GEFRAN

1650

PID 1/8 DIN Double temperature controller

Dimensions 48 × 96 × 80 mm (1/8 DIN)

Main features

- *Operator interface with large LCD display and three configurable bar graph*
- *Scrolling diagnostics messages, configurable, in the selected language*
- *Easy, guided configuration, copy/paste parameters even with power off*
- *Preventive maintenance with energy counters (kWh) and load switching*
- *32 function block applications*
- *8 math application blocks*
- *Timer, setpoint and algorithm programmer for controlling motorized valves*
- *Advanced tuning of control parameters*
- *Different password levels*
- *2 universal inputs configurable for thermocouples, resistance thermometers, linear inputs*
- *2 PID control loop*
- *2 setpoint programmers (128 steps in 16 programs)*
- *Relay, logic, isolated analog outputs*
- *Up to two CT inputs for interrupted load diagnostics*
- *RS485 serial communication in Modbus RTU*
- *Removable faceplate for immediate replacement*
- *Sampling time 60 ms*

PROFILE

Operator interface

Large LCD display with customization of plastic front panel color and logo.
Scrolling alphameric display of 25 messages (32 letters each), completely configurable and savable, in three languages.
Thanks to language selection and clear scrolling messages for diagnostics, alarms, and process state, the controller speaks the user's language.

Control

Double loop, two configurable universal inputs for thermocouples, resistance thermometers, linear inputs.
Second input can be configured as remote setpoint of single loop.

Easy Configuration

Guided configuration for manual-free programming, with a few essential parameters and on-line help messages.
Ability to clone configuration among controllers, even with power off and in the field, thanks to a mini portable configurator with Zapper battery.
Extended configuration, creation of work recipes, and firmware updates via PC and GF_eXpress software, even without powering the controllers.
Thanks to the Smart Configurator function, you obtain the required parameter recipe by answering a few simple questions.
Local configuration and operation with only four keys assigned to LEDs that serve as feedback for the pressed key and as guide to specify appropriate steps.
The initial parameters can always be reset, both from the keypad and from the GF_eXpress Software tool.

Diagnostics, Preventive Maintenance, and Energy Monitor

Complete diagnostics for broken or incorrectly connected probe, total or partial load break, out of range variables, and control loop faults.
Thanks to the switching count and to the settable alarm thresholds, you can program preventive maintenance to replace worn actuators.
An internal energy counter with alarm for abnormal variations totalizes energy consumptions and costs for constant control.

Function block applications

32 AND, OR, Timer Function Blocks let you create customizable logic sequences for complete and flexible machine control.
The controller's hardware resources are exploited completely, without any need for external devices such as timers and small PLCs.
There are 8 math Function Blocks to process analog variables and add/subtract/multiply/divide, calculate average, root, logarithms and control functions in cascade, and ratio check.
Options are available with 8 digital inputs/outputs and 8 additional relay outputs to be managed via Function Blocks with state signals via dedicated LEDs on the LCD display.

Tuning

Advanced tuning algorithms ensure stable and accurate control even with critical or very rapid thermal systems, engaging automatically when necessary.

Timer

Three types of timers let you set delay times before activating the control, hold times on the setpoint value, and timed changes of programmed setpoints.

Setpoint Programmer

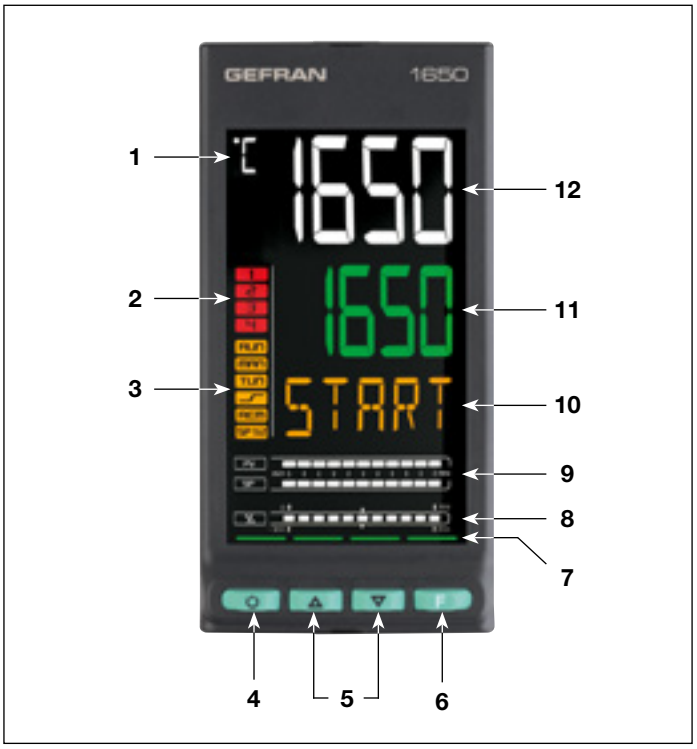
Models with 128 steps (each step consisting of a ramp and a hold), groupable in a maximum of 16 programs, are available for applications with setpoint profiles.
Enable inputs, event outputs, and messages to display can be assigned to each step.
Double Programmer with synchronous and asynchronous base times for activating two setpoint profiles (even separate) assigned to the two loops.
On-board configuration and graphic configuration with GF_eXpress.

