

General

Optimised for the rough environment of the rotor hub on a wind turbine, the MotionController GEL 8400 meets all requirements arising in installation locations worldwide - whether onshore or offshore. As the Hot Climate Version (HCV) in the hot and humid area of South China or as the Cold Climate Version (CCV) for -20 °C temperatures at 1500 m altitude in the Central Asian Plateau. As the successor to the proven GEL 823x and GEL 825x, the new GEL 8400 combines years of experience with a performance increase in this product family.

Optionally with Remote Service WEB

- FTP, HTTP communication via web browser
- Condition monitoring of the current actual values
- Reading and writing parameters.
- Reading saved faults
- Interface to LB Graph
- Remote Update, online update of the firmware
- Remote service log book

Features

- Expanded temperature range - 40 °C to + 70 °C
- Robust, resistant to shock and vibration
- Compact controller, CPU, LCD display, keyboard and I/Os
- 30 digital inputs / 15 digital outputs
- 3 analogue inputs / 3 analogue outputs
- 4 PT100 inputs
- 3 SSI inputs / 6 incremental inputs (5 V / 24 V)
- Serial interfaces: 1 x RS 232 C / RS 422/485, 1 x RS 232 C
- 2 x CANopen onboard
- Optional: EtherNet/IP interface module

Advantages

- Optimised for rough environments
- Technically improved successor to the field-proven controller GEL 823x and GEL 825x

Fields of application

- Wind power (onshore, nearshore, offshore)
- Tidal power plants
- Robust industrial environments



Right to technical changes and errors reserved.

Technical data

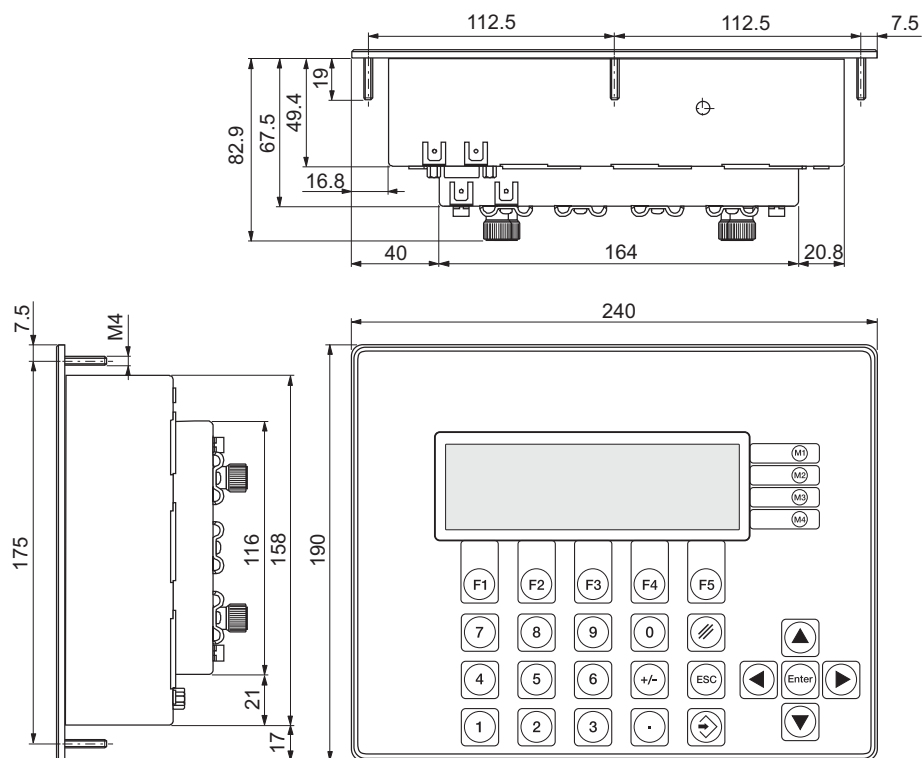
Electrical data	
Supply voltage U_B	19 to 30 V DC
Current consumption	Max. 1 A (depending on interfaces used)
Interfaces	
Serial	2 (COM1/2), adjustable baud rate, for PC communication/programming; COM1: RS 232 C or RS 422/485, COM2: only RS 232 C
CAN bus	2 x onboard (master/slave)
Fieldbus	1 extension slot for PROFIBUS-DP or EtherNet/IP
Inputs	
Act. value inputs	6 × absolute SSI, supply 24/5 V, 900/600 mA in total, clock frequency 100 kHz
Digital inputs (electrically isolated)	30 × 24 V, state indication via green LED
Analogue inputs (electrically isolated)	3 × 0–20 mA
PT100 inputs (electrically isolated)	4 × -40 °C to +215 °C
Outputs	
Digital outputs (electrically isolated)	9 × 24 V, 30 mA 6 × 24 V, 500 mA State indication via red LED
Analogue outputs (electrically isolated)	3 × ±10 V, max. 10 mA, resolution 2 mV
Ambient data	
Degree of protection	Front side: IP 67, rear side: IP 20
Operating temperature	-20 °C to +70 °C
Storage temperature	-40 °C ⁽¹⁾ to +70 °C
Relative humidity of air	95 %, no condensation
Electromagnetic compatibility	DIN EN 61000-6-2:2006-03, DIN EN 61000-6-4:2011-09 ⁽²⁾
Vibration resistance	20 m/s ² , 9 to 55 Hz (DIN EN 60068-2-6:2008-10)
Display	
Display	LC display 64×240 pixels with LED background lighting; visible surface 133 × 39 mm
Housing	
Material	Sheet steel, galvanised
Front panel	Aluminium with edge protection
Weight	Approx. 1.7 kg

