Pixsys®
ELECTRONICS

ATR444

Régulateur

Manuel utilisateur

Introduction

Le régulateur ATR444 (format 48x96mm - 1 / 8DIN) est disponible en plusieurs versions avec un nombre variable d'entrées et de sorties analogiques-numériques, qui permettent une large gamme de fonctions logicielles décrites en détail dans les paragraphes correspondants.
Les modes de programmation incluent l'application MyPixsys, basée sur la communication NFC sans l'utilisation d'adaptateurs et sans besoin de câblage / alimentation, ou encore le logiciel Labsoftview via port Micro-USB.
La fonction de programmation de cycle est également disponible.

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.
- N'utilisez pas de produits chimiques/solvants, détergents et autres liquides.
- Le non-respect de ces instructions peut réduire les performances et la sécurité des appareils et entraîner un danger pour les personnes et les choses.

Pour l'entrée CT (Current Transformer):

- **Warning**: Pour réduire le risque de choc électrique, toujours ouvrir ou déconnecter le circuit du système de distribution électrique (ou service) du bâtiment avant d'installer ou d'entretenir des transformateurs de courant.
- À utiliser avec les transformateurs de courant de surveillance de l'énergie répertoriés.
- Les transformateurs de courant ne peuvent pas être installés dans des équipements où ils dépassent 75 pour cent de l'espace de câblage de toute section transversale à l'intérieur de l'équipement.
- Restreindre l'installation du transformateur de courant dans une zone où il bloquerait les ouvertures de ventilation.
- Éviter l'installation du transformateur de courant dans une zone de ventilation d'arc de disjoncteur.

- Ne pas utiliser avec méthodes de câblage de classe 2.
- Nºn destiné à être connecté à un équipement de classe 2.
- Fixez le transformateur de courant et acheminez les conducteurs de manière à ce que les conducteurs n'entrent pas en contact avec les bornes ou le bus sous tension.

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

Alimentazione 24..230 VAC/VDC ±15% 50/60 Hz – 6 Watt/VA	
ATR444-13ABC	1 A.I. + 3 relais 5 A + 2 SSR + 4 D.I. + 1 A.O. V/mA + 1 CT
ATR444-14ABC-T	1 A.I. + 4 relais 5 A + 2 SSR + 2 D.I. + 1 A.O. V/mA + 1 CT + RS485
ATR444-15ABC	1 A.I. + 5 relais 5 A + 2 SSR + 4 D.I. + 1 CT
ATR444-22ABC	2 A.I. + 2 relais 5 A + 2 SSR + 4 D.I. + 1 A.O. V/mA + 2 CT
ATR444-24ABC-T	2 A.I. + 4 relais 5 A + 2 SSR + 4 D.I. + 2 A.O. V/mA + 1 CT + RS485

3 Données techniques

3.1 Caractéristiques générales

Visualisateurs	4 affichage 0,63 " + 5 affichage 0,39 " + 5 affichage 0,33 " + bar graph
Conditions d'exercice	Température: 0-45 °C - Humidité: 35..95 uR%. Altitude max: 2000m
Protection	Montage sur panneau avant NEMA type 1 IP65 panneau frontal (avec joint) - IP20 boîtier et bornes (non testé UL)
Matériel	Boîtier et panneau frontal PC UL94V2
Poids	Environ 245 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) +/-0.2% ±1 digit (su F.s.) pour thermocouple, thermorésistance et V / mA. Précision jonction froide 0.1 °C/°C. **Impedance**: **0-10 V**: Ri>110 KΩ **0-20 mA**: Ri<5 Ω **0-40 mV**: Ri>1 MΩ
Sorties relais	Config. comme sortie commande et alarme	Contacts: 5A - 250 VAC pour charges résistives.
Sorties SSR	Config. 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 +/-0.2% (su F.s.) @25 °C; carico >= 1 KΩ **4-20 mA** avec 40000 points +/-0.2% (su F.s.) @25 °C; carico <= 250Ω

Alimentation	Alimentation à range étendue 24..230 VAC/ VDC ±15% 50/60 Hz	**Consommation:** 13ABC 8W 14ABC-T 10W 15ABC 12W 22ABC 10W 24ABC-T 12W

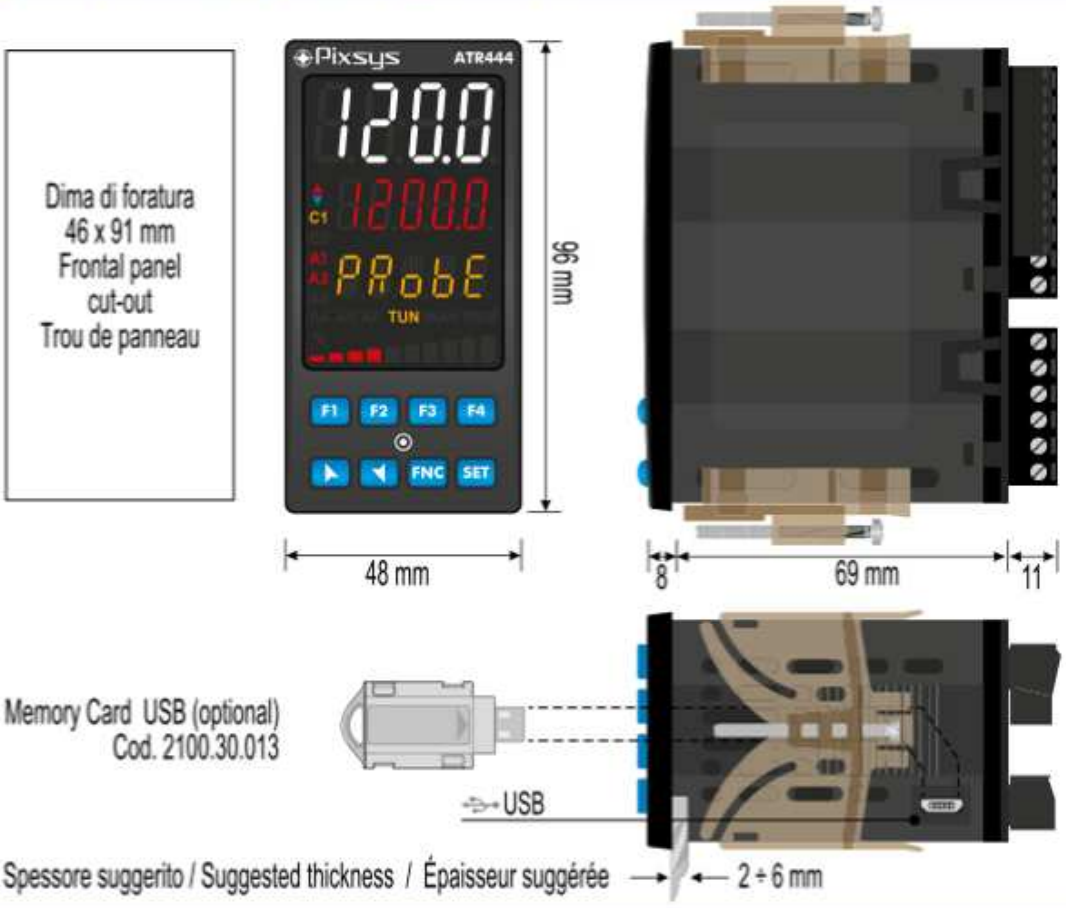
3.3 Caractéristiques Software

Algorithmes régulation	ON-OFF avec hystérésis. - P, PI, PID, PD à durée proportionnelle.
Bande 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 13
software LabSoftview	.. voir la section *"Download"* du site www.pixsys.net
App MyPixsys	.. à travers le download de l'application de Google Play Store®, voir le paragraphe 11 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

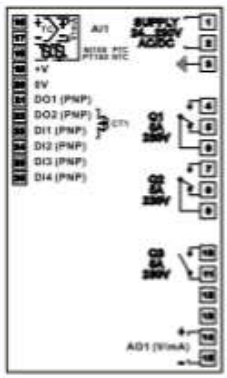
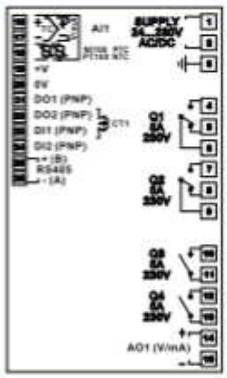
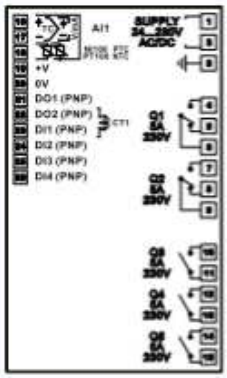
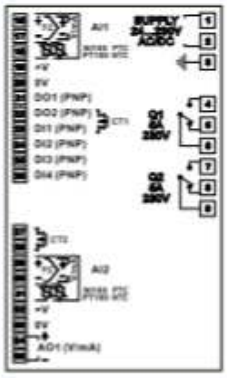
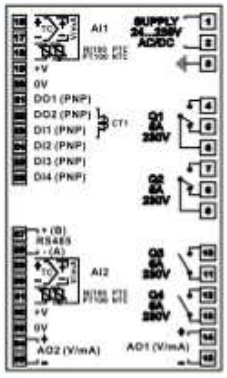


4.1 Raccordements électriques

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...15, 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 nominale minimale du câble à connecter aux bornes du câblage de terrain, 70°C). La longueur de dénudage est comprise entre 7 et 8 mm. Serrez les vis à un couple de 0,19 Nm.
- Pour câbler les bornes 16...35, 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. AWG12; Température nominale minimale du câble à connecter aux bornes du câblage de terrain, 70°C). La longueur de dénudage est comprise entre 6 et 7 mm. Serrez les vis à un couple de 0,51 Nm.
- Utilisez uniquement des conducteurs en cuivre ou en aluminium plaqué cuivre ou AL-CU ou CU-AL.

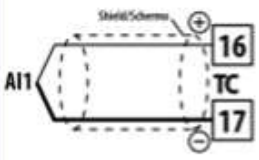
4.2 Plan des connexions

ATR444-13ABC	ATR444-14ABC-T	ATR444-15ABC	ATR444-22ABC	ATR444-24ABC-T
				

4.2.a Alimentation

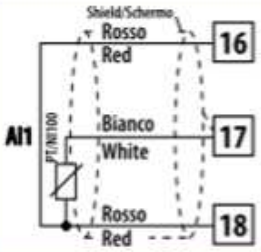
Alimentation switching à range étendu 24..230 VAC/DC ±15% 50/60 Hz - 9 Watt/VA.
Isolation galvanique (sur toutes les versions).

4.2.b Entrée analogique AI1



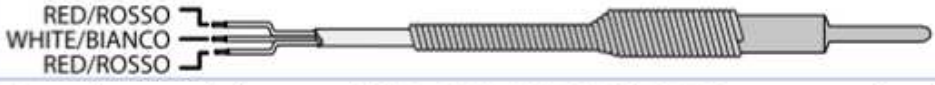
Pour thermocouples K, S, R, J, T, E, N, B.

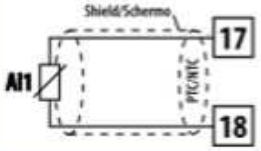
- Respecter la polarité.
- Pour d'éventuelles rallonges, utiliser un câble compensé et des bornes adaptées au thermocouple utilisé (compensées).
- Quand on utilise un câble blindé, le blindage doit être raccordé à la terre à une seule extrémité.



Pour thermorésistances PT100, NI100.

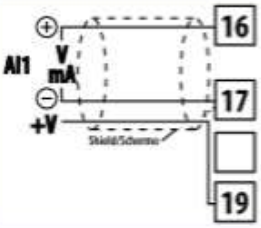
- Pour le raccordement à trois fils, utiliser des câbles de la même section.
- Pour le raccordement à **deux fils**, courtcircuiter les bornes 16 et 18.
- Quand on utilise un câble blindé, le blindage doit être raccordé à la terre à une seule extrémité.





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

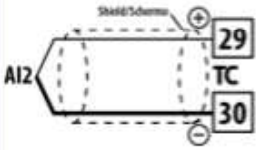
- Quand on utilise un câble blindé, le blindage doit être raccordé à la terre à une seule extrémité.



Pour signaux normalisés en courant et tension.

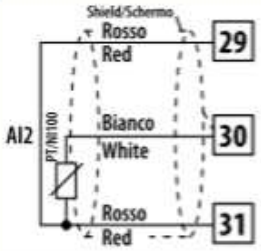
- Respecter la polarité.
- Quand on utilise un câble blindé, le blindage doit être raccordé à la terre à une seule extrémité.
- + V peut être sélectionné à 12Vdc ou 24Vdc en configurant le paramètre 334 u.out (GROUPE G1 - d iSP. - Affichage et interface).

4.2.c Entrée analogique AI2 (seulement ATR444-2xABC-x)



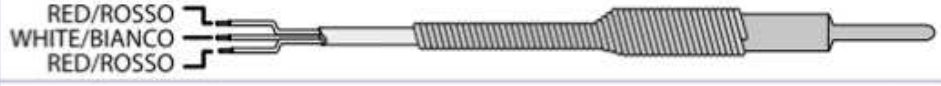
Pour thermocouples K, S, R, J, T, E, N, B.

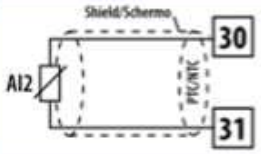
- Respecter la polarité.
- Pour d'éventuelles rallonges, utiliser un câble compensé et des bornes adaptées au thermocouple utilisé (compensées).
- Quand on utilise un câble blindé, le blindage doit être raccordé à la terre à une seule extrémité.



Pour thermorésistances PT100, NI100.

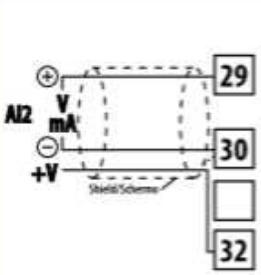
- Pour le raccordement à trois fils, utiliser des câbles de la même section.
- Pour le raccordement à **deux fils**, courtcircuiter les bornes 29 et 30.
- Quand on utilise un câble blindé, le blindage doit être raccordé à la terre à une seule extrémité.





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.



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 32), court-circuitez 0 V (borne 33) avec la masse de l'entrée AI2 (borne 30). L'isolation galvanique entre les deux entrées est perdue.
- + V peut être sélectionné à 12Vdc ou 24Vdc en configurant le paramètre 334 u.out (GROUPE G1 - d iSP. - Affichage et interface).

4.2.d Entrée CT1

Pour activer l'entrée CT1 modifier le paramètre 366 ct.tF.

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

4.2.e Entrée CT2 (seulement ATR444-22ABC)

Pour activer l'entrée CT2 modifier le paramètre 377 *ct.2F*.

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

4.2.f Entrées digitales

Entrées digitales activable par paramètres.

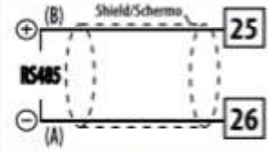
Fermer la borne *"DIx"* sur la borne*"+V"* pour activer l'entrée digitale.

Il est possible de mettre en parallèle les entrées digitales de différents instruments en reliant les bornes 0V (20).

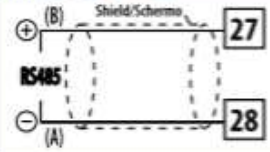
Dans la version ATR444-14ABC-T, seulement DI1 et DI2 sont disponibles.

4.2.g Entrée sérielle (seulement ATR444-xxxxx-T)

ATR444-14ABC-T



ATR444-24ABC-T



Communication RS485 Modbus
RTU Slave avec isolation galvanique.

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

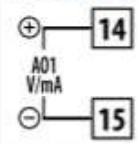
4.2.h Sorties digitales

Sortie digital PNP (y compris le mode SSR) pour commande ou alarme.
Portée 12 VDC/25 mA ou 24 VDC/15mA sélectionnable par paramètre 334 *u.out*. (GROUPE G1 - *d iSP* - Affichage et interface).

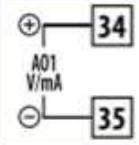
Connectez la commande positive (+) du relais statique à la borne DO (x).
Connectez la commande négative (-) du relais statique à la borne 0V.

4.2.i Sortie analogique AO1

ATR444-13ABC, ATR444-14ABC-T e ATR444-24ABC-T



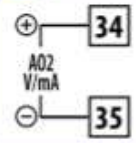
ATR444-22ABC



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.

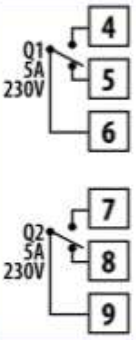
4.2.j Sortie analogique AO2 (seulement ATR444-24ABC-T)

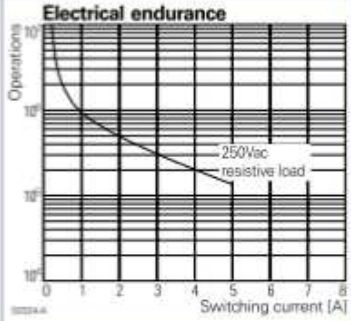


Sortie analogique en **mA** ou **V** (isolé galvaniquement) configurable comme commande, alarme ou retransmission du procès-setpoint.

La sélection mA ou Volt pour la sortie analogique dépend de la configuration des paramètres.

4.2.k Sortie relais Q1 et Q2

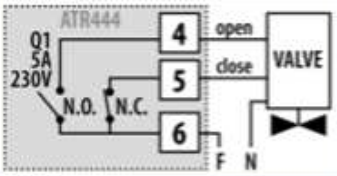




Portée contacts:

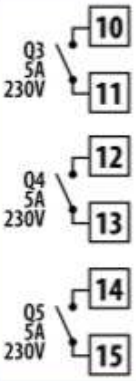
- 5 A, 250 VAC, pour charges résistives 10^5 operations.
- 20/2 A, 250 VAC, cosφ = 0.3, $1.2x10^5$ operations.

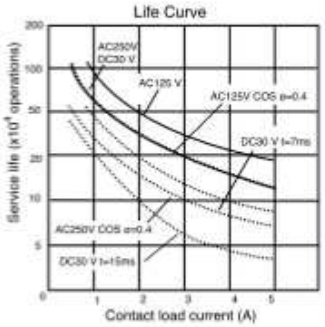
Voir le tableau ci-dessous



La sortie Q1 fonctionne via 2 relais indépendants et pour la gestion des vannes tous les deux les contacts peuvent être ouverts (voir dessin)

4.2.l Sortie relais Q3, Q4 et Q5 (où prévu)





Portée contacts:

- 5 A, 250 Vac, pour charges résistives; min.$100x10^3$ operations.
- 1/8 HP 277 Vac; min. $100x10^3$ operations.

Voir le tableau ci-dessous

NB: les relais 3, 4 et 5 ne sont pas présents dans toutes les versions de l'ATR444

6 Numeric Indicators (Display)

120.0	Normally it displays the process. During the configuration phase, it displays the name of parameter being inserted.
1200.0	Displays the selected value on the parameter 327 u i.d.2. (factory settings: setpoint) During the configuration phase it displays the parameters group or the number of the parameter being inserted. I
ProbE	Displays the selected value on the parameter 328 u i.d.3. (factory settings: state) During the configuration phase it displays the parameter value being inserted.

6.1 Meaning of Status Lights (Led)

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.
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.
A1	ON when alarm 1 is active.
A2	ON when alarm 2 is active.
A3	ON when alarm 3 is active.
A4	ON when alarm 4 is active.
A5	ON when alarm 5 is active.
A6	ON when alarm 6 is active.
TUN	ON when the controller is executing an auto-tuning cycle.
MAN	ON when *"Manual"* function is active.
REM	ON when the controller communicates through serial. Flashes when the remote setpoint is enabled.
▬▬▬	Configurable on par. 331 bArG. Normally it indicates the percentage of the command output 1
%	Access when the bar graph indicates the percentage of the command output 1 or 2 q
▲	ON during the rising phase of the cycle
▼	ON during the falling phase of the cycle
▲ ▼	Both ON during parameter modification, when this is not a default value.

6.2 Keys

▲	• Increases the main setpoint. • During the configuration phase it allows to scroll the groups of parameters and to scroll/ modify the parameters. • Increases the setpoints.
▼	• Decreases the main setpoint. • During the configuration phase it allows to scroll the groups of parameters and to scroll/ modify the parameters. • Decreases the setpoints.
FNC	• Allows to enter the Tuning launch function, automatic/manual selection. • During configuration works as exit key (ESC).
SET	• Allows to visualize command and alarm setpoints. • During configuration allows to enter the parameter to be modified and confirms the variation.
F1	• Configurable on the parameter 342 - F1 F.
F2	• Configurable on the parameter 348 - F2 F.
F3	• Configurable on the parameter 354 - F3 F.
F4	• Configurable on the parameter 360 - F4 F.

7 Dual input mode

Each ATR444-2xABC-x 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

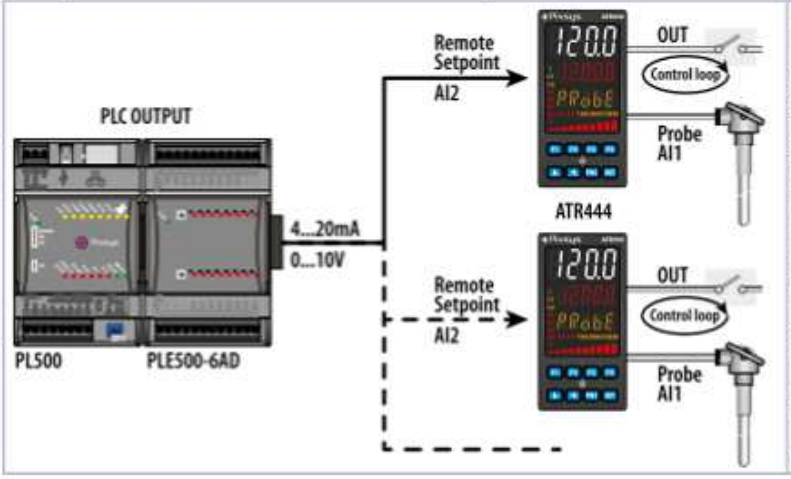
When second analogue input is enabled (par. 19 SEn.2 other than d.SAb.) it is possible to choose the process value to be related to command output, to alarms and to retransmission.
Following options are available:

- A.in.1: Value read by input AI1
- A.in.2: Value read by input AI2;
- MEAn: Mean between inputs AI1 and AI2;
- d.FF.: Difference between inputs: AI1-AI2;
- Ab.d.F.: Difference between inputs as absolute value: AI1-AI2;
- SuM: Sum of inputs: AI1+AI2.
- H.GH.: Greater value between AI1 and AI2.
- LoW.: Lower value between AI1 and AI2.
- PEduN.: The value read on AI1. If AI1 signs error (E-05), it goes automatically to the value read on AI2.
- Command 1 process must be selected on parameter 38 c.Pr.1
- Command 2 process must be selected on parameter 61 c.Pr.2
- The process related to the alarms must be selected on par. 136 A.1.Pr. for the alarm 1, on par. 156 A.2.Pr. for the alarm 2, on par. 176 A.3.Pr. for the alarm 3, and on par. 196 A.4.Pr. for the alarm 4, on par. 216 A.5.Pr. for the alarm 5, on par. 236 A.6.Pr. for the alarm 6 and on par. 256 A.7.Pr. for the alarm 7.
- The value to be retransmitted must be selected on par. 299 rtn.1 and/or on par. 308 rtn.2.

