Field Mounted - Multi-Channel - TDL Gas Analyzer
ISA DATA SHEET

BOREAL

General	1	Manufacturer	Boreal Laser Inc.
	2	Analyzer Model No.	GasFinder3-MC (Multi-Channel) Assembly (e.g. BL-GF3-MC-_-__-__-__-__-__)
	3	Measurement Head Model No.	N/A
	4	Warranty Period	10 years on Laser (Light Source) and 3 years Full Warranty
Analyzer Performance	5	Detection/Operating Principle	Tunable Diode Laser Absorption Spectroscopy (TDLAS)
	6	Sensor Type / Number of Sensors	Semiconductor Diode Laser (NIR) / One (1) or Two (2) Lasers per GasFinder3-MC
	7	Channels / Measurement Heads	One (1), Two (2), Three (3), or Four (4) Measurement Heads per GasFinder3-MC
	8	Eye Safety	Class 1 AEL under IEC 60825-1
	9	Function	Detects/monitors free gaseous molecules of one (1) or two (2) target gas(es)
	10	Calibration	Factory calibrated with no requirement for periodic/inherent calibration
	11	Field Calibration	None Required or Available
	12	Automatic Validation	Internal Reference Cell (interrogated once a minute)
	13	User Function Testing	External Response Cell to "bump", "test" or "challenge" (Optional Accessory)
	14	Response Time	1.7 Seconds per Sample
	15	Recovery Time	Instantaneous (Each sample is independent of the last)
	16	Analyzer Mounting Location	Field (See Area Classification for more details)
	17	Display / Local Indication	HMI Touchscreen (ppm-m, light level, alarm status, and fault status)
	18	Accuracy	±2% of Reading
	19	Internal Temperature Compensation	Dynamic (Piezo Resistive) or Manual Entry: -55°C to +150°C (-67°F to +302°F)
	20	Internal Pressure Compensation	Dynamic (MEMS) or Manual Entry: 50 to 200 kPa Absolute (7.25 to 29 psia)
	21	Drift	±0.1% over operating temperature and pressure ratings
	22	Warm-up / Start-up Time	2 Minutes
	23	User Intervention on Start-up	None Required
	24	Operating Temperature	-55 to +65°C (-67 to 149°F)
	25	Operating Humidity	0-100% RH (Non-Condensing)
	26	Operating Pressure	50 to 200 kPa Absolute (7.25 to 29 psia)
	27	Fault Diagnostics	Status Code visible via HMI Display, Interface, Outputs, and Logfiles
	28	Internal Data Logging	User has access to 20 years worth of storage capacity via USB Stick
	29	Safety Integrity Level	SIL2 Suitable
	30	Obscuration / Beam Block	Operates down to 97% Obscuration (40x Turndown)
	31	Solar Blind	No False Positives from Solar Interference
Analyzer Enclosure	32	Area Classification - Option #1	(A)Ex nA IIC T5 Tamb -45 to 65°C (Equivalent to: Class 1 Div/Zone 2 & Groups A,B,C,D)
	33	Area Classification - Option #2	(A)Ex nA IIC T6 Tamb -45 to 50°C (Equivalent to: Class 1 Div/Zone 2 & Groups A,B,C,D)
	34	Method of Protection	Non-Sparking/Non-Arcing “nA” (CSA No. 60079-15:16, ANSI/ISA 12.12.01-2015)
	35	Ingress Protection	IP 66 & NEMA Type 4X
	36	RFI/EMI	N/A
	37	Enclosure Material	304 Stainless Steel
	38	Enclosure Mounting	Surface/Wall - 4 bolts in structure with 0.3125" nominal hole size
	39	Enclosure Dimensions (LxWxH)	495 x 368 x 160 mm (19.5 x 14.5 x 6.3 inches)
	40	Enclosure Weight	14 kg (31 lbs)
	41	Shipping Weight	16.6 kg (36.6 lbs)
	42	Storage Temperature	-55 to +65°C (-67 to 149°F)
	43	Power Cable Entry Size	One (1) 1/2" hole / M14 (left side of enclosure)