Valve Positioner
Models to control motorized valves, with or without feedback.
The position is calculated for floating valves.
For valves with potentiometer via auxiliary input you can control and display the position.

Connectivity
Modbus RTU on RS485 2 wire connection.

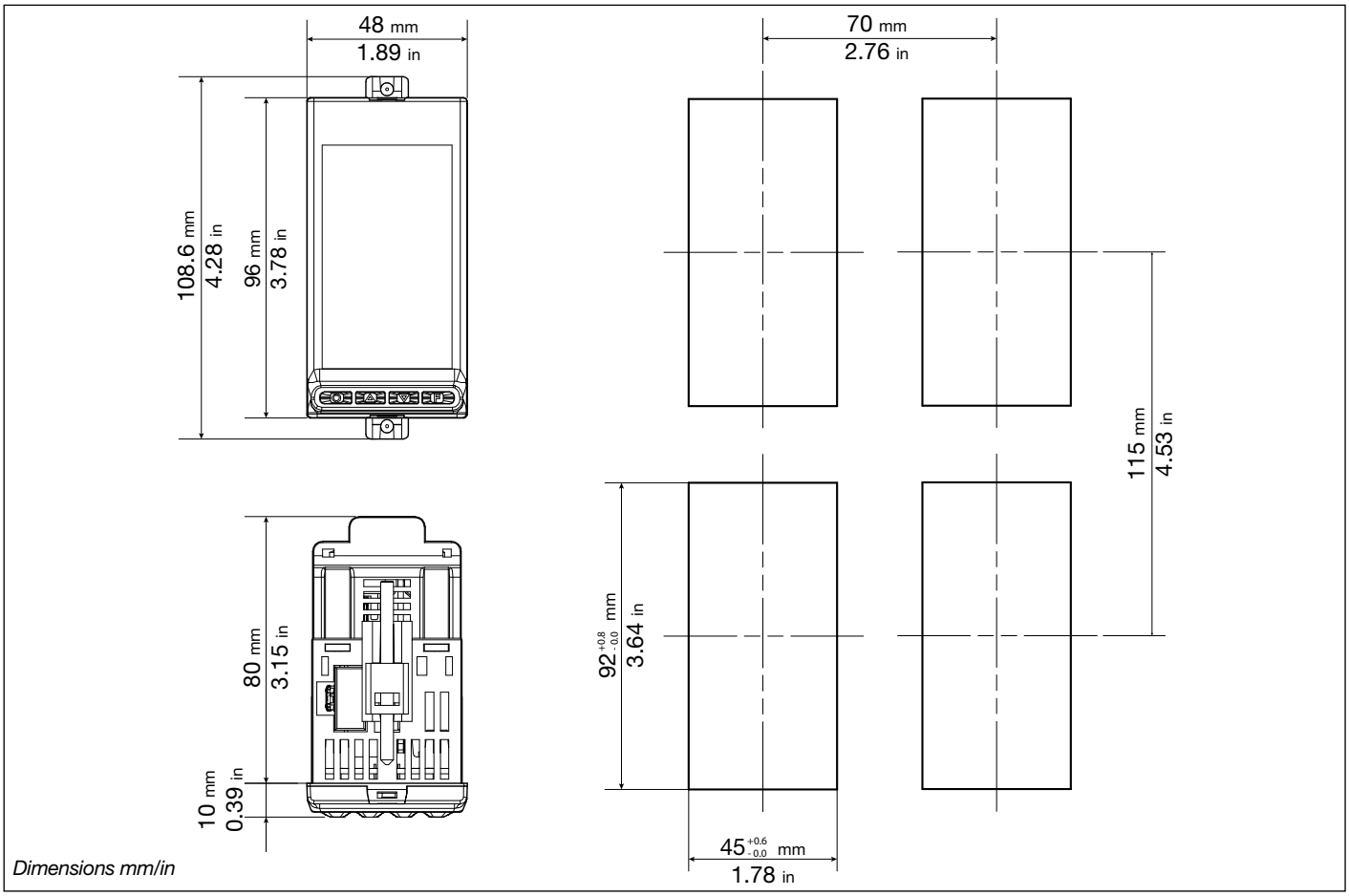
General characteristics
The controller is completely software configurable without accessing the internal electronics.
The universal main input accepts thermocouple sensors, resistance thermometers, and linears.
The controller can be replaced at any time simply by removing the faceplate, without any additional procedures.