It is possible to choose what to visualize on display 2 selecting par. 327 u.d.2. and on display 3 by selecting the parameter 328 u.d.3.

7.2 Remote setpoint by analogue input

It is possible to enable remote setpoint function setting ENAb. or En.tSt. on par. 62 rEn.S.



The command setpoint is read on the second analog input AI2: on par. 61 c.Pr.2 set A.in. 2. The inputs reversal is possible by setting A.in.1 on par. 61 c.Pr.2.
Selecting EN.tSt. on par. 62 rEn.S. it is possible to switch from remote to local setpoint pressing SET for 1 second or F1...F4 if configurated. The selection is stored even after the subsequent device restarts.
In remote setpoint mode the led REM is ON, it flashes when switching to local setpoint mode.

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.SEP. or EN.SE.t. on par. 62 rEn.S. The remote setpoint must be written on the word modbus 1259 for the command 1 and 1260 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 sepoint pressing SET for 1 second or F1...F4 if configured.
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 Controller Functions

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	SET	Visualizes the other setpoints on display 2. Display 3 shows the setpoint type.	
3	▲▼	Value on display 2 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. 83 *tun.1* (for the regulation loop 1), or on par. 109 *tun.2* (for the regulation loop 2), the controller analyzes the proces 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 *MAnu.* on par. 83 *tun.1*, or on par. 109 *tun.2*, the procedure can be activated in 4 ways:

- **Running Tuning by keyboard:**
  Press FNC until display 3 shows *tuNE* with display 2 on *diSAb.* and then press SET: display 2 shows *ENAb.* Led TUN switches ON and the procedure starts.
- **Running Tuning from F1... F4:**
  Select *tuNE* on par. 342 *F1 F.* (or on par. 348 *F2 F.*, par. 354 *F3 F.*, par. 360 *F4 F.*). By pressing the button, the tuning activates/deactivates. Led TUN switches on when tuning is activated.
- **Running Tuning by digital input:**
  Select *tuNE* on par. 275 *d.in.1F.* (or on par. 284 *d.in.2F.*, par. 293 *d.in.3F.*, par. 302 *d.in.4F.*). 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 1224 (command 1) or 1225 (command 2): led TUN switches ON and the procedure starts. Write 0 to stop the tuning.

To avoid an overshoot, the treshold where the controller calculates new PID parameters is determined by this operation:
Tune threshold = Setpoint - *"Set Deviation Tune"* (par. 84 *S.d.t.1* or par. 110 *S.d.t.2*)
Ex.: if the sepoint is 100.0∞C and the Par. 84 *S.d.t.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 83 *tun.1*, or on parameter 109 *tun.2*.
Autotuning procedure is executed only once at next device restart. If the procedure doesn't work, it will be executed at next restart.

8.5 Synchronized tuning

Set SYNcH. on parameter 83 tun.1 or on parameter 109 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 1224 (for regulation loop 1) or 1225 (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 1224) for a time long enough to create inertia on the system.
At this point the autotuning is launched (value 3 on word 1224). 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 1224. The master, who will always read the word 1224, will control the various zones and when all will have finished, will bring to 0 the value of word 1224: the various devices will regulate the temperature independently, with the new calculated values.

The master must read the word 1224 at least every 10 seconds or the controller will automatically exit the autotuning procedure.

8.6 Digital input functions

The ATR444 functions related to digital inputs, can be enabled by parameters 275 d.i.1F., 284 d.i.2F., 293 d.i.3F. and 302 d.i.4F..

- 2t.SW.: Two threshold setpoint modification: with digital input active the controller regulates on SET2, otherwise reulates on SET1;
- 2t.SW.i.: Modification of 2 setpoints by digital input with impulse command;
- 3t.SW.i.: Modification of 3 setpoints by digital input with impulse command,
- 4t.SW.i.: Modification of 4 setpoints by digital input with impulse command,
- SEt.1.: Controller regulates on SET1;
- SEt.2.: Controller regulates on SET2;
- SEt.3.: Controller regulates on SET3;
- SEt.4.: Controller regulates on SET4;
- StARt: Start of the regulator by digital input with impulse command;
- StoP: Stop of the regulator by digital input with impulse command;
- St./St.: 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. 83 tun.1 or par. 109 tun.2 is selected as MAnu;
- Au.MA.i.: If par. 53 A.MA.1 or par. 76 A.MA.2 is selected as ENAb. or EN.Sto., with impulse command on digital input, the controller switches the related regulation loop, from automatic to manual and vice versa.
- Au.MA.c.: If par. 53 A.MA.1 or par. 76 A.MA.2 is selected as ENAb. or EN.Sto. the controller switches to manual the related regulation loop, with digital input active, otherwise the regulation is automatic.
- Act.tY.: On the regulation loop selected for this function (par. 278 d.i.1r. or 287 d.i.2r. or 296 d.i.3r. or 305 d.i.4r.), the controller execute a cooling type regulation with digital input active, otherwise the regulation is of heating type;
- PRGM: Programmer. If par. 312 PRGM is set on ENAb., the device works as programmator 1 cycle, if digital input is activated, otherwise it is a basic controller.
- R.kWh: Reset kWh. It resets the energy value consumed by the system (set the power rating of the load on par. 54 LPr.1 or on par 77 LPr.2).

- A.1.0: Zero tare function: brings the related analogue input to 0. The analogue input is selected on par. 277 d.1.LP. or 286 d.1.2P. or 295 d.1.3.P. or 304 d.1.4.P.
- M.RES.: Allows the reset of the output if manual reset is active for the alarms and for the command outputs selected on par. 278 d.1.1.r. or 287 d.1.2.r. or 296 d.1.3.r. or 305 d.1.4.r;
- t.1.Run: If timer 1 is enabled (par. 420 tMr.1 different from d.SAb.), with digital input active, the timer is switched to RUN, otherwise is kept in STOP;
- t.1.S.E.: If timer 1 is enabled (par. 420 tMr.1 different from d.SAb.), acting on the digital input, the status of the timer switches from STOP to RUN and vice versa;
- t.1.StR.: If il timer 1 is enabled (par. 420 tMr.1 differnet from d.SAb.), acting on the digital input, the timer is switched to RUN;
- t.1.End.: If il timer 1 is enabled (par. 420 tMr.1 differnet from d.SAb.), acting on the digital input, the timer is switched to STOP;
- t.2.Run: If timer 2 is enabled (par. 423 tMr.2 different from d.SAb.), with digital input active, the timer is switched to RUN, otherwise is kept in STOP;
- t.2.S.E.: If timer 2 is enabled (par. 423 tMr.2 different from d.SAb.), acting on the digital input, the status of the timer switches from STOP to RUN and vice versa;
- t.2.StR.: If timer 2 is enabled (par. 423 tMr.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. 423 tMr.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;
- uP.KEY: the digital input simulates the operation of ▲
- doWN.K.: the digital input simulates the operation of ▼
- FNc. K.: the digital input simulates the operation of FNC
- SEt. K.: the digital input simulates the operation of SET
- REM.S.E.: If on par. 62 rEM.S. it is selected ENAb. or EN.SEP.), with digital input active the remote setpoint is enabled, otherwise the setpoint is local. On par. 278 d.1.1.r. or 287 d.1.2.r. or 296 d.1.3.r. or 305 d.1.4.r. 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. 53 A.MA.1 (for regulation loop 1) or par. 76 A.MA.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 2, while on display 3 is showed AutoM.

Press SET to visualize MANu.; 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 AutoM. on display 3: immediately led MAN switches off and functioning backs to automatic.

2 **Second selection** (EN.Sto.) 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)

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 HZ or 60 HZ on par. 287 ct.1.F. and the value of the connected transfomer, on par. 288 ct.1.u..

- Seletct on par. 368 H.b.1.P. the regulation loop referred to the current measure and the Heater Break Alarm intervention.
- Select on par. 369 H.b.1.t. the Heater Break Alarm intervention threshold in Ampere.
- Select on par. 370 oc.1.t. the intervention threshold in Ampere to control the overcurrent.
- Select on par. 371 H.b.1.d. the delay time in seconds for the Heater Break Alarm intervention.
- It is possible to associate an alarm, selecting H.b.A. on par. 215 AL5.F. on par. 155 AL2.F. or par. 175 AL3.F. or par. 195 AL4.F. or par. 215 AL5.F. or par. 235 AL6.F. or par. 255 AL7.F.

It is possible to visualize on display 2 or 3 the average current, selecting AMP.1 on par. 327 in.d.2. or on par. 328 in.d.3.

Selecting 0 on par. 369 H.b.1t. it is possible to visualize the current consumption without generating an Heater Break Alarm.

In the version ATR444-22ABC 2 CT inputs are available: for the second CT configuration refer to "Group I2 - ct2 Current Transformer 2".

8.9 Dual Action (Heating-Cooling)

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

The command output has to be configured as PID for Heating (Par. 40 Ac.t.1 or Par. 63 Ac.t.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., AL.5.F., AL.6.F. or AL.7.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:

Ac.t.1 or Ac.t.2 = HEAt Command output action type (Heating);

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

in.t. 1 or in.t. 2: Integral time of heating and cooling;

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

c.t. 1 or c.t. 2: Heating time cycle.

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

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

P.b.M.t: Proportional band multiplier;

o.d.b.t: Overlapping / Dead band;

c.c.t.t: Cooling time cycle.

Par. P.b.M.1 (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 x P.b.M.t

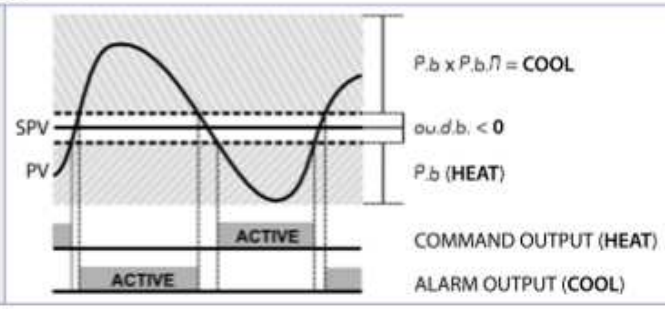
This gives a proportional band for cooling which will be the same as heating band if P.b.M.1 = 1.00, or 5 times greater if P.b.M.1 = 5.00.

Integral and derivative time are the same for both actions.

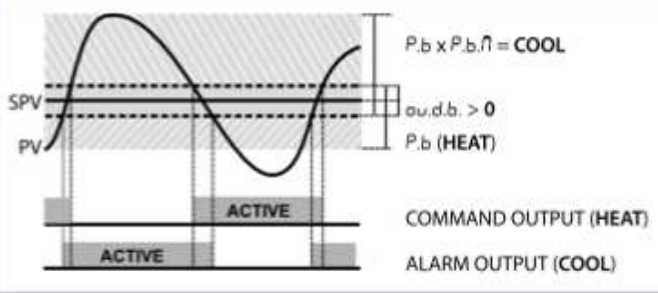
Par. o.d.b.1 determines the percentage overlapping between the two actions. For systems in which the heating output and cooling output must never be simultaneously active a Dead Band (o.d.b.1 ≤ 0), must be configured, vice versa you can configure an overlapping (o.d.b.1 > 0).

The following figure shows an example of dual action PID (heating-cooling) with in.t. 1 = 0 and d.t. 1 = 0.

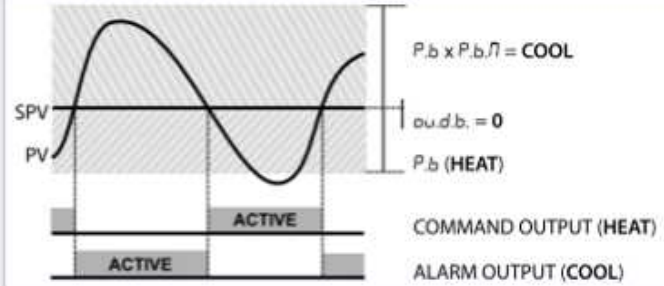
1



3



2



Parameter c.cE.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.M.1 and the cooling PID cycle time c.cE.1 according to cooling fluid type:

co.F.1	Cooling fluid type	P.b.M.1	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.M.1, o.d.b.1 and c.cE.1 can be however modified.

8.10 LATCH ON Function

For use with input Pot. 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 LL.r.1 or par. 22 LL.r.2) to the minimum position of the sensor and value of the scale end (par. 5 uL.r.1 or par. 23 uL.r.2) to the maximum position of the sensor (par. 11 Ltc.1 or par. 29 Ltc.2 configured as StMdP).
It is also possible to fix the point in which the controller will display 0 (however keeping the scale range between LL.r.1 / LL.r.2 and uL.r. 1 / uL.r.2) using the *"virtual zero"* option by selectin u.0.Sto. or u.0.t.on. on par. 11 Ltc.1 or 29 Ltc.2 Selecting u.0.t.on. the virtual zero must be reset at each switching on; selecting u.0.Sto. the virtual zero will remain fixed once calibrated. To use the LATCH ON function, configure the par. Ltc.1 or Ltc.2
The tuning procedure starts by exiting the configuration after changing the parameter.
Then refer to the following table for the calibration procedure:

	Press	Display	Do
1	FNC	Exit parameters configuration. Display 3 visualizes writing LAtcH.	Place the sensor on minimum operating value (corresponding to LL.r.1 / LL.r.2)
2	▼	Store value on minimum. Display shows LoW.	Place sensor on maximum operating value (corresponding to uL.r.1 / uL.r.2).
3	▲	Store value on max. Display shows H.GH.	To exit standard proceeding press SET. For *"virtual zero"* setting, place the sensor to zero point.
4	FNC	Set virtual zero. Display shows ZERo. If *"Virtual zero at start"* is selected, point 4 must be repeated at each starting.	To exit procedure press SET.

8.11 Soft-Start Function

The controller is provided with two types of softstart selectable on parameter 313 SS.tY. (*"Softstart Type"*).

1 First selection (GRAd.) enables gradient softstart. AAt starting the controller reaches setpoint basing on the rising gradient set on parameter 315 SS.Gr. (*"Softstart Gradient"*) in Unit/hour (ex. °C/h). If parameter 318 SS.t1. (*"Softstart Time"*) is different to 0, at starting when the time selected on par. SS.t1. is elapsed, the controller stops to follow the gradient and reaches setpoint with the maximum power.

2 Second selection (PERc.) abilita enables output percentage softstart. On par. 317 SS.tH. it is possible to set the threshold under which starts the softstart (*"Softstart Threshold"*). On par. 316 SS.PE. (*"Softstart Percentage"*) an output percentage is selectable (from 0 to 100), which controller keeps until the process exceeds the threshold set on par. SS.tH. or until the time in minutes set on par. 318 SS.t1. (*"Softstart Time"* word 2084).

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

8.12 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 388 rtn.1 ("Retransmission 1") or on parameter 399 rtn2 ("Retransmission 2") the value to be retransmitted and on parameter 389 r.1tY. ("Retransmission 1 Type") or on parameter 400 r.2tY. ("Retransmission 2 Type") the output type. It is possible also to select on parameters 390 r.1LL. and 391 r.1uL. or 401 r2LL. and 402 r.2uL. the input value rescale limits.

8.13 Timer functions

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

Timer 1 is enabled on parameter 420 tMr.1; timer 2 on parameter 423 tMr.2:

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

The timer time-base set in MM.SS or HH.MM by changing parameters 421 t.b.t.1 for timer 1 and 424 t.b.t.2 for timer 2.

In parameter 426 tMrS. 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 timE 1 or timE 2 visualized on display 1.	
2	▲ ▼	Digits on display 2 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 timE 1 or timE 2 visualized on display 3. Display 2 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.1iF ... d.4iF..) or by key functions (see parameters F1 F. ... F4 F.).

The alarm outputs can be associated with the timers (parameters AL.1F .... AL.6F). On parameters 425 AtM.1 and 333 AtM2 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 Programmer (1 cycle, 12 steps)

ATR444 integrates the programmer mode allowing process 1 to follow a cycle set by the user and consisting of maximum 12 steps. To enable this function select EnAb. on parameter 312 PrGm (*"Programmer"*).

In this case F1, F2, F3 and F4 are not programmable, but perform the following functions:

- F1: allows to enter the cycle modification management. When device is in START, the cycle can only be displayed.
- F2: allows to ciclically display the setpoint, the running step and other cycle data.
- F3: resets the energy consumed value by command 1, if enabled on parameter 54 LP.r.1 ("Load Power Rating 1").
- F4: manages the regulation or cycle START/STOP.

Selecting PrGm on parameter 275 d.i.1F. (or on 284 d.i.2F., or on 293 d.i.3F. or on 302 d.i.4F.) it is possible to change mode from controller to programmer, by acting on digital inputs.

9.1 Programming (or modifying) cycle data

Follow the steps listed in the following table:

	Press	Display	Do
1	F1	Display 1 shows 01-t. Display 2 shows the time of the step.	Press F1 to save and exit from programming cycle.
2	▲ or ▼	Scroll the different steps. The data on display 1 enables two information: • The step number (first two digits) • The type of data (time, temperature or status of the auxiliary output).	Ex:01-t step 1 time 01-S step 1 setpoint 01-A step 1 auxiliary **NB**: the auxiliary setting is present only if enabled on at least one alarm parameter (selection StEP.A.).
3	SET to confirm	Enables the value modification. Display 2 flashes. This point is not allowed when the cycle is in START.	
4	▲ or ▼	The displayed value is increased or decreased	Insert the new data. • During time entry (hh:mm) set --.-- for infinite time or End for end of cyle (if not all available steps are used) • During setpoint entry set the arrival temperature at the end of the step • During auxiliary entry select oN for active auxiliary during step, otherwise set oFF.
5	SET to confirm	Confirm the new value.	
6	F1	Save and exit cycle programming.	

9.2 Cycle start

There are different options to start the cycle (START):

- Press key 4 for at least 1 second to START / STOP the controller.
- Through digital input if configured.
- Through serial port where present.

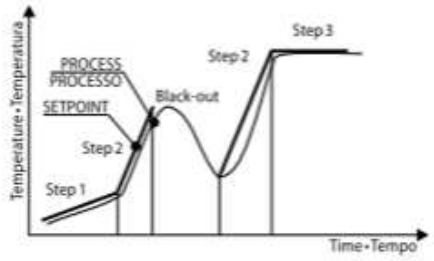
9.3 Recovery of interrupted cycle

Recovery function is particulary useful for kilns temperature regulation. After a power failure, at restarting ATR444 can resume the interrupted cycle. There are two recovery modes.

9.3.1 Recovery with automatic gradient

To enable cycle recovery with automatic gradient, set 1 on parameter 321 as r.tcY. This mode does not operate for cooling regulations. At restart, after a power failure, controller will operate like this:

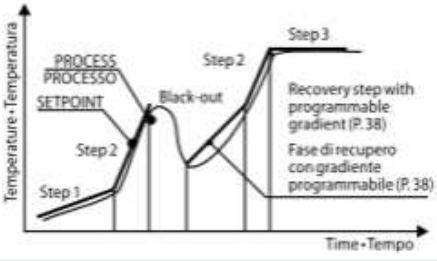
1. If a power failure occurs during a rising step, the gradient will be same as the operating step (setpoint temperature equal to the temperature read by the sensor).
2. If a power failure occurs during a holding step, two options are possible. If gap between process and setpoint is limited (not exceeding the value on parameter 320 MGSE) cycle will resume from the point of interruption; if the gap is bigger but controller has not yet executed a cooling step, the cycle will go back to the closest rising step and will repeat the procedure as explained on point 1.
3. If a power failure occurs during a cooling step or a holding step (dwell) after that a cooling step has already been completed, the setpoint will match the the temperature read by the sensor, without including any rising and even skipping to next step if necessary (this a safety tip particularly for glass working).



NB: after a power-off the chronometer will restart from 00:00.

9.3.2 Recovery with recovery gradient

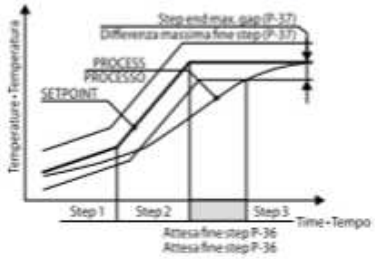
To enable cycle recovery with a recovery gradient, enter on parameter 321 r.tcY a value (degrees/hour if temperature) greater than 1. At restarting if the kiln temperature (process) is lower than the setpoint, ATR444 locks the working cycle executing a step with the rising gradient set on parameter 321 r.tcY to return to the setpoint value entered before the power failure and the cycle restarts form that point. In recovery mode the display shows rECoVERY StEP instead of the cycle number.



Recovery will start only for holding steps or rising steps in heating regulation or for falling steps in cooling regulation.

9.4 Waiting step end

This function has been conceived to control kilns working cycles, whenever the kiln cannot follow gradients programmed by the user. If at step end the difference between process and setpoint values is greater than the value on parameter 320 *n.G.S.E.* (*"Max Gap Step End"*), controller starts with the next step only after waiting for the time programmed on parameter 319 *U.t.S.E.* (*"Waiting Time Step End"*), or when this gap becomes lower than parameter 320 *n.G.S.E.*.