	44	Communication Cable Entry Size	Two (2) 3/4" holes / M20 (left side of enclosure)
	45	Measurement Head Cable Entry Size	Four (4) 3/4" holes / M20 (bottom of enclosure)
	46	Cable Glands: Power & Comm.	Supplied by others (as per local electrical standards)
Analyzer Power	47	Power Consumption/Fuse	20 Watts under Normal Operation and 4A Fast Blow Cartridge Fuse (5x20 mm)
	48	In-Rush Current	Non-Hydrogen Fluoride (HF): 2.5A for 100ms & Hydrogen Fluoride (HF): 3.1A for 100ms
	49	Input Voltage	24 VDC (Nominal) & 120-220 VAC (Available Option)
	50	Power/Communication Terminals	4-Wire Device (16 awg)
	51	Measurement Head Terminals	Single Mode Fiber Optic Cabling (FC/APC) and Shielded CAT6/5e Cabling (RJ-45)
Analyzer Interface Protocols	52	Serial	USB (Data Download via USB Stick), & Micro USB (Realtime Data via GasView)
	53	MODBUS	RS-485
	54	HART	PV (ppm-m), SV (Light Level), TV (R2 Confidence Factor), & QV (TBD)
Analyzer Outputs	55	Analyzer Board Stack Outputs	One (1) HART 7 enabled Non-Isolated/ Active Analog Loop and Digital Relay Output
	56	Analog Module	Four (4) HART 7 enabled Isolated/ Active Analog Loops per Analog Module
	57	Max. # of Analog Modules	GasFinder3-MC can support up to two (2) Analog Modules
	58	Configurable Analog Output Options	ppm-m, ppm, mg/Nm3, Light Level (Rx), & R2 Confidence Factor
	59	Analog Load Impedance	1,000 ohms (3 Devices)
	60	Analog Range	2-20 mA
	61	Low Light Alarm (Beam Block)	2.7 mA
	62	General System Fault	3.6 mA
	63	Relay Module	Six (6) Isolated Digital Relays per Relay Module (24 V, 1A Max)
	64	Max # of Relay Module(s)	GasFinder3-MC can support up to four (4) Relay Modules
	65	Configurable Relay Output Options	Hi-Alarm, Hi-Hi-Alarm, Low Light (Low Rx) Alarm, & General System Fault
	66	Contact Relay Type	Voltage Free
	67	Analog Range Settings	User Programmable via HMI Touchscreen or HART Communicator
	68	Discrete Alarm Settings	User Programmable via HMI Touchscreen or HART Communicator
	69	Analog/Discrete Low Light Time Delay	0 to 300 seconds - User Programmable via HMI Touchscreen or HART Communicator

Lo-Range Hydrogen Fluoride (HFL)	70	Minimum Detectable Limit (MDL)	0.4 ppm-m
	71	Sensitivity	0.1 ppm-m
	72	Full Scale	250 ppm-m (analog range(s) are user programmable)
	73	Lowest Actionable Concentration	0.8 ppm-m (2x MDL)
	74	Lowest Recommended Alarm Threshold	2 ppm-m (5x MDL)
	75	Maximum Recommended Path Length	500 m
	76	Maximum Recommended Cable Length	300 m
Hi-Range Hydrogen Fluoride (HFH)	77	Minimum Detectable Limit (MDL)	4 ppm-m
	78	Sensitivity	1 ppm-m
	79	Full Scale	1,000 ppm-m (analog range(s) are user programmable)
	80	Lowest Actionable Concentration	8 ppm-m (2x MDL)
	81	Lowest Recommended Alarm Threshold	20 ppm-m (5x MDL)
	82	Maximum Recommended Path Length	500 m
	83	Maximum Recommended Cable Length	300 m
Lo-Range Ammonia (NH3L)	84	Minimum Detectable Limit (MDL)	8 ppm-m
	85	Sensitivity	2 ppm-m
	86	Full Scale	6,500 ppm-m (analog range(s) are user programmable)
	87	Lowest Actionable Concentration	16 ppm-m (2x MDL)
	88	Lowest Recommended Alarm Threshold	40 ppm-m (5x MDL)
	89	Maximum Recommended Path Length	500 m
	90	Maximum Recommended Cable Length	300 m
