

# Process controller Setpoint programmer 1/16 DIN - 48 x 48 mm gamma**due**<sup>®</sup> series M5 line

### Advanced features, customizable and process adaptable

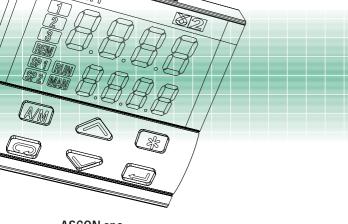
High speed data aquisition and signal management. Efficent information transfer to the supervisor. Ability to adapt itself to changing process conditions. The most sophisticated 48 x 48 of the gammadue<sup>®</sup> series is user-friendly due

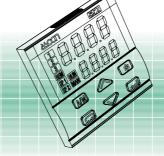
to easy and customizable procedures. The outputs (analogue, time

proportioning or valve control) are freely addressable to the different functions like control, alarm or retransmission. The programmable Setpoint and the memory chip help the M5 line achieve mini process controller status.









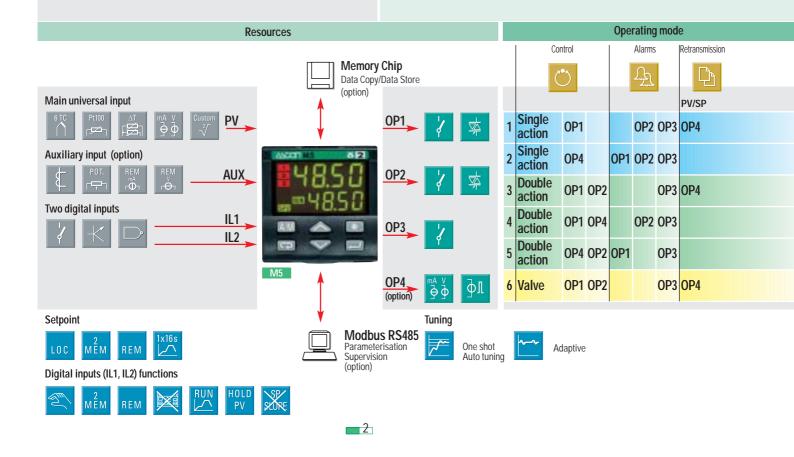


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# gammadue<sup>®</sup> the right solution to your needs



Your needs	Our solutions
High speed data acquisition and signal management	Sampling time: 100ms measure update time: 50 ms
Use of different actuators	Analogue output, heat/cool (linear, water, oil), valve control output with potentiometer position feedback
Process with time variable characteristic	Initial and automatic calculation of the right control parameters
Alarm signalling and diagnostic	4 alarms addressable to one or more outputs, latching/blocking, absolute or deviation thresholds, loop break alarm, heater break alarm by current transformer input
Interfacing with other devices	Serial communications at 19200 baud Modbus/Jbus protocol, analogue retransmission output and Remote Setpoints
Temperature profile	1 program with 16 segments, 2 stored Setpoints
Safe and reproducible configuration and parameter settings	Memory chip for data transfer and storing, configuration and parameterisation software
Quick learning	Every model has the same operating method
Ergonomic compatibility with other devices	Two colours: beige or darkgrey front panels
Environmental protection	IP65 front panel protection (indoor, dust and water protection)
Easy to use	Ergonomic keypad, clear and comprehensive display
Noise immunity	Electromagnetic compatibility
Universal input signals, linear as well as non-linear	Configurable input (TC, RTD, mA, Volt and $\Delta$ T, infrared sensor, "custom" linearisation)
Reliability and safety	CE compatibility, ASCON is ISO 9001 certified, 3 years warranty
Technical support	Technical application assistance from ASCON sales and after sales service



