



REGISTRES MODBUS

Le module PDM-8TC dispose de registres MODBUS à 16 bits (words) accessibles par la communication série RS485 ou RS232. Les paragraphes qui suivent décrivent les commandes MODBUS supportées et les fonctions pouvant être exprimées par les différents registres.

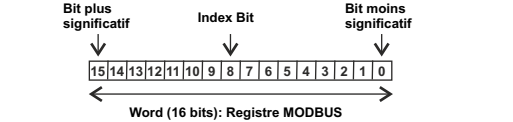
Commandes MODBUS supportées

| Code   | Fonction                 | Description                                     |
|--------|--------------------------|-------------------------------------------------|
| 03 (*) | Read Holding Registers   | Lecture de registres word jusqu'à 32 à la fois  |
| 04 (*) | Read Input Registers     | Lecture de registres word jusqu'à 32 à la fois  |
| 06     | Write Single Register    | Écriture d'un registre word                     |
| 16     | Write Multiple Registers | Écriture de registres word jusqu'à 32 à la fois |

(\*) Les deux fonctions ont le même effet

Holding Registers

Les registres Holding Registers à 16 bits ont la structure suivante :



La notation Bit [x:y] reportée sur le tableau indique tous les bits du mot x à y. Par exemple Bit [2:1] indique le bit 2 et le bit 1 et sert à illustrer la signification des différentes combinaisons conjointes de valeurs des deux bits. À noter que les fonctions MODBUS 3, 4, 6 et 16, de lecture et d'écriture simple et multiple peuvent être exécutées sur les registres suivants. Les valeurs indiquées par le symbole " sont celles par défaut.

| Registre   | Description                                                                                                                   | adr.  | R/W |
|------------|-------------------------------------------------------------------------------------------------------------------------------|-------|-----|
| MACHINE_ID | La partie haute du registre contient l'ID du module ( 24 ) Bit [15:8]. La partie basse la révision du micrologiciel Bit [7:0] | 40001 | R   |
| STATUS_INP | État des voies d'entrée                                                                                                       | 40002 | R   |
| Bit 15     | 1: Panne des voies 1 et 2.                                                                                                    |       |     |
| Bit 14     | 1: Panne des voies 3 et 4.                                                                                                    |       |     |
| Bit 13     | 1: Panne des voies 5 et 6.                                                                                                    |       |     |
| Bit 12     | 1: Panne des voies 7 et 8.                                                                                                    |       |     |
| Bit 11     | 1: Panne du TC branché à la voie 1.                                                                                           |       |     |

|            |                                                                            |       |   |
|------------|----------------------------------------------------------------------------|-------|---|
| Bit 10     | 1: Panne du TC branché à la voie 2.                                        |       |   |
| Bit 9      | 1: Panne du TC branché à la voie 3.                                        |       |   |
| Bit 8      | 1: Panne du TC branché à la voie 4.                                        |       |   |
| Bit 7      | 1: Panne du TC branché à la voie 5.                                        |       |   |
| Bit 6      | 1: Panne du TC branché à la voie 6.                                        |       |   |
| Bit 5      | 1: Panne du TC branché à la voie 7.                                        |       |   |
| Bit 4      | 1: Panne du TC branché à la voie 8.                                        |       |   |
| Bit 3      | 1: Erreur Communication avec les voies 1 et 2.                             |       |   |
| Bit 2      | 1: Erreur Communication avec les voies 3 et 4.                             |       |   |
| Bit 1      | 1: Erreur Communication avec les voies 5 et 6.                             |       |   |
| Bit 0      | 1: Erreur Communication avec les voies 7 et 8.                             |       |   |
| CHAN1_DEC  | Mesure voie 1 (en dixièmes de °C ou dizaines de µV)                        | 40003 | R |
| Bit [15:0] | Température en dixièmes de °C de la voie 1 (ou tension en dizaines de µV). |       |   |
| CHAN2_DEC  | Mesure voie 2 (en dixièmes de °C ou dizaines de µV)                        | 40004 | R |
| Bit [15:0] | Température en dixièmes de °C de la voie 2 (ou tension en dizaines de µV). |       |   |
| CHAN3_DEC  | Mesure voie 3 (en dixièmes de °C ou dizaines de µV)                        | 40005 | R |
| Bit [15:0] | Température en dixièmes de °C de la voie 3 (ou tension en dizaines de µV). |       |   |
| CHAN4_DEC  | Mesure voie 4 (en dixièmes de °C ou dizaines de µV)                        | 40006 | R |
| Bit [15:0] | Température en dixièmes de °C de la voie 4 (ou tension en dizaines de µV). |       |   |
| CHAN5_DEC  | Mesure voie 5 (en dixièmes de °C ou dizaines de µV)                        | 40007 | R |
| Bit [15:0] | Température en dixièmes de °C de la voie 5 (ou tension en dizaines de µV). |       |   |
| CHAN6_DEC  | Mesure voie 6 (en dixièmes de °C ou dizaines de µV)                        | 40008 | R |
| Bit [15:0] | Température en dixièmes de °C de la voie 6 (ou tension en dizaines de µV). |       |   |
| CHAN7_DEC  | Mesure voie 7 (en dixièmes de °C ou dizaines de µV)                        | 40009 | R |
| Bit [15:0] | Température en dixièmes de °C de la voie 7 (ou tension en dizaines de µV). |       |   |

|               |                                                                             |       |   |
|---------------|-----------------------------------------------------------------------------|-------|---|
| CHAN8_DEC     | Mesure voie 8 (en dixièmes de °C ou dizaines de µV)                         | 40010 | R |
| Bit [15:0]    | Température en dixièmes de °C de la voie 8 (ou tension en dizaines de µV).  |       |   |
| CHAN1_FLOAT_H | Mesure voie 1 en floating point (voir bit 15 registre 40058 «AUX_SETTINGS») | 40011 | R |
| Bit [15:0]    | Température en °C ou tension en mV de la voie 1 (MSW du float).             |       |   |
| CHAN1_FLOAT_L | Mesure voie 1 en floating point (voir bit 15 registre 40058 «AUX_SETTINGS») | 40012 | R |
| Bit [15:0]    | Température en °C ou tension en mV de la voie 1 (LSW du float).             |       |   |
| CHAN2_FLOAT_H | Mesure voie 2 en floating point (voir bit 15 registre 40058 «AUX_SETTINGS») | 40013 | R |
| Bit [15:0]    | Température en °C ou tension en mV de la voie 2 (MSW du float).             |       |   |
| CHAN2_FLOAT_L | Mesure voie 2 en floating point (voir bit 15 registre 40058 «AUX_SETTINGS») | 40014 | R |
| Bit [15:0]    | Température en °C ou tension en mV de la voie 2 (LSW du float).             |       |   |
| CHAN3_FLOAT_H | Mesure voie 3 en floating point (voir bit 15 registre 40058 «AUX_SETTINGS») | 40015 | R |
| Bit [15:0]    | Température en °C ou tension en mV de la voie 3 (MSW du float).             |       |   |
| CHAN3_FLOAT_L | Mesure voie 3 en floating point (voir bit 15 registre 40058 «AUX_SETTINGS») | 40016 | R |
| Bit [15:0]    | Température en °C ou tension en mV de la voie 3 (LSW du float).             |       |   |
| CHAN4_FLOAT_H | Mesure voie 4 en floating point (voir bit 15 registre 40058 «AUX_SETTINGS») | 40017 | R |
| Bit [15:0]    | Température en °C ou tension en mV de la voie 4 (MSW du float).             |       |   |
| CHAN4_FLOAT_L | Mesure voie 4 en floating point (voir bit 15 registre 40058 «AUX_SETTINGS») | 40018 | R |
| Bit [15:0]    | Température en °C ou tension en mV de la voie 4 (LSW du float).             |       |   |
| CHAN5_FLOAT_H | Mesure voie 5 en floating point (voir bit 15 registre 40058 «AUX_SETTINGS») | 40019 | R |
| Bit [15:0]    | Température en °C ou tension en mV de la voie 5 (MSW du float).             |       |   |