Hi-Range Ammonia (NH3H)	91	Minimum Detectable Limit (MDL)	40 ppm-m
	92	Sensitivity	10 ppm-m
	93	Full Scale	15,000 ppm-m (analog range(s) are user programmable)
	94	Lowest Actionable Concentration	80 ppm-m (2x MDL)
	95	Lowest Recommended Alarm Threshold	200 ppm-m (5x MDL)
	96	Maximum Recommended Path Length	500 m
	97	Maximum Recommended Cable Length	300 m
Ultra Hi-Range Ammonia (NH3UH)	98	Minimum Detectable Limit (MDL)	4,000 ppm-m
	99	Sensitivity	1,000 ppm-m
	100	Full Scale	1,000,000 ppm-m (analog range(s) are user programmable)
	101	Lowest Actionable Concentration	8,000 ppm-m (2x MDL)
	102	Lowest Recommended Alarm Threshold	20,000 ppm-m (5x MDL)
	103	Maximum Recommended Path Length	500 m
	104	Maximum Recommended Cable Length	300 m
Lo-Range Methane (CH4L)	105	Minimum Detectable Limit (MDL)	2 ppm-m
	106	Sensitivity	0.5 ppm-m
	107	Full Scale	8,500 ppm-m (analog range(s) are user programmable)
	108	Lowest Actionable Concentration	4 ppm-m (2x MDL)
	109	Lowest Recommended Alarm Threshold	10 ppm-m (5x MDL)
	110	Maximum Recommended Path Length	500 m
	111	Maximum Recommended Cable Length	300 m
Hi-Range Methane (CH4H)	112	Minimum Detectable Limit (MDL)	100 ppm-m
	113	Sensitivity	25 ppm-m
	114	Full Scale	500,000 ppm-m or 10 LEL-m (analog range(s) are user programmable)
	115	Lowest Actionable Concentration	200 ppm-m (2x MDL)
	116	Lowest Recommended Alarm Threshold	500 ppm-m (5x MDL)
	117	Maximum Recommended Path Length	500 m
	118	Maximum Recommended Cable Length	300 m
Lo-Range Hydrogen Sulphide (H2SL)	119	Minimum Detectable Limit (MDL)	100 ppm-m
	120	Sensitivity	25 ppm-m
	121	Full Scale	100,000 ppm-m (analog range(s) are user programmable)
	122	Lowest Actionable Concentration	200 ppm-m (2x MDL) to 500 ppm-m
	123	Lowest Recommended Alarm Threshold	500 ppm-m (5x MDL)
	124	Maximum Recommended Path Length	500 m
	125	Maximum Recommended Cable Length	300 m
Hi-Range Hydrogen Sulphide (H2SH)	126	Minimum Detectable Limit (MDL)	1,000 ppm-m
	127	Sensitivity	250 ppm-m
	128	Full Scale	500,000 ppm-m (analog range(s) are user programmable)
	129	Lowest Actionable Concentration	2,000 ppm-m (2x MDL)
	130	Lowest Recommended Alarm Threshold	5,000 ppm-m (5x MDL)
	131	Maximum Recommended Path Length	500 m
	132	Maximum Recommended Cable Length	300 m
Hydrogen Chloride (HCl)	133	Minimum Detectable Limit (MDL)	2 ppm-m
	134	Sensitivity	0.5 ppm-m
	135	Full Scale	2,500 ppm-m (analog range(s) are user programmable)
	136	Lowest Actionable Concentration	1 ppm-m (2x MDL)
	137	Lowest Recommended Alarm Threshold	10 ppm-m (5x MDL)
	138	Maximum Recommended Path Length	200 m (2-Channels Only)
	139	Retro-Array Requirements	Limited to Wafer Retro-Array and Cornercube Retro-Array
	140	Maximum Recommended Cable Length	300 m (2-Channels Only)
Hydrogen Cyanide (HCN)	141	Minimum Detectable Limit (MDL)	8 ppm-m
	142	Sensitivity	2 ppm-m
	143	Full Scale	5,000 ppm-m (analog range(s) are user programmable)
	144	Lowest Actionable Concentration	16 ppm-m (2x MDL)
	145	Lowest Recommended Alarm Threshold	40 ppm-m (5x MDL)
	146	Maximum Recommended Path Length	500 m
	147	Maximum Recommended Cable Length	300 m

