format)	
1C	01	LMV5...	Ignition Pos not defined	Ignition position of the air actuator	
1C	02	LMV5...	Ignition Pos not defined	Ignition position of the active fuel actuator has not been parameterized	
1C	04	LMV5...	Ignition Pos not defined	Ignition position of auxiliary actuator 1 has not been parameterized	
1C	08	LMV5...	Ignition Pos not defined	Ignition position of auxiliary actuator 2 has not been parameterized	
1C	10	LMV5...	Ignition Pos not defined	Ignition position of VSD has not been parameterized	
1C	20	LMV5...	Ignition Pos not defined	Ignition position of auxiliary actuator 3 has not been parameterized	
1D	#	LMV5...		Running time fault of actuators / VSD.	Check the relevant actuators to see if they are mechanically overloaded. Check power supply to the actuators and their fuses. The actuator's ramp must be smaller to or equal to the ramp parameterized in the basic unit. The parameterized ramp of the VSD must be smaller than the ramp parameterized in the basic unit (recommendation: 20%)
1D	01..3F	LMV5...	Fault Running Time	The diagnostic value is made up of the following faults or their combinations (the individual diagnostic codes are added up in hexadecimal format)	
1D	01	LMV5...	Fault Running Time Air Actuator	Running time fault of air actuator	
1D	04	LMV5...	Fault Running Time Aux Actuator	Running time fault of auxiliary actuator 1	

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
1D	08	LMV5...	Fault Running Time Aux Actuator	Running time fault of auxiliary actuator 2	
1D	10	LMV5...	Fault Running Time VSD	Running time fault of VSD	
1D	20	LMV5...	Fault Running Time Aux Actuator	Running time fault of auxiliary actuator 3	
1E	#	SQM4... VSD module	Special Pos not reached	Basic unit has detected that 1 / several actuators (incl. VSD module) has / have not reached the special position pertaining to the phase	Check to see whether the respective actuators are subjected to mechanical overload, check actuators' supply voltages and fuses. Check actuators' power supply
1E	01..3F	SQM4...	Special Pos not reached	The diagnostic value is made up of the following faults or their combinations (the individual diagnostic codes are added up in hexadecimal format)	
1E	01	SQM4...	Special Pos not reached	Positioning fault of air actuator	
1E	02	SQM4...	Special Pos not reached	Positioning fault of fuel actuator	
1E	04	SQM4...	Special Pos not reached	Positioning fault of auxiliary actuator 1	
1E	08	SQM4...	Special Pos not reached	Positioning fault of auxiliary actuator 2	
1E	10	VSD module	Special Pos not reached	VSD has not reached the speed	
1E	20	SQM4...	Special Pos not reached	Positioning fault of auxiliary actuator 3	
1F	#	VSD module	Code for VSD Module Fault	Basic unit has detected a fault in connection with the VSD module	If fault occurs sporadically: Check CAN bus wiring. Improve EMC. If fault occurs constantly: Replace the defective basic unit
1F	01	VSD module	Speed Acquisition faulty	Internal VSD module test was not successful	
1F	02	VSD module	Wrong Direction of Rotation	Fan rotates in the wrong direction	Check to see if the motor's direction of rotation is correct. Check to see if the sensor disk on the motor is mounted the correct way. Change live conductor on the fan motor or check parameterized direction of rotation on the VSD and correct, if necessary
1F	03	VSD module	Speed Acquisition faulty	Pulse sequence and length at the speed input were different from those anticipated	Check to see if sensor disk and speed sensor are correctly mounted. Check if the distance of the inductive sensor is correct. Check if the inductive sensor is correctly connected
1F	04	VSD module	Standardization canceled because of VSD	Fan was not able to keep the standardized speed at a constant level	Check if motor runs. Check if the inductive sensor is correctly connected. Check if distance of inductive sensor is correct
1F	05	VSD module	Standardization canceled because of Air Actuator	Air actuator has not reached the prepurge position. For this reason, speed standardization is not possible	Check to see if all air-influencing actuators travel to the prepurge position. Check to see if the relevant actuators are mechanically overloaded or replace defective actuator, if necessary. Check power supply to the actuators
1F	06	VSD module	Speed Test was not successfully completed	Internal VSD module speed test was not successful	
21	---	LMV5...	Safety Loop open	Safety loop open	
22	---	LMV5...	Internal Temp Limiter has responded	Internal temperature limiter has switched off because parameterized value has been exceeded	
23	---	LMV5...	Extraneous Light on Startup	Basic unit has detected extraneous light during startup	

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
23	00	LMV5...	Extraneous Light on Startup	Basic unit has detected extraneous light during startup	
23	01/02/03	LMV5...	Extraneous Light on Startup	(Only LMV52...) Basic unit has detected extraneous light during startup Coding: 01 = flame QRI.../QRB... present 02 = flame ION present 03 = flame QRA2... / QRA4.U. / QRA10... / QRB... / QRI... / ION present	
24	---	LMV5...	Extraneous Light on Shutdown	Basic unit has detected extraneous light during shutdown	
24	00	LMV5...	Extraneous Light on Shutdown	Basic unit has detected extraneous light during shutdown	
24	01/02/03	LMV5...	Extraneous Light on Shutdown	(Only LMV52...) Basic unit has detected extraneous light during startup phase. Coding: 01 = flame QRI.../QRB... present 02 = flame ION present 03 = flame QRA2... / QRA4.U / QRA10... / QRB... / QRI... / ION present	
25	---	LMV5...	No Flame at End of Safety Time	No flame detected at the end of safety time TSA1	
25	00	LMV5...	No Flame at End of Safety Time	No flame detected at the end of safety time TSA1	
25	01/02/03	LMV5...	No Flame at End of Safety Time	(Only LMV52...) No flame detected at the end of the safety time. Coding: 01 = flame QRI.../QRB... present 02 = flame ION present 03 = flame QRA2... / QRA4.U / QRA10... / QRB... / QRI... / ION present	
26	---	LMV5...	Loss of Flame	Detection of loss of flame during operation	
26	00	LMV5...	Loss of Flame	Loss of flame during operation detected	
26	01/02/03	LMV5...	Loss of Flame	(Only LMV52...) Loss of flame during operation detected. Coding: 01 = flame QRI.../QRB... present 02 = flame ION present 03 = flame QRA2... / QRA4.U / QRA10... / QRB... / QRI... / ION present	
27	---	LMV5...	Air Pressure on	Air pressure = on, but should have been off	
28	---	LMV5...	Air Pressure off	Air pressure = off, but should have been on	
29	---	LMV5...	Fan Contactor Contact is on	Fan contactor contact signal = on, but should have been off	
2A	---	LMV5...	Fan Contactor Contact is off	Fan contactor contact signal = off, but should have been on	

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
2B	---	LMV5...	Flue Gas Recirculation Pressure Switch on	Flue gas recirculation pressure switch = on, but should have been on	
2C	---	LMV5...	Flue Gas Recirculation Pressure Switch off	Flue gas recirculation pressure switch = off, but should have been on	
2D	---	LMV5...	Valve not open	Closed Position Indicator (CPI) = on, but should have been off	
2D	00	LMV5...	Valve not open	Closed Position Indicator (CPI) = on, but should have been off	
2D	01	LMV5...	Valve not open	(Only LMV52...) CPI via terminal StartRelease_Gas Closed Position Indicator (CPI) = on, but should have been off	Check the parameters or the signals: Pressure switch valve proofed / CPI and StartRelease_Gas
2E	---	LMV5...	Valve or Closed Position Indicator (CPI) open	Closed Position Indicator (CPI) = off, but should have been on	
2E	00	LMV5...	Valve or Closed Position Indicator (CPI) open	Closed Position Indicator (CPI) = off, but should have been on	
2E	01	LMV5...	Valve or Closed Position Indicator (CPI) open	(Only LMV52...) CPI via terminal StartRelease_Gas Closed Position Indicator (CPI) = off, but should have been on	Check the parameters or the signals: Pressure switch valve proofed / CPI and StartRelease_Gas
2F	---	LMV5...	Gas Pressure has dropped below minimum Limit	Gas pressure < Min	
30	---	LMV5...	Gas Pressure has exceeded maximum Limit	Gas pressure > Max	
31	---	LMV5...	Gas Pressure at Valve proving: Valve on Gas Side leaking	Gas pressure valve proofed = high	
32	---	LMV5...	No Gas Pressure Valve Proving: Valve on Burner Side leaking	Gas pressure valve proofed = low	
33	---	LMV5...	Oil Pressure on although Oil Pump off	Oil pressure > Min	
34	---	LMV5...	Oil Pressure below Minimum	Oil pressure < Min	
35	---	LMV5...	Oil Pressure above Maximum	Oil pressure > Max	
36	---	LMV5...	No Start Release for Oil	Start release oil = off	
37	---	LMV5...	No direct Heavy Oil direct start	Heavy oil direct start	
38	---	LMV5...	Lack of Gas Program	Shortage-of-gas program in progress	
39	#	LMV5...	Internal Fault Basic Unit	Parameter of max. safety time faulty	
39	01	LMV5...	Internal Fault Basic Unit	Fault with timer1	