To disable this function fix at 0 end step waiting time *U.t.S.E.*

While waiting step end, instead of number of steps, the displays shows *WAIT NG StEP End.*

10 Serial communication

ATR444-x4ABC-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 410 *SL.Ad.* (*"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 411 *bd.rt.* (*"Baud Rate"*). The baude rate is selected on parameter 412 *S.P.P.* (Serial Port Parameters).
The controller can introduce a delay (in milliseconds) of the response to the master request. This delay must be set on parameter 413 *SE.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 411 *bd.rt.* 1200bit/s 28800bit/s 2400bit/s 38400bit/s 4800bit/s 57600bit/s 9600bit/s 115200bit/s 19200bit/s
Formato	Selectable on parameter 412 *S.P.P.* 8N1 8N2 8E1 8E2 8O1 8O2
Funzioni supportate	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	55x
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
601	First character of the custom alarm message 1	RW	"u"
...			
623	Last character of the custom alarm message 1	RW	0
651	First character of the custom alarm message 2	RW	"u"
...			
673	Last character of the custom alarm message 2	RW	0
701	First character of the custom alarm message 3	RW	"u"
...			
723	Last character of the custom alarm message 3	RW	0
751	First character of the custom alarm message 4	RW	"u"
...			
773	Last character of the custom alarm message 4	RW	0
801	First character of the custom alarm message 5	RW	"u"
...			
823	Last character of the custom alarm message 5	RW	0
851	First character of the custom alarm message 6	RW	"u"
...			
873	Last character of the custom alarm message 6	RW	0
901	First character of the custom alarm message 7	RW	0
...			
923	Last character of the custom alarm message 7	RW	"u"
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	Greater value between AI1 and AI2 (degrees with tenth)	RO	0
1007	Lower value between AI1 and AI2 (degrees with tenth)	RO	0
1008	AI1 value. AI2 value if AI1 signs error (E-05) (degrees with tenth)	RO	0
1009	Real setpoint (gradient) of the regulation loop 1	RO	0
1010	Real setpoint (gradient) of the regulation loop 2	RO	0
1011	Alarms status (0 = absent, 1 = present) Bit0 = Alarm 1 Bit4 = Alarm 5 Bit1 = Alarm 2 Bit5 = Alarm 6 Bit2 = Alarm 3 Bit6 = Alarm 7 Bit3 = Alarm 4	RO	0

Modbus address	Description	Read Write	Reset value
1012	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
1013	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 = AI2 error disabled	RO	0
1014	Digital inputs status (0 = not active, 1 = active) Bit0 = Ingresso dig. 1 Bit2 = Ingresso dig. 3 Bit1 = Ingresso dig. 2 Bit3 = Ingresso dig. 4	RO	0
1015	Outputs status (0 = OFF, 1 = ON) Bit 0 = Q1 (NO) Bit 4 = Q4 Bit 1 = Q1 (NC) Bit 5 = Q5 Bit 2 = Q2 Bit 6 = DO1 Bit 3 = Q3 Bit 7 = DO2	RO	0
1016	Stato led (0 = OFF, 1 = ON) Bit 0 = Led UP arrow Bit 8 = Led A5 Bit 1 = Led C1 Bit 9 = Led A6 Bit 2 = Led C2 Bit 10 = Led TUN Bit 3 = Led A1 Bit 11 = Led MAN Bit 4 = Led A2 Bit 12 = Led REM Bit 5 = Led A3 Bit 13 = Led point time 2 Bit 6 = Led A4 Bit 14 = Led point time 3 Bit 7 = Led % Bit 15 = Led DOWN arrow	RO	0
1017	Key status (0 = released, 1 = pressed) Bit 0 = Key UP arrow Bit 4 = Key F4 Bit 1 = Key DOWN arrow Bit 5 = Key F3 Bit 2 = Key FNC Bit 6 = Key F2 Bit 3 = Key SET Bit 7 = Key F1	RO	0
1018	Cold junction 1 temperature (degrees with tenth)	RO	-
1019	Cold junction 2 temperature (degrees with tenth)	RO	-
1020	Current CT1 instantaneous (Ampere with tenth)	RO	0
1021	Current CT1 average (Ampere with tenth)	RO	0
1022	Current CT1 ON (Ampere with tenth)	RO	0
1023	Current CT1 OFF (Ampere with tenth)	RO	0
1024	Current CT2 instantaneous (Ampere with tenth)	RO	-

Modbus address	Description	Read Write	Reset value
1025	Current CT2 average (Ampere with tenth)	RO	-
1026	Current CT2 ON (Ampere with tenth)	RO	-
1027	Current CT2 OFF (Ampere with tenth)	RO	-
1028	Feedback valve position (0-100)	RO	-
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	Greater value between AI1 and AI2 with decimal point selection	RO	-
1107	Lower value between AI1 and AI2 with decimal point selection	RO	-
1108	AI1 Value. AI2 value if AI1 signs error (E-05) with decimal point selection	RO	-
1109	Real setpoint (gradient) of the regulation loop 1 with decimal point selection	RO	0
1110	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 del loop di regolazione 2 (gradi con decimo)	R/W	EEPROM
1205	Setpoint 2 del loop di regolazione 2 (gradi con decimo)	R/W	EEPROM
1206	Setpoint 3 del loop di regolazione 2 (gradi con decimo)	R/W	EEPROM
1207	Setpoint 4 del loop di regolazione 2 (gradi con decimo)	R/W	EEPROM
1208	Alarm 1 setpoint (degrees with tenth) Alarm 1 upper setpoint if Par. 135 AL.1.F. = R.bAnd	R/W	EEPROM
1209	Alarm 1 lower setpoint if Par. 135 AL.1.F. = R.bAnd (degrees with tenth)	R/W	EEPROM
1210	Alarm 2 setpoint (degrees with tenth) Alarm 2 upper setpoint if Par. 155 AL.2.F. = R.bAnd	R/W	EEPROM
1211	Alarm 2 lower setpoint if Par. 155 AL.2.F. = R.bAnd (degrees with tenth)	R/W	EEPROM
1212	Alarm 3 setpoint (degrees with tenth) Alarm 3 upper setpoint if Par. 175 AL.3.F. = R.bAnd	R/W	EEPROM
1213	Alarm 3 lower setpoint if Par. 175 AL.3.F. = R.bAnd (degrees with tenth)	R/W	EEPROM
1214	Alarm 4 setpoint (degrees with tenth) Alarm 4 upper setpoint if Par. 195 AL.4.F. = R.bAnd	R/W	EEPROM
1215	Alarm 4 lower setpoint if Par. 195 AL.4.F. = R.bAnd (degrees with tenth)	R/W	EEPROM
1216	Alarm 5 setpoint (degrees with tenth) Alarm 5 upper setpoint if Par. 215 AL.5.F. = R.bAnd	R/W	EEPROM
1217	Alarm 5 lower setpoint if Par. 215 AL.5.F. = R.bAnd (degrees with tenth)	R/W	EEPROM
1218	Alarm 6 setpoint (degrees with tenth) Alarm 6 upper setpoint if Par. 235 AL.6.F. = R.bAnd	R/W	EEPROM
1219	Alarm 6 lower setpoint if Par. 235 AL.6.F. = R.bAnd (degrees with tenth)	R/W	EEPROM
1220	Alarm 7 setpoint (degrees with tenth) Alarm 7 upper setpoint if Par. 255 AL.7.F. = R.bAnd	R/W	EEPROM
1221	Alarm 7 lower setpoint if Par. 255 AL.7.F. = R.bAnd (degrees with tenth)	R/W	EEPROM
1222	Start/Stop 0=controller in STOP 1=controller in START	R/W	0

Modbus address	Description	Read Write	Reset value
1223	Hold conversion ON/OFF 0=Hold conversion OFF 1=Hold conversion ON	R/W	0
1224	Tune management for regulation loop 1		
	With automatic Tune (par. 83 tun.1 = Auto): 0 = autotunig function OFF 1 = autotuning ON	RO	0
	With manual Tune (par. 83 tun.1 = MAnu. or OncE): 0 = autotunig function OFF 1 = autotuning ON	R/W	0
	With synchronized Tune (par. 83 tun.1 = SYncH): 0 = autotunig function OFF 1 = command output OFF (forces the cooling) 2 = command output ON (forces the heating) 3 = autotuning ON 4 = autotuning ended	R/W	0
1225	Tune management for regulation loop 2		
	With automatic Tune (par. 109 tun.2 = Auto): 0 = autotunig function OFF 1 = autotuning ON	RO	0
	With manual Tune (par. 109 tun.2 = MAnu. o OncE): 0 = autotunig function OFF 1 = autotuning ON	R/W	0
	With synchronized Tune (par. 109 tun.2 = SYncH): 0 = autotunig function OFF 1 = command output OFF (forces the cooling) 2 = command output ON (forces the heating) 3 = autotuning ON 4 = autotuning ended	R/W	0
1226	Automatic/manual selection for regulation loop 1 0 = automatic; 1 = manual	R/W	0
1227	Automatic/manual selection for regulation loop 2 0 = automatic; 1 = manual	R/W	0
1228	Command output percentage for regulation loop 1 (0-10000) Heating output percentage with regulation 1 in double loop (0-10000)	R/W	0
1229	Command output percentage for regulation loop 1 (0-1000) Heating output percentage with regulation 1 in double loop (0-1000)	R/W	0
1230	Command output percentage for regulation loop 1 (0-100) Heating output percentage with regulation 1 in double loop (0-100)	R/W	0
1231	Cooling output percentage with regulation 1 in double loop (0-10000)	RO	0
1232	Cooling output percentage with regulation 1 in double loop (0-1000)	RO	0
1233	Cooling output percentage with regulation 1 in double loop (0-100)	RO	0
1234	Command output percentage for regulation loop 2 (0-10000) Heating output percentage with regulation 2 in double loop (0-10000)	R/W	0
1235	Command output percentage for regulation loop 2 (0-1000) Heating output percentage with regulation 2 in double loop (0-1000)	R/W	0
1236	Command output percentage for regulation loop 2 (0-100) Heating output percentage with regulation 2 in double loop (0-100)	R/W	0
1237	Cooling output percentage with regulation 2 in double loop (0-10000)	RO	0
1238	Cooling output percentage with regulation 2 in double loop (0-1000)	RO	0
1239	Cooling output percentage with regulation 2 in double loop (0-100)	RO	0

Modbus address	Description	Read Write	Reset value
1240	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
1241	Alarms manual reset: write 0 to reset all alarms. In reading 0 = reset not allowed, 1 = reset allowed Bit0 = Alarm 1 Bit4 = Alarm 5 Bit1 = Alarm 2 Bit5 = Alarm 6 Bit2 = Alarm 3 Bit6 = Alarm 7 Bit3 = Alarm 4	R/W	0
1242	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
1243	Alarm 1 remote status (0 = absent, 1 = present)	R/W	0
1244	Alarm 2 remote status (0 = absent, 1 = present)	R/W	0
1245	Alarm 3 remote status (0 = absent, 1 = present)	R/W	0
1246	Alarm 4 remote status (0 = absent, 1 = present)	R/W	0
1247	Alarm 5 remote status (0 = absent, 1 = present)	R/W	0
1248	Alarm 6 remote status (0 = absent, 1 = present)	R/W	0
1249	Alarm 7 remote status (0 = absent, 1 = present)	R/W	0
1250	Value AO1 by serial (Par. 388 rtn.1 = nd.bus)	R/W	0
1251	Value AO2 by serial (Par. 399 rtn.2 = nd.bus)	R/W	0
1252	Tare of zero AI1 (1 = tare; 2=reset tare)	R/W	0
1253	Tare of zero AI2 (1 = tare; 2=reset tare)	R/W	0
1254	Tare of zero average between AI1 and AI2 [(AI1 + AI2) /2] (1 = tare; 2 = reset tare)	R/W	0
1255	Tare of zero difference between AI1 and AI2 (AI1 - AI2) (1 = tare; 2 = reset tare)	R/W	0
1256	Tare of zero module of the difference between AI1 and AI2 (|AI1 - AI2|) (1 = tare; 2 = reset tare)	R/W	0
1257	Tare of zero sum of AI1 and AI2 (AI1 + AI2) (1 = tare; 2 = reset tare)	R/W	0
1258	Zero tare AI1 and AI2 simultaneously (1=tare; 2= tare reset)	R/W	0
1259	Value of remote setpoint by command 1 serial	R/W	0
1260	Value of remote setpoint by command 2 serial	R/W	0
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 (degrees with tenth) Alarm 1 upper setpoint if Par. 135 AL.1.F. = R.bAnd	R/W	EEPROM
1309	Alarm 1 lower setpoint if Par. 135 AL.1.F. = R.bAnd (degrees with tenth)	R/W	EEPROM
1310	Alarm 2 setpoint (degrees with tenth) Alarm 2 upper setpoint if Par. 155 AL.2.F. = R.bAnd	R/W	EEPROM
1311	Alarm 2 lower setpoint if Par. 155 AL.2.F. = R.bAnd (degrees with tenth)	R/W	EEPROM
1312	Alarm 3 setpoint (degrees with tenth) Alarm 3 upper setpoint if Par. 175 AL.3.F. = R.bAnd	R/W	EEPROM
1313	Alarm 3 lower setpoint if Par. 175 AL.3.F. = R.bAnd (degrees with tenth)	R/W	EEPROM

Modbus address	Description	Read Write	Reset value
1314	Alarm 4 setpoint (degrees with tenth) Alarm 4 upper setpoint if Par. 195 AL.4.F. = A.bAnd	R/W	EEPROM
1315	Alarm 4 lower setpoint if Par. 195 AL.4.F. = A.bAnd (degrees with tenth)	R/W	EEPROM
1316	Alarm 5 setpoint (degrees with tenth) Alarm 5 upper setpoint if Par. 215 AL.5.F. = A.bAnd	R/W	EEPROM
1317	Alarm 5 lower setpoint if Par. 215 AL.5.F. = A.bAnd (degrees with tenth)	R/W	EEPROM
1318	Alarm 6 setpoint (degrees with tenth) Alarm 6 upper setpoint if Par. 235 AL.6.F. = A.bAnd	R/W	EEPROM
1319	Alarm 6 lower setpoint if Par. 235 AL.6.F. = A.bAnd (degrees with tenth)	R/W	EEPROM
1320	Alarm 7 setpoint (degrees with tenth) Alarm 7 upper setpoint if Par. 255 AL.7.F. = A.bAnd	R/W	EEPROM
1321	Alarm 7 lower setpoint if Par. 255 AL.7.F. = A.bAnd (degrees with tenth)	R/W	EEPROM
1400	Remote process reset 1: by writing 1 the controller uses for the process the value measured in AI1 instead of the one written in the word 1402	R/W	0
1401	Remote process reset 2: by writing 1 the controller uses for the process the value measured in AI2 instead of the one written in the word 1403	R/W	0
1402	Remote process 1. The number written in this word will be the process value 1 that the device uses for setting and alarms (ADC1 disabled)	R/W	-
1403	Remote process 2. The number written in this word will be the process value 2 that the device uses for setting and alarms (ADC2 disabled)	R/W	-
2001	Parameter 1	R/W	EEPROM
2002	Parameter 2	R/W	EEPROM
...	Parameter ...	R/W	EEPROM
2503	Parameter 503	R/W	EEPROM

10.1 Serial compatibility with ATR401-22ABC-T

In existing plants where it is necessary to replace an ATR401-22ABC-T, it is possible to install a new ATR444-14ABC-T or ATR444-24ABC-T enabling the Modbus register's compatibility.
To enable the Modbus register's compatibility with the ATR401, simply enter the password 0401.
To return again to the ATR144 Modbus mapping, enter the password 0444.
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	Address slave	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
900	AI1 value (degrees with tenth)		
901	AI2 value (degrees with tenth)		
902	Average between AI1 and AI2 [(AI1 + AI2) /2] (degrees with tenth)		
903	Difference between AI1 and AI2 (AI1 - AI2) (degrees with tenth)		
904	Module of the difference between AI1 and AI2 (|AI1 - AI2|) (degrees with tenth)		
905	Sum of AI1 and AI2 (AI1 + AI2) (degrees with tenth)		
1000	AI1 value (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	Alarm 4	R/W	EEPROM
1009	Setpoint gradient	RO	EEPROM
1010	Relay status (0=OFF, 1=ON) Bit 0 = Q1 (NO) Bit 4 = Q4 Bit 1 = Q1 (NC) Bit 5 = Q5 Bit 2 = Q2 Bit 6 = DO1 Bit 3 = Q3 Bit 7 = DO2	RO	0
1011	Heating output percentage (0-10000)	R/W	0
1012	Cooling output percentage (0-10000)	RO	0
1013	Alarms status (0=None, 1=Active) Bit0 = Alarm 1 Bit4 = Alarm 5 Bit1 = Alarm 2 Bit5 = Alarm 6 Bit2 = Alarm 3 Bit6 = Alarm 7 Bit3 = Alarm 4	RO	0
1014	Manual reset: write 0 to reset all alarms. In reading (0 = Not resettable, 1 = Resettable) Bit0 = Alarm 1 Bit4 = Alarm 5 Bit1 = Alarm 2 Bit5 = Alarm 6 Bit2 = Alarm 3 Bit6 = Alarm 7 Bit3 = Alarm 4	R/W	0
1015	Error flags: Bit 0 = Eeprom writing error Bit 1 = Eeprom reading error Bit 2 = Cold junction error Bit 3 = AI1 error (probe 1) Bit 4 = AI2 error (probe 2) Bit 5 = Generic error Bit 6 = Hardware error Bit 7 = Missing calibration data error Bit 8 = Parameters out of range error	RO	0
1016	Cold junction temperature (degrees.tenths)	RO	-
1017	Start / Stop 0 = Controller in STOP 1 = Controller in START	R/W	0
1018	Lock conversion ON / OFF 0 = Lock conversion OFF 1 = Lock conversion ON	R/W	0
1019	Tune management for regulation loop 1		
	With automatic Tune (par. 83 tUN.1 = Auto): 0 = autotunig function OFF 1 = autotuning ON	RO	0
	With manual Tune (par. 83 tUN.1 = MANU. o oNcE): 0 = autotunig function OFF 1 = autotuning ON	R/W	0
	With synchronized Tune (par. 83 tUN.1 = SYNcH.): 0 = autotunig function OFF 1 = command output OFF (forces the cooling) 2 = command output ON (forces the heating) 3 = autotuning ON 4 = autotuning ended	R/W	0
1020	Automatic/manual selection 0 = automatic	R/W	0
1021	OFF LINE* time (milliseconds)	R/W	0

1022	Digital inputs status (0 = not active, 1 = active) Bit0 = Ingresso dig. 1 Bit2 = Ingresso dig. 3 Bit1 = Ingresso dig. 2 Bit3 = Ingresso dig. 4	RO	0
1023	Current CT instantaneous (Ampere with tenth)	RO	0
1024	Current CT ON (Ampere with tenth)	RO	0
1025	Current CT OFF (Ampere with tenth)	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	Alarm 4 with decimal point selection	R/W	EEPROM
1109	Gradient Setpoint with decimal point selection	RO	EEPROM
1110	Percentage heating output (0-1000)	R/W	0
1111	Percentage heating output (0-100)	R/W	0
1112	Percentage cooling output (0-1000)	RO	0
1113	Percentage cooling output (0-100)	RO	0
5000	Start/Stop	WO	-
5001	Value of remote setpoint by command 1 serial	R/W	0

* *If value is 0, the control is disabled. If different from 0, it is the max. time which can elapse between two pollings before the controller goes off-line. If it goes off-line, the controller returns to Stop mode, the control output is disabled but the alarms are active.*

11 Reading and configuration through NFC

Programmable
via RFID /NFC.
No wiring required!

Scan the Qr-Code
to download the App
on Google Play Store®

The controller 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 controller'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 controller 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.

11.1 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.

11.2 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 MEMo SKiP. 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.

11.3 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 MEMo SKiP. By pressing ▲ you see MEMo 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 MEMo SKiP, the product starts without uploading any data from the memory card.

12 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.	

13 Access configuration

	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 name of first parameters group, display 2 shows the description.	
4	▲ or ▼	Scroll parameters groups.	
5	SET to confirm	Display 1 shows the name of the group first parameter, display 2 shows the number of parameter and display 3 shows its value.	Press FNC to exit configuration.
6	▲ or ▼	Scroll parameters.	
7	SET to confirm	Allows parameter modification (display 3 flashes)	
8	▲ or ▼	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

13.1 Parameters list functioning

The controller 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.1 (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.

14 Table of configuration parameters

GROUP A1 - AIn.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
Ni120	Ni120	-60 °C..240 °C
Ntc 1	NTC 10K β3435K	-40° C..125° C
Ntc 2	NTC 10K β3694K	-40 °C..150 °C
Ntc 3	NTC 2252 β3976K	-40 °C..150 °C
Ptc	PTC 1K	-50° C..150° C
Pt500	Pt500	-200° C..600° C
Pt1K	Pt1000	-200° C..600° C
PSvd.1	Reserved	
PSvd.2	Reserved	
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)	

2 dP. 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↑ p. 94] **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↑ p. 94] **Default**:1000

6 P.uR.1 Potentiometer Value AI1

Selects the value of the potentiometer connected on AI1
1..150 kohm. Default: 10kohm

7 .oL.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.SAb.	Disabled (**Default**)
ENAb.	Enabled

8 L.cE.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	

9 o.cA.1 Offset Calibration AI1

AI1 Offset calibration. Value added/subtracted to the process value (ex: usually correcting the ambient temperature value).
-9999..+9999 [digit[1.9.4]] (degrees.tenths for temperature sensors). **Default** 0.

10 G.cA.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.

11 Ltc.1 Latch-On AI1

Automatic setting of limits for AI1 linear input

d.SAb.	Disabled (**Default**)
StNRd	Standard
V.0.Sto.	Virtual Zero Stored
V.0.t.oN.	Virtual Zero at start

12 cFL.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)

13 cFr.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).