DISPLAY AND KEYS



1. Unit of measurement or number of program running or number of loop displayed
2. State of outputs OUT1, OU2, OUT3, OUT4.
3. Controller function states:
   - RUN = functioning (flashing = normal functioning, steady on = program running);
   - _/- = setpoint ramp active;
   - TUN = PID parameters tuning active;
   - MAN = manual/automatic (off = automatic control, on = manual control);
   - REM = remote setpoint enabled;
   - SP1/2 = setpoint active (off = setpoint 1, on = setpoint 2).
4. Work mode key (manual/automatic) in standard mode. A function can be assigned via parameter but1. The key is active only when the display shows the process variable.
5. Up/down keys: raise/lower the value of the parameterdisplayed on the SV or PV display.
6. F key: lets you navigate among controller menus and parameters. Confirms the parameter value and selects the next parameter.
7. Key pressed signals.
8. Displays percentage of power or current, configurable with parameter bArG.
9. Display of percentage of process variable and of setpoint.
10. Display F: parameters, diagnostics and alarm messages. Configurable with parameter dS.F (default = setpoint); default =% control power.
11. DSV display: parameter values. Configurable with paramet dS.SP (default = setpoint).
12. PV display: process variable.

DIMENSIONS AND DRILLING TEMPLATE



Dimensions mm/in

TECHNICAL DATA

OPERATOR INTERFACE		
DISPLAY	Type	LCD black background
	Screen area (L x H)	37 × 68 mm
	Lighting	Backlit with LEDs, life > 40.000 hours @ 25 °C (with brightness level backl = 8)
	PV display	Number of digits: 4 to 7 segments, with decimal point Digit height: 17 mm Color: white
	SV display	Number of digits: 4 to 7 segments, with decimal point Digit height: 14 mm Color: green
	F display	Number of digits: 5 to 14 segments, with decimal point Digit height: 9 mm Color: amber
	Unit of measurement	Selectable, °C, °F or custom [1] Color: same as PV display
	Controller state signals	Number: 6 (RUN, MAN, _/-, REM, SP1/2) Color: amber
	Output state signals	Number: 4 (1, 2, 3, 4) Color: red
	Bargraph indicator, configurable	Type: graphic bargraph,11 segments Power indication: 0 ... 100% o -100 ... 100% Current indication: 0 ... 100% f.s. Valve position indication: 0 ... 100%
	Bargraph indicator	Type: double bar, 11 segments Indication of process variable and setpoint: 0...100% f.s.
KEYPAD		Keys number: 4, silicone (Man/Auto, INC,DEC,F) Type: mechanical
INPUTS		
MAIN INPUT	Sensor type	TC, RTD (PT100, JPT100), IR ES1B, DC linear sensor
	Accuracy	**TC input** Calibration accuracy: < ± (0,25% of reading in °C +0,1°C) Linearization accuracy: 0,1% of reading Cold junction accuracy: < ± 1°C a 25°C ambient temperature Cold junction compensation: > 30:1 rejection to the change of the ambient temperature **RTD input** Calibration accuracy: < ± (0,15% of reading in °C +0,4°C) Temperature drift: < ± (0,005% of reading in °C +0,015°C)/°C from 25°C ambient temperature Linearization accuracy: 0,1% of reading **Linear input**: Calibration accuracy: < 0,1% F.S. Temperature drift: < ± 0,005% F.S. /°C from 25°C ambient temperature
	Sampling time	60 ms / 120 ms, selectable
	Digital filter	0,0...20,0 s
	Temperature unit of measurement	Degrees C / F, selectable from keypad
	Signal interval	Type: linear Scale: -1999...9999, settable decimal point
	TC (thermocouple) input	Thermocouple: J, K, R, S, T, C, D Linearization: ITS90 or custom
	RTD (resistance thermometer) input	Resistance thermometer: PT100, JPT100 Input impedance (Ri): ≥ 30 kΩ Linearization: DIN 43760 or custom Max. line resistance: 20 Ω
	DC linear input	0...60 mV input impedance (Ri): > 70 kΩ 0...1 V input impedance (Ri): > 15 kΩ 0...5 V / 0...10 V input impedance (Ri): > 30 kΩ 0/4...20 mA input impedance (Ri): 50 Ω Linearization: linear or custom

