



CALEC[®] ST III

KNX[®] TP1

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1 Généralités

1.1 Contenu

Ce descriptif de communication contient uniquement des informations spécifiques sur le CALEC® ST III avec le module KNX® TP1. Les informations plus détaillées figurent dans la documentation technique du CALEC® ST III.

Vous trouverez des **documents plus détaillés** sur nos sites web.

LIEN!



Clients internationaux : <https://integra-metering.com/product/calec-st-iii-standard-smart/>

Clients allemands : <https://aquametro.de/product/calec-st-iii-standard-smart/>

Clients suisses (DE) : <https://aquametro.com/product/calec-st-iii-standard-smart/>

Clients suisses (FR) : <https://aquametro.com/fr/product/calec-st-iii-standard-smart/>

Vous trouverez les informations générales sur le KNX® sur www.knx.org

1.2 Définition

En tant que bus de terrain pour l'automatisation des bâtiments, KNX® est une norme ouverte pour la technique des systèmes domotiques et immotiques. Il est homologué selon les normes européennes CENELEC EN 50090 et CEN EN 13321-1 ainsi que la norme chinoise GB / T 20965 et la norme internationale ISO / IEC 14543-3. Avec KNX®, le chauffage, l'éclairage, les stores, la ventilation et la technique de sécurité peuvent être commandés de manière adaptée à toutes les disciplines et en fonction de toutes les exigences.

1.3 Marques déposées et noms commerciaux

KNX® ainsi que le **logo KNX®** sont des marques déposées de l'association KNX de Bruxelles. Le nom de l'**association KNX** est un nom commercial enregistré.

1.4 Certification selon standard KNX®

Le CALEC® ST III avec le module KNX® TP1 est certifié selon les normes d'essai suivantes :

Normes d'essai

08_07_01 System Conformance Testing - Interworking Tests v01.02.01 AS

2 Hardware

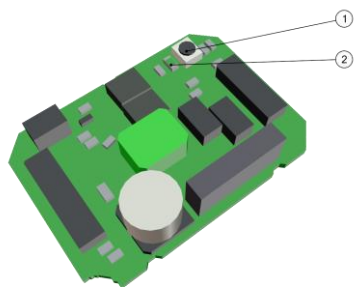
2.1 L'interface de communication

La société INTEGRA METERING AG utilise une interface de communication imposée par la technologie KNX® du câblage Twisted-Pair (2 conducteurs).

CALEC® ST III : Vue d'ensemble des fonctions supportées

Fonction	Paramètre	Valeur description	Plus d'informations
ID fabricant	403	-	Cet identifiant est valable pour INTEGRA METERING AG
Type d'appareil	050.060	-	-
Adresse individuelle	15.15.255	Réglage usine	-
Protocole de données	KNX® TP1	-	TP1 (paire torsadée à 2 fils)
Version	0xc0 Volume 0xc1 Mass 0xc2 Flow 0xc4 BDE 0xc7 TGR 0xc8 BDV 0xc9 DTF	-	-
Version de programme	1.1	-	-
Débit en bauds	9600 bits/s	-	-
Courant bus	10 mA	-	-

2.2 Bouton de programmation et LED du participant



① Bouton de programmation

② LED du participant

Le circuit imprimé est muni d'une LED du participant. Elle permet d'interpréter l'état du système via les codes clignotants suivants:

Codes clignotants de la LED du participant

A: Fonctionnement normal 	Lors de la mise en marche, la LED s'allume brièvement (env. 1 sec) et s'éteint ensuite. Le contrôleur KNX® est configuré et fonctionne correctement.
B: Mode programmation (adresse individuelle) 	Après activation du bouton de programmation, la LED reste allumée jusqu'à ce que le processus de programmation soit terminé.
C: Programmation (programme d'application) 	Après la fin du processus de chargement, la LED s'allume brièvement (env. 1 sec) et s'éteint ensuite.