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

14÷18 Reserved Parameters - Group A1

Reserved parameters - Group **A1**

GROUP A2 - AIn2 - Analogue input 2 *(only on ATR444-2xABC-X)*

19 SEn2 Sensor AI2

Analogue input configuration / sensor AI2 selection

dISAb.	Disabled	Disabled. (**Default**)
tc. K	Tc-K	-260° C..1360° C
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
Ni120	Ni120	-60 °C..240 °C
Ntc 1	NTC 10K β3435K	-40° C..125° C
Ntc 2	NTC 10K β3694K	-40 °C..150 °C
Ntc 3	NTC 2252 β3976K	-40 °C..150 °C
Ptc	PTC 1K	-50° C..150° C
Pt500	Pt500	-200° C..600° C
Pt1K	Pt1000	-200° C..600° C
rSVd.1	Reserved	
rSVd.2	Reserved	
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 24)	

20 dP. 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

21 rES. Reserved

Reserved parameter

22 LL.i2 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[p. 94]] **Default**: 0.

23 uL.i2 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[p. 94]] **Default**:1000

24 P.uR2 Potentiometer Value AI2

Selects the value of the potentiometer connected on AI2
1..150 kohm. **Default**: 10kohm

25 i.oL2 Linear Input over Limits AI2

If AI2 is a linear input, allows to the process to overpass the limits (parameters 22 and 23)

d.SAb.	Disabled (**Default**)
ENAb.	Enabled

26 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	

27 o.cA2 Offset Calibration AI2

AI2 Offset calibration. Value added/subtracted to the process value (ex: usually correcting the ambient temperature value).
-9999..+9999 [digitp. 94] (degrees.tenths for temperature sensors). **Default** 0.

28 G.cA2 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.

29 Ltc2 Latch-On AI2

Automatic setting of limits for AI2 linear input

d.SAb.	Disabled (**Default**)
StNRd	Standard
V.0.Sto.	Virtual Zero Stored
V.0.t.oN	Virtual Zero at start

30 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)

31 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)	39.0HZ	39.0 Hz
6.25HZ	6.25 Hz	50.0HZ	50.0 Hz
8.33HZ	8.33 Hz	62.0HZ	62.0 Hz
10.0HZ	10.0 Hz	123HZ	123 Hz
12.5HZ	12.5 Hz	242HZ	242 Hz
16.7HZ	16.7 Hz (**Default**) Ideal for filtering noises 50 / 60 Hz	470HZ	470 Hz (Max. speed conversion)
19.6HZ	19.6 Hz		
33.2HZ	33.2 Hz		

32÷36 Reserved Parameters - Group A2

Reserved parameters - Group **A2**

GROUP B1 - cnd.1 - Outputs and regulation Process 1

37 c.ou.1 Command Output 1

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

- c. o3 Command on relay output Q3.
- c. o1 Command on relay output Q1. (**Default**)
- c. SSR Command on digital output
- c. VAL. Servo-valve command with open loop on Q1 (6-4 open; 6-5 close).
- 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.P. 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.P. 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.

ATR444-13ABC

	Command	AL. 1	AL. 2	AL. 3	AL. 4	AL. 5
c. o3	Q3	Q1	Q2	DO1	DO2	AO1
c. o1	Q1	Q2	Q3	DO1	DO2	AO1
c. SSR	DO1	Q1	Q2	Q3	DO2	AO1
c. VAL.	Q1	Q2	Q3	DO1	DO2	AO1
c.0-10 (0.10.S.P.)	AO1 (0..10 V)	Q1	Q2	Q3	DO1	DO2
c.4-20 (4.20.S.P.)	AO1 (4..20 mA)	Q1	Q2	Q3	DO1	DO2

ATR444-14ABC-T

	Command	AL. 1	AL. 2	AL. 3	AL. 4	AL. 5	AL. 6
c. o3	Q3	Q1	Q2	Q4	DO1	DO2	AO1
c. o1	Q1	Q2	Q3	Q4	DO1	DO2	AO1
c. SSR	DO1	Q1	Q2	Q3	Q4	DO2	AO1
c. VAL.	Q1	Q2	Q3	Q4	DO1	DO2	AO1
c.0-10 (0.10.S.P.)	AO1 (0..10 V)	Q1	Q2	Q3	Q4	DO1	DO2
c.4-20 (4.20.S.P.)	AO1 (4..20 mA)	Q1	Q2	Q3	Q4	DO1	DO2

ATR444-15ABC

	Command	AL. 1	AL. 2	AL. 3	AL. 4	AL. 5	AL. 6
c. o3	Q3	Q1	Q2	Q4	Q5	DO1	DO2
c. o1	Q1	Q2	Q3	Q4	Q5	DO1	DO2
c. SSR	DO1	Q1	Q2	Q3	Q4	Q5	DO2
c. VAL.	Q1	Q2	Q3	Q4	Q5	DO1	DO2

ATR444-22ABC

	Command	AL. 1	AL. 2	AL. 3	AL. 4
c. o1	Q1	Q2	DO1	DO2	AO1
c. SSR	DO1	Q1	Q2	DO2	AO1
c. VAL.	Q1	Q2	DO1	DO2	AO1
c.0-10 (0.10.S.P.)	AO1 (0..10 V)	Q1	Q2	DO1	DO2
c.4-20 (4.20.S.P.)	AO1 (4..20 mA)	Q1	Q2	DO1	DO2

ATR444-24ABC-T

	Command	AL. 1	AL. 2	AL. 3	AL. 4	AL. 5	AL. 6	AL. 7
c. o3	Q3	Q1	Q2	Q4	DO1	DO2	AO1	AO2
c. o1	Q1	Q2	Q3	Q4	DO1	DO2	AO1	AO2
c. SSR	DO1	Q1	Q2	Q3	Q4	DO2	AO1	AO2
c. VAL.	Q1	Q2	Q3	Q4	DO1	DO2	AO1	AO2
c.0-10 (0.10.S.P.)	AO1 (0..10 V)	Q1	Q2	Q3	Q4	DO1	DO2	AO2
c.4-20 (4.20.S.P.)	AO1 (4..20 mA)	Q1	Q2	Q3	Q4	DO1	DO2	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.

38 cPr.1 Command Process 1 *(only on ATR444-2xABC-X)*

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

- A.in.1 Value read on input AI1. (**Default**)
- A.in.2 Value read on input AI2.
- MEAN 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).
- Ab.diF. 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).
- HiGH. Greater value between AI1 and AI2
- LoWER Lower value between AI1 and AI2
- PEduM. Value read on AI1 or value read on AI2 if AI1 is in error (E-05)

39 rES. Reserved

Reserved parameter

40 Ac.t.1 Action type 1

Action type to control process 1.

- HEAt Heating (N.A.) (**Default**)
- cooL Cooling (N.C.)

41 cHy.1 Command Hysteresis 1

Hysteresis to control process 1 in ON/OFF
-9999..+9999 [digitp. 94] (degrees.tenths for temperature sensors). **Default** 0.2.

42 LLS.1 Lower Limit Setpoint 1

Lower limit setpoint selectable for command setpoint 1
-9999..+30000 [digitp. 94] (degrees for temperature sensors). **Default** 0.

43 uLS.1 Upper Limit Setpoint 1

Upper limit setpoint selectable for command setpoint 1
-9999..+30000 [digitp. 94] (degrees for temperature sensors). **Default** 1750.

44 c.rE.1 Command Reset 1

Type of reset for command contact 1 (always automatic in PID functioning)

- A. 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)
- A.rES.t. Automatic reset with timed activation. The command remains active for the time set on the parameter 48 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.

45 c5E.1 Command State Error 1

State of contact for command 1 output in case of error.
If the command output 1 (Par. 37 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:
0 mA 0 mA. **Default**
4 mA 4 mA.
20 mA 20 mA.
21.5mA 21.5 mA.

46 c5S.1 Command State Stop 1

State of contact for command output 1 with controller in STOP
If the command output 1 (Par. 37 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:
0 mA 0 mA. **Default**
4 mA 4 mA.
20 mA 20 mA.
21.5mA 21.5 mA.

47 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.
o.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**)

48 c.dE.1 Command Delay 1

Command 1 delay (only in ON / OFF functioning).
-60:00..60:00 mm:ss. **Default**: 00:00.
Negative value: delay when turning off output.
Positive value: delay when turning on output.

49 c5P.1 Command Setpoint Protection 1

Allows or not to modify command setpoint 1 value
FREE Modification allowed (**Default**)
Loc Protected

50 uRt.1 Valve Time 1

Valve time related to command 1 (declared by the manufacturer of the valve)
1...300 seconds. **Default**: 60.

51 uFEP. Valve Feedback Potentiometer *(only on ATR444-2xABC-X)*

Enables the reading of feedback potentiometer for motorized valves on input AI2
By setting Po.cAL., when exit configuration, valve will be open and then completely closed to allow the controller to store feedback potentiometer limits.

- d.SAb. Disabled (**Default**)
- ENAb. Enabled
- Po.cAL. (Potentiometer Calibration). Back to ENAb. when the procedure ends.

52 S.uS.1 State Valve Saturation 1

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
- F.oEd The valve opening relay is always active

53 A.MA.1 Automatic / Manual 1

Enables the automatic/manual selection for command 1

- d.SAb. Disabled (**Default**)
- ENAb. Enabled
- EN.Sto. Enabled with memory

54 LP.r.1 Load Power Rating 1

Defines the power rating of the load (in kW) connected to the command output 1, to calculate the energy consumed by the system.
0.0..1000.0 kW. **Default**: 0.0 kW

55 in.S. 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 function button.

- StArt Start (**Default**)
- StoP Stop
- StoPE. Stored. State of Start/Stop prior to switching off.

56÷59 Reserved Parameters - Group B1

Reserved parameters - Group B1

GROUP B2 - cnd2 - Outputs and regul. Process 2 *(only on ATR444-2xABC-X)*

60 c.ou2 Command Output 2

Selects the command output related to the process 2

NB: refer to the function/output table of parameter 37 c.ou.1 to check which resources will remain available after changing this parameter (eg: setting c.ou.2 as c.SSR, it will no longer be possible to enable the alarm associated with the DO2 output).

- d.SAb. Command disabled. (**Default**)
- c. o4 Command on relay output Q4
- c. o2 Command on relay output Q2
- c. SSR Command on digital output DO2
- c. VAL. Servo-valve command with open loop
- c.0.-10 Command 0-10 V on analogue output AO2
- c.4-20 Command 4-20 mA on analogue output AO2
- 0.10.S.R. 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.S.R. 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.

ATR444-22ABC	
	Command
d.SAb	-
-	-
c. o2	Q2
c. SSR	DO2
c. VAL.	DO1(open)-DO2(close)

ATR444-24ABC-T	
	Command
d.SAb	-
c. o4	Q4
c. o2	Q2
c. SSR	DO2
c. VAL.	Q2(open)-Q4(close)
c.0-10 (0.10.S.R.)	AO2 (0..10 V)
c.4-20 (4.20.S.R.)	AO2 (4..20 mA)

61 c.Pr2 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.
- MEAN 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).
- Ab.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).
- HIGH. Greater value between AI1 and AI2
- LoWER Lower value between AI1 and AI2
- REduN. Value read on AI1 or value read on AI2 if AI1 is in error (E-05)

62 rEnS. 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.Pr2 the selections R.IN.1 or R.IN.2) or through serial.

- d.SAb. Disabled. (**Default**)
- ENAb. Enables remote setpoint by process 2. Remote/local selection can be done by digital input.
- EN.tSt. 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.t. Remote setpoint by serial, Remote/local selection only by keyboard (not allowed by digital input).
- cnd. 1 The reference setpoint of command 2 is the same of command 1.

63 Ac.t2 Action type 2

Action type to control process 2.

HEAt Heating (N.A.) (**Default**)
cooL Cooling (N.C.)

64 cHY2 Command Hysteresis 2

Hysteresis to control process 2 in ON/OFF.
-9999..+9999 [digitp. 94] (degrees.tenths for temperature sensors). **Default** 0.2.

65 LLS2 Lower Limit Setpoint 2

Lower limit setpoint selectable for command setpoint 2.
-9999..+30000 [digitp. 94] (degrees for temperature sensors). **Default** 0.

66 uLS2 Upper Limit Setpoint 2

Upper limit setpoint selectable for command setpoint 2.
-9999..+30000 [digitp. 94] (degrees for temperature sensors). **Default** 1750.

67 c.rE2 Command Reset 2

Type of reset for command contact 2 (always automatic in PID functioning)

A. 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)
A.RES.t. Automatic reset with timed activation. The command remains active for the time set on the parameter 71 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.

68 cSE2 Command State Error 2

State of contact for command 2output in case of error.
If the command output 2 (Par. 60 c.ou2) **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.

69 cSS2 Command State Stop 2

State of contact for command output 2 with controller in STOP
If the command output 2 (Par. 60 c.ou2) 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 1 is 0-20 mA:

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

70 c.Ld.2 Command Led 2

Defines led C2 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**)

71 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.

72 c5.P.2 Command Setpoint Protection 2

Allows or not to modify command setpoint 2 value

FREE	Modification allowed (**Default**)
Loc!	Protected

73 uR.t.2 Valve Time 2

Valve time related to command 2 (declared by the manufacturer of the valve)
1...300 seconds. **Default**: 60.

74 rES. Reserved

Reserved parameter

75 S.uS.2 State Valve Saturation 2

Select the valve 2 status when the output percentage is 100%

PERc.	The valve opening relay is activated for a time equal to 5% of the valve time
F.:Ed	The valve opening relay is always active

76 A.MA.2 Automatic / Manual 2

Enables the automatic/manual selection for command 2

d.SAb.	Disabled (**Default**)
ENAb.	Enabled
EN.Sto.	Enabled with memory

77 LP.r.2 Load Power Rating 2

Defines the power rating of the load (in kW) connected to the command output 2, to calculate the energy consumed by the system
0.0..1000.0 kW. **Default**: 0.0 kW

78÷82 Reserved Parameters - Group B2

Reserved parameters - Group B2

GROUP C1 - rEG.1 - Autotuning and PID 1

83 tun.1 Tune 1

Selects autotuning type for command 1

- d.SAb. Disabled. If proportional band and integral time paramters are to selected to zero, the regulation is ON/OFF type. (**Default**)
- AutO Automatic (Automatic PID parameters calculation)
- MAnU. Manual (launch by keyboards or by digital input)
- oncE Once (PID parameters calculation only at first start)
- SYnCH. Synchronized (Autotuning managed by serial)

84 S.d.t.1 Setpoint Deviation Tune 1

Selects deviation from command setpoint 1 as threshold used by autotuning to calculate PID parameters

0-10000 [digit[p. 94]] (degrees.tenths for temperature sensors). **Default**: 30.0.

85 P.b. 1 Proportional Band 1

Proportional band or process 1 PID regulation (Process inertia).

0 ON / OFF if t.r. equal to 0 (**Default**)

1..10000 [digit[p. 94]] (degrees.tenths for temperature sensors).

86 i.t. 1 Integral Time 1

Integral time for process 1 PID regulation (process inertia duration).

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

87 d.t. 1 Derivative Time 1

Derivative time for process 1 PID regulation (Normally ¼ of integral time).

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

88 d.b. 1 Dead Band 1

Dead band of process 1 PID

0..10000 [digit[p. 94]] (degrees.tenths for temperature sensors) (**Default**: 0)

89 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.SAb. Disabled. Band under (heating) or over (cooling)(**Default**)
- ENAb. Centered band

90 o.o.S.1 Off Over Setpoint 1

In PID enables the command output 1 switching off, when a certain threshold is exceeded (setpoint + Par.91 o.d.t.1)

- d.SAb. Disabled (**Default**)
- ENAb. Enabled

91 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[p. 94]] (degrees.tenths for temperature sensors) (**Default**: 0)

92 c.t. 1 Cycle Time 1

Cycle time for PID regulation of process 1 (for PID on remote control switch 15 s; for PID on SSR 2s). For valve refer to parameter 50 uA.t.1

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

93 coF.1 **Cooling Fluid 1**

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

AiR	Air (**Default**)
oiL	Oil
WAtEr	Water

94 Pb.M.1 **Proportional Band Multiplier 1**

Proportional band multiplier for heating/cooling PID for process 1. Proportional band for cooling action is given by parameter Pb. 1 multiplied for this value
1.00..5.00. **Default**: 1.00

95 o.d.b.1 **Overlap / Dead Band 1**

Dead band combination for heating / cooling PID (double action) for process 1.
-20.0%...50.0%
Negative: Dead band.
Positive: overlap. **Default**: 0.0%

96 c.c.t.1 **Cooling Cycle Time 1**

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

97 LLP.1 **Lower Limit Output Percentage 1**

Selects min. value for command output 1 percentage.
0%...100%, **Default**: 0%.

98 uLP.1 **Upper Limit Output Percentage 1**

Selects max. value for command output 1 percentage.
0%...100%, **Default**: 100%.

99 M.G.t.1 **Max Gap Tune 1**

Selects the max. process-setpoint gap beyond which the automatic tune recalculates PID parameters of process 1.
8-10000 [digit(p. 94)] (degrees.tenths for temperature sensors). **Default: 2.0**

100 Mn.P.1 **Minimum Proportional Band 1**

Selects the min. proportional band 1 value selectable by the automatic tune for the PID regulation of process 1.
0-10000 [digit(p. 94)] (degrees.tenths for temperature sensors). **Default: 3.0**

101 MA.P.1 **Maximum Proportional Band 1**

Selects the max. proportional band 1 value selectable by the automatic tune for the PID regulation of process 1.
0-10000 [digit(p. 94)] (degrees.tenths for temperature sensors). **Default: 100.0**

102 Mn.i.1 **Minimum Integral Time 1**

Selects the min. integral time 1 value selectable by the automatic tune for the PID regulation of process 1.
0.0...1000.0 seconds. **Default**: 30.0 s.

103 d.cA.1 Derivative Calculation 1

Determines if, during autotuning, derivative time must be calculated or left at zero.

- AutoM. The derivative is forced to zero only if the command is of valve type; in all other cases it is calculated by autotuning.(**Default**)
- ZERo The derivative is always forced to zero.
- cALc. The derivative is always calculated by autotuning

104 o.cL.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.

d.SAb.	LEV. 3	LEV. 6	LEV. 9
LEV. 1	LEV. 4	LEV. 7	LEV. 10
LEV. 2	LEV. 5 [**Default**]	LEV. 8	

105÷108 Reserved Parameters - Group C1

Reserved parameters - Group C1

GROUP C2 - rEG2 - Autotuning and PID 2 *(only on ATR444-2xABC-X)*

109 tun2 Tune 2

Selects autotuning type for command 2

- d.SAb. Disabled. If proportional band and integral time paramters are to selected to zero, the regulation is ON/OFF type. (**Default**)
- Auto Automatic (Automatic PID parameters calculation)
- MAN. Manual (launch by keyboards or by digital input)
- oNcE Once (PID parameters calculation only at first start)
- SYNcH. Synchronized (Autotuning managed by serial)

110 S.d.t2 Setpoint Deviation Tune 2

Selects deviation from command setpoint 2 as threshold used by autotuning to calculate PID parameters.

0-10000 [digit[1 p. 94]] (degrees.tenths for temperature sensors). **Default**: 30.0.

111 P.b. 2 Proportional Band 2

Proportional band or process 2 PID regulation (Process inertia).

0 ON / OFF if t. r. equal to 0 (**Default**)

1..10000 [digit[1 p. 94]] (degrees.tenths for temperature sensors).

112 r.t. 2 Integral Time 2

Integral time for process 2 PID regulation (process intertia duration).

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

113 d.t. 2 Derivative Time 2

Derivative time for process 2 PID regulation (Normally ¼ of integral time).

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

114 d.b. 2 Dead Band 2

Dead band of process 2 PID

0..10000 [digit[1 p. 94]] (degrees.tenths for temperature sensors) (**Default**: 0)

115 P.b.c2 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.SAb. Disabled. Band under (heating) or over (cooling) (**Default**)
ENAb. Centered band

116 o.o.S2 Off Over Setpoint 2

In PID enables the command output 2 switching off, when a certain threshold is exceeded (setpoint + Par. 117 o.d.t.2)

d.SAb. Disabled (**Default**)
ENAb. Enabled

117 o.d.t2 Off Deviation Threshold 2

Selects deviation from command setpoint 2, to calculate the intervention threshold of "Off Over Setpoint 2" function.

-9999..+9999 [digitp. 94] (degrees.tenths for temperature sensors) (**Default**: 0)

118 c.t. 2 Cycle Time 2

Cycle time for PID regulation of process 2 (for PID on remote control switch 15 s; for PID on SSR 2s). For valve refer to parameter 73 VA.t.2
1-300 secondi (**Default**:15 s)

119 coF2 Cooling Fluid 2

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

AIR Air (**Default**)
oIL Oil
WAtEr Water

120 Pb.M2 Proportional Band Multiplier 2

Proportional band multiplier for heating/cooling PID for process 2. Proportional band for cooling action is given by parameter Pb. 2 multiplied for this value.
1.00..5.00. **Default**: 1.00

121 o.d.b2 Overlap / Dead Band 2

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

122 c.c.t2 Cooling Cycle Time 2

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

123 LLP2 Lower Limit Output Percentage 2

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

124 uLP2 Upper Limit Output Percentage 2

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

125 MG.t2 Max Gap Tune 2

Selects the max. process-setpoint gap beyond which the automatic tune recalculates PID parameters of process 2.
8-10000 [digitp. 94] (degrees.tenths for temperature sensors). **Default: 2.0**

126 Mn.P2 Minimum Proportional Band 2

Selects the min. proportional band value selectable by the automatic tune for the PID regulation of process 2.
0-10000 [digit[p. 94]] (degrees.tenths for temperature sensors). **Default: 3.0**

127 MA.P2 Maximum Proportional Band 2

Selects the max. proportional band 2 value selectable by the automatic tune for the PID regulation of process 2.
0-10000 [digit[p. 94]] (degrees.tenths for temperature sensors). **Default: 100.0**

128 Mn.i2 Minimum Integral Time 2

Selects the min. integral time 2 value selectable by the automatic tune for the PID regulation of process 2.
0.0...1000.0 sec. **Default**: 30.0 sec.

129 d.cA2 Derivative Calculation 2

Determines if, during autotuning, derivative time must be calculated or left at zero.

AutoM.	The derivative is forced to zero only if the command is of valve type; in all other cases it is calculated by autotuning.(**Default**)
ZERo	The derivative is always forced to zero.
cALc.	The derivative is always calculated by autotuning

130 o.cL2 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.

d.SAb.	LEV. 3	LEV. 6	LEV. 9
LEV. 1	LEV. 4	LEV. 7	LEV. 10
LEV. 2	LEV. 5 [**Default**]	LEV. 8	

131÷134 Reserved Parameters - Group C2

Reserved parameters - Group C2

GROUP D1 - AL 1 - Alarm 1

135 AL.LF. Alarm 1 Function

Alarm 1 selection.