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
39	02	LMV5...	Internal Fault Basic Unit	Fault with timer2	
39	03	LMV5...	Internal Fault Basic Unit	Fault with timer3	
3A	---	LMV5...	No Burner ID defined	No burner identification defined	Parameterize burner identification
3B	---	LMV5...	No Service Password defined	No service password defined	Enter service password
40	---	LMV5...	Internal Fault Basic Unit	Wrong contact position of safety relays relay	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit. Check to see whether the safety loop and the burner flange contact are correctly connected
41	---	LMV5...	Internal Fault Basic Unit	Wrong contact position of ignition	Check output wiring
42	#	LMV5...	Internal Fault Basic Unit	Wrong contact position of fuel valve relay	Check output wiring
42	01..FF	LMV5...	Internal Fault Basic Unit	<p>Note that all outputs are powered by the safety loop, which means that the monitoring microprocessor identifies these contact reset errors, triggering lockout.</p>	<p>Check whether voltage is fed back to the voltage input via an external power source. If yes, remove that power source</p> <p>Check to see whether there are switches contained in the safety loop opening very briefly and closing again. This could be a fluttering pressure switch or water shortage switch operating in the very same moment. All outputs are powered by the safety loop, which means that the microprocessor monitoring these outputs detects the fault</p>
42	01	LMV5...	Internal Fault Basic Unit	Contact position fault shut off valve-oil	<p>Check whether voltage is fed back to the voltage input via an external power source. If yes, remove that power source</p> <p>Check to see whether there are switches contained in the safety loop opening very briefly and closing again. This could be a fluttering pressure switch or water shortage switch operating in the very same moment. All outputs are powered by the safety loop, which means that the microprocessor monitoring these outputs detects the fault</p>
42	02	LMV5...	Internal Fault Basic Unit	Contact position fault fuel valve 1-oil	<p>Check whether voltage is fed back to the voltage input via an external power source. If yes, remove that power source</p> <p>Check to see whether there are switches contained in the safety loop opening very briefly and closing again. This could be a fluttering pressure switch or water shortage switch operating in the very same moment. All outputs are powered by the safety loop, which means that the microprocessor monitoring these outputs detects the fault</p>
42	04	LMV5...	Internal Fault Basic Unit	Contact position fault fuel valve 2-oil	<p>Check whether voltage is fed back to the voltage input via an external power source. If yes, remove that power source</p> <p>Check to see whether there are switches contained in the safety loop opening very briefly and closing again. This could be a fluttering pressure switch or water shortage switch operating in the very same moment. All outputs are powered by the safety loop, which means that the microprocessor monitoring these outputs detects the fault</p>

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
42	08	LMV5...	Internal Fault Basic Unit	Contact position fault fuel valve 3-oil	<p>Check whether voltage is fed back to the voltage input via an external power source. If yes, remove that power source</p> <p>Check to see whether there are switches contained in the safety loop opening very briefly and closing again. This could be a fluttering pressure switch or water shortage switch operating in the very same moment. All outputs are powered by the safety loop, which means that the microprocessor monitoring these outputs detects the fault</p>
42	10	LMV5...	Internal Fault Basic Unit	Contact position fault shut off valve-gas	<p>Check whether voltage is fed back to the voltage input via an external power source. If yes, remove that power source</p> <p>Check to see whether there are switches contained in the safety loop opening very briefly and closing again. This could be a fluttering pressure switch or water shortage switch operating in the very same moment. All outputs are powered by the safety loop, which means that the microprocessor monitoring these outputs detects the fault</p>
42	20	LMV5...	Internal Fault Basic Unit	Contact position fault fuel valve 1-gas	<p>Check whether voltage is fed back to the voltage input via an external power source. If yes, remove that power source</p> <p>Check to see whether there are switches contained in the safety loop opening very briefly and closing again. This could be a fluttering pressure switch or water shortage switch operating in the very same moment. All outputs are powered by the safety loop, which means that the microprocessor monitoring these outputs detects the fault</p>
42	40	LMV5...	Internal Fault Basic Unit	Contact position fault fuel valve 2-gas	<p>Check whether voltage is fed back to the voltage input via an external power source. If yes, remove that power source</p> <p>Check to see whether there are switches contained in the safety loop opening very briefly and closing again. This could be a fluttering pressure switch or water shortage switch operating in the very same moment. All outputs are powered by the safety loop, which means that the microprocessor monitoring these outputs detects the fault</p>
42	80	LMV5...	Internal Fault Basic Unit	Contact position error fuel valve 3-gas	<p>Check whether voltage is fed back to the voltage input via an external power source. If yes, remove that power source</p> <p>Check to see whether there are switches contained in the safety loop opening very briefly and closing again. This could be a fluttering pressure switch or water shortage switch operating in the very same moment. All outputs are powered by the safety loop, which means that the microprocessor monitoring these outputs detects the fault</p>
43	#	LMV5...		Fault in connection with plausibility check. For cause of fault, refer to diagnostic code	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace defective unit
43	01	LMV5...	Internal Fault Basic Unit	No fuel selection	
43	02	LMV5...	No Fuel Train defined	No defined fuel train parameterized	

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
43	03	LMV5...	Internal Fault Basic Unit	Variable Train not defined	
43	04	LMV5...	Internal Fault Basic Unit	Variable Fuel not defined	
43	05	LMV5...	Internal Fault Basic Unit	Operating mode with load controller not defined	
43	06	LMV5...	Internal Fault Basic Unit	Prepurge time gas too short	
43	07	LMV5...	Internal Fault Basic Unit	Prepurge time oil too short	
43	08	LMV5...	Internal Fault Basic Unit	Safety time 1 gas too long	
43	09	LMV5...	Internal Fault Basic Unit	Safety time 1 oil too long	
43	0A	LMV5...	Internal Fault Basic Unit	Ignition off time > TSA1 gas	
43	0B	LMV5...	Internal Fault Basic Unit	Ignition off time > TSA1 oil	
43	0C	LMV5...	Internal Fault Basic Unit	Safety time 2 gas too long	
43	0D	LMV5...	Internal Fault Basic Unit	Safety time 2 gas too long	
44	#	LMV5...		Fault at deactivated inputs	Deactivate input or do not connect
44	01	LMV5...	Controller input connected but deactivated	Controller input connected but deactivated	
44	02	LMV5...	Air Press Switch connected but deactivated	Air pressure switch connected but deactivated	
44	03	LMV5...	FCC / FGR – APS connected but deactivated	Fan contactor contact / Flue gas recirculation – Air pressure switch connected but deactivated	
44	04	LMV5...	Gas Pressure-MIN connected but deactivated	Gas pressure-Min connected but deactivated	
44	05	LMV5...	Gas Pressure-MAX connected but deactivated	Gas pressure-Max connected but deactivated	
44	06	LMV5...	Oil Pressure min connected but deactivated	Oil pressure-Min connected but deactivated	
44	07	LMV5...	Oil Pressure max connected but deactivated	Oil pressure-Max connected but deactivated	
44	08	LMV5...	Start Signal Oil connected but deactivated	Start signal oil connected but deactivated	
44	09	LMV5...	HO Start connected but deactivated	Heavy oil start connected but deactivated	
44	0A	LMV5...	Start Signal Gas connected but deactivated	Start signal gas connected but deactivated	
45	---	LMV5...	Locked by SLT	Shutdown via safety limit thermostat test	Safety limit thermostat was activated and safety shutdown was triggered (usually via the safety limit thermostat)
46	#	LMV5...	Programstop active	Program stop was activated. System has stopped at the parameterized position	Deactivate the program stop if no longer required
46	01	LMV5...	Programstop active	Program stop STOP_DR_PREP in phase 24 active	
46	02	LMV5...	Programstop active	Program stop STOP_PREP2 in phase 32 active	
46	03	LMV5...	Programstop active	Program stop STOP_DR_IGN in phase 36 active	
46	04	LMV5...	Programstop active	Program stop STOP_INTERV1 in phase 44 active	