AUXILIARY INPUT	Sensor type	TC, RTD (PT100, JPT100), IR ES1B, DC linear sensor
	Accuracy	**<u>TC input</u>** Calibration accuracy: < ± (0,25% of reading in °C +0,1°C) Linearization accuracy: 0,1% of reading Cold junction accuracy: < ± 1°C a 25°C ambient temperature Cold junction compensation: > 30:1 rejection to the change of the ambient temperature **<u>RTD input</u>** Calibration accuracy: < ± (0,15% of reading in °C +0,4°C) Temperature drift: < ± (0,005% of reading in °C +0,015°C)/°C from 25°C ambient temperature Linearization accuracy: 0,1% of reading **<u>Linear input</u>**: Calibration accuracy: < 0,1% F.S. Temperature drift: < ± 0,005% F.S. /°C from 25°C ambient temperature
	Sampling time	60 ms / 120 ms, selectable
	Digital filter	0,0...20,0 s
	Temperature unit of measurement	Gradi C / F, selectable from keypad
	Signal interval	Type: linear Scale: -1999...9999, settable decimal point
	TC (thermocouple) input	Thermocouple: J, K, R, S, T, C, D Linearization: ITS90 o custom
	RTD (resistance thermometer) input	Resistance thermometer: PT100, JPT100 Input impedance (Ri): ≥ 10 MΩ Linearization: DIN 43760 or custom Max. line resistance:: 20 Ω
	DC linear input	0...60 mV input impedance (Ri): > 10 MΩ 0...1 V input impedance (Ri): > 300 kΩ 0...5 V / 0...10 V input impedance (Ri): > 300 kΩ 0/4...20 mA input impedance (Ri): 50 Ω Linearization: linear or custom
	Isolation	Functional isolation 250 V
CT (ammeter) input	Type	Isolated via external transformer
		Number: 2 max Max. capacity: x / 50 mA AC Line frequency: 50/60 Hz Input impedance (Ri): 10 Ω
	Accuracy	±2% f.s. ±1 digit @25 °C
DIGITAL INPUTS	Number	5 max
	Type	Voltage-free contact, or NPN 24 V - 4,5 mA, o PNP 12/24 V - max 3,6 mA *For detail see electrical connections*
	Isolation	250 V

OUTPUTS		
	Relay (R)	Number: 4 max Type of relay contact: NO Max. current: 5A (2A at ambient temperature up to 45°C for certification UL), 250VAC / 30VDC, cosφ = 1 Minimum load: 5 V, 10 mA Life cycle: > 100.000 operations Double isolation
	Logic (D)	Number: 2 max Type: for solid-state relays Voltage: 24 V ±10% (min 10 V @20 mA) Isolated from main input
	Isolated logic (M)	Number: 2 max Type: MOS optoisolated for PLC inputs and AC/DC load Voltage: 30 V AC/DC max Current: 100 mA max Resistance ON: 0,8 Ω max Isolation: 1500 V
	Triac (long life relè) (T)	Number: 1 max Load: resistive Voltage: 75...240 VAC Current max: 1 A Isolation 3 kV snubber circuit integrated zero crossing switching
	Continuous (C)	Number: 1 max Current: 4...20mA R_{out} < 500 Ω Resolution: 12 bit Isolated from main input
	Analog retransmission (A1) (A2)	Number: 2 max 0...10 V, max 20 mA, R_{out}: > 500 Ω 0...20 mA, 4...20 mA, R_{out}: < 500 Ω Resolution: 12 bit Isolated from main input
ALARMS	Number of alarm functions	4 max, assignable to an output
	Possible configurations	Maximum, minimum, symmetric, absolute/relative, exclusion at firing, memory, reset from keypad and/or contact, LBA, HB, HBB Hold Back Band if enabled with Programmer function, alarm after power variation at full power
POWER SUPPLY	For sensor VT, VT2	Voltage: 24 VDC ±10% Current max: 30 mA VT option of Out3
	For potentiometer VP	Voltage: 1 VDC ±1% Current max: 30 mA
CONTROL FUNCTIONS		
CONTROL	Type	Single loop, double loop
	Control	PID, ON/OFF, single action heat or cool, double action heat/cool
	Control output	Continuous or ON/OFF Cycle time: constant or optimized (BF)
	Control output for motorized valves	OPEN/CLOSE for floating motorized valve or with feedback with position control by potentiometer on Relay, Solid-state, Triac outputs.
SETPOINT PROGRAMMER (Double programmer if double loop)	Number of programs	Max 16 (if double loop 8 + 8) Start / Stop / Reset / Skip via digital inputs and/or outputs from logic operations Output state: Run /Hold / Ready / End
	Number of steps	Max 128, each with own setpoint, ramp time and hold time Times settable in HH:MM or MM:SS Max 4 consents, configurable for ramp and for hold Max 4 events, configurable in ramp and in hold
MULTIPLE SETPOINTS	Number of setpoints	Max 4, selectable from digital input Each setpoint change is subject to set ramp, different for up and down ramp
LOGIC OPERATIONS [1]	Digital function blocks	Max 32, with 4 input variables per block. The result can act on the state of the controller, of the programmer on alarms and outputs. Each function contains a block type AND, OR with TIMER