- d.SAb. Disabled (**Default**)
- Ab.uP.A. Absolute Upper Activation. Absolute referred to the process, active over
- Ab.Lo.A. Absolute Lower Activation. Absolute referred to the process, active under
- bAnd Band alarm (command setpoint ± alarm setpoint)
- A.bAnd Asymmetric band alarm (command setpoint + alarm setpoint 1 H and command setpoint - alarm setpoint 1 L).
- uP.dEv. Upper Deviation. Upper Deviation alarm
- Lo.dEv. Lower Deviation. Lower Deviation alarm
- Ab.c.u.A. Absolute Command Upper Activation. Absolute alarm referred to the command setpoint, active over
- Ab.c.L.A. 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)
- c. Au: Auxiliary for job distribution on the command output. It cyclically replaces the command output for the time set on the parameter 147 A.1.dE.. If A.1.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 A.1.dE. is different from 0.
- StEP.A. Step Auxiliary. Auxiliary output related to the step (ON/OFF at each step).
- PAb.ER. Probe error. Alarm active in case of sensor rupture.
- H.b.A. Heater Break Alarm and Overcurrent Alarm
- tMR.1 Related to timer 1
- tMR.2 Related to timer 2
- tMR.1.2 Related to both timers
- F1 Key F1. Alarm is activated / deactivated by pressing the F1 key 4 p. 94
- F2 Key F2. Alarm is activated / deactivated by pressing the F2 key 4 p. 94
- F3 Key F3. Alarm is activated / deactivated by pressing the F3 key 4 p. 94
- F4 Key F4. Alarm is activated / deactivated by pressing the F4 key 4 p. 94
- d.i. 1 Digital Input 1. Active when digital input 1 is active.
- d.i. 2 Digital Input 2. Active when digital input 2 is active.
- d.i. 3 Digital Input 3. Active when digital input 3 is active.
- d.i. 4 Digital Input 4. Active when digital input 4 is active.
- REM. Remote. The alarm is enabled by the word 1243

136 A.tPr. Alarm 1 Process *(only on ATR444-2xABC-X)*

Selects the size related to alarm 1.

- A.in.1 Value read on input AI1. (**Default**)
- A.in.2 Value read on input AI2.
- MEAn 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).
- Ab.diF. 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).
- HiGH. Greater value between AI1 and AI2
- LoWEr Lower value between AI1 and AI2
- REduN. The value read on AI1 or value read on AI2 if AI1 is in error (E-05)

137 AL.rc. Alarm 1 Reference Command *(only on ATR444-2xABC-X)*

Selects alarm 1 reference command

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

138 A1S.o. Alarm 1 State Output

Alarm 1 output contact and intervention type.

- n.o. St. (N.O. Start) Normally open, active at start (**Default**)
- n.c. St. (N.C. Start) Normally closed, active at start
- n.o. tH. (N.O. Threshold) Normally open, active on reaching alarm 2 p. 94
- n.c. tH. (N.C. Threshold) Normally closed, active on reaching alarm 2 p. 94
- n.o.tH.V. (N.O. Threshold Variation) disabled after changing control setpoint 3 p. 94
- n.c.tH.V. (N.C. Threshold Variation) disabled after changing control setpoint 3 p. 94

139 rES. Reserved

Reserved parameter

140 A1HY. Alarm 1 Hysteresis

Alarm 1 hysteresis

-9999..+9999 [digit1 p. 94] (degrees.tenths for temperature sensors). **Default** 0.5.

141 A1LL. Alarm 1 Lower Limit

Lower limit selectable for the alarm 1 setpoint.

-9999..+30000 [digit1 p. 94] (degrees for temperature sensors). **Default** 0.

142 A1uL. Alarm 1 Upper Limit

Upper limit selectable for the alarm 1 setpoint.

-9999..+30000 [digit1 p. 94] (degrees for temperature sensors). **Default** 1750.

143 A1rE. Alarm 1 Reset

Alarm 1 contact reset type (always automatic if AL1F. = c. Au:).

- A. 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)
- A. rES.t. Automatic reset with timed activation. The alarm remains active for the time set on the parameter 147 A1dE., even if the conditions generating it are missing. To be able to act again, the alarm conditions must disappear.

144 A1SE. Alarm 1 State Error

Alarm 1 output status in case of error.

- oPEN Open contact. **Default**
- cLoSE Closed contact.

145 A1SS. Alarm 1 State Stop

Alarm 1 output status with the controller in STOP.

- ActV.A. Alarm active. **Default**
- oPEN Open contact.
- cLoSE Closed contact.

146 A1Ld. 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**)

147 A1dE. Alarm 1 Delay

Alarm 1 Delay.

-60:00..60:00 mm:ss (hh:mm if AL1F. = c. Au:). **Default**: 00:00.

Negative value: delay when exit alarm status.

Positive value: delay when enter alarm status.

148 A.1S.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

149 A.1Lb. Alarm 1 Label

Selects the message displayed in case of alarm 1 intervention.

- diSAb. Disabled. (**Default**)
- Lb. 01 Message 1 (see table paragraph *15.1*)
- ...
- Lb. 20 Message 20 (see table paragraph *15.1*)
- uSER.L. Custom message (modifiable by the user through the App or via modbus)

150÷154 Reserved Parameters - Group D1

Reserved parameters - Group D1

GROUP D2 - AL. 2 - Alarm 2

155 AL2F. Alarm 2 Function

Alarm 2 selection.

- diSAb. Disabled (**Default**)
- Ab.uP.A. Absolute Upper Activation. Absolute referred to the process, active over
- Ab.Lo.A. Absolute Lower Activation. Absolute referred to the process, active under
- bAnd Band alarm (command setpoint ± alarm setpoint)
- A.bAnd Asymmetric band alarm (command setpoint + alarm setpoint 2 H and command setpoint - alarm setpoint 2 L).
- uP.dEv. Upper Deviation. Upper Deviation alarm
- Lo.dEv. Lower Deviation. Lower Deviation alarm
- Ab.c.u.A. Absolute Command Upper Activation. Absolute alarm referred to the command setpoint, active over
- Ab.c.L.A. 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)
- c. Au: Auxiliary for job distribution on the command output. It cyclically replaces the command output for the time set on the parameter 167 *A.2.dE.*. If *A.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 *A.2.dE.* is different from 0.
- StEP.A. Step Auxiliary. Auxiliary output related to the step (ON/OFF at each step).
- PPb.ER. Probe error. Alarm active in case of sensor rupture.
- H.b.A. Heater Break Alarm and Overcurrent Alarm
- tMR.1 Related to timer 1
- tMR.2 Related to timer 2
- tMR.1.2 Related to both timers
- F1 Key F1. Alarm is activated / deactivated by pressing the F1 key 4 p. 94
- F2 Key F2. Alarm is activated / deactivated by pressing the F2 key 4 p. 94
- F3 Key F3. Alarm is activated / deactivated by pressing the F3 key 4 p. 94
- F4 Key F4. Alarm is activated / deactivated by pressing the F4 key 4 p. 94
- di. 1 Digital Input 1. Active when digital input 1 is active.
- di. 2 Digital Input 2. Active when digital input 2 is active.
- di. 3 Digital Input 3. Active when digital input 3 is active.
- di. 4 Digital Input 4. Active when digital input 4 is active.
- REM. Remote. The alarm is enabled by the word 1244

156 A2Pr. Alarm 2 Process *(only on ATR444-2xABC-X)*

Select the size related to alarm 2.

- A.IN.1 Value read on input AI1. (**Default**)
- A.IN.2 Value read on input AI2.
- MEAN 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).
- Ab.diF. 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).
- HiGH. Greater value between AI1 and AI2
- LoWER Lower value between AI1 and AI2
- PEduN. The value read on AI1 or value read on AI2 if AI1 is in error (E-05)

157 A2rc. Alarm 2 Reference Command *(only on ATR444-2xABC-X)*

Selects alarm 2 reference command

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

158 A2So. Alarm 2 State Output

Alarm 2 output contact and intervention type.

- N.o. St. (N.O. Start) Normally open, active at start (**Default**)
- N.c. St. (N.C. Start) Normally closed, active at start
- N.o. tH. (N.O. Threshold) Normally open, active on reaching alarm 2 p. 94
- N.c. tH. (N.C. Threshold) Normally closed, active on reaching alarm 2 p. 94
- N.o.tH.V. (N.O. Threshold Variation) disabled after changing control setpoint 3 p. 94
- N.c.tH.V. (N.C. Threshold Variation) disabled after changing control setpoint 3 p. 94

159 rES. Reserved

Reserved parameter.

160 A2HY. Alarm 2 Hysteresis

Alarm 2 hysteresis

-9999..+9999 [digit1 p. 94] (degrees.tenths for temperature sensors). **Default** 0.5.

161 A2LL. Alarm 2 Lower Limit

Lower limit selectable for the alarm 2 setpoint

-9999..+30000 [digit1 p. 94] (degrees for temperature sensors). **Default** 0.

162 A2uL. Alarm 2 Upper Limit

Upper limit selectable for the alarm 2 setpoint

-9999..+30000 [digit1 p. 94] (degrees for temperature sensors). **Default** 1750.

163 A2rE. Alarm 2 Reset

Alarm 2 contact reset type (always automatic if AL.2.F. = c. Au:).

- A. 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)
- A. rES.t. Automatic reset with timed activation. The alarm remains active for the time set on the parameter 167 A.2.dE., even if the conditions generating it are missing. To be able to act again, the alarm conditions must disappear.

164 A2S.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.

165 A2S.S. Alarm 2 State Stop

Alarm 2 output status with controller in STOP
If the alarm output is relay
ActV.A. Alarm active. **Default**
oPEN Contact or open valve
cLoSE Contact or closed valve
If the alarm output is digital (SSR):
ActV.A. Alarm active. **Default**
oFF Digital output OFF
oN Digital output ON

166 A2Ld. 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**)

167 A2dE. Alarm 2 Delay

Alarm 2 Delay. -60:00..60:00 mm:ss (hh:mm if AL.2.F. = c. Ru:). **Default**: 00:00.
Negative value: delay when exit alarm status.
Positive value: delay when enter alarm status

168 A2S.P. Alarm 2 Setpoint Protection

Allows or not to change the alarm 2 setpoint
FREE Editable by the user (**Default**)
Loc! Protected
HidE Protected and not visualized

169 A2Lb. Alarm 2 Label

Selects the message displayed in case of alarm 2 intervention.
diSAb. Disabled. (**Default**)
Lb. 01 Message 1 (see table paragraph *15.1*)
...
Lb. 20 Message 20 (see table paragraph *15.1*)
uSER.L. Custom message (modifiable by the user through the App or via modbus)

170÷174 Reserved Parameters - Group D2

Reserved parameters - Group D2.

GROUP D3 - AL 3 - Alarm 3

175 AL3F. Alarm 3 Function

Alarm 3 selection.

- d.SAb. Disabled (**Default**)
- Ab.uP.A. Absolute Upper Activation. Absolute referred to the process, active over
- Ab.Lo.A. Absolute Lower Activation. Absolute referred to the process, active under
- bAnd Band alarm (command setpoint ± alarm setpoint)
- A.bAnd Asymmetric band alarm (command setpoint + alarm setpoint 3 H and command setpoint - alarm setpoint 3 L)
- uP.dEv. Upper Deviation. Upper Deviation alarm
- Lo.dEv. Lower Deviation. Lower Deviation alarm
- Ab.c.u.A. Absolute Command Upper Activation. Absolute alarm referred to the command setpoint, active over
- Ab.c.L.A. 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)
- c. Au: Auxiliary for job distribution on the command output. It cyclically replaces the command output for the time set on the parameter 187 A.3.dE.. If A.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 A.3.dE. is different from 0.
- StEP.A. Step Auxiliary. Auxiliary output related to the step (ON/OFF at each step).
- PAb.ER. Probe error. Alarm active in case of sensor rupture.
- H.b.A. Heater Break Alarm and Overcurrent Alarm
- tMR.1 Related to timer 1
- tMR.2 Related to timer 2
- tMR.1.2 Related to both timers
- F1 Key F1. Alarm is activated / deactivated by pressing the F1 key 4 p. 94
- F2 Key F2. Alarm is activated / deactivated by pressing the F2 key 4 p. 94
- F3 Key F3. Alarm is activated / deactivated by pressing the F3 key 4 p. 94
- F4 Key F4. Alarm is activated / deactivated by pressing the F4 key 4 p. 94
- d.i. 1 Digital Input 1. Active when digital input 1 is active.
- d.i. 2 Digital Input 2. Active when digital input 2 is active.
- d.i. 3 Digital Input 3. Active when digital input 3 is active.
- d.i. 4 Digital Input 4. Active when digital input 4 is active.
- REM. Remote. The alarm is enabled by the word 1245

176 A3Pr. Alarm 3 Process *(only on ATR444-2xABC-X)*

Select the size related to alarm 3.

- A.in.1 Value read on input AI1. (**Default**)
- A.in.2 Value read on input AI2.
- MEAn 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).
- Ab.diF. 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).
- HiGH. Greater value between AI1 and AI2
- LoWEr Lower value between AI1 and AI2
- REduN. The value read on AI1 or value read on AI2 if AI1 is in error (E-05)

177 A3.r.c. Alarm 3 Reference Command *(only on ATR444-2xABC-X)*

Select alarm 3 reference command

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

178 A3S.o. Alarm 3 State Output

Alarm 3 output contact and intervention type.

- N.o. St. (N.O. Start) Normally open, active at start (**Default**)
- N.c. St. (N.C. Start) Normally closed, active at start
- N.o. tH. (N.O. Threshold) Normally open, active on reaching alarm 2 p. 94
- N.c. tH. (N.C. Threshold) Normally closed, active on reaching alarm 2 p. 94
- N.o.tH.V. (N.O. Threshold Variation) disabled after changing control setpoint 3 p. 94
- N.c.tH.V. (N.C. Threshold Variation) disabled after changing control setpoint 3 p. 94

179 rES. Reserved

Reserved parameter

180 A3HY. Alarm 3 Hysteresis

Alarm 3 hysteresis.
-9999..+9999 [digit1 p. 94] (degrees.tenths for temperature sensors). **Default** 0.5.

181 A3LL Alarm 3 Lower Limit

Lower limit selectable for the alarm 3 setpoint.
-9999..+30000 [digit1 p. 94] (degrees for temperature sensors). **Default** 0.

182 A3uL. Alarm 3 Upper Limit

Upper limit selectable for the alarm 3 setpoint.
-9999..+30000 [digit1 p. 94] (degrees for temperature sensors). **Default** 1750.

183 A3rE. Alarm 3 Reset

Alarm 3 contact reset type (always automatic if AL.3.F. = c. Ru:).

- A. 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)
- A. rES.t. Automatic reset with timed activation. The alarm remains active for the time set on the parameter 187 A.3.dE., even if the conditions generating it are missing. To be able to act again, the alarm conditions must disappear.

184 A3S.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.

185 A3SS. Alarm 3 State Stop

Alarm 3 output status with controller in STOP
If the alarm output is relay

- ActV.A. Alarm active. **Default**
- oPEN Contact or open valve
- cLoSE Contact or closed valve

If the alarm output is digital (SSR):

- ActV.A. Alarm active. **Default**
- oFF Digital output OFF
- oN Digital output ON

186 A3Ld. 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**)

187 A3.dE. Alarm 3 Delay

Alarm 3 Delay.
-60:00..60:00 mm:ss (hh:mm if AL.3.F. = c. Ru:). **Default**: 00:00.
Negative value: delay when exit alarm status.
Positive value: delay when enter alarm status

188 A3S.P. Alarm 3 Setpoint Protection

Allows or not to change the alarm 3 setpoint.

- FREE Editable by the user (**Default**)
- Loc: Protected
- HidE Protected and not visualized

189 A3Lb. Alarm 3 Label

Selects the message displayed in case of alarm 3 intervention.

- diSAb. Disabled. (**Default**)
- Lb. 01 Message 1 (see table paragraph *15.1*)
- ...
- Lb. 20 Message 20 (see table paragraph *15.1*)
- uSER.L. Custom message (modifiable by the user through the App or via modbus)

190÷194 Reserved Parameters - Group D3

Reserved parameters - Group D3

GROUP D4 - AL 4 - Alarm 4

195 AL4.F. Alarm 4 Function

Alarm 4 selection.

- d.SAb. Disabled (**Default**)
- Ab.uP.A. Absolute Upper Activation. Absolute referred to the process, active over
- Ab.Lo.A. Absolute Lower Activation. Absolute referred to the process, active under
- bAnd Band alarm (command setpoint ± alarm setpoint)
- A.bAnd Asymmetric band alarm (command setpoint + alarm setpoint 4 H and command setpoint - alarm setpoint 4 L)
- uP.dEv. Upper Deviation. Upper Deviation alarm
- Lo.dEv. Lower Deviation. Lower Deviation alarm
- Ab.c.u.A. Absolute Command Upper Activation. Absolute alarm referred to the command setpoint, active over
- Ab.c.L.A. 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)
- c. Au: Auxiliary for job distribution on the command output. It cyclically replaces the command output for the time set on the parameter 207 A.4.dE.. If A.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 A.4.dE. is different from 0.
- StEP.A. Step Auxiliary. Auxiliary output related to the step (ON/OFF at each step).
- PAb.ER. Probe error. Alarm active in case of sensor rupture.
- H.b.A. Heater Break Alarm and Overcurrent Alarm
- tMR.1 Related to timer 1
- tMR.2 Related to timer 2
- tMR.1.2 Related to both timers
- F1 Key F1. Alarm is activated / deactivated by pressing the F1 key 4 p. 94
- F2 Key F2. Alarm is activated / deactivated by pressing the F2 key 4 p. 94
- F3 Key F3. Alarm is activated / deactivated by pressing the F3 key 4 p. 94
- F4 Key F4. Alarm is activated / deactivated by pressing the F4 key 4 p. 94
- d.i. 1 Digital Input 1. Active when digital input 1 is active.
- d.i. 2 Digital Input 2. Active when digital input 2 is active.
- d.i. 3 Digital Input 3. Active when digital input 3 is active.
- d.i. 4 Digital Input 4. Active when digital input 4 is active.
- REM. Remote. The alarm is enabled by the word 1246

196 A4Pr. Alarm 4 Process *(only on ATR444-2xABC-X)*

Selects the size related to alarm 4.

- A.in.1 Value read on input AI1. (**Default**)
- A.in.2 Value read on input AI2.
- MEAn 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).
- Ab.diF. 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).
- HiGH. Greater value between AI1 and AI2
- LoWEr Lower value between AI1 and AI2
- REduN. The value read on AI1 or value read on AI2 if AI1 is in error (E-05)

197 A4.r.c. Alarm 4 Reference Command *(only on ATR444-2xABC-X)*

Select alarm 4 reference command

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

198 AS.o. Alarm 4 State Output

Alarm 4 output contact and intervention type.

- n.o. St. (N.O. Start) Normally open, active at start (**Default**)
- n.c. St. (N.C. Start) Normally closed, active at start
- n.o. tH. (N.O. Threshold) Normally open, active on reaching alarm 2 p. 94
- n.c. tH. (N.C. Threshold) Normally closed, active on reaching alarm 2 p. 94
- n.o.tH.V. (N.O. Threshold Variation) disabled after changing control setpoint 3 p. 94
- n.c.tH.V. (N.C. Threshold Variation) disabled after changing control setpoint 3 p. 94

199 AS.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
- 10.0 V Output 10..0 V
- 20.4mA Output 20..4 mA

200 AS.HY. Alarm 4 Hysteresis

Alarm 4 hysteresis.
-9999..+9999 [digit1 p. 94] (degrees.tenths for temperature sensors). **Default** 0.5.

201 AS.LL Alarm 4 Lower Limit

Lower limit selectable for the alarm 4 setpoint.
-9999..+30000 [digit1 p. 94] (degrees for temperature sensors). **Default** 0.

202 AS.uL. Alarm 4 Upper Limit

Upper limit selectable for the alarm 4 setpoint.
-9999..+30000 [digit1 p. 94] (degrees for temperature sensors). **Default** 1750.

203 AS.rE. Alarm 4 Reset

Alarm 4 contact reset type (always automatic if AL.4.F. = c. Au:).

- A. 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)
- A. RES.t. Automatic reset with timed activation. The alarm remains active for the time set on the parameter 207 A.4.dE., even if the conditions generating it are missing. To be able to act again, the alarm conditions must disappear.

204 AS.E. Alarm 4 State Error

Alarm 4 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**
- 4 mA 4 mA.
- 20 mA 20 mA.
- 21.5mA 21.5 mA.

205 AL5S. Alarm 4 State Stop

Alarm 4 output status with controller in STOP.
If the alarm output is relay
AcE.A. Alarm active. **Default**
oPEN Contact or open valve
cLoSE Contact or closed valve
If the alarm output is digital (SSR):
AcE.A. Alarm active. **Default**
oFF Digital output OFF
on Digital output ON
If the alarm output is 0-10V:
AcE.A. Alarm active. **Default**
0 V 0 V.
10 V 10 V.
If the alarm output is 0-20 mA or 4-20 mA:
AcE.A. Alarm active. **Default**
0 mA 0 mA
4 mA 4 mA
20 mA 20 mA
21.5mA 21.5 mA

206 AL4Ld. Alarm 4 Led

Defines the status of the led A4 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**)

207 AL4dE. Alarm 4 Delay

Alarm 4 Delay.
-60:00..60:00 mm:ss (hh:mm if AL.4.F. = c. Au:). **Default**: 00:00.
Negative value: delay when exit alarm status.
Positive value: delay when enter alarm status

208 AL5.P. Alarm 4 Setpoint Protection

Allows or not to change the alarm 4 setpoint.
FREE Editable by the user (**Default**)
Loc: Protected
HidE Protected and not visualized

209 AL4Lb. Alarm 4 Label

Selects the message displayed in case of alarm 4 intervention.
diSAb. Disabled. (**Default**)
Lb. 01 Message 1 (see table paragraph *15.1*)
...
Lb. 20 Message 20 (see table paragraph *15.1*)
uSER.L. Custom message (modifiable by the user through the App or via modbus)

210÷214 Reserved Parameters - Group D4

Reserved parameters - Group D4.

GROUP D5 - AL 5 - Alarm 5 *(not available on ATR444-22ABC)*

215 AL5.F. Alarm 5 Function

Alarm 5 selection.