3 Mise en service

3.1 Mise en service du CALEC® ST III avec l'interface KNX® TP1

Après avoir connecté le câble KNX aux bornes A11 (rouge) et B11 (noir) du module #1 ou A21 (rouge) et B21 (noir) du module #2 ou encore des connexions en guirlande encore possibles sur les bornes A12 (rouge) B12 (noir) pour le module #1.

A22 (rouge) B22 (noir) pour le module #2, les étapes suivantes doivent être effectuées :

Instructions étape par étape		
Étape	Mesure	Description
1	Configuration du CALEC® ST III pour l'utilisation de l'application	Vous trouverez les informations correspondantes dans le mode d'emploi du CALEC® ST III.
2	Configuration du CALEC® ST III aux fins de l'utilisation du KNX®	Cette étape ne doit pas être effectuée. Tous les paramètres sont réglés via l'ETS5®. Le CALEC® ST III ne dispose d'aucun menu KNX.
3	Configuration du module KNX® via ETS5®	Selon cette description Les commandes, paramètres et objets de communication sont décrits dans les chapitres suivants

3.2 Commandes CALEC® ST III KNX®

Outre les fonctions cycliques internes, l'utilisateur du réseau dispose des commandes suivantes:

3.2.1 LED du participant: «Commande – Clignoter»

Pour localiser un appareil dont l'adresse individuelle est connue, la technique du KNX® met à disposition une dite «Commande Clignoter». Lorsqu'elle est exécutée via l'ETS5®, le nœud concerné réagit de manière optique. Le CALEC® ST III prend en charge la commande du réseau «Clignoter» avec le comportement suivant:

- La LED du participant clignote à une fréquence de 3 Hz jusqu'à ce que la «Commande Clignoter» soit désactivée via l'ETS5®.

Le «clignotement» peut être utilisé comme aide auxiliaire par le personnel d'entretien pour localiser plus facilement l'appareil recherché.

3.2.2 LED du participant: «Commande Marche/Arrêt»

La LED de l'appareil peut également être allumée et éteinte de manière statique. Le CALEC® ST III prend en charge la commande réseau «Marche / Arrêt» avec le comportement suivant:

- La LED du participant s'allume lors de l'activation de la touche «Marche»
- La LED du participant s'éteint lors de l'activation de la touche «Arrêt»

La «fonction Marche / Arrêt» peut être utilisée comme aide auxiliaire par le personnel d'entretien pour localiser plus facilement l'appareil recherché.

3.2.3 Commande Geler (Freeze)

Via l'objet de communication «CO 134 Freeze CO» (voir chapitre 4.2 Objets de communication pris en charge par KNX®), le CALEC® ST III effectue un gel immédiat de l'état des compteurs.

Si la commande 'freeze' est effectuée via le réseau, la date d'enregistrement et tous les états de compteurs actifs sont immédiatement enregistrés dans l'unité de calcul. Les valeurs ainsi gelées peuvent ensuite être lues avec l'objet de communication «CO 135 Query datas CO» via la valeur 0. Un délai de jusqu'à 6 secondes doit à cet effet être observé.

Les données gelées (Freeze) ne sont pas disponibles via l'affichage de l'unité de calcul.

3.2.4 Commandes relais à distance

Si la programmation de la fonction des deux relais est réglée comme suit:

Menu de commande: OUTPUTS  NR: 1 ou 2  FCT: M-BUS 

Ils peuvent être activés ou désactivés via les commandes à distance :

Relais 1	L'objet de communication «CO 137 Relais 1 – Le commutateur Marche/Arrêt commande l'état du relais 1
Relais 2	L'objet de communication «CO 139 Relais 2 – Le commutateur Marche/Arrêt commande l'état du relais 2

3.3 Les valeurs de la mémoire

Le CALEC® ST III ne met pas à disposition sous KNX® tous les jeux de données de la mémoire disponibles dans l'unité de calcul en tant que variables.