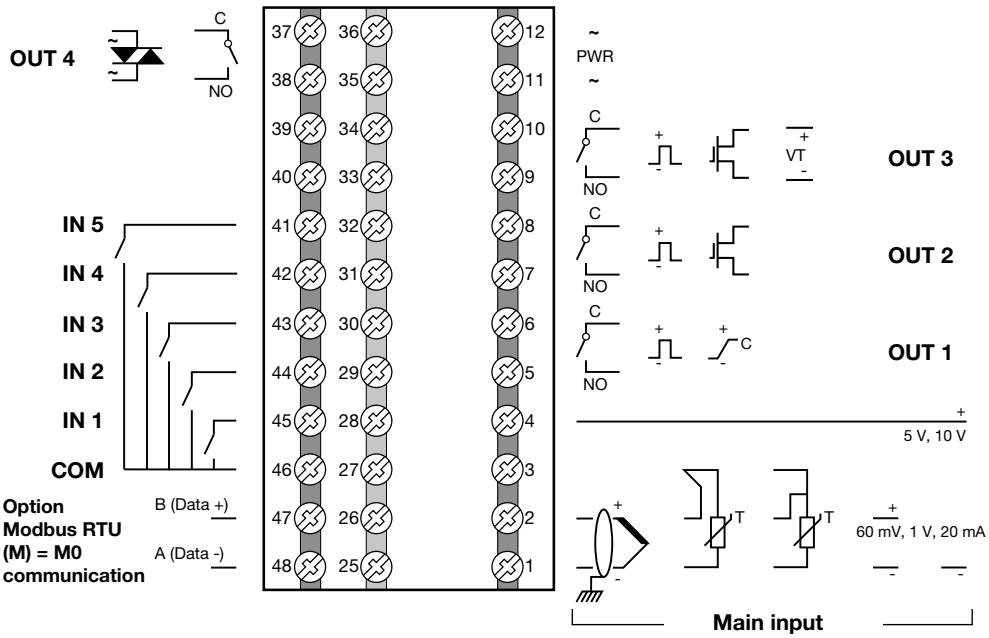
OPERATIONS MATHEMATICAL [1]	Analog function blocks	Max 8, with 2 input variables per block, with operators such as + , - , × , : , average, square root, ... The result may act on analog variables in input to PID loops (controlled variable, setpoint) or analog outputs .
TIMER FUNCTION	Modes	START / STOP (2 timer if double loop) STABILIZATION (timer is on when PV enters a band set around setpoint; at end of count you can activate an output, shut down SW or change SP1/SP2) FIRING (timed activation of control after power on)
ENERGY COUNTER		Calculation done on nominal line voltage and nominal load power or on rms current measured on load via CT
DIAGNOSTIC		Short circuit or open circuit (LBA alarm) Interrupted or partially interrupted load (HB alarm) Short circuit of control output (SSR alarm)
RETENTIVE MEMORY	Type	FRAM
	Max. number of writes	Number max: > 10^{10} cycles Retention: > 10 anni
GENERAL DATA		
POWER SUPPLY	Operating voltage	100...240 VAC/VDC ±10%, 50/60 Hz (20...27 VAC/VDC +-10%, 50/60 Hz)
	Power dissipation	10 W max
	Protections	Overvoltage 300 V / 35 V
	Connection	Screw terminals and crimp connector, max. wire section 1 mm^2
CONNECTIONS	Serial configuration port	Connector: microUSB
	RS485 (option)	Baudrate: 1200, 2400, 4800, 9600, 19.200, 38.400, 57.600, 115.200 bit/s Protocol: Modbus RTU Insulation compared to main entrance Screw terminals and crimp connector, max. wire section 2.5mm^2
	Inputs and outputs	Screw terminals and crimp connector, max. wire section 2.5mm^2
AMBIENT CONDITIONS	Use	Indoor
	Altitude	2000 m max
	Operating temperature	-10 ... +55 °C (as per IEC 68-2-14)
	Storage temperature	-20 ... +70 °C (as per IEC 68-2-14)
	Relative humidity	20...85% RH non-condensing (as per IEC 68-2-3)
PROTECTION LEVEL		IP 65 on front panel (as per IEC 68-2-3)
ASSEMBLY	Positioning	On panel, removable faceplate
	Installation regulations	Installation category: II Pollution degree: 2 Isolation: double
DIMENSIONS		48 X 96 mm (1/8 DIN) Depth: 80 mm
WEIGHT		0,24 kg
CE STANDARDS	EMC (electromagnetic compatibility)	Conforms to Directive 2014/30/EU norme EN 61326-1 Emissions in industrial environment classe A
	LVD safety	Conforms to Directive 2014/35/EU norme EN 61010-1

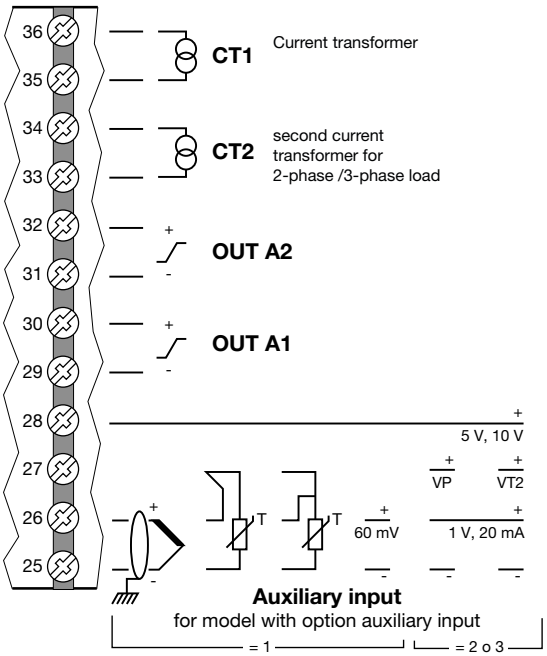
1) Programming is done with the GF_eXpress configuration program.