- d.SAb. Disabled (**Default**)
- Ab.uP.A. Absolute Upper Activation. Absolute referred to the process, active over
- Ab.Lo.A. Absolute Lower Activation. Absolute referred to the process, active under
- bAnd Band alarm (command setpoint ± alarm setpoint)
- A.bAnd Asymmetric band alarm (command setpoint + alarm setpoint 5 H and command setpoint - alarm setpoint 5 L)
- uP.dEv. Upper Deviation. Upper Deviation alarm
- Lo.dEv. Lower Deviation. Lower Deviation alarm
- Ab.c.u.A. Absolute Command Upper Activation. Absolute alarm referred to the command setpoint, active over
- Ab.c.L.A. 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)
- c. Au: Auxiliary for job distribution on the command output. It cyclically replaces the command output for the time set on the parameter 227 A.5.dE.. Se A.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 A.5.dE. is different from 0.
- StEP.A. Step Auxiliary. Auxiliary output related to the step (ON/OFF at each step).
- PAb.ER. Probe error. Alarm active in case of sensor rupture.
- H.b.A. Heater Break Alarm and Overcurrent Alarm
- tMR.1 Related to timer 1
- tMR.2 Related to timer 2
- tMR.1.2 Related to both timers
- F1 Key F1. Alarm is activated / deactivated by pressing the F1 key 4 p. 94
- F2 Key F2. Alarm is activated / deactivated by pressing the F2 key 4 p. 94
- F3 Key F3. Alarm is activated / deactivated by pressing the F3 key 4 p. 94
- F4 Key F4. Alarm is activated / deactivated by pressing the F4 key 4 p. 94
- d.i. 1 Digital Input 1. Active when digital input 1 is active.
- d.i. 2 Digital Input 2. Active when digital input 2 is active.
- d.i. 3 Digital Input 3. Active when digital input 3 is active.
- d.i. 4 Digital Input 4. Active when digital input 4 is active.
- REM. Remote. The alarm is enabled by the word 1247

216 AL5.Pr. Alarm 5 Process *(only on ATR444-24ABC-T)*

Select the size related to alarm 5.

- A.in.1 Value read on input AI1. (**Default**)
- A.in.2 Value read on input AI2.
- MEAn 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).
- Ab.diF. 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).
- HiGH. Greater value between AI1 and AI2
- LoWEr Lower value between AI1 and AI2
- REduN. The value read on AI1 or value read on AI2 if AI1 is in error (E-05)

217 AL5.r.c. Alarm 5 Reference Command *(only on ATR444-24ABC-T)*

Select alarm 5 reference command

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

218 AS5.o. Alarm 5 State Output

Alarm 5 output contact and intervention type.

- N.o. St. (N.O. Start) Normally open, active at start (**Default**)
- N.c. St. (N.C. Start) Normally closed, active at start
- N.o. tH. (N.O. Threshold) Normally open, active on reaching alarm 2 p. 94
- N.c. tH. (N.C. Threshold) Normally closed, active on reaching alarm 2 p. 94
- N.o.tH.V. (N.O. Threshold Variation) disabled after changing control setpoint 3 p. 94
- N.c.tH.V. (N.C. Threshold Variation) disabled after changing control setpoint 3 p. 94

219 AS.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.
- 10.0 V Output 10..0 V
- 20.4mA Output 20..4 mA

220 AS.HY. Alarm 5 Hysteresis

Alarm 5 hysteresis.

-9999..+9999 [digit1 p. 94] (degrees.tenths for temperature sensors). **Default** 0.5.

221 AS.LL. Alarm 5 Lower Limit

Lower limit selectable for the alarm 5 setpoint.

-9999..+30000 [digit1 p. 94] (degrees for temperature sensors). **Default** 0.

222 AS.uL. Alarm 5 Upper Limit

Upper limit selectable for the alarm 5 setpoint.

-9999..+30000 [digit1 p. 94] (degrees for temperature sensors). **Default** 1750.

223 AS.rE. Alarm 5 Reset

Alarm 5 contact reset type (always automatic if AL.5.F. = c. Au:).

- A. 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)
- A. RES.t. Automatic reset with timed activation. The alarm remains active for the time set on the parameter 227 A.5.dE., even if the conditions generating it are missing. To be able to act again, the alarm conditions must disappear.

224 AS5.E. Alarm 5 State Error

Alarm 5 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**
- 4 mA 4 mA
- 20 mA 20 mA
- 21.5mA 21.5 mA

225 AS5S. Alarm 5 State Stop

Alarm 5 output status with controller in STOP.
If the alarm output is relay
AcE.A. Alarm active. **Default**
oPEN Contact or open valve
cLoSE Contact or closed valve
If the alarm output is digital (SSR):
AcE.A. Alarm active. **Default**
oFF Digital output OFF
oN Digital output ON
If the alarm output is 0-10V:
AcE.A. Alarm active. **Default**
0 V 0 V
10 V 10 V
If the alarm output is 0-20 mA or 4-20 mA:
AcE.A. Alarm active. **Default**
0 mA 0 mA
4 mA 4 mA
20 mA 20 mA
21.5mA 21.5 mA

226 AS.Ld. Alarm 5 Led

Defines the status of the led A5 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**)

227 AS.dE. Alarm 5 Delay

Alarm 5 Delay.
-60:00..60:00 mm:ss (hh:mm if AL.5.F. = c. Au:). **Default**: 00:00.
Negative value: delay when exit alarm status.
Positive value: delay when enter alarm status

228 AS5.P. Alarm 5 Setpoint Protection

Allows or not to change the alarm 5 setpoint.
FREE Editable by the user (**Default**)
Loc Protected
HidE Protected and not visualized

229 AS.Lb. Alarm 5 Label

Select the message displayed in case of alarm 5 intervention.
diSAb. Disabled. (**Default**)
Lb. 01 Message 1 (see table paragraph *15.1*)
...
Lb. 20 Message 20 (see table paragraph *15.1*)
uSEr.L. Custom message (modifiable by the user through the App or via modbus)

230÷234 Reserved Parameters - Group D5

Reserved parameters - Group D5.

GROUP D6 - AL 6 - Alarm 6 *(only on ATR444-14ABC-T, ATR444-15ABC and ATR444-24ABC-T)*

235 AL6.F. Alarm 6 Function

Alarm 6 selection.

- d.SAb. Disabled (**Default**)
- Ab.uP.A. Absolute Upper Activation. Absolute referred to the process, active over
- Ab.Lo.A. Absolute Lower Activation. Absolute referred to the process, active under
- bAnd Band alarm (command setpoint ± alarm setpoint)
- A.bAnd Asymmetric band alarm (command setpoint + alarm setpoint 6 H and command setpoint - alarm setpoint 6 L)
- uP.dEv. Upper Deviation. Upper Deviation alarm
- Lo.dEv. Lower Deviation. Lower Deviation alarm
- Ab.c.u.A. Absolute Command Upper Activation. Absolute alarm referred to the command setpoint, active over
- Ab.c.L.A. 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)
- c. Au: Auxiliary for job distribution on the command output. It cyclically replaces the command output for the time set on the parameter 247 A.6.dE.. Se A.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 A.6.dE. is different from 0.
- StEP.A. Step Auxiliary. Auxiliary output related to the step (ON/OFF at each step).
- PAb.ER. Probe error. Alarm active in case of sensor rupture.
- H.b.A. Heater Break Alarm and Overcurrent Alarm
- tMR.1 Related to timer 1
- tMR.2 Related to timer 2
- tMR.1.2 Related to both timers
- F1 Key F1. Alarm is activated / deactivated by pressing the F1 key 4 p. 94
- F2 Key F2. Alarm is activated / deactivated by pressing the F2 key 4 p. 94
- F3 Key F3. Alarm is activated / deactivated by pressing the F3 key 4 p. 94
- F4 Key F4. Alarm is activated / deactivated by pressing the F4 key 4 p. 94
- d.i. 1 Digital Input 1. Active when digital input 1 is active.
- d.i. 2 Digital Input 2. Active when digital input 2 is active.
- d.i. 3 Digital Input 3. Active when digital input 3 is active.
- d.i. 4 Digital Input 4. Active when digital input 4 is active.
- REM. Remote. The alarm is enabled by the word 1248

236 A6Pr. Alarm 6 Process *(only on ATR444-24ABC-T)*

Selects the size related to alarm 6.

- A.in.1 Value read on input AI1. (**Default**)
- A.in.2 Value read on input AI2.
- MEAn 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).
- Ab.diF. 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).
- HiGH. Greater value between AI1 and AI2
- LoWEr Lower value between AI1 and AI2
- REduN. The value read on AI1 or value read on AI2 if AI1 is in error (E-05)

237 A6.r.c. Alarm 5 Reference Command *(only on ATR444-24ABC-T)*

Select alarm 6 reference command

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

238 A6S.o. Alarm 6 State Output

Alarm 6 output contact and intervention type.

- N.o. St. (N.O. Start) Normally open, active at start (**Default**)
- N.c. St. (N.C. Start) Normally closed, active at start
- N.o. tH. (N.O. Threshold) Normally open, active on reaching alarm 2 p. 94
- N.c. tH. (N.C. Threshold) Normally closed, active on reaching alarm 2 p. 94
- N.o.tH.V. (N.O. Threshold Variation) disabled after changing control setpoint 3 p. 94
- N.c.tH.V. (N.C. Threshold Variation) disabled after changing control setpoint 3 p. 94

239 A6o.t. 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.
- 10.0 V Output 10..0 V
- 20.4mA Output 20..4 mA

240 A6HY. Alarm 6 Hysteresis

Alarm 6 hysteresis

-9999..+9999 [digit1 p. 94] (degrees.tenths for temperature sensors). **Default** 0.5.

241 A6LL. Alarm 6 Lower Limit

Lower limit selectable for the alarm 6 setpoint.

-9999..+30000 [digit1 p. 94] (degrees for temperature sensors). **Default** 0.

242 A6uL. Alarm 6 Upper Limit

Upper limit selectable for the alarm 6 setpoint.

-9999..+30000 [digit1 p. 94] (degrees for temperature sensors). **Default** 1750.

243 A6rE. Alarm 6 Reset

Alarm 6 contact reset type (always automatic if AL.6.F. = c. Au).

- A. 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)
- A. RES.t. Automatic reset with timed activation. The alarm remains active for the time set on the parameter 247 A.6.dE., even if the conditions generating it are missing. To be able to act again, the alarm conditions must disappear.

244 A6S.E. Alarm 6 State Error

Alarm 6 output status in case of error

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**
- 4 mA 4 mA.
- 20 mA 20 mA.
- 21.5mA 21.5 mA.

245 A6SS. Alarm 6 State Stop

Alarm 6 output status with controller in STOP.
If the alarm output is digital (SSR):
- Act.A. Alarm active. **Default**
- oFF Digital output OFF
- oN Digital output ON

If the alarm output is 0-10V:
- Act.A. Alarm active. **Default**
- 0 V 0 V
- 10 V 10 V

If the alarm output is 0-20 mA or 4-20 mA:
- Act.A. Alarm active. **Default**
- 0 mA 0 mA
- 4 mA 4 mA
- 20 mA 20 mA
- 21.5mA 21.5 mA

246 A6Ld. Alarm 6 Led

Defines the status of the led A6 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**)

247 A6dE. Alarm 6 Delay

Alarm 6 Delay.
-60:00..60:00 mm:ss (hh:mm if AL.6.F. = c. Ru). **Default**: 00:00.
Negative value: delay when exit alarm status
Positive value: delay when enter alarm status

248 A6SP. Alarm 6 Setpoint Protection

Allows or not to change the alarm 6 setpoint.
- FREE Editable by the user (**Default**)
- Loc Protected
- HidE Protected and not visualized

249 A6Lb. Alarm 6 Label

Selects the message displayed in case of alarm 6 intervention.
- diSAb. Disabled. (**Default**)
- Lb. 01 Message 1 (see table paragraph *15.1*)
- ...
- Lb. 20 Message 20 (see table paragraph *15.1*)
- uSER.L. Custom message (modifiable by the user through the App or via modbus)

250÷254 Reserved Parameters - Group D6

Reserved parameters - Group D6.

GROUP D7 - AL 7 - Alarm 7 *(only on ATR444-24ABC-T)*

255 AL7.F. Alarm 7 Function

Alarm 7 selection.

- d.SAb. Disabled (**Default**)
- Ab.uP.A. Absolute Upper Activation. Absolute referred to the process, active over
- Ab.Lo.A. Absolute Lower Activation. Absolute referred to the process, active under
- bAnd Band alarm (command setpoint ± alarm setpoint)
- A.bAnd Asymmetric band alarm (command setpoint + alarm setpoint 7 H and command setpoint - alarm setpoint 7 L)
- uP.dEv. Upper Deviation. Upper Deviation alarm
- Lo.dEv. Lower Deviation. Lower Deviation alarm
- Ab.c.u.A. Absolute Command Upper Activation. Absolute alarm referred to the command setpoint, active over
- Ab.c.L.A. 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)
- c. Au: Auxiliary for job distribution on the command output. It cyclically replaces the command output for the time set on the parameter 267 A.7.dE.. Se A.7.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 A.7.dE. is different from 0.
- StEP.A. Step Auxiliary. Auxiliary output related to the step (ON/OFF at each step).
- PAb.ER. Probe error. Alarm active in case of sensor rupture.
- H.b.A. Heater Break Alarm and Overcurrent Alarm
- tMR.1 Related to timer 1
- tMR.2 Related to timer 2
- tMR.1.2 Related to both timers
- F1 Key F1. Alarm is activated / deactivated by pressing the F1 key 4 p. 94
- F2 Key F2. Alarm is activated / deactivated by pressing the F2 key 4 p. 94
- F3 Key F3. Alarm is activated / deactivated by pressing the F3 key 4 p. 94
- F4 Key F4. Alarm is activated / deactivated by pressing the F4 key 4 p. 94
- d.i. 1 Digital Input 1. Active when digital input 1 is active.
- d.i. 2 Digital Input 2. Active when digital input 2 is active.
- d.i. 3 Digital Input 3. Active when digital input 3 is active.
- d.i. 4 Digital Input 4. Active when digital input 4 is active.
- REM. Remote. The alarm is enabled by the word 1249

256 A7.Pr. Alarm 7 Process

Selects the size related to alarm 7.

- A.in.1 Value read on input AI1. (**Default**)
- A.in.2 Value read on input AI2.
- MEAn 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).
- Ab.diF. 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).
- HiGH. Greater value between AI1 and AI2
- LoWEr Lower value between AI1 and AI2
- REduN. The value read on AI1 or value read on AI2 if AI1 is in error (E-05)

257 A7.r.c. Alarm 7 Reference Command

Selects alarm 7 reference command

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

258 A7S.o. Alarm 7 State Output

Alarm 7 output contact and intervention type.

- N.o. St. (N.O. Start) Normally open, active at start (**Default**)
- N.c. St. (N.C. Start) Normally closed, active at start
- N.o. tH. (N.O. Threshold) Normally open, active on reaching alarm 2 p. 94
- N.c. tH. (N.C. Threshold) Normally closed, active on reaching alarm 2 p. 94
- N.o.tH.V. (N.O. Threshold Variation) disabled after changing control setpoint 3 p. 94
- N.c.tH.V. (N.C. Threshold Variation) disabled after changing control setpoint 3 p. 94

259 A7o.t. Alarm 7 Output Type

Defines the output type if the alarm 7 is analogue.

- 0.10 V Output 0...10 V. **Default**
- 4.20mA Output 4...20 mA.
- 10.0 V Output 10..0 V
- 20.4mA Output 20..4 mA

260 A7HY. Alarm 7 Hysteresis

Alarm 7 hysteresis

-9999..+9999 [digit1 p. 94] (degrees.tenths for temperature sensors). **Default** 0.5.

261 A7LL. Alarm 7 Lower Limit

Lower limit selectable for the alarm 7 setpoint.

-9999..+30000 [digit1 p. 94] (degrees for temperature sensors). **Default** 0.

262 A7uL. Alarm 7 Upper Limit

Upper limit selectable for the alarm 7 setpoint.

-9999..+30000 [digit1 p. 94] (degrees for temperature sensors). **Default** 1750.

263 A7rE. Alarm 7 Reset

Alarm 7 contact reset type (always automatic if AL.7.F. = c. Au:).

- A. 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)
- A. RES.t. Automatic reset with timed activation. The alarm remains active for the time set on the parameter 267 A.7.dE., even if the conditions generating it are missing. To be able to act again, the alarm conditions must disappear.

264 A7S.E. Alarm 7 State Error

Alarm 7 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**
- 4 mA 4 mA
- 20 mA 20 mA
- 21.5mA 21.5 mA

265 A7SS. Alarm 7 State Stop

Alarm 7 output status with controller in STOP.
If the alarm output is 0-10V:
AcE.A. Alarm active. **Default**
0 V 0 V
10 V 10 V
If the alarm output is 0-20 mA or 4-20 mA:
AcE.A. Alarm active. **Default**
0 mA 0 mA
4 mA 4 mA
20 mA 20 mA
21.5mA 21.5 mA

266 rES. Reserved

Reserved parameter

267 A7.dE. Alarm 7 Delay

Alarm 7 Delay.
-60:00..60:00 mm:ss (hh:mm if AL.7.F. = c. Au:). **Default**: 00:00.
Negative value: delay when exit alarm status
Positive value: delay when enter alarm status

268 A7SP. Alarm 7 Setpoint Protection

Allows or not to change the alarm 7 setpoint.
FREE Editable by the user (**Default**)
Loc: Protected
HidE Protected and not visualized

269 A7Lb. Alarm 7 Label

Select the message displayed in case of alarm 7 intervention.
diSAb. Disabled. (**Default**)
Lb. 01 Message 1 (see table paragraph *15.1*)
...
Lb. 20 Message 20 (see table paragraph *15.1*)
uSER.L. Custom message (modifiable by the user through the App or via modbus)

270÷274 Reserved Parameters - Group D7

Reserved parameters - Group D7.

GROUP E1 - d.i. 1 - Digital input 1

275 d.i.1F. Digital Input 1 Function

Digital input 1 functioning.

- d.SAb. Disabled (**Default**)
- 2t. SW. 2 Setpoints Switch
- 2t.SW.i. 2 Setpoints Switch Impulsive
- 3t.SW.i. 3 Setpoints Switch Impulsive
- 4t.SW.i. 4 Setpoints Switch Impulsive
- SEt.1 Controller regulates on SET1
- SEt.2 Controller regulates on SET2
- SEt.3 Controller regulates on SET3
- SEt.4 Controller regulates on SET4
- StARt Start (impulsive)
- StoP Stop (impulsive)
- St./St. Start / Stop (impulsive)
- RUN Run (controller in START with D.I. active, controller in STOP with D.I. disabled)
- E:t.AL. 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.
- HoLd Lock conversion (stop all conversions and display values)
- tUNE Performing manual tune
- Au.MA.i. Automatic / Manual Impulse (if enabled on parameter 53 or 76)
- Au.MA.c. Automatic / Manual Contact (if enabled on parameter 53 or 76)
- Act.tY. Action Type. Cooling regulation if D.I. is active, otherwise heating regulation.
- PRGM Programmer. 1 cycle Programmer, with D.I. active (if enabled on parameter 312 PRGM), otherwise simple controller.
- r. KWH Reset kWh. Resets the energy consumed by the system
- A.i. 0 Analogue Input 0. Set AI to zero
- M. RES. Manual reset. Reset the outputs if selected as manual reset.
- t.1.RUN Timer 1 run. The timer 1 count with activated D.I.
- t.1. S.E. Timer 1 Start End. D.I. starts and stops the timer 1 (impulsive)
- t.1.StR. Timer 1 Start. D.I. starts the timer 1 (impulsive)
- t.1.End Timer 1 End. D.I. stops the timer 1 (impulsive)
- t.2.RUN Timer 2 run. The timer 2 count with activated D.I.
- t.2. S.E. Timer 2 Start End. D.I. starts and stops the timer 2 (impulsive)
- t.2.StR. Timer 2 Start. D.I. starts the timer 2 (impulsive)
- t.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 62 rEM.S.)

276 d.i.Lc. Digital Input 1 Contact

Defines the resting contact of the digital input 1.

- N.oPEN Normally open (**Default**)
- N.cLoS. Normally closed

277 d.1.IP. Digital Input 1 Process *(only on ATR444-2xABC-X)*

Select the size related to the digital input 1 if parameter 275 d.1.F. = R.1. 0.

- R.1N.1 Value read on input AI1. (**Default**)
- R.1N.2 Value read on input AI2.
- MERN Arithmetic average of the value read on inputs AI1 and AI2 [(AI1-AI2)/2].
- d1FF. Difference of the values read on inputs AI1 and AI2 (AI1-AI2).
- Rb.d1F. 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).
- R.1N.1.2 The value read on AI1 and AI2

278 d.1.Lc. Digital Input 1 Reference Command *(only on ATR444-2xABC-X)*

Defines the reference command for the digital input 1 functions.

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

279÷283 Reserved Parameters - Group E1

Reserved parameters - Group E1.

GROUP E2 - d.1. 2 - Digital input 2

284 d.12.F. Digital Input 2 Function

Digital input 2 functioning.

- d1SAb. Disabled (**Default**)
- 2t. SW. 2 Setpoints Switch
- 2t.SW.1. 2 Setpoints Switch Impulsive
- 3t.SW.1. 3 Setpoints Switch Impulsive
- 4t.SW.1. 4 Setpoints Switch Impulsive
- SEt.1 Controller regulates on SET1
- SEt.2 Controller regulates on SET2
- SEt.3 Controller regulates on SET3
- SEt.4 Controller regulates on SET4
- StARt Start (impulsive)
- StoP Stop (impulsive)
- St./St. Start / Stop (impulsive)
- RUN Run (controller in START with D.I. active, controller in STOP with D.I. disabled)
- E:t.AL. 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.
- HoLd Lock conversion (stop all conversions and display values)
- tUNE Performing manual tune
- Au.MR.1. Automatic / Manual Impulse (if enabled on parameter 53 or 76)
- Au.MR.c. Automatic / Manual Contact (if enabled on parameter 53 or 76)
- Act.tY. Action Type. Cooling regulation if D.I. is active, otherwise heating regulation.
- PRGM Programmer. 1 cycle Programmer, with D.I. active (if enabled on parameter 312 PRGM), otherwise simple controller,
- R. 1WH Reset kWh. It resets the energy consumed by the system
- R.1. 0 Analogue Input 0. Set AI to zero
- M. RES. Manual reset. Reset the outputs if selected as manual reset.
- t.1.RUN Timer 1 run. The timer 1 count with activated D.I.
- t.1. S.E. Timer 1 Start End. D.I. starts and stops the timer 1 (impulsive)
- t.1.StR. Timer 1 Start. D.I. starts the timer 1 (impulsive)
- t.1.End Timer 1 End. D.I. stops the timer 1 (impulsive)
- t.2.RUN Timer 2 run. The timer 2 count with activated D.I.
- t.2. S.E. Timer 2 Start End. D.I. starts and stops the timer 2 (impulsive)
- t.2.StR. Timer 2 Start. D.I. starts the timer 2 (impulsive)
- t.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 62 rEM.S.)