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
46	05	LMV5...	Programstop active	Program stop STOP_INTERV2 in phase 52 active	
46	06	LMV5...	Programstop active	Program stop STOP_DR_POSTP in phase 72 active	
46	07	LMV5...	Programstop active	Program stop STOP_PREP2 in phase 76 active	
47	---	LMV5...	No Start Release for Gas	Start release gas = off	
48	---	LMV5...	2 Flame Signals with 1 Detector Operation	System parameterized for 1-detector operation but 2 flame signals present	
50	#	LMV5...	Internal Fault Basic Unit	Fault during key value check	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
50	00..07	LMV5...	Internal Fault Basic Unit	Number of time block in which the fault was detected	
51	#	LMV5...	Internal Fault Basic Unit	Time block overflow	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
51	00..07	LMV5...	Internal Fault Basic Unit	Number of time block in which the fault was detected	
52	#	LMV5...	Internal Fault Basic Unit	Stack error	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
52	01	LMV5...	Internal Fault Basic Unit	Stack overflow	
52	02	LMV5...	Internal Fault Basic Unit	Value dropped below preset minimum limit	
52	03	LMV5...	Internal Fault Basic Unit	Test values in stack range exceeded	
53	01	LMV5...	Internal Fault Basic Unit	Faulty reset state has occurred	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
58	---	LMV5...	Parameter Set damaged	Internal communication ($\mu C1 \leftrightarrow \mu C2$)	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace defective basic unit
59	#	LMV5...	Parameter Set damaged	After initialization, EEPROM page is on ABORT (last parameterization was possibly interrupted due to a power failure)	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace defective basic unit.
59	#	LMV5...	Parameter Set damaged	Page number	
5A	#	LMV5...	Parameter Set damaged	CRC error of a parameter page	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace defective basic unit
5A	#	LMV5...	Parameter Set damaged	Page number	

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
5B	#	LMV5...	Parameter Set damaged	Page is on ABORT	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace defective basic unit
5B	#	LMV5...	Parameter Set damaged	Page number	
5C	#	LMV5...	Parameter Backup Restore	Page is on WR_RESTO A backup restore was made	Reset the unit
5C	#	LMV5...	Parameter Backup Restore	Page number	
5D	#	LMV5...	Internal Fault Basic Unit	Page too long open	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace defective basic unit
5D	#	LMV5...	Internal Fault Basic Unit	Page number	
5E	#	LMV5...	Internal Fault Basic Unit	Page has an undefined status	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace defective basic unit
5E	#	LMV5...	Internal Fault Basic Unit	Page number	
5F	---	LMV5...	Parameter Set damaged	Last backup restore invalid (was interrupted)	Repeat backup restore
60	#	LMV5...	Internal Fault Basic Unit	Fault when copying a parameter page	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace defective basic unit
60	#	LMV5...	Internal Fault Basic Unit	Number of parameter page	
61	#	LMV5...	Internal Fault Basic Unit	Fault in connection with EEPROM initialization	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace defective basic unit
61	01	LMV5...	Internal Fault Basic Unit	Fault during initialization of EEPROM	
61	02	LMV5...	Internal Fault Basic Unit	Number of write attempts exceeded	
61	10	LMV5...	Internal Fault Basic Unit	EEPROM was busy when accessed	
61	11	LMV5...	Internal Fault Basic Unit	Comparison of EEPROM and RAM area revealed dissimilarity	
61	12	LMV5...	Internal Fault Basic Unit	Page area of EEPROM exceeded during write process	

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
61	13	LMV5...	Internal Fault Basic Unit	Access conflict $\mu C1 \leftrightarrow \mu C2$ (aritation)	
61	20	LMV5...	Internal Fault Basic Unit	Fault when calling the ParAccess() function	
61	21	LMV5...	Internal Fault Basic Unit	Written EEPROM block unequal RAM block	
61	22	LMV5...	Internal Fault Basic Unit	CRC of page is faulty	
61	23	LMV5...	Internal Fault Basic Unit	Matching fault $\mu C1$, $\mu C2$ when saving the error page	
63	#	LMV5...	No Display of Error Can only be read out via eBus	Unit is error-free	
70	#	LMV5...	Internal Fault Basic Unit	Fault during restoring of lockout information	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
70	01	LMV5...	Internal Fault Basic Unit	When reading from EEPROM (initialization)	
70	02	LMV5...	Internal Fault Basic Unit	When test writing in the initialization	
70	03	LMV5...	Internal Fault Basic Unit	No write access to error page in init.	
70	04	LMV5...	Internal Fault Basic Unit	Repetition counter Internal fault has elapsed	
71	---	LMV5...	Manual Lockout	Lockout was made manually via contact	Lockout via the external reset Lockout contact is negated by new actuation
72	#	LMV5...	Internal Fault Basic Unit	Plausibility fault in connection with fault entry	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
72	01	LMV5...	Internal Fault Basic Unit	Fault in seterr()	
72	02	LMV5...	Internal Fault Basic Unit	Fault in seterr()	
72	03	LMV5...	Internal Fault Basic Unit	Fault in error_manager()	
72	04	LMV5...	Internal Fault Basic Unit	Fault in storeerr()	
80	#	SQM4...	Fault Feedback Aux Actuator 3	Basic unit has detected wrong state of the air actuator	Check CAN cabling and terminators as specified. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective actuator
80	01	SQM4...	Fault Feedback Aux Actuator 3	CRC error	
80	02	SQM4...	Fault Feedback Aux Actuator 3	Key error main loop counter	
80	03	SQM4...	Fault Feedback Aux Actuator 3	No feedback for max. number	
81	#	SQM4...	Fault Feedback Air Actuator	Basic unit has detected wrong state of the air actuator	Check CAN cabling and terminators as specified. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective actuator
81	01	SQM4...	Fault Feedback Air Actuator	CRC error	
81	02	SQM4...	Fault Feedback Air Actuator	Key error main loop counter	
81	03	SQM4...	Fault Feedback Air Actuator	No feedback for max. number	
82	#	SQM4...	Fault Feedback Gas (Oil) Actuator	Basic unit has detected wrong state of the gas actuator	Check CAN cabling and terminators as specified. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective actuator