|                 |                                                                             |       |   |
|-----------------|-----------------------------------------------------------------------------|-------|---|
| CHAN5_FLOAT_L   | Mesure voie 5 en floating point (voir bit 15 registre 40058 «AUX_SETTINGS») | 40020 | R |
| Bit [15:0]      | Température en °C ou tension en mV de la voie 5 (LSW du float).             |       |   |
| CHAN6_FLOAT_H   | Mesure voie 6 en floating point (voir bit 15 registre 40058 «AUX_SETTINGS») | 40021 | R |
| Bit [15:0]      | Température en °C ou tension en mV de la voie 6 (MSW du float).             |       |   |
| CHAN6_FLOAT_L   | Mesure voie 6 en floating point (voir bit 15 registre 40058 «AUX_SETTINGS») | 40022 | R |
| Bit [15:0]      | Température en °C ou tension en mV de la voie 6 (LSW du float).             |       |   |
| CHAN7_FLOAT_H   | Mesure voie 7 en floating point (voir bit 15 registre 40058 «AUX_SETTINGS») | 40023 | R |
| Bit [15:0]      | Température en °C ou tension en mV de la voie 7 (MSW du float).             |       |   |
| CHAN7_FLOAT_L   | Mesure voie 7 en floating point (voir bit 15 registre 40058 «AUX_SETTINGS») | 40024 | R |
| Bit [15:0]      | Température en °C ou tension en mV de la voie 7 (LSW du float).             |       |   |
| CHAN8_FLOAT_H   | Mesure voie 8 en floating point (voir bit 15 registre 40058 «AUX_SETTINGS») | 40025 | R |
| Bit [15:0]      | Température en °C ou tension en mV de la voie 8 (MSW du float).             |       |   |
| CHAN8_FLOAT_L   | Mesure voie 8 en floating point (voir bit 15 registre 40058 «AUX_SETTINGS») | 40026 | R |
| Bit [15:0]      | Température en °C ou tension en mV de la voie 8 (LSW du float).             |       |   |
| STATUS_INP      | Couple du registre 40002 contenant l'état des voies d'entrée                | 40027 | R |
| JUNCT_DEC_IN1_2 | Mesure température soudure froide voies 1 et 2                              | 40028 | R |
| Bit [15:0]      | Température en dixièmes de °C de la soudure froide des voies 1 et 2.        |       |   |
| JUNCT_DEC_IN3_4 | Mesure température soudure froide voies 3 et 4                              | 40029 | R |
| Bit [15:0]      | Température en dixièmes de °C de la soudure froide des voies 3 et 4.        |       |   |
| JUNCT_DEC_IN5_6 | Mesure température soudure froide voies 5 et 6                              | 40030 | R |
| Bit [15:0]      | Température en dixièmes de °C de la soudure froide des voies 5 et 6.        |       |   |

|                 |                                                                                    |       |     |
|-----------------|------------------------------------------------------------------------------------|-------|-----|
| JUNCT_DEC_IN7_8 | Mesure température soudure froide voies 7 et 8                                     | 40031 | R   |
| Bit [15:0]      | Température en dixièmes de °C de la soudure froide des voies 7 et 8.               |       |     |
| ERR_CH1-2_CH3-4 | Erreurs Voies 1, 2 (MSB), Voies 3, 4 (LSB)                                         | 40037 | R   |
| Bit 15          | 1: Erreur tension d'alimentation (voies 1 et 2).                                   |       |     |
| Bit 14          | 1: Erreur de réception (voies 1 et 2).                                             |       |     |
| Bit 13          | 1: Erreur sauvegarde EEPROM (voies 1 et 2).                                        |       |     |
| Bit 12          | 1: Sauvegarde EEPROM bloquée (voies 1 et 2).                                       |       |     |
| Bit [11:9]      | Réservés.                                                                          |       |     |
| Bit 8           | 1: Erreur lecture CRC EEPROM (voies 1 et 2).                                       |       |     |
| Bit 7           | 1: Erreur tension d'alimentation (voies 3 et 4).                                   |       |     |
| Bit 6           | 1: Erreur de réception (voies 3 et 4).                                             |       |     |
| Bit 5           | 1: Erreur sauvegarde EEPROM (voies 3 et 4).                                        |       |     |
| Bit 4           | 1: Sauvegarde EEPROM bloquée (voies 3 et 4).                                       |       |     |
| Bit [3:1]       | Réservés.                                                                          |       |     |
| Bit 0           | 1: Erreur lecture CRC EEPROM (voies 3 et 4).                                       |       |     |
| ERR_CH5-6_CH7-8 | Erreurs Voies 5, 6 (MSB), Voies 7, 8 (LSB)                                         | 40038 | R   |
| Bit 15          | 1: Erreur tension d'alimentation (voies 5 et 6).                                   |       |     |
| Bit 14          | 1: Erreur de réception (voies 5 et 6).                                             |       |     |
| Bit 13          | 1: Erreur sauvegarde EEPROM (voies 5 et 6).                                        |       |     |
| Bit 12          | 1: Sauvegarde EEPROM bloquée (voies 5 et 6).                                       |       |     |
| Bit [11:9]      | Réservés.                                                                          |       |     |
| Bit 8           | 1: Erreur lecture CRC EEPROM (voies 5 et 6).                                       |       |     |
| Bit 7           | 1: Erreur tension d'alimentation (voies 7 et 8).                                   |       |     |
| Bit 6           | 1: Erreur de réception (voies 7 et 8).                                             |       |     |
| Bit 5           | 1: Erreur sauvegarde EEPROM (voies 7 et 8).                                        |       |     |
| Bit 4           | 1: Sauvegarde EEPROM bloquée (voies 7 et 8).                                       |       |     |
| Bit [3:1]       | Réservés.                                                                          |       |     |
| Bit 0           | 1: Erreur lecture CRC EEPROM (voies 7 et 8).                                       |       |     |
| RESET           | Mise à zéro du module                                                              | 40041 | R/W |
| Bit [15:0]      | Le fait d'écrire la valeur 0xFFFF commande la mise à zéro (redémarrage) du module. |       |     |

|                                     |                                                                                                                                                                                                                                                                                                               |       |     |
|-------------------------------------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----|
| ADDR <sup>(6)</sup> <sup>(7)</sup>  | Registre pour la configuration de l'adresse du module et du contrôle de parité                                                                                                                                                                                                                                | 40052 | R/W |
| Bit [15:8]                          | Adresse du module. Valeurs admises de 0x00 à 0xFF (valeurs décimales dans l'intervalle 0-255, par défaut: 1).                                                                                                                                                                                                 |       |     |
| Bit [7:0]                           | Type de contrôle sur la parité :<br>00000000 *: aucune parité (NONE)<br>00000001 : parités paires (EVEN)<br>00000010 : parités impaires (ODD)                                                                                                                                                                 |       |     |
| BAUDR <sup>(6)</sup> <sup>(7)</sup> | Registre pour la configuration du baudrate et du temps de retard de la réponse                                                                                                                                                                                                                                | 40053 | R/W |
| Bit [15:8]                          | Valeur de la vitesse de communication série (baudrate):<br>00000000 (0x00): 4800 Baud<br>00000001 (0x01): 9600 Baud<br>00000010 (0x02): 19200 Baud<br>00000011* (0x03): 38400 Baud<br>00000100 (0x04): 57600 Baud<br>00000101 (0x05): 115200 Baud<br>00000110 (0x06): 1200 Baud<br>00000111 (0x07): 2400 Baud |       |     |
| Bit [7:0]                           | Temps de retard de la réponse. Représente le nombre de pauses de 6 caractères chacune à insérer entre la fin du message Rx et le début du message Tx. La valeur par défaut est 0x00 (valeur décimale 0).                                                                                                      |       |     |
| CONF_CH1_CH2 <sup>(6)</sup>         | Configuration voies 1 et 2                                                                                                                                                                                                                                                                                    | 40054 | R/W |
| Bit 15                              | Activation voie 1 :<br>0 : voie 1 pas activée<br>1* : voie 1 activée                                                                                                                                                                                                                                          |       |     |
| Bit 14                              | Activation voie 2 :<br>0 : voie 2 pas activée<br>1* : voie 2 activée                                                                                                                                                                                                                                          |       |     |
| Bit 13                              | Type donnée restituée voie 1 et voie 2 :<br>0* : mesure en °C<br>1 : mesure en mV                                                                                                                                                                                                                             |       |     |
| Bit 12                              | Compensation soudure froide voie 1 et voie 2 :<br>0 : pas activée<br>1* : activée                                                                                                                                                                                                                             |       |     |
| Bit 11                              | Fréquence Réjection voie 1 et voie 2 :<br>0* : 50 Hz<br>1 : 60 Hz                                                                                                                                                                                                                                             |       |     |