285 d.i2.c. Digital Input 2 Contact

Defines the resting contact of the digital input 2.
N.oPEN Normally open (**Default**)
N.cLoS. Normally closed

286 d.i2P. Digital Input 2 Process *(only on ATR444-2xABC-X)*

Select the size related to the digital input 2.
A.iN.1 Value read on input AI1. (**Default**)
A.iN.2 Value read on input AI2.
MEAN Arithmetic average of the value read on inputs AI1 and AI2 [(AI1-AI2)/2].
di.FF. Difference of the values read on inputs AI1 and AI2 (AI1-AI2).
Ab.di.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).
A.iN.1.2 The value read on AI1 and AI2

287 d.i2.r. Digital Input 2 Reference Command *(only on ATR444-2xABC-X)*

Defines the reference command for the digital input 2 functions.
cMd. 1 Command 1 (**Default**)
cMd. 2 Command 2
cMd.1.2 Command 1 and 2

288÷292 Reserved Parameters - Group E2

Reserved parameters - Group E2.

GROUP E3 - d.i. 3 - Digital input 3 *(not available on ATR244-14ABC-T)*

293 d.i3.F. Digital Input 3 Function

Digital input 3 functioning.
di.SAb. Disabled (**Default**)
2t. SW. 2 Setpoints Switch
2t.SW.i. 2 Setpoints Switch Impulsive
3t.SW.i. 3 Setpoints Switch Impulsive
4t.SW.i. 4 Setpoints Switch Impulsive
SEt.1 Controller regulates on SET1
SEt.2 Controller regulates on SET2
SEt.3 Controller regulates on SET3
SEt.4 Controller regulates on SET4
StARt Start (impulsive)
StoP Stop (impulsive)
St./St. Start / Stop (impulsive)
RUN Run (controller in START with D.I. active, controller in STOP with D.I. disabled)
E:t.AL. 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.
HoLd Lock conversion (stop all conversions and display values)
tUNE Performing manual tune
Au.MA.i. Automatic / Manual Impulse (if enabled on parameter 53 or 76)
Au.MA.c. Automatic / Manual Contact (if enabled on parameter 53 or 76)
Act.tY. Action Type. Cooling regulation if D.I. is active, otherwise heating regulation.

PRGM Programmer. 1 cycle Programmer, with D.I. active (if enabled on parameter 312 PrGM), otherwise simple controller
R. KWH Reset kWh. It resets the energy consumed by the system.
R.i. 0 Analogue Input 0. Set AI to zero
M. RES. Manual reset. Reset the outputs if selected as manual reset.
t.1.RUN Timer 1 run. The timer 1 count with activated D.I.
t.1. S.E. Timer 1 Start End. D.I. starts and stops the timer 1 (impulsive)
t.1.StR. Timer 1 Start. D.I. starts the timer 1 (impulsive)
t.1.End Timer 1 End. D.I. stops the timer 1 (impulsive)
t.2.RUN Timer 2 run. The timer 2 count with activated D.I.
t.2. S.E. Timer 2 Start End. D.I. starts and stops the timer 2 (impulsive)
t.2.StR. Timer 2 Start. D.I. starts the timer 2 (impulsive)
t.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 62 rEM.S.)

294 d.i3c. Digital Input 3 Contact

Defines the resting contact of the digital input 3.
N.oPEN Normally open (**Default**)
N.cLoS. Normally closed

295 d.i3P. Digital Input 3 Process *(only on ATR444-2xABC-X)*

Select the size related to the digital input 3.
R.iN.1 Value read on input AI1. (**Default**)
R.iN.2 Value read on input AI2.
MEAN 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.diF. 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).
R.iN.1.2 The value read on AI1 and AI2

296 d.i3.c. Digital Input 3 Reference Command *(only on ATR444-2xABC-X)*

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

297÷301 Reserved Parameters - Group E3

Reserved parameters - Group E3.

GROUP E4 - d.i.4 - Digital input 4 *(not available on ATR244-14ABC-T)*

302 d.i4.F. Digital Input 4 Function

Digital input 4 functioning.

- d.SAb. Disabled (**Default**)
- 2t. SW. 2 Setpoints Switch
- 2t.SW.i. 2 Setpoints Switch Impulsive
- 3t.SW.i. 3 Setpoints Switch Impulsive
- 4t.SW.i. 4 Setpoints Switch Impulsive
- SEt.1 Controller regulates on SET1
- SEt.2 Controller regulates on SET2
- SEt.3 Controller regulates on SET3
- SEt.4 Controller regulates on SET4
- StARt Start (impulsive)
- StoP Stop (impulsive)
- St./St. Start / Stop (impulsive)
- RUN Run (controller in START with D.I. active, controller in STOP with D.I. disabled)
- E.t.AL. 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.
- HoLd Lock conversion (stop all conversions and display values)
- tUNE Performing manual tune
- Au.MA.i. Automatic / Manual Impulse (if enabled on parameter 53 or 76)
- Au.MA.c. Automatic / Manual Contact (if enabled on parameter 53 or 76)
- Act.tY. Action Type. Cooling regulation if D.I. is active, otherwise heating regulation.
- PRGM Programmer. 1 cycle Programmer, with D.I. active (if enabled on parameter 312 Prgm), otherwise simple controller.
- r. kWH Reset kWh. Resets the energy consumed by the system
- A.i. 0 Analogue Input 0. Set AI to zero
- M. RES. Manual reset. Reset the outputs if selected as manual reset.
- t.1.RUN Timer 1 run. The timer 1 count with activated D.I.
- t.1. S.E. Timer 1 Start End. D.I. starts and stops the timer 1 (impulsive)
- t.1.StR. Timer 1 Start. D.I. starts the timer 1 (impulsive)
- t.1.End Timer 1 End. D.I. stops the timer 1 (impulsive)
- t.2.RUN Timer 2 run. The timer 2 count with activated D.I.
- t.2. S.E. Timer 2 Start End. D.I. starts and stops the timer 2 (impulsive)
- t.2.StR. Timer 2 Start. D.I. starts the timer 2 (impulsive)
- t.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 62 rEM.S.)

303 d.i4.c. Digital Input 4 Contact

Defines the resting contact of the digital input 4.

- N.oPEN Normally open (**Default**)
- N.cLoS. Normally closed

304 d.iHP. Digital Input 4 Process

Select the size related to the digital input 4.

- AI.1 Value read on input AI1. (**Default**)
- AI.2 Value read on input AI2.
- MEAN 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).
- Ab.diF. 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).
- AI.1.2 The value read on AI1 and AI2

305 d.iHr. 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

306÷310 Reserved Parameters - Group E4

Reserved parameters - Group E4

GROUP F1 - SFt.S - Soft-start and mini cycle

311 dE.St. 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.

312 PrGM Programmer

Enables the programmer functioning (1 cycle, 12 steps).

- diSAb. Disabled (**Default**)
- ENAb. Enabled (all remote setpoint functions are inhibited)

313 SS.tY. Soft-Start Type

Enables and selects the soft-start type

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

314 SS.r.c. Soft-Start Reference Command *(only on ATR444-2xABC-X)*

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

315 SS.Gr. Soft-Start Gradient

Rising/falling gradient for soft-start and pre-programmed cycle.
0..20000 Digit/ora (degrees.tenth / hour if temperature). (**Default**: 100.0)

316 SS.PE. Soft-Start Percentage

Output percentage during soft-start function.
0..100%. (**Default**: 50%)

317 SS.tH. Soft-Start Threshold

Threshold under which the soft-start percentage function is activated, at starting.
-9999..30000 [digit(p. 94)] (degrees.tenths for temperature sensors) (**Default**: 1000)

318 SS.tr. Soft-Start Time

Max. Softstart duration: if the processs 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)

319 U.t.S.E. Waiting Time Step End

Selects time for step end waiting in hh:mm

00:00 Step end waiting excluded

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

320 M.G.S.E. Max. Gap Step End

Selects max. gap for step end waiting activation. When the difference between setpoint- process is lower than this parameter, controller switches to the next step also without waiting time programmed into parameter 319 U.t.S.E.

0..10000 [digit[1.99]] (degrees.tenth for temperature sensors) (**Default**: 5.0°C)

321 r.i.cY. Recovery Interrupted Cycle

Enables interrupted cycle recovery function

d.SAb. Cycle recovery disabled

AutoM. Cycle recovery enabled with automatic gradient (**Default**)

2...20000 Digit/hour (degrees.tenth / hour if temperature). Select recovery gradient (rising).

322÷325 Reserved Parameters - Group F1

Reserved parameters - Group F1

GROUP G1 - d.SP. - Display and interface

326 u.FLt Visualization Filter

d.SAb. Disabled

PtcHF Pitchfork filter (**Default**)

F1.oPd. First Order

F1.oP.P. First Order with Pitchfork

2 SA.M. 2 Samples Mean

... ...n Samples Mean

10.SA.M. 10 Samples Mean

327 u1.d2 Visualization Display 2

Select visualization on display 2 (second line).

PPo.d.1 (Process Display 1) Visualises which process the display 1 is visualising (Es. A1.IN.1)

u.o.M. (Unit Of Measure) Unit of measure set on the parameter 329 u.o.M.

c.1.SPt Command 1 setpoint (**Default**)

ou.PE.1 Percentage of command output 1

AMP. 1 Ampere from 1 current transformer

d.S.P.c.1 Command process setpoint deviation 1

VAL.c.1 Valve position for command 1

kW Power on loads (command 1 + command 2 if present)

kWH kWh cmd 1. Energy transferred to loads (command 1 + command 2 if present)

A1.IN.1 Value read on input AI1.

A1.IN.2 Value read on input AI2.

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

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

Ab.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).

HIGH. Greater value between AI1 and AI2

LoWER Lower value between AI1 and AI2

c.2.SPt Command 2 setpoint

ou.PE.2 Percentage of command output 2
AMP. 2 Ampere from current transformer 2
d.S.P.c.2 Command process setpoint deviation 2
VAL.c.2 Valve position for command 2
kW c.1 Power on control load 1
kWH.c.1 kWh cmd 1. Energy transferred to command load 1
kW c.2 Power on control load 2
kWH.c.2 kWh cmd 2. Energy transferred to command load 2

328 u.d3 Visualization Display 3

Select visualization on display 3.

StAtE Status controller. RUN, STOP, **MAN**UAL, **REM**OTE, STEP1... STEP8 (**Default**)
Pro.d.1 (Process Display 1) Visualizza quale processo sta visualizzando il display 1 (Es. A.in.1)
u.o.M. (Unit Of Measure) Unit of measure set on the parameter 329 u.o.M.
c.1.SPt Command 1 setpoint
ou.PE.1 Percentage of command output 1
AMP. 1 Ampere from 1 current transformer
d.S.P.c.1 Command process setpoint deviation 1
VAL.c.1 Valve position for command 1
kW Power on loads (command 1 + command 2 if present)
kWH kWh cmd 1. Energy transferred to loads (command 1 + command 2 if present)
A.in.1 Value read on input AI1.
A.in.2 Value read on input AI2.
MEAN 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).
Ab.diF. 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).
HiGH. Greater value between AI1 and AI2
LoWEr Lower value between AI1 and AI2
c.2.SPt Command 2 setpoint
ou.PE.2 Percentage of command output 2
AMP. 2 Ampere from current transformer 2
d.S.P.c.2 Command process setpoint deviation 2
VAL.c.2 Valve position for command 2
kW c.1 Power on command load 1
kWH.c.1 kWh cmd 1. Energy transferred to command load 1
kW c.2 Power on command load 2
kWH.c.2 kWh cmd 2. Energy transferred to command load 2

329 u.o.M Unit Of Measure

Select the unit of measurement to show on the displays 2/3 if enabled in parameters 327 and 328.

°C **Default**	HPA	in	M/H	kGP
°F	kPA	N	L/S	Ki.P
K	MPA	kN	L/M	LbF
t	REM	G	L/H	oZF
Mt	MH2o	kG	PPM	PcS
A	MMHG	g	PH	PERS.
MA	MM	t	PH	(by App)
bAr	cM	oZ	L	
MbAr	dM	Lb	NM	
PSi	M	M/S	kNM	
PA	KM	M/M	kGF	

330 uSr.M. User Menu

Enables to modify parameter 315 SS.Gr. "Soft-Start Gradient" from the user menu. To modify the gradient, press SET.

d.SAb. Disabled (**Default**)
ENAb. Enabled (the gradient can be changed from the user menu)

331 ScL.t. Scrolling Time

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

3 S 3 seconds
5 S 5 seconds (**Default**)
10 S 10 seconds
30 S 30 seconds
1 M.N 1 minutes
5 M.N 5 minutes
10M.N 10 minutes
MAN.Sc. Manual scroll

332 bAr.G. Bar Graph

Set the value indicated by the Bar Graph

d.SAb Bar graph off
c.1.SPt Command 1 setpoint
ou.PE.1 Command output percentage 1 (Par. LLbG. and uLbG. are ignored) (**Default**)
AMP. 1 Ampere from current transformer 1
d.S.P.c.1 Command process setpoint deviation 1
VA.P.c.1 Valve position for command 1 (Par. LLbG. and uLbG. are ignored)
kW Power on loads (command 1 + command 2 if present)
A.IN.1 Value read on AI1 input.
A.IN.2 Value read on AI2 input.
MEAN Arithmetic average of the values read on inputs AI1 e AI2 [(AI1+AI2)/2].
d.FF. Difference of the values read on the inputs AI1 and AI2 (AI1-AI2).
Ab.d.F. Module of the difference in the values read on the inputs AI1 and AI2 (|AI1-AI2|).
SuM Sum of the values read on the inputs AI1 and AI2 (AI1+AI2).
H.GH. Greater value between AI1 and AI2
LoWER Lower value between AI1 and AI2
PEduN. The value read on AI1 or value read on AI2 if AI1 is in error (E-05)
c.2.SPt Command 2 setpoint
ou.PE.2 Percentage of command output 2 (Par. LLbG. and uLbG. are ignored)
AMP. 2 Ampere from current transformer 2
d.S.P.c.2 Command process setpoint deviation 2
VA.P.c.2 Valve position for command 2 (Par. LLbG. and uLbG. are ignored)

333 LLbG. Lower Limit Bar Graph

Bar Graph lower limit
-9999..+30000 [digitp. 94] (degrees for temperature sensors). **Default** 0.

334 uLbG. Upper Limit Bar Graph

Bar Graph upper limit
-9999..+30000 [digitp. 94] (degrees for temperature sensors). **Default** 1000.

335 u.out Voltage Output

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

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

336 nFcL. NFC Lock

d.SAb. NFC lock disabled: NFC accessible.
EnAb. NFC lock enabled: NFC not accessible.

337÷341 Reserved Parameters - Group G1

Reserved parameters - Group G1

GROUP H1 - F.tEY. - Function Keys

342 F1 F. F1 Key

F1 key operation mode.

d.SAb. Disabled (**Default**)
2t.SW.i. 2 Setpoints Switch Impulsive
3t.SW.i. 3 Setpoints Switch Impulsive
4t.SW.i. 4 Setpoints Switch Impulsive
SEt.1 Controller regulates on SET1
SEt.2 Controller regulates on SET2
SEt.3 Controller regulates on SET3
SEt.4 Controller regulates on SET4
StArt Start (impulsive)
StoP Stop (impulsive)
St./St. Start / Stop (impulsive)
tunE Performing manual tune
Au.MA.i. Automatic / Manual Impulse (if enabled on parameter 53 or 76)
r. kWH Reset kWh. Reset the value of energy consumed by the system.
A.i. 0 Analogue Input 0. Set AI to zero
M. rES. Manual reset. Reset the outputs if selected as manual reset.
t.1. S.E. Timer 1 Start End. D.I. starts and stops the timer 1(impulsive)
t.1.StA. Timer 1 Start. D.I. starts the timer 1(impulsive)
t.1.End Timer 1 End. D.I. stops the timer 1(impulsive)
t.2. S.E. Timer 2 Start End. D.I. starts and stops the timer 2(impulsive)
t.2.StA. Timer 2 Start. D.I. starts the timer 2(impulsive)
t.2.End Timer 2 End. D.I. stops the timer 2(impulsive)
rEM.S.E. Local/Remote setpoint switch (remote setpoint must be enabled on par. 62 rEM.S.)

343 F1 c. F1 Contact

Defines the type of contact to be performed on F1 to activate the related function

FSt.PP. (Fast Press) Fast pressure (**Default**)
PP.HLd. (Press & hold) Long pressure (1s).

344 F1 P. F1 Process *(only on ATR444-2xABC-X)*

Selects the value to be brought to 0 when function A.i. 0. is selected for F1

A.in.1 Value read on input AI1. (**Default**)
A.in.2 Value read on input AI2
MEAN 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)
Ab.dif. 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)
A.in.1.2 The value read on AI1 and AI2

345 F1 r.c. F1 Reference Command

Defines the reference command for F1 functions

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

346 rES. Reserved

Reserved parameter

347 rES. Reserved

Reserved parameter

348 F2 F. F2 Key

F2 key operation mode.

- d.SAb. Disabled (**Default**)
- 2t.SW.. 2 Setpoints Switch Impulsive
- 3t.SW.. 3 Setpoints Switch Impulsive
- 4t.SW.. 4 Setpoints Switch Impulsive
- SEt.1 Controller regulates on SET1
- SEt.2 Controller regulates on SET2
- SEt.3 Controller regulates on SET3
- SEt.4 Controller regulates on SET4
- StArt Start (impulsive)
- StoP Stop (impulsive)
- St./St. Start / Stop (impulsive)
- tunE Performing manual tune
- Au.MA.. Automatic / Manual Impulse (if enabled on parameter 53 or 76)
- r. kWH Reset kWh. Reset the value of energy consumed by the system.
- A.. 0 Analogue Input 0. Set AI to zero
- M. rES. Manual reset. Reset the outputs if selected as manual reset.
- t.1. S.E. Timer 1 Start End. D.I. starts and stops the timer 1(impulsive)
- t.1.StA. Timer 1 Start. D.I. starts the timer 1(impulsive)
- t.1.End Timer 1 End. D.I. stops the timer 1(impulsive)
- t.2. S.E. Timer 2 Start End. D.I. starts and stops the timer 2(impulsive)
- t.2.StA. Timer 2 Start. D.I. starts the timer 2(impulsive)
- t.2.End Timer 2 End. D.I. stops the timer 2(impulsive)
- rEM.S.E. Local/Remote setpoint switch (remote setpoint must be enabled on par. 62 rEM.S.)

349 F2 c. F2 Contact

Defines the type of contact to be performed on F2 to activate the related function

- FSt.PR. (Fast Press) Fast pressure (**Default**)
- PR.HLd. (Press & hold) Long pressure (1s).

350 F2 P. F2 Process *(only on ATR444-2xABC-X)*

Selects the value to be brought to 0 when function A.. 0. is selected for F2

- A.IN.1 Value read on input AI1. (**Default**)
- A.IN.2 Value read on input AI2
- MEAN 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)
- Ab.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)
- A.IN.1.2 The value read on AI1 and AI2

351 F2 r.c. F2 Reference Command

Defines the reference command for F2 functions.

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

352 rES. Reserved

Reserved parameter

353 rES. Reserved

Reserved parameter

354 F3 F. F3 Key

F3 key operation mode.

- dISAb. Disabled (**Default**)
- 2t.SW.I. 2 Setpoints Switch Impulsive
- 3t.SW.I. 3 Setpoints Switch Impulsive
- 4t.SW.I. 4 Setpoints Switch Impulsive
- SEt.1 Controller regulates on SET1
- SEt.2 Controller regulates on SET2
- SEt.3 Controller regulates on SET3
- SEt.4 Controller regulates on SET4
- StARt Start (impulsive)
- StoP Stop (impulsive)
- St./St. Start / Stop (impulsive)
- tunE Performing manual tune
- Au.MAn.I. Automatic / Manual Impulse (if enabled on parameter 53 or 76)
- P. KWH Reset kWh. Reset the value of energy consumed by the system.
- AN. 0 Analogue Input 0. Set AI to zero
- M. RES. Manual reset. Reset the outputs if selected as manual reset.
- t.1. S.E. Timer 1 Start End. D.I. starts and stops the timer 1(impulsive)
- t.1.StR. Timer 1 Start. D.I. starts the timer 1(impulsive)
- t.1.End Timer 1 End. D.I. stops the timer 1(impulsive)
- t.2. S.E. Timer 2 Start End. D.I. starts and stops the timer 2(impulsive)
- t.2.StR. Timer 2 Start. D.I. starts the timer 2(impulsive)
- t.2.End Timer 2 End. D.I. stops the timer 2(impulsive)
- REM.S.E. Local/Remote setpoint switch (remote setpoint must be enabled on par. 62 rEM.S.)

355 F3 c. F3 Contact

Defines the type of contact to be performed on F3 to activate the related function.

- FSt.PR. (Fast Press) Fast pressure (**Default**)
- PR.HLd. (Press & hold) Long pressure (1s).

356 F3 P. F3 Process *(only on ATR444-2xABC-X)*

Selects the value to be brought to 0 when function AN. 0. is selected for F3.

- AN.IN.1 Value read on input AI1. (**Default**)
- AN.IN.2 Value read on input AI2
- MEAN 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)
- Ab.dIF. 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)
- AN.IN.1.2 The value read on AI1 and AI2

357 F3 r.c. F3 Reference Command

Defines the reference command for F3 functions.

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

358 rES. Reserved

Reserved parameter

359 rES. Reserved

Reserved parameter

360 F4 F. F4 Key

F4 key operation mode.