⁽¹⁾ Can be stored in a relative atmospheric humidity of 0% for 200 h at -40 °C

⁽²⁾ On operation in residential, business and commercial sectors compliance with the requirement on electromagnetic emissions in accordance EN 61000-6-3 is to be ensured with additional external screening and filtering measures.

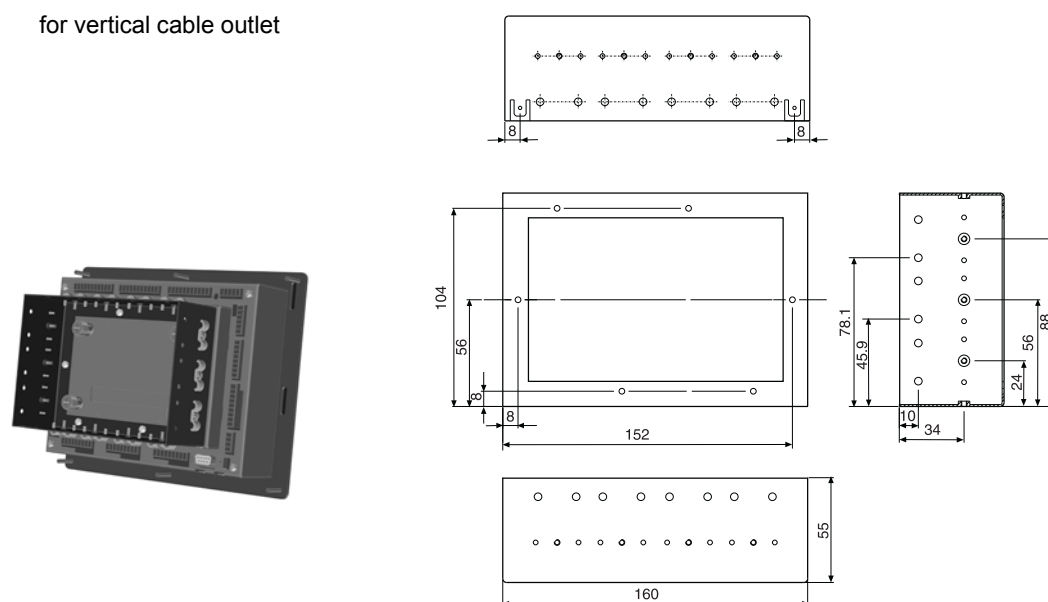
Dimensional drawings

Dimensional drawing GEL 8400



All dimensions stated in mm ($\approx$ approximate dimension)
General tolerance DIN ISO 2768 medium

Dimensional drawing attachment frame GK 2063

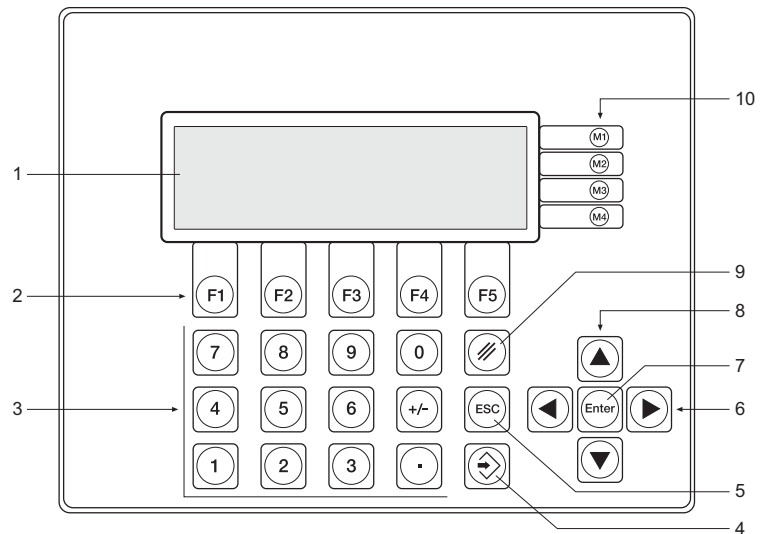


All dimensions stated in mm ($\approx$ approximate dimension)
General tolerance DIN ISO 2768 medium

