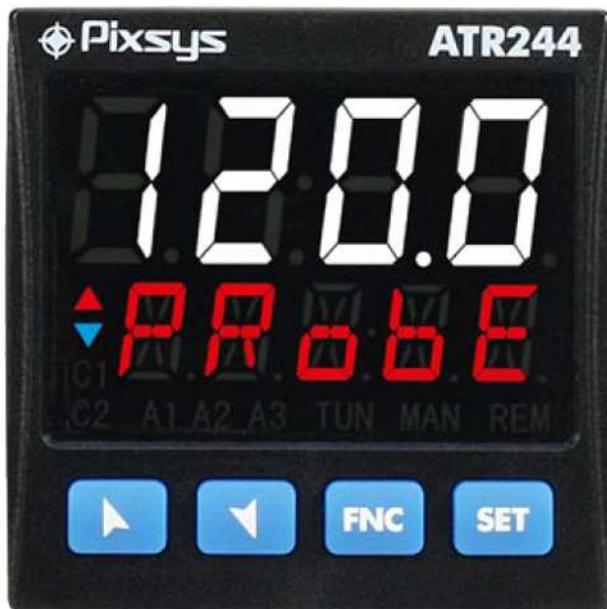




ATR244

Régulateur

Manuel utilisateur



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Introduction

Le régulateur ATR244 se distingue par son affichage performante qui garantit une excellente lisibilité et augmente les informations que peuvent être utilisées par l'opérateur, en plus d'une utile fonction d'aide à défilement. Est introduite la modalité de programmation avec technologie NFC/RFID via App pour les appareils Android, la même déjà utilisée pour la gamme Pixsys de convertisseurs de signaux et d'indicateurs STR. Cette modalité vous permet de programmer l'instrument sans avoir besoin de câblage et ne nécessite pas la connexion du régulateur à l'alimentation, en outre, il simplifie la programmation sur le terrain et en déplacement. Il existe des versions avec entrée analogique simple et double, avec la possibilité de gérer deux processus et deux boucles de contrôle distinctes ou d'effectuer des opérations mathématiques (somme, différence, moyenne) entre les deux processus. Les sorties peuvent être sélectionnées comme commande/plusieurs modes d'alarme/retransmission analogique. L'option de communication série est en RS485 avec protocole Modbus RTU/ Slave. Utile alimentation à range étendu de 24 à 230V AC/DC avec isolation galvanique du réseau pour la version à single loop, tandis que le modèle à double entrée analogique prévoit deux versions à 115/230Vac ou 24Vac/Vdc.

1 Consignes de sécurité

Lisez attentivement les consignes de sécurité et les instructions de programmation contenues dans ce manuel avant de connecter / utiliser le périphérique. Débranchez l'alimentation électrique avant de procéder aux réglages du matériel ou aux câblages électriques afin d'éviter tout risque d'électrocution, d'incendie ou de dysfonctionnement. Ne pas installer / utiliser l'appareil dans des environnements contenant des gaz inflammables / explosifs. Cet appareil a été conçu et développé pour les environnements et les applications industriels et est basé sur les réglementations nationales et internationales de sécurité du travail et des personnes. Toute application pouvant entraîner de graves dommages physiques / un risque pour la vie ou impliquer des dispositifs médicaux pour les personnes doit être évitée. L'appareil n'est pas conçu pour les applications liées aux centrales nucléaires, aux systèmes d'armes, aux commandes de vol et aux systèmes de transport en commun. Seul un personnel qualifié peut être autorisé à utiliser l'appareil et / ou à le réparer, uniquement en conformité avec les données techniques énumérées dans ce manuel. Ne démontez / modifiez / réparez aucun composant interne. L'appareil doit être installé et utilisé dans les conditions environnementales indiqués. Une surchauffe peut entraîner un risque d'incendie et de perte de durée de vie des composants électroniques.

1.1 Organisation des avis de sécurité

Les avis de sécurité dans ce manuel sont organisés comme suit:

Avis de sécurité	Description
Danger!	Le non-respect de ces notes et avis de sécurité pourrait être fatal.
Warning!	Le non-respect de ces instructions et avis de sécurité pourrait causer de graves blessures ou des dommages matériels importants.
Information!	Ces informations sont importantes pour éviter des défauts.

1.2 Avis de sécurité

Ce produit est classé comme équipement de contrôle du processus « type ouvert » (monté sur le panneau).	Danger!
Si les relais de sortie sont utilisés au-delà de leur durée de vie, il pourrait y avoir des fusions ou des brûlures de contacts.	
Tenez toujours compte des conditions d'application et utilisez les relais de sortie dans les limites de leur charge nominale et de leur durée de vie électrique. La durée de vie des relais de sortie change considérablement en fonction de la charge de sortie et des conditions de commutation.	Danger!
Pour les bornes à vis des relais et de l'alimentation, serrez les vis à un couple de 0,51 Nm. Pour les autres bornes, le couple est de 0,19 Nm.	Warning!

Il y a des cas où un mauvais fonctionnement du régulateur digital pourrait rendre les opérations de contrôle impossibles ou bloquer les sorties d'alarme, en causant des dommages matériels. Pour maintenir la sécurité en cas de mauvais fonctionnement, prenez des mesures de sécurité appropriées, par exemple en installant un dispositif de contrôle indépendant et sur une ligne séparée.

Warning!

1.3 Précautions pour l'usage en toute sécurité

Il faut faire attention à respecter les précautions suivantes pour éviter des défauts, de mauvais fonctionnements ou des effets négatifs sur les performances et les fonctions du produit. Autrement, il pourrait y avoir des événements inattendus. Ne pas utiliser le régulateur digital au-delà des valeurs nominales.

- Le produit a été conçu uniquement pour l'usage à l'intérieur. Ne pas utiliser ou stocker le produit à l'extérieur ou dans les environnements suivants:
 - Environnements directement exposés à la chaleur émise par des appareils de chauffage.
 - Environnements soumis à des projections de liquide ou d'huile.
 - Environnements soumis au soleil.
 - Environnements exposés à la poussière ou aux gaz corrosifs (en particulier les gaz de sulfure et d'ammoniac).
 - Environnements soumis à de fortes fluctuations de température.
 - Environnements soumis au givrage et à la condensation.
 - Environnements soumis à des vibrations et des impacts violents.
- L'utilisation de deux ou plus régulateurs côté à côté ou superposés pourrait causer une augmentation de la chaleur intérieure, en réduisant le cycle de vie. Dans ce cas, il est recommandé d'utiliser des ventilateurs pour le refroidissement forcé ou d'autres dispositifs pour conditionner la température intérieure du panneau.
- Vérifier toujours les noms des bornes ainsi que la polarité. Assurez-vous que le câblage est correct. Ne connectez pas les bornes inutilisées.
- Pour éviter les troubles inductifs, gardez le câblage de l'appareil loin des câbles d'alimentation sous haute tension ou à courant élevé. En outre, ne pas connecter les lignes électriques ensemble ou en parallèle avec le câblage du régulateur digital. Nous recommandons d'utiliser des câbles blindés et des conduits séparés. Connectez un limiteur de surcharge ou un filtre de bruit aux dispositifs générant du bruit (notamment les moteurs, les transformateurs, les solénoïdes, les bobines ou tout autre équipement doté de composants inductifs). Quand on utilise des filtres de bruit sur l'alimentation électrique, il faut vérifier la tension et le courant et connecter le filtre le plus proche possible à l'appareil. Laisser le plus d'espace possible entre le régulateur et les dispositifs d'alimentation générant des fréquences élevées (soudeuses à haute fréquence, machines à coudre à haute fréquence, etc.) ou des surcharges.
- Un interrupteur ou un sectionneur doit être placé à proximité du régulateur. L'interrupteur ou le sectionneur doit être facilement accessible pour l'opérateur et il doit être marqué comme moyen de déconnexion du régulateur.
- L'appareil doit être protégé par un fusible 1A (cl. 9.6.2).
- Prenez un chiffon doux et sec pour enlever la saleté de l'appareil. N'utilisez jamais de diluants, essence, alcool ou détergents contenant ces substances, ou d'autres solvants organiques, car une déformation ou décoloration pourrait se vérifier.
- Le nombre d'opérations d'écriture sur la mémoire non volatile est limité. Tenez compte de ce fait lorsque vous utilisez le mode d'écriture EEprom, par exemple pour modifier les données pendant les communications en série.

1.4 Politique environnementale / DEEE

Ne pas jeter d'outils électriques avec les déchets ménagers. Conformément à la directive européenne 2012/19/EU concernant les déchets d'équipements électriques et électroniques ainsi que leur mise en œuvre conformément au droit national, les outils électriques arrivés en fin de vie doivent être collectés séparément et renvoyés à un centre de recyclage respectueux de l'environnement.

2 Identification du modèle

La série ATR244 prévoit 5 versions:

Alimentation 24..230 VAC/VDC ±15% 50/60 Hz – 6 Watt/VA	
ATR244-12ABC	1 entrée analogique + 2 relais 2 A + 2 SSR + 2 D.I. + 1 sortie analogique V/mA
ATR244-12ABC-T	1 entrée analogique + 2 relais 2 A + 2 SSR / D.I. + 1 sortie analogique V/mA + RS485
ATR244-13ABC	1 entrée analogique + 3 relais 2 A + 2 SSR + 2 D.I. + 1 sortie analogique V/mA
Alimentation 24 VAC/VDC ±15% 50/60 Hz – 6 Watt/VA	
ATR244-23A-T	2 entrées analogiques + 3 relais 2 A + 2 SSR + 2/4 D.I. + 2 sorties analogiques V/mA + RS485 + CT
Alimentation 115..230 VAC ±15% 50/60 Hz – 6 Watt/VA	
ATR244-23BC-T	2 entrées analogiques + 3 relais 2 A + 2 SSR + 2/4 D.I. + 2 sorties analogiques V/mA + RS485 + CT

3 Données techniques

3.1 Caractéristiques générales

Visualiseurs	4 affichage 0,52", 5 affichage 0,30"
Température d'exercice	Température: 0-45 °C - Humidité: 35..95 uR%
Protection	IP65 panneau frontal (avec joint) - IP20 boîtier et bornes (non testé UL)
Matériel	Boîtier: PC UL94V2 auto-extinguible - Panneau frontal: PC UL94V2 auto-extinguible
Poids	Environ 185 g

3.2 Caractéristiques Hardware

Entrées analogiques	AI1 – AI2: Configurable via software. Entrée: Thermocouples type K, S, R, J,T,E,N,B. Compensation automatique de la jonction froide de -25..85 °C. Thermorésistances: PT100, PT500, PT1000, Ni100, PTC 1K, NTC 10K (β 3435K) Entrée V/mA: 0-1 V, 0-5 V, 0-10 V, 0-20 o 4-20 mA, 0-60 mV. Entrée Puis.: 1..150 KΩ. CT: 50 mA.	Tolérance (25 °C) $\pm 0.2\% \pm 1$ digit (su F.s.) pour thermocouple, thermorésistance et V / mA. Précision jonction froide 0.1 °C/°C. Impédance: 0-10 V: $R_i > 110 \text{ k}\Omega$ 0-20 mA: $R_i < 5 \Omega$ 0-40 mV: $R_i > 1 \text{ M}\Omega$
Sorties relais	Configurables comme sortie commande et alarme.	Contacts: 2 A - 250 VAC pour charges résistives.
Sorties SSR	Configurables comme sortie commande et alarme.	12/24 V, 25 mA.
Sorties analogiques	Configurables comme sortie commande, alarme ou retransmission des procès ou setpoint.	Configurable: 0-10 V avec 40000 points $\pm 0.2\%$ (su F.s.) 4-20 mA avec 40000 points $\pm 0.2\%$ (su F.s.)
Alimentation	Pour ATR244-12xxx et -13ABC: Alimentation à plage étendue 24..230 VAC/VDC ±15% 50/60 Hz Pour ATR244-23A-T: 24 VAC/VDC ±15% 50/60 Hz Pour ATR244-23BC-T: 115..230 VAC ±15% 50/60 Hz	Consommation: ATR244-12ABC: 6 Watt/VA ATR244-12ABC-T: 9 Watt/VA ATR244-13ABC: 8 Watt/VA ATR244-23A-T: 7 Watt/VA ATR244-23BC-T: 12 Watt/VA

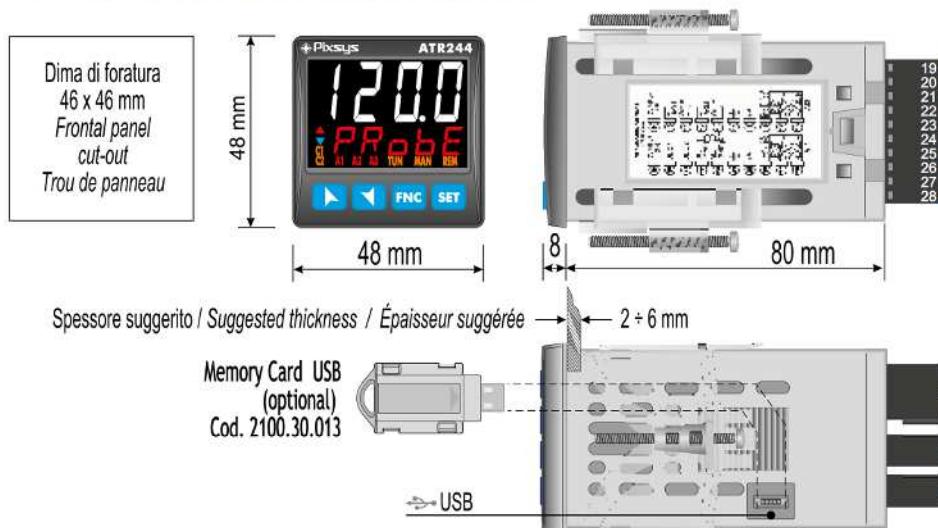
3.3 Caractéristiques Software

Algorithmes régulation	ON-OFF avec hystérésis. - P, PI, PID, PD à durée proportionnelle.
Bandé proportionnelle	0..9999°C ou °F
Temps intégral	0,0..999,9 sec (0 exclut)
Temps dérivatif	0,0..999,9 sec (0 exclut)
Fonctions du régulateur	Tuning manual ou automatique, alarme programmable, protection set commande et alarme.

3.4 Mode de programmation

du clavier	..voir le paragraphe 12
software LabSoftview	..voir la section "Download" du site www.pixsys.net ..à travers le download de l'application de Google Play Store®, voir le par. 11
App MyPixsys	Lorsqu'il est interrogé par un lecteur qui supporte le protocole NFC-V, l'appareil doit être considéré comme un VICC (Vicinity Inductively Coupled Card) conformément à la directive ISO / IEC 15693 et fonctionne à une fréquence de 13,56 MHz. L'appareil n'émet pas intentionnellement d'ondes radio.

4 Dimensions et Installation



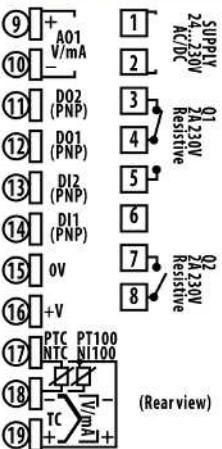
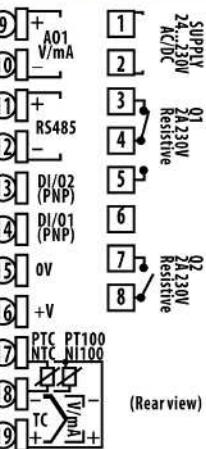
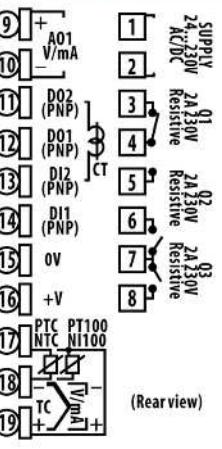
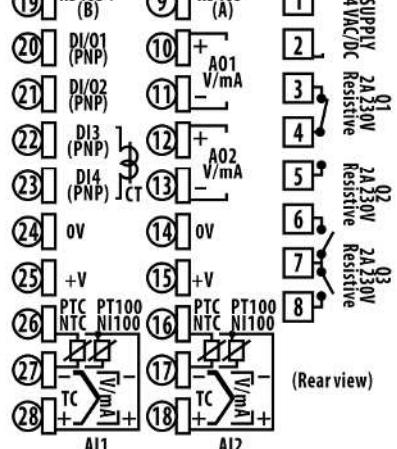
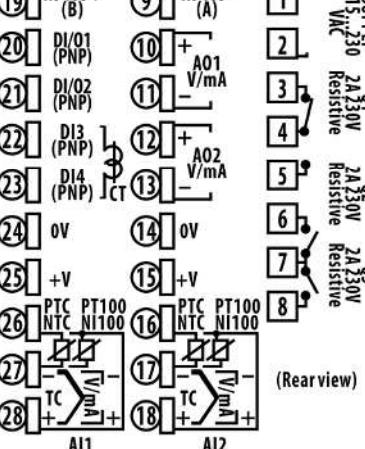
5 Raccordements électriques

Ce régulateur a été conçu et fabriqué conformément aux directives sur les basses tensions 2006/95/CE, 2014/35/UE (LVD) et Compatibilité électromagnétique 2004/108/CE et 2014/30/UE (EMC) pour l'installation dans des environnements industriels, il est recommandé de prendre les précautions suivantes:

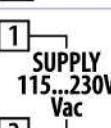
- Distinguer la ligne des alimentations de celles de puissance.
- Eviter la proximité de groupes de télérupteurs, compteurs électromagnétiques, moteurs de grosse puissance.
- Eviter la proximité de groupes de puissance, en particulier si à contrôle de phase
- Il est recommandé d'utiliser des filtres de réseau spéciaux sur l'alimentation de la machine où l'instrument sera installé, en particulier dans le cas d'une alimentation électrique 230VAC.
Il faut noter que le régulateur est conçu pour être assemblé à d'autres machines et que le marquage CE du régulateur n'exonère donc pas le fabricant du système des obligations de sécurité et de conformité prévues pour la machine dans son ensemble.
- Pour câbler les bornes 1...8 de l'ATR244-12ABC, ATR244-12ABC-T ou ATR244-13ABC, utilisez des embouts tubulaires sertis ou un fil de cuivre souple ou rigide avec une section comprise entre 0,2 et 2,5 mm² (min. AWG28, max. AWG12, température de fonctionnement: min. 70°C). La longueur de dénudage est comprise entre 7 et 8 mm.

- Pour câbler les bornes 9...19 de l'ATR244-12ABC, ATR244-12ABC-T ou ATR244-13ABC, utilisez des embouts tubulaires sertis ou un fil de cuivre souple ou rigide avec une section comprise entre 0,2 et 1,5 mm² (min. AWG28, max. AWG14, température de fonctionnement: min. 70°C). La longueur de dénudage est comprise entre 6 et 7 mm.
- Pour câbler les bornes 1...8 de l'ATR244-23xx-T, utilisez des embouts tubulaires sertis ou un fil de cuivre souple ou rigide avec une section comprise entre 0,2 et 2,5 mm² (min. AWG26, max. AWG12, température de fonctionnement: min. 70°C). La longueur de dénudage est comprise entre 10 et 11 mm.
- Pour câbler les bornes 9 ... 28 de l'ATR244-23xx-T, utilisez des embouts tubulaires sertis ou un fil de cuivre souple ou rigide avec une section comprise entre 0,5 et 1 mm² (min. AWG24, max. AWG16, température de fonctionnement: min. 70°C). La longueur de dénudage est comprise entre 7 et 8 mm.

5.1 Plan des connexions

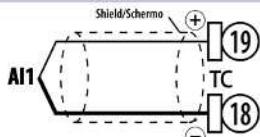
ATR244-12ABC	ATR244-12ABC-T	ATR244-13ABC
		
		

5.1.a Alimentation

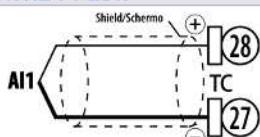
	Pour ATR244-12ABC, ATR244-12ABC-T et ATR244-13ABC Alimentation switching à range étendu 24..230 VAC/dc ±15% 50/60 Hz - 6 Watt/VA. Isolation galvanique (sur toutes les versions).
	Pour ATR244-23A-T Alimentation switching 24 VAC/dc ±15% 50/60 Hz - 6 Watt/VA. Isolation galvanique.
	Pour ATR244-23BC-T Alimentation switching à range étendu 115..230 VAC ±15% 50/60 Hz - 6 Watt/VA. Isolation galvanique.

5.1.b Entrée analogique AI1

ATR244-12x et ATR244-13



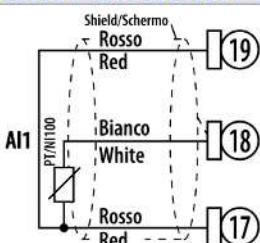
ATR244-23x



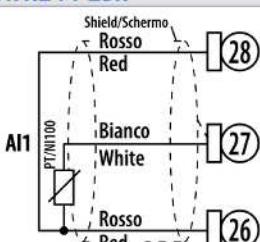
Pour thermocouples K, S, R, J, T, E, N, B.

- Respecter la polarité.
- Pour d'éventuelles rallonges, utiliser un câble compensé et des bornes adaptées au thermocouple utilisé (compensées).
- Quand on utilise un câble blindé, le blindage doit être raccordé à la terre à une seule extrémité.

ATR244-12x et ATR244-13

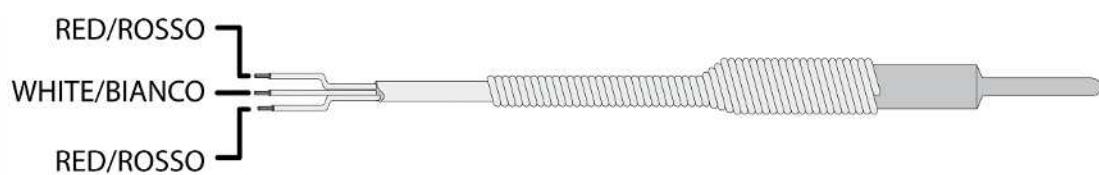


ATR244-23x

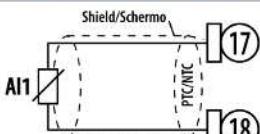


Pour thermorésistances PT100, NI100.

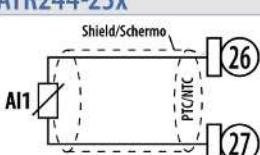
- Pour le raccordement à trois fils, utiliser des câbles de la même section.
- Pour le raccordement à deux fils, courtcircuiter les bornes 17 et 19 (version -12x et -13) ou 26 et 28.
- Quand on utilise un câble blindé, le blindage doit être raccordé à la terre à une seule extrémité.



ATR244-12x et ATR244-13



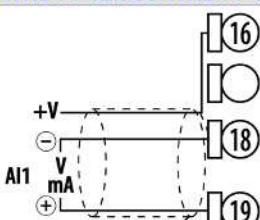
ATR244-23x



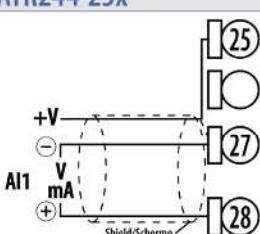
Pour thermorésistances NTC, PTC, PT500, PT1000 et potentiomètres linéaires.

- Quand on utilise un câble blindé, le blindage doit être raccordé à la terre à une seule extrémité.

ATR244-12x et ATR244-13



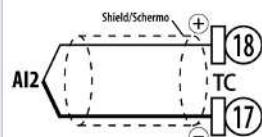
ATR244-23x



Pour signaux normalisés en courant et tension.

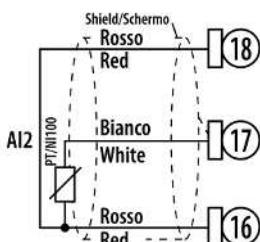
- Respecter la polarité.
- Quand on utilise un câble blindé, le blindage doit être raccordé à la terre à une seule extrémité.

5.1.c Entrée analogique AI2 (seulement ATR244-23x)



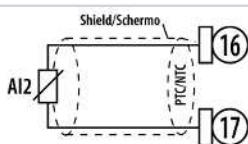
Pour thermocouples K, S, R, J, T, E, N, B.

- Respecter la polarité.
- Pour d'éventuelles rallonges, utiliser un câble compensé et des bornes adaptées au thermocouple utilisé (compensées).
- Quand on utilise un câble blindé, le blindage doit être raccordé à la terre à une seule extrémité.



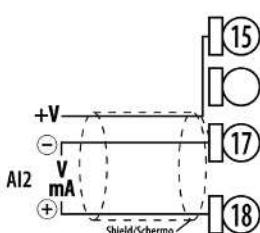
Pour thermorésistances PT100, NI100.