- d.SAb. Disabled (**Default**)
- 2t.SU.. 2 Setpoints Switch Impulsive
- 3t.SU.. 3 Setpoints Switch Impulsive
- 4t.SU.. 4 Setpoints Switch Impulsive
- SEt.1 Controller regulates on SET 1
- SEt.2 Controller regulates on SET 2
- SEt.3 Controller regulates on SET 3
- SEt.4 Controller regulates on SET 4
- StArt Start (impulsive)
- StoP Stop (impulsive)
- St./St. Start / Stop (impulsive)
- tunE Performing manual tune
- Au.MA.. Automatic / Manual Impulse (if enabled on parameter 53 or 76)
- r. kWH Reset kWh. Reset the value of energy consumed by the system.
- A.. 0 Analogue Input 0. Set AI to zero
- M. RES. Manual reset. Reset the outputs if selected as manual reset.
- t.1. S.E. Timer 1 Start End. D.I. starts and stops the timer 1(impulsive)
- t.1.StR. Timer 1 Start. D.I. starts the timer 1(impulsive)
- t.1.End Timer 1 End. D.I. stops the timer 1(impulsive)
- t.2. S.E. Timer 2 Start End. D.I. starts and stops the timer 2(impulsive)
- t.2.StR. Timer 2 Start. D.I. starts the timer 2(impulsive)
- t.2.End Timer 2 End. D.I. stops the timer 2(impulsive)
- REM.S.E. Local/Remote setpoint switch (remote setpoint must be enabled on par. 62 rEM.S.)

361 F4 c. F4 Contact

Defines the type of contact to be performed on F4 to activate the related function.

- FSt.PR. (Fast Press) Fast Pressure (**Default**)
- PR.HLd. (Press & hold) Long pressure (1s).

362 F4 P. F4 Process *(only on ATR444-2xABC-X)*

Selects the value to be brought to 0 when function A.. 0. is selected for F4

- A.IN.1 Value read on input AI1. (**Default**)
- A.IN.2 Value read on input AI2
- MEAN 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)
- Ab.diF. 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)
- A.IN.1.2 The value read on AI1 and AI2

363 F4 r.c. F4 Reference Command

Defines the reference command for F4 functions.

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

364 rES. Reserved

Reserved parameter

365 rES. Reserved

Reserved parameter

GROUP I1 - ct 1 - Current Transformer 1

366 ct.1F. Current Transformer 1 Function

Enables the CT1 input and select the net frequency

- d.SAb. Disabled (**Default**)
- 50 HZ 50 Hz
- 60 HZ 60 Hz
- A.IN.2 Electricity is the value converted by analogue input 2

367 ct.1u. Current Transformer 1 Value

Select the current transformer 1 full-scale

- 1..300 Ampere (**Default**: 50)

368 Hb.1r. Heater Break Alarm 1 Reference Command

Defines the heater break Alarm reference command and the CT1 overcurrent.

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

369 Hb.1t. Heater Break Alarm 1 Threshold

CT1 Heater Break Alarm 1 intervention threshold

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

370 oc.1t. Overcurrent 1 Alarm Threshold

CT1 Overcurrent Alarm 1 threshold

- 0 Alarm disabled. (**Default**)
- 0.1-300.0 Ampere

371 Hb.1d. Heater Break Alarm 1 Delay

CT1 Heater Break Alarm and overcurrent alarm activation delay.

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

372÷376 Reserved Parameters - Group I1

Reserved parameters - Group I1

GROUP I2 - ct 2 - Current Transformer 2

377 ct2F. Current Transformer 2 Function

Enables the CT2 input and select the net frequency

- d.SAb. Disabled (**Default**)
- 50 HZ 50 Hz
- 60 HZ 60 Hz
- A.IN.2 Electricity is the value converted by analog input 2

378 ct2u. Current Transformer 2 Value

Select the current transformer 2 full-scale

- 1..300 Ampere (**Default**: 50)

379 Hb2r. Heater Break Alarm 2 Reference Command

Defines the heater break Alarm reference command and the CT2 overcurrent.

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

380 Hb2t. Heater Break Alarm 2 Threshold

CT2 Overcurrent Alarm 1 threshold

- 0 Alarm disabled. (**Default**)
- 0.1-300.0 Ampere

381 oc2t. Overcurrent 2 Alarm Threshold

CT2 Overcurrent Alarm 1 threshold

0 Alarm disabled. (**Default**)

0.1-300.0 Ampere

382 Hb2d. Heater Break Alarm 2 Delay

CT2 Heater Break Alarm and overcurrent alarm activation delay.

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

383÷387 Reserved Parameters - Group I2

Reserved parameters - Group I2

GROUP J1 - Ao. 1 - Retransmission 1

388 rtr1 Retransmission 1

Retransmission for AO1. Parameters 390 and 391 define lower and upper limit of the operating scale.

diSAb.	Disabled (**Default**)
c.1.SPt	Command 1 setpoint
ou.PE.1	Percentage of command output 1
d.S.P.c.1	Command process setpoint deviation 1
AMP. 1	Ampere from current transformer 1
AL. 1	Alarm 1 setpoint
AL. 2	Alarm 2 setpoint
Md.buS	Retransmits the value written on word 1241
A.iN.1	Value read on input AI1
A.iN.2	Value read on input AI2
MEAN	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)
Ab.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)
HiGH.	Greater value between AI1 and AI2
LoWER	Lower value between AI1 and AI2
REduN.	Value read on AI2 if AI1 is in error (E-05)
c.2.SPt	Command 2 setpoint
ou.PE.2	Percentage of command output 2
d.S.P.c.2	Command process setpoint deviation 2
AMP. 2	Ampere from current transformer 2

389 r.tY. Retransmission 1 Type

Select the retransmission type for AO1

0.10 V Output 0...10 V.

4.20mA Output 4...20 mA. **Default**

390 r.1 LL. Retransmission 1 Lower Limit

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

-9999..+30000 [digit[p.94]] (degrees for temperature sensors), **Default**: 0.

391 r.1 uL. Retransmission 1 Upper Limit

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

-9999..+30000 [digit[p.94]] (degrees for temperature sensors), **Default**: 1000.

392 r.ES.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.

393 r.ISS. Retransmission 1 State Stop

Determines retransmission 1 value with controller in STOP.
If the alarm output is 0-10V:
AcE.A. Alarm active
0 V 0 V. **Default**
10 V 10 V.
If the alarm output is 0-20 mA or 4-20 mA:
AcE.A. Alarm active
0 MA 0 mA. **Default**
4 MA 4 mA.
20 MA 20 mA.
21.5MA 21.5 mA.

394÷398 Reserved Parameters - Group J1

Reserved parameters - Group J1

GROUP J2 - A.o. 2 - Retransmission 2 *(only on ATR444-24ABC-T)*

399 rtn2 Retransmission 2

Retransmission for AO1. Par. 401 and 402 define lower and upper limit of the operating scale.
diSAb. Disabled (**Default**)
c.1.SP Command 1 setpoint
ou.PE.1 Percentage of command output 1
d.S.P.c.1 Command process setpoint deviation 1
AMP. 1 Ampere from current transformer 1
AL. 1 Alarm 1 setpoint
AL. 2 Alarm 2 setpoint
Md.buS Retransmits the value written on word 1241
A.IN.1 Value read on input AI1
A.IN.2 Value read on input AI2
MEAN 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)
Ab.diF. 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)
HIGH. Greater value between AI1 and AI2
LoWER Lower value between AI1 and AI2
REduN. Value read on AI2 if AI1 is in error (E-05)
c.2.SP Command 2 setpoint
ou.PE.2 Percentage of command output 2
d.S.P.c.2 Command process setpoint deviation 2
AMP. 2 Ampere from current transformer 2

400 r2tY. Retransmission 2 Type

Select the retransmission type for AO2
0.10 V Output 0...10 V.
4.20MA Output 4...20 mA. **Default**

401 r2.LL. Retransmission 2 Lower Limit

Retransmission 2 lower limit range (value related to 0 V or 0/4 mA).
-9999..+30000 [digit[1 p.94]] (degrees for temperature sensors), **Default**: 0.

402 r2.uL. Retransmission 2 Upper Limit

Retransmission 2 upper limit range 2 (value related to 10 V or 20 mA).
-9999..+30000 [digit[1 p.94]] (degrees for temperature sensors), **Default**: 1000.

403 r2S.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.

404 r2S.S. Retransmission 2 State Stop

Determines retransmission 2 value with controller in STOP.
If the alarm output is 0-10V:

Act.A.	Alarm active
0 V	0 V. **Default**
10 V	10 V.

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

Act.A.	Alarm active
0 mA	0 mA. **Default**
4 mA	4 mA.
20 mA	20 mA.
21.5mA	21.5 mA.

405÷409 Reserved Parameters - Group J2

Reserved parameters - Group J2

GROUP K1 - SEr. - Serial *(only on ATR444-14ABC-T and ATR444-24ABC-T)*

410 SL.Ad. Slave Address

Select slave address for serial communication.
1..254. **Default**: 247.

411 bd.rt. Baud Rate

Select baudrate for serial communication

1.2	1200 bit/s	28.8	28800 bit/s
2.4	2400 bit/s	38.4	38400 bit/s
4.8	4800 bit/s	57.6	57600 bit/s
9.6	9600 bit/s	115.2	115200 bit/s
19.2	19200 bit/s (**Default**)		

412 S.P.P. Serial Port Parameters

Select 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

413 SE.dE. Serial Delay

Select serial delay
0..100 ms. **Default**: 5 ms.

414 oFFL. Off Line

Select the off-line tine. 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.

415÷419 Reserved Parameters - Group K1

Reserved parameters - Group K1

GROUP L1 - tiMr - Timer

420 tMr.1 Timer 1

Enabling Timer 1
d.SAb. Disabled (**Default**)
ENAb. Enabled
EN.StA. Enabled and active at start

421 t.b.t.1 Time Base Timer 1

Selects time base for timer 1
MM.SS minutes.seconds (**Default**)
HH.MM hours.minutes

422 A.tM.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

423 tMr2 Timer 2

Enabling Timer 2
d.SAb. Disabled (**Default**)
ENAb. Enabled
EN.StA. Enabled and active at start

424 t.b.t2 Time Base Timer 2

Selects time base for timer 2
MM.SS minutes.seconds (**Default**)
HH.MM hours.minutes

425 A.tM2 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.

426 tMr.S. Timers Sequence

Select the correlation between the two timers.
S.nGL. Singles. Timers work independently (**Default**)
SEQuE. Sequential. When timer 1 ends, timer 2 starts.
LooP Loop. When a timer ends, another starts.

427 MA.r. Maintenance Request

View a maintenance request after elapsing of time given on par. 428 Mt.M.

d.SAb. Disabled (**Default**)

EnAb. Enabled

428 Mt.M Maintenance Time

Select the time in hours for the maintenance request.

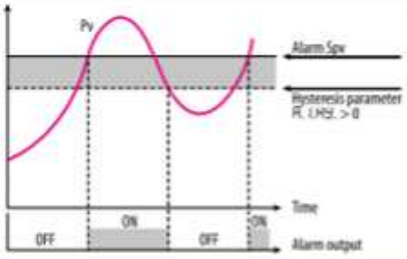
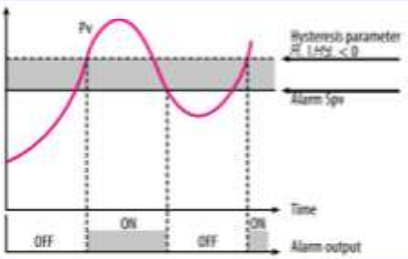
Range 1....30000 (**Default**: 1000).

429÷431 Reserved Parameters - Group L1

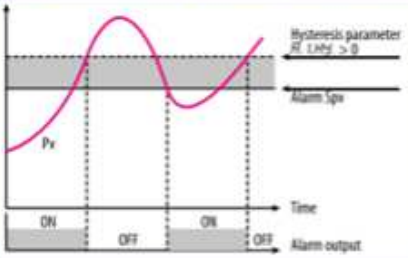
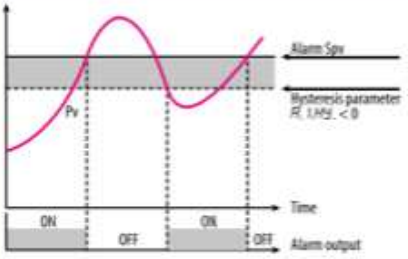
Reserved parameters - Group L1

15 Alarm intervention modes

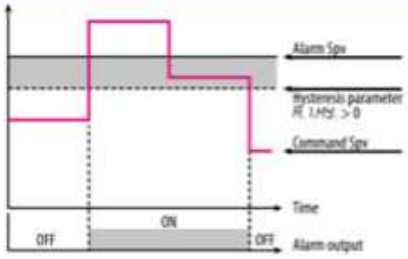
15.a Absolute or threshold alarm active over (par. 135 AL.1F. = Ab.uPA)

	Absolute alarm active over. Hysteresis value greater than "0" (Par. 140 A.1HY > 0).
	Absolute alarm active over. Hysteresis value lower than "0" (Par. 140 A.1HY < 0).

15.b Absolute or threshold alarm active below (par. 135 AL.1F. = Ab.uPA)

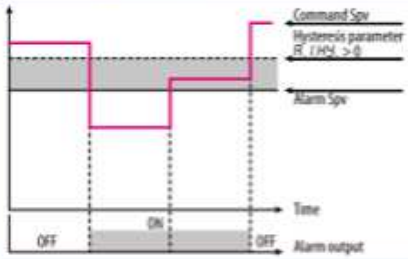
	Absolute alarm active below. Hysteresis value greater than "0" (Par. 140 A.1HY > 0).
	Absolute alarm active below. Hysteresis value lower than "0" (Par. 140 A.1HY < 0).

15.c Absolute or threshold alarm referred to command setpoint active over (par. 135 AL.1F. = Ab.c.uA)



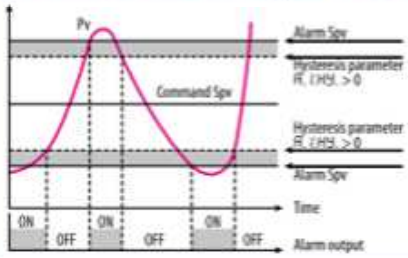
Absolute alarm referred to command setpoint active over.
Hysteresis value greater than "0" (Par. 140 A.1HY > 0).

15.d Absolute or threshold alarm referred to command setpoint active below (par. 135 AL.1F. = Ab.c.LA)

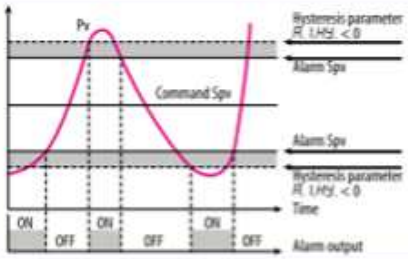


Absolute alarm referred to command setpoint active below.
Hysteresis value greater than "0" (Par. 140 A.1HY > 0).

15.e Band alarm (par. 135 AL.1F. = bAnd)

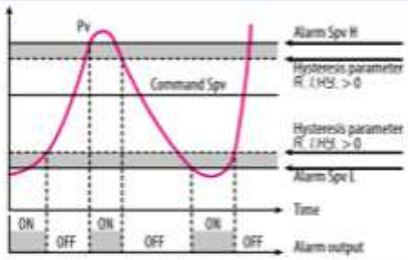


Band alarm hysteresis value greater than "0" (Par. A.1HY > 0).

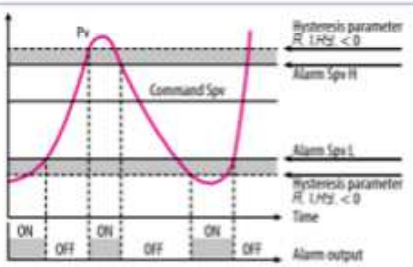


Band alarm hysteresis value lower than "0" (Par. 140 A.1HY < 0).

15.f Asymmetric band alarm (par. 135 AL.1F. = A.bAnd)

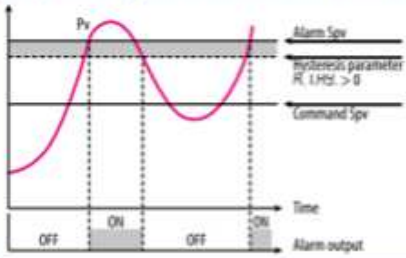


Asymmetric band alarm with hysteresis value greater than "0" (Par. 140 A.1HY > 0).



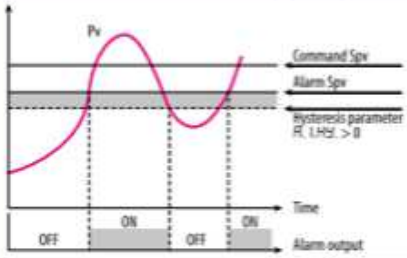
Asymmetric band alarm with hysteresis value lower than "0" (Par. 140 A.1HY < 0).

15.g Upper deviation alarm (par. 135 AL.1F. = uP.dEu)



Upper deviation alarm value of alarm setpoint greater than "0" and hysteresis value greater than "0" (Par. 140 A.1HY > 0).

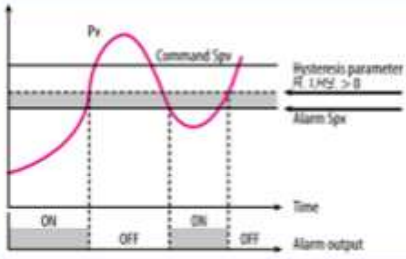
NB: with hysteresis value less than "0" (A.1HY. < 0) the dotted line moves under the alarm setpoint.



Upper deviation alarm value of alarm setpoint less than "0" and hysteresis value greater than "0" (Par. 140 A.1HY > 0).

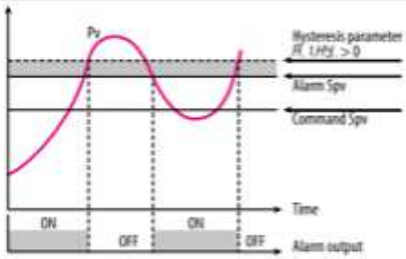
NB: with hysteresis value less than "0" (A.1HY. < 0) the dotted line moves under the alarm setpoint.

15.h Lower deviation alarm (par. 135 AL.1F. = Lo.dEu)



Lower deviation alarm value of alarm setpoint greater than "0" and hysteresis value greater than "0" (Par. 140 A.1HY > 0).

NB: with hysteresis value less than "0" (A.1HY. < 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. 140 A.1HY > 0).

NB: with hysteresis value less than "0" (A.1HY. < 0) the dotted line moves under the alarm setpoint.

15.1 Alarms label

By setting a value from 1 to 21 on the parameters 149 A.1.Lb., 169 A.2.Lb., 189 A.3.Lb., 209 A.4.Lb., 229 A.5.Lb., 249 A.6.Lb. and 269 A.7.Lb., the display 3 will show one of the following messages in case of alarm:

Selection	Message displayed in the alarm event
1 ... 7	alarm 1 ... 7
8	open door
9	closed door
10	light on
11	light off
12	warning
13	waiting
14	high limit

Selection	Message displayed in the alarm event
15	low limit
16	external alarm
17	temperature alarm
18	pressure alarm
19	fan command
20	cooling
21	operating

By setting 0, no message will be displayed. While setting 22, the user will have up to 23 characters available to customize his message via the *"MyPyxsys"* App or via modbus.

16 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 SYStEM Error	Cold junction temperature sensor failure or environment temperature out of range	Call assistance
E-04 EEProM 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.
E-08 SYStEM Error	Missing calibration	Call assistance
E-10 A. in2 diSAbLEd	Analogue input 2 disabled but used during configuration.	Enable A. in2 or disable it during configuration.
E-80 rF id Error	Tag rfid malfunctioning	Call assistance

Notes / Updates

1 *Display of decimal point depends on setting of parameter SEn.1 and dP.1 or SEn.2 and dP.2.*

2 *On activation, the output is inhibited if the controller is in alarm mode. Activates only if alarm condition reappers, 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).*

4 *The alarm remains active for the time set on the parameter A x.dE, if different from 0.*

Table of configuration parameters

GROUP A1 - A in.1 - Analogue input 1			
1	SEn.1	Sensor AI1	37
2	dP. 1	Decimal Point 1	37
3	dEGr.	Degree	37
4	LL.i.1	Lower Linear Input AI1	37
5	uL.i.1	Upper Linear Input AI1	37
6	P.uA.1	Potentiometer Value AI1	38
7	i.oL.1	Linear Input over Limits AI1	38
8	LcE.1	Lower Current Error 1	38
9	o.cA.1	Offset Calibration AI1	38
10	G.cA.1	Gain Calibration AI1	38
11	Ltc.1	Latch-On AI1	38
12	cFL.1	Conversion Filter AI1	38
13	cFr.1	Conversion Frequency AI1	38
14÷18		Reserved Parameters - Group A1	38
GROUP A2 - A in.2 - Analogue input 2 *(only on ATR444-2xABC-X)*			
19	SEn2	Sensor AI2	39
20	dP. 2	Decimal Point 2	39
21	rES.	Reserved	39
22	LL.i.2	Lower Linear Input AI2	39
23	uL.i.2	Upper Linear Input AI2	39
24	P.uA2	Potentiometer Value AI2	39
25	i.oL2	Linear Input over Limits AI2	40
26	LcE2	Lower Current Error 2	40
27	o.cA2	Offset Calibration AI2	40
28	G.cA.2	Gain Calibration AI2	40
29	Ltc.2	Latch-On AI2	40
30	cFL.2	Conversion Filter AI2	40
31	cFr.2	Conversion Frequency AI2	40
32÷36		Reserved Parameters - Group A2	40
GROUP B1 - cnd.1 - Outputs and regulation Process 1			
37	c.ou.1	Command Output 1	41
38	cPr.1	Command Process 1 (only on ATR444-2xABC-X)	42
39	rES.	Reserved	42
40	Ac.t.1	Action type 1	42
41	cHY.1	Command Hysteresis 1	42
42	LLS.1	Lower Limit Setpoint 1	42
43	uLS.1	Upper Limit Setpoint 1	42
44	c.rE.1	Command Reset 1	42
45	cS.E.1	Command State Error 1	43
46	cSS.1	Command State Stop 1	43
47	cLd.1	Command Led 1	43
48	c.dE.1	Command Delay 1	43
49	cS.P.1	Command Setpoint Protection 1	43
50	uR.t.1	Valve Time 1	44
51	u.FE.P.	Valve Feedback Potentiometer (only on ATR444-2xABC-X)	44
52	S.uS.1	State Valve Saturation 1	44
53	A.MA.1	Automatic / Manual 1	44
54	LP.r.1	Load Power Rating 1	44

Index des sujets

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.

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

CE

RoHS Compliant

c UL us LISTED
Proc. Cont. Eq.
E469441

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