ACCESSORIES

Code	Description
F060800	Cable for programming with PC, USB-TTL 3 V with USB – microUSB connectors, length 1.8 m
F043958	“GF_eXpress” software CD
F060909	Configuration kit for new instruments
51969	Rubber gasket 48×96 front box
51068	Rubber gasket 48×96 box-panel
49030	Fastening box to panel
51328	Protection of contacts at box bottom
51738	36 contacts at box bottom
330200	Current transformer (CT) 50/0.05 A
330201	Current transformer (CT) 25/0.05 A

CONNECTION DIAGRAM





LEGEND

~ PWR ~ *Power supply*

\+ − *Linear input in voltage / current*

Input for current transformer

\+ AUX − *Auxiliary input*

Isolated digital inputs

Thermocouple input

Input PT100 JPT100 2 / 3wires

NO C *Relay output*

Long-life solid state relay output

Logic output

Isolated logic output

Isolated analog output

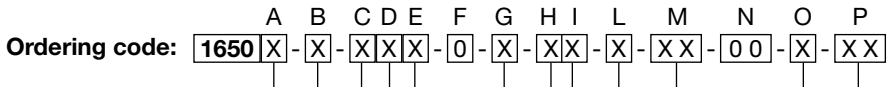
B (Data +) A (Data -) *RS485 serial line*

VT *Supply transmitter*

VP *Supply potentiometer*

ATTENTION: For correct installation, read the warnings in the instruction manual.

ORDER METHODS



Model (A)	
Controller	
Programmer	P
Valve [4]	V
Programmer+valve [4]	PV

Output 1 (B)	
Relay	R
Logic	D
Analog	C

Output 2 (C) Output 3 (D)	
Relay - Relay	R R
Logic - Logic	D D
Isolated logic - Isolated logic	M M
Relay - VT 24 V	R V
Logic - VT 24 V	D V
Isolated logic - VT 24 V	M V

Output 4 (E)	
Absent	0
Relay	R
Long Life relay	T

Retransmission (G)	
Absent	0
Analogue A1	1
Analogue A1 + A2	2

Fonction (P)	
00	Absent
FB	Logical + mathematical operations

Supply (O)	
0	20...27 VAC / VDC
1	100...240 VAC / VDC

Communication (M)	
00	Absent
M0	RS485 Modbus RTU

Digital inputs (L)	
0	Absent [3]
5	5 DI

Auxiliary input (I)	
0	Absent
1	Input Aux [2]
2	Input Aux + VP 1 V [1]
3	Input Aux + VT2 24 V [1]

CT Input (H)	
0	Absent
2	CT1 + CT2

Note

1) Auxiliary input type 1 V / 5 V / 10 V / 20 mA
2) Auxiliary input type TC / RTD / 60 mV
3) Only with option H-I = 0
4) V and PV models required (CD) =RR

Check before each request a list of codes available on the following pages

Power supply 100...240 VAC/VDC

Code F	Model	Valves	Programmer	Inputs					Outputs								Communica-tions			Mathematical + logic functions		Total Number of Outputs
				Digital	CT	AUX (TC/RTD/60mV)	AUX (1V/5V/10V/20mA) +VP	AUX (1V/5V/10V/20mA) +VT	Relay	Triac	Logic SSR	solated logic		Analog I	Analog V/I	Sensor supply	RS485 modbus RTU					
F064820	1650-D-RVR-0-0-00-5-00-00-1-00			5					2		1					•						3 outputs
F064823	1650-R-RVR-0-0-00-5-00-00-1-00			5					3							•						
F064824	1650-R-RR0-0-0-02-5-00-00-1-00			5			•		3													
F067102	1650-R-DDR-0-0-01-5-00-00-1-FB			5		•			2		2									•		4 outputs
F067103	1650-R-DDR-0-0-03-5-00-00-1-FB			5				•	2		2									•		
F067104	1650-R-DDR-0-0-01-5-M0-00-1-FB			5		•			2		2						•			•		
F067105	1650-R-DDR-0-0-03-5-M0-00-1-FB			5				•	2		2						•			•		
F067108	1650-R-RR0-0-1-01-5-M0-00-1-00			5		•			3						1		•					
F064832	1650-R-RR0-0-1-03-5-M0-00-1-00			5				•	3						1		•					
F064851	1650V-D-RRR-0-0-02-5-M0-00-1-00	•		5			•		3		1						•					
F067109	1650P-D-RRR-0-0-01-5-00-00-1-00		•	5		•			3		1											
F064840	1650P-D-RRR-0-0-03-5-00-00-1-00		•	5				•	3		1											
F067110	1650P-R-RR0-0-1-01-5-M0-00-1-00		•	5		•			3						1		•					
F064842	1650P-R-RR0-0-1-03-5-M0-00-1-00		•	5				•	3						1		•					
F067111	1650P-D-RRR-0-0-01-5-00-00-1-FB		•	5		•			3		1									•		
F064868	1650P-D-RRR-0-0-03-5-00-00-1-FB		•	5				•	3		1									•		
F064873	1650PV-D-RRR-0-0-02-5-00-00-1-FB	•	•	5			•		3		1									•		
F067116	1650-C-RRR-0-0-01-5-00-00-1-FB			5		•			3					1						•		
F067117	1650-C-RRR-0-0-03-5-00-00-1-FB			5				•	3					1						•		
F064849	1650V-R-RRR-0-0-02-5-00-00-1-00	•		5			•		4													
F067118	1650V-R-RRR-0-0-01-5-00-00-1-00	•		5		•			4													
F064850	1650V-R-RRR-0-0-03-5-00-00-1-00	•		5				•	4													