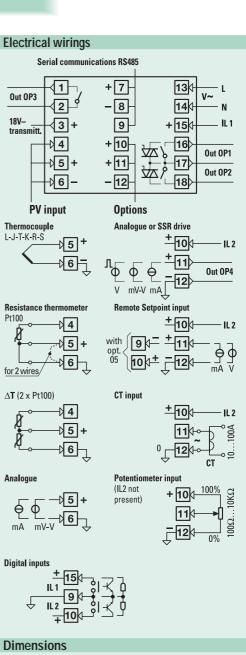
## Technical data

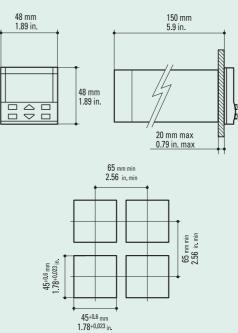
Total configuration modes         The choices are: input type, operating mode, type of control, safety strategies, alarm strategies           Operating modes         10op with single/double output         Itop with single/double output           Name         Algorithm         PID with valve algorithm, for controlling modersed valves           Proport. band (P)         01999.9         Itop with single/double output         PID with valve algorithm, for controlling modersed valves           Control mode         Integral time (D)         01999.9         User         PID control           Control mode         Cold Integral time         1999.9         User         ON-OFF control           Operating         015.0%         ON-OFF control         ON-OFF control         ON-OFF control           Dead band         01999.9         User         Motor minim step         Ito5.0%         Motorised valves           Feedback potert         1002010K2         Motor minim step         015.0%         Motorised valves           Feedback potert         100201K2         Motor minim step         015.0%         Motorised valves           Feedback potert         100201K2         Motor minim step         015.0%         Motorised valves           Feedback potert         100201K2         Or sorting valves valves         Sampling tine (max.up	Features at env. 25°C	Description				
configurability operating         alam strategies         control work           Operating         1 loop with single/double output         Thom with single/double output           modes         1 loop as the latter with the addition of the Setpoint programmer           PD with voreshoot control of ON-OFF         PD with voreshoot control of ON-OFF           Proport. band (P)         0.1999 %         User         PD control           Derivative time (D)         0.1999 %         User         PD control           Derivative time (D)         0.1999 %         User         PD control           Derivative time (D)         0.1999 %         User         PD control           Dead band         0.05.0%         ON-OFF control           Dead band         0.05.0%         ON-OFF control           Cool Integral time (T)         .999 %         User         Heat-Cool control           Cool Cycle time         0.200.s         Motorised valves           Feedback potent         000210kQ         Motorised valves           Common characteristics         Common (characteristics         2.0 s with single/double with esolution of 160.000 points           Update measurement time: 50 ms sampling time (max.update time of the output adjustable): 0.100.s configurable- input shift : 60+ 60 digit input fitter votith esolution to 0		The choices are: input type, operating mode, type of control, safety strategies,				
modes         Tioop as the latter with the addition of the Selpoint programmer           Algorithm         PiD with overshoot control or ON-OFF           Proport. band (P)         01999.9%           Integral time (i)         1999.9%           Disitivativativativativativativativativativ	configurability	alarm strategies			, ,	
Algorithm         PID with overshoot control or ON-OFF           Proport. band (P)         0.1999 %         Proport. band (P)           Derivative time (D)         0.1999 %         PID control           Dead band         0.150%         ON-OFF control           Dead band         0.1999 %         PID control           Cool Proport. band (D)         0.999 %         PID control           Cool Proport. band (D)         0.999 %         PID control           Cool Cocycle time         0.230.0 s         Motor rised waves           Motor travel time         10.000 sonts         Update measurement time: 50 ms           Motor minim: step         0.150%         Motorised vaves           Common         Characteristics         Sampling time (max.update time of the output adjustable): 0.1100 sconfigurable : nums the resor is minimized vaves           Resistance         PIDO con Cor Cor Pid (C 75%)         2 PI100 for AT         Q1 *C/DQ Wire res.           free weanasurement         Cor Pid (C 75%)         2 PI1	Operating					
Algorithm         PID with value algorithm, for controlling motorised values           Proport, band (P)         0.1999.9%         User         PID control           Integral line (I)         0.1.999.9%         User         PID control           Oprivative time (ID)         0.1999.9%         User         PID control           Control mode         Oprivative time (ID)         0.1999.9%         User         PID control           Control mode         Oprivative time (ID)         0.1999.9%         User         Ime prop. control           Cool Dergort band         0.1999.9%         User         Heat-Cool control         ON-OFF control           Cool Proport band         0.1999.9%         User         enable/disabled         Cool control         On-So/%           Cool Dergort band         0.1999.9%         User         enable/disabled         Cool control         Addition           Cool Dergort band         0.1999.9%         User         enable/disabled         Cool control         Addition           Cool Optic Der time         0.15.0%         Motorised values         Motorised values         Motorised values           Common         Characteristics         Addition         Addition         Motorised values         Sampling time (max, update time of the output adjustable):	modes					
PV input Integral time (I)         1999.9%         User         PID control           Control mode         Derivative time (ID)         1999.9         User         PID control           Manual reset         010% output         User enabl/disabled         Pad PD control           Control mode         Dead baad         050%         ON-OFF control           Dead baad         050%         ON-OFF control           Dead baad         050%         ON-OFF control           Cool Integral time         0999.9%         User           Cool Oper time         0999.9%         User           Cool Integral time         1999.9%         User           Cool Oper time         0999.9%         Motor set valves           Motor minms tep         050%         Motorised valves           Feedback potent         100210k2         Motorsid valves           Accuracy         AD converter with resolution of 160.00 points         Update measurement time: 50 ms           Sampling time (max. update time of the output adjustable): 0400 digit         Input filter with enable/disable: 0400 with eres: 100400 digit           Instracteristics         Sampling time (max. update time of the output adjustable): 0400 with eres: 100400 with adv.wire res: 1502 Senstitivity: 2pV/*C Env.t.           Cormon		PID with oversheet central or ON OEE				
PV input (principal see table 1)         Integral time (I) Derivative time (ID) Derivative time (ID) Derivative time (ID) Coll integral time (ID) Coll integral time (ID) Cool Perport. band (ID) Cool Cycle time (ID) Cool Cycle time (ID) Cool Perport. band (ID) Cool Cycle time (ID) Cool Cycle time (ID) Cool Cycle time (ID) Cool Cycle time (ID) Cool Cycle time (ID) Motor ravel time (ID) Cool Cycle time (ID) Motor ravel time (ID) Cool Cycle time (ID) Motor ravel time (ID) Cool Cycle time (ID) Motor ravel time (ID) Common characteristics Sampling time (max. update time of the output adjustable): (ID) Common characteristics Sampling tim Cori		Algorithin	PID with valve algorithm, for controlling motorised valves			
Derivative time (D)         D.1999.9 s         enabled/disabled           Manual reset         0100% output         User enabl/disabled         P and PD control           Control mode         Dead band         0.050%         ON-OFF control           Cool Integral time         1999.9%         User         Heat-Cool control           Cool Poet time         0.1999.9%         User         Heat-Cool control           Cool Cool Forcer time         0.1999.9%         User         Heat-Cool control           Motor ravel time         0.3.00.5         Motorised valves         Motorised valves           Motor ravel time         15600 s         Motorised valves         Motorised valves           Feedback potent         100210K2         Motorised valves         Motorised valves           Accuracy         0.25% ± 1 digits for temperature sensors         Between 100200/ac         Max.wire res: 202           Accuracy         0.25% ± 1 digits for temperature sensors         Between 100200/ac         Max.wire res: 202           Thermocouple         "C/F         2 or 3 wires or 2 01% cr 1401/miteres.         Max.wire res: 202           Designal ranges         Comput (current)         0.420mA         Engineering units and ± range           Di cinput (current)         0.420mA         Engine		Proport. band (P)	0.1999.9%			