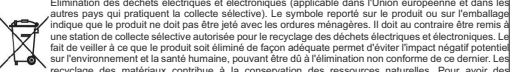
|                             |                                                                                                                                                                                                                                                                  |       |     |
|-----------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----|
| Bit [10:8]                  | Filtre voies 1 et 2 (pour les détails, se référer à la section CONFIGURATION FILTRE):<br>000: Pas inséré<br>001: Filtre dans moyenne<br>Autres paramètres dans CONFIGURATION FILTRE.                                                                             |       |     |
| Bit [7:4]                   | Type Thermocouple voie 1 (voir Tableau TYPE THERMOCOUPLE). Par défaut: Type J.                                                                                                                                                                                   |       |     |
| Bit [3:0]                   | Type Thermocouple voie 2 (voir Tableau TYPE THERMOCOUPLE). Par défaut: Type J.                                                                                                                                                                                   |       |     |
| CONF_CH3_CH4 <sup>(6)</sup> | Configuration voies 3 et 4                                                                                                                                                                                                                                       | 40055 | R/W |
| Bit [15:0]                  | Registre pour la configuration des voies 3 et 4. Voir le registre 40054, en remplaçant respectivement les voies 1 et 2 par les voies 3 et 4.                                                                                                                     |       |     |
| CONF_CH5_CH6 <sup>(6)</sup> | Configuration voies 5 et 6                                                                                                                                                                                                                                       | 40056 | R/W |
| Bit [15:0]                  | Registre pour la configuration des voies 5 et 6. Voir le registre 40054, en remplaçant respectivement les voies 1 et 2 par les voies 5 et 6.                                                                                                                     |       |     |
| CONF_CH7_CH8 <sup>(6)</sup> | Configuration voies 7 et 8                                                                                                                                                                                                                                       | 40057 | R/W |
| Bit [15:0]                  | Registre pour la configuration des voies 7 et 8. Voir le registre 40054, en remplaçant respectivement les voies 1 et 2 par les voies 7 et 8.                                                                                                                     |       |     |
| AUX_SETTINGS <sup>(6)</sup> | Registre auxiliaire configuration                                                                                                                                                                                                                                | 40058 | R/W |
| Bit 15                      | Interprétation floating point<br>0 *: La partie haute du floating point est transmise en premier, suivie de la partie basse.<br>1 : La partie basse du floating point est transmise en premier, suivie de la partie haute.                                       |       |     |
| Bit [14:8]                  | Réservés ne pas modifier.                                                                                                                                                                                                                                        |       |     |
| Bit 7                       | Action en cas de défaillance voie 1 :<br>0 *: La valeur de la température/tension est forcée à la valeur de défaillance programmée.<br>1 : La valeur de la température/tension est mémorisée à la dernière valeur acquise avant la signalisation de défaillance. |       |     |
| Bit 6                       | Action en cas de défaillance voie 2 (Comme Bit 7).                                                                                                                                                                                                               |       |     |
| Bit 5                       | Action en cas de défaillance voie 3 (Comme Bit 7).                                                                                                                                                                                                               |       |     |
| Bit 4                       | Action en cas de défaillance voie 4 (Comme Bit 7).                                                                                                                                                                                                               |       |     |
| Bit 3                       | Action en cas de défaillance voie 5 (Comme Bit 7).                                                                                                                                                                                                               |       |     |
| Bit 2                       | Action en cas de défaillance voie 6 (Comme Bit 7).                                                                                                                                                                                                               |       |     |
| Bit 1                       | Action en cas de défaillance voie 7 (Comme Bit 7).                                                                                                                                                                                                               |       |     |

|                            |                                                                                                     |       |     |
|----------------------------|-----------------------------------------------------------------------------------------------------|-------|-----|
| Bit 0                      | Action en cas de défaillance voie 8 (Comme Bit 7).                                                  |       |     |
| VAL_FAULT_1 <sup>(6)</sup> | Valeur saisie en cas de défaillance voie 1 (expprimée comme 40003). <sup>(6)</sup> Default: 2000.0. | 40059 | R/W |
| VAL_FAULT_2 <sup>(6)</sup> | Valeur saisie en cas de défaillance voie 2 (expprimée comme 40004). <sup>(6)</sup> Default: 2000.0. | 40060 | R/W |
| VAL_FAULT_3 <sup>(6)</sup> | Valeur saisie en cas de défaillance voie 3 (expprimée comme 40005). <sup>(6)</sup> Default: 2000.0. | 40061 | R/W |
| VAL_FAULT_4 <sup>(6)</sup> | Valeur saisie en cas de défaillance voie 4 (expprimée comme 40006). <sup>(6)</sup> Default: 2000.0. | 40062 | R/W |
| VAL_FAULT_5 <sup>(6)</sup> | Valeur saisie en cas de défaillance voie 5 (expprimée comme 40007). <sup>(6)</sup> Default: 2000.0. | 40063 | R/W |
| VAL_FAULT_6 <sup>(6)</sup> | Valeur saisie en cas de défaillance voie 6 (expprimée comme 40008). <sup>(6)</sup> Default: 2000.0. | 40064 | R/W |
| VAL_FAULT_7 <sup>(6)</sup> | Valeur saisie en cas de défaillance voie 7 (expprimée comme 40009). <sup>(6)</sup> Default: 2000.0. | 40065 | R/W |
| VAL_FAULT_8 <sup>(6)</sup> | Valeur saisie en cas de défaillance voie 8 (expprimée comme 40010). <sup>(6)</sup> Default: 2000.0. | 40066 | R/W |

TABLEAU TYPE THERMOCOUPLE POUR CONFIGURATION REGISTRES 40054..40057

| BIT                      | TYPE THERMOCOUPLE | BIT | TYPE THERMOCOUPLE |
|--------------------------|-------------------|-----|-------------------|
| 7                        | 6                 | 5   | 4                 |
| TC pour voies 1, 3, 5, 7 | 3                 | 2   | 1                 |
| TC pour voies 2, 4, 6, 8 | 0                 | 0   | 0                 |
| TC J                     | 0                 | 0   | 1                 |
| TC K                     | 0                 | 0   | 0                 |
| TC R                     | 0                 | 0   | 1                 |
| TC S                     | 0                 | 0   | 1                 |
| TC T                     | 0                 | 1   | 0                 |
| TC B                     | 0                 | 1   | 0                 |
| TC E                     | 0                 | 1   | 1                 |
| TC N                     | 0                 | 1   | 1                 |
| PAS IMPLEMENTÉES         | 1                 | x   | x                 |
| PAS IMPLEMENTÉES         | 1                 | x   | x                 |

<sup>(6)</sup> La valeur est conservée dans EEPROM.  
<sup>(7)</sup> L'effet a lieu au redémarrage (matériel ou logiciel) de l'instrument.  
<sup>(8)</sup> La valeur dans les registres 40059..40066 est copiée respectivement dans les registres 40003..40010, quand le bit correspondant du registre 40058 est à 0. La même valeur est convertie en floating-point et copiée dans le registre float correspondant à la voie.