Note: Please, contact GEFRAN sales people for the codes availability.

Power supply 100...240 VAC/VDC

Code F	Model	Valves	Programmer	Inputs					Outputs								Communica-tions			Mathematical + logic functions		Total Number of Outputs
				Digital	CT	AUX (TC/RTD/60mV)	AUX (1V/5V/10V/20mA) +VP	AUX (1V/5V/10V/20mA) +VT	Relay	Triac	Logic SSR	solated logic		Analog I	Analog V/I	Sensor supply	RS485 modbus RTU					
F064833	1650-D-RR0-0-2-02-5-00-00-1-00			5			•		2		1				2							5 outputs
F067119	1650-D-RVR-0-2-01-5-00-00-1-00			5		•			2		1				2	•						
F064822	1650-D-RVR-0-2-03-5-00-00-1-00			5				•	2		1				2	•						
F064845	1650P-D-RR0-0-2-20-5-M0-00-1-00		•	5	2				2		1				2		•					
F067121	1650-R-RR0-0-2-01-5-M0-00-1-00			5		•			3						2		•					
F064834	1650-R-RR0-0-2-03-5-M0-00-1-00			5				•	3						2		•					
F067122	1650-R-RVR-0-2-01-5-M0-00-1-00			5		•			3						2	•	•					
F064987	1650-R-RVR-0-2-03-5-M0-00-1-00			5				•	3						2	•	•					
F064855	1650V-R-RR0-0-2-00-0-00-00-1-00	•							3						2							
F064854	1650V-D-RRR-0-1-02-5-00-00-1-00	•		5			•		3		1				1							
F064853	1650V-D-RRR-0-1-02-5-M0-00-1-00	•		5			•		3		1				1		•					
F067123	1650V-D-RRR-0-1-01-5-M0-00-1-00	•		5		•			3		1				1		•					
F064852	1650V-D-RRR-0-1-03-5-M0-00-1-00	•		5				•	3		1				1		•					
F064843	1650P-D-RRR-0-1-02-5-M0-00-1-00		•	5			•		3		1				1		•					
F067124	1650-R-RRR-0-1-01-5-00-00-1-00			5		•			4						1							
F064835	1650-R-RRR-0-1-03-5-00-00-1-00			5				•	4						1							
F067127	1650-R-DDR-0-2-01-5-00-00-1-FB			5		•			2		2				2					•		6 outputs
F067128	1650-R-DDR-0-2-03-5-00-00-1-FB			5				•	2		2				2					•		
F067129	1650-R-DDR-0-2-01-5-M0-00-1-FB			5		•			2		2				2		•			•		
F067130	1650-R-DDR-0-2-03-5-M0-00-1-FB			5				•	2		2				2		•			•		
F067131	1650-R-RRR-0-2-01-5-00-00-1-00			5		•			4						2							
F064836	1650-R-RRR-0-2-03-5-00-00-1-00			5				•	4						2							
F067132	1650P-R-RRR-0-2-01-5-M0-00-1-00		•	5		•			4						2		•					
F064846	1650P-R-RRR-0-2-03-5-M0-00-1-00		•	5				•	4						2		•					