Outre l'état des compteurs et les valeurs instantanées, les jeux de données suivants sont mis à disposition :

- Les données de l'enregistreur pour la totalité des 500 enregistreurs de données. La lecture s'effectue via l'objet de communication «CO 135 Query datas CO» dans une plage de valeurs de 1 - 500
- Les données gelées (Freeze). La lecture s'effectue via l'objet de communication «CO 135 Query datas CO» via la valeur 0

4 Paramètres et objets CALEC® ST III KNX®

4.1 Paramètres pris en charge par KNX®

Le CALEC® ST III avec KNX® TP1 prend en charge les paramètres suivants. Ils sont mis à disposition pour la configuration des objets de communication du module KNX®. Le paramétrage est effectué exclusivement via l'ETS5® et est mis à disposition en fonction de la variante d'appareil.

General		
Paramètre	Valeur	Description
Device type	Standard Mass Flow BDE TGR BDV DTF	Choix de la variante d'appareil CALEC® ST III
Customer text field	Yes No	Active ou désactive la configuration du paramètre champ Texte 1 à champ Texte 4
Text field 1	A<- L1 ->B	Champ de texte libre de 10 caractères max
Text field 2	C<- L2 ->D	Champ de texte libre de 10 caractères max
Text field 3	E<- L3 ->F	Champ de texte libre de 10 caractères max
Text field 4	G<- L4 ->H	Champ de texte libre de 10 caractères max
Delay before starting to send after restart	1s 4min	Réglable
Delay for cyclical sending	No cyclical sending 1s 18h	Réglable et désactivable

General / Sending		
Paramètre	Valeur	Description
Objets de communication «General» CO - numéro 0	Never On restart On restart + cyclic	Comportement d'envoi des objets de communication «General»
Objets de communication «General» CO - numéro 1 – 16	Never On restart On restart + cyclic On restart + on change	Comportement d'envoi des objets de communication «General»
Limite de la vitesse d'envoi pour les objets de communication «General» CO - numéro 1 – 2 CO - numéro 4 – 16	No limitation 1s 1min	Réglable et désactivable

Standard type		
Paramètre	Valeur	Description
Sending current and instant values	Yes No	Active ou désactive les relevés et compteur et les valeurs instantanées
Sending logger values	Yes No	Active ou désactive les valeurs de l'enregistreur
Sending freeze values	Yes No	Active ou désactive les valeurs gelées

Standard type / Current and Instant values		
Paramètre	Valeur	Description
Objets de communication «Current values» CO - numéro 17 – 44	Never On restart On restart + cyclic On restart + on change	Comportement d'envoi des objets de communication «Current values»
Limite de vitesse d'envoi des objets de communication «Current values» CO - numéro 17 – 44	No limitation 1s 1min	Réglable et désactivable
Objets de communication «Instant values» CO - numéro 45 – 51	Never On restart On restart + cyclic On restart + on change	Comportement d'envoi des objets de communication «Instant values»
Limite de vitesse d'envoi des objets de communication «Instant values» CO - numéro 45 – 51	No limitation 1s 1min	Réglable et désactivable

Standard type / Logger values		
Paramètre	Valeur	Description
Objets de communication «Logger» CO - numéro 52 – 92	Never On request	Comportement d'envoi des objets de communication «Logger»
Limite de vitesse d'envoi des objets de communication «Logger» CO - numéro 52 – 92	No limitation 1s 1min	Réglable et désactivable

Standard type / Freeze values		
Paramètre	Valeur	Description
Objets de communication «Freeze» CO - numéro 93 – 133	Never On request	Comportement d'envoi des objets de communication «Freeze»
Limite de vitesse d'envoi des objets de communication «Freeze» CO - numéro 93 – 133	No limitation 1s 1min	Réglable et désactivable

Relay 1

Paramètre	Valeur	Description
Use relay CO - numéro 137	Yes No	Active ou désactive le contact de commutation du relais 1

Relay 2

Paramètre	Valeur	Description
Use relay CO - numéro 139	Yes No	Active ou désactive le contact de commutation du relais 2

4.2 Objets de communication pris en charge par KNX®

Le CALEC® ST III avec KNX® TP1 prend en charge les objets de communications suivants. Ils sont mis à disposition en fonction de la variante d'appareil.