Élimination des déchets électriques et électroniques (applicable dans l'Union européenne et dans les autres pays qui pratiquent la collecte sélective). Le symbole reporté sur le produit ou sur l'emballage indique que le produit ne doit pas être jeté avec les ordures ménagères. Il doit au contraire être remis à une station de collecte sélective autorisée pour le recyclage des déchets électriques et électroniques. Le fait de veiller à ce que le produit soit éliminé de façon adéquate permet d'éviter l'impact négatif potentiel sur l'environnement et la santé humaine, pouvant être dû à l'élimination non conforme de ce dernier. Les recyclages des matériaux contribue à la conservation des ressources naturelles. Pour avoir des informations plus détaillées, prière de contacter le bureau préposé de la ville intéressée, le service de ramassage des déchets ou le revendeur du produit.

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Pour les manuels et le logiciel de configuration, visiter [www.pyrocontrolle.com](http://www.pyrocontrolle.com)

|                                                                               |                |                                                    |
|-------------------------------------------------------------------------------|----------------|----------------------------------------------------|
|  | <b>PDM-8TC</b> | <b>8 THERMOCOUPLE INPUTS<br/>WITH MODBUS RS485</b> |
|-------------------------------------------------------------------------------|----------------|----------------------------------------------------|

**General Description**  
The PDM-8TC instrument is a digital converter for thermocouples, with eight measuring channels, which are insulated from the power supply and from the serial communication line up to 1.5 kV. The same 1.5 kV insulation is present among the input channels belonging to different groups of terminals. The instrument is therefore characterized by a six points global insulation. Furthermore, the module has:

- Easy wiring of power supply and serial bus by means of the bus housed in the DIN rail.
- Communication can be configured by DIP-switch or software.
- Rs485 serial communication with MODBUS-RTU protocol, 32 nodes maximum.
- Inputs protected against ESD discharges up to 4 kV.
- High acquisition speed.
- Measurement of thermocouples: J, K, E, N, S, R, B, T.
- Measurement of the inputs available in the following formats: floating-point, representation, reverse floating-point, fixed dot at 16 bits, in tenths degrees with sign for temperature, tenths of  $\mu$ V for voltage.
- Channels independently activable.
- Programmable value in case of fault or freezing of last reading.

For each pair of inputs belonging to the same group of terminals the following common settings are possible:

- Measurement in temperature or mV.
- Filter programmable at eight levels to stabilise reading.
- Rejection programmable at 50 Hz or 60 Hz.
- Three selectable acquisition speeds (two at 14 bits, one at 15 bits).
- Cold Junction Compensation.

|                                 |                                                                                                                                                                                                                                                  |
|---------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Technical Specifications</b> |                                                                                                                                                                                                                                                  |
| Power Supply:                   | 10..40 Vdc or 19..28 Vac (50..60 Hz), max 0,6 W.                                                                                                                                                                                                 |
| Consumption :                   |                                                                                                                                                                                                                                                  |
| Serial Communication Ports :    | -RS485, 1200..115200 Baud.<br>-RS232, 2400 Baud, Address: 1, Parity: NO, Data bits: 8; Stop bits: 1.<br>MODBUS-RTU.                                                                                                                              |
| Protocol :                      |                                                                                                                                                                                                                                                  |
| <b>Inputs</b>                   |                                                                                                                                                                                                                                                  |
| Inputs :                        | Thermocouple types: J, K, E, N, S, R, B, T.                                                                                                                                                                                                      |
| Tables :                        | EN60584-1 (ITS-90).                                                                                                                                                                                                                              |
| Temperature Range :             | Dependent on the thermocouple type (see <b>Thermocouples Range</b> table).                                                                                                                                                                       |
| Span mV:                        | -10,1..81,4 mV.                                                                                                                                                                                                                                  |
| Impedance :                     | 10 M $\Omega$ .                                                                                                                                                                                                                                  |
| Total Error:                    | 14 bits ADC and 50 Hz Rejection: "(0,040 % + 13 $\mu$ V).<br>15 bits ADC and 50 Hz Rejection: "(0,035 % + 10 $\mu$ V).<br>14 bits ADC and 60 Hz Rejection: "(0,045 % + 16 $\mu$ V).<br>15 bits ADC and 60 Hz Rejection: "(0,040 % + 12 $\mu$ V). |

|                                                                                  |               |               |
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|                          |                                                  |
|--------------------------|--------------------------------------------------|
| Test Current :           | <50 nA.                                          |
| CMRR <sup>(1)</sup> :    | >155 dB (one port to all the other ones at GND). |
| DMRR <sup>(1)(2)</sup> : | >60 dB.                                          |

| THERMOCOUPLES RANGE |               |                     |         |                             |                     |
|---------------------|---------------|---------------------|---------|-----------------------------|---------------------|
| TC TYPE             | Allowed Range | Linearization Error | TC TYPE | Allowed Range               | Linearization Error |
| J                   | -210..1200 °C | 0,05 °C             | S       | -50..1768 °C                | 0,02 °C             |
| K                   | -200..1372 °C | 0,05 °C             | R       | -50..1768 °C                | 0,02 °C             |
| E                   | -200..1000 °C | 0,02 °C             | B       | 250..1820 °C <sup>(3)</sup> | 0,03 °C             |
| N                   | -200..1300 °C | 0,04 °C             | T       | -200..400 °C                | 0,04 °C             |

|                            |                                                                                                                                                                                                                 |
|----------------------------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|
| <b>Other Features</b>      |                                                                                                                                                                                                                 |
| ADC :                      | Settable to 14 or 15 bits.                                                                                                                                                                                      |
| Thermal Drift :            | < 100 ppm/K.                                                                                                                                                                                                    |
| Disturbance Rejection :    | Settable to 50 Hz or 60 Hz.                                                                                                                                                                                     |
| Cold Junction Error :      | <1 °C.                                                                                                                                                                                                          |
| Insulation Voltage :       | 1500 Vac among input, power supply and communication ports.<br>1500 Vac among channels belonging to different groups of terminals.                                                                              |
| Protection Degree :        | IP20.                                                                                                                                                                                                           |
| Environmental conditions : | Temperature -10..+65 °C. Saving of parameters in EEPROM guaranteed in range: 0..50 °C.<br>Humidity 30..90 % not-condensing.<br>Altitude: up to 2000 m a.s.l.                                                    |
| Storage temperature :      | -20..+85 °C.                                                                                                                                                                                                    |
| Signalling by LED :        | Power Supply, Fail, RS485 Communication.                                                                                                                                                                        |
| Connections :              | -Removable 4-way screw terminals., max 1.5 mm <sup>2</sup> , 3.5 mm pitch.<br>-Rear IDC10 connector for DIN rail.<br>-3.5 mm stereophonic front jack for RS232 (COM) connection.                                |
| Box :                      | PBT, black.                                                                                                                                                                                                     |
| Dimensions and weight :    | 100 x 112 x 17,5 mm. 140 g.                                                                                                                                                                                     |
| Standards :                | EN61000-6-4/2002 (electromagnetic emission, industrial environment)<br>EN61000-6-2/2005 (electromagnetic immunity, industrial environment)<br>EN61010-1/2001 (safety).                                          |
|                            | All circuits must be insulated from the other circuits under dangerous voltage with double insulation. The power supply transformer must comply with EN60742: "Insulated transformers and safety transformers". |

<sup>(1)</sup>The values are valid at the set rejection frequency, with the filter ON.  
<sup>(2)</sup>For disturbance values such as the input signal peak does not exceed the limit of acceptability.  
<sup>(3)</sup>Up to 250 °C: the input is considered equivalent to a null temperature.

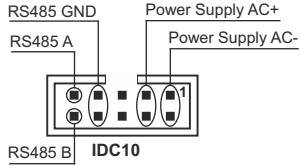
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**Installation rules**  
The module is designed to be installed in vertical position on a DIN 46277 rail. In order to ensure optimum performance and the longest working life, the module(s) must be supplied adequate ventilation and no raceways or other objects that obstruct the ventilation slots.  
Never install modules above sources of heat; we recommend installation in the lower part of the control panel.