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
82	01	SQM4...	<i>Fault Feedback Gas (Oil) Actuator</i>	<i>CRC error</i>	
82	02	SQM4...	<i>Fault Feedback Gas (Oil) Actuator</i>	<i>Key error main loop counter</i>	
82	03	SQM4...	<i>Fault Feedback Gas (Oil) Actuator</i>	<i>No feedback for max. number</i>	
83	#	SQM4...	Fault Feedback Oil Actuator	Basic unit has detected wrong state of the oil actuator	Check CAN cabling and terminators as specified. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective actuator
83	01	SQM4...	<i>Fault Feedback Oil Actuator</i>	<i>CRC error</i>	
83	02	SQM4...	<i>Fault Feedback Oil Actuator</i>	<i>Key error main loop counter</i>	
83	03	SQM4...	<i>Fault Feedback Oil Actuator</i>	<i>No feedback for max. number</i>	
84	#	SQM4...	Fault Feedback Aux Actuator 1	Basic unit has detected wrong state of the auxiliary actuator	Check CAN cabling and terminators as specified. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective actuator
84	01	SQM4...	<i>Fault Feedback Aux Actuator 1</i>	<i>CRC error</i>	
84	02	SQM4...	<i>Fault Feedback Aux Actuator 1</i>	<i>Key error main loop counter</i>	
84	03	SQM4...	<i>Fault Feedback Aux Actuator 1</i>	<i>No feedback for max. number</i>	
85	#	SQM4...	Fault Feedback Aux Actuator 2	Basic unit has detected wrong state of the auxiliary actuator	Check CAN cabling and terminators as specified. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective actuator
85	01	SQM4...	<i>Fault Feedback Aux Actuator 2</i>	<i>CRC error</i>	
85	02	SQM4...	<i>Fault Feedback Aux Actuator 2</i>	<i>Key error main loop counter</i>	
85	03	SQM4...	<i>Fault Feedback Aux Actuator 2</i>	<i>No feedback for max. number</i>	
86	#	LC	Fault Feedback Load Controller	Basic unit has detected wrong state of the internal load controller	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective <i>unit</i>
86	01	LC	<i>Fault Feedback Load Controller</i>	<i>CRC error</i>	
86	02	LC	<i>Fault Feedback Load Controller</i>	<i>Key error main loop counter</i>	
86	03	LC	<i>Fault Feedback Load Controller</i>	<i>No feedback for max. number</i>	
87	#	AZL5...	Fault Feedback AZL5...	Basic unit has detected wrong state of the AZL5...	Check CAN cabling and terminators as specified. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the faulty AZL5...
87	01	AZL5...	<i>Fault Feedback AZL5...</i>	<i>CRC error</i>	
87	02	AZL5...	<i>Fault Feedback AZL5...</i>	<i>Key error main loop counter</i>	

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
87	03	AZL5...	Fault Feedback AZL5...	No feedback for max. number	
88	#	All		Plausibility fault NMT	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit (see diagnostic code) or the basic unit
88	01	SQM4...	Fault Feedback Actuator	Undefined fault class of SQM4...	
88	02	LC	Fault Feedback Load Controller	Undefined fault class of load controller	
88	03	AZL5...	Fault Feedback AZL5...	Undefined fault class of AZL5...	
88	04	VDS module	Fault Feedback VSD Module	Undefined fault class of VSD module	
88	05	O2M	Fault Feedback O2 Module	Undefined fault class of O2 module	
90	---	SQM4...	Fault Feedback Aux Actuator 3	Basic unit has detected a ROM-CRC error on the air actuator when checking its feedback signal	Check CAN cabling and terminators as specified. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective actuator
91	---	SQM4...	Fault Feedback Air Actuator	Basic unit has detected a ROM-CRC error on the air actuator when checking its feedback signal	Check CAN cabling and terminators as specified. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective actuator
92	---	SQM4...	Fault Feedback Gas (Oil) Actuator	Basic unit has detected a ROM-CRC error on the gas actuator when checking its feedback signal	Check CAN cabling and terminators as specified. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective actuator
93	---	SQM4...	Fault Feedback Oil Actuator	Basic unit has detected a ROM-CRC error on the oil actuator when checking its feedback signal	Check CAN cabling and terminators as specified. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective actuator
94	---	SQM4...	Fault Feedback Aux Actuator 1	Basic unit has detected a ROM-CRC error on the auxiliary actuator when checking its feedback signal	Check CAN cabling and terminators as specified If fault occurs sporadically: Improve EMC If fault occurs constantly: Replace the defective actuator
95	---	SQM4...	Fault Feedback Aux Actuator 2	Basic unit has detected a ROM-CRC error on the auxiliary actuator when checking its feedback signal	Check CAN cabling and terminators as specified. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective actuator
96	---	LC	Fault Feedback Load Controller	Basic unit has detected a ROM-CRC error on the load controller when checking its feedback signal	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective basic unit
97	---	AZL5...	Fault Feedback AZL5...	Basic unit has detected a ROM-CRC error on the AZL5... when checking its feedback signal	Check CAN cabling and terminators as specified. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective AZL5...
98	---	All	Fault two equal Addresses	There are several components with the same address on the CAN bus (CAN overflow)	Check to see if several users (e.g. actuators) with the same address are connected to the CAN bus and rectify (e.g. readdressing the actuators)

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
99	---	All	Internal Fault Basic Unit	<i>CAN bus OFF</i> <i>A CAN bus user (SQM4..., PLL52...) switches the CAN bus to OFF mode</i>	Check CAN cabling. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit <i>Disconnect the actuators and the PLL52... bus plug, reset the LMV5... → if other faults are displayed, reconnect the CAN users one by one until the fault occurs again.</i> <i>Check power supply on the CAN user causing the fault. If power supply 2 x AC 12 V is ok, replace the unit. If the fault occurs only with AZL5... and LMV5..., make the test with another AZL5... first</i>
9A	---	All	Internal Fault Basic Unit	CAN warning level. Fault probably occurred when connecting or disconnecting a CAN bus user	Check CAN cabling. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
9B	#	All	Internal Fault Basic Unit	CAN queue overrun	Check CAN cabling. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
9B	01	All	Internal Fault Basic Unit	Overrun of RX queue	
9B	02	All	Internal Fault Basic Unit	Overrun of TX queue	
A0	#	SQM4...		Auxiliary actuator 3 has detected a fault and reported it to the basic unit. Type of fault: See diagnostic code	Check CAN cabling and terminators as specified. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective actuator
A0	See A1	See A1	Internal Fault Auxiliary Actuator 3	See A1	See A1
A1	#	SQM4...		Air actuator has detected own fault and reported it to the basic unit. Type of fault: See diagnostic code	Check CAN cabling and terminators as specified. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective actuator
A1	01	SQM4...	Internal Fault Air Actuator	CRC fault during ROM test	
A1	02	SQM4...	Internal Fault Air Actuator	CRC fault during RAM test	
A1	04	SQM4...	Internal Fault Air Actuator	Fault during key value check	
A1	05	SQM4...	Internal Fault Air Actuator	Error code for time block overflow	
A1	07	SQM4...	Internal Fault Air Actuator	Sync fault or CRC fault	
A1	08	SQM4...	Internal Fault Air Actuator	Error code for main loop counter	
A1	09	SQM4...	Internal Fault Air Actuator	Fault during stack test	
A1	0C	SQM4...	Overtemperature Air Actuator	Temperature warning and shutdown	Check housing temperature (max. 60 °C)
A1	0D	SQM4...	Internal Fault Air Actuator	Actuator turns in the wrong direction	<i>This fault can be caused by mechanical blocking of the drive shaft. Check to ensure that mechanical parts operate smoothly also under extreme temperature conditions</i>
A1	0E	SQM4...	Ramp time too short Air Actuator	Actuator operates with too short a ramp time, or with an angular rotation that is too long for the ramp time	Recommendation: 1. Match ramp time to the slowest actuator in the system (SQM48.4/6), OR 2. Reduce the actuator's angular rotation between special positions (load stages with multistage operation) based on angular rotation = 90° * ramp time / (90° running time of SQM4...)
A1	10	SQM4...	Internal Fault Air Actuator	Timeout during A/D conversion	
A1	11	SQM4...	Internal Fault Air Actuator	Fault during ADC test	