- Pour le raccordement à trois fils, utiliser des câbles de la même section.
- Pour le raccordement à deux fils, courtcircuiter les bornes 16 et 18.
- Quand on utilise un câble blindé, le blindage doit être raccordé à la terre à une seule extrémité.



Pour thermorés. NTC, PTC, PT500, PT1000 et potentiomètres linéaires.

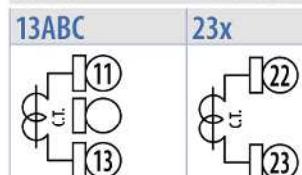
Quand on utilise un câble blindé, le blindage doit être raccordé à la terre à une seule extrémité.



Pour signaux normalisés en courant et tension.

- Respecter la polarité.
- Quand on utilise un câble blindé, le blindage doit être raccordé à la terre à une seule extrémité.
- Pour alimenter le capteur connecté à AI2 via +V (borne 15 ou 25), court-circuitez 0 V (borne 14 ou 24) avec la masse de l'entrée AI2 (borne 17).
- + V peut être sélectionné à 12Vdc ou 24Vdc en configurant le paramètre 282 *u.out* (GROUPE R - d SP - Affichage et interface).

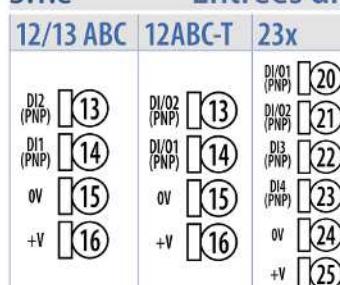
5.1.d Entrée CT (seulement ATR244-13ABC et 23xx-T)



Pour activer l'entrée CT modifier le paramètre 287 *cE F*.

- Entrée pour transformateur de courant 50 mA.
- Temps d'échantillonage 100 ms.
- Configurable par paramètres.

5.1.e Entrées digitales

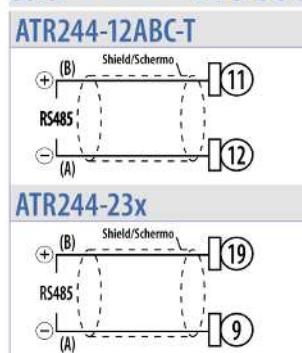


Entrées digitales activable par paramètres.

Fermer la borne "Dlx" sur la borne "+V" pour activer l'entrée digitale.

Il est possible de mettre en parallèle les entrées digitales de différents instruments en reliant les bornes (15).

5.1.f Entrée sérielle (seulement ATR244-xxxxx-T)



Communication RS485 Modbus RTU Slave avec isolation galvanique.

Il est recommandé d'utiliser un câble de communication torsadé et blindé.

5.1.g Sorties digitales

12/13 ABC	12ABC-T	23x
D02 (PNP) [11] +	DI/01 (PNP) [20] +	Sortie digital PNP (y compris le mode SSR) pour commande ou alarme.
D01 (PNP) [12] +	DI/02 (PNP) [21] +	Portée 12 VDC/25 mA ou 24 VDC/15mA sélectionnable par paramètre 282 u.out.
[13]	[14]	
OV [15] -	OV [15] -	Connectez la commande positive (+) du relais statique à la borne DO (x).
	OV [24] -	Connectez la commande négative (-) du relais statique à la borne 0V.

5.1.h Sortie analogique AO1

ATR244-12x et ATR244-13	ATR244-23x

Sortie analogique en **mA** ou **V** (isolé galvaniquement) configurable comme commande, alarme ou retransmission du procès-setpoint.
La sélection mA ou Volt pour la sortie analogique dépend de la configuration des paramètres.

5.1.i Sortie analogique AO2 (seulement ATR244-23xx-T)

	Sortie analogique en mA ou V (isolé galvaniquement) configurable comme commande, alarme ou retransmission du procès-setpoint.. La sélection mA ou Volt pour la sortie analogique dépend de la configuration des paramètres.
--	--

5.1.j Sortie relai Q1

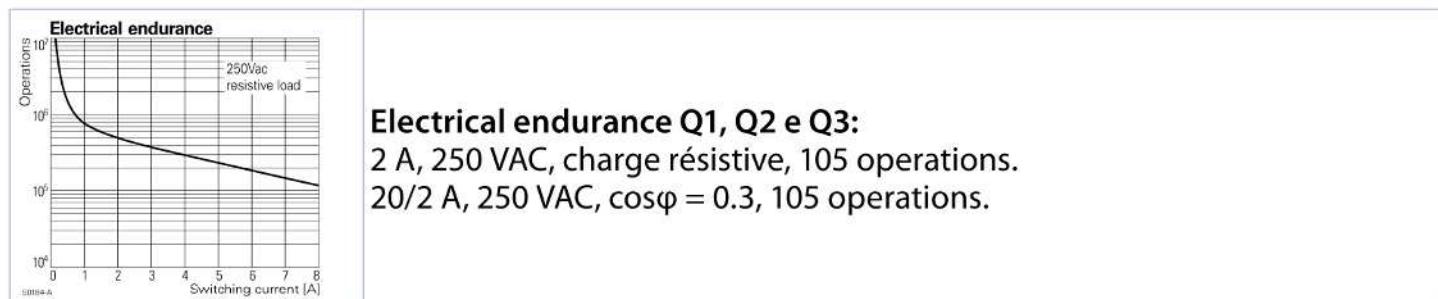
	Portée contacts 2 A / 250 VAC pour charges résistives. Voir le tableau ci-dessous.
--	---

5.1.k Sortie relai Q2 (seulement ATR244-12x)

	Portée contacts 2 A / 250 VAC pour charges résistives. Voir le tableau ci-dessous.
--	---

5.1.l Sortie relai Q2 - Q3 (ATR244-13ABC et ATR244-23xx-T)

	Portée contacts 2 A / 250 VAC pour charges résistives. Voir le tableau ci-dessous.
--	---



Notes / Mises à jour

6

Display and Key Functions

	1	1234	Normally displays the process. During the configuration phase, it displays the parameter being inserted.
	2	Probe	Normally displays the setpoint. During the configuration phase, it displays the parameter value being inserted.

6.1 Meaning of Status Lights (Led)

3	C1	ON when the command output 1 is active. In versions with single analog input, it is ON when the valve is opening. In the versions with two analog inputs, in case of command 1 on the motorized valve, it is permanently ON when the valve is opening and flashing during the closing phase.
4	C2	ON when the command output 2 is active. In versions with single analog input, it is ON when the valve is opening. In the versions with two analog inputs, in case of command 2 on the motorized valve, it is permanently ON when the valve is opening and flashing during the closing phase.
5	A1	ON when alarm 1 is active.
6	A2	ON when alarm 2 is active.
7	A3	ON when alarm 3 is active.
8	TUN	ON when the controller is executing an auto-tuning cycle.
9	MAN	ON when "Manual" function is active.
10	REM	ON when the controller communicates through serial. Flashes when the remote setpoint is enabled.

6.2 Keys

11	▲	<ul style="list-style-type: none"> Increases the main setpoint. During configuration allows to scroll the parameters or the groups of parameters. Increases the setpoints.
12	▼	<ul style="list-style-type: none"> Decreases the main setpoint. During configuration allows to scroll the parameters or the groups of parameters. Decreases the setpoints.
13	SET	<ul style="list-style-type: none"> Allows to visualize command and alarm setpoints. During configuration allows to enter the parameter to be modified and confirms the variation.
14	FNC	<ul style="list-style-type: none"> Allows to enter the Tuning launch function, automatic/manual selection. During configuration works as exit key (ESCAPE).
15	▲ ▼ ◆	<ul style="list-style-type: none"> ON during the rising phase of the pre-programmed cycle; ON during the falling phase of the pre-programmed cycle; Both ON during parameter modification, when this is not a default value.

7 Dual input mode

Each ATR401 model is provided with two analogue inputs: it is possible to do mathematic operations between 2 measured process values, correlating obtained result to the command or alarm outputs, or to give a process value as remote setpoint. It is also possible to use the controller for 2 independent control loops.

7.1 Selection of process value related to the command output and to the alarms

When second analogue input is enabled (par.18 *SEn.2* other than *d5Rb*) it is possible to choose the process value to be related to command output, to alarms and to retransmission.

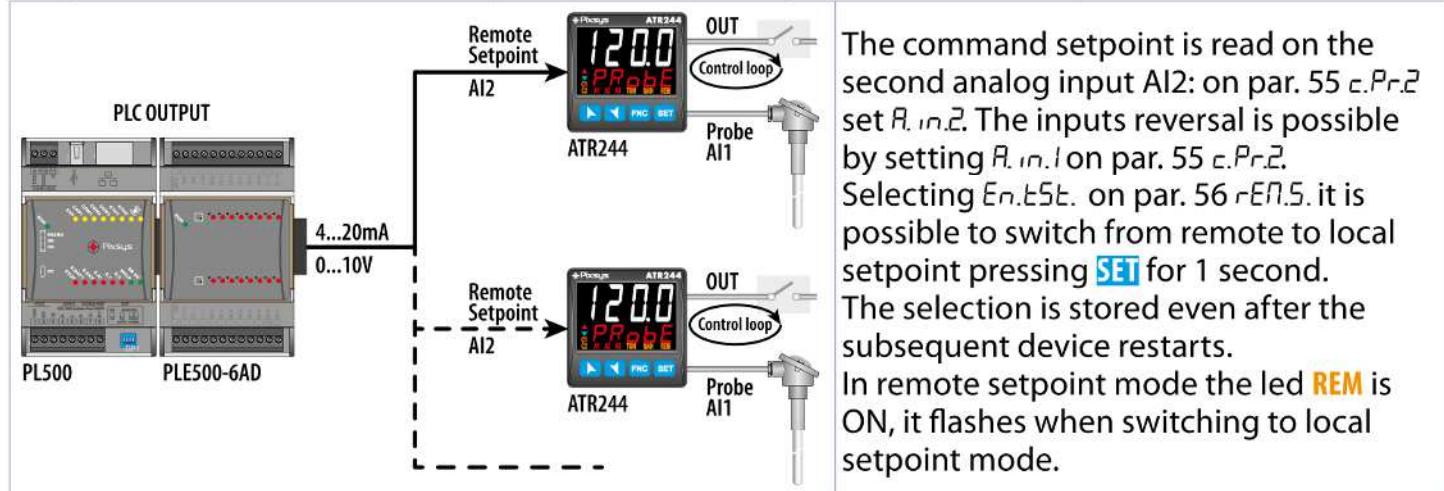
Following options are available:

- *R.in.1*: Value read by input AI1;
- *R.in.2*: Value read by input AI2;
- *MEAn*: Mean between inputs AI1 and AI2;
- *dIFF*: Difference between inputs: AI1-AI2;
- *Abs.dIFF*: Difference between inputs as absolute value: AI1-AI2;
- Command 1 process must be selected on parameter 36 *cPr.1*
- Command 2 process must be selected on parameter 55 *cPr.2*
- The process related to the alarms must be selected on par. 124 *R.iPr.* for the alarm 1, on par. 142 *R.2Pr.* for the alarm 2, on par. 160 *R.3Pr.* for the alarm 3, and on par. 178 *R.4Pr.* for the alarm 4, on par. 196 *R.5Pr.* for the alarm 5 and on par. 214 *R.6Pr.* for the alarm 6.
- The value to be retransmitted must be selected on par. 299 *rEn.1* and/or on par. 308 *rEn.2*.

It is possible to choose what to visualize on display 2 selecting par. 278 *u.d.2*.

7.2 Remote setpoint by analogue input

It is possible to enable remote setpoint function setting *EnRb.* or *En.E5E.* on par. 56 *rEn.5*.



The decimal point setting parameter for the image input (or remote setpoint) is locked and modifies automatically when the command input decimal point is changed.

7.3 Remote setpoint by serial input

It is possible to enable remote setpoint function selecting *En.5Er.* or *En.5E.E.* on par. 56 *rEn.5*. The remote setpoint must be written on the word modbus 1249 for the command 1 and 1250 for the command 2 (with tenth of degree if the command process is a temperature sensor).

It is possible to switch from remote to local setpoint pressing **SET** for 1 second. In remote setpoint mode the led **REM** is ON (if there is serial communication), it flashes when switching to local setpoint mode. At restarting the controller keeps set in remote setpoint mode (the setpoint value is initialized to 0).

8.1 Modification of main and alarm setpoint value

Setpoint value can be modified from keyboard as follows:

Press	Display	Do
1 	Value on display 2 changes.	Increases or decreases the main setpoint value.
2 	Visualizes the other setpoints on display 1. Display 2 shows the setpoint type.	
3 	Value on display 1 changes.	Increases or decreases the alarm setpoint value.

8.2 Automatic Tune

Automatic tuning procedure allows a precise regulation without delving into the PID regulation algorithm. Selecting Auto on par. 73 *tun.1* (for the regulation loop 1), or on par. 98 *tun.2* (for the regulation loop 2), the controller analyzes the process oscillations and optimizes the PID parameters. Led **TUN** flashes.

If the PID parameters are not yet selected, at the device switch-on, it is automatically launched the manual Tuning procedure described into the next paragraph.

8.3 Manual Tune

Manual procedure allows the user greater flexibility to decide when to update PID algorithm parameters. During the manual tuning, the device generates a step to analyze the system inertia to be regulated and, according to the collected data, modifies PID parameters.

After selecting *ATRnU* on par. 73 *tun.1*, or on par. 98 *tun.2*, the procedure can be activated in three ways:

- **Running Tuning by keyboard:**

Press **FNC** until display 2 shows *tunE* with display 1 on dis. and then press **SET**: display 1 shows Enab. Led **TUN** switches ON and the procedure starts.

- **Running Tuning by digital input:**

Select *tunE* on par. 231 d.1.F (or on par. 239 d.2.F, par. 247 d.3.F, par. 255 d.4.F). At first activation of digital input (commutation on front panel) led **TUN** led switches on and at second activation switches off.

- **Running Tuning by serial input:**

Write 1 on word modbus 1216 (command 1) or 1217 (command 2): led **TUN** switches ON and the procedure starts. Write 0 to stop the tuning.

To avoid an overshoot, the threshold where the controller calculates new PID parameters is determined by this operation:

Tune threshold = Setpoint - "Set Deviation Tune" (par. 74 S.d.E.1 or par. 99 S.d.E.2)

Ex.: if the setpoint is 100.0°C and the Par.32 S.d.E.1 is 20.0°C the threshold to calculate PID parameters is (100.0 - 20.0) = 80.0°C.

For a greater precision on PID parameters calculation it is suggested to start the manual tuning procedure when the process deviates from the setpoint.

8.4 Tuning once

Set *oncE* on parameter 73 *tun.1*, or on parameter 98 *tun.2*.

Autotuning procedure is executed only once at next ATR244 restart. If the procedure doesn't work, will be executed at next restart.

8.5 Synchronized tuning

Set **Synch.** on parameter 73 **Tun.1** or on parameter 98 **Tun.2**.

This procedure has been conceived to calculate correct PID values on multi-zone systems, where each temperature is influenced by the adjacent zones.

Writing on word modbus 1216 (for regulation loop 1) or 1217 (for regulation loop 2) the controller works as follows:

Word value	Action
0	Tune off
1	Command output OFF
2	Command output ON
3	Tune active
4	Tune completed: command output OFF (read only)
5	Tune not available: softstart function enabled (only reading)

Here below the functioning for regulation loop 1: the master switches-off or turns-on all zones (value 1 or 2 on word 1216) for a time long enough to create inertia on the system.

At this point the autotuning is launched (value 3 on word 1216). The controller executes the procedure for the calculation of the new PID values. When the procedure ends, the controller switches off the command output and selects the value 4 on word 1216. The master, who will always read the word 1216, will control the various zones and when all will have finished, will bring to 0 the value of word 1216: the various devices will regulate the temperature independently, with the new calculated values.

| The master must read the word 1216 at least every 10 seconds or the controller will automatically exit the autotuning procedure.

8.6 Digital input functions

The ATR244 functions related to digital inputs, can be enabled by parameters 231 **d.1.IF**, 239 **d.1.2F**, 247 **d.1.3F** and 255 **d.1.4F**.

- 2E5U:** Two threshold setpoint modification: with digital input active the ATR244 regulates on **SET2**, otherwise regulates on **SET1**;
- 2E5U.1:** Modification of 2 setpoints by digital input with impulse command;
- 3E5U.1:** Modification of 3 setpoints by digital input with impulse command,
- 4E5U.1:** Modification of 4 setpoints by digital input with impulse command,
- St.rSt:** Start / Stop of the controller by digital input with impulse command,
- run:** The regulation is enabled only with digital input active,
- HoLd:** With digital input active the conversion is locked (visualization maintenance function);
- tunE:** Enables/disables the Tuning if par. 73 **Tun.1** or par. 98 **Tun.2** is selected as **ParTu**;
- Au.PA.1:** If par. 48 **A.PA.1** or par. 67 **A.PA.2** is selected as **EnAb.** or **En.Sta.**, with impulse command on digital input, the ATR244 switches the related regulation loop, from automatic to manual and vice versa.
- Au.PA.c:** If par. 48 **A.PA.1** or par. 67 **A.PA.2** is selected as **EnAb.** or **En.Sta.** the ATR244 switches to manual the related regulation loop, with digital input active, otherwise the regulation is automatic.
- Act.EY:** On the regulation loop selected for this function (par. 234 **d.1.lr** or 242 **d.1.2r** or 250 **d.1.3r** or 258 **d.1.4r**), the ATR244 execute a cooling type regulation with digital input active, otherwise the regulation is of heating type;
- R.1.0:** Zero tare function: brings the related analogue input to 0. The analogue input is selected on par. 233 **d.1.IP** or 241 **d.1.2P** or 249 **d.1.3P** or 257 **d.1.4P**.
- FlrE5:** Allows the reset of the output if manual reset is active for the alarms and for the command outputs selected on par. 234 **d.1.lr** or 242 **d.1.2r** or 250 **d.1.3r** or 258 **d.1.4r**;
- E.lrun:** If timer 1 is enabled (par. 328 **Eflr.1** different from **d.1SAb**), with digital input active, the timer is switched to RUN, otherwise is kept in STOP;
- E.l5.E:** If timer 1 is enabled (par. 328 **Eflr.1** different from **d.1SAb**), acting on the digital input, the status of the timer switches from STOP to RUN e vice versa; **E.l5EA:** If il timer 1 is enabled (par. 328 **Eflr.1** differnet from **d.1SAb**), acting on the digital input, the timer is switched to RUN;
- E.lEnd:** If il timer 1 is enabled (par. 328 **Eflr.1** differnet from **d.1SAb**), acting on the digital input, the timer is switched to STOP;

- **t.2.run**: If timer 2 is enabled (par. 331 t.2 different from d.SAb), with digital input active, the timer is switched to RUN, otherwise is kept in STOP;
- **t.25.E**: If timer 2 is enabled (par. 331 t.2 different from d.SAb), acting on the digital input, the status of the timer switches from STOP to RUN e vice versa;
- **t.25.tA**: If timer 2 is enabled (par. 331 t.2 different from d.SAb), acting on the digital input, the timer is switched to RUN;
- **t.2.End**: If timer 2 is enabled (par. 331 t.2 different from d.SAb), acting on the digital input, the timer is switched to STOP;
- **Lo.cFG**: With digital input active, the access to setpoint configuration/modification is locked;
- **rEP5.E**: If on par. 56 rEP5.it is selected EnAb. or En.5Er), with digital input active the remote setpoint is enabled, otherwise the setpoint is local. On par. 234 d.1.lr. or 242 d.1.2r. or 250 d.1.3r. or 258 d.1.4r. it is necessary to select the reference regulation loop.

8.7 Automatic / Manual regulation for % output control

This function allows to switch from automatic functioning to manual command of the output percentage.

With par. 48 R.PA.1 (for regulation loop 1) or par. 67 R.PA.2 (for regulation loop 2) it is possible to select two modes.

- 1 **First selection** (EnAb.) allows to enable with **FNC** the writing P--- on display 1, while on display 2 is showed Auto.

Press **SET** to visualize **PAuto**; it's now possible, during the process visualization, modify through the keys **▲** and **▼** the output percentage. To back to automatic, with the same procedure, select **Auto**. on display 2: immediately led **MAN** switches off and functioning backs to automatic.

- 2 **Second selection** (En.5Eo.) enables the same functioning but with two important variants:

- If there is a temporary power failure or after switch-off, the manual functioning as well as the previous output percentage value will be maintained at restarting.
- If the sensor breaks during automatic functioning, the controller switches to manual mode while maintaining the output percentage command unchanged as generated by the PID immediately before breakage.

Ex: on an extruder the command in percentage of the resistance (load) is maintained also in case of input sensor failure.

8.8 Heater Break Alarm on CT (current transformer - only on ATR244-13ABC and 23xx-T)

This function allows to measure load current to manage an alarm during a malfunctioning with power in short circuit, always open or partial break of the charge. To enable this function set **50 H2** or **60 H2** on par. 287 ct F. and the value of the connected transfromer, on par. 288 ct u..

- Select on par. 289 H.b.R.r. the regulation loop referred to the current measure and the Heater Break Alarm intervention.
- Select on par. 290 H.b.R.E. the Heater Break Alarm intervention threshold in Ampere.
- Select on par. 291 acu.E. the intervention threshold in Ampere to control the overcurrent.
- Select on par. 292 H.b.R.d. the delay time in seconds for the Heater Break Alarm intervention.
- It is possible to associate an alarm, selecting **H.b.R.** on par. 123 RL1F. on par. 141 RL2F. or par. 159 RL3F. or par. 177 RL4F. or par. 195 RL5F. or par. 213 RL6F.

It is possible to visualize on display 2 the average current, selecting **ANPER** on par. 278 u.i.d.2.

Selecting 0 on par. 290 H.b.R.E. it is possible to visualize the current consumption without generating an Heater Break Alarm.

8.9 Dual Action (Heating-Cooling)

ATR244 is suitable also for systems requiring a combined heating-cooling action.

The command output has to be configured as PID for Heating (Par. 38 $P.c.E.1$ or Par. 57 $P.c.E.2 = HEAT$ and $P.b.1$ or $P.b.2$ greater than 0), and one of the alarms ($AL.1.F$, $AL.2.F$, $AL.3.F$, $AL.4.F$, $AL.5.F$ or $AL.5.F$) has to be configured as $cool$.

The command output must be connected to the actuator responsible for heating, while the alarm will control cooling action.

Parameters to be configured for the heating PID are:

$P.c.E.1$ or $P.c.E.2 = HEAT$ Command output action type (Heating);

$P.b.1$ or $P.b.2$: Heating proportional band;

$i.E.1$ or $i.E.2$: Integral time of heating and cooling;

$d.E.1$ or $d.E.2$: Derivative time of heating and cooling;

$c.E.1$ or $c.E.2$: Heating time cycle.

Parameters to be configured for the cooling PID related to regulation loop 1 and alarm 1 are:

$AL.1.F = cool$. Alarm 1 selection (Cooling);

$P.b.1.t$: Proportional band multiplier;

$o.d.b.1$: Overlapping / Dead band;

$c.c.E.1$: Cooling time cycle.

Par. $P.b.1.t$ (that ranges from 1.00 to 5.00) determines the proportional band of cooling action basing on the formula:

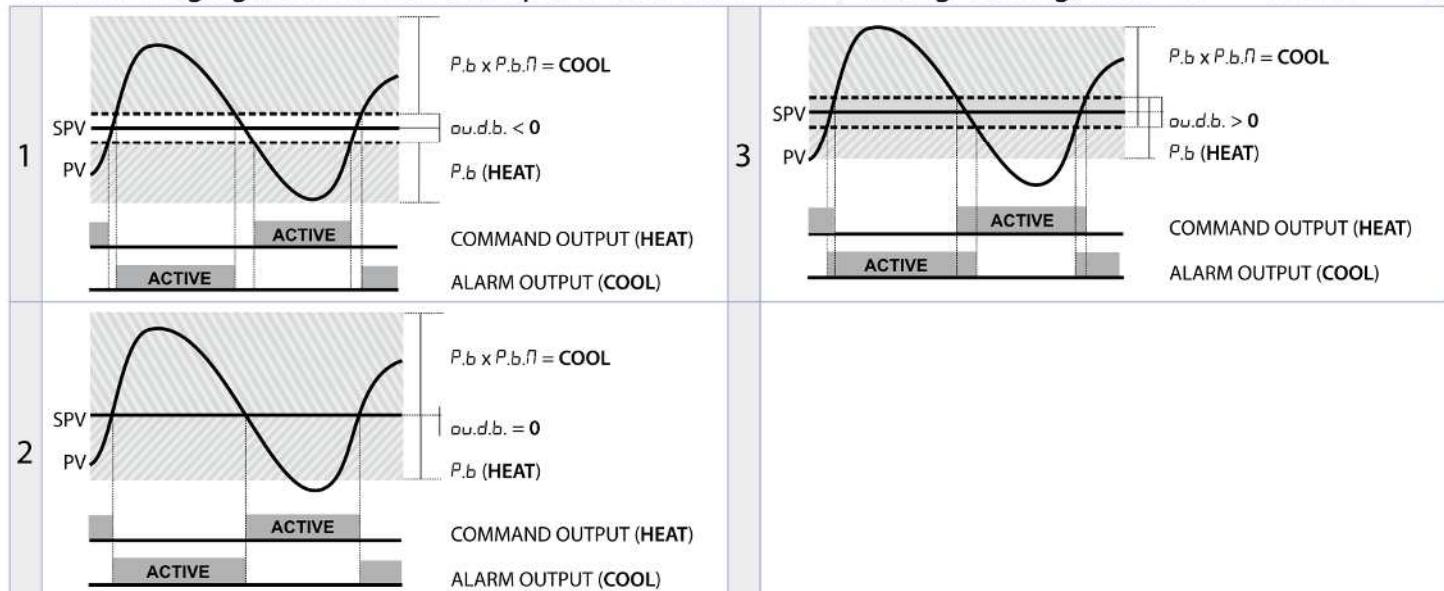
Proportional band for cooling action = $P.b.1 \times P.b.1.t$

This gives a proportional band for cooling which will be the same as heating band if $P.b.1.t = 1.00$, or 5 times greater if $P.b.1.t = 5.00$.