### Electric Connections

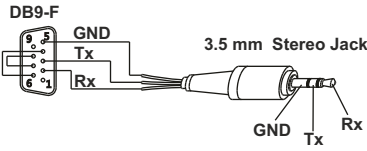
#### POWER SUPPLY AND RS485 COMMUNICATION PORT

The electric connections for power supply and RS485 bus can be made only by using the DIN Rail bus system with PDM-DIN accessories.  
The connections of the bus connector are described on the following figure.



#### RS232 SERIAL PORT

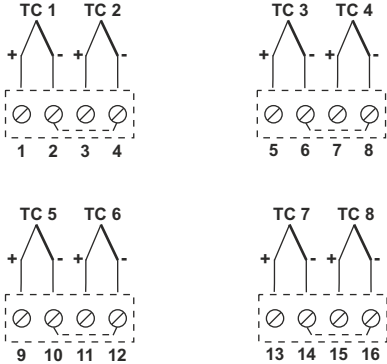
Connection cable DB9 with a 3.5 mm stereo Jack, can be assembled as indicated in the following figure, or can be bought as an accessory.  
We advise you that the GND of the RS232 is common with RS485.



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### INPUTS

The module accepts, at input, the following types of thermocouples: J, K, E, N, S, R, B, T. For the electrical connections, we advise you to use shielded cables.



The pairs of channels belonging to the same group of terminals, have the GND terminal internally connected and are not insulated each other.  
1.5 kV insulation is performed among the input channels belonging to different groups of terminals.

#### Indications by LED on the front panel

|                  |                                                                                                                                          |
|------------------|------------------------------------------------------------------------------------------------------------------------------------------|
| PWR LED (GREEN)  | Meaning                                                                                                                                  |
| Steady           | Power Supply is present.                                                                                                                 |
| ERR LED (YELLOW) | Meaning                                                                                                                                  |
| Steady           | Fault: insufficient power supply, faulty channel, faulty TC, internal communication error (signalled if the channel has been activated). |
| RX LED (RED)     | Meaning                                                                                                                                  |
| Steady           | Data are being received through the RS485 communication port.                                                                            |

|                                                                                     |               |               |
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|              |                                                                  |
|--------------|------------------------------------------------------------------|
| TX LED (RED) | Meaning                                                          |
| Steady       | Data are being transmitted through the RS485 communication port. |

### Serial interface

For detailed information on RS485 serial interface, consult the documentation provided by the website [www.pyrocontrole.com](http://www.pyrocontrole.com)

### DIP-SWITCH SETTING

The instrument has factory settings with all DIP-switches configured in position 0. The settings of the DIP-switches defines the module's communication parameters: address and speed.

In all the following tables, the indication ● corresponds to a DIP-switch set in 1 (ON); no indication is provided when the DIP-switch is set in 0 (OFF).

|                         |                                                     |
|-------------------------|-----------------------------------------------------|
| <b>SPEED</b>            |                                                     |
| SW1                     | 1 2                                                 |
|                         | ● 9600 Baud                                         |
|                         | ● 19200 Baud                                        |
|                         | ● 38400 Baud                                        |
|                         | ● 57600 Baud                                        |
| <b>ADDRESS</b>          |                                                     |
| SW1                     | 3 4 5 6 7 8                                         |
|                         | Communication Parameters from EEPROM <sup>(4)</sup> |
|                         | ● Fixed Address: 01                                 |
|                         | ● Fixed Address: 02                                 |
|                         | ● Fixed Address: 03                                 |
|                         | ● Fixed Address: 04                                 |
|                         | ● Fixed Address, as from binary representation.     |
|                         | ● Fixed Address: 63                                 |
| <b>NOT USED</b>         |                                                     |
| SW1                     | 9                                                   |
|                         | Not used.                                           |
|                         | Leave to OFF position.                              |
| <b>RS485 TERMINATOR</b> |                                                     |
| SW1                     | 10                                                  |
|                         | Terminator OFF.                                     |
|                         | ● Terminator ON.                                    |

<sup>(4)</sup> The default configuration is the following: Address 1, 38400, no parity, 1 stop bit.

|                                                                                     |               |               |
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### DEFAULT SETTING OF INPUT CHANNELS

The default configuration, valid for each pair of channels, belonging to the same group of terminals is the following :

|                              |                                                    |
|------------------------------|----------------------------------------------------|
| Enabling :                   | Both channels are enabled.                         |
| Type of returned Data :      | °C                                                 |
| Cold junction Compensation : | Active                                             |
| Rejection :                  | 50 Hz                                              |
| ADC / Filter :               | ADC: 15 bit, Filter: average, J for both channels. |
| Thermocouple Type :          |                                                    |

### FILTER SETTING

The filtering methods can be set for each pair of channels.  
The filter consists of two independent low-pass filters:  
-FIR Filter , in running average, able to increase the rejection of disturbances to the mains power line frequency and to reduce measuring noise.  
-IIR exponential Filter, with programmable time constant, able to dampen fluctuations.

If an input variation higher than the threshold T is detected, both filters are forced to adapt rapidly to the new value, stabilising it only later on. The value of the threshold in voltage is fixed and equal to 0,75 mV. The filter is set with the three least significant bits of registers MODBUS 40054..57 (refer to section **MODBUS REGISTERS**).  
The following is a table containing all setttable filter types. The propagation time (90%) is indicated for each filter, i.e. the maximum time between the step variation of the input and the variation of the number which represents it in the Modbus register, including the interrogation time of the single register (at 115 kbaud). The times indicated are valid if both the following conditions are respected:

- Rejection set to 50 Hz. For 60 Hz rejection divide the times by 1,2.
- Only one of the two thermocouples of the same group is enabled. If both thermocouples are enabled, the propagation times approximately are doubled.

| SET                | SAMPLING |    | FILTER TYPE   | PROP. TIME 90% |        |
|--------------------|----------|----|---------------|----------------|--------|
|                    | Bits ADC | Hz |               | <T             | >T     |
| 000                | 14       | 48 | Not present   | 45 ms          | 45 ms  |
| 001                | 14       | 20 | Average       | 236 ms         | 103 ms |
| 010 <sup>(5)</sup> | 15       | 11 | Average       | 405 ms         | 179 ms |
| 011                | 15       | 11 | Average + exp | 1 s            | 179 ms |
| 100                | 15       | 11 | Average + exp | 3 s            | 179 ms |
| 101                | 15       | 11 | Average + exp | 8 s            | 179 ms |
| 110                | 15       | 11 | Average + exp | 24 s           | 179 ms |
| 111                | 15       | 11 | Average + exp | 72 s           | 179 ms |

<sup>(5)</sup> Default Value.

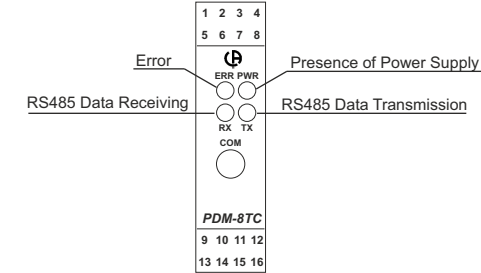
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### Programming

For the product's programming and/or configuration tools, consult the website [www.pyrocontrole.com](http://www.pyrocontrole.com)  
During initial programming, the EEPROM (SW3 ..8 in OFF position) default setting values originally programmed as follows can be used:  
**Address = 1, SPEED = 38400 baud, PARITY = none, BIT NUMBER = 8, STOP BIT = 1.**

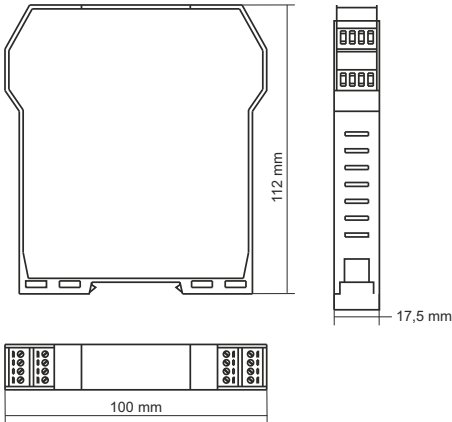
The module can also be programmed through the front connector (COM) while paying attention to set the following connection parameters:  
**Address = 1, Speed = 2400 Baud, PARITY = none, STOP BIT = 1.**  
The COM communication port behaves in the same way as the RS485 bus port except for the communication parameters described above. It also has priority over the RS485 serial port and closes after 3 seconds of inactivity.