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
A1	12	SQM4...	Internal Fault Air Actuator	Fault during A/D conversion	
A1	13	SQM4...	Position Fault Air Actuator	Actuator is outside the valid angular rotation (0-90°) or linearization data are faulty	Check to see if actuator is within the valid positioning range (0...90°)
A1	15	SQM4...	Internal Fault Air Actuator	CAN fault	Check CAN wiring
A1	16	SQM4...	Internal Fault Air Actuator	CRC fault of a parameter page	Check CAN wiring
A1	17	SQM4...	Internal Fault Air Actuator	Page too long open	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace the defective basic unit
A1	18	SQM4...	Internal Fault Air Actuator	Page disrupted	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace the defective basic unit
A1	19	SQM4...	Internal Fault Air Actuator	Invalid parameter access	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters Otherwise, replace the defective basic unit
A1	1B	SQM4...	Internal Fault Air Actuator	Fault during copying of parameter page	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace the defective basic unit
A1	1E	SQM4...	Internal Fault Air Actuator	External plausibility fault. This type of fault covers possible faults occurring due to invalid presettings in the drive commands. In response, the presettings will be ignored	Check the special positions to see if value range is valid (0...90°)
A1	1F	SQM4...	Internal Fault Air Actuator	Internal plausibility fault. This type of fault covers possible faults that can occur due to strong EMC impact	
A2	#	SQM4...		Gas actuator has detected own fault and reported it to the basic unit. Type of fault: See diagnostic code	Check CAN cabling and terminators as specified. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective actuator
A2	See A1	See A1	Internal Fault Gas Actuator	See A1	See A1
A3	#	SQM4...		Oil actuator has detected own fault and reported it to the basic unit. Type of fault: See diagnostic code	Check CAN cabling and terminators as specified. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective actuator
A3	See A1	See A1	Internal Fault Oil Actuator	See A1	See A1
A4	#	SQM4...		Auxiliary actuator 1 has detected own fault and reported it to the basic unit. Type of fault: See diagnostic code	Check CAN cabling and terminators as specified. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective actuator
A4	See A1	See A1	Internal Fault Auxiliary Actuator 1	See A1	See A1

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
A5	#	SQM4...		Auxiliary actuator 2 has detected own fault and reported it to the basic unit. Type of fault: See diagnostic code	Check CAN cabling and terminators as specified. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective actuator
A5	See A1	See A1	Internal Fault Auxiliary Actuator 2	See A1	See A1
A6	#	LC		Internal load controller has detected own fault and reported it to the basic unit. Type of fault: See diagnostic code	
A6	10	LC	No actual Value Slope at End of Identification		If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	12	LC	Adaption invalid	Invalid XP identified	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	13	LC	Adaption invalid	Invalid TN identified	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	14	LC	Adaption invalid	TU longer than identification time	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	15	LC	Adaption invalid	Invalid TV identified	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	16	LC	Timeout with Adaption	Timeout during observation time	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	17	LC	Cold Start thermal Shock Protection active		If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	18	LC	Timeout with Adaption	Timeout during delivery of adaption rate and while process is being watched	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	22	LC	Setpoint Temp Controller above maximum Limit		If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	30	LC	Internal Fault Load Controller	EEPROM does not respond within the expected period of time	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	31	LC	Internal Fault Load Controller	Max. number of EEPROM attempts exceeded	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	32	LC	Internal Fault Load Controller	Fault during opening of page	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	33	LC	Parameter Set damaged	Invalid CRC when reading a page	Reset the unit, repeat backup restore if necessary
A6	34	LC	Internal Fault Load Controller	Page cannot be set to FINISH	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	35	LC	Internal Fault Load Controller	No access to PID after identification	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	36	LC	Internal Fault Load Controller	No access to PID Standard after identification	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	37	LC	Internal Fault Load Controller	No reading of EEPROM at identification fault	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	38	LC	Internal Fault Load Controller	No EEPROM write access for PID possible	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	39	LC	Internal Fault Load Controller	No EEPROM write access for PID Standard possible	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
A6	3A	LC	Internal Fault Load Controller	No access if reception via COM	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	3B	LC	Internal Fault Load Controller	Invalid page access	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	40	LC	Internal Fault Load Controller	Page too long open	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace the defective basic unit
A6	41	LC	Internal Fault Load Controller	Invalid phase during parameterization of the safety-related page P_TW	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	42	LC	Internal Fault Load Controller	Invalid phase during parameterization of the safety-related page P_STATUSs	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	43	LC	Internal Fault Load Controller	Invalid phase during parameterization of the safety-related page P_SYSTEM	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	44	LC	Parameter Set damaged	Page has been set to ABORT	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace the defective basic unit
A6	45	LC	Parameter Backup Restore	Page has been set to RESTO	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace the defective basic unit
A6	46	LC	Internal Fault Load Controller	Page has an invalid status	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace the defective basic unit
A6	4A	LC	Internal Fault Load Controller	CAN error	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	4B	LC	Internal Fault Load Controller	CAN error	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	4C	LC	Internal Fault Load Controller	CAN error	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	4D	LC	Internal Fault Load Controller	CAN error	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	4E	LC	Internal Fault Load Controller	CAN error	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	50	LC	Short-circuit Pt100 Sensor	Short-circuit sensor PT100 (X60.1 X60.4)	Check wiring and sensor
A6	51	LC	Open-circuit Pt100 Sensor	Open-circuit sensor PT100 (X60.1 X60.4)	Check wiring and sensor
A6	52	LC	Open-circuit Pt 100 Sensor (Line Compens)	Open-circuit compensation line of sensor PT100 (X60.2 X60.4)	Check wiring and sensor
A6	53	LC	Short-circuit Pt1000 Sensor	Short-circuit sensor PT1000 (X60.3 X60.4)	Check wiring and sensor
A6	54	LC	Open-circuit PT1000 Sensor	Open-circuit sensor PT1000 (X60.3 X60.4)	Check wiring and sensor
A6	55	LC	Short-circuit Ni1000 Sensor	Short-circuit sensor Ni1000 (X60.3 X60.4)	Check wiring and sensor

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
A6	56	LC	Open-circuit Ni1000 Sensor	Open-circuit sensor Ni1000 (X60.3 X60.4)	Check wiring and sensor
A6	57	LC	Overvoltage at Input 2	Overvoltage at input 2 (X61)	Check wiring and sensor
A6	58	LC	Open-circuit / Short-circuit at Input 2	Open-circuit / short-circuit input 2 (X61)	Check wiring and sensor
A6	59	LC	Overvoltage at Input 3	Overvoltage at input 3 (X62)	Check wiring and sensor
A6	5A	LC	Open-circuit / Short-circuit at Input 3	Open-circuit / short-circuit input 3 (X62)	Check wiring and sensor
A6	5B	LC	Output Value for Analog Output not available	Selected output value for analog output is not available in the current configuration	Check setting Sensor selection and Output value selection Also refer to Basic Documentation P7550
A6	5C	LC	Sensor for ARF not available	The selected sensor for flue gas recirculation is not available in the current configuration	Check setting ARF sensor selection. Also refer to Basic Documentation P7550
A6	60	LC	Internal Fault Load Controller	Timeout during calibrate_ADC	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	61	LC	Internal Fault Load Controller	Timeout during read_conversion	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	62	LC	Internal Fault Load Controller	Timeout during calibrate_ADC	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	63	LC	Internal Fault Load Controller	Fault during RedInv reading from A/D converter	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	64	LC	Internal Fault Load Controller	Fault internal A/D converter	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	65	LC	Internal Fault Load Controller	Gain register has been changed	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	66	LC	Internal Fault Load Controller	Offset register has been changed	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	67	LC	Internal Fault Load Controller	Too great / small gain for self-calibration of A/D converter	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	68	LC	Internal Fault Load Controller	Too great / small offset for self-calibration of A/D converter	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	69	LC	Internal Fault Load Controller	Fault internal A/D converter	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	6A	LC	Internal Fault Load Controller	Fault during PWM test	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	6B	LC	Internal Fault Load Controller	Faulty reference voltage	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	6C	LC	Internal Fault Load Controller	Fault transmitter power supply	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	6D	LC	Internal Fault Load Controller	Fault analog output, voltage deviation too great	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	6E	LC	Internal Fault Load Controller	Fault during resistance test PT100 input (X60)	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	6F	LC	Internal Fault Load Controller	Fault during diode test PT100 input	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	70	LC	Internal Fault Load Controller	Measured value varies too much: Concerns: PT100 sensor (X60)	Check wiring of input.
A6	71	LC	Internal Fault Load Controller	Measured value varies too much: Concerns: PT100 line (X60)	Check wiring of input.