General information											
Nr.	Name	Function	Length	Flags	Volume	Mass	Flow	BDE	TGR	BDV	DTF
					X	X	X	X	X	X	X
0	General - Device operating status	Inactive / Active	1 bit, 1.002	R/C/T	X	X	X	X	X	X	X
<p>1: Device is running 0: Device is not running The KNX option board can send "1" for signalling activity. This CO can be used for monitoring the device if set to be sent cyclically, so failing devices can be detected.</p>											
1	General - Communication failure status	Alarm / No alarm	1 bit, 1.002	R/C/T	X	X	X	X	X	X	X
<p>0: Communication between KNX option board and calculator is OK 1: Communication between KNX option board and calculator is erroneous</p> <p>The KNX option board is constantly communicating with the calculator. If communication is erroneous, KNX option board will try to repair it (for ex. If communication speed has been changed manually in calculator, the KNX option board will set it back to initial speed). Actual communication status is available on this CO.</p>											
2	General - Device type status	Calculator type (ASCII)	Max. 14 chars, 16.000	R/C/T	X	X	X	X	X	X	X
<p>"Standard": Calculator type is 0xC0, standard energy calculator with volume display "Mass": Calculator type is 0xC1, standard energy calculator with mass display "Flow": Calculator type is 0xC2, flowmeter "BDE": Calculator type is 0xC4, bidirectional energy measurement driven by temperature difference "TGR": Calculator type is 0xC7, energy calculator with reference temperature controlled tariffs "BDV": Calculator type is 0xC8, bidirectional energy measurement driven by an external control signal "DTF": Calculator type is 0xC9, double-tariff energy calculator "Unknown": Calculator type is none of above, or could not be read out</p> <p>KNX option board is constantly communicating with calculator. Also device type of calculator is queried, and displayed as user readable ASCII string.</p> <p>Rem.: The monitored device type is the real one communicated by calculator, and can be different from type set by user within parameters. Rem.: If device type could not be read out of calculator (missing power supply, faulty communication, ...), this CO will display "Unknown" as device type.</p>											
3	General - Medium type status	Metering medium type	1 byte, 20.114	R/C/T	X	X	X	X	X	X	X
<p>4: Heat (outlet) 7: Water meter 12: Heat (inlet) \$FF: Medium could not be read out</p> <p>Rem.: If device medium could not be read out of calculator (missing power supply, faulty communication, ...), this CO will send value \$FF as device type.</p>											
4	General - State of counters status	Counter status	1 byte, 21.001	R/C/T	X	X	X	X	X	X	X
<p>0: Counter is OK 1: Counter is out of service 2: Counter is faulty 8: Counter is in alarm</p> <p>The Status is cyclically read out of calculator. Status "Out of service" can also indicate communication between KNX option board and calculator is erroneous</p>											