### Front Panel and Led Position



|                                                                                     |               |               |
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### Dimensions and Overall dimensions



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MODBUS REGISTERS

PDM-8TC has MODBUS 16 bits (words) registers, accessible by RS485 or RS232 serial communication. In the next paragraphs, we shall describe the supported MODBUS commands, and the functions of the registers.

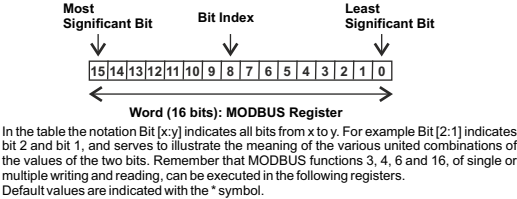
Supported MODBUS Commands

| Code   | Function                 | Description                                   |
|--------|--------------------------|-----------------------------------------------|
| 03 (*) | Read Holding Registers   | Reading of word registers up to 32 at a time. |
| 04 (*) | Read Input Registers     | Reading of word registers up to 32 at a time. |
| 06     | Write Single Register    | Writing of a word register.                   |
| 16     | Write Multiple Registers | Writing of word registers up to 32 at a time. |

(\*) The two functions have the same effect.

Holding Registers

The 16-bit Holding Registers have the following structure:



| REGISTER   | Description                                                                             | ADD.  | R/W |
|------------|-----------------------------------------------------------------------------------------|-------|-----|
| MACHINE ID | Bit [15:8]: contain the module's ID: 24.<br>Bit [7:0]: contain the firmware's revision. | 40001 | R   |
| STATUS_INP | Status of input channels.                                                               | 40002 | R   |
| Bit 15     | 1: Fault on channels 1 and 2.                                                           |       |     |
| Bit 14     | 1: Fault on channels 3 and 4.                                                           |       |     |
| Bit 13     | 1: Fault on channels 5 and 6.                                                           |       |     |
| Bit 12     | 1: Fault on channels 7 and 8.                                                           |       |     |
| Bit 11     | 1: Fault on the TC connected to channel 1.                                              |       |     |

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|            |                                                                        |       |   |
|------------|------------------------------------------------------------------------|-------|---|
| Bit 10     | 1: Fault on the TC connected to channel 2.                             |       |   |
| Bit 9      | 1: Fault on the TC connected to channel 3.                             |       |   |
| Bit 8      | 1: Fault on the TC connected to channel 4.                             |       |   |
| Bit 7      | 1: Fault on the TC connected to channel 5.                             |       |   |
| Bit 6      | 1: Fault on the TC connected to channel 6.                             |       |   |
| Bit 5      | 1: Fault on the TC connected to channel 7.                             |       |   |
| Bit 4      | 1: Fault on the TC connected to channel 8.                             |       |   |
| Bit 3      | 1: Communication Error with channels 1 and 2.                          |       |   |
| Bit 2      | 1: Communication Error with channels 3 and 4.                          |       |   |
| Bit 1      | 1: Communication Error with channels 5 and 6.                          |       |   |
| Bit 0      | 1: Communication Error with channels 7 and 8.                          |       |   |
| CHAN1_TEN  | Channel 1 measurement (tenths of °C or tenths of μV).                  | 40003 | R |
| Bit [15:0] | Temperature of channel 1 in tenths of °C (or voltage in tenths of μV). |       |   |
| CHAN2_TEN  | Channel 2 measurement (tenths of °C or tenths of μV).                  | 40004 | R |
| Bit [15:0] | Temperature of channel 2 in tenths of °C (or voltage in tenths of μV). |       |   |
| CHAN3_TEN  | Channel 3 measurement (tenths of °C or tenths of μV).                  | 40005 | R |
| Bit [15:0] | Temperature of channel 3 in tenths of °C (or voltage in tenths of μV). |       |   |
| CHAN4_TEN  | Channel 4 measurement (tenths of °C or tenths of μV).                  | 40006 | R |
| Bit [15:0] | Temperature of channel 4 in tenths of °C (or voltage in tenths of μV). |       |   |
| CHAN5_TEN  | Channel 5 measurement (tenths of °C or tenths of μV).                  | 40007 | R |
| Bit [15:0] | Temperature of channel 5 in tenths of °C (or voltage in tenths of μV). |       |   |
| CHAN6_TEN  | Channel 6 measurement (tenths of °C or tenths of μV).                  | 40008 | R |
| Bit [15:0] | Temperature of channel 6 in tenths of °C (or voltage in tenths of μV). |       |   |
| CHAN7_TEN  | Channel 7 measurement (tenths of °C or tenths of μV).                  | 40009 | R |
| Bit [15:0] | Temperature of channel 7 in tenths of °C (or voltage in tenths of μV). |       |   |

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|               |                                                                                            |       |   |
|---------------|--------------------------------------------------------------------------------------------|-------|---|
| CHAN8_TEN     | Channel 8 measurement (tenths of °C or tenths of μV).                                      | 40010 | R |
| Bit [15:0]    | Temperature of channel 8 in tenths of °C (or voltage in tenths of μV).                     |       |   |
| CHAN1_FLOAT_H | Measurement of channel 1 in floating point (see bit 15 of "AUX_SETTINGS" register: 40058). | 40011 | R |
| Bit [15:0]    | Temperature of channel 1 in °C or voltage in mV (MSW of the float).                        |       |   |
| CHAN1_FLOAT_L | Measurement of channel 1 in floating point (see bit 15 of "AUX_SETTINGS" register: 40058). | 40012 | R |
| Bit [15:0]    | Temperature of channel 1 in °C or voltage in mV (LSW of the float).                        |       |   |
| CHAN2_FLOAT_H | Measurement of channel 2 in floating point (see bit 15 of "AUX_SETTINGS" register: 40058). | 40013 | R |
| Bit [15:0]    | Temperature of channel 2 in °C or voltage in mV (MSW of the float).                        |       |   |
| CHAN2_FLOAT_L | Measurement of channel 2 in floating point (see bit 15 of "AUX_SETTINGS" register: 40058). | 40014 | R |
| Bit [15:0]    | Temperature of channel 2 in °C or voltage in mV (LSW of the float).                        |       |   |
| CHAN3_FLOAT_H | Measurement of channel 3 in floating point (see bit 15 of "AUX_SETTINGS" register: 40058). | 40015 | R |
| Bit [15:0]    | Temperature of channel 3 in °C or voltage in mV (MSW of the float).                        |       |   |
| CHAN3_FLOAT_L | Measurement of channel 3 in floating point (see bit 15 of "AUX_SETTINGS" register: 40058). | 40016 | R |
| Bit [15:0]    | Temperature of channel 3 in °C or voltage in mV (LSW of the float).                        |       |   |
| CHAN4_FLOAT_H | Measurement of channel 4 in floating point (see bit 15 of "AUX_SETTINGS" register: 40058). | 40017 | R |
| Bit [15:0]    | Temperature of channel 4 in °C or voltage in mV (MSW of the float).                        |       |   |
| CHAN4_FLOAT_L | Measurement of channel 4 in floating point (see bit 15 of "AUX_SETTINGS" register: 40058). | 40018 | R |
| Bit [15:0]    | Temperature of channel 4 in °C or voltage in mV (LSW of the float).                        |       |   |
| CHAN5_FLOAT_H | Measurement of channel 5 in floating point (see bit 15 of "AUX_SETTINGS" register: 40058). | 40019 | R |
| Bit [15:0]    | Temperature of channel 5 in °C or voltage in mV (MSW of the float).                        |       |   |