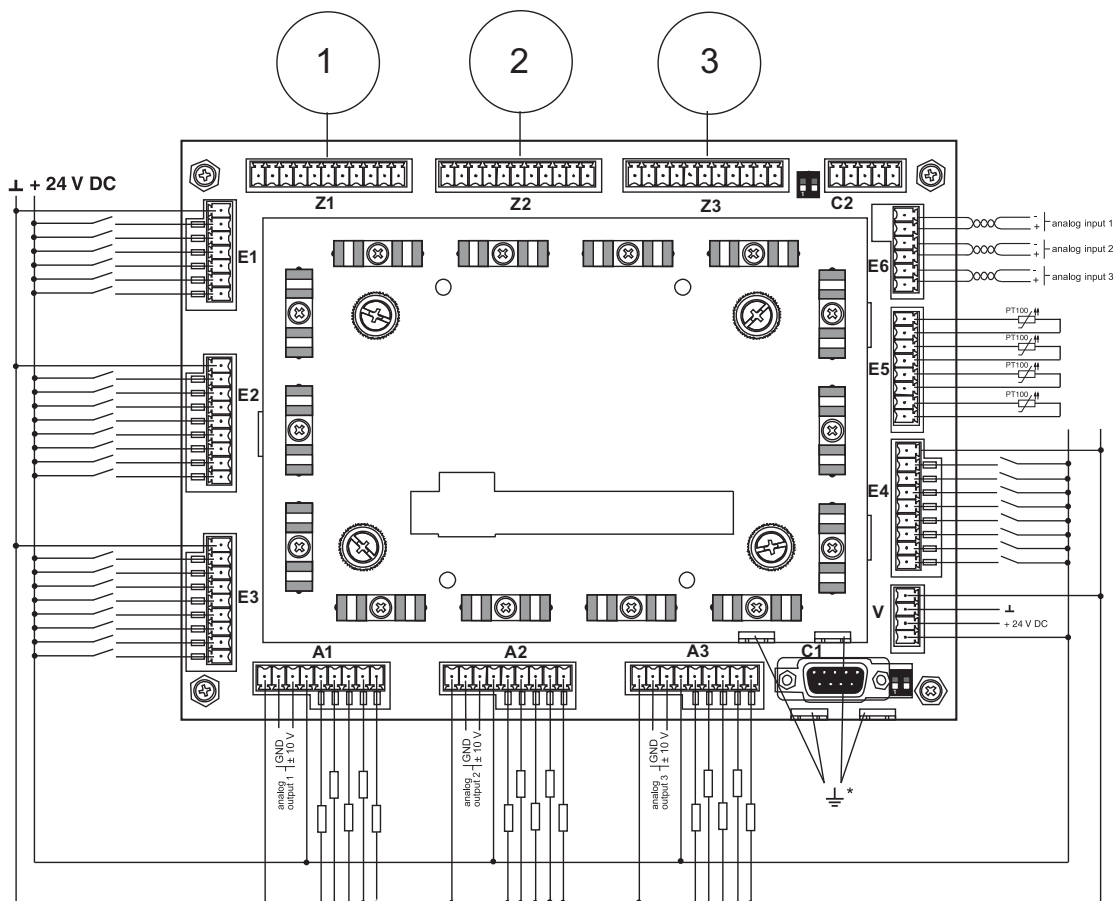
Overview

Front view

- 1 Display
- 2 Function keys
- 3 Numerical keys
- 4 Enter key (same as 7)
- 5 Escape key
- 6 Navigation and selection keys
- 7 Same as 4
- 8 Scroll keys
- 9 Delete key
- 10 Menu keys



General overview



1, 2, 3 Incremental or SSI encoder for axis 1, 2, 3

* Earth connections, flat connectors 6.3

Terminal assignment

Analogue and digital outputs for axis 1, 2, 3 (terminal strips A1, A2, A3)

A1	A2	A3	Terminal	Signal	Function
⊥ Q1	⊥ Q2	⊥ Q3	1	GND	GND power supply for signals ⁽¹⁾
			2	AnalogX_Out-	Analogue GND ⁽²⁾
QW10	QW20	QW30	3	AnalogX_Out+	±10 V
24 V DC In	24 VDC In	24 V DC In	4	U _S	24 VDC power supply for signals ⁽¹⁾
QX1.0	QX2.0	QX3.0	5	DAX.1	Output 30 mA
QX1.1	QX2.1	QX3.1	6	DAX.2	Output 30 mA
QX1.2	QX2.2	QX3.2	7	DAX.3	Output 30 mA
QX1.3	QX2.3	QX3.3	8	DAX.4	Output 500 mA
QX1.4	QX2.4	QX3.4	9	DAX.5	Output 500 mA