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
A6	72	LC	Internal Fault Load Controller	Measured value varies too much: Concerns: PT1000 (X60)	Check wiring of input.
A6	73	LC	Internal Fault Load Controller	Measured value varies too much: Concerns: PWM	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	74	LC	Internal Fault Load Controller	Measured value varies too much: Concerns: Voltage measurement input 2 (X61)	Check wiring of input. Check input voltage value for humming voltages
A6	75	LC	Internal Fault Load Controller	Measured value varies too much: Concerns: Current measurement input 2 (X61)	Check wiring of input. Check input voltage value for humming voltages
A6	76	LC	Internal Fault Load Controller	Measured value varies too much: Concerns: Voltage measurement input 3 (X62)	Check wiring of input. Check input voltage value for humming voltages
A6	77	LC	Internal Fault Load Controller	Measured value varies too much: Concerns: Current measurement input 3 (X62)	Check wiring of input. Check input voltage value for humming voltages
A6	78	LC	Internal Fault Load Controller	Excessive voltage value or wrong polarity PT100 sensor (X60)	Check wiring of input
A6	79	LC	Internal Fault Load Controller	Excessive voltage value or wrong polarity PT100 line (X60)	Check wiring of input
A6	7A	LC	Internal Fault Load Controller	Excessive voltage value or wrong polarity PT1000 (X60)	Check wiring of input
A6	7B	LC	Internal Fault Load Controller	Excessive voltage value or wrong polarity PWM	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	7C	LC	External Fault Load Control- ler	Excessive voltage value or wrong polarity voltage measurement input 2 (X61)	Check wiring of input. Check input voltage value
A6	7D	LC	Internal Fault Load Controller	Excessive voltage value or wrong polarity current measurement input 2 (X61)	Check wiring of input. Check input actual value
A6	7E	LC	Internal Fault Load Controller	Excessive voltage value or wrong polarity voltage measurement input 3 (X62)	Check wiring of input. Check input voltage value
A6	7F	LC	Internal Fault Load Controller	Excessive voltage value or wrong polarity current measurement input 3 (X62)	Check wiring of input. Check input actual value
A6	80	LC	Internal Fault Load Controller	Fault during internal multiplexer test PT100 sensor	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	81	LC	Internal Fault Load Controller	Fault during internal multiplexer test PT100 line	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	82	LC	Internal Fault Load Controller	Fault during internal multiplexer test PT100	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	90	LC	Internal Fault Load Controller	Number of maximum sync failures exceeded	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	91	LC	Internal Fault Load Controller	Wrong CRC during SYNC message	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	92	LC	Internal Fault Load Controller	Wrong CRC during PDO message	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	93	LC	Internal Fault Load Controller	Main loop counter does not agree with basic unit	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	96	LC	Internal Fault Load Controller	Fault during multiplexer test	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	97	LC	Internal Fault Load Controller	Paraccess with FINISH unsuccessful	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
A6	9B	LC	Internal Fault Load Controller	Fault PageAccess, invalid access status	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	9C	LC	Internal Fault Load Controller	Fault voltage monitor test	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	9E	LC	Internal Fault Load Controller	Fault during readout of PDO message	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	A0	LC	Internal Fault Load Controller	XP smaller than min. value	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	A1	LC	Internal Fault Load Controller	XP larger than max. value	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	A2	LC	Internal Fault Load Controller	TN smaller than min. value	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	A3	LC	Internal Fault Load Controller	TN larger than max. value	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	A4	LC	Internal Fault Load Controller	TV smaller than min. value	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	A5	LC	Internal Fault Load Controller	TV larger than max. value	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	A6	LC	Internal Fault Load Controller	Parameter outside the permissible range	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	A7	LC	Inadmissible Selection aux Sensor Cold Start	Inadmissible selection of the auxiliary sensor	When using the auxiliary sensor for the cold start, a temperature or pressure sensor must be selected at input 2. Parameter: Sensor Selection (TempSensor, PressSensor)
A6	B0	LC	Internal Fault Load Controller	Red/Inv fault with float variables	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	B1	LC	Internal Fault Load Controller	Red/Inv fault of a Red/Inv variable	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	B2	LC	Internal Fault Load Controller	Fault during key value check	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	B4	LC	Internal Fault Load Controller	Fault in fault routine	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	B5	LC	Internal Fault Load Controller	Step to invalid interrupt vector	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	B6	LC	Internal Fault Load Controller	Time block too long: Time block 0	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	B7	LC	Internal Fault Load Controller	Time block too long: Time block 1	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	B8	LC	Internal Fault Load Controller	Time block too long: Time block 2	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	B9	LC	Internal Fault Load Controller	Time block too long: Time block 3	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	BA	LC	Internal Fault Load Controller	Time block too long: Time block 4	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	BB	LC	Internal Fault Load Controller	Time block too long: Time block 5	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	BC	LC	Internal Fault Load Controller	Time block too long: Time block 6	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
A6	BD	LC	Internal Fault Load Controller	Time block too long: Time block 7	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace defective unit
A6	C0	LC	Internal Fault Load Controller	CRC fault in page	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	E0	LC	Internal Fault Load Controller	Identpower	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	E1	LC	Internal Fault Load Controller	Controller parameter KP	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	E2	LC	Internal Fault Load Controller	Scanning time	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	EA	LC	Internal Fault Load Controller	Invalid branch in EEPROM module()	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	EB	LC	Internal Fault Load Controller	Invalid branch in EEPROM module()	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	EC	LC	Internal Fault Load Controller	Invalid branch in EEPROM module()	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	ED	LC	Internal Fault Load Controller	Invalid branch in EEPROM module()	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	EE	LC	Internal Fault Load Controller	Invalid branch in EEPROM module()	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	EF	LC	Internal Fault Load Controller	Invalid branch in EEPROM module()	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	F0	LC	Internal Fault Load Controller	Fault during ROM test	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	F1	LC	Internal Fault Load Controller	Fault during RAM test	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	F2	LC	Internal Fault Load Controller	Fault during RAM test, register bank 0	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	F3	LC	Internal Fault Load Controller	Fault during RAM test, IDATA range	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	F4	LC	Internal Fault Load Controller	Fault during RAM test, XDATA range	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	F5	LC	Internal Fault Load Controller	Stack pointer does not point at stack	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	F6	LC	Internal Fault Load Controller	Stack overflow	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	FE	LC	Internal Fault Load Controller	Fault messages in fault management	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A6	FF	LC	Internal Fault Load Controller	Fault messages in fault management	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A7	#	AZL5...		AZL5...has detected own fault and reported it to the basic unit. Type of fault: See diagnostic code	Check CAN cabling and terminators as specified. Observe instructions given below, and: If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective AZL5...
A7	01	AZL5...	Internal Fault AZL	CRC fault during ROM test	