Integral and derivative time are the same for both actions.

Par. $o.d.b.1$ determines the percentage overlapping between the two actions. For systems in which the heating output and cooling output must never be simultaneously active a Dead Band ($o.d.b.1 \leq 0$), must be configured, vice versa you can configure an overlapping ($o.d.b.1 > 0$).

The following figure shows an example of dual action PID (heating-cooling) with $i.E.1 = 0$ e $d.E.1 = 0$.



Parameter $c.c.E.1$ has the same meaning of cycle time for heating action $c.E.1$.

Parameter $co.F.1$ (Cooling Fluid) pre-selects the proportional band multiplier $P.b.1.t$ and the cooling PID cycle time $c.c.E.1$ according to cooling fluid type:

$co.F.1$	Cooling fluid type	$P.b.1.t$	$c.c.E.1$
Air	Air	1.00	10
oil	Oil	1.25	4
$H2O$	Water	2.50	2

Once parameter $co.F.1$ has been selected, the parameters $P.b.1.t$, $o.d.b.1$ and $c.c.E.1$ can be however modified.

8.10 LATCH ON Function

For use with input P_{oE} and with linear input (0..10 V, 0..40 mV, 0/4..20 mA) it is possible to associate start value of the scale (par. 4 L_{L1} or par. 21 L_{L2}) to the minimum position of the sensor and value of the scale end (par. 5 u_{L1} or par. 22 u_{L2}) to the maximum position of the sensor (par. 10 L_{Ec1} or par. 27 L_{Ec2} configured as S_{Endr}).

It is also possible to fix the point in which the controller will display 0 (however keeping the scale range between L_{L1} / L_{L2} and u_{L1} / u_{L2}) using the "virtual zero" option by selecting $u_{0.5Eo}$ or $u_{0.Eon}$ on par. 10 L_{Ec1} or 27 L_{Ec2} . Selecting $u_{0.Eon}$, the virtual zero must be reset at each switching on; selecting $u_{0.5Eo}$, the virtual zero will remain fixed once calibrated. To use the LATCH ON function, configure the par. L_{Ec1} or 27 L_{Ec2} .

Then refer to the following table for the calibration procedure:

	Press	Display	Do
1	FNC	Exit parameters configuration. Display 2 visualizes writing L_{Ec} .	Place the sensor on minimum operating value (corresponding to L_{L1} / L_{L2})
2	▼	Store value on minimum. Display shows L_{oU} .	Place sensor on maximum operating value (corresponding to u_{L1} / u_{L2}).
3	▲	Store value on max. Display shows H_{iUh} .	To exit standard proceeding press SETI. For "virtual zero" setting, place the sensor to zero point.
4	FNC	Set virtual zero. Display shows $2Ero$. If "Virtual zero at start" is selected, point 4 must be repeated at each starting.	To exit procedure press SETI.



8.11 Soft-Start Function

ATR244 is provided with two types of softstart selectable on parameter 264 55.EY ("Softstart Type").

- First selection (G_{RaD}) enables gradient softstart. At starting the controller reaches setpoint basing on the rising gradient set on parameter 266 55.Gr. ("Softstart Gradient") in Unit/hour (ex. °C/h). If parameter 269 55.E1. ("Softstart Time") is different to 0, at starting when the time selected on par. 269 is elapsed, the controller stops to follow the gradient and reaches setpoint with the maximum power.
- Second selection (PE_{rc}) enables output percentage softstart. On par. 268 55.EH it is possible to set the threshold under which starts the softstart ("Softstart Threshold"). On par. 267 55.PE. ("Softstart Percentage") an output percentage is selectable (from 0 to 100), which controller keeps until the process exceeds the threshold set on par. 268 or until the time in minutes set on par. 269 55.E1. ("Softstart Time" word 2084).

If the Sof-Start function is active the automatic/manual Tuning function cannot be activated.

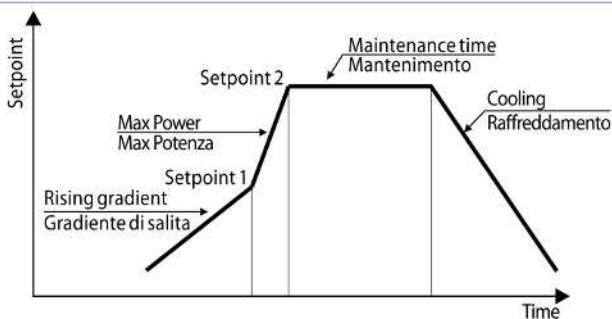
8.12 Pre-Programmed cycle

Pre-programmed cycle function activates by setting $ENRb$ on parameter 263 Pr.cY.

Controller reaches setpoint 1 basing on the gradient set on parameter 266 55.Gr., then it reaches max. power up to setpoint 2. When the process reaches max. power, this setpoint is maintained for the time set on parameter 270 PR.E1..

At expiry, process will reach ambient temperature according to gradient entered on parameter 271 FR.Gr., then command output will be disabled and display will visualize S_{OpP} .

¹ The tuning procedure starts by exiting the configuration after changing the parameter.



Cycle starts at each activation of the controller, or via digital input if it is enabled for this type of functioning (parameters 231, 239, 247, 255 set as **St./St.** or **RuN**).

8.13 Retransmission function on analogue output

If not used as command, the analogue output can be used to retransmit process/ setpoint/ current read by the C.T. input/ output percentage.

Select on parameter 298 **rE7.1** ("Retransmission 1") or on parameter 308 **rE7.2** ("Retransmission 2") the value to be retransmitted and on parameter 299 **r.IEY** ("Retransmission 1 Type") or on parameter 309 **r2EY** ("Retransmission 2 Type") the output type. It is possible also to select on parameters 300 **r.ILL** and 301 **r.IuL** or 310 **r2LL** and 311 **r2uL** the input value rescale limits.

8.14 Timer functions

The ATR244 integrates two timers that can be independent, sequential or looped together.

Timer 1 is enabled on parameter 328 **tE7.1**; timer 2 on parameter 331 **tE7.2**:

- ENRb.** the timer starts from the keyboard or digital input (user intervention is required)
- EN.SER.** the timer starts counting when the regulator is in RUN.

The timer time-base set in **PP.55** or **hh.PP** by changing parameters 329 **E.b.E.1** for timer 1 and 332 **E.b.E.2** for timer 2.

In parameter 334 **E7r5** can be define whether the timers should be independent or related to each other.

- SINGL.** The timers work independently of each other.
- SEQuE.** When timer 1 ends, timer 2 starts. The sequence is active only by starting timer 1. When timer 2 expires, the sequence is interrupted.
- Loop** When a timer ends, another starts: the sequence repeats itself cyclically.

To change the duration of the counting time, follow the steps below:

	Press	Display	Do
1	SET	Press until tE7.1 or tE7.2 visualized on display 1.	
2	▲▼	Digits on display 1 changes.	Increase or decrease time value for the selected timer.

To start the keyboard count follow the steps below:

	Press	Display	Do
1	FNC	Press until tE7.1 or tE7.2 visualized on display 2. Display 1 shows STOP if the timer is stopped, otherwise it shows the remaining time.	
2	SET	The timer stops if active or starts counting if in STOP.	

Start/Stop of Timer is possibile also by digital input (see parameters **d.1.F ... d.4.F.**)

The alarm outputs can be associated with the timers (parameters **AL.1F AL.6F**). On parameters 330 **A.E7.1** and 333 **A.E7.2** is possible to select the activation mode. The proposed solutions are as follows:

- START** Alarm active during timer counting
- End** Alarm active when the timer expiry
- WARN.** Alarm active 5 " before the timer expiry

9 Serial communication

ATR244-xxxxx-T is equipped with RS485 and can receive/broadcast data via serial communication using MODBUS RTU protocol. The device can only be configured as a Slave. This function enables the control of multiple controllers connected to a supervisory system / SCADA.

Each controller responds to a Master query only if the query contains the same address as parameter 318 5L.Rd. ("Slave Address").

The addresses permitted range from 1 to 254 and there must not be controllers with the same address on the same line.

Address 255 can be used by the Master to communicate with all the connected equipment (broadcast mode), while with 0 all the devices receive the command, but no response is expected.

The baud rate is selected on parameter 319 bd.rt. ("Baud Rate").

ATR244 can introduce a delay (in milliseconds) of the response to the master request. This delay must be set on parameter 321 5E.dE. ("Serial Delay").

Each parameter modification is saved by the controller in the EEPROM memory (100000 writing cycles), while the setpoints are saved with a delay of 10 seconds after the last modification.

Changes made to words that are different from those reported in the following table can lead to malfunction.

Modbus RTU protocol features			
Baud-rate		Selectable on parameter 319 bd.rt. 1200bit/s 28800bit/s 2400bit/s 38400bit/s 4800bit/s 57600bit/s 9600bit/s 115200bit/s 19200bit/s	
Format		Selectable on parameter 320 5.P.P. 8N1 8N2 8E1 8E2 8O1 8O2	
Supported functions		WORD READING (max 50 word) (0x03, 0x04) SINGLE WORD WRITING (0x06) MULTIPLE WORDS WRITING (max 50 word) (0x10)	

Here below a list of all available addresses and supported functions:

RO = Read Only R/W = Read/Write WO = Write Only

Modbus address	Description	Read Write	Reset value
0	Device type	RO	47x
1	Software version	RO	Flash
2	Boot version	RO	Flash
3	Slave Address	RO	Eepr/dip
6	Baud rate	RO	Eepr/dip
50	Slave address automatic learning	WO	-
51	System code comparison for slave address automatic learning	WO	-
500	Loading default values (write 9999)	RW	0
501	Restart ATR244 (write 9999)	RW	0
502	Setpoint storing delay time	RW	10
503	Parameters storing delay time	RW	1
701	First character of the custom alarm message 1	RW	"u"
...			
723	Last character of the custom alarm message 1	RW	0
751	First character of the custom alarm message 2	RW	"u"
...			

Modbus address	Description	Read Write	Reset value
773	Last character of the custom alarm message 2	RW	0
801	First character of the custom alarm message 3	RW	"u"
...			
823	Last character of the custom alarm message 3	RW	0
851	First character of the custom alarm message 4	RW	"u"
...			
873	Last character of the custom alarm message 4	RW	0
901	First character of the custom alarm message 5	RW	"u"
...			
923	Last character of the custom alarm message 5	RW	0
951	First character of the custom alarm message 6	RW	"u"
...			
973	Last character of the custom alarm message 6	RW	0
1000	AI1 value (degrees with tenth)	RO	-
1001	AI2 value (degrees with tenth)	RO	-
1002	Average between AI1 and AI2 $[(AI1 + AI2) / 2]$ (degrees with tenth)	RO	0
1003	Difference between AI1 and AI2 $(AI1 - AI2)$ (degrees with tenth)	RO	0
1004	Module of the difference between AI1 and AI2 $(AI1 - AI2)$ (degrees with tenth)	RO	0
1005	Sum of AI1 and AI2 $(AI1 + AI2)$ (degrees with tenth)	RO	0
1006	Real setpoint (gradient) of the regulation loop 1	RO	0
1007	Real setpoint (gradient) of the regulation loop 2	RO	0
1008	Alarms status (0=absent, 1=present) Bit0 = Alarm 1 Bit3 = Alarm 4 Bit1 = Alarm 2 Bit4 = Alarm 5 Bit2 = Alarm 3 Bit5 = Alarm 6	RO	0
1009	Error flags 1 Bit0 = AI1 process error (sensor 1) Bit1 = AI2 process error (sensor 2) Bit2 = Cold junction error Bit3 = Safety error Bit4 = Generic error Bit5 = Hardware error Bit6 = Error H.B.A. (partial rupture of the load) Bit7 = Error H.B.A. (SSR in short circuit) Bit8 = Overcurrent error Bit9 = Parameters out of range error Bit10 = CPU eeprom writing error Bit11 = RFid eeprom writing error Bit12 = CPU eeprom reading error Bit13 = RFid eeprom reading error Bit14 = Eeprom calibrations bench corrupted Bit15 = Eeprom constants bench corrupted	RO	0
1010	Error flags 2 Bit0 = Missing calibrations error Bit1 = Eeprom CPU bench parameters corrupted Bit2 = Eeprom CPU setpoint bench corrupted Bit3 = RFid memory not formatted Bit4 = Error AI2 disabled	RO	0
1011	Digital inputs status (0=not active, 1=active) Bit0 = Digital inp. 1 Bit2 = Digital inp. 3 Bit1 = Digital inp. 2 Bit3 = Digital inp. 4	RO	0

Modbus address	Description	Read Write	Reset value
1012	Outputs status (0=off, 1=on) Bit 0 = Q1 Bit 3 = DO1 Bit 1 = Q2 Bit 4 = DO2 Bit 2 = Q3	RO	0
1013	Led status (0=OFF, 1=ON) Bit 0 = Led UP arrow Bit 6 = Led TUN Bit 1 = Led C1 Bit 7 = Led point time 2 Bit 2 = Led C2 Bit 8 = Led MAN Bit 3 = Led A1 Bit 9 = Led REM Bit 4 = Led A2 Bit 10 = Led DOWN arrow Bit 5 = Led A3 Bit 11 = Led point time 1	RO	0
1014	Key status (0=released, 1=pressed) Bit 0 = Key UP arrow Bit 2 = Key FNC Bit 1 = Key DOWN arrow Bit 3 = Key SET	RO	0
1015	Cold junction temperature (degrees with tenth)	RO	-
1016	Current CT instantaneous (Ampere with tenth)	RO	0
1017	Current CT average (Ampere with tenth)	RO	0
1018	Current CT ON (Ampere with tenth)	RO	0
1019	Current CT OFF (Ampere with tenth)	RO	0
1100	AI1 value with decimal point selection	RO	-
1101	AI2 value with decimal point selection	RO	-
1102	Average between AI1 and AI2 [(AI1 + AI2) / 2] with decimal point selection	RO	0
1103	Difference between AI1 and AI2 (AI1 - AI2) with decimal point selection	RO	0
1104	Module of the difference between AI1 and AI2 (AI1 - AI2) with decimal point selection	RO	0
1105	Sum of AI1 and AI2 (AI1 + AI2) with decimal point selection	RO	0
1106	Real setpoint (gradient) of the regulation loop 1 with decimal point selection	RO	0
1107	Real setpoint (gradient) of the regulation loop 2 with decimal point selection	RO	0
1200	Setpoint 1 of regulation loop 1 (degrees with tenth)	R/W	EEPROM
1201	Setpoint 2 of regulation loop 1 (degrees with tenth)	R/W	EEPROM
1202	Setpoint 3 of regulation loop 1 (degrees with tenth)	R/W	EEPROM
1203	Setpoint 4 of regulation loop 1 (degrees with tenth)	R/W	EEPROM
1204	Setpoint 1 of regulation loop 2 (degrees with tenth)	R/W	EEPROM
1205	Setpoint 2 of regulation loop 2 (degrees with tenth)	R/W	EEPROM
1206	Setpoint 3 of regulation loop 2 (degrees with tenth)	R/W	EEPROM
1207	Setpoint 4 of regulation loop 2 (degrees with tenth)	R/W	EEPROM
1208	Alarm 1 setpoint (degrees with tenth) Alarm 1 upper setpoint if Par. 123 <i>RL.1.F.</i> = <i>R.bRNd</i>	R/W	EEPROM
1209	Alarm 2 setpoint (degrees with tenth) Alarm 2 upper setpoint if Par. 141 <i>RL.2.F.</i> = <i>R.bRNd</i>	R/W	EEPROM
1210	Alarm 3 setpoint (degrees with tenth) Alarm 3 upper setpoint if Par. 159 <i>RL.3.F.</i> = <i>R.bRNd</i>	R/W	EEPROM
1211	Alarm 4 setpoint (degrees with tenth) Alarm 4 upper setpoint if Par. 177 <i>RL.4.F.</i> = <i>R.bRNd</i>	R/W	EEPROM
1212	Alarm 5 setpoint (degrees with tenth) Alarm 5 upper setpoint if Par. 195 <i>RL.5.F.</i> = <i>R.bRNd</i>	R/W	EEPROM
1213	Alarm 6 setpoint (degrees with tenth) Alarm 6 upper setpoint if Par. 213 <i>RL.6.F.</i> = <i>R.bRNd</i>	R/W	EEPROM

Modbus address	Description	Read	Reset value
		Write	
1214	Start/Stop 0=controller in STOP 1=controller in START	R/W	0
1215	Hold conversion ON/OFF 0=Hold conversion OFF 1=Hold conversion ON	R/W	0
1216	Tune management for regulation loop 1 With automatic Tune (par. 73 $tun.l = Auto$): 0=autotuning function OFF 1=autotuning ON	RO	0
	With manual Tune (par. 73 $tun.l = Manu.$ or One): 0=autotuning function OFF 1=autotuning ON	R/W	0
	With synchronized Tune (par. 73 $tun.l = SyncH$): 0=autotuning function OFF 1=command output OFF (forces the cooling) 2=command output ON (forces the heating)	R/W	0
	3=autotuning ON 4=autotuning ended		
1217	Tune management for regulation loop 2 With automatic Tune (par. 98 $tun.2 = Auto$): 0=autotuning function OFF 1=autotuning ON	RO	0
	With manual Tune (par. 98 $tun.2 = Manu.$ or One): 0=autotuning function OFF 1=autotuning ON	R/W	0
	With synchronized Tune (par. 98 $tun.2 = SyncH$): 0=autotuning function OFF 1=command output OFF (forces the cooling) 2=command output ON (forces the heating)	R/W	0
	3=autotuning ON 4=autotuning ended		
1218	Automatic/manual selection for regulation loop 1 0=automatic; 1>manual	R/W	0
1219	Automatic/manual selection for regulation loop 2 0=automatic; 1>manual	R/W	0
1220	Command output percentage for regulation loop 1 (0-10000) Heating output percentage with regulation 1 in double loop (0-10000)	R/W	0
1221	Command output percentage for regulation loop 1 (0-1000) Heating output percentage with regulation 1 in double loop (0-1000)	R/W	0
1222	Command output percentage for regulation loop 1 (0-100) Heating output percentage with regulation 1 in double loop (0-100)	R/W	0
1223	Cooling output percentage with regulation 1 in double loop (0-10000)	RO	0
1224	Cooling output percentage with regulation 1 in double loop (0-1000)	RO	0
1225	Cooling output percentage with regulation 1 in double loop (0-100)	RO	0
1226	Command output percentage for regulation loop 2 (0-10000) Heating output percentage with regulation 2 in double loop (0-10000)	R/W	0
1227	Command output percentage for regulation loop 2 (0-1000) Heating output percentage with regulation 2 in double loop (0-1000)	R/W	0
1228	Command output percentage for regulation loop 2 (0-100) Heating output percentage with regulation 2 in double loop (0-100)	R/W	0

Modbus address	Description	Read Write	Reset value
1229	Cooling output percentage with regulation 2 in double loop (0-10000)	RO	0
1230	Cooling output percentage with regulation 2 in double loop (0-1000)	RO	0
1231	Cooling output percentage with regulation 2 in double loop (0-100)	RO	0
1232	Command output manual reset for regulation loop 1: write 0 to reset the command output. In reading 0=reset not allowed, 1=reset allowed	R/W	0
1233	Alarms manual reset: write 0 to reset all alarms. In reading 0=reset not allowed, 1=reset allowed Bit0 = Alarm 1 Bit3 = Alarm 4 Bit1 = Alarm 2 Bit4 = Alarm 5 Bit2 = Alarm 3 Bit5 = Alarm 6	R/W	0
1234	Command output manual reset for regulation loop 2: write 0 to reset the command output. In reading 0=reset not allowed, 1=reset allowed	R/W	0
1235	Alarm 1 remote stauts (0=absent, 1=present)	R/W	0
1236	Alarm 2 remote stauts (0=absent, 1=present)	R/W	0
1237	Alarm 3 remote stauts (0=absent, 1=present)	R/W	0
1238	Alarm 4 remote stauts (0=absent, 1=present)	R/W	0
1239	Alarm 5 remote stauts (0=absent, 1=present)	R/W	0
1240	Alarm 6 remote stauts (0=absent, 1=present)	R/W	0
1241	Value AO1 by serial (Par. 298 $rL.1 = Rd.bu5$)	R/W	0
1242	Value AO2 by serial (Par. 308 $rL.2 = Rd.bu5$)	R/W	0
1243	Tare of zero AI1 (1=tare; 2=reset tare)	R/W	0
1244	Tare of zero AI2 (1=tare; 2=reset tare)	R/W	0
1245	Tare of zero average between AI1 and AI2 $[(AI1 + AI2) / 2]$ (1=tare; 2=reset tare)	R/W	0
1246	Tare of zero difference between AI1 and AI2 $(AI1 - AI2)$ (1=tare; 2=reset tare)	R/W	0
1247	Tare of zero module of the difference between AI1 and AI2 $(AI1 - AI2)$ (1=tare; 2=reset tare)	R/W	0
1248	Tare of zero sum of AI1 and AI2 $(AI1 + AI2)$ (1=tare; 2=reset tare)	R/W	0
1249	Value of remote setpoint by command 1 serial	R/W	0
1250	Value of remote setpoint by command 2 serial	R/W	0
1251	Alarm 1 lower setpoint if Par. 123 $RL.1.F. = R.bnD$ (degrees with tenth)	R/W	EEPROM
1252	Alarm 2 lower setpoint if Par. 141 $RL.2.F. = R.bnD$ (degrees with tenth)	R/W	EEPROM
1253	Alarm 3 lower setpoint if Par. 159 $RL.3.F. = R.bnD$ (degrees with tenth)	R/W	EEPROM
1254	Alarm 4 lower setpoint if 177 $RL.4.F. = R.bnD$ (degrees with tenth)	R/W	EEPROM
1255	Alarm 5 lower setpoint if Par. 195 $RL.5.F. = R.bnD$ (degrees with tenth)	R/W	EEPROM
1256	Alarm 6 lower setpoint if Par. 213 $RL.6.F. = R.bnD$ (degrees with tenth)	R/W	EEPROM
1300	Setpoint 1 of regulation loop 1, with decimal point selection	R/W	EEPROM
1301	Setpoint 2 of regulation loop 1, with decimal point selection	R/W	EEPROM
1302	Setpoint 3 of regulation loop 1, with decimal point selection	R/W	EEPROM
1303	Setpoint 4 of regulation loop 1, with decimal point selection	R/W	EEPROM
1304	Setpoint 1 of regulation loop 2, with decimal point selection	R/W	EEPROM
1305	Setpoint 2 of regulation loop 2, with decimal point selection	R/W	EEPROM
1306	Setpoint 3 of regulation loop 2, with decimal point selection	R/W	EEPROM
1307	Setpoint 4 of regulation loop 2, with decimal point selection	R/W	EEPROM
1308	Alarm 1 setpoint, with decimal point selection Alarm 1 upper setpoint if Par. 123 $RL.1.F. = R.bnD$	R/W	EEPROM

Modbus address	Description	Read Write	Reset value
1309	Alarm 2 setpoint, with decimal point selection Alarm 2 upper setpoint if Par. 141 RL.2.F. = R.bRND	R/W	EEPROM
1310	Alarm 3 setpoint, with decimal point selection Alarm 3 upper setpoint if Par. 159 RL.3.F. = R.bRND	R/W	EEPROM
1311	Alarm 4 setpoint, with decimal point selection Alarm 4 upper setpoint if Par. 177 RL.4.F. = R.bRND	R/W	EEPROM
1312	Alarm 5 setpoint, with decimal point selection Alarm 5 upper setpoint if Par. 195 RL.5.F. = R.bRND	R/W	EEPROM
1313	Alarm 6 setpoint, with decimal point selection Alarm 6 upper setpoint if Par. 213 RL.6.F. = R.bRND	R/W	EEPROM
1351	Alarm 1 lower setpoint if Par. 123 RL.1.F. = R.bRND, with decimal point selection	R/W	EEPROM
1352	Alarm 2 lower setpoint if Par. 141 RL.2.F. = R.bRND, with decimal point selection	R/W	EEPROM
1353	Alarm 3 lower setpoint if Par. 159 RL.3.F. = R.bRND, with decimal point selection	R/W	EEPROM
1354	Alarm 4 lower setpoint if Par. 177 RL.4.F. = R.bRND, with decimal point selection	R/W	EEPROM
1355	Alarm 5 lower setpoint if Par. 195 RL.5.F. = R.bRND, with decimal point selection	R/W	EEPROM
1356	Alarm 6 lower setpoint if Par. 213 RL.6.F. = R.bRND, with decimal point selection	R/W	EEPROM
2001	Parameter 1	R/W	EEPROM
2002	Parameter 2	R/W	EEPROM
...	Parameter ...	R/W	EEPROM
2366	Parameter 366	R/W	EEPROM

9.1 Serial compatibility with ATR243-21ABC-T

In existing plants where it is necessary to replace an ATR243-21ABC-T, it is possible to install a new ATR244-12ABC-T enabling the Modbus register's compatibility.