Digital inputs (terminal strips layout: E1, axes 1–3: E2, E3, E4)

PLC identifier				Terminal	Signal	Function
E1	E2	E3	E4			
⊥ I1	⊥ I2	⊥ I3	⊥ I4	1	GND	Optocoupler supply ⁽¹⁾
IX1.0	IX2.0	IX3.0	IX4.0	2	DEX.1	
IX1.1	IX2.1	IX3.1	IX4.1	3	DEX.2	
IX1.2	IX2.2	IX3.2	IX4.2	4	DEX.3	
IX1.3	IX2.3	IX3.3	IX4.3	5	DEX.4	
IX1.4	IX2.4	IX3.4	IX4.4	6	DEX.5	
IX1.5	IX2.5	IX3.5	IX4.5	7	DEX.6	
	IX2.6	IX3.6	IX4.6	8	DEX.7	
	IX2.7	IX3.7	IX4.7	9	DEX.8	

Analogue inputs terminal strip E5 (PT100)

E5	PLC	Terminal	Signal	Function
Analog4_In-	IW54	1	/AE 1.4	GND
Analog4_In+		2	AE 1.4	PT100
Analog5_In-	IW55	3	/AE 1.5	GND
Analog5_In+		4	AE 1.5	PT100
Analog6_In-	IW56	5	/AE 1.6	GND
Analog6_In+		6	AE 1.6	PT100
Analog7_In-	IW57	7	/AE 1.7	GND
Analog7_In+		8	AE 1.7	PT100

Analogue inputs terminal strip E6 (current)

E6	PLC	Terminal	Signal	Function
Analog1_In-	IW61	1	/AE 1.1	Signal-
Analog1_In+		2	AE 1.1	Signal+
Analog2_In-	IW62	3	/AE 1.2	Signal-
Analog2_In+		4	AE 1.2	Signal+
Analog3_In-	IW63	5	/AE 1.3	Signal-
Analog3_In+		6	AE 1.3	Signal+

(1) Terminal strips are not interconnected.

(2) Terminal strips are connected together.

Terminal assignment

Power supply (24 V; terminal strip V)

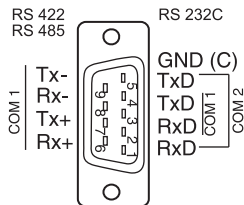
Terminal	Signal	Function
1	GND (Z)	GND (encoder)
2	GND	GND
3	24 V DC	Power supply, logic
4	24 V DC (Z)	Power supply, encoders (terminal strips Z1, Z2, Z3)

Encoder inputs (actual value inputs for axis 1, 2, 3; terminal strips Z1, Z2, Z3)

Terminal	Signal	SSI encoder A	SSI encoder B	Function
1	GND (Z)	x	x	GND encoder ⁽¹⁾
2	+5 V DC Out	U _Z	U _Z	5 V power supply encoder ⁽¹⁾ , internally regulated to 5 V
3	+24 V DC Out	U _Z	U _Z	24 V power supply encoder ⁽¹⁾
4	CLK_SSI+	x	x	Differential clock signal for encoder A and B
5	CLK_SSI-	x	x	
6	Data_SSI_A +	x	-	Differential data signal from encoder A
7	Data_SSI_A -	x	-	
8	Data_SSI_B +	-	x	Differential data signal from encoder B
9	Data_SSI_B -	-	x	
10	Ref_N +	(x)		Reference signal N
11	Ref_N -	(x)		

Serial interface (connector C1)

9-pin D-subminiature connector



Termination for CAN bus and for COM1 (RS 422/485) via DIP switch

CAN bus interface (terminal strip C2)

Terminal	Signal
1	GND (C)
2	CAN 1_H
3	CAN 1_L
4	CAN 2_H
5	CAN 2_L

⁽¹⁾ From terminal strip V

Accessories

Mounting accessories

Order no.	Description
GEL 89043	Mating connector set
BG 4622	14 hex screws M3 x 10, 14 cable clamps, 2 earthing terminals, 14 toothed lock washers
BG 4623	6 hex screws M4, 6 washers, 6 spring washers, 2 earthing terminals
GK 2063	Attachment frame: 6 hex screws M3 x 10 and 6 toothed lock washers

Fieldbus accessories

Order no.	Description
GEL 89022	Connecting cable RS 232 C from PC to the MotionController
GEL 89130	Fieldbus module (PROFIBUS-DP)
GEL 89133	Fieldbus module (EtherNet/IP)

Documentation

Order no.	Description
Upon request	CD-ROM GEL 8400, including manuals as PDF files
Upon request	Device manual GEL 8400 in German or English (DIN A5, printed)



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