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
A7	02	AZL5...	Internal Fault AZL	CRC fault during RAM test	
A7	03	AZL5...	Internal Fault AZL	Fault during stack test	
A7	04	AZL5...	Internal Fault AZL	Fault during key value check	
A7	05	AZL5...	Internal Fault AZL	Time block overflow	
A7	07	AZL5...	Internal Fault AZL	Sync fault or CRC fault	
A7	08	AZL5...	Internal Fault AZL	Fault main loop counter	
A7	09	AZL5...	Manual Lockout AZL	Fault message for emergency off function via AZL5...	
A7	0A	AZL5...	Internal Fault AZL	Invalid AZL5... page	
A7	0B	AZL5...	>250,000 startups, service required		
A7	0C	AZL5...	Internal Fault AZL	Save fault parameter	
A7	0D	AZL5...	Menu for firing on oil. Current Fuel is Gas	Fuel changeover from oil to gas	Change to GasSettings menu
A7	0E	AZL5...	Menu for firing on gas. Current Fuel is Oil	Fuel changeover from gas to oil	Change to OilSettings menu
A7	15	AZL5...	Internal Fault AZL	CAN queue fault	
A7	16	AZL5...	Internal Fault AZL	CAN overflow fault	
A7	17	AZL5...	Internal Fault AZL	CAN bus off A CAN bus user (SQM4..., PLL52...) switches the CAN bus to OFF mode	Check power supply, fuses and wiring. Disconnect the actuators and the PLL52... bus plug, reset the LMV5... → if other faults are displayed, reconnect the CAN users one by one until the fault occurs again. Check power supply on the CAN user causing the fault. If power supply 2 x AC 12 V is ok, replace the unit. If the fault occurs only with AZL5... and LMV5..., make the test with another AZL5... first
A7	18	AZL5...	Internal Fault AZL	CAN warning level	
A7	1A	AZL5...	Internal Fault AZL	EEPROM fault	If the error occurs in phase 22 together with a VSD, check / change wiring of the VSD
A7	1B	AZL5...	No valid Parameter Backup	Fault during copying of a parameter page	Reset the unit, repeat backup restore if necessary
A7	1C	AZL5...	Internal Fault AZL	Page in EEPROM was disrupted, has been restored	
A7	20	AZL5...	Internal Fault AZL	Display fault	
A7	22	AZL5...	Internal Fault AZL	RTC is locked, permanently busy	
A7	24	AZL5...	Internal Fault AZL	Buffer for page copies too small	
A7	28	AZL5...	Internal Fault AZL	Time stamp could not be sent	
A7	30	AZL5...	Fault Communication eBUS	Fault in connection with eBUS communication	
A7	38	AZL5...	Internal Fault AZL	Interface mode could not be terminated	
A7	40	AZL5...	Communication AZL with PC tool	Parameterization fault PC tool. Disclosed by key value check in AZL5...	
A7	88	AZL5...	Internal Fault AZL	RAM fault with redundant inverse variables	

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
A7	89	AZL5...	Internal Fault AZL	Program run fault, execution of program code that will probably never be executed	
A7	8A	AZL5...	Internal Fault AZL	Unintentional watchdog reset	
A9	#	VSD module	Fault VSD Module	VSD module has detected own fault and reported it to the basic unit. Type of fault: See diagnostic code	
A9	01	VSD module	Internal Fault VSD Module	CRC fault during ROM test	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A9	02	VSD module	Internal Fault VSD Module	CRC fault during RAM test	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A9	04	VSD module	Internal Fault VSD Module	Fault during key value check	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A9	05	VSD module	Internal Fault VSD Module	Error code for time block overflow	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A9	07	VSD module	Internal Fault VSD Module	Sync fault or CRC fault	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A9	08	VSD module	Internal Fault VSD Module	Error code for main loop counter	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A9	09	VSD module	Internal Fault VSD Module	Fault during stack test	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A9	0A	VSD module	Internal Fault VSD Module	Max IRQ speed reached	Possibly electromagnetic interference on the line to the speed sensor, check cable routing, use shielding If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace defective unit
A9	0C	VSD module	Alarm from VSD	VSD reports a fault to the VSD module	Fault has been triggered by the VSD. Read VSDs error code. Check VSD settings (ramps, motor settings), increase ramp time on VSD and basic unit, if necessary. Check combination VSD / motor size
A9	0D	VSD module	Control Range Limitation VSD Module	VSD module could not offset speed differential within its control limits	Check to see if the current interfaces of VSD and VSD module use the same setting (0/4...20 mA). Standardize the speed. !! Note !! After standardizing the speed -> check setting of combustion mixture!
A9	0E	VSD module	Internal Fault VSD Module	Fault during the speed calculation test	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
A9	15	VSD module	Internal Fault VSD Module	CAN bus fault, disturbed CAN bus transmissions	If fault occurs sporadically: Check CAN bus wiring. Improve EMC. Check terminating resistors and correct, if necessary
A9	16	VSD module	Internal Fault VSD Module	CRC fault of a parameter page	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace the defective basic unit

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
A9	17	VSD module	Internal Fault VSD Module	Page too long open	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace the defective basic unit
A9	18	VSD module	Internal Fault VSD Module	Page disrupted	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace the defective basic unit.
A9	19	VSD module	Internal Fault VSD Module	Invalid access to parameters	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace the defective basic unit
A9	1B	VSD module	Internal Fault VSD Module	Fault when copying a parameter page	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace the defective basic unit
A9	1E	VSD module	Internal Fault VSD Module	External plausibility fault. This type of fault covers possible faults occurring due to invalid presettings in the drive commands. In response, the presettings will be ignored	Check the special positions for valid value range (0...100%)
A9	1F	VSD module	Internal Fault VSD Module	Internal plausibility fault. This type of fault detects faults that cannot practically occur...	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
AB	#	O2M	Fault O2 Module	The O2 module has detected own fault and reported it to the basic unit	
AB	01	O2M	Internal Fault O2 Module	CRC fault during ROM test	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace defective O2 module
AB	02	O2M	Internal Fault O2 Module	CRC fault during RAM test	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective O2 module
AB	04	O2M	Internal Fault O2 Module	Fault during key value check	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective O2 module
AB	05	O2M	Internal Fault O2 Module	Error code for time block overflow	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective O2 module
AB	07	O2M	Internal Fault O2 Module	Sync fault or CRC fault	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective O2 module
AB	08	O2M	Internal Fault O2 Module	Error code for main loop counter	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective O2 module
AB	09	O2M	Internal Fault O2 Module	Fault during stack test	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective O2 module
AB	0A	O2M	Internal Fault O2 Module	Feedback values invalid	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective O2 module
AB	10	O2M	Unplaus Value Nernst Voltage O2 Module	Nernst voltage outside the valid range	Check the connection (correct polarity, short-circuit)

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
AB	12	O2M	Unplaus Value Thermocouple O2 Module	Thermocouple voltage outside the valid range	Check connections (polarity, short-circuit, open-circuit). Check power supply to the O2 module. Check fuse F2 on the O2 module. Check heating control on the QGO20....
AB	13	O2M	Unplaus Value Compensation Element	Compensation element voltage outside the valid range	Check connections (polarity, short-circuit, open-circuit). Check housing temperature of the QGO20... (temperature inside -25...120 °C)
AB	15	O2M	Unplaus Value Flue Gas Temp O2 Module	Temperature of combustion air sensor outside the valid range (-20...+400 °C)	Check connections (short-circuit, open-circuit). Check ambient temperature
AB	16	O2M	Unplaus Value Flue Gas Temp O2 Module	Temperature of flue gas sensor outside the valid range (-20...+400 °C)	Check connections (short-circuit, open-circuit). Check ambient temperature
AB	17	O2M	Internal Fault O2 Module	Fault during combustion air temperature sensor test	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective O2 module
AB	18	O2M	Internal Fault O2 Module	Fault during thermocouple test	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective O2 module
AB	19	O2M	Internal Fault O2 Module	Fault during compensation element test	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective O2 module
AB	1A	O2M	Internal Fault O2 Module	Fault during channel comparison of O2 signal	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective O2 module
AB	1B	O2M	Internal Fault O2 Module	Fault ADC test voltages	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective O2 module
AB	20	O2M	O2 Sensor Temp too low	Temperature of QGO20... measuring cell too low	Check mains power supply on O2 module. Check fuse F2 on O2 module. Check connection between O2 module and QGO20... heating
AB	21	O2M	O2 Sensor Temp too high	Temperature of QGO20... measuring cell too high	Check QGO20... temperature
AB	22	O2M	Internal Fault O2 Module	Fault during calculation test	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective O2 module
AB	23	O2M	Unplaus Value Ri O2 Measuring Cell	Measured internal resistance of the QGO20... measuring cell is smaller than 5 Ohm or greater than 150 Ohm	Check electrical connection (polarity, short-circuit). If fault occurs after more than 1 year, QGO20... may have reached the end of its service life -> replace
AB	24	O2M	Response Time O2 Measuring Cell too long	Measured response time of the QGO20... measuring cell exceeds 5 s	Check mounting position of QGO20.... Check to see if QGO20... is dirty. If error occurs after more than 1 year, QGO20... may have reached end of its service life -> replace
AB	25	O2M	O2 Sensor Test aborted by O2 Module	Fault occurred during O2 sensor test	Check fluctuations of the O2 value
AB	30	O2M	Internal Fault O2 Module	CAN fault	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective O2 module
AB	31	O2M	Internal Fault O2 Module	CRC fault of a parameter page	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace the defective O2 module
AB	32	O2M	Internal Fault O2 Module	Page too long open	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace the defective O2 module