Lo-Range Carbon Monoxide (COL)	148	Minimum Detectable Limit (MDL)	8 ppm-m
	149	Sensitivity	2 ppm-m
	150	Full Scale	8,500 ppm-m (analog range(s) are user programmable)
	151	Lowest Actionable Concentration	4 ppm-m (2x MDL)
	152	Lowest Recommended Alarm Threshold	40 ppm-m (5x MDL)
	153	Maximum Recommended Path Length	50 m with one (1) OPX Head and 20m with two (2) OPX Heads
	154	Maximum Recommended Cable Length	5 m (2-Channels Only)
	155	Retro-Array Requirements	Limited to Wafer Retro-Array and Cornercube Retro-Array
	156	Special Note	Visible Laser function from Optical Multi-Meter will not work with COL Transceivers
Hi-Range Carbon Monoxide (COH)	157	Minimum Detectable Limit (MDL)	250 ppm-m
	158	Sensitivity	60 ppm-m
	159	Full Scale	500,000 ppm-m (analog range(s) are user programmable)
	160	Lowest Actionable Concentration	500 ppm-m (2x MDL)
	161	Lowest Recommended Alarm Threshold	1,250 ppm-m (5x MDL)
	162	Maximum Recommended Path Length	500 m
	163	Maximum Recommended Cable Length	300 m
Ultra Lo-Range Carbon Dioxide (CO2UL)	164	Minimum Detectable Limit (MDL)	0.4 ppm-m
	165	Sensitivity	0.1 ppm-m
	166	Full Scale	250 ppm-m (analog range(s) are user programmable)
	167	Lowest Actionable Concentration	0.8 ppm-m (2x MDL)
	168	Lowest Recommended Alarm Threshold	2 ppm-m (5x MDL)
	169	Maximum Recommended Path Length	Saturation will occur over a 0.5m Path Length if measuring ambient concentrations
	170	Maximum Recommended Cable Length	20 m
	171	Retro-Array Requirements	Limited to Wafer Retro-Array and Cornercube Retro-Array
	172	Special Note	2-Channels Only & Atmospheric Concentrations can vary from 400-1,000 ppm
Lo-Range Carbon Dioxide (CO2L)	173	Minimum Detectable Limit (MDL)	120 ppm-m
	174	Sensitivity	30 ppm-m
	175	Full Scale	60,000 ppm-m (analog range(s) are user programmable)
	176	Lowest Actionable Concentration	240 ppm-m (2x MDL)
	177	Lowest Recommended Alarm Threshold	600 ppm-m (5x MDL)
	178	Maximum Recommended Path Length	100 m
	179	Maximum Recommended Cable Length	20 m
	180	Retro-Array Requirements	Limited to Wafer Retro-Array and Cornercube Retro-Array
	181	Special Note	2-Channels Only & Atmospheric Concentrations can vary from 400-1,000 ppm
Hi-Range Carbon Dioxide (CO2H)	182	Minimum Detectable Limit (MDL)	500 ppm-m
	183	Sensitivity	150 ppm-m
	184	Full Scale	500,000 ppm-m (analog range(s) are user programmable)
	185	Lowest Actionable Concentration	2,000 ppm-m (2x MDL)
	186	Lowest Recommended Alarm Threshold	2,500 ppm-m (5x MDL)
	187	Maximum Recommended Path Length	500 m
	188	Maximum Recommended Cable Length	300 m
	189	Special Note	Atmospheric Concentrations can vary from 400-1,000 ppm
Oxygen (O2)	190	Minimum Detectable Limit (MDL)	2,500 ppm-m
	191	Sensitivity	625 ppm-m
	192	Full Scale	1,000,000 ppm-m (analog range(s) are user programmable)
	193	Lowest Actionable Concentration	5,000 ppm-m (2x MDL)
	194	Lowest Recommended Alarm Threshold	12,500 ppm-m (5x MDL)
	195	Maximum Recommended Path Length	4.5 m (Full Scale Saturation at Atmospheric Concentrations)
	196	Maximum Recommended Cable Length	5 m
	197	Special Note	To meet FDA & Hazardous Area requirements, this laser has a power output limit of 0.5 mW
Latest Revision	198	8/18/22	