To enable the Modbus register's compatibility with the ATR243, simply enter the password 0243.

To return again to the ATR244 Modbus mapping, enter the password 0244.

The new register map is the following:

Modbus address	Description of compatibility registers	Read Write	Reset value
0	Device type	RO	EEPROM
1	Software version	RO	EEPROM
5	Slave address	RO	EEPROM
6	Boot version	RO	EEPROM
50	Automatic addressing	WO	-
51	System code comparison	WO	-
500	Loading default values (write 9999)	R/W	0
510	Setpoints storing time in eeprom (0-60 s)	R/W	10
999	Process subjected to the visualization filter	RO	-
1000	Process (degrees with tenths for temperature sensors; digits for linear sensors)	RO	-
1001	Setpoint 1	R/W	EEPROM
1002	Setpoint 2	R/W	EEPROM
1003	Setpoint 3	R/W	EEPROM
1004	Setpoint 4	R/W	EEPROM
1005	Alarm 1	R/W	EEPROM

1006	Alarm 2	R/W	EEPROM
1007	Alarm 3	R/W	EEPROM
1008	Setpoint gradient	RO	EEPROM
1009	Relay status (0 = Off, 1 = On): Bit 0 = Relay Q1 Bit 1 = Relay Q2 Bit 2 = Reserved Bit 3 = SSR	RO	0
1010	Heating output percentage (0-10000)	R/W	0
1011	Cooling output percentage (0-10000)	RO	0
1012	Alarms status (0 = None, 1 = Active) Bit 0 = Alarm 1 Bit 1 = Alarm 2 Bit 2 = Alarm 3	RO	0
1013	Manual reset: write 0 to reset all alarms. In reading (0 = Not resettable, 1 = Resettable) Bit 0 = Alarm 1 Bit 1 = Alarm 2 Bit 2 = Alarm 3	R/W	0
1014	Error flags Bit 0 = Eeprom writing error Bit 1 = Eeprom reading error Bit 2 = Cold junction error Bit 3 = Process error (sensor) Bit 4 = Generic error Bit 5 = Hardware error Bit 6 = L.B.A.O. error Bit 7 = L.B.A.C. error Bit 8 = Missing calibration data error	RO	0
1015	Cold junction temperature (degrees.tenths)	RO	-
1016	Start / Stop 0 = Controller in STOP 1 = Controller in START	R/W	0
1017	Lock conversion ON / OFF 0 = Lock conversion OFF 1 = Lock conversion ON	R/W	0
1018	Tuning ON / OFF 0 = Tuning OFF 1 = Tuning ON	R/W	0
1019	Automatic / manual selection 0 = Automatic	R/W	0
1020	C.T. current ON (Ampere with tenths)	RO	0
1021	C.T. current OFF (Ampere with tenths)	RO	0
1022	OFF LINE* time (milliseconds)	R/W	-
1023	Instant Current (Ampere)	RO	0
1024	Digital Input State	RO	0
1025	Gestione Tune per loop di regolazione 1 With automatic Tune (par. 73 <i>EuN.I</i> = Auto): 0= autotuning function OFF 1= autotuning in corso	RO	0
	With manual Tune (par. 73 <i>EuN.I</i> = <i>MANu.</i> or <i>oNcE</i>): 0= autotuning function OFF	R/W	0
	1= autotuning ON		
	With synchronized Tune (par. 73 <i>EuN.I</i> = <i>SYNch.</i>): 0= autotuning function OFF		
	1= command output OFF (forza il raffreddamento) 2= command output ON (forza il riscaldamento) 3= autotuning ON 4= autotuning finished	R/W	0
1026	Zero tare AI1 (1 = tare; 2 = reset tare)	R/W	0

1099	Process subjected to the visualization filter and decimal point selection	RO	0
1100	Process with decimal point selection	RO	0
1101	Setpoint 1 with decimal point selection	R/W	EEPROM
1102	Setpoint 2 with decimal point selection	R/W	EEPROM
1103	Setpoint 3 with decimal point selection	R/W	EEPROM
1104	Setpoint 4 with decimal point selection	R/W	EEPROM
1105	Alarm 1 with decimal point selection	R/W	EEPROM
1106	Alarm 2 with decimal point selection	R/W	EEPROM
1107	Alarm 3 with decimal point selection	R/W	EEPROM
1108	Gradient Setpoint with decimal point selection	RO	EEPROM
1109	Percentage heating output (0-1000)	R/W	0
1110	Percentage heating output (0-100)	R/W	0
1111	Percentage cooling output (0-1000)	RO	0
1112	Percentage cooling output (0-100)	RO	0

10 Reading and configuration through NFC



The controller ATR244 is supported by the App MyPixsys: using an ANDROID smartphone with NFC connection it is possible to program the device without using a dedicated equipment. The App allows to read, set and backup all parameters which are stored into the internal memory of Pixsys devices.

Procedure:

- Identify the position of the NFC antenna on the smartphone (usually central, behind the back cover) or to one of the sides in case of metal chassis. The ATR244's antenna is placed on the frontal panel, under the function keys.
- Make sure that the NFC sensor of the phone is enabled or that there are no metal materials between the phone and the device (ex. aluminium cover or with magnetic stand)
- It is useful to enable the system sounds on the smartphone, as the notification sound confirms that the device has correctly been detected.

The App interface is provided with four tabs: SCAN, DATA, WRITE, EXTRA.

Select the first tab "SCAN" to read data stored into the internal memory of the device; place the smartphone in contact with the controller frontal panel, making sure that the phone's antenna matched with that of the controller.

Once detected the device, the App emits a notification sounds and proceeds with the model identification and the reading of the parameters.

The graphic interface shows the advancement and switches to the second tab "DATA". It is now possible to move the smartphone away from the controller to make the required modifications more easily. The device parameters are divided into collapsible groups and are displayed with name, current value and reference index to the manual. Click on a row to open the setting screen of the related parameter with the detailed view of available options (in case of multiple choice parameters) or of the minimum/

maximum/decimals limits (for numeric parameters), included the text description (as per section n. 11 of the user manual). Once selected the chosen value, the related row will be updated and underlined into the tab "DATA" (hold down the line to cancel modifications).

To download the new configuration on your device, select the third tab "WRITE", place again the smartphone in contact with the controller and wait for the notification.

The ATR244 will show a restart request, necessary to update the configuration with the new written modifications; if it does not restart, the ATR 244 will continue to work with the previous configuration. In addition to the classic operation of parameters reading->modification->writing, MyPixsys is provided with additional functions which can be accessed by the tab "EXTRA", as save parameters / e-mail loaded values/ restore default values.

10.1 Configuration through memory card

The device can be configured through a memory card (2100.30.013). This one is linked to the micro-USB connector on the bottom of the device.

10.2 Memory card creation/update



In order to save a parameter configuration in the memory card, connect it to micro-USB connector and power the instrument. If the memory has never been configured, the device starts normally, but if its data are considered valid, it is possible to view on the display **RENo SK.P**. Press **SET** in order to start the product without uploading any data from the memory card. Configure, set the parameters and exit configuration. Now, the device saves the configuration just created also in the memory.

10.3 Configuration loading from memory card



In order to charge a configuration previously created and saved in the memory card, connect it to the micro-USB connector and power the instrument. Now, if the memory is detected and its data are considered valid, it is possible to view on the display **RENo SK.P**. By pressing **▲** you see **RENo Load** and with **SET** you confirm the uploading of parameters from the memory card to the controller. If, on the other hand, you press directly **SET**, when viewing **RENo SK.P**, the product starts without uploading any data from the memory card.

11 Loading default values

This procedure allows to restore factory settings of the device.

	Press	Display	Do
1	FNC for 3 sec	Display 1 shows PASS. , while display 2 shows 0000 with the 1st digit flashing.	
2	▲ or ▼	Modify the flashing digit and move to the next one pressing SET .	Enter password 9999 .
3	FNC to confirm	The device loads default settings and restarts.	

	Press	Display	Do
1	FNC for 3 sec.	Display 1 shows PASS , while display 2 shows 0000 with the 1st digit flashing.	
2		Modify flashing digit and move to next digit with SET .	Enter password 1234 .
3	FNC to confirm	Display 1 shows the first parameters group, display 2 shows the description.	
4	or SET	Scroll parameters groups.	
5	SET to confirm	Display 1 shows the first parameter of the group and display 2 shows its value.	Press FNC to exit configuration.
6		Scroll parameters.	
7	SET to confirm	Allows parameter modification (display 2 flashes)	
8		Increases or decreases visualized value	Introduce new data
9	SET	Confirms and stores the new value. If the value is different from default values, the arrow keys light on.	
10	FNC	Backs to parameter groups selection (see point 3).	Press again FNC to exit configuration

12.1 Parameters list functioning

The controller ATR244 integrates many features that make the configuration parameters list very long. To make it more functional, the parameters list is dynamics and it changes as the user enables / disables the functions. Practically, using a specific function that occupies a given input (or output), the parameters referred to other functions of that resource are hidden to the user making the parameters list more concise.

To simplify the reading/interpretation of the parameters, pressing **SET** it is possible to visualize a brief description of the selected parameter.

Finally, keeping pressed **FNC**, it is possible to move from the mnemonic visualization of the parameter to the numeric one, and vice versa. Ex. The first parameter can be displayed as **SEn.I** (mnemonic visualization) or as **P001** (numeric visualization).

Set the product parameters so that they are suitable for the system to be controlled. If they are not suitable, unexpected operations may occasionally cause materials damage or accidents.

13 Table of configuration parameters

GROUP A - R.in.1 - Analogue input 1

1 SEn.1 Sensor AI1

Analogue input configuration / sensor AI1 selection

Tc. K	Tc-K	-260° C..1360° C. (Default)
Tc. S	Tc-S	-40° C..1760° C
Tc. R	Tc-R	-40° C..1760° C
Tc. J	Tc-J	-200° C..1200° C
Tc. T	Tc-T	-260° C..400° C
Tc. E	Tc-E	-260° C..980° C
Tc. N	Tc-N	-260° C..1280° C
Tc. b	Tc-B	100° C..1820° C
Pt100	Pt100	-200° C..600° C
Ni100	Ni100	-60° C..180° C
NTc 1	NTC 10K β3435K	-40° C..125° C
PTc	PTC 1K	-50° C..150° C
Pt500	Pt500	-200° C..600° C
Pt1k	Pt1000	-200° C..600° C
0-1	0..1 V	
0-5	0..5 V	
0-10	0..10 V	
0-20	0..20 mA	
4-20	4..20 mA	
0-60	0..60 mV	
Pot.	Potentiometer	(set the value on parameter 6)
Ni120	Ni120	-60 °C..240 °C
NTc 2	NTC 10K β3694K	-40 °C..150 °C
NTc 3	NTC 2252 β3976K	-40 °C..150 °C

2 d.P. 1 Decimal Point 1

Select number of displayed decimal points for AI1

0	Default
0.0	1 decimal
0.00	2 decimals
0.000	3 decimals

3 dEGr. Degree

°C	Celsius (Default)
°F	Fahrenheit
K	Kelvin

4 LL.1 Lower Linear Input AI1

AI1 lower limit only for linear signals. Ex.: with input 4..20 mA this parameter takes value associated to 4 mA. The value may be greater than the one entered on the next parameter.

-9999..+30000 [digit^{1p.74}] Default: 0.

5 uL.1 Upper Linear Input AI1

AI1 upper limit only for linear signals Ex: with input 4..20 mA this parameter takes value associated to 20 mA. The value may be lower than the one entered on the previous parameter.

-9999..+30000 [digit^{1p.74}] Default:1000

6 P.uR.1 Potentiometer Value AI1

Selects the value of the potentiometer connected on AI1

1..150 kohm. Default: 10kohm

7 *i.o.L.1* Linear Input over Limits AI1

If AI1 is a linear input, allows to the process to overpass the limits (parameters 4 and 5).

d.SRb. Disabled (**Default**)

ENRb. Enabled

8 *o.cR.1* Offset Calibration AI1

AI1 Offset calibration. Value added/subtracted to the process value (ex: usually correcting the ambient temperature value).

-9999..+9999 [digit^{1p.74}] (degrees.tenths for temperature sensors). **Default** 0.

9 *G.cR.1* Gain Calibration AI1

Value multiplied to the process value to calibrate the working point. Ex: to correct the range from 0..1000°C showing 0.1010°C, set the parameter to -1.0

-100.0%...+100.0%, **Default**: 0.0.

10 *L.Ec.1* Latch-On AI1

Automatic setting of limits for AI1 linear input

d.SRb. Disabled (**Default**)

SENRd Standard

V.Z.Szr. Virtual Zero Stored

V.Z.E.on. Virtual Zero at start

11 *c.FL.1* Conversion Filter AI1

ADC Filter: Number of sensor readings to calculate mean that defines process value. **NB:** When readings increase, control loop speed slows down. 1..15. (**Default**: 10)

12 *c.Fr.1* Conversion Frequency AI1

Sampling frequency of digital / analogue converter for AI1. Increasing the conversion speed will slow down reading stability

(example: for fast transients, as the pressure, it is advisable to increase sampling frequency).

4.17Hz	4.17 Hz (Min. conversion speed)	33.2Hz	33.2 Hz
6.25Hz	6.25 Hz	39.0Hz	39.0 Hz
8.33Hz	8.33 Hz	50.0Hz	50.0 Hz
10.0Hz	10.0 Hz	62.0Hz	62.0 Hz
12.5Hz	12.5 Hz	123Hz	123 Hz
16.7Hz	16.7 Hz (Default) Ideal for noises filtering 50 / 60 Hz	242Hz	242 Hz
19.6Hz	19.6 Hz	470Hz	470 Hz (Max. speed conversion)

13 *L.c.E.1* Lower Current Error 1

If AI1 is a 4-20 mA input, it determines the current value below the probe error E-05 is signaled.

2.0 mA (**Default**) 2.6 mA 3.2 mA 3.8 mA

2.2 mA 2.8 mA 3.4 mA

2.4 mA 3.0 mA 3.6 mA

14÷17 Reserved Parameters - Group A

Reserved parameters - Group A

GROUP B - R._{in.2} - Analogue input 2 (only on ATR244-23XX-T)

18 SEn2 Sensor AI2

Analogue input configuration / sensor AI2 selection

d5Rb.	Disabled	Disabled. (Default)
Ec. K	Tc-K	-260° C..1360° C.
Ec. S	Tc-S	-40° C..1760° C
Ec. R	Tc-R	-40° C..1760° C
Ec. J	Tc-J	-200° C..1200° C
Ec. T	Tc-T	-260° C..400° C
Ec. E	Tc-E	-260° C..980° C
Ec. N	Tc-N	-260° C..1280° C
Ec. B	Tc-B	100° C..1820° C
Pt100	Pt100	-200° C..600° C
Ni100	Ni100	-60° C..180° C
NTc 1	NTC 10K β3435K	-40 °C..125 °C
Ptc	PTC 1K	-50° C..150° C
Pt500	Pt500	-200° C..600° C
Pt1k	Pt1000	-200° C..600° C
0-1	0..1 V	
0-5	0..5 V	
0-10	0..10 V	
0-20	0..20 mA	
4-20	4..20 mA	
0-60	0..60 mV	
Pot.	PPotentiometer (set the value on parameter 23)	
Ni120	Ni120	-60 °C..240 °C
NTc 2	NTC 10K β3694K	-40 °C..150 °C
NTc 3	NTC 2252 β3976K	-40 °C..150 °C

19 d.P.2 Decimal Point 2

Select number of displayed decimal points for AI 2

0	Default
0.0	1 decimal
0.00	2 decimals
0.000	3 decimals

20 rE5. Reserved

Reserved parameter.

21 L.L.1.2 Lower Linear Input AI2

AI2 lower limit only for linear signals. Ex.: with input 4..20 mA this parameter takes value associated to 4 mA. The value may be greater than the one entered on the next parameter.

-9999..+30000 [digit^{1p.74}] Default: 0.

22 u.L.1.2 Upper Linear Input AI2

AI2 upper limit only for linear signals Ex: with input 4..20 mA this parameter takes value associated to 20 mA.The value may be lower than the one entered on the previous parameter..

-9999..+30000 [digit^{1p.74}] Default:1000

23 P.uR.2 Potentiometer Value AI2

Selects the value of the potentiometer connected on AI2

1.150 kohm. Default: 10kohm

24 *i.o.L2* Linear Input over Limits AI2

If AI2 is a linear input, allows to the process to overpass the limits (parameters 21 and 22).

d.SRb. Disabled (**Default**)

ENRb. Enabled

25 *o.cR2* Offset Calibration AI2

AI2 Offset calibration. Value added/subtracted to the process value (ex: usually correcting the ambient temperature value).

-9999..+9999 [digit^{1p.74}] (degrees.tenths for temperature sensors). **Default** 0.

26 *G.cR2* Gain Calibration AI2

Value multiplied to the process value to calibrate the working point. Ex: to correct the range from 0..1000°C showing 0..1010°C, set the parameter to -1.0

-100.0%...+100.0%, **Default**: 0.0.

27 *Ltc2* Latch-On AI2

Automatic setting of limits for AI2 linear input

d.SRb. Disabled (**Default**)

SENRe Standard

V.Z.Sto. Virtual Zero Stored

V.Z.E.on Virtual Zero at start

28 *cFl2* Conversion Filter AI2

ADC Filter: Number of sensor readings to calculate mean that defines process value. **NB:** When readings increase, control loop speed slows down.

1..15. (**Default**: 10)

29 *cFr2* Conversion Frequency AI2

Sampling frequency of digital / analogue converter for AI2.

Increasing the conversion speed will slow down reading stability

(example: for fast transients, as the pressure, it is advisable to increase sampling frequency).

4.17.Hz	4.17 Hz (Min. conversion speed)	33.2Hz	33.2 Hz
6.25Hz	6.25 Hz	39.0Hz	39.0 Hz
8.33Hz	8.33 Hz	50.0Hz	50.0 Hz
10.0Hz	10.0 Hz	62.0Hz	62.0 Hz
12.5Hz	12.5 Hz	123Hz	123 Hz
16.7Hz	16.7 Hz (Default) Ideal for filtering noises 50 / 60 Hz	242Hz	242 Hz
19.6Hz	19.6 Hz	470Hz	470 Hz (Max. speed conversion)

30 *L.cE2* Lower Current Error 2

If AI2 is a 4-20 mA input, it determines the current value below the probe error E-06 is signaled.

2.0 mA (**Default**) 2.6 mA 3.2 mA 3.8 mA

2.2 mA 2.8 mA 3.4 mA

2.4 mA 3.0 mA 3.6 mA

31÷34 Reserved Parameters - Group B

Reserved parameters - Group B

GROUP C - cOut - Outputs and regulation Process 1

35 cOut Command Output 1

Selects the command output related to the process1 and the outputs related to the alarms.

- c. o2 Command on relay output Q2.
- c. o1 Command on relay output Q1. (**Default**)
- c. SSR Command on digital output
- c. VRL Servo-valve command with open loop on Q1 and Q2 relays
- c. 0-10 Command 0-10 V on analogue output AO1.
- c. 4-20 Command 4-20 mA on analogue output AO1.
- 0.10.S.R. Command 0-10 V on analogue output AO1 with split-range function: the analogue output sets the cooling action from 0 to 5V and heating action from 5 to 10V.
- 4.20.S.R. Command 4-20 mA on analogue output AO1 with split-range function: the analogue output sets the cooling action from 4 to 12mA and heating action from 12 to 20mA.
- c. VRL.c. Servo-valve command with open loop on Q2 and Q3 relays (not available for -12xxx)

ATR244-12ABC and ATR244-12ABC-T

	Command	AL. 1	AL. 2	AL. 3	AL. 4
c. o2	Q2	Q1	DO1	DO2	AO1
c. o1	Q1	Q2	DO1	DO2	AO1
c. SSR	DO1	Q1	Q2	DO2	AO1
c. VRL.	Q1(open) Q2(close)	DO1	DO2	A01	-
c. 0-10 (0.10.S.R.)	AO1 (0..10 V)	Q1	Q2	DO1	DO2
c. 4-20 (4.20.S.R.)	AO1 (4..20 mA)	Q1	Q2	DO1	DO2

ATR244-13ABC

	Command	AL. 1	AL. 2	AL. 3	AL. 4	AL. 5
c. o2	Q2	Q1	Q3	DO1	DO2	AO1
c. o1	Q1	Q2	Q3	DO1	DO2	AO1
c. SSR	DO1	Q1	Q2	Q3	DO2	AO1
c. VRL.	Q1(open) Q2(close)	Q3	DO1	DO2	A01	-
c. 0-10 (0.10.S.R.)	AO1 (0..10 V)	Q1	Q2	Q3	DO1	DO2
c. 4-20 (4.20.S.R.)	AO1 (4..20 mA)	Q1	Q2	Q3	DO1	DO2
c. VRL.c.	Q2(open) Q3(close)	Q1	DO1	DO2	A01	-

ATR244-23A-T and ATR244-23BC-T

	Command	AL. 1	AL. 2	AL. 3	AL. 4	AL. 5	AL. 6
c. o2	Q2	Q1	Q3	DO1	DO2	A01	AO2
c. o1	Q1	Q2	Q3	DO1	DO2	A01	AO2
c. SSR	DO1	Q1	Q2	Q3	DO2	A01	AO2
c. VRL.	Q1(open) Q2(close)	Q3	DO1	DO2	A01	AO2	-
c. 0-10 (0.10.S.R.)	AO1 (0..10 V)	Q1	Q2	Q3	DO1	DO2	AO2
c. 4-20 (4.20.S.R.)	AO1 (4..20 mA)	Q1	Q2	Q3	DO1	DO2	AO2
c. VRL.c.	Q2(open) Q3(close)	Q1	DO1	DO2	A01	AO2	-

NB: if an output is used for functions other than alarms (for example retransmission or command n° 2), this resource will no longer be available as an alarm and the related group will be hidden from the parameter list. The correspondence of the functions/outputs remains however that indicated in the tables above.

36 cPr.1 Command Process 1 (only on ATR244-23XX-T)

Selects process value related to process 1 and to command output 1.

- R.N.1 Value read on input AI1. (**Default**)
- R.N.2 Value read on input AI2.
- MERN Arithmetic average of the value read on inputs AI1 and AI2 [(AI1-AI2)/2].
- dFF. Difference of the values read on inputs AI1 and AI2 (AI1-AI2).
- Rb.dF. Module of the difference of the values read on inputs AI1 and AI2 (|AI1-AI2|).
- SuM Sum of values read on inputs AI1 and AI2 (AI1+AI2).

37 rE5. Reserved

Reserved parameter.

38 Ac.E.1 Action type 1

Action type to control process 1.

- HEAT Heating (N.A.) (**Default**)
- Cool Cooling (N.C.)

39 c.HY.1 Command Hysteresis 1

Hysteresis to control process 1 in ON/OFF.

-9999..+9999 [digit^{1p.74}] (degrees.tenths for temperature sensors). **Default** 0.2.

40 LL5.1 Lower Limit Setpoint 1

Lower limit setpoint selectable for command setpoint 1.

-9999..+30000 [digit^{1p.74}] (degrees.tenths for temperature sensors). **Default** 0.