Manual reset         0100% output         User enabl/disabled         P and PD control           Control mode         Cycle time         0230 s         Time prop. control           Hysteresis         050%         ON-OFF control           Cool Inegral time         0999.9%         User           Cool Ocycle time         0230 s         Heat-Cool control           Motor minim.step         0150%         Motorised valves           Feedback potent.         1000210KQ         Motorised valves           Feedback potent.         100210KQ         Motorised valves           Common characteristics         Or so configurable - Input shift :60+60 digit Input filter with enable/disable: 0999.9 s         Motorised valves           Accuracy         0.25% ± 1 digits for temperature sensors (for AT: R1+R2 must be <320Q)		Integral time (I)	19999 s	User	PID control	
Control mode         Cycle time         0.230.5         Time prop. control           Control mode         Hysteresis         0.15.0%         ON-OFF control           Cool Integral time         1999.9%         User         Heat-Cool control           Cool Integral time         0.1999.9%         Integral time         Heat-Cool control           Cool cycle time         0.230.0 s         Motor travel time         Motor travel time           The prop. control         0.05.0%         Motor travel time         Motor travel time           Feedback potent         100010K2         Motor travel time         Motor travel time           Common         characteristics         Common         Sampling time (max.update time of the output adjustable):           0.110.0 s configurable - Input shift : 60+ 60 digit         Input filter with enable/disable : 0.1999.9 s         Sampling time (max.update time of the output adjustable):           0.110.0 s configurable - Input shift : 60+ 60 digit         Input digits (for mA and m/)         Max.wire res: 100		Derivative time (D)	0.1999.9 s	enabled/disabled		
Control model Dead band         Hysteresis Local Proport. band         0.150%         ON-OFF control           Cool Dreport. band         0.1999.9%         User         Heat-Cool control           Cool Der. time         0.1999.9%         enabled/disabled         Motor travel time           Motor travel time         0.1999.9%         enabled/disabled         Motorset values           Motor travel time         0.150%         Motorset values         Motorset values           Motor travel time         0.150%         Motorset values         Motorset values           Feedback potent.         100210K2         Motorset values         Motorset values           Common characteristics         Common characteristics         Common characteristics         Motorset values         Motorset values           Accuracy         0.25% ± 1 digits for temperature sensors seetable 1)         Between 100240Vac (0.1% cr3)         Max.wire res: 200 (3 wires)         Max.wire res: 200 (3 wires)         Max.wire res: 200 (3 wires)           Thermocouple         U.J. T.K.R.S (UC 7F         2 or 3 wires or 2 Ptito for $\Delta T$ Max.wire res: 100 (3 wires)         Max.wire res: 100 (3 wires)           DC input (current)         0.15010W (R = 0.002)         Internal codi junction (7 C/F         2 or 3 wires or 2 Ptito for $\Delta T$ O1*C/02 Wire res.           Max.wi		Manual reset	0100% output	User enabl./disabled	P and PD control	
Control mode         Dead band         0.05.0%           Cool Proport. band         0.1999.9%         User           Cool Der time         0.1999.9%         Heat-Cool control           Cool Der time         0.230.8         Motor mismis           Motor mismis Eq         0.150%         Motorised valves           Feedback potent.         100210kΩ         Motorised valves           Accuracy         0.0% + 1 digits (or measurement time: 50 ms         Sampling time (max. update time of the output adjustable):           0.16.0%         0.16.0 %         Motor isminiantal           PV input         Resistance         P100Q.a 0°C         Between 100240Vac           Resistance         P100Q.a 0°C         2 or 3 wires or 2 P100 for ΔT         0.1*C/0°C Env. t.           Max.wire ress.         0.1% ± 1 digits (or mA and mV)         Max.wire ress.         150Ω Sensitivity           vi/res or 2 P100 for ΔT         0.1*C/0°C Env. t.         -0.1*C/0°C Env. t.         -0.1*C/0°C Env. t.           Max.wire ress.         0.0.50 mV         Internal cold junction orgeneration         Max.wire ress.           DC input (voltage         0.420mA R] = 30Ω         Engineering units Decimal point conf.         Input drift: -0.1% / 20°C           DC input (voltage         0.50 mV         Rind from -9.9499.9		Cycle time	0.230.0 s		Time prop. control	
Dead band $050\%$ Cool Proport. band $050\%$ Cool Integral time $1999.9\%$ Cool Der. time $050\%$ Motor travel time $050\%$ Motor minim. step $050\%$ Motor step and time $050\%$ Motor step and time $050\%$ Max. wire step and time of the output adjustable): $0002$ $0002$ $0002$ $0000$ $0000$ $0$	Control modo	Hysteresis	0.15.0%		ON-OFF control	
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	contrormode	Dead band	0.05.0%			
Cool Der. time         0.1999.9 s Motor travel time         enabled/disabled           Motor travel time         15600 s Motor min. step         0.150%         Motorised valves           Feedback potent.         100210kQ         AD Converter with resolution of 160.000 points Update measurement time: 50 ms Sampling time (max. update time of the output adjustable): 0.1100 s configurable - Input shift : 60+60 digit Input filter with enable/disable: 01999.9 s           Accuracy         0.25% ± 1 digits for mA and mV)         Max wire res: 20Q (325% ± 1 digits for mA and mV)         Max wire res: 20Q (3wires)         Max. wire res: 20Q (3wires)           PV input (for signal ranges see table 1)         Thermocouple         L.J. T.K.R.S (EC 584) "C/F selectable         Internal cold junction (C) T C Env. t. d) 1°C/10Q Wire res.         Max. wire res: 15Q2 Sensitivity -2µV/0 C Env. t. d) 1°C/10Q Wire res.           DC input (voltage)         0.150 mV R] = 10MQ         Engineering units Decimal point conf. (Mital Sc:-9999999         Input drift: -0.1% / 20°C           Auxiliary inputs         Remote Setpoint Not isolated accuracy 0.1%         Current (M20mA R] = 30Q         Engineering units and ± range R] = 10KQ         Bias in engineering units and ± range R] = 30Q2         Notal arm threshold (Heater break atam)           Optionions)         C1 current transformer         100Q10kQ         Position feedback measurement         Setpoint mode change, Local/Remote Setpoint mode change, Local/Remote Setpoint mode change, Stored Setpoints activation, k		Cool Proport. band	0.1999.9%			
Cool cycle time         0.2.::30.0 s           Motor travel time         15.::600 s           Motor minim. step         0.1.::5.0%           Motor minim. step         0.1.::5.0%           Feedback potent.         10002.::10k2           AvD converter with resolution of 160.000 points Update measurement time: 50 ms Sampling time (max. update time of the output adjustable): 0.1.::10 0 s configurable - Input shift : 60+60 digit Input filter with enable/disable: 0.1.:.999.9 s           Accuracy         0.25% ± 1 digits (for temperature sensors 0.1% ± 1 digits (for mA and mV)         Between 100240Vac the error is minimal           Resistance (for AT: RI+R2 must be <320.2)		Cool Integral time	19999 s	User	Heat-Cool control	
Motor travel time         15600 s         Motorised valves           Motor minim. step         0.15.0%         Motorised valves           Feedback potent.         100Ω10kΩ         Motorised valves           All converter with resolution of 160.000 points Update measurement time: 50 ms Sampling time (max. update time of the output adjustable): 0.110.0 s configurable - Input shift : 60 + 60 digit Input filter with enable/disable: 01999.9 s         Between 100240Vac the error is minimal           Accuracy         0.25% ± 1 digits for temperature sensors 0.1% ± 1 digits (for mA and mV)         Between 100240Vac the error is minimal           Resistance finermometer (for ΔT: R1-R2 must be <320Ω)		Cool Der. time	0.1999.9 s	enabled/disabled		
Motor minim. step         0.15.0%         Motorised valves           Feedback potent.         100Ω10kΩ         A/D converter with resolution of 16.0.00 points Update measurement time: 50 ms Sampling time (max. update time of the output adjustable): 0.110.0 s configurable - Input shift : 60+ 60 digit input filter with enable/disable: 0.1999.9 s           Accuracy         0.25% ± 1 digits for temperature sensors the error is minimal         Between 100240Vac the error is minimal           Resistance thermometer (for AI: HR2 ranges see table 1)         P100Ω a 0°C (IC 7/F selectable         2 or 3 wires or 2 P100 for ΔT         Max. wire res: 20Ω (3 wires)           DC input (current)         0/420mA R] = 30Ω         Engineering units Decimal point conf. (minim.range 100 digits)         Max. wire res: 150Ω Sensitive - 201°C/PF selectable         Internal cold junction compensation - 50 mV         Max. wire res: 150Ω Sensitive - 201°C/PF selectable         Max. wire res: 150Ω Sensitive - 201°		Cool cycle time	0.230.0 s			