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
AB	33	O2M	Internal Fault O2 Module	Page disrupted	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace the defective O2 module
AB	34	O2M	Internal Fault O2 Module	Invalid access to parameters	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace the defective O2 module
AB	38	O2M	Internal Fault O2 Module	Fault during copying of a parameter page	Reset the unit. ! Caution ! If fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace the defective O2 module
AB	3E	O2M	Internal Fault O2 Module	External plausibility fault. This type of fault covers possible faults occurring due to invalid presettings in the drive commands. In response, the presettings will be ignored	Reset the unit. ! Caution ! If this fault occurred during parameterization: Check the parameters changed last. If fault cannot be rectified by the reset: Restore AZL5... parameters. Otherwise, replace defective O2 module
AB	3F	O2M	Internal Fault O2 Module	Internal plausibility fault. This type of fault covers possible errors that cannot practically occur	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective O2 module
B0	#	LMV5...		Fault during test of port outputs	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
B0	01	LMV5...	Internal Fault Basic Unit	Fault when resetting the set outputs	
B0	02	LMV5...	Internal Fault Basic Unit	Fault during ZR test	
B1	01	LMV5...	Internal Fault Basic Unit	Fault during short-circuit test between inputs and outputs	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
B5	#	LMV5...		O2 monitor	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
B5	01	LMV5...	Below O2 Min Value	O2 value has dropped below O2 min. value	Check setting of the fuel / air ratio curve. Increase interval between O2 setpoint and O2 min. value
B5	02	LMV5...	O2 Min Values undefined	Invalid O2 min. value	Define all O2 min. values
B5	03	LMV5...	O2 Setpoints undefined	Invalid O2 setpoint	Define all O2 setpoints
B5	04	LMV5...	O2 Delay Time undefined	Invalid O2 delay time	Adaption at curvepoint 2 or at the highest curvepoint has not been made. Set these curvepoints
B5	05	LMV5...	Actual O2 Value invalid	No valid actual O2 value in operation for ≥ 3 s	O2 module and O2 sensor must be correctly connected. Mains power supply to the QGO20... must be connected
B5	06	LMV5...	O2 Value Prepurging not reached	During prepurging, the parameterized air oxygen content of +2% was not reached	At the end of prepurging, the parameterized O2 content air must be reached. Prepurging must not be sufficiently long for the air to reach the O2 content in the flueways. The value must have been parameterized at an air oxygen content of 20.9%. If fault occurs after more than 1 year, QGO20... may have reached the end of its service life -> replace
B5	07	LMV5...	O2 Value in Operation too high	O2 value of 15% in operation was exceeded	Check mechanical and electrical mounting of the QGO20... sensor

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
BA	01	LMV5...	O2 Sensor Test aborted	O2 sensor test was not successful. E.g. reset of O2 module during probe test	<i>If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective O2 module</i>
BF			O2 Control and Limiter automate deactivated	Fault occurred in connection with O2 trim control or with the O2 monitor. It led to automatic deactivation of O2 trim control or the O2 monitor	In the error history, the reason for switching off is entered just before the BF error
C5	#	#	Version Conflict	When comparing the versions of the individual units, the AZL5... has detected old versions	Before replacing any units, start the system and wait about 1 minute (until, after entering the parameter level, the display <i>Parameters will be updated</i> disappears). Then, make a reset. Replace the unit only if the fault message does not disappear. Replace the relevant units by new versions
C5	01...2F	#	Version Conflict	<i>The diagnostic value is made up of the following faults or their combinations (the individual diagnostic codes are added up in hexadecimal format)</i>	
C5	01	LMV5...	Version Conflict	<i>Software of the basic unit too old</i>	<i>Replace the basic unit</i>
C5	02	LC	Version Conflict	<i>Software of the load controller too old</i>	<i>Replace the basic unit</i>
C5	04	AZL5...	Version Conflict	<i>Software of the AZL5... too old</i>	<i>Replace the AZL5... or update its software</i>
C5	08	SQM4...	Version Conflict	<i>Software of 1 or several actuators too old</i>	<i>Replace the actuator</i>
C5	10	VSD module	Version Conflict	<i>Software of VSD module too old</i>	<i>Replace the basic unit</i>
C5	20	O2	Version Conflict	<i>Software of O2 module too old</i>	<i>Replace the O2 module</i>
D1	#	VSD module	Fault Feedback VSD Module	Basic unit has detected a wrong state of the VSD module. Corresponds to the 8x-faults with the other CAN users	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective module
D1	01	VSD module	Fault Feedback VSD Module	CRC error	
D1	02	VSD module	Fault Feedback VSD Module	Key error main loop counter	
D1	03	VSD module	Fault Feedback VSD Module	No feedback for max. number	
D3	#	O2	Fault Feedback O2 Module	Basic unit has detected a wrong stage of the O2 module	Check CAN cabling and terminators as specified. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective module
D3	01	O2	Fault Feedback O2 Module	CRC error	
D3	02	O2	Fault Feedback O2 Module	Key error main loop counter	
D3	03	O2	Fault Feedback O2 Module	No feedback for max. number	
E1	---	VSD module	Fault Feedback VSD Module	Basic unit has detected a ROM-CRC fault in the VSD module when checking its feedback signal	If fault occurs sporadically: Improve EMC If fault occurs constantly: Replace the defective module

Error code	Diagnostic code	Device	Display	Meaning for the LMV5x system	Troubleshooting
E3	---	O2	Fault Feedback O2 Module	Basic unit has detected a ROM-CRC fault in the O2 module when checking its feedback signal	Check CAN cabling and terminators as specified. If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective module
F0	---	LMV5...	Internal Fault Basic Unit	Plausibility fault during calculation of interpolation values	If fault occurs sporadically: Improve EMC. If fault occurs constantly: Replace the defective unit
F1	#	LMV5...	Internal Fault Basic Unit	Internal fault during calculation of precontrol	Check curve setting, check fuel parameters depending on the selected type of fuel
F1	01	LMV5...	Internal Fault Basic Unit		
F1	02	LMV5...	Internal Fault Basic Unit		
F1	03	LMV5...	Internal Fault Basic Unit		
F1	04	LMV5...	Internal Fault Basic Unit		
F1	05	LMV5...	Internal Fault Basic Unit		
F1	06	LMV5...	Internal Fault Basic Unit	Internal fault calculation of precontrol. Undefined value in the curves used for the calculation	
F1	07	LMV5...	Internal Fault Basic Unit	Internal fault calculation of precontrol. Undefined value for a type of fuel parameter	
F2	#	LMV5...		Code for faulty temperature values from O2 module when calculating the air rate change	
F2	07	LMV5...	Internal Fault Basic Unit	O2 module has delivered invalid value	
F2	08	LMV5...	Flue Gas Temp too high	Flue gas temperature outside the permissible value range	Set permissible flue gas temperature to a higher level
F2	0A	LMV5...	QGO in Heating-up Phase	QGO20... probe not yet sufficiently heated up	Wait until probe has reached its operating temperature
F3	01	LMV5...	Missing or faulty Control Parameters	PID parameter for controller algorithm missing	Check the controller parameters
F4	01	O2	Fault with Feedback from O2 Module	Flue gas temperature sensor PLL52... is selected but there is no feedback signal on CAN	Flue gas recirculation is activated and O2 module is not connected. Check CAN wiring / power supply PLL52...
F5	01	LC	Fault with Feedback from Load Controller	Pt1000 / Ni1000 of load controller is selected but there is no feedback signal on CAN	Check CAN wiring. If fault occurs aporadically: Improve EMC. If fault occurs constantly: Replace the defective unit

The logo consists of the word "RIELLO" in a bold, red, sans-serif typeface. The letters are closely spaced and have a slightly distressed or industrial feel.

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