41 uL5.1 Upper Limit Setpoint 1

Upper limit setpoint selectable for command setpoint 1.

-9999..+30000 [digit^{1p.74}] (degrees for temperature sensors). **Default** 1750.

42 c.rE.1 Command Reset 1

Type of reset for command contact 1 (always automatic in P.I.D. functioning)

- R. RES. Automatic Reset (**Default**)
- M. RES. Manual Reset (by keyboard or by digital input)
- M.RES.S. Manual Reset Stored (keeps relay status also after an eventual power failure)
- R.RES.E. Automatic reset with timed activation. The command remains active for the time set on the parameter 45 c.dE.1., even if the conditions generating it are missing. To be able to act again, the conditions for activating the command must disappear.

43 cSE.1 Command State Error 1

State of contact for command 1 output in case of error.

If the command output 1 (Par. 35 c.oU.1) is relay or valve:

- OPEN Contact or valve open. **Default**
- cLOSE Contact or valve closed.

If the command output 1 is digital output (SSR):

- OFF Digital output OFF. **Default**
- ON Digital output ON.

If the command output 1 is 0-10V:

- 0 V 0 V. **Default**
- 10 V 10 V.

If the command output 1 is 0-20 mA or 4-20 mA:

- 0 MA 0 mA. **Default**
- 4 MA 4 mA.
- 20 MA 20 mA.
- 21.5MA 21.5 mA.

44 c.Ld.1 Command Led 1

Defines led C1 state corresponding to the relevant output. If the valve command is selected, this parameter is not managed.

- a.c. ON with open contact or SSR switched off. If command AO1, ON with output 0%, OFF if 100% and flashing between 1% and 99%.
- c.c. ON with closed contact or SSR switched on. If command AO1 ON with output 100%, OFF if 0% and flashing between 1% and 99%. (**Default**)

45 c.d.E.1 Command Delay 1

Command 1 delay (only in ON / OFF functioning).

-60:00..60:00 mm:ss. **Default:** 00:00.

Negative: delay when turning off output.

Positive: delay when turning on output.

46 c.S.P.1 Command Setpoint Protection 1

Allows or not to modify command setpoint 1 value

FREE Modification allowed (**Default**)

Lock Protected

FR.IN. Free Initialized. At start, setpoint 1 of command 1 is initialized to the value set on parameter 51 .S.P.1 (Initial Value Setpoint 1).

47 u.R.E.1 Valve Time 1

Valve time related to command 1 (declared by the manufacturer of the valve)

1...300 seconds. **Default:** 60.

48 A.PA.R.1 Automatic / Manual 1

Enables the automatic/manual selection for command 1

d.SRb. Disabled (**Default**)

EN.Rb. Enabled

EN.Sb. Enabled with memory

49 in.i5. Initial State

Choose the state of the controller when turning it on. This only works on the RS485 version or by enabling the Start/Stop from digital input or **SET** button.

StaRPt Start (**Default**)

StoP Stop

StoRE. Stored. State of Start/Stop prior to switching off.

50 S.uAS. State Valve Saturation

Select the valve status when the output percentage is 100%

PERc. The valve opening relay is activated for a time equal to 5% of the valve time

FixEd The valve opening relay is always active

51 .S.P.1 Initial Value Setpoint 1

Determines the initial value (at start) of setpoint 1 of command 1 when FR.IN. is selected on parameter 46 c.S.P.1 (Command Setpoint Protection 1)

-9999..+30000 [digit^{1p.74}] (degrees for temperature sensors). **Default 0.**

52÷53 Reserved Parameters - Group C

Reserved parameters - Group C

GROUP D - c_{7d.2} - Outputs and regul. Process 2 (only on ATR244-23XX-T)

54 c_{ou.2} Command Output 2

Selects the command output related to the process 2

NB: refer to the function/output table of parameter 35 c_{ou.1} to check which resources will remain available after changing this parameter (eg: setting c_{ou.2} as c_{55R}, it will no longer be possible to enable the alarm associated with the DO2 output).

- d_{5Rb}. Command disabled. (**Default**)
- c_{o3} Command on relay output Q3
- c_{55R} Command on digital output DO2
- c_{VRL} Servo-valve command with open loop on DO1 (open) and DO2 (close)
- c_{0..10} Command 0-10 V on analogue output AO2
- c_{4..20} Command 4-20 mA on analogue output AO2
- 0..10..5..P. Command 0-10 V on analogue output AO2 with split-range function: the analogue output sets the cooling action from 0 to 5V and heating action from 5 to 10V.
- 4..20..5..P. Command 4-20 mA on analogue output AO2 with split-range function: the analogue output sets the cooling action from 4 to 12mA and heating action from 12 to 20mA.

55 c_{Pr.2} Command Process 2

Selects process value related to process 2 and to command output 2.

- R_{.IN.1} Value read on input AI1. (**Default**)
- R_{.IN.2} Value read on input AI2.
- MERN Arithmetic average of the value read on inputs AI1 and AI2 [(AI1-AI2)/2].
- d_{FF}. Difference of the values read on inputs AI1 and AI2 (AI1-AI2).
- R_{b.d.F}. Module of the difference of the values read on inputs AI1 and AI2 (|AI1-AI2|).
- SUM Sum of values read on inputs AI1 and AI2 (AI1+AI2).

56 r_{ENS}. Remote Setpoint

Enables remote setpoint. The control setpoint is sent by another device and is received by a second analogue input (it is necessary to select on parameter c_{Pr.2} the selections R_{.IN.1} or R_{.IN.2}) or through serial.

- d_{5Rb}. Disabled. (**Default**)
- EN_{RB}. Enables remote setpoint by process 2. Remote/local selection can be done by digital input.
- EN_{ESE}. Remote setpoint by process 2, Remoto/local selection only by keyboard (not allowed by digital input)
- EN_{SER}. Enables remote setpoint by serial input. Remote/local selection can be done by digital input.
- EN_{SE.E}. Remote setpoint by serial, Remote/local selection only by keyboard (not allowed by digital input).
- c_{7d.1}. The reference setpoint of command 2 is the same of command 1.

57 Ac._{E.2} Action type 2

Action type to control process 2.

- HEAT Heating (N.A.) (**Default**)
- COOL Cooling (N.C.)

58 c_{HY.2} Command Hysteresis 2

Hysteresis to control process 2 in ON/OFF.

-9999..+9999 [digit^{1p.74}] (degrees.tenths for temperature sensors). **Default** 0.2.

59 LL_{S.2} Lower Limit Setpoint 2

Lower limit setpoint selectable for command setpoint 2.

-9999..+30000 [digit^{1p.74}] (degrees for temperature sensors). **Default** 0.

60 uL5.2 Upper Limit Setpoint 2

Upper limit setpoint selectable for command setpoint 2.

-9999..+30000 [digit^{1p.74}] (degrees for temperature sensors). **Default** 1750.

61 c.rE.2 Command Reset 2

Type of reset for command contact 2 (always automatic in P.I.D. functioning)

R. RES. Automatic Reset (**Default**)

M. RES. Manual Reset (by keyboard or by digital input)

M.RES.S. Manual Reset Stored (keeps relay status also after an eventual power failure)

R.RES.E. Automatic reset with timed activation. The command remains active for the time set on the parameter 64 c.de.2., even if the conditions generating it are missing. To be able to act again, the conditions for activating the command must disappear.

62 c5.E.2 Command State Error 2

State of contact for command 2^output in case of error.

If the command output 2 (Par. 54 c.o.u.2) is relay or valve:

oPEN Contact or valve open. **Default**

cLoSE Contact or valve closed.

If the command output 2 is digital output (SSR):

oFF Digital output OFF. **Default**

oN Digital output ON.

If the command output 2 is 0-10V:

0 V 0 V. **Default**

10 V 10 V.

If the command output 2 is 0-20 mA or 4-20 mA:

0 MA 0 mA. **Default**

4 MA 4 mA.

20 MA 20 mA.

21.5MA 21.5 mA.

63 cLd.2 Command Led 2

Defines led **C** state corresponding to the relevant output. If the valve command is selected, this parameter is not managed.

o.c. ON with open contact or SSR switched off. If command AO2, ON with output 0%, OFF if 100% and flashing between 1% and 99%.

c.c. ON with closed contact or SSR switched on. If command AO2 ON with output 100%, OFF if 0% and flashing between 1% and 99%. (**Default**)

64 c.dE.2 Command Delay 2

Command 2 delay (only in ON / OFF functioning).

-60:00..60:00 mm:ss. **Default:** 00:00.

Negative: delay when turning off output.

Positive: delay when turning on output.

65 c5.P.2 Command Setpoint Protection 2

Allows or not to modify command setpoint 2 value

FREE Modification allowed (**Default**)

Lock Protected

FR.IN. Free Initialized. At start, setpoint 1 of command 2 is initialized to the value set on parameter 70 c.SP.2 (Initial Value Setpoint 2).

66 uR.E.2 Valve Time 2

Valve time related to command 2 (declared by the manufacturer of the valve)

1..300 seconds. **Default:** 60.

67 A.NR.2 Automatic / Manual 2

Enables the automatic/manual selection for command 2

d.SRb. Disabled (**Default**)

ENRb. Enabled

EN.Sr. Enabled with memory

68 rE5. Reserved

Reserved parameter

69 rE5. Reserved

Reserved parameter

70 iSP.2 Initial Value Setpoint 2

Determines the initial value (at start) of setpoint 1 of command 2 when FR.iN. is selected on parameter 65 c.S.P.2 (Command Setpoint Protection 2)

-9999..+30000 [digit^{1p.74}] (degrees for temperature sensors). **Default 0.**

71÷72 Reserved Parameters - Group D

Reserved parameters - Group D

GROUP E - rE5.1 - Autotuning and PID 1

73 tUn.1 Tune 1

Selects autotuning type for command 1

d.SRb. Disabled. If proportional band and integral time parameters are selected to zero, the regulation is ON/OFF type.. (**Default**)

Auto. Automatic (Automatic P.I.D. parameters calculation)

MANu. Manual (launch by keyboards or by digital input)

oNcE Once (P.I.D. parameters calculation only at first start)

SYNch. Synchronized (Autotuning managed by serial)

74 S.d.E.1 Setpoint Deviation Tune 1

Selects deviation from command setpoint 1 as threshold used by autotuning to calculate P.I.D. parameters

0-10000 [digit^{1p.74}] (degrees.tenths for temp. sensors). **Default: 30.0.**

75 P.b. 1 Proportional Band 1

Proportional band or process 1 P.I.D. regulation (Process inertia).

0 ON / OFF if L.1. equal to 0 (**Default**)

1...10000 [digit^{1p.74}] (degrees.tenths for temp. sensors).

76 i.E. 1 Integral Time 1

Integral time for process 1 P.I.D. regulation (process inertia duration).

0.0...2000.0 sec. (0.0 = integral disabled), **Default 0.0**

77 d.E. 1 Derivative Time 1

Derivative time for process 1 P.I.D. regulation (Normally 1/4 of integral time).

0.0...1000.0 sec. (0.0 = derivative disabled), **Default 0**

78 d.b. 1 Dead Band 1

Dead band of process 1 P.I.D..

0...10000 [digit^{1p.74}] (degrees.tenths for temp. sensors) (**Default: 0**)

79 P.b.c.1 Proportional Band Centered 1

Defines if the proportional band 1 must be centered or not on the setpoint. In double loop functioning (heating/cooling), always disabled.

d.SRb. Disabled. Band under (heating) or over (cooling)(**Default**)

ENRb. Centered band

80 o.o.5.1 Off Over Setpoint 1

In P.I.D. enables the command output 1 switching off, when a certain threshold is exceeded (setpoint + Par.81)

d.SRb. Disabled (**Default**)

ENRb. Enabled

81 o.d.t.1 Off Deviation Threshold 1

Selects deviation from command setpoint 1, to calculate the intervention threshold of "Off Over Setpoint 1" function.

-9999...+9999 [digit^{1p.74}] (degrees.tenths for temp. sensors) (**Default:** 0)

82 c.E.1 Cycle Time 1

Cycle time for P.I.D. regulation of process 1 (for P.I.D. on remote control switch 15 s; for PID on SSR 2s). For valve refer to parameter 47 u.R.E.1

1-300 seconds (**Default:**15 s)

83 co.F.1 Cooling Fluid 1

Type of refrigerant fluid for heating / cooling P.I.D. for process 1. Enable the cooling output on parameter AL.1... AL.6.

AIR Air (**Default**)

oIL Oil

WATER Water

84 P.b.1 Proportional Band Multiplier 1

Proportional band multiplier for heating/cooling P.I.D. for process 1. Proportional band for cooling action is given by parameter P.b. 1 multiplied for this value

1.00...5.00. **Default:** 1.00

85 o.d.b.1 Overlap / Dead Band 1

Dead band combination for heating / cooling P.I.D. (double action) for process 1.

-20.0%...50.0%

Negative: Dead band.

Positive: overlap. **Default:** 0.0%

86 c.c.E.1 Cooling Cycle Time 1

Cycle time for cooling output in heating / cooling P.I.D. mode for process 1.

1-300 seconds (**Default:**10 s)

87 LL.P.1 Lower Limit Output Percentage 1

Selects min. value for command output 1 percentage.

0%...100%, **Default:** 0%.

88 u.L.P.1 Upper Limit Output Percentage 1

Selects max. value for command output 1 percentage.

0%...100%, **Default:** 100%.

- 89 P.G.E.1 Max Gap Tune 1**
Selects the max. process-setpoint gap beyond which the automatic tune recalculates PID parameters of process 1.
0-10000 [digit^{1p.74}] (degrees.tenths for temp. sensors). **Default:** 2.0
- 90 P.n.P.1 Minimum Proportional Band 1**
Selects the min. proportional band 1 value selectable by the automatic tune for the P.I.D. regulation of process 1.
0-10000 [digit^{1p.74}] (degrees.tenths for temp. sensors). **Default:** 3.0
- 91 P.R.P.1 Maximum Proportional Band 1**
Selects the max. proportional band 1 value selectable by the automatic tune for the P.I.D. regulation of process 1.
0-10000 [digit^{1p.74}] (degrees.tenths for temp. sensors). **Default:** 80.0
- 92 P.n.i.1 Minimum Integral Time 1**
Selects the min. integral time 1 value selectable by the automatic tune for the P.I.D. regulation of process 1.
0.0...1000.0 seconds. **Default:** 30.0 s.
- 93 o.c.L.1 Overshoot Control Level 1**
The overshoot control function prevents this event during device switching on or when the setpoint is modified.
Setting a too low value the overshoot may not be fully absorbed, while with high values the process could reach the setpoint more slowly.

Disab.	Lev. 3	Lev. 6	Lev. 9
Lev. 1	Lev. 4	Lev. 7	Lev. 10
Lev. 2	Lev. 5 (Default)	Lev. 8	
- 94÷97 Reserved Parameters - Group E**
Reserved parameters - Group E
- GROUP F - rEG2 - Autotuning and PID 2** (only on ATR244-23XX-T)
- 98 tUn.2 Tune 2**
Selects autotuning type for command 2

dISAb.	Disabled. If proportional band and integral time parameters are selected to zero, the regulation is ON/OFF type. (Default)
Auto	Automatic (Automatic P.I.D. parameters calculation)
MANu.	Manual (launch by keyboards or by digital input)
oNce	Once (P.I.D. parameters calculation only at first start)
SYNch.	Synchronized (Autotuning managed by serial)
- 99 S.d.E.2 Setpoint Deviation Tune 2**
Selects deviation from command setpoint 2 as threshold used by autotuning to calculate P.I.D. parameters.
0-10000 [digit^{1p.74}] (degrees.tenths for temp. sensors). **Default:** 30.0
- 100 P.b.2 Proportional Band 2**
Proportional band or process 2 P.I.D. regulation (Process inertia).
0 ON / OFF if t.i. equal to 0 (**Default**)
1...10000 [digit^{1p.74}] (degrees.tenths for temp. sensors).
- 101 i.t.2 Integral Time 2**
Integral time for process 2 P.I.D. regulation (process inertia duration).
0.0...2000.0 seconds (0.0 = integral disabled), **Default** 0.0

102 d.t. 2 Derivative Time 2

Derivative time for process 2 P.I.D. regulation (Normally 1/4 of integral time).
0.0...1000.0 seconds (0.0 = derivative disabled), **Default** 0

103 d.b. 2 Dead Band 2

Dead band of process 2 P.I.D.
0...10000 [digit^{1p.74}] (degrees.tenths for temp. sensors) (**Default**: 0)

104 P.b.c.2 Proportional Band Centered 2

Defines if the proportional band 2 must be centered or not on the setpoint. In double loop functioning (heating/cooling), always disabled.
d.SRb. Disabled. Band under (heating) or over (cooling) (**Default**)
ENRb. Centered band

105 o.o.5.2 Off Over Setpoint 2

In P.I.D. enables the command output 2 switching off, when a certain threshold is exceeded (setpoint + Par.106)
d.SRb. Disabled (**Default**)
ENRb. Enabled

106 o.d.b.2 Off Deviation Threshold 2

Selects deviation from command setpoint 2, to calculate the intervention threshold of "Off Over Setpoint 2" function.
-9999...+9999 [digit^{1p.74}] (degrees.tenths for temp. sensors) (**Default**: 0)

107 c.t. 2 Cycle Time 2

Cycle time for P.I.D. regulation of process 2 (for P.I.D. on remote control switch 15 s; for PID on SSR 2s). For valve refer to parameter 66 u.R.E.2
1-300 seconds (**Default**:15 s)

108 co.F.2 Cooling Fluid 2

Type of refrigerant fluid for heating / cooling P.I.D. for process 2. Enable the cooling output on parameter AL.1... AL.6.

R.R Air (**Default**) *o.i.L* Oil *WATER* Water

109 P.b.M.2 Proportional Band Multiplier 2

Proportional band multiplier for heating/cooling P.I.D. for process 2. Proportional band for cooling action is given by parameter *P.b. 2* multiplied for this value.
1.00..5.00. **Default**: 1.00

110 o.d.b.2 Overlap / Dead Band 2

Dead band combination for heating / cooling P.I.D. (double action) for process 2. -20.0..50.0%
Negative: Dead band. Positive: overlap. **Default**: 0.0%

111 c.c.t.2 Cooling Cycle Time 2

Cycle time for cooling output in heating / cooling P.I.D. mode for process 2.
1-300 seconds (**Default**:10 s)

112 LL.P.2 Lower Limit Output Percentage 2

Selects min. value for command output 2 percentage.
0%...100%, **Default**: 0%.

113 u.L.P.2 Upper Limit Output Percentage 2

Selects max. value for command output 2 percentage.
0%...100%, **Default**: 100%.

114 P.G.E2 Max Gap Tune 2

Selects the max. process-setpoint gap beyond which the automatic tune recalculates PID parameters of process 2.

0-10000 [digit^{1p.74}] (degrees.tenths for temp. sensors). **Default:** 2.0

115 P.n.P2 Minimum Proportional Band 2

Selects the min. proportional band value selectable by the automatic tune for the P.I.D. regulation of process 2.

0-10000 [digit^{1p.74}] (degrees.tenths for temp. sensors). **Default:** 3.0

116 P.R.P2 Maximum Proportional Band 2

Selects the max. proportional band 2 value selectable by the automatic tune for the P.I.D. regulation of process 2.

0-10000 [digit^{1p.74}] (degrees.tenths for temp. sensors). **Default:** 80.0

117 P.n.i2 Minimum Integral Time 2

Selects the min. integral time 2 value selectable by the automatic tune for the P.I.D. regulation of process 2.

0.0...1000.0 sec. **Default:** 30.0 sec.

118 o.c.L2 Overshoot Control Level 2

The overshoot control function prevents this event during device switching on or when the setpoint is modified. Setting a too low value the overshoot may not be fully absorbed, while with high values the process could reach the setpoint more slowly.

Disab.	Lev. 3	Lev. 6	Lev. 9
Lev. 1	Lev. 4	Lev. 7	Lev. 10
Lev. 2	Lev. 5 (Default)	Lev. 8	

119÷122 Reserved Parameters - Group F

Reserved parameters - Group F

GROUP G - RL_1 - Alarm 1**123 RL.F. Alarm 1 Function**

Alarm 1 selection.

d.SRb. Disabled (**Default**)

Rb.uP.R. Absolute Upper Activation. Absolute referred to the process, active over

Rb.lo.R. Absolute Lower Activation. Absolute referred to the process, active under

bRNd Band alarm (command setpoint ± alarm setpoint)

uP.dEV. Upper Deviation alarm

Lo.dEV. Lower Deviation alarm

Rb.c.u.R. Absolute Command Upper Activation. Absolute alarm referred to the command setpoint, active over

Rb.c.l.R. Absolute Command Lower Activation. Absolute alarm referred to the command setpoint, active under

RuN Status alarm (active in RUN/START)

coolL Cold actuator auxiliary (Cold action in double loop)

PPb.ER. Probe error. Alarm active in case of sensor rupture.

EMR.1 Related to timer 1

EMR.2 Related to timer 2

EMR.1.2 Related to both timers

REM. Remote. The alarm is enabled by the word 1235

d..1 Digital Input 1. Active when digital input 1 is active.

d..2 Digital Input 2. Active when digital input 2 is active.

d..3 Digital Input 3. Active when digital input 3 is active.

d..4 Digital Input 4. Active when digital input 4 is active.

H.b.R. Heater Break Alarm and Overcurrent Alarm

- R.bRND* Asymmetric band alarm (command setpoint + alarm setpoint 1 H and command setpoint - alarm setpoint 1 L).
- c. Rux* Auxiliary for job distribution on the command output. It cyclically replaces the command output for the time set on the parameter 134 *R.l.dE.*. Se *R.l.dE.=0*, it is activated parallel to the command output. It does not work in case of valve control and can only be activated on an alarm if *R.l.dE.* is different from 0.

124 *R.lPr.* Alarm 1 Process (only on ATR244-23XX-T)

Selects the size related to alarm 1.

- R.N.1* Value read on input AI1. (**Default**)
- R.N.2* Value read on input AI2.
- MERN* Arithmetic average of the value read on inputs AI1 and AI2 [(AI1+AI2)/2].
- dFF.* Difference of the values read on inputs AI1 and AI2 (AI1-AI2).
- Rb.dF.* Module of the difference of the values read on inputs AI1 and AI2(|AI1-AI2|).
- SUM* Sum of values read on inputs AI1 and AI2 (AI1+AI2).

125 *R.l.r.c.* Alarm 1 Reference Command (only on ATR244-23XX-T)

Selects alarm 1 reference command

- cMd. 1* Alarm referred to command 1. (**Default**)
- cMd. 2* Alarm referred to command 2.

126 *R.l.S.o.* Alarm 1 State Output

Alarm 1 output contact and intervention type.

- N.o. Sf.* (N.O. Start) Normally open, active at start (**Default**)
- N.c. Sf.* (N.C. Start) Normally closed, active at start
- N.o. EH.* (N.O. Threshold) Normally open, active on reaching alarm^{2 p. 74}
- N.c. EH.* (N.C. Threshold) Normally closed, active on reaching alarm^{2 p. 74}
- N.o.EH.V.* (N.O. Threshold Variation) disabled after changing control setpoint^{3 p. 74}
- N.c.EH.V.* (N.C. Threshold Variation) disabled after changing control setpoint^{3 p. 74}

127 *rES.* Reserved

Reserved parameter.

128 *R.lHY.* Alarm 1 Hysteresis

Alarm 1 hysteresis

-9999..+9999 [digit^{1 p. 74}] (degrees for temp. sensors). **Default** 0.5.

129 *R.lLL.* Alarm 1 Lower Limit

Lower limit selectable for the alarm 1 setpoint.

-9999..+30000 [digit^{1 p. 74}] (degrees for temp. sensors). **Default** 0.

130 *R.lU.L.* Alarm 1 Upper Limit

Upper limit selectable for the alarm 1 setpoint

-9999..+30000 [digit^{1 p. 74}] (degrees for temp. sensors). **Default** 1750.

131 *R.lrE.* Alarm 1 Reset

Alarm 1 contact reset type (always automatic if *RL.l.F. = c. Rux*).

- R. RES.* Automatic reset (**Default**)
- M. RES.* Manual reset (manual reset by keyboard or by digital input)
- M.RES.S.* Stored manual reset (keeps the output status also after a power failure)
- R. RES.E.* Automatic reset with timed activation. The alarm remains active for the time set on the parameter 134 *R.l.dE.*, even if the conditions generating it are missing. To be able to act again, the alarm conditions must disappear.

132 A.I.S.E. Alarm 1 State Error

Alarm 1 output status in case of error.

oPEN Open contact. **Default**

cLoSE Closed contact.