Feedback potent.         100Ω10kΩ           AD converter with resolution of 160.000 points Update measurement time: 50 ms Sampling time (max. update time of the output adjustable): 0.110.s configurable - Input shift : 60+ 60 digit Input filter with enable/disable: 0.1999.9 s           Accuracy         0.25% ± 1 digits (for mA and mV)           Resistance thermometer (for AI: R1+R2 must be <320Ω)		Motor travel time	15600 s			
PV input characteristicsA/D converter with resolution of 160.000 points Update measurement time: 50 ms Sampling time (max. update time of the output adjustable): 0.110.9 s configurable - Input shift : 60+ 60 digit input filter with enable/disable: 0.1999.9 sPV input for signal ranges see table 1)Accuracy0.25% ± 1 digits (for mA and mV)Between 100240Vac the error is minimalPV input for signal ranges see table 1)Resistance thermometer (for AT: R1+R2 must be <320Q)		Motor minim. step	0.15.0%		Motorised valves	
PV input (or signal ranges see table 1)         Common characteristics         Update measurement time: 50 ms Sampling time (max. update time of the output adjustable): 0.110.0 s configurable - 1.nput shift : 60+60 digit input filter with enable/disable: 01999.9 s           Accuracy         0.25% ± 1 digits for temperature sensors 0.1% ± 1 digits (for mA and mV)         Between 100240Vac the error is minimal           Resistance thermometer (for ΔT. R1+R2 must be <320Ω)		Feedback potent.	100Ω10kΩ			
Accuracy $0.1\% \pm 1$ digits (for mA and mV)the error is minimalPV input (for signal ranges see table 1)Resistance thermometer (for $\Delta T$ : R1+R2 must be <320Ω)			Update measurement time: 50 ms Sampling time (max. update time of the output adjustable): 0.110.0 s configurable - Input shift : 60+ 60 digit			
PV input (for signal ranges see table 1)thermometer (for $\Delta T$ : R1+R2 must be <320Ω)2 or 3 wires or 2 P1100 for $\Delta T$ 3 wires) 3 wires) 0.1 °C/10Ω Wire res.Thermocouple $L, J, T, K, R, S$ (IEC 584) °C/°F selectableInternal cold junction compensationMax. wire res: 150Ω Sensitivity <2 $\mu V/^\circ C$ Env. t. <5 $\mu V/10\Omega$ Wire res.DC input (current) $0/420mA$ Rj = 30ΩEngineering units Decimal point conf. with or without $\sqrt{-1}$ Initial Sc: .9999999 full Sc: .9999999 full Sc: .9999999Input drift: <0.1% / 20°C Env. temperature < $5\mu V/10\Omega$ Wire res.Auxillary inputs (options)Remote Setpoint ransformerCurrent $0/420mA$ Rj = 300ΩBias in engineering units and ± range range 100 digits)Auxillary inputs (options)CT current transformerMax. span So or 100 mA So or 100 mABias in engineering units and ± range resolution of 1A with alarm threshold (Heater break alarm)Digital inputs2 logicThe closure of the external contact produces any of the following actionsAuto/Man mode change, Local/Remote Setpoint mode change, Stored Setpoints activation, keypad lock, measure hold and slopes inhibit.Digital inputsSingle or double channel, direct or reverse actionStart, stop, hold of a program (only with Setpoint programmer)Control output Minimum limit0100.0% (OP1 heat)Start, stop, hold of a program (only with Setpoint programmer)		Accuracy				
see table 1)         Thermocouple         L, J, T, K, R, S (IEC 584) *C/F selectable         Internal cold junction compensation         Max. wire res: 150Ω Sensitivity <2µ//*C Env. t. <5µ//10Ω Wire res.           DC input (current)         0/420mA Rj = 30Ω         Engineering units Decimal point conf. with or without √ Initial Sc.: -9999999 full Sc.: -999	(for signal	thermometer (for $\Delta$ T: R1+R2	(IEC 751) °C/°F		(3 wires) 0.1 °C/10°C Env. t.	
DC input (current)Rj = 30ΩDecimal point conf. with or without √ Initial Sc: -9999999Input drift: <0.1% / 20°C Env. temperature <5µ/10Ω Wire res.Auxiliary inputs (options)Remote Setpoint Not isolated accuracy 0.1%Current 0/420mA Rj = 10kΩBias in engineering units and ± range Rj = 30ΩBias in engineering units and ± range (minim. range 100 digits)Auxiliary inputs (options)C rurrent transformerVoltage 15/05/010V Rj = 300ΩRatio from -9.99+99.99CT current transformermax. span 50 or 100 mA hdw selectableDisplay from 10 to 200 A resolution of 1A with alarm threshold (Heater break alarm)Digital inputs2 logicThe closure of the external contact produces any of the following actionsAuto/Man mode change, Local/Remote Setpoint mode change, Stored Setpoints activation, keypad lock, measure hold and slopes inhibit.Digital inputsSingle or double charnel, direct or reverse actionStart, stop, hold of a program (only with Setpoint programmer)Control output Minimum limit0100.0% (OP1 heat)Start, stop.		Thermocouple	(IEC 584) °C/°F		150Ω Sensitivity <2μV/°C Env. t.	
$ \begin{array}{ c c c c } \hline \mbox{DC input (voltage)} & \hline \mbox{Pj = 10M} \mbox{Pj = 10M} \mbox{Pill Sc: -9999999} \mbox{Full Sc: -999999} \mbox{Full Sc: -99999} Full Sc: -9$		DC input (current)	Rj = 30Ω	Decimal point conf.		
Auxiliary inputs (options)Remote Setpoint Not isolated accuracy 0.1%O/420mA Rj = 30ΩBias in engineering units and ± rangeAuxiliary inputs (options)Remote Setpoint Not isolated accuracy 0.1%Voltage 15/05/010V Rj = 300kQRatio from -9.99+99.99CT current transformermax. span 50 or 100 mA hdw selectableDisplay from 10 to 200 A resolution of 1A with alarm threshold (Heater break alarm)Potentiometer100Q10kQ supply.300mVPosition feedback measurementDigital inputs2 logicThe closure of the external contact produces any of the following actionsAuto/Man mode change, Local/Remote Setpoint mode change, Stored Setpoints activation, keypad lock, measure hold and slopes inhibit.Control output (analoguo)Single or double channel, direct or reverse action Minimum limit0100.0% (OP1 heat)		DC input (voltage)	Rj = 10ΜΩ 15/05/010V	Initial Sc.: -999 9999 Full Sc.: -999 9999	Env. temperature	
Auxiliary inputs (options)accuracy 0.1%Voltage 15/ 05/ 010V Rj = 300kΩRatio from -9.99+99.99 Local + Remote SetpointCT current transformermax. span 50 or 100 mA hdw selectableDisplay from 10 to 200 A resolution of 1A with alarm threshold (Heater break alarm)Potentiometer100Ω10kΩ supply. 300mVPosition feedback measurementDigital inputs2 logicThe closure of the external contact produces any of the following actionsAuto/Man mode change, Local/Remote Setpoint mode change, Stored Setpoints activation, keypad lock, measure hold and slopes inhibit.Control output (analogue)Single or double channel, direct or reverse action Minimum limit0100.0% (OP1 heat)			0/420mA	Bias in engineering units and ± range		
Auxiliary inputs (options)Image: Control output (options)Image: Control output (analoguo)Image: Cont					9.99	
(options) <sup>III</sup> – 300K2 <sup>IIII</sup> – 300K2 <sup>IIII</sup> – 300K2 <sup>IIII</sup> – 300K2 <sup>IIII</sup> – 1000K <sup>IIII</sup> – 400K2 <sup>IIII</sup> – 400K2 <sup>IIIII</sup> – 400K2 <sup>IIII</sup> – 100K2 <sup>IIII</sup> – 100K <sup>IIIIIIIIIIIIII </sup>	Auxiliary inputs			Local Domata Cata	int	
CT current transformer       max. span 50 or 100 mA 50 or 100 mA hdw selectable       Display from 10 to 200 A resolution of 1A with alarm threshold (Heater break alarm)         Potentiometer       100Ω10kΩ supply. 300mV       Position feedback measurement         Digital inputs       2 logic       The closure of the external contact produces any of the following actions       Auto/Man mode change, Local/Remote Setpoints activation, keypad lock, measure hold and slopes inhibit.         Control output (analogue)       Single or double channel, direct or reverse action			$Rj = 300 k\Omega$			
Potentiometer     supply. 300mV     measurement       Digital inputs     2 logic     The closure of the external contact produces any of the following actions     Auto/Man mode change, Local/Remote Setpoints activation, keypad lock, measure hold and slopes inhibit.       Control output (analoguo)     Single or double channel, direct or reverse action	(56.1010)		50 or 100 mA	resolution of 1A with alarm threshold		
Digital inputs       2 logic       The closure of the external contact produces any of the following actions       Auto/Man mode change, Local/Remote Setpoints activation, keypad lock, measure hold and slopes inhibit.         Control output (analogue)       Single or double channel, direct or reverse action       Single or double channel, direct or reverse action		Potentiometer				
Control output (analoguo)     Single or double channel, direct or reverse action       Minimum limit     0100.0% (OP1 heat)	Digital inputs	2 logic	The closure of the external contact produces any of the following	Auto/Man mode chan Setpoint mode change activation, keypad loc slopes inhibit.	e, Stored Setpoints k, measure hold and	
Single or double channel, direct or reverse action           Minimum limit         0100.0% (OP1 heat)			actions			
(analoguo) Minimum limit 0100.0% (OP1 heat)	Single or double channel, direct or reverse action			· · · · · ·		
Maximum limit 0100.0% (OP1 heat), -100.00% (OP2 cool)			0100.0% (OP1	heat)		
	(analogue)	Maximum limit				