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|                 |                                                                                            |       |   |
|-----------------|--------------------------------------------------------------------------------------------|-------|---|
| CHAN5_FLOAT_L   | Measurement of channel 5 in floating point (see bit 15 of "AUX_SETTINGS" register: 40058). | 40020 | R |
| Bit [15:0]      | Temperature of channel 5 in °C or voltage in mV (LSW of the float).                        |       |   |
| CHAN6_FLOAT_H   | Measurement of channel 6 in floating point (see bit 15 of "AUX_SETTINGS" register: 40058). | 40021 | R |
| Bit [15:0]      | Temperature of channel 6 in °C or voltage in mV (MSW of the float).                        |       |   |
| CHAN6_FLOAT_L   | Measurement of channel 6 in floating point (see bit 15 of "AUX_SETTINGS" register: 40058). | 40022 | R |
| Bit [15:0]      | Temperature of channel 6 in °C or voltage in mV (LSW of the float).                        |       |   |
| CHAN7_FLOAT_H   | Measurement of channel 7 in floating point (see bit 15 of "AUX_SETTINGS" register: 40058). | 40023 | R |
| Bit [15:0]      | Temperature of channel 7 in °C or voltage in mV (MSW of the float).                        |       |   |
| CHAN7_FLOAT_L   | Measurement of channel 7 in floating point (see bit 15 of "AUX_SETTINGS" register: 40058). | 40024 | R |
| Bit [15:0]      | Temperature of channel 7 in °C or voltage in mV (LSW of the float).                        |       |   |
| CHAN8_FLOAT_H   | Measurement of channel 8 in floating point (see bit 15 of "AUX_SETTINGS" register: 40058). | 40025 | R |
| Bit [15:0]      | Temperature of channel 8 in °C or voltage in mV (MSW of the float).                        |       |   |
| CHAN8_FLOAT_L   | Measurement of channel 8 in floating point (see bit 15 of "AUX_SETTINGS" register: 40058). | 40026 | R |
| Bit [15:0]      | Temperature of channel 8 in °C or voltage in mV (LSW of the float).                        |       |   |
| STATUS_INP      | Copy of register 40002 containing the status of the input channels.                        | 40027 | R |
| JUNCT_TEN_IN1_2 | Cold Junction Temperature of channels 1 and 2.                                             | 40028 | R |
| Bit [15:0]      | Cold junction temperature of channels 1 and 2, in tenths of °C.                            |       |   |
| JUNCT_TEN_IN3_4 | Cold Junction Temperature of channels 3 and 4.                                             | 40029 | R |
| Bit [15:0]      | Cold junction temperature of channels 3 and 4, in tenths of °C.                            |       |   |
| JUNCT_TEN_IN5_6 | Cold Junction Temperature of channels 5 and 6.                                             | 40030 | R |
| Bit [15:0]      | Cold junction temperature of channels 5 and 6, in tenths of °C.                            |       |   |

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|                 |                                                                 |       |     |
|-----------------|-----------------------------------------------------------------|-------|-----|
| JUNCT_TEN_IN7_8 | Cold Junction Temperature of channels 7 and 8.                  | 40031 | R   |
| Bit [15:0]      | Cold junction temperature of channels 7 and 8, in tenths of °C. |       |     |
| ERR_CH1-2_CH3-4 | Errors: Channels 1, 2 (MSB), Channels 3, 4 (LSB).               | 40037 | R   |
| Bit 15          | 1: Power supply voltage error (channels 1 and 2).               |       |     |
| Bit 14          | 1: Reception Error (channels 1 and 2).                          |       |     |
| Bit 13          | 1: EEPROM saving Error (channels 1 and 2).                      |       |     |
| Bit 12          | 1: EEPROM saving blocked (channels 1 and 2).                    |       |     |
| Bit [11:9]      | Reserved.                                                       |       |     |
| Bit 8           | 1: Reading Error CRC EEPROM (chan. 1 and 2).                    |       |     |
| Bit 7           | 1: Power supply voltage error (channels 3 and 4).               |       |     |
| Bit 6           | 1: Reception Error (channels 3 and 4).                          |       |     |
| Bit 5           | 1: EEPROM saving Error (channels 3 and 4).                      |       |     |
| Bit 4           | 1: EEPROM saving blocked (channels 3 and 4).                    |       |     |
| Bit [3:1]       | Reserved.                                                       |       |     |
| Bit 0           | 1: Reading Error CRC EEPROM (chan. 3 and 4).                    |       |     |
| ERR_CH5-6_CH7-8 | Errors: Channels 5, 6 (MSB), Channels 7, 8 (LSB).               | 40038 | R   |
| Bit 15          | 1: Power supply voltage error (channels 5 and 6).               |       |     |
| Bit 14          | 1: Reception Error (channels 5 and 6).                          |       |     |
| Bit 13          | 1: EEPROM saving Error (channels 5 and 6).                      |       |     |
| Bit 12          | 1: EEPROM saving blocked (channels 5 and 6).                    |       |     |
| Bit [11:9]      | Reserved.                                                       |       |     |
| Bit 8           | 1: Reading Error CRC EEPROM (chan. 5 and 6).                    |       |     |
| Bit 7           | 1: Power supply voltage error (channels 7 and 8).               |       |     |
| Bit 6           | 1: Reception Error (channels 7 and 8).                          |       |     |
| Bit 5           | 1: EEPROM saving Error (channels 7 and 8).                      |       |     |
| Bit 4           | 1: EEPROM saving blocked (channels 7 and 8).                    |       |     |
| Bit [3:1]       | Reserved.                                                       |       |     |
| Bit 0           | 1: Reading Error CRC EEPROM (chan. 7 and 8).                    |       |     |
| RESET           | Module Reset.                                                   | 40041 | R/W |
| Bit [15:0]      | Write value 0xCCCC to reset the module.                         |       |     |

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|                             |                                                                                                                                                                                                                                                                                                                   |       |     |
|-----------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-------|-----|
| ADDR <sup>(6) (7)</sup>     | Register for the setting of the module's address and parity control.                                                                                                                                                                                                                                              | 40052 | R/W |
| Bit [15:8]                  | Set the module's address. Permissible values from 0x00 to 0xFF (decimal values in the interval of 0-255). Default address: 1.                                                                                                                                                                                     |       |     |
| Bit [7:0]                   | Set the type of parity control:<br>00000000*: No parity (NONE) (Default)<br>00000001*: Even parity (EVEN)<br>00000010*: Odd parity (ODD)                                                                                                                                                                          |       |     |
| BAUDR <sup>(6) (7)</sup>    | Register for the setting of the baudrate and of the response delay time.                                                                                                                                                                                                                                          | 40053 | R/W |
| Bit [15:8]                  | Set the value of the serial communication speed (baudrate):<br>00000000 (0x00): 4800 Baud<br>00000001 (0x01): 9600 Baud<br>00000010 (0x02): 19200 Baud<br>00000011* (0x03): 38400 Baud<br>00000100 (0x04): 57600 Baud<br>00000101 (0x05): 115200 Baud<br>00000110 (0x06): 1200 Baud<br>00000111 (0x07): 2400 Baud |       |     |
| Bit [7:0]                   | Set the response delay time in characters that represents the number of pauses of 6 characters each to be entered between the end of the Rx message and the start of the Tx message. Default value: 0.                                                                                                            |       |     |
| CONF_CH1_CH2 <sup>(6)</sup> | Configuration of Channels 1 and 2.                                                                                                                                                                                                                                                                                | 40054 | R/W |
| Bit 15                      | Channel 1 Activation:<br>0*: Channel 1 is not active.<br>1*: Channel 1 is active.                                                                                                                                                                                                                                 |       |     |
| Bit 14                      | Channel 2 Activation:<br>0*: Channel 2 is not active.<br>1*: Channel 2 is active.                                                                                                                                                                                                                                 |       |     |
| Bit 13                      | Type of returned Data Item (Channels 1 and 2):<br>0*: Measurement in °C.<br>1*: Measurement in mV.                                                                                                                                                                                                                |       |     |
| Bit 12                      | Cold junction Compensation Channels 1 and 2:<br>0*: not active<br>1*: active                                                                                                                                                                                                                                      |       |     |
| Bit 11                      | Rejection to mains frequency (Channels 1 and 2):<br>0*: 50 Hz<br>1*: 60 Hz                                                                                                                                                                                                                                        |       |     |