133 A.I.Ld. Alarm 1 Led

Defines the status of the led **A1** in correspondence of the relevant output

o.c. ON with open contact or DO switched off.

c.c. ON with closed contact or DO switched on. (**Default**)

134 A.I.dE. Alarm 1 Delay

Alarm 1 Delay.

-60:00..60:00 mm:ss (hh:mm if *RL.I.F. = c. RuN*). **Default:** 00:00.

Negative value: delay when exit alarm status.

Positive value: delay when enter alarm status.

135 A.I.S.P. Alarm 1 Setpoint Protection

Allows or not to change the alarm 1 setpoint

FREE Editable by the user (**Default**)

Lock Protected

HidE Protected and not visualized

136 A.I.Lb. Alarm 1 Label

Selects the message displayed in case of alarm 1 intervention.

dSRb. Disabled. (**Default**) 0.

Lb. 01 Message 1 (see table on paragraph [14.1](#))

..
Lb. 16 Message 16 (see table on paragraph [14.1](#))

uSER.L. Custom message (modifiable by the user through the App or via modbus)

137÷140 Reserved Parameters - Group G

Reserved parameters - Group G

GROUP H - RL 2 - Alarm 2

141 RL2.F. Alarm 2 Function

Alarm 2 selection.

dSRb. Disabled (**Default**)

Rb.uP.R. Absolute Upper Activation. Absolute referred to the process, active over

Rb.lo.R. Absolute Lower Activation. Absolute referred to the process, active under

bRNd Band alarm (command setpoint ± alarm setpoint)

uP.dEV. Upper Deviation alarm

lo.dEV. Lower Deviation alarm

Rb.c.u.R. Absolute Command Upper Activation. Absolute alarm referred to the command setpoint, active over

Rb.c.lo.R. Absolute Command Lower Activation. Absolute alarm referred to the command setpoint, active under

RuN Status alarm (active in RUN/START)

cool Cold actuator auxiliary (Cold action in double loop)

PPb.ER. Probe error. Alarm active in case of sensor rupture.

tMR.1 Related to timer 1

tMR.2 Related to timer 2

tMR.1.2 Related to both timers

REM. Remote. The alarm is enabled by the word 1236

d..1 Digital Input 1. Active when digital input 1 is active.

d..2 Digital Input 2. Active when digital input 2 is active.

d..3 Digital Input 3. Active when digital input 3 is active.

- d.. 4 Digital Input 4. Active when digital input 4 is active.
- H.b.R. Heater Break Alarm and Overcurrent Alarm
- R.bRND Asymmetric band alarm (command setpoint + alarm setpoint 2 H and command setpoint - alarm setpoint 2 L).
- c. Ru^x Auxiliary for job distribution on the command output. It cyclically replaces the command output for the time set on the parameter 152 R.2.dE.. If R.2.dE. = 0, it is activated parallel to the command output. It does not work in case of valve control and can only be activated on an alarm if R.2.dE. is different from 0.

142 R.2Pr. Alarm 2 Process (only on ATR244-23XX-T)

Selects the size related to alarm 2.

- R..N.1 Value read on input AI1. (**Default**)
- R..N.2 Value read on input AI2.
- MERN Arithmetic average of the value read on inputs AI1 and AI2 [(AI1+AI2)/2].
- dFF. Difference of the values read on inputs AI1 and AI2 (AI1-AI2).
- Rb.dF. Module of the difference of the values read on inputs AI1 and AI2(|AI1-AI2|).
- SUM Sum of values read on inputs AI1 and AI (AI1+AI2).

143 R.2r.c. Alarm 2 Reference Command (only on ATR244-23XX-T)

Selects alarm 2 reference command

- cMd. 1 Alarm referred to command 1. (**Default**)
- cMd. 2 Alarm referred to command 2.

144 R.2S.o. Alarm 2 State Output

Alarm 2 output contact and intervention type.

- N.o. SE. (N.O. Start) Normally open, active at start (**Default**)
- N.c. SE. (N.C. Start) Normally closed, active at start
- N.o. EH. (N.O. Threshold) Normally open, active on reaching alarm^{2 p. 74}
- N.c. EH. (N.C. Threshold) Normally closed, active on reaching alarm^{2 p. 74}
- N.o.EH.V. (N.O. Threshold Variation) disabled after changing control setpoint^{3 p. 74}
- N.c.EH.V. (N.C. Threshold Variation) disabled after changing control setpoint^{3 p. 74}

145 rES. Reserved

Reserved parameter.

146 R.2HY. Alarm 2 Hysteresis

Alarm 2 hysteresis

-9999..+9999 [digit^{1 p. 74}] (degrees for temp. sensors). **Default** 0.5.

147 R.2LL. Alarm 2 Lower Limit

Lower limit selectable for the alarm 2 setpoint.

-9999..+30000 [digit^{1 p. 74}] (degrees for temp. sensors). **Default** 0.

148 R.2U.L. Alarm 2 Upper Limit

Upper limit selectable for the alarm 2 setpoint

-9999..+30000 [digit^{1 p. 74}] (degrees for temp. sensors). **Default** 1750.

149 R.2rE. Alarm 2 Reset

Alarm 2 contact reset type (always automatic if RL.2.F. = c. Ru^x).

- R. RES. Automatic reset (**Default**)
- M. RES. Manual reset (manual reset by keyboard or by digital input)
- M.RES.S. Stored manual reset (keeps the output status also after a power failure)
- R. RES.E. Automatic reset with timed activation. The alarm remains active for the time set on the parameter 152 R.2.dE., even if the conditions generating it are missing. To be able to act again, the alarm conditions must disappear.

150 A.25.E. Alarm 2 State Error

Alarm 2 output status in case of error

If the alarm output is relay

oPEN Contact or open valve. **Default**

cLoSE Contact or closed valve.

If the alarm output is digital (SSR):

oFF Digital output OFF. **Default**

oN Digital output ON.

151 A.2Ld. Alarm 2 Led

Defines the status of the led **A2** in correspondence of the relevant output.

o.c. ON with open contact or DO switched off.

c.c. ON with closed contact or DO switched on. (**Default**)

152 A.2.dE. Alarm 2 Delay

Alarm 2 Delay. -60:00..60:00 mm:ss (hh:mm if *RL.2.F. = c. Ru%*). **Default:** 00:00.

Negative value: delay when exit alarm status.

Positive value: delay when enter alarm status

153 A.25.P. Alarm 2 Setpoint Protection

Allows or not to change the alarm 2 setpoint

FREE Editable by the user (**Default**)

Lock Protected

Hide Protected and not visualized

154 A.2Lb. Alarm 2 Label

Selects the message displayed in case of alarm 2 intervention.

d.SRb. Disabled. (**Default**) 0.

Lb. 01 Message 1 (see table on paragraph [14.1](#))

..
Lb. 20 Message 20 (see table on paragraph [14.1](#))

uSER.L. Custom message (modifiable by the user through the App or via modbus)

155÷158 Reserved Parameters - Group H

Reserved parameters - Group H

GROUP I - RL. 3 - Alarm 3

159 RL.3.F. Alarm 3 Function

Alarm 3 selection.

d.SRb. Disabled (**Default**)

Rb.uP.R. Absolute Upper Activation. Absolute referred to the process, active over

Rb.lo.R. Absolute Lower Activation. Absolute referred to the process, active under

bRNd Band alarm (command setpoint ± alarm setpoint)

uP.dEV. Upper Deviation alarm

lo.dEV. Lower Deviation alarm

Rb.c.u.R. Absolute Command Upper Activation. Absolute alarm referred to the command setpoint, active over

Rb.c.l.R. Absolute Command Lower Activation. Absolute alarm referred to the command setpoint, active under

RuN Status alarm (active in RUN/START)

cool Cold actuator auxiliary (Cold action in double loop)

PRb.ER. Probe error. Alarm active in case of sensor rupture.

tMR.1 Related to timer 1

tMR.2 Related to timer 2

tMR.1.2 Related to both timers

REM. Remote. The alarm is enabled by the word 1237

d..1 Digital Input 1. Active when digital input 1 is active.

d..2 Digital Input 2. Active when digital input 2 is active.

d..3 Digital Input 3. Active when digital input 3 is active.

- d...4 Digital Input 4. Active when digital input 4 is active.
 H.b.R. Heater Break Alarm e Overcurrent Alarm
 R.bAND Asymmetric band alarm (command setpoint + alarm setpoint 3 H and command setpoint - alarm setpoint 3 L).
 c. Ru^x Auxiliary for job distribution on the command output. It cyclically replaces the command output for the time set on the parameter 170 R.3.dE. If R.3.dE. = 0, it is activated parallel to the command output. It does not work in case of valve control and can only be activated on an alarm if R.3.dE. is different from 0.

160 R.3Pr. Alarm 3 Process (only on ATR244-23XX-T)

Selects the size related to alarm 3.

- R..N.1 Value read on input AI1. (**Default**)
 R..N.2 Value read on input AI2.
 MERN Arithmetic average of the value read on inputs AI1 and AI2 [(AI1+AI2)/2].
 dFF. Difference of the values read on inputs AI1 and AI2 (AI1-AI2).
 Rb.dF. Module of the difference of the values read on inputs AI1 and AI2 (|AI1-AI2|).
 SuM Sum of values read on inputs AI1 and AI2 (AI1+AI2).

161 R.3.r.c. Alarm 3 Reference Command (only on ATR244-23XX-T)

Selects alarm 3 reference command

- cMd. 1 Alarm referred to command 1. (**Default**)
 cMd. 2 Alarm referred to command 2.

162 R.3S.o. Alarm 3 State Output

Alarm 3 output contact and intervention type.

- N.o. S_E. (N.O. Start) Normally open, active at start (**Default**)
 N.c. S_E. (N.C. Start) Normally closed, active at start
 N.o. E_H. (N.O. Threshold) Normally open, active on reaching alarm^{2 p. 74}
 N.c. E_H. (N.C. Threshold) Normally closed, active on reaching alarm^{2 p. 74}
 N.o.EH.V. (N.O. Threshold Variation) disabled after changing control setpoint^{3 p. 74}
 N.c.EH.V. (N.C. Threshold Variation) disabled after changing control setpoint^{3 p. 74}

163 R.3.o.t. Alarm 3 Output Type

Defines the output type if the alarm 3 is analogue.

- 0.10 V Output 0...10 V. **Default**
 4.20mA Output 4...20 mA.

164 R.3HY. Alarm 3 Hysteresis

Alarm 3 hysteresis.

-9999..+9999 [digit^{1 p. 74}] (degrees for temp. sensors). **Default** 0.5.

165 R.3LL. Alarm 3 Lower Limit

Lower limit selectable for the alarm 3 setpoint.

-9999..+30000 [digit^{1 p. 74}] (degrees for temp. sensors). **Default** 0.

166 R.3.u.L. Alarm 3 Upper Limit

Upper limit selectable for the alarm 3 setpoint

-9999..+30000 [digit^{1 p. 74}] (degrees for temp. sensors). **Default** 1750.

167 R.3.r.E. Alarm 3 Reset

Alarm 3 contact reset type (always automatic if RL.3.F. = c. Ru^x).

- R. RES. Automatic reset (**Default**)
 M. RES. Manual reset (manual reset by keyboard or by digital input)
 M.RES.S. Stored manual reset (keeps the output status also after a power failure)
 R. RES.E. Automatic reset with timed activation. The alarm remains active for the time set on the parameter 170 R.3.dE., even if the conditions generating it are missing. To be able to act again, the alarm conditions must disappear.

168 R3.S.E. Alarm 3 State Error

Alarm 3 output status in case of error.

If the alarm output is relay

oPEN Contact or open valve. **Default**

cLoSE Contact or closed valve.

If the alarm output is digital (SSR):

oFF Digital output OFF. **Default**

oN Digital output ON.

If the alarm output is 0-10V:

0 V 0 V. **Default**

10 V 10 V.

If the alarm output is 0-20 mA or 4-20 mA:

0 MA 0 mA. **Default**

20 MA 20 mA.

4 MA 4 mA.

21.5MA 21.5 mA.

169 R3.Ld. Alarm 3 Led

Defines the status of the led **A3** in correspondence of the relevant output.

o.c. ON with open contact, DO switched off or AO deactivated.

c.c. ON with closed contact, DO switched on or AO activated. (**Default**)

170 R3.dE. Alarm 3 Delay

Alarm 3 Delay.

-60:00..60:00 mm:ss (hh:mm if *R3.E.F. = c. RuN*). **Default:** 00:00.

Negative value: delay when exit alarm status.

Positive value: delay when enter alarm status

171 R3.S.P. Alarm 3 Setpoint Protection

Allows or not to change the alarm 3 setpoint.

FREE Editable by the user (**Default**)

Lock Protected

HidE Protected and not visualized

172 R3.Lb. Alarm 3 Label

Selects the message displayed in case of alarm 3 intervention.

d5Rb. Disabled. (**Default**) 0.

Lb. 01 Message 1 (see table on paragraph [14.1](#)) ...

Lb. 20 Message 20 (see table on paragraph [14.1](#))

uSER.L. Custom message (modifiable by the user through the App or via modbus)

173÷176 Reserved Parameters - Group I

Reserved parameters - Group I

GROUP J - R_L. 4 - Alarm 4

177 R_L.4.F. Alarm 4 Function

Alarm 4 selection.

d5Rb. Disabled (**Default**)

Rb.uP.R. Absolute Upper Activation. Absolute referred to the process, active over

Rb.lo.R. Absolute Lower Activation. Absolute referred to the process, active under

bRNd Band alarm (command setpoint ± alarm setpoint)

uP.dEV. Upper Deviation alarm

Lo.dEV. Lower Deviation alarm

Rb.c.u.R. Absolute Command Upper Activation. Absolute alarm referred to the command setpoint, active over

Rb.c.L.R. Absolute Command Lower Activation. Absolute alarm referred to the command setpoint, active under.

RuN Status alarm (active in RUN/START)

cool Cold actuator auxiliary (Cold action in double loop)

PPb.ER. Probe error. Alarm active in case of sensor rupture.

EMR.1	Related to timer 1
EMR.2	Related to timer 2
EMR.1,2	Related to both timers
REM.	Remote. The alarm is enabled by the word 1238
d..1	Digital Input 1. Active when digital input 1 is active.
d..2	Digital Input 2. Active when digital input 2 is active.
d..3	Digital Input 3. Active when digital input 3 is active.
d..4	Digital Input 4. Active when digital input 4 is active.
H.b.R.	Heater Break Alarm and Overcurrent Alarm
R.bAND	Asymmetric band alarm (command setpoint + alarm setpoint 4 H and command setpoint - alarm setpoint 4 L).
c. Aux	Auxiliary for job distribution on the command output. It cyclically replaces the command output for the time set on the parameter 188 R.4.dE.. If R.4.dE. = 0, it is activated parallel to the command output. It does not work in case of valve control and can only be activated on an alarm if R.4.dE. is different from 0.

178 R4Pr. Alarm 4 Process (only on ATR244-23XX-T)

Selects the size related to alarm 4.

- R..N.1 Value read on input AI1. (**Default**)
- R..N.2 Value read on input AI2.
- MERN Arithmetic average of the value read on inputs AI1 and AI2 [(AI1+AI2)/2].
- dFF. Difference of the values read on inputs AI1 and AI2 (AI1-AI2).
- Rb.dF. Module of the difference of the values read on inputs AI1 and AI2(|AI1-AI2|).
- SUM Sum of values read on inputs AI1 and AI2 (AI1+AI2).

179 R4.r.c. Alarm 4 Reference Command

Selects alarm 4 reference command

- cMd. 1 Alarm referred to command 1. (**Default**)
- cMd. 2 Alarm referred to command 2.

180 R4S.o. Alarm 4 State Output

Alarm 4 output contact and intervention type.

- N.o. SE. (N.O. Start) Normally open, active at start (**Default**)
- N.c. SE. (N.C. Start) Normally closed, active at start
- N.o. EH. (N.O. Threshold) Normally open, active on reaching alarm^{2 p. 74}
- N.c. EH. (N.C. Threshold) Normally closed, active on reaching alarm^{2 p. 74}
- N.o.EH.V. (N.O. Threshold Variation) disabled after changing control setpoint^{3 p. 74}
- N.c.EH.V. (N.C. Threshold Variation) disabled after changing control setpoint^{3 p. 74}

181 R4.o.t. Alarm 4 Output Type

Defines the output type if the alarm 4 is analogue.

- 0.10 V Output 0...10 V. **Default**
- 4.20mA Output 4...20 mA.

182 R4HY. Alarm 4 Hysteresis

Alarm 4 hysteresis.

-9999..+9999 [digit^{1 p. 74}] (degrees for temp. sensors). **Default** 0.5.

183 R4LL. Alarm 4 Lower Limit

Lower limit selectable for the alarm 4 setpoint.

-9999..+30000 [digit^{1 p. 74}] (degrees for temp. sensors). **Default** 0.

184 R4.u.L. Alarm 4 Upper Limit

Upper limit selectable for the alarm 4 setpoint.

-9999..+30000 [digit^{1 p. 74}] (degrees for temp. sensors). **Default** 1750.

185 A4.R.E. Alarm 4 Reset

Alarm 4 contact reset type (always automatic if RL.A.F. = c. Ru \ddot{x}).

R. RES. Automatic reset (**Default**)

M. RES. Manual reset (manual reset by keyboard or by digital input)

M.RES.S. Stored manual reset (keeps the output status also after a power failure)

R. RES.E. Automatic reset with timed activation. The alarm remains active for the time set on the parameter 188 R.4.dE., even if the conditions generating it are missing. To be able to act again, the alarm conditions must disappear.

186 A4.S.E. Alarm 4 State Error

Alarm 4 output status in case of error.

If the alarm output is digital (SSR):

OFF	Digital output OFF. Default	ON	Digital output ON.
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If the alarm output is 0-10V:

0 V	0 V. Default	10 V	10 V.
-----	---------------------	------	-------

If the alarm output is 0-20 mA or 4-20 mA:

0 MA	0 mA. Default	20 MA	20 mA.
------	----------------------	-------	--------

4 MA	4 mA.	21.5MA	21.5 mA.
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187 rES. Reserved

Reserved parameter

188 A4.dE. Alarm 4 Delay

Alarm 4 Delay.

-60:00..60:00 mm:ss (hh:mm if RL.A.F. = c. Ru \ddot{x}). **Default:** 00:00.

Negative value: delay when exit alarm status.

Positive value: delay when enter alarm status

189 A4.S.P. Alarm 4 Setpoint Protection

Allows or not to change the alarm 4 setpoint.

FREE Editable by the user (**Default**)

Lock Protected

Hide Protected and not visualized

190 A4.Lb. Alarm 4 Label

Selects the message displayed in case of alarm 4 intervention.

d.SRb. Disabled. (**Default**) 0.

Lb. D1 Message 1 (see table on paragraph 14.1) ..

Lb. Z0 Message 20 (see table on paragraph 14.1)

uSER.L. Custom message (modifiable by the user through the App or via modbus)

191÷194 Reserved Parameters - Group J

Reserved parameters - Group J

GROUP K - RL. 5 - Alarm 5 (only on ATR244-13ABC and ATR244-23XX-T)

195 A5.F. Alarm 5 Function

Alarm 5 selection 5.

d.SRb. Disabled (**Default**)

Rb.uP.R. Absolute Upper Activation. Absolute referred to the process, active over

Rb.lo.R. Absolute Lower Activation. Absolute referred to the process, active under

bRNd Band alarm (command setpoint ± alarm setpoint)

uP.dEV. Upper Deviation. alarm

Lo.dEV. Lower Deviation alarm

Rb.c.u.R. Absolute Command Upper Activation. Absolute alarm referred to the command setpoint, active over.

Rb.c.L.R. Absolute Command Lower Activation. Absolute alarm referred to the command

	setpoint, active under
RuN	Status alarm (active in RUN/START)
coolL	Cold actuator auxiliary (Cold action in double loop)
PRb.ER.	Probe error. Alarm active in case of sensor rupture.
EMR.1	Related to timer 1
EMR.2	Related to timer 2
EMR.1.2	Related to both timers
REM.	Remote. The alarm is enabled by the word 1239
d..1	Digital Input 1. Active when digital input 1 is active.
d..2	Digital Input 2. Active when digital input 2 is active.
d..3	Digital Input 3. Active when digital input 3 is active.
d..4	Digital Input 4. Active when digital input 4 is active.
H.b.R.	Heater Break Alarm and Overcurrent Alarm
R.bRNd	Asymmetric band alarm (command setpoint + alarm setpoint 5 H and command setpoint - alarm setpoint 5 L).
c. Ru%	Auxiliary for job distribution on the command output. It cyclically replaces the command output for the time set on the parameter 206 R.5.dE.. If R.5.dE. = 0, it is activated parallel to the command output. It does not work in case of valve control and can only be activated on an alarm if R.5.dE. is different from 0.

196 R5Pr. Alarm 5 Process (only on ATR244-23XX-T)

Selects the size related to alarm 5.

R..N.1	Value read on input AI1. (Default)
R..N.2	Value read on input AI2.
MERN	Arithmetic average of the value read on inputs AI1 and AI2 [(AI1+AI2)/2].
dFF.	Difference of the values read on inputs AI1 and AI2 AI1-AI2).
Rb.dF.	Module of the difference of the values read on inputs AI1 and AI2 (AI1-AI2).
SuM	Sum of values read on inputs AI1 and AI2 (AI1+AI2).

197 R5.r.c. Alarm 5 Reference Command (only on ATR244-23XX-T)

Selects alarm 5 reference command

cMd. 1	Alarm referred to command 1. (Default)
cMd. 2	Alarm referred to command 2.

198 R5S.o. Alarm 5 State Output

Alarm 5 output contact and intervention type.

N.o. Sf.	(N.O. Start) Normally open, active at start (Default)
N.c. Sf.	(N.C. Start) Normally closed, active at start
N.o. EH.	(N.O. Threshold) Normally open, active on reaching alarm ^{2 p. 74}
N.c. EH.	(N.C. Threshold) Normally closed, active on reaching alarm ^{2 p. 74}
N.o.EH.V.	(N.O. Threshold Variation) disabled after changing control setpoint ^{3 p. 74}
N.c.EH.V.	(N.C. Threshold Variation) disabled after changing control setpoint ^{3 p. 74}

199 R5.o.t. Alarm 5 Output Type

Defines the output type if the alarm 5 is analogue.

0..10 V	Output 0...10 V. Default
4..20mA	Output 4...20 mA.

200 R5.HY. Alarm 5 Hysteresis

Alarm 5 hysteresis.

-9999..+9999 [digit^{1 p. 74}] (degrees for temp. sensors). **Default** 0.5.

201 R5.LL. Alarm 5 Lower Limit

Lower limit selectable for the alarm 5 setpoint.

-9999..+30000 [digit^{1 p. 74}] (degrees for temp. sensors). **Default** 0.

202 R5.u.L Alarm 5 Upper Limit

Upper limit selectable for the alarm 5 setpoint.

-9999..+30000 [digit^{1p.74}] (degrees for temp. sensors). **Default** 1750.

203 R5.rE. Alarm 5 Reset

Alarm 5 contact reset type (always automatic if RL.S.F. = c. Rx).

R. RES. Automatic reset (**Default**)

M. RES. Manual reset (manual reset by keyboard or by digital input)

M.RES.S. Stored manual reset (keeps the output status also after a power failure)

R. RES.E. Automatic reset with timed activation. The alarm remains active for the time set on the parameter 206 R.5.dE., even if the conditions generating it are missing. To be able to act again, the alarm conditions must disappear.

204 R5.S.E. Alarm 5 State Error

Alarm 5 output status in case of error.

If the alarm output is digital (SSR):

OFF	Digital output OFF. Default	ON	Digital output ON.
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If the alarm output is 0-10V:

0 V	0 V. Default	10 V	10 V.
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If the alarm output is 0-20 mA or 4-20 mA:

0 MA	0 mA. Default	20 MA	20 mA.
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4 MA	4 mA.	21.5 MA	21.5 mA.
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205 rE5. Reserved

Reserved parameter

206 R5.dE. Alarm 5 Delay

Alarm 5 Delay.

-60:00..60:00 mm:ss (hh:mm if RL.S.F. = c. Rx). **Default**: 00:00.

Negative value: delay when exit alarm status.

Positive value: delay when enter alarm status

207 R5.S.P. Alarm 5 Setpoint Protection

Allows or not to change the alarm 5 setpoint.

FREE Editable by the user (**Default**)

Lock Protected

Hide Protected and not visualized

208 R5.lB. Alarm 5 Label

Selects the message displayed in case of alarm 5 intervention.

d.SRb. Disabled. (**Default**) 0.