Input type	Scale range
	-200600 °C
RTD	-3281112 °F
Pt100 $\Omega$ at 0°C	-99.9300.0 °C
	-99.9572.0 °F
RTD	-50.050.0 °C
$2xPt100\Omega$ at 0°C for $\Delta T$	-58.0122.0 °F
T/C type L	0600 °C
Fe-Const.	321112 °F
T/C type J	0600 °C
Fe-Cu 45% Ni	321112 °F
T/C type T	-200400 °C
Cu - CuNi	-328752 °F
T/C type K	01200 °C
Cromel Alumel	322192 °F
T/C type R	01600 °C
Pt13%Rh-Pt	322912 °F
T/C type S	01600 °C
Pt10%Rh-Pt	322912 °F
0/420 mA, 050 mV	Configurable engineering unit
0/15 V, 010 V	mA, mV, V, bar, psi, Rh, ph
mV Custom scale	On request

Table 1 : PV input

at env. 25°C	Description				
	Max. slope	0.0199.9	9%/s up and	l down	
	Safety value	-100100	%. User ena	bled/disabled	
		2 Relays	SPST NO, 2/	V250Vac resistive loa	ids (4A/120Vac)
	Time	2 Triacs		esistive loads	
	proportioning		022Vdc,		
Control output	1 1 5	SSR drive	(for static s		Galvanic isolation 500Vac/1min
oonnoroutput		Current	•	max. 750Ω/10Vmax.	
	Analogue	Current	0/42011A	1118X. 73052/10V1118X.	12 bit (0.025%)
	(optional)	Voltage	01/5/10V	500 $\Omega$ /20mA max.	Accuracy 0.1% Short circuit protection
	Motorised valve Raise - Stop - Lo		Double acti 2 poles NO,	ion , 2A/250Vac resistiv	e load
	SPST NO, 2A/250	/ac resistive	load - hvste	resis 0.15.0% symi	netrical
				Deviation threshole	
		Active hig	<sup>n</sup> Action		0
		Active low	type	Band threshold	0range
Alarms		Active low		Absolute threshold	Whole range
/ lidi lilio	Action		Heater B	reak detection	
	, lotion	C	Loop Bre	ak Alarm	
		Special		n inhibit (blocking)	
		functions		edge (latching)	
				o the program (opti	onal) (OP3)
	Galvanic isolation	500Vac/1min		0/420mA	
Analogue	Resolution: 12 bit		750Ω/10\		Retransmission
output OP4	Accuracy: 0.1%	(0.02370)		15/05/010V	of PV or SP
(optional)	Short circuit prof	actad	$500\Omega/20r$		011 001 51
				s 2 stored Setpoints	、 、
	Ramp up and dov		Only Rem		)
	slope in digit/s, d	igit/minute			
Setpoint	or digit/hour bet	ween	Local and		
	0.010.0%		Local wit		
	of the range		Remote v		0
	High and low lim			grammable (optiona	1l)
Programmable	1 program, 16 se	gments (1in	itial and 1 er	nd)	
Setpoint	From 1 to 9999 cy				
(optional)	Time values in se				
	Start, stop, hold,	etc. activat	ed from the	keypad, digital inpu	t and serial comm.s
	One chat tune of	ep response	e method fo	r calculating the PI	) terms parameters
	one shot tune-st				
Tuning		• •	ot intrusive.	Ű	•
Tuning	Adaptive tune se	If-learnig, n		analysis of the pro	cess response to
Tuning	Adaptive tune se disturbances and	lf-learnig, n d continuou	s calculatio	Ű	cess response to
5	Adaptive tune se disturbances and with the Setpoint	If-learnig, n d continuou t Programm	s calculatio er option)	analysis of the pro	cess response to
Auto/Manual	Adaptive tune se disturbances and with the Setpoin Integrated in the	If-learnig, n continuou Programm controller, l	s calculation er option) bumpless	analysis of the pro- n of the PID parame	cess response to eters (not available
Auto/Manual station	Adaptive tune set disturbances and with the Setpoin Integrated in the Operated from ket	If-learnig, n d continuou t Programm controller, l eypad, digita	s calculation er option) bumpless al inputs and	analysis of the pro	cess response to eters (not available
Auto/Manual station Serial comm.s	Adaptive tune se disturbances and with the Setpoin Integrated in the Operated from ke RS 485 isolated,	If-learnig, n d continuou t Programm controller, l eypad, digita Modbus/Jb	s calculation er option) bumpless al inputs and us	analysis of the pro- n of the PID parame	cess response to ters (not available
Auto/Manual station Serial comm.s (optional)	Adaptive tune se disturbances and with the Setpoin Integrated in the Operated from ke RS 485 isolated, 1,200, 2,400, 4,800	If-learnig, n d continuou t Programm controller, l eypad, digita Modbus/Jbb 0, 9,600, 19,2	s calculation er option) bumpless al inputs and us 200 bit/s, 2 w	analysis of the pro- n of the PID parame d serial communica- ires	cess response to ters (not available
Auto/Manual station Serial comm.s	Adaptive tune se disturbances and with the Setpoin Integrated in the Operated from ke RS 485 isolated,	If-learnig, n d continuou t Programm controller, i eypad, digit Wodbus/Jbi 0, 9,600, 19,2 nA max. for	s calculatio er option) bumpless al inputs and us 200 bit/s, 2 w transmitters	analysis of the pro- n of the PID parame d serial communica- ires ; (2, 3, 4 wires)	cess response to eters (not available
Auto/Manual station Serial comm.s (optional)	Adaptive tune set disturbances and with the Setpoin Integrated in the Operated from ke RS 485 isolated, 1,200, 2,400, 4,800 18Vdc ±20%, 30n	If-learnig, n d continuou t Programm controller, l eypad, digita Modbus/Jbio 0, 9,600, 19,2 nA max. for Detectior	s calculatio er option) bumpless al inputs and us 200 bit/s, 2 w transmitters n of out of rar	analysis of the pro- n of the PID parame d serial communica- ires ; (2, 3, 4 wires) nge, short circuit or s	cess response to eters (not available tions ensor break with
Auto/Manual station Serial comm.s (optional)	Adaptive tune se disturbances and with the Setpoin Integrated in the Operated from ke RS 485 isolated, 1,200, 2,400, 4,800 18Vdc ±20%, 30n Measure input	If-learnig, n d continuou t Programm controller, eypad, digita Modbus/Jbio ), 9,600, 19,2 nA max. for Detectior automatic	s calculatio er option) bumpless al inputs and us 200 bit/s, 2 w transmitters n of out of rar c activation of	analysis of the pro- n of the PID parame d serial communica- ires ; (2, 3, 4 wires) nge, short circuit or s of the safety strategie	ensor break with
Auto/Manual station Serial comm.s (optional)	Adaptive tune set disturbances and with the Setpoin Integrated in the Operated from ke RS 485 isolated, 1,200, 2,400, 4,800 18Vdc ±20%, 30n	If-learnig, n d continuou t Programm controller, eypad, digiti Modbus/Jbb 0, 9,600, 19,2 nA max. for Detectior automatic Safety va	s calculation er option) bumpless al inputs and us 200 bit/s, 2 w transmitters n of out of rar c activation of alue:-100+	analysis of the pro- n of the PID parame d serial communica- ires (2, 3, 4 wires) nge, short circuit or s of the safety strategie 100%, (user enable	cess response to eters (not available tions ensor break with es and alerts on display d/disabled)
Auto/Manual station Serial comm.s (optional) Auxil. supply	Adaptive tune se disturbances and with the Setpoin Integrated in the Operated from ke RS 485 isolated, 1,200, 2,400, 4,800 18Vdc ±20%, 30n Measure input	If-learnig, n d continuou t Programm controller, l eypad, digit Modbus/Jbb 0, 9,600, 19,2 nA max. for Detectior automatic Safety va Paramete	s calculation er option) bumpless al inputs and us 200 bit/s, 2 w transmitters n of out of ran c activation of alue:-100+ ers and com	analysis of the pro- n of the PID parame d serial communica ires (2, 3, 4 wires) nge, short circuit or s of the safety strategie 100%, (user enable figuration data are s	cess response to eters (not available tions ensor break with es and alerts on display d/disabled) stored in a non volatile