General information

Nr.	Name	Function	Length	Flags	Volume	Mass	Flow	BDE	TGR	BDV	DTF
5	General - Actual date and time / Actual date and time status	Actual date and time	8 bytes, 19.001	R/W/C /T/U	X	X	X	X	X	X	X
<p>This object monitors the internal date and time counter that are continuously running within calculator. Also, this object can be used to update internal date and time of calculator.</p>											
6	General - Operating time counter status	Calculator operating time counter	4 bytes, 13.100	R/C/T	X	X	X	X	X	X	X
<p>This object monitors calculator operating time. Value is in seconds.</p> <p>Rem.: The calculator's operating time counter has 1 hour resolution. So, only values of complete hours (3600 sec., 7200 sec.) will be sent on KNX bus.</p> <p>Rem.: 2147483647 Sec. (approx. 68 years) denotes invalid value (for example, value could not be read out of calculator)</p>											
7	General - Time-off counter status	Calculator time-off counter	4 bytes, 13.100	R/C/T	X	X	X	X	X	X	X
<p>This object monitors calculator off-time. Value is in seconds.</p> <p>Rem.: The calculator's off time counter has 1 hour resolution. So, only values of complete hours (3600 sec., 7200 sec.) will be sent on KNX bus.</p> <p>Rem.: 2147483647 Sec. (approx. 68 years) denotes invalid value (for example, value could not be read out of calculator)</p>											
8	General - Alarm counter status	Calculator alarm time counter	4 bytes, 13.100	R/C/T	X	X	X	X	X	X	X
<p>This object monitors calculator alarm time. Value is in seconds.</p> <p>Rem.: The calculator's alarm time counter has 1 hour resolution. So, only value of complete hours (3600 sec., 7200 sec.) will be sent on KNX bus.</p> <p>Rem.: 2147483647 Sec. (approx. 68 years) denotes invalid value (for example, value could not be read out of calculator)</p>											
9	General - Serial number status	Calculator serial number	14 bytes, 16.000	R/C/T	X	X	X	X	X	X	X
<p>This object monitors actual serial number read out of calculator.</p> <p>KNX option board is constantly communicating with calculator. Also, serial number of calculator is queried, and displayed as user readable ASCII string.</p> <p>The serial number will be preceded by "Ser.". E.g: "Ser.05476107"</p> <p>Rem.: "Unknown" denotes invalid value (for example, value could not be read out of calculator)</p>											
10	General - Manufacturing date status	Manufacturing date	8 bytes, 19.001	R/C/T	X	X	X	X	X	X	X
<p>This object monitors manufacturing date read out of calculator.</p> <p>KNX option board is constantly communicating with calculator. Also, manufacturing date of calculator is queried, and displayed on KNX bus.</p> <p>Rem.: Value 0x00 00 00 00 00 00 BE 00 denotes invalid value (for example, value could not be read out of calculator). Value will be noticed as faulty.</p>											
11	General - Customer text field 1 status	Custom text field 1/4	14 bytes, 16.000	R/C/T	X	X	X	X	X	X	X
<p>KNX option board is constantly communicating with calculator. Also, customer text of calculator is queried, and displayed as user readable ASCII string.</p> <p>Rem.: The customer text contains 40 chars, using 4 lines of 10 chars. This object will monitor the first line only.</p> <p>Rem.: In case string could not be read out of calculator, value "Unknown" will be used.</p>											

General information

Nr.	Name	Function	Length	Flags	Volume	Mass	Flow	BDE	TGR	BDV	DTF
					X	X	X	X	X	X	X
12	General - Customer text field 2 status	Custom text field 2/4	14 bytes, 16.000	R/C/T	X	X	X	X	X	X	X
<p>KNX option board is constantly communicating with calculator. Also, customer text of calculator is queried, and displayed as user readable ASCII string.</p> <p>Rem.: The customer text contains 40 chars, using 4 lines of 10 chars. This object will monitor the second line only. Rem.: In case string could not be read out of calculator, value "Unknown" will be used.</p>											
13	General - Customer text field 3 status	Custom text field 3/4	14 bytes, 16.000	R/C/T	X	X	X	X	X	X	X
<p>KNX option board is constantly communicating with calculator. Also, customer text of calculator is queried, and displayed as user readable ASCII string.</p> <p>Rem.: The customer text contains 40 chars, using 4 lines of 10 chars. This object will monitor the third line only. Rem.: In case string could not be read out of calculator, value "Unknown" will be used.</p>											
14	General - Customer text field 4 status	Custom text field 4/4	14 bytes, 16.000	R/C/T	X	X	X	X	X	X	X
<p>KNX option board is constantly communicating with calculator. Also, customer text of calculator is queried, and displayed as user readable ASCII string.</p> <p>Rem.: The customer text contains 40 chars, using 4 lines of 10 chars. This object will monitor the last line only. Rem.: In case string could not be read out of calculator, value "Unknown" will be used.</p>											
15	General - Hardware version status	Hardware version	14 bytes, 16.000	R/C/T	X	X	X	X	X	X	X
<p>KNX option board is constantly communicating with calculator. Also, hardware version of calculator is queried, and displayed as user readable ASCII string. The hardware version will be preceded by "HW ". E.g: "HW 02.12.00.00"</p> <p>Rem.: In case string could not be read out of calculator, value "Unknown" will be used.</p>											
16	General - Firmware version status	Firmware version	14 bytes, 16.000	R/C/T	X	X	X	X	X	X	X
<p>KNX option board is constantly communicating with calculator. Also, firmware version of calculator is queried, and displayed as user readable ASCII string. The firmware version will be preceded by "FW ". E.g: "FW 02.00.06"</p> <p>Rem.: In case string could not be read out of calculator, value "Unknown" will be used.</p>											