Lb. 01 Message 1 (see table on paragraph 14.1)

.. Lb. 20 Message 20 (see table on paragraph 14.1)

uSER.L. Custom message (modifiable by the user through the App or via modbus)

209÷212 Reserved Parameters - Group K

Reserved parameters - Group K

GROUP L - RL 6 - Alarm 6 (only on ATR244-23XX-T)

213 AL6.F. Alarm 6 Function

Alarm 6 selection.

- d5Rb. Disabled (**Default**)
- Rb.uP.R. Absolute Upper Activation. Absolute referred to the process, active over
- Rb.lo.R. Absolute Lower Activation. Absolute referred to the process, active under
- bRNd Band alarm (command setpoint ± alarm setpoint)
- uP.dEV. Upper Deviation alarm
- Lo.dEV. Lower Deviation alarm
- Rb.c.u.R. Absolute Command Upper Activation. Absolute alarm referred to the command setpoint, active over.
- Rb.c.L.R. Absolute Command Lower Activation. Absolute alarm referred to the command setpoint, active under.
- RuN Status alarm (active in RUN/START)
- coolL Cold actuator auxiliary (Cold action in double loop)
- PPb.ER. Probe error. Alarm active in case of sensor rupture.
- tMR.1 Related to timer 1
- tMR.2 Related to timer 2
- tMR.1.2 Related to both timers
- REM. Remote. The alarm is enabled by the word 1240
- d.. 1 Digital Input 1. Active when digital input 1 is active.
- d.. 2 Digital Input 2. Active when digital input 2 is active.
- d.. 3 Digital Input 3. Active when digital input 3 is active.
- d.. 4 Digital Input 4. Active when digital input 4 is active.
- H.b.R. Heater Break Alarm and Overcurrent Alarm
- R.bRNd Asymmetric band alarm (command setpoint + alarm setpoint 6 H and command setpoint - alarm setpoint 6 L).
- c. Ru* Auxiliary for job distribution on the command output. It cyclically replaces the command output for the time set on the parameter 224 R.6.dE.. If R.6.dE. = 0, it is activated parallel to the command output. It does not work in case of valve control and can only be activated on an alarm if R.6.dE. is different from 0.

214 R6Pr. Alarm 6 Process

Selects the size related to alarm 6.

- R.iN.1 Value read on input AI1. (**Default**)
- R.iN.2 Value read on input AI2.
- MERN Arithmetic average of the value read on inputs AI1 and AI2 [(AI1+AI2)/2].
- diff. Difference of the values read on inputs AI1 and AI2 (AI1-AI2).
- Rb.dF. Module of the difference of the values read on inputs AI1 and AI2 (|AI1-AI2|).
- SUM Sum of values read on inputs AI1 and AI2 (AI1+AI2).

215 R6r.c. Alarm 6 Reference Command

Selects alarm 6 reference command

- cMd. 1 Alarm referred to command 1. (**Default**)
- cMd. 2 Alarm referred to command 2.

216 R6S.o. Alarm 6 State Output

Alarm 6 output contact and intervention type.

- N.o. 5E. (N.O. Start) Normally open, active at start (**Default**)
- N.c. 5E. (N.C. Start) Normally closed, active at start
- N.o. EH. (N.O. Threshold) Normally open, active on reaching alarm^{2 p. 74}
- N.c. EH. (N.C. Threshold) Normally closed, active on reaching alarm^{2 p. 74}
- N.o.EH.V. (N.O. Threshold Variation) disabled after changing control setpoint^{3 p. 74}
- N.c.EH.V. (N.C. Threshold Variation) disabled after changing control setpoint^{3 p. 74}

217 R.6.o.E. Alarm 6 Output Type

Defines the output type if the alarm 6 is analogue.

0..10 V Output 0...10 V. **Default**

4..20mA Output 4...20 mA.

218 R.6.HY. Alarm 6 Hysteresis

Alarm 6 hysteresis

-9999..+9999 [digit^{1p.74}] (degrees.tenths for temp. sensors). **Default** 0.5.

219 R.6.LL. Alarm 6 Lower Limit

Lower limit selectable for the alarm 6 setpoint.

-9999..+30000 [digit^{1p.74}] (degrees for temp. sensors). **Default** 0.

220 R.6.u.L. Alarm 6 Upper Limit

Upper limit selectable for the alarm 6 setpoint.

-9999..+30000 [digit^{1p.74}] (degrees for temp. sensors). **Default** 1750.

221 R.6.rE. Alarm 6 Reset

Alarm 6 contact reset type (always automatic if RL.6.F. = c. Rx).

R. RES. Automatic reset (**Default**)

M. RES. Manual reset (manual reset by keyboard or by digital input)

M.RES.S. Stored manual reset (keeps the output status also after a power failure)

R. RES.E. Automatic reset with timed activation. The alarm remains active for the time set on the parameter 224 R.6.dE., even if the conditions generating it are missing. To be able to act again, the alarm conditions must disappear.

222 R.65.E. Alarm 6 State Error

Alarm 6 output status in case of error.

If the alarm output is 0-10V:

0 V 0 V. **Default** 10 V 10 V.

If the alarm output is 0-20 mA or 4-20 mA:

0 MA 0 mA. **Default** 20 MA 20 mA.

4 MA 4 mA. 21.5MA 21.5 mA.

223 rE5. Reserved

Reserved parameter

224 R.6.dE. Alarm 6 Delay

Alarm 6 Delay.

-60:00..60:00 mm:ss (hh:mm if RL.6.F. = c. Rx). **Default**: 00:00.

Negative value: delay when exit alarm status

Positive value: delay when enter alarm status

225 R.65.P. Alarm 6 Setpoint Protection

Allows or not to change the alarm 6 setpoint.

FREE Editable by the user (**Default**)

Lock Protected

Hide Protected and not visualized

226 R.6Lb. Alarm 6 Label

Selects the message displayed in case of alarm 6 intervention.

d.SRb. Disabled. (**Default**) 0.

Lb. 01 Message 1 (see table on paragraph 14.1) ..

Lb. 20 Message 20 (see table on paragraph 14.1)

uSER.L. Custom message (modifiable by the user through the App or via modbus)

GROUP M - d.i. 1 - Digital input 1**231 d.i.1.F. Digital Input 1 Function**

Digital input 1 functioning.

d.5Rb. Disabled (**Default**)

2E. SW. 2 Setpoints Switch

2E.SW.. 2 Setpoints Switch Impulsive

3E.SW.. 3 Setpoints Switch Impulsive

4E.SW.. 4 Setpoints Switch Impulsive

SE./SE. Start / Stop

RuN Run

HoLD Lock conversion (stop all conversions and display values)

EuNE Performing manual tune

Ru.MR.. Automatic / Manual Impulse (if enabled on parameter 48 or 67)

Ru.MR.c. Automatic / Manual Contact (if enabled on parameter 48 or 67)

Act.EY. Action Type. Cooling regulat. if D.I. is active, otherwise heating reg.

A.. 0 Analogue Input 0. Set AI to zero

M. RES. Manual reset. Reset the outputs if selected as manual reset.

E.1.RuN Timer 1 run. The timer 1 count with activated D.I.

E.1. S.E. Timer 1 Start End. D.I. starts and stops the timer 1(impulsive)

E.1.SrR. Timer 1 Start. D.I. starts the timer 1(impulsive)

E.1.END Timer 1 End. D.I. stops the timer 1(impulsive)

E.2.RuN Timer 2 run. The timer 2 count with activated D.I.

E.2. S.E. Timer 2 Start End. D.I. starts and stops the timer 2(impulsive)

E.2.SrR. Timer 2 Start. D.I. starts the timer 2(impulsive)

E.2.END Timer 2 End. D.I. stops the timer 2(impulsive)

Lo.cFG. Lock configuration and setpoints.

uP.KEY Simulates the functioning of up key.

doWN.K. Simulates the functioning of down key.

FNC. K. Simulates the functioning of fnd key.

SET. K. Simulates the functioning of set key.

REM.S.E. Remote setpoint enabling. Enables Remote setpoint with activated D.I. Local setpoint with deactivated D.I. (remote setpoint must be enabled on parameter 56 - E.1.5.)

ExE.RL. External alarm. The controller goes on STOP and the alarms will be disabled. The controller does not return to START automatically: for this operation, the user's intervention is required.

232 d.i.1.C. Digital Input 1 Contact

Defines the resting contact of the digital input 1.

N.oPEN Normally open (**Default**)

N.cLoS. Normally closed

233 d.i.1.P. Digital Input 1 Process (only on ATR244-23XX-T)

Select the size related to the digital input 1.

A..N.1 Value read on input AI1. (**Default**)

A..N.2 Value read on input AI2.

MERN Arithmetic average of the value read on inputs AI1 and AI2 [(AI1-AI2)/2].

d.DF. Difference of the values read on inputs AI1 and AI2 (AI1-AI2).

Rb.dF. Module of the difference of the values read on inputs AI1 and AI2 (|AI1-AI2|).

SUM Sum of values read on inputs AI1 and AI2 (AI1+AI2).

234 d.i.1. Digital Input 1 Reference Command

Defines the resting contact of the digital input 1.

cMd. 1 Command 1 (**Default**)

cMd. 2 Command 2

cMd.1.2 Command 1 and 2

235÷238 Reserved Parameters - Group M

Reserved parameters - Group M

GROUP N - d.i. 2 - Digital input 2

239 d.i.2.F. Digital Input 2 Function

Digital input 2 functioning.

d.i.5Rb. Disabled (**Default**)

2E. SW. 2 Setpoints Switch

2E.SW..1. 2 Setpoints Switch Impulsive

3E.SW..1. 3 Setpoints Switch Impulsive

4E.SW..1. 4 Setpoints Switch Impulsive

5E./SE. Start / Stop

RuN Run

HoLd Lock conversion (stop all conversions and display values)

EuNE Performing manual tune

Ru.MA..1. Automatic / Manual Impulse (if enabled on parameter 48 or 67)

Ru.MA..c. Automatic / Manual Contact (if enabled on parameter 48 or 67)

Act.EY. Action Type. Cooling regulation if D.I. is active, otherwise heating reg.

R..0 Analogue Input 0. Set AI to zero

M. RES. Manual reset. Reset the outputs if selected as manual reset.

E.1.RuN Timer 1 run. The timer 1 count with activated D.I.

E.1. S.E. Timer 1 Start End. D.I. starts and stops the timer 1(impulsive)

E.1.SR. Timer 1 Start. D.I. starts the timer 1(impulsive)

E.1.END Timer 1 End. D.I. stops the timer 1(impulsive)

E.2.RuN Timer 2 run. The timer 2 count with activated D.I.

E.2. S.E. Timer 2 Start End. D.I. starts and stops the timer 2(impulsive)

E.2.SR. Timer 2 Start. D.I. starts the timer 2(impulsive)

E.2.END Timer 2 End. D.I. stops the timer 2(impulsive)

Lo.cFG. Lock configuration and setpoints.

uP.KEY Simulates the functioning of up key.

doWN.K. Simulates the functioning of down key.

FNC. K. Simulates the functioning of fnc key.

SET. K. Simulates the functioning of set key.

REM.S.E. Remote setpoint enabling. Enables Remote setpoint with activated D.I. Local setpoint with deactivated D.I. (remote setpoint must be enabled on parameter 56 rEN.S.)

ExE.RL. External alarm. The controller goes on STOP and the alarms will be disabled. The controller does not return to START automatically: for this operation, the user's intervention is required.

240 d.i.2.C. Digital Input 2 Contact

Defines the resting contact of the digital input 2.

N.oPEN Normally open (**Default**)

N.cLoS. Normally closed

241 d..2.P. Digital Input 2 Process (only on ATR244-23XX-T)

Select the size related to the digital input 2.

- R..N.1 Value read on input AI1. (**Default**)
- R..N.2 Value read on input AI2.
- MERN Arithmetic average of the value read on inputs AI1 and AI2 [(AI1-AI2)/2].
- dFF. Difference of the values read on inputs AI1 and AI2 (AI1-AI2).
- Rb.d.F. Module of the difference of the values read on inputs AI1 and AI2 (|AI1-AI2|).
- Sum Sum of values read on inputs AI1 and AI2 (AI1+AI2).

242 d..2.r. Digital Input 2 Reference Command

Defines the resting contact of the digital input 2.

- cMd. 1 Command 1 (**Default**)
- cMd. 2 Command 2
- cMd.1.2 Command 1 and 2

243÷246 Reserved Parameters - Group N

Reserved parameters - Group N

GROUP O - d..3 - Digital input 3 (only on ATR244-23XX-T)

247 d..3.F. Digital Input 3 Function

Digital input 3 functioning.

- d.SRb. Disabled (**Default**)
- 2E. SW. 2 Setpoints Switch
- 2E.SW.. 2 Setpoints Switch Impulsive
- 3E.SW.. 3 Setpoints Switch Impulsive
- 4E.SW.. 4 Setpoints Switch Impulsive
- SE./SE. Start / Stop
- Run Run
- Hold Lock conversion (stop all conversions and display values)
- EuNE Performing manual tune
- Ru.MA.. Automatic / Manual Impulse (if enabled on parameter 48 or 67)
- Ru.MA.c. Automatic / Manual Contact (if enabled on parameter 48 or 67)
- Rct.EY. Action Type. Cooling regulation if D.I. is active, otherwise heating reg.
- R.. 0 Analogue Input 0. Set AI to zero
- M. RES. Manual reset. Reset the outputs if selected as manual reset.
- E.1.Run. Timer 1 run. The timer 1 count with activated D.I.
- E.1. S.E. Timer 1 Start End. D.I. starts and stops the timer 1(impulsive)
- E.1.Sr. Timer 1 Start. D.I. starts the timer 1(impulsive)
- E.1.ED. Timer 1 End. D.I. stops the timer 1(impulsive)
- E.2.Run. Timer 2 run. The timer 2 count with activated D.I.
- E.2. S.E. Timer 2 Start End. D.I. starts and stops the timer 2(impulsive)
- E.2.Sr. Timer 2 Start. D.I. starts the timer 2(impulsive)
- E.2.ED. Timer 2 End. D.I. stops the timer 2(impulsive)
- Lo.cFG. Lock configuration and setpoints.
- uP.KEY Simulates the functioning of up key.
- doWN.K. Simulates the functioning of down key.
- FNC. K. Simulates the functioning of fnc key.
- SET. K. Simulates the functioning of set key.
- REM.S.E. Remote setpoint enabling. Enables Remote setpoint with activated D.I. Local setpoint with deactivated D.I. (remote setpoint must be enabled on parameter 56 -E7.5.)
- ExE.RL. External alarm. The controller goes on STOP and the alarms will be disabled. The controller does not return to START automatically: for this operation, the user's intervention is required.

248 d.i.3.c. Digital Input 3 Contact

Defines the resting contact of the digital input 3.

N.oPEN Normally open (**Default**)

N.cLoS. Normally closed

249 d.i.3.P. Digital Input 3 Process

Select the size related to the digital input 3.

R.i.N.1 Value read on input AI1. (**Default**)

R.i.N.2 Value read on input AI2.

MERN Arithmetic average of the value read on inputs AI1 and AI2 [(AI1-AI2)/2].

dIFF. Difference of the values read on inputs AI1 and AI2 (AI1-AI2).

Rb.d.F. Module of the difference of the values read on inputs AI1 and AI2(|AI1-AI2|).

SUM Sum of values read on inputs AI1 and AI2 (AI1+AI2).

250 d.i.3.r. Digital Input 3 Reference Command

Defines the reference command for the digital input 3 functions.

cMd. 1 Command 1 (**Default**)

cMd. 2 Command 2

cMd.1.2 Command 1 and 2

251÷254 Reserved Parameters - Group O

Reserved parameters - Group O

GROUP P - d.i.4 - Digital input 4 (only on ATR244-23XX-T)

255 d.i.4.F. Digital Input 4 Function

Digital input 4 functioning.

d.SRb. Disabled (**Default**)

2E.SW. 2 Setpoints Switch

2E.SW..1. 2 Setpoints Switch Impulsive

3E.SW..1. 3 Setpoints Switch Impulsive

4E.SW..1. 4 Setpoints Switch Impulsive

SE./SE. Start / Stop

Run Run

Hold Lock conversion (stop all conversions and display values)

tuNE Performing manual tune

Ru.MR..1. Automatic / Manual Impulse (if enabled on parameter 48 or 67)

Ru.MR..c. Automatic / Manual Contact (if enabled on parameter 48 or 67)

Act.EY. Action Type. Cooling regulation if D.I. is active, otherwise heating reg.

R..0 Analogue Input 0. Set AI to zero

M.RES. Manual reset. Reset the outputs if selected as manual reset.

E.1.RuN Timer 1 run. The timer 1 count with activated D.I.

E.1.S.E. Timer 1 Start End. D.I. starts and stops the timer 1(impulsive)

E.1.S&R. Timer 1 Start. D.I. starts the timer 1(impulsive)

E.1.END. Timer 1 End. D.I. stops the timer 1(impulsive)

E.2.RuN Timer 2 run. The timer 2 count with activated D.I.

E.2.S.E. Timer 2 Start End. D.I. starts and stops the timer 2(impulsive)

E.2.S&R. Timer 2 Start. D.I. starts the timer 2(impulsive)

E.2.END. Timer 2 End. D.I. stops the timer 2(impulsive)

Lo.cFG. Lock configuration and setpoints.

uP.KEY Simulates the functioning of up key.

doWN.K. Simulates the functioning of down key.

FNC.K. Simulates the functioning of fnc key.

SET.K. Simulates the functioning of set key.

REM.S.E. Remote setpoint enabling. Enables Remote setpoint with activated D.I. Local setpoint with deactivated D.I. (remote setpoint must be enabled on parameter 56 rE7.5.)

Ex.E.RL. External alarm. The controller goes on STOP and the alarms will be disabled. The

controller does not return to START automatically: for this operation, the user's intervention is required.

256 d.i4.c. Digital Input 4 Contact

Defines the resting contact of the digital input 4.

N.oPEN Normally open (**Default**) N.cLo5. Normally closed

257 d.i4.P. Digital Input 4 Process

Select the size related to the digital input 4.

- R.iN.1 Value read on input AI1. (**Default**)
- R.iN.2 Value read on input AI2.
- MERN Arithmetic average of the value read on inputs AI1 and AI2 [(AI1-AI2)/2].
- dFF. Difference of the values read on inputs AI1 and AI2 (AI1-AI2).
- Rb.dF. Module of the difference of the values read on inputs AI1 and AI2 (|AI1-AI2|).
- Sum Sum of values read on inputs AI1 and AI2 (AI1+AI2).

258 d.i4.r. Digital Input 4 Reference Command

Defines the reference command for the digital input 4 functions.

- cMd. 1 Command 1 (**Default**)
- cMd. 2 Command 2
- cMd.1.2 Command 1 and 2

259÷262 Reserved Parameters - Group P

Reserved parameters - Group P

GROUP Q - 5F5 - Soft-start and mini cycle

263 Pr.c4. Pre-programmed Cycle

Enables special functionings.

- d.SRb. Disabled (**Default**)
- ENRb. Enabled (all remote setpoint functions are inhibited)

264 SS.tY. Soft-Start Type

Enables and selects the soft-start type

- d.SRb. Disabled (**Default**)
- GRAd. Gradient
- PERc. Percentage (only with pre-programmed cycle disabled)

265 SS.r.c. Soft-Start Reference Command (only on ATR244-23XX-T)

Defines the reference command for the Soft-Start and the pre-programmed cycle.

- cMd. 1 Command 1 (**Default**)
- cMd. 2 Command 2
- cMd.1.2 Command 1 and 2

266 SS.Gr. Soft-Start Gradient

Rising/falling gradient for soft-start and pre-programmed cycle.

0..20000 Digit/hour^{1p.74} (degrees.tenths/hour if temperature). (**Default:** 100.0)

267 SS.PE. Soft-Start Percentage

Output percentage during soft-start function.

0..100%. (**Default:** 50%)

268 SS.EH. Soft-Start Threshold

Threshold under which the soft-start percentage function is activated, at starting.

-9999...30000 [digit^{1p.74}] (degrees.tenths for temp. sensors) (**Default:** 1000)

269 SS.t₁. Soft-Start Time

Max. Softstart duration: if the process will not reach the threshold selected on par. SS.tH. within the selected time, the controller starts to regulate on setpoint.

00:00 Disabled

00:01-24:00 hh:mm (**Default:** 00:15)

270 MA.T₁. Maintenance Time

Maintenance time for pre-programmed cycle.

00:00-24:00 hh:mm (**Default:** 00:00)

271 FG.Gr. Falling Gradient

Falling gradient for pre-programmed cycle.

0 Disabled (**Default**)

1..10000 Digit/hour^{1/p.74} (degrees.tenths/hour if temperature)

272 dES.t. Delayed Start

To set the initial waiting time for the delayed start of the setting or cycle, even in case of a blackout. The elapsed time is saved every 10 minutes.

0 Initial waiting time disabled: the controller starts immediately (**Default**)
00:01-24:00 hh:mm Initial waiting time enabled.

273-276 Reserved Parameters - Group Q

Reserved parameters - Group Q

GROUP R - d.iSP. - Display and interface

277 uFLt Visualization Filter

d.SRb. Disabled

PtcfHF Pitchfork filter (**Default**)

F1.oRd. First Order

F1.oR.P. First Order with Pitchfork

2.SR.M. 2 Samples Mean

.... ...n Samples Mean

10.SR.M. 10 Samples Mean

278 u.i.d.2 Visualization Display 2

Selects visualization on display 2.

c.1.SP% Command 1 setpoint (**Default**)

ou.PE.1 Percentage of command output 1

R..N.1 Value read on input AI1.

R..N.2 Value read on input AI2.

MERN Arithmetic average of the value read on inputs AI1 and AI2 [(AI1-AI2)/2].

d.DF. Difference of the values read on inputs AI1 and AI2 (AI1-AI2).

Rb.d.F. Module of the difference of the values read on inputs AI1 and AI2 (|AI1-AI2|).

SUM Sum of values read on inputs AI1 and AI2 (AI1+AI2).

c.2.SP% Command 2 setpoint

ou.PE.2 Percentage of command output 2

AMPER. Ampere from current transformer

279 tNo.d. Timeout Display

Determines the display timeout

d.SRb. Disabled. Display always ON 5 M:N 5 minutes
(**Default**) 10M:N 10 minutes

15 S 15 seconds 30M:N 30 minutes

1 M:N 1 minute 1 H 1 hour

280 *tNo.5.* Timeout Selection

Selects which display is switched off when Display Timeout expires

- dSP.1* Display 1
- dSP.2* Display 2 (**Default**)
- dSP.1.2* Display 1 and 2
- d.1.2.Ld.* Display 1, 2 and led

281 *uMPc.* User Menu Pre-Programmed Cycle

Allows to modify rising/falling gradient and retention time form the user menu, in pre-programmed cycle functioning. To access parameter modification, press **SET**.

- dSRb.* Disabled (**Default**)
- R.S.GR.* Only rising gradient
- MR.Et.* Only retention time
- R.G.M.E.* Rising gradient and retention time
- FRL.GR* Only falling gradient
- R.F.R.G.* Rising and falling gradient
- FR.G.M.E.* Falling gradient and retention time
- R.F.G.M.E.* Rising gradient, retention time and falling gradient

282 *u.out* Voltage Output

Selects the voltage on the sensors power terminals and of the digital outputs (SSR).

- 12 V* 12 volt (**Default**)
- 24 V* 24 volt

283 *ScL.t.* Scrolling Time

Select the duration for the visualization of the user menu data, before returning to the default page.

- | | | | |
|-------------|------------------------------|----------------|---------------|
| <i>3 S</i> | 3 seconds | <i>1 M.N</i> | 1 minutes |
| <i>5 S</i> | 5 seconds (Default) | <i>5 M.N</i> | 5 minutes |
| <i>10 S</i> | 10 seconds | <i>10M.N</i> | 10 minutes |
| <i>30 S</i> | 30 seconds | <i>MRN.Sc.</i> | Manual scroll |

284 *dSPF.* Display Special Functions

- dSRb.* Special functions disabled
- SWRP* Shows the setpoint on display 1 and the process on display 2 (only if Par. 278 *u.i.d.2* set on *c.ISP_U*)

285 *nFc.L.* NFC Lock

- dSRb.* NFC lock disabled: NFC accessible.
- ENRb.* NFC lock enabled: NFC not accessible.

286 *S.F.S.F.* Set Key Special Functions

Assign special functions to the **SET** button. To execute the function the button must be pressed for 1 second. The selections *2E.SW1.*, *3E.SW1.*, *4E.SW1.* and *R.. Ø* are not available for versions with double analogue input (ATR244-23A-T e ATR244-23BC-T).