Auto/Manual station Serial comm.s (optional) Auxil. supply Operational	Adaptive tune se disturbances and with the Setpoin Integrated in the Operated from ke RS 485 isolated, 1,200, 2,400, 4,800 18Vdc ±20%, 30n Measure input Control output	If-learnig, n d continuou t Programm controller, l eypad, digit Modbus/Jbb 0, 9,600, 19,2 nA max. for Detectior automatic Safety va Parameti memory	s calculation er option) bumpless al inputs and us 200 bit/s, 2 w transmitters a of out of rar c activation of alue:-100+ ers and com for an unlim	analysis of the pro- n of the PID parame d serial communica ires (2, 3, 4 wires) nge, short circuit or s of the safety strategie 100%, (user enable figuration data are s ited time. They are of	cess response to eters (not available tions ensor break with es and alerts on display d/disabled) stored in a non volatile organised in
Auto/Manual station Serial comm.s (optional) Auxil. supply	Adaptive tune se disturbances and with the Setpoin Integrated in the Operated from ke RS 485 isolated, 1,200, 2,400, 4,800 18Vdc ±20%, 30n Measure input	If-learnig, n d continuou t Programm controller, l eypad, digit Modbus/Jbb 0, 9,600, 19,2 nA max. for Detectior automatic Safety va Parameter memory functiona	s calculation er option) bumpless al inputs and us 200 bit/s, 2 w transmitters n of out of rar c activation of alue:-100+ ers and com for an unlim ally homoge	analysis of the pro- n of the PID parame d serial communica ires (2, 3, 4 wires) nge, short circuit or s of the safety strategie 100%, (user enable figuration data are s ited time. They are o neous groups, as: v	cess response to ters (not available tions ensor break with es and alerts on display d/disabled) stored in a non volatile organised in isible and
Auto/Manual station Serial comm.s (optional) Auxil. supply Operational	Adaptive tune se disturbances and with the Setpoin Integrated in the Operated from ke RS 485 isolated, 1,200, 2,400, 4,800 18Vdc ±20%, 30n Measure input Control output	If-learnig, n d continuou t Programm controller, l eypad, digit Modbus/Jbb 0, 9,600, 19,2 nA max. for Detection automatic Safety va Parameter memory functiona changea	s calculation er option) bumpless al inputs and us 200 bit/s, 2 w transmitters a of out of rar c activation of alue:-100+ ers and com for an unlim ally homoge ble, visible a	analysis of the pro- n of the PID parame d serial communica ires (2, 3, 4 wires) nge, short circuit or s of the safety strategie 100%, (user enable figuration data are s ited time. They are of neous groups, as: v and not changeable	cess response to ters (not available tions ensor break with es and alerts on display d/disabled) stored in a non volatile organised in isible and , not visible
Auto/Manual station Serial comm.s (optional) Auxil. supply Operational	Adaptive tune se disturbances and with the Setpoin Integrated in the Operated from ke RS 485 isolated, 1,200, 2,400, 4,800 18Vdc ±20%, 30n Measure input Control output	If-learnig, n d continuou t Programm controller, l eypad, digit Modbus/Jbb 0, 9,600, 19,2 nA max. for Detection automatic Safety va Parameter memory functiona changea	s calculation er option) bumpless al inputs and us 200 bit/s, 2 w transmitters a of out of rar c activation of alue:-100+ ers and com for an unlim ally homoge ble, visible a	analysis of the pro- n of the PID parame d serial communica ires (2, 3, 4 wires) nge, short circuit or s of the safety strategie 100%, (user enable figuration data are s ited time. They are of neous groups, as: v and not changeable	cess response to ters (not available tions ensor break with es and alerts on display d/disabled) stored in a non volatile organised in isible and , not visible
Auto/Manual station Serial comm.s (optional) Auxil. supply Operational	Adaptive tune se disturbances and with the Setpoin Integrated in the Operated from ke RS 485 isolated, 1,200, 2,400, 4,800 18Vdc ±20%, 30n Measure input Control output Parameters	If-learnig, n d continuou t Programm controller, l eypad, digit Modbus/Jbb 0, 9,600, 19,2 nA max. for Detection automatic Safety va Parameter memory functiona changea	s calculation er option) bumpless al inputs and us 200 bit/s, 2 w transmitters a of out of ran c activation of alue:-100+ ers and com for an unlim ally homoge ble, visible a d to access	analysis of the pro- n of the PID parame d serial communica ires (2, 3, 4 wires) nge, short circuit or s of the safety strategie 100%, (user enable figuration data are s ited time. They are of neous groups, as: v and not changeable	cess response to ters (not available tions ensor break with es and alerts on display d/disabled) stored in a non volatile organised in isible and , not visible
Auto/Manual station Serial comm.s (optional) Auxil. supply Operational	Adaptive tune se disturbances and with the Setpoin Integrated in the Operated from ke RS 485 isolated, 1,200, 2,400, 4,800 18Vdc ±20%, 30n Measure input Control output Parameters Access	If-learnig, n d continuou t Programm controller, l eypad, digita Modbus/Jbb 0, 9,600, 19,2 nA max. for Detection automatic Safety va Parameti memory functiona changea Passwor protectic 100240	s calculation er option) bumpless al inputs and us 200 bit/s, 2 w transmitters a of out of rar c activation of alue:-100+ ers and com for an unlim ally homoge ble, visible a d to access in menu Vac (-15+1	analysis of the pro- n of the PID parame d serial communicatives (2, 3, 4 wires) nge, short circuit or soft the safety strategie 100%, (user enable figuration data are so ited time. They are of neous groups, as: v and not changeable the configuration d	cess response to ters (not available tions ensor break with es and alerts on display d/disabled) stored in a non volatile organised in isible and , not visible ata and the parameter ac(-25+12%), 50/60Hz
Auto/Manual station Serial comm.s (optional) Auxil. supply Operational	Adaptive tune se disturbances and with the Setpoin Integrated in the Operated from ka RS 485 isolated, 1,200, 2,400, 4,800 18Vdc ±20%, 30n Measure input Control output Parameters Access protection Power supply	If-learnig, n d continuou t Programm controller, l eypad, digita Modbus/Jbb 0, 9,600, 19,2 nA max. for Detection automatic Safety va Parameti memory functiona changea Passwor protectio 100240 and 24Vc	s calculation er option) bumpless al inputs and us 200 bit/s, 2 w transmitters a of out of rar c activation of alue:-100+ ers and com for an unlim ally homoge ble, visible a d to access an menu Vac (-15+1 Ic (-15+255)	analysis of the pro- n of the PID parame d serial communicatives (2, 3, 4 wires) rge, short circuit or s of the safety strategie 100%, (user enable figuration data are s ited time. They are of neous groups, as: v and not changeable the configuration d 0%) 50/60Hz or 24Va %). Power consump	cess response to eters (not available tions ensor break with es and alerts on display d/disabled) stored in a non volatile organised in isible and , not visible ata and the parameter ac(-25+12%), 50/60Hz tion 3W max .
Auto/Manual station Serial comm.s (optional) Auxil. supply Operational	Adaptive tune se disturbances and with the Setpoin Integrated in the Operated from ke RS 485 isolated, 1,200, 2,400, 4,800 18Vdc ±20%, 30n Measure input Control output Parameters Access protection Power supply Safety	If-learnig, n d continuou t Programm controller, l eypad, digita Modbus/Jbb 0, 9,600, 19,2 nA max. for Detectior automatic Safety va Paramete memory functiona changea Passwor protectic 100240 and 24Vc Complian	s calculation er option) bumpless al inputs and us 200 bit/s, 2 w transmitters a of out of rar c activation of alue:-100+ for an unlim ally homoge ble, visible a d to access an menu Vac (-15+1 lc (-15+259 cce EN61010-1	analysis of the pro- n of the PID parame d serial communication ires (2, 3, 4 wires) rge, short circuit or s of the safety strategie 100%, (user enable figuration data are s ited time. They are of neous groups, as: v and not changeable the configuration d 0%) 50/60Hz or 24Va %). Power consump (IEC 1010-1), inst. cla	cess response to eters (not available tions ensor break with es and alerts on display d/disabled) stored in a non volatile organised in isible and , not visible ata and the parameter ac(-25+12%), 50/60Hz tion 3W max . ss 2 (2,5kV), poll. class II