Power supply 20...27 VAC/VDC

Code F	Model	Valves	Programmer	Inputs					Outputs								Communica-tions			Mathematical + logic functions		Total Number of Outputs
				Digital	CT	AUX (TC/RTD/60mV)	AUX (1V/5V/10V/20mA) +VP	AUX (1V/5V/10V/20mA) +VT	Relay	Triac	Logic SSR	solated logic		Analog I	Analog V/I	Sensor supply	RS485 modbus RTU					
F064876	1650-D-RVR-0-0-00-5-00-00-0-00			5					2		1					•						3 outputs
F064879	1650-R-RVR-0-0-00-5-00-00-0-00			5					3							•						
F064880	1650-R-RR0-0-0-02-5-00-00-0-00			5			•		3													
F067133	1650-R-DDR-0-0-01-5-00-00-0-FB			5		•			2		2									•		4 outputs
F067134	1650-R-DDR-0-0-03-5-00-00-0-FB			5				•	2		2									•		
F067135	1650-R-DDR-0-0-01-5-M0-00-0-FB			5		•			2		2						•			•		
F067136	1650-R-DDR-0-0-03-5-M0-00-0-FB			5				•	2		2						•			•		
F067139	1650-R-RR0-0-1-01-5-M0-00-0-00			5		•			3						1		•					
F064888	1650-R-RR0-0-1-03-5-M0-00-0-00			5				•	3						1		•					
F064907	1650V-D-RRR-0-0-02-5-M0-00-0-00	•		5			•		3		1						•					
F067140	1650P-D-RRR-0-0-01-5-00-00-0-00		•	5		•			3		1											
F064896	1650P-D-RRR-0-0-03-5-00-00-0-00		•	5				•	3		1											
F067141	1650P-R-RR0-0-1-01-5-M0-00-0-00		•	5		•			3						1		•					
F064898	1650P-R-RR0-0-1-03-5-M0-00-0-00		•	5				•	3						1		•					
F067142	1650P-D-RRR-0-0-01-5-00-00-0-FB		•	5		•			3		1									•		
F064924	1650P-D-RRR-0-0-03-5-00-00-0-FB		•	5				•	3		1									•		
F064929	1650PV-D-RRR-0-0-02-5-00-00-0-FB	•	•	5			•		3		1									•		
F067147	1650-C-RRR-0-0-01-5-00-00-0-FB			5		•			3					1						•		
F067148	1650-C-RRR-0-0-03-5-00-00-0-FB			5				•	3					1						•		
F064905	1650V-R-RRR-0-0-02-5-00-00-0-00	•		5			•		4													
F067149	1650V-R-RRR-0-0-01-5-00-00-0-00	•		5		•			4													
F064906	1650V-R-RRR-0-0-03-5-00-00-0-00	•		5				•	4													

Note: Please, contact GEFRAN sales people for the codes availability.

Power supply 20...27 VAC/VDC

Code F	Model	Valves	Programmer	Inputs					Outputs								Communica-tions			Mathematical + logic functions		Total Number of Outputs
				Digital	CT	AUX (TC/RTD/60mV)	AUX (1V/5V/10V/20mA) +VP	AUX (1V/5V/10V/20mA) +VT	Relay	Triac	Logic SSR	solated logic		Analog I	Analog V/I	Sensor supply	RS485 modbus RTU					
F064889	1650-D-RR0-0-2-02-5-00-00-0-00			5			•		2		1				2							5 outputs
F067150	1650-D-RVR-0-2-01-5-00-00-0-00			5		•			2		1				2	•						
F064878	1650-D-RVR-0-2-03-5-00-00-0-00			5				•	2		1				2	•						
F064901	1650P-D-RR0-0-2-20-5-M0-00-0-00		•	5	2				2		1				2		•					
F067152	1650-R-RR0-0-2-01-5-M0-00-0-00			5		•			3						2		•					
F064890	1650-R-RR0-0-2-03-5-M0-00-0-00			5				•	3						2		•					
F067153	1650-R-RVR-0-2-01-5-M0-00-0-00			5		•			3						2	•	•					
F064988	1650-R-RVR-0-2-03-5-M0-00-0-00			5				•	3						2	•	•					
F064911	1650V-R-RR0-0-2-00-0-00-00-0-00	•							3						2							
F064910	1650V-D-RRR-0-1-02-5-00-00-0-00	•		5			•		3		1				1							
F064909	1650V-D-RRR-0-1-02-5-M0-00-0-00	•		5			•		3		1				1		•					
F067154	1650V-D-RRR-0-1-01-5-M0-00-0-00	•		5		•			3		1				1		•					
F064908	1650V-D-RRR-0-1-03-5-M0-00-0-00	•		5				•	3		1				1		•					
F064899	1650P-D-RRR-0-1-02-5-M0-00-0-00		•	5			•		3		1				1		•					
F067155	1650-R-RRR-0-1-01-5-00-00-0-00			5		•			4						1							
F064891	1650-R-RRR-0-1-03-5-00-00-0-00			5				•	4						1							
F067158	1650-R-DDR-0-2-01-5-00-00-0-FB			5		•			2		2				2					•		6 outputs
F067159	1650-R-DDR-0-2-03-5-00-00-0-FB			5				•	2		2				2					•		
F067160	1650-R-DDR-0-2-01-5-M0-00-0-FB			5		•			2		2				2		•			•		
F067161	1650-R-DDR-0-2-03-5-M0-00-0-FB			5				•	2		2				2		•			•		
F067162	1650-R-RRR-0-2-01-5-00-00-0-00			5		•			4						2							
F064892	1650-R-RRR-0-2-03-5-00-00-0-00			5				•	4						2							
F067163	1650P-R-RRR-0-2-01-5-M0-00-0-00		•	5		•			4						2		•					
F064902	1650P-R-RRR-0-2-03-5-M0-00-0-00		•	5				•	4						2		•					

UL	Conformity C/UL/US File no. E216851
CE	EMC: Compliance with Directive 2014/30 / EU, with reference to EN 61326-1 emission in industrial environment class A Security LVD: Compliance with Directive 2014/35 / EU, with reference to EN 61010-1

GEFRAN

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