- dSRb.* No special function linked to the **SET** key. (**Default**)
- SE./SE.* Start/Stop. Pressing **SET** key the controller switches from Start to Stop and viceversa. Status of the controller, upon power-up, depends on parameter ini.s.
- 2E.SW1.* 2 Threshold Command Setpoint Switch. The controller changes the regulation setpoint alternating between Set1 and Set2
- 3E.SW1.* 3 Threshold Command Setpoint Switch. The controller changes the regulation setpoint alternating between Set1, Set2 and Set3
- 4E.SW1.* 4 Threshold Command Setpoint Switch. The controller changes the regulation setpoint alternating between Set1, Set2, Set3 and Set4
- R.. Ø* Analogue Input 0. Set analogue input to zero (zero tare)

GROUP S - ct - Current transformer (only on ATR244-13ABC and 23xx-T)

287 ct.F. Current Transformer Function

Enables the C.T. input and selects the net frequency

- d.SRb. Disabled (**Default**)
- 50 Hz 50 Hz
- 60 Hz 60 Hz

288 ct.u. Current Transformer Value

Selects the amperometric transformer full-scale

- 1..200 Ampere (**Default:** 50)

289 H.b.R.r. Heater Break Alarm Reference Command

Defines the reference command for the heater break alarm and the overcurrent alarm.

- cMd. 1 Command 1 (**Default**)
- cMd. 2 Command 2

290 H.b.R.E. Heater Break Alarm Threshold

Heater Break Alarm activation threshold

- 0 Alarm disabled. (**Default:**)
- 0.1-200.0 Ampere

291 ocu.t. Overcurrent Alarm Threshold

Overcurrent alarm threshold.

- 0 Alarm disabled. (**Default**)
- 0.1-200.0 Ampere

292 H.b.R.d. Heater Break Alarm Delay

Heater Break Alarm and overcurrent alarm activation delay.

- 00:00-60:00 mm:ss (**Default:** 01:00)

293÷297 Reserved Parameters - Group S

Reserved parameters - Group S

GROUP T - R.o. 1 - Retransmission 1

298 r.t.1. Retransmission 1

Retransmission for output. Parameters 300 and 301 define lower and upper limit of the operating scale.

- d.SRb. Disabled (**Default**)
- c.1.5P% Command 1 setpoint
- RL. 1 Alarm 1 setpoint
- RL. 2 Alarm 2 setpoint
- Md.bu5 Retransmits the value written on word 1241
- R..N.1 Value read on input AI1
- R..N.2 Value read on input AI2
- MERN Arithmetic average of the value read on inputs AI1 and AI2 [(AI1+AI2)/2]
- d.DF. Difference of the values read on inputs AI1 and AI2 (AI1-AI2)
- Rb.d.F. Module of the difference of the values read on inputs AI1 and AI2 (|AI1-AI2|)
- SuM Sum of values read on inputs AI1 and AI2 (AI1+AI2)
- c.2.5P% Command 2 setpoint
- AMPER. Ampere from current transformer

299 r.t.1. Retransmission 1 Type

Selects the retransmission type for AO1

- 0..10 V Output 0...10 V.
- 4..20mA Output 4...20 mA. **Default**

300 r.I.LL Retransmission 1 Lower Limit

Retransmission 1 lower limit range (value related to 10 V or 0/4 mA).

-9999..+30000 [digit^{1p.74}] (degrees if temperature), **Default:** 0.

301 r.I.U.L Retransmission 1 Upper Limit

Retransmission 1 upper limit range 2 (value related to 10 V or 20 mA).

-9999..+30000 [digit^{1p.74}] (degrees if temperature), **Default:** 1000.

302 r.I5.E Retransmission 1 State Error

Determines retransmission 1 value in case of error or anomaly

If the retransmission output is 0-10V:

0 V 0 V. **Default**

10 V 10 V.

If the retransmission output is 0-20 mA or 4-20 mA:

0 MA 0 mA. **Default**

4 MA 4 mA.

20 MA 20 mA.

21.5MA 21.5 mA.

303÷307 Reserved Parameters - Group T

Reserved parameters - Group T

GROUP U - R.O. 2 - Retransmission 2 (only on ATR244-23XX-T)

308 rE7.2 Retransmission 2

Retransmission for output AO2. Parameters 310 and 311 define lower and upper limit of the operating scale.

d.SRb. Disabled (**Default**)

c.1.5PV Command 1 setpoint

RL. 1 Alarm 1 setpoint

RL. 2 Alarm 2 setpoint

Md.bus Retransmits the value written on word 1242

R..N.1 Value read on input AI1

R..N.2 Value read on input AI2

MERN Arithmetic average of the value read on inputs AI1 and AI2 [(AI1+AI2)/2]

d.FF. Difference of the values read on inputs AI1 and AI2 (AI1-AI2)

Rb.d.F. Module of the difference of the values read on inputs AI1 and AI2 (|AI1-AI2|)

SuM Sum of values read on inputs AI1 and AI2 (AI1+AI2)

c.2.5PV Command 2 setpoint

AMPER. Ampere from current transformer

309 r2.EY. Retransmission 2 Type

Selects the retransmission type for AO2

0..10 V Output 0...10 V.

4..20MA Output 4...20 mA. **Default**

310 r2.LL Retransmission 2 Lower Limit

Retransmission 2 lower limit range (value related to 10 V or 0/4 mA).

-9999..+30000 [digit^{1p.74}] (degrees if temperature), **Default:** 0.

311 r2.U.L Retransmission 2 Upper Limit

Retransmission 2 upper limit range 2 (value related to 10 V or 20 mA).

-9999..+30000 [digit^{1p.74}] (degrees if temperature), **Default:** 1000.

312 r25.E. Retransmission 2 State Error

Determines retransmission 2 value in case of error or anomaly.

If the retransmission output is 0-10V:

0 V 0 V. Default

10 V 10 V.

If the retransmission output is 0-20 mA or 4-20 mA:

0 mA 0 mA. Default

4 mA 4 mA.

20 mA 20 mA.

21.5mA 21.5 mA.

313÷317 Reserved Parameters - Group U

Reserved parameters - Group U

GROUP V - SEr. - Serial (*not available on ATR244-12ABC*)

318 SL.Ad. Slave Address

Selects slave address for serial communication.

1...254. Default: 247.

319 bd.rt. Baud Rate

Selects baudrate for serial communication

1.2 k 1200 bit/s

2.4 k 2400 bit/s

4.8 k 4800 bit/s

9.6 k 9600 bit/s

19.2 k 19200 bit/s (Default)

28.8 k 28800 bit/s

38.4 k 38400 bit/s

57.6 k 57600 bit/s

115.2k 115200 bit/s

320 S.P.P. Serial Port Parameters

Selects the format for the modbus RTU serial communication.

8-N-1 8 bit, no parity, 1 stop bit (Default)

8-E-1 8 bit, even parity, 1 stop bit

8-o-1 8 bit, odd parity, 1 stop bit

8-N-2 8 bit, no parity, 2 stop bit

8-E-2 8 bit, even parity, 2 stop bit

8-o-2 8 bit, odd parity, 2 stop bit

321 SE.dE. Serial Delay

Selects serial delay

0...100 ms. Default: 5 ms.

322 oFFL. Off Line

Selects the off-line time. If there is no serial communication during the selected time, the controller switches-off the command output.

0 Offline disabled (Default)

0.1-600.0 tenths of second.

323÷327 Reserved Parameters - Group V

Reserved parameters - Group V

GROUP W - Timer - Timer

328 E₁r.1 Timer 1

Enabling Timer 1

d₁SRb. Disabled (**Default**)

ENRb. Enabled

EN.SR. Enabled and active at start

329 E₁b.E₁ Time Base Timer 1

Selects time base for timer 1

MM.55 minutes.seconds (**Default**)

HH.MM hours.minutes

330 A.E₁.1 Action Timer 1

Select the type of the action executed by the timer 1 to be related to an alarm..

START Start. Active during timer counting (**Default**)

END End. Active at timer expiry

WARN. Warning. Active 5" before the timer expiry

331 E₁r.2 Timer 2

Enabling Timer 2

d₁SRb. Disabled (**Default**)

ENRb. Enabled

EN.SR. Enabled and active at start

332 E₁b.E₂ Time Base Timer 2

Selects time base for timer 2

MM.55 minutes.seconds (**Default**)

HH.MM hours.minutes

333 A.E₁.2 Action Timer 2

Select the type of the action executed by the timer 2 to be related to an alarm.

START Start. Active during timer counting (**Default**)

END End. Active at timer expiry.

WARN. Warning. Active 5" before the timer expiry.

334 E₁r.5. Timers Sequence

Select the correlation between the two timers.

SINGL. Singles. Timers work independently (**Default**)

SEQU_E. Sequential. When timer 1 ends, timer 2 starts.

Loop. Loop. When a timer ends, another starts.

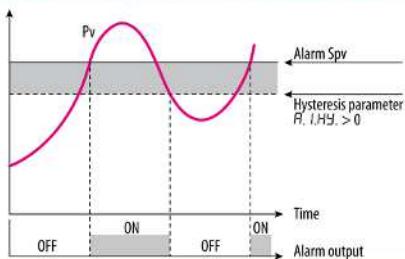
335÷339 Reserved Parameters - Group W

Reserved parameters - Group W

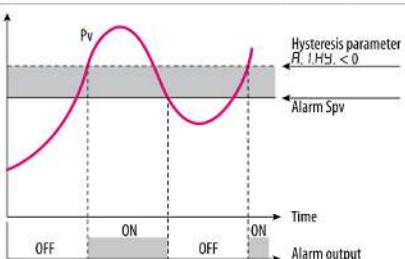
14

Alarm Intervention Modes

14.a Absolute or threshold alarm active over (par. 123 $AL.IF = Ab.uPA$)

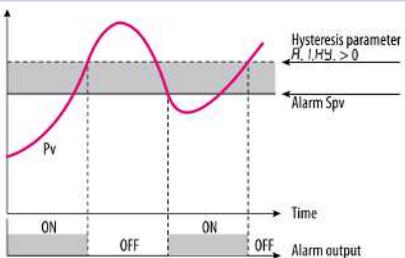


Absolute alarm active over.
Hysteresis value greater than "0" (Par. 128 $R.I.HY > 0$).

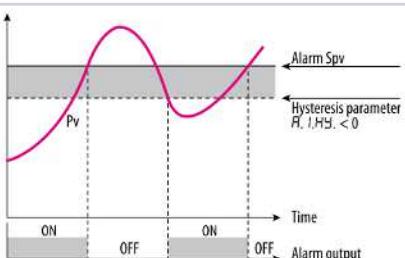


Absolute alarm active over.
Hysteresis value lower than "0" (Par. 128 $R.I.HY < 0$).

14.b Absolute or threshold alarm active below (par. 123 $AL.IF = Ab.uPB$)

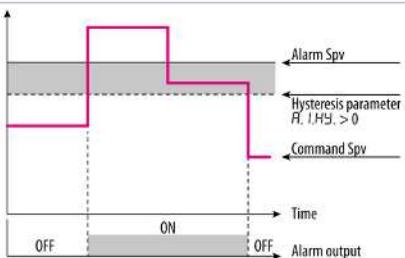


Absolute alarm active below.
Hysteresis value greater than "0" (Par. 128 $R.I.HY > 0$).



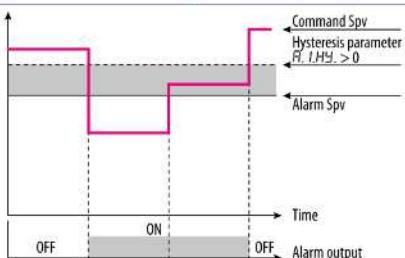
Absolute alarm active below.
Hysteresis value lower than "0" (Par. 128 $R.I.HY < 0$).

14.c Absolute or threshold alarm referred to command setpoint active over (par. 123 $AL.IF = Ab.c.uRA$)



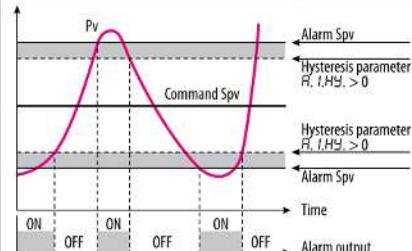
Absolute alarm referred to command setpoint active over. Hysteresis value greater than "0" (Par. 128 $R.I.HY > 0$).

14.d Absolute or threshold alarm referred to command setpoint active below (par. 123 $AL.IF = Ab.c.LRA$)

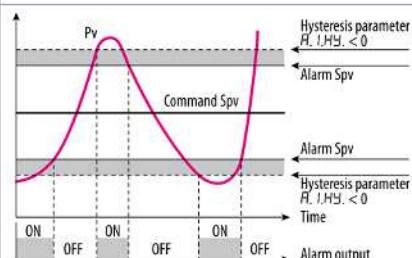


Absolute alarm referred to command setpoint active below.
Hysteresis value greater than "0" (Par. 128 $R.I.HY > 0$).

14.e Band alarm (par. 123 RL.IF.= bAnd)

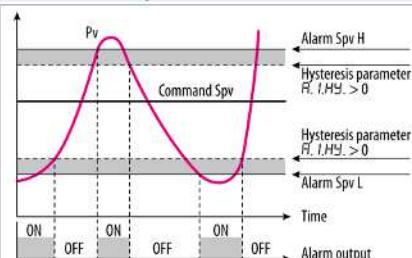


Band alarm hysteresis value greater than "0" (Par. 128 R.I.HY > 0).

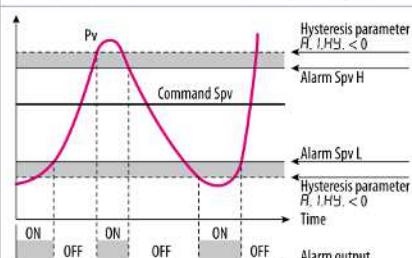


Band alarm hysteresis value lower than "0" (Par. 128 R.I.HY < 0).

14.f Asymmetric band alarm (par. 123 RL.IF.= R.bAnd)

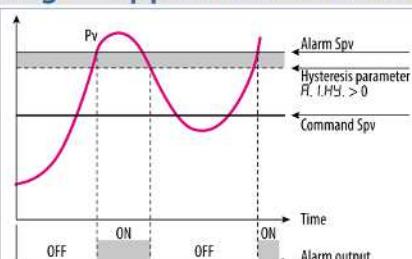


Asymmetric band alarm with hysteresis value greater than "0" (Par. 128 R.I.HY > 0).



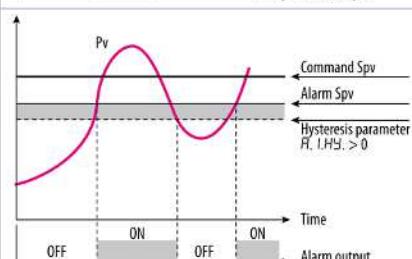
Asymmetric band alarm with hysteresis value lower than "0" (Par. 128 R.I.HY < 0).

14.g Upper deviation alarm (par. 123 RL.IF.= uP.dEu)



Upper deviation alarm value of alarm setpoint greater than "0" and hysteresis value greater than "0" (Par.128 R.I.HY. > 0).

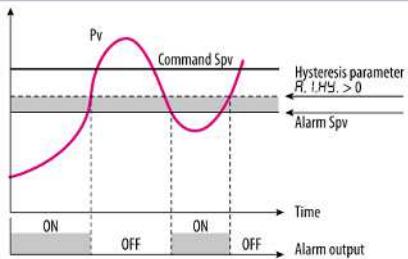
NB: with hysteresis value less than "0" ($R.I.HY. < 0$) the dotted line moves under the alarm setpoint.



Upper deviation alarm value of alarm setpoint less than "0" and hysteresis value greater than "0" (Par.128 R.I.HY. > 0).

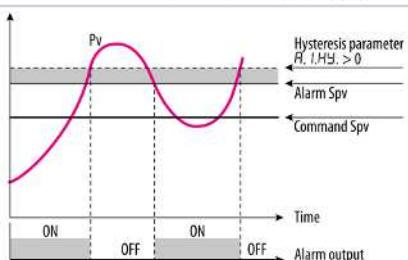
NB: with hysteresis value less than "0" ($R.I.HY. < 0$) the dotted line moves under the alarm setpoint.

14.h Lower deviation alarm (par. 123 RL.IF = Lo.dEu)



Lower deviation alarm value of alarm setpoint greater than "0" and hysteresis value greater than "0" (Par.128 R.I.HY > 0).

NB: with hysteresis value less than "0" (R.I.HY < 0) the dotted line moves under the alarm setpoint.



Lower deviation alarm value of alarm setpoint less than "0" and hysteresis value greater than "0" (Par.128 R.I.HY > 0).

NB: with hysteresis value less than "0" (R.I.HY < 0) the dotted line moves under the alarm setpoint.

14.1 Alarms label

By setting a value from 1 to 20 on the parameters 136 A.1.Lb., 154 A.2.Lb., 172 A.3.Lb., 190 A.4.Lb., 208 A.5.Lb. e 226 A.6.Lb., the display 2 will show one of the following messages in case of alarm:

Selection	Message displayed in the alarm event
1	alarm 1
2	alarm 2
3	alarm 3
4	alarm 4
5	alarm 5
6	alarm 6
7	open door
8	closed door
9	light on
10	light off

Selection	Message displayed in the alarm event
11	warning
12	waiting
13	high limit
14	low limit
15	external alarm
16	temperature alarm
17	pressure alarm
18	fan command
19	cooling
20	operating

By setting 0, no message will be displayed. While setting 21, the user will have up to 23 characters available to customize his message via the "MyPyxsys" App or via modbus.

15 Table of Anomaly Signals

If installation malfunctions, the controller switches off the regulation output and reports the anomaly noticed. For example, controller will report failure of a connected thermocouple visualizing E-05 (flashing) flashing on display.

For other signals see table below.

	Cause	What to do
E-02 SYStEN Error	Cold junction temperature sensor failure or environment temperature out of range	Call assistance
E-04 EEProN Error	Incorrect configuration data. Possible loss of instrument calibration	Verify that configuration parameters are correct.
E-05 ProbE 1 Error	Sensor connected to AI1 broken or temperature out of range	Control connection with probes and their integrity.
E-06 ProbE 2 Error	Sensor connected to AI2 broken or temperature out of range	Control connection with probes and their integrity.

	Cause	What to do
E-08 System Error	Missing calibration	Call assistance
E-10 A.in.2 disabled	Analogue input 2 disabled but used during configuration.	Enable A.in.2 or disable it during configuration.
E-80 rfid Error	Tag rfid malfunctioning	Call assistance

Notes / Updates

- - 1 *Display of decimal point depends on setting of parameter **SEn.** and parameter **d.P.***
 - 2 *On activation, the output is inhibited if the controller is in alarm mode. Activates only if alarm condition reappears, after that it was restored.*
 - 3 *Changing the control setpoint, the alarm will be disabled. It will stay disabled as long as the parameters that created it are active. It only works with deviation alarms, band alarms and absolute alarms (referring to the control setpoint).*

Table of configuration parameters

GROUP A - A.in.1 - Analogue input 1

1	SEn.1	Sensor AI1	34
2	d.P.1	Decimal Point 1	34
3	dEGr.	Degree	34
4	LL.i.1	Lower Linear Input AI1	34
5	uL.i.1	Upper Linear Input AI1	34
6	P.uR.1	Potentiometer Value AI1	34
7	i.o.L.1	Linear Input over Limits AI1	35
8	a.cR.1	Offset Calibration AI1	35
9	G.cR.1	Gain Calibration AI1	35
10	Ltc.1	Latch-On AI1	35
11	c.FL.1	Conversion Filter AI1	35
12	c.Fr.1	Conversion Frequency AI1	35
13	L.c.E.1	Lower Current Error 1	35
14÷17		Reserved Parameters - Group A	35

GROUP B - A.in.2 - Analogue input 2 (only on ATR244-23XX-T)

18	SEn.2	Sensor AI2	36
19	d.P.2	Decimal Point 2	36
20	rES.	Reserved	36
21	LL.i.2	Lower Linear Input AI2	36
22	uL.i.2	Upper Linear Input AI2	36
23	P.uR.2	Potentiometer Value AI2	36
24	i.o.L.2	Linear Input over Limits AI2	37
25	a.cR.2	Offset Calibration AI2	37
26	G.cR.2	Gain Calibration AI2	37
27	Ltc.2	Latch-On AI2	37
28	c.FL.2	Conversion Filter AI2	37
29	c.Fr.2	Conversion Frequency AI2	37
30	L.c.E.2	Lower Current Error 2	37
31÷34		Reserved Parameters - Group B	37

GROUP C - c.Rd.1 - Outputs and regulation Process 1

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36	c.Pr.1	Command Process 1 (only on ATR244-23XX-T)	38
37	rES.	Reserved	39
38	A.c.E.1	Action type 1	39
39	c.HY.1	Command Hysteresis 1	39
40	LL.S.1	Lower Limit Setpoint 1	39
41	uL.S.1	Upper Limit Setpoint 1	39
42	c.rE.1	Command Reset 1	39
43	c.S.E.1	Command State Error 1	39
44	c.Ld.1	Command Led 1	39
45	c.dE.1	Command Delay 1	40
46	c.S.P.1	Command Setpoint Protection 1	40
47	uR.E.1	Valve Time 1	40
48	A.MA.1	Automatic / Manual 1	40
49	i.n.S.	Initial State	40
50	S.uRS.	State Valve Saturation	40
51	i.SP.1	Initial Value Setpoint 1	40
52÷53		Reserved Parameters - Group C	40

GROUP D - cNd.2 - Outputs and regul. Process 2 (only on ATR244-23XX-T)

54	c.out.2	Command Output 2	41
55	c.Pr.2	Command Process 2	41
56	rES.	Remote Setpoint	41
57	A.t.E.2	Action type 2	41
58	c.HY.2	Command Hysteresis 2	41
59	LLS.2	Lower Limit Setpoint 2	41
60	ULS.2	Upper Limit Setpoint 2	42
61	c.rE.2	Command Reset 2	42
62	c.S.E.2	Command State Error 2	42
63	c.Ld.2	Command Led 2	42
64	c.dE.2	Command Delay 2	42
65	c.S.P.2	Command Setpoint Protection 2	42
66	vR.E.2	Valve Time 2	42
67	A.MA.2	Automatic / Manual 2	43
68	rES.	Reserved	43
69	rES.	Reserved	43
70	iSP.2	Initial Value Setpoint 2	43
71÷72		Reserved Parameters - Group D	43

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73	tun.1	Tune 1	43
74	S.d.E.1	Setpoint Deviation Tune 1	43
75	P.b.1	Proportional Band 1	43
76	i.t.1	Integral Time 1	43
77	d.t.1	Derivative Time 1	43
78	d.b.1	Dead Band 1	43
79	P.b.c.1	Proportional Band Centered 1	44
80	o.o.S.1	Off Over Setpoint 1	44
81	o.d.t.1	Off Deviation Threshold 1	44
82	c.t.1	Cycle Time 1	44
83	co.F.1	Cooling Fluid 1	44
84	P.b.M.1	Proportional Band Multiplier 1	44
85	o.d.b.1	Overlap / Dead Band 1	44
86	c.c.t.1	Cooling Cycle Time 1	44
87	LLP.1	Lower Limit Output Percentage 1	44
88	ULP.1	Upper Limit Output Percentage 1	44
89	M.G.E.1	Max Gap Tune 1	45
90	Mn.P.1	Minimum Proportional Band 1	45
91	MA.P.1	Maximum Proportional Band 1	45
92	Mn.i.1	Minimum Integral Time 1	45
93	o.c.L.1	Overshoot Control Level 1	45
94÷97		Reserved Parameters - Group E	45

GROUP F - rEG.2 - Autotuning and PID 2 (only on ATR244-23XX-T)

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99	S.d.E.2	Setpoint Deviation Tune 2	45
100	P.b.2	Proportional Band 2	45
101	i.t.2	Integral Time 2	45
102	d.t.2	Derivative Time 2	46
103	d.b.2	Dead Band 2	46
104	P.b.c.2	Proportional Band Centered 2	46
105	o.o.S.2	Off Over Setpoint 2	46

106 <i>o.d.t.2</i>	Off Deviation Threshold 2	46
107 <i>c.t.2</i>	Cycle Time 2	46
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110 <i>o.d.b.2</i>	Overlap / Dead Band 2	46
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115 <i>MnP.2</i>	Minimum Proportional Band 2	47
116 <i>MPnP.2</i>	Maximum Proportional Band 2	47
117 <i>Mn.i.2</i>	Minimum Integral Time 2	47
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Read carefully the safety guidelines and programming instructions contained in this manual before using/connecting the device.

Prima di utilizzare il dispositivo leggere con attenzione le informazioni di sicurezza e settaggio contenute in questo manuale.

Antes de usar el dispositivo leer con atención las informaciones de seguridad y configuración contenidas en este manual.

Avant d'utiliser le dispositif lire avec attention les renseignements de sûreté et installation contenus dans ce manuel.



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