Auto/Manual station Serial comm.s (optional) Auxil. supply Operational	Adaptive tune se disturbances and with the Setpoin Integrated in the Operated from ke RS 485 isolated, 1,200, 2,400, 4,800 18Vdc ±20%, 30n Measure input Control output Parameters Access protection Power supply Safety Electromagnetic	If-learnig, n d continuou t Programm controller, l eypad, digits Modbus/Jbb 0, 9,600, 19,2 nA max. for Detectior automatic Safety va Paramete memory functiona changea Passwor protectio 100240 and 24Vo Complian	s calculation er option) bumpless al inputs and us 200 bit/s, 2 w transmitters n of out of rar c activation of alue:-100+ for an unlim ally homoge ble, visible a d to access on menu Vac (-15+1 lc (-15+255) cc EN61010-1 mode to the CI	analysis of the pro- n of the PID parame d serial communicatives (2, 3, 4 wires) rge, short circuit or s of the safety strategie 100%, (user enable figuration data are s ited time. They are of neous groups, as: v and not changeable the configuration d 0%) 50/60Hz or 24Va %). Power consump	cess response to eters (not available tions ensor break with es and alerts on display d/disabled) stored in a non volatile organised in isible and , not visible ata and the parameter ac(-25+12%), 50/60Hz tion 3W max . ss 2 (2,5kV), poll. class II
Auto/Manual station Serial comm.s (optional) Auxil. supply Operational safety	Adaptive tune se disturbances and with the Setpoin Integrated in the Operated from ke RS 485 isolated, 1,200, 2,400, 4,800 18Vdc ±20%, 30n Measure input Control output Parameters Access protection Power supply Safety Electromagnetic compatibility	If-learnig, n d continuou t Programm controller, l eypad, digita Modbus/Jbb 0, 9,600, 19,2 nA max. for Detectior automatic Safety va Paramete memory functiona changea Passwor protectic 100240 and 24Vc Complian	s calculation er option) bumpless al inputs and us 200 bit/s, 2 w transmitters n of out of rar c activation of alue:-100+ for an unlim ally homoge ble, visible a d to access on menu Vac (-15+1 lc (-15+255) cc EN61010-1 mode to the CI	analysis of the pro- n of the PID parame d serial communication ires (2, 3, 4 wires) rge, short circuit or s of the safety strategie 100%, (user enable figuration data are s ited time. They are of neous groups, as: v and not changeable the configuration d 0%) 50/60Hz or 24Va %). Power consump (IEC 1010-1), inst. cla	cess response to eters (not available tions ensor break with es and alerts on display d/disabled) stored in a non volatile organised in isible and , not visible ata and the parameter ac(-25+12%), 50/60Hz tion 3W max . ss 2 (2,5kV), poll. class II
Auto/Manual station Serial comm.s (optional) Auxil. supply Operational	Adaptive tune set disturbances and with the Setpoin Integrated in the Operated from ke RS 485 isolated, 1,200, 2,400, 4,800 18Vdc ±20%, 30n Measure input Control output Parameters Access protection Power supply Safety Electromagnetic compatibility UL and cUL	If-learnig, n d continuou t Programm controller, l eypad, digits Modbus/Jbb 0, 9,600, 19,2 nA max. for Detectior automatic Safety va Paramete memory functiona changea Passwor protectio 100240 and 24Vo Complian	s calculation er option) bumpless al inputs and us 200 bit/s, 2 w transmitters a of out of ran c activation of alue:-100+ ers and com for an unlim ally homoge ble, visible a d to access in menu Vac (-15+1 lc (-15+259 ce EN61010-1 nce to the CI nt	analysis of the pro- n of the PID parame d serial communication ires (2, 3, 4 wires) rge, short circuit or s of the safety strategie 100%, (user enable figuration data are s ited time. They are of neous groups, as: v and not changeable the configuration d 0%) 50/60Hz or 24Va %). Power consump (IEC 1010-1), inst. cla	cess response to eters (not available tions ensor break with es and alerts on display d/disabled) stored in a non volatile organised in isible and , not visible ata and the parameter ac(-25+12%), 50/60Hz tion 3W max . ss 2 (2,5kV), poll. class II
Auto/Manual station Serial comm.s (optional) Auxil. supply Operational safety General	Adaptive tune set disturbances and with the Setpoin Integrated in the Operated from ke RS 485 isolated, 1,200, 2,400, 4,800 18Vdc ±20%, 30n Measure input Control output Parameters Access protection Power supply Safety Electromagnetic compatibility UL and cUL Approval	If-learnig, n d continuou t Programm controller, l eypad, digits Modbus/Jbb 0, 9,600, 19,2 nA max. for Detectior automatic Safety va Paramete memory functiona changea Passwor protectio 100240 and 24Vc Complian equipme File E176	s calculation er option) bumpless al inputs and us 200 bit/s, 2 w transmitters a contraction of alue:-100+ ers and com for an unlim ally homoge ble, visible a d to access an menu Vac (-15+1 lc (-15+259 ce EN61010-1 nce to the Cl nt	analysis of the pro- n of the PID parame d serial communication ires (2, 3, 4 wires) rge, short circuit or s of the safety strategie 100%, (user enable figuration data are s ited time. They are of neous groups, as: v and not changeable the configuration d 0%) 50/60Hz or 24Va %). Power consump (IEC 1010-1), inst. cla	cess response to eters (not available tions ensor break with es and alerts on display d/disabled) stored in a non volatile organised in isible and , not visible ata and the parameter ac(-25+12%), 50/60Hz tion 3W max . ss 2 (2,5kV), poll. class II
Auto/Manual station Serial comm.s (optional) Auxil. supply Operational safety General	Adaptive tune set disturbances and with the Setpoin Integrated in the Operated from ke RS 485 isolated, 1,200, 2,400, 4,800 18Vdc ±20%, 30n Measure input Control output Parameters Access protection Power supply Safety Electromagnetic compatibility UL and cUL	If-learnig, n d continuou t Programm controller, l eypad, digits Modbus/Jbb ), 9,600, 19,2 nA max. for Detectior automatic Safety va Parameter memory functiona changea Passwor protectic 100240° and 24Vc Complian Complian equipme File E176	s calculation er option) bumpless al inputs and us 200 bit/s, 2 w transmitters a of out of rar c activation of alue:-100+ ers and com for an unlim ally homoge ble, visible a d to access on menu Vac (-15+1 lc (-15+255) cce EN61010-1 nce to the CI nt 452 t panel	analysis of the pro- n of the PID parame d serial communication ires (2, 3, 4 wires) rge, short circuit or s of the safety strategie 100%, (user enable figuration data are s ited time. They are of neous groups, as: v and not changeable the configuration d 0%) 50/60Hz or 24Va %). Power consump (IEC 1010-1), inst. cla	cess response to eters (not available tions ensor break with es and alerts on display d/disabled) stored in a non volatile organised in isible and , not visible ata and the parameter ac(-25+12%), 50/60Hz tion 3W max . ss 2 (2,5kV), poll. class II strial system and