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| Bit [10:8]                  | Filter of channels 1 and 2 (for details, refer to the FILTER SETTING section):<br>000: Not present<br>001: Average filter<br>Other settings in FILTER SETTING.                                                           |       |     |
| Bit [7:4]                   | Thermocouple Type of Channel 1 (see THERMOCOUPLE TYPE Table). Default: Type J.                                                                                                                                           |       |     |
| Bit [3:0]                   | Thermocouple Type of Channel 2 (see THERMOCOUPLE TYPE Table). Default: Type J.                                                                                                                                           |       |     |
| CONF_CH3_CH4 <sup>(6)</sup> | Configuration of Channels 3 and 4.                                                                                                                                                                                       | 40055 | R/W |
| Bit [15:0]                  | Register for the configuration of channels 3 and 4. See Register 40054, referring to channels 3 and 4 instead of channels 1 and 2.                                                                                       |       |     |
| CONF_CH5_CH6 <sup>(6)</sup> | Configuration of Channels 5 and 6.                                                                                                                                                                                       | 40056 | R/W |
| Bit [15:0]                  | Register for the configuration of channels 5 and 6. See Register 40054, referring to channels 5 and 6 instead of channels 1 and 2.                                                                                       |       |     |
| CONF_CH7_CH8 <sup>(6)</sup> | Configuration of Channels 7 and 8.                                                                                                                                                                                       | 40057 | R/W |
| Bit [15:0]                  | Register for the configuration of channels 7 and 8. See Register 40054, referring to channels 7 and 8 instead of channels 1 and 2.                                                                                       |       |     |
| AUX_SETTINGS <sup>(6)</sup> | Additional Configuration Register.                                                                                                                                                                                       | 40058 | R/W |
| Bit 15                      | Floating point interpretation:<br>0*: The high word of floating point is transmitted first, then the low word.<br>1*: The low word of floating point is transmitted first, then the high word.                           |       |     |
| Bit [14:8]                  | Reserved and not modifiable.                                                                                                                                                                                             |       |     |
| Bit 7                       | Action in case of fault on channel 1:<br>0*: The temperature/voltage value is forced to the programmed fault value.<br>1*: The temperature/voltage value is frozen at the last acquired value before fault is signalled. |       |     |
| Bit 6                       | Action in case of fault on channel 2 (As Bit 7).                                                                                                                                                                         |       |     |
| Bit 5                       | Action in case of fault on channel 3 (As Bit 7).                                                                                                                                                                         |       |     |
| Bit 4                       | Action in case of fault on channel 4 (As Bit 7).                                                                                                                                                                         |       |     |
| Bit 3                       | Action in case of fault on channel 5 (As Bit 7).                                                                                                                                                                         |       |     |
| Bit 2                       | Action in case of fault on channel 6 (As Bit 7).                                                                                                                                                                         |       |     |
| Bit 1                       | Action in case of fault on channel 7 (As Bit 7).                                                                                                                                                                         |       |     |
| Bit 0                       | Action in case of fault on channel 8 (As Bit 7).                                                                                                                                                                         |       |     |

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| VAL_FAULT_1 <sup>(6)</sup> | Value loaded in case of fault on channel 1 (expressed as 40003) <sup>(8)</sup> Default: 2000,0. | 40059 | R/W |
| VAL_FAULT_2 <sup>(6)</sup> | Value loaded in case of fault on channel 2 (expressed as 40004) <sup>(8)</sup> Default: 2000,0. | 40060 | R/W |
| VAL_FAULT_3 <sup>(6)</sup> | Value loaded in case of fault on channel 3 (expressed as 40005) <sup>(8)</sup> Default: 2000,0. | 40061 | R/W |
| VAL_FAULT_4 <sup>(6)</sup> | Value loaded in case of fault on channel 4 (expressed as 40006) <sup>(8)</sup> Default: 2000,0. | 40062 | R/W |
| VAL_FAULT_5 <sup>(6)</sup> | Value loaded in case of fault on channel 5 (expressed as 40007) <sup>(8)</sup> Default: 2000,0. | 40063 | R/W |
| VAL_FAULT_6 <sup>(6)</sup> | Value loaded in case of fault on channel 6 (expressed as 40008) <sup>(8)</sup> Default: 2000,0. | 40064 | R/W |
| VAL_FAULT_7 <sup>(6)</sup> | Value loaded in case of fault on channel 7 (expressed as 40009) <sup>(8)</sup> Default: 2000,0. | 40065 | R/W |
| VAL_FAULT_8 <sup>(6)</sup> | Value loaded in case of fault on channel 8 (expressed as 40010) <sup>(8)</sup> Default: 2000,0. | 40066 | R/W |

| TABLE: THERMOCOUPLE TYPE FOR THE SETTING OF REGISTERS 40054..40057 |   |   |   |                              |   |   |   |     |                              |  |  |                   |  |  |  |
|--------------------------------------------------------------------|---|---|---|------------------------------|---|---|---|-----|------------------------------|--|--|-------------------|--|--|--|
| BIT                                                                |   |   |   | THERMOCOUPLE TYPE            |   |   |   | BIT |                              |  |  | THERMOCOUPLE TYPE |  |  |  |
| 7                                                                  | 6 | 5 | 4 | TC for Channels 1, 3, 5 or 7 | 3 | 2 | 1 | 0   | TC for Channels 2, 4, 6 or 8 |  |  |                   |  |  |  |
| 0                                                                  | 0 | 0 | 0 | TC J                         | 0 | 0 | 0 | 0   | TC J                         |  |  |                   |  |  |  |
| 0                                                                  | 0 | 0 | 1 | TC K                         | 0 | 0 | 0 | 1   | TC K                         |  |  |                   |  |  |  |
| 0                                                                  | 0 | 1 | 0 | TC R                         | 0 | 0 | 1 | 0   | TC R                         |  |  |                   |  |  |  |
| 0                                                                  | 0 | 1 | 1 | TC S                         | 0 | 0 | 1 | 1   | TC S                         |  |  |                   |  |  |  |
| 0                                                                  | 1 | 0 | 0 | TC T                         | 0 | 1 | 0 | 0   | TC T                         |  |  |                   |  |  |  |
| 0                                                                  | 1 | 0 | 1 | TC B                         | 0 | 1 | 0 | 1   | TC B                         |  |  |                   |  |  |  |
| 0                                                                  | 1 | 1 | 0 | TC E                         | 0 | 1 | 1 | 0   | TC E                         |  |  |                   |  |  |  |
| 0                                                                  | 1 | 1 | 1 | TC N                         | 0 | 1 | 1 | 1   | TC N                         |  |  |                   |  |  |  |
| 1                                                                  | x | x | x | Not implemented              | 1 | x | x | x   | Not implemented              |  |  |                   |  |  |  |

<sup>(6)</sup> The value is memorized in EEPROM memory.  
<sup>(7)</sup> The effect is at the reset (hardware or software) of the module.  
<sup>(8)</sup> The value in registers 40059..40066 is copied respectively in registers 40003..40010, when the corresponding bit in register 40058 is 0. The same value is converted in floating-point, and copied on the corresponding floating-point register.



Disposal of Electrical & Electronic Equipment (Applicable throughout the European Union and other European countries with separate collection programs)  
This symbol, found on your product or on its packaging, indicates that this product should not be treated as household waste when you wish to dispose of it. Instead, it should be handed over to an applicable collection point for the recycling of electrical and electronic equipment. By ensuring this product is disposed of correctly, you will help prevent potential negative consequences to the environment and human health, which could otherwise be caused by inappropriate disposal of this product. The recycling of materials will help to conserve natural resources. For more detailed information about the recycling of this product, please contact your local city office, waste disposal service or the retail store where you purchased this product.

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