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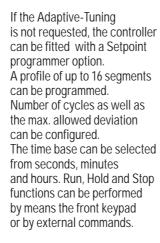
#### Tuning

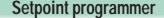
Two methods of tuning are available:

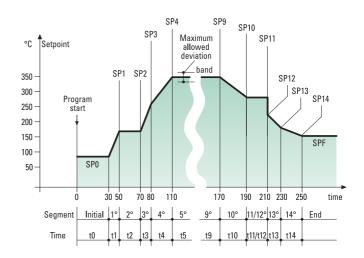
- Auto-Tuning "one shot"
- Adaptive-Tuning
- continuous and self-teaching

The **Auto-Tuning** method works best on the step response basis. When activated it modifies the output value and, in a short time, calculates the PID parameters. The new algorithm is operational immediately.

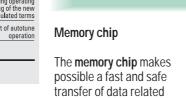
The main advantages of this method are fast calculation and quick implementation.







#### Integrity in data copy



transfer of data related to the configuration and all parameters. With a simple operation, the information can be stored and copied to the **memory chip**. The procedure can be protected by a password.



#### **Configuration software**

A software tool is available to improve both the configuration and the parameterization. All the data can be stored to file. It is also possible to down-load the linearisation of the "custom" input by using the polynomial's coefficients.

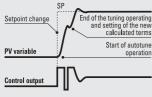
#### Fast view - fast parameter access

The **Fast view** is a password protected review procedure of the 10 most useful parameters. The combination of a luminous

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and comprehensive display and the ergonomic keypad allows the **immediate access** to the **Fast View**.





The ASCON self teaching Adaptive-Tuning waits for process change to recalculate the new PID parameters. The new PID calculation does not influence the control output, avoiding any disturbance. The PID optimisation is done only when necessary (e.g. Setpoint changes or process disturbances like load changes).

No action by the operator is required.

The operating mode of Adaptive-Tuning is safe and user friendly. It tests the process response after a disturbance, it memorises the intensity and frequency of the reaction, then the Adaptive-Tuning checks the new information with its statistical data base.

The correct PID algorithm is then ready to implement. This tuning is ideal for non-linear

processes where the PID parameters must be adapted to changing conditions.





Urdering codes	Line	Basic model	Accessories
Model:	M5	A B C D	– E F G 0
Power supply			
Outputs			
Serial comm.s/Options			
Setpoint			
Instr. handbook			
Colour			

Power supply	Α
100240Vac (-15+10%)	3
24Vac (-25+12%) or 24Vdc (-15+25%)	5
Outputs OP1 (OP2)	В
Relay-Relay	1
Relay-Triac	2
Triac-Relay	4
Triac-Triac	5

Serial comm.s	Options		С	D	
Seligi Commis			6	U	
	None [2]		0	0	
	Auvilian	Feedback potentiometer [2]			
	Auxiliary	Remote Setpoint [1]	0	2	
Not fitted	input	Current transformer	0	3	
	Auxiliary	SSR drive/Analogue	0	4	
	output	SSR drive/Analogue + Remote Setpoint [1] [2]	0	5	
	None [2]		5	0	
RS 485	Auviliany	Feedback potentiometer [2]	5		
Modbus/Jbus	Auxiliary		Remote Setpoint [1]	5	2
protocol	input	Current Transformer	5	3	
	SSR drive/Ana	alogue auxiliary output	5	4	

Setpoint Programmer	E
Not fitted	0
Fitted (adaptive-tuning not available)	1
Instruction handbook	F
Italian-English (std)	0
French-English	1
German-English	2
Spanish-English	3
Front case colour	G
Dark (std)	0

Beige

[1] Not available with Setpoint programmer installed (E = 1)[2] Second digital input (IL2) not available

## If not differently specified the controller will be supplied with standard version Model: M5 3100-0000