Current values

Nr.	Name	Function	Length	Flags	Volume	Mass	Flow	BDE	TGR	BDV	DTF
17	Current values - Energy status	Current energy	4 bytes, 13.013	R/C/T	X	X			X		X
<p>This object monitors current energy calculated by device. Value is in kWh.</p> <p>Rem.: If value cannot be read out of calculator, value "0" will be used instead.</p>											
18	Current values - Energy register status	Current energy	6 bytes, 229.001	R/C/T	X	X			X		X
<p>This object monitors current energy calculated by device. It is the same value as CO Nr. 17, but using different format, including additional information's (resolution, status)</p> <p>Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
19	Current values - Energy positive status	Current positive energy	4 bytes, 13.013	R/C/T				X		X	
<p>This object monitors current positive energy calculated by device. Value is in kWh.</p> <p>Rem.: If value cannot be read out of calculator, value "0" will be used instead.</p>											
20	Current values - Energy positive register status	Current positive energy	6 bytes, 229.001	R/C/T				X		X	
<p>This object monitors current positive energy calculated by device. It is the same value as CO Nr. 19, but using different format, including additional information's (resolution, status)</p> <p>Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
21	Current values - Energy negative status	Current negative energy	4 bytes, 13.013	R/C/T				X		X	
<p>This object monitors current negative energy calculated by device. Value is in kWh.</p> <p>Rem.: If value cannot be read out of calculator, value "0" will be used instead.</p>											
22	Current values - Energy negative register status	Current negative energy	6 bytes, 229.001	R/C/T				X		X	
<p>This object monitors current negative energy calculated by device. It is the same value as CO Nr. 21, but using different format, including additional information's (resolution, status)</p> <p>Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
23	Current values - Energy tarif 1 status	Current tarif 1 energy	4 bytes, 13.013	R/C/T					X		X
<p>This object monitors current tarif 1 energy calculated by device. Value is in kWh.</p> <p>Rem.: If value cannot be read out of calculator, value "0" will be used instead.</p>											
24	Current values - Energy tarif 1 register status	Current tarif 1 energy	6 bytes, 229.001	R/C/T					X		X
<p>This object monitors current tarif 1 energy calculated by device. It is the same value as CO Nr. 23, but using different format, including additional information's (resolution, status)</p> <p>Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
25	Current values - Energy tarif 2 status	Current tarif 2 energy	4 bytes, 13.013	R/C/T					X		
<p>This object monitors current tarif 2 energy calculated by device. Value is in kWh.</p> <p>Rem.: If value cannot be read out of calculator, value "0" will be used instead.</p>											

Current values

Nr.	Name	Function	Length	Flags	Volume	Mass	Flow	BDE	TGR	BDV	DTF
26	Current values - Energy tarif 2 register status	Current tarif 2 energy	6 bytes, 229.001	R/C/T					X		
<p>This object monitors current tarif 2 energy calculated by device. It is the same value as CO Nr. 25, but using different format, including additional information's (resolution, status)</p> <p>Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
27	Current values - Volume status	Current volume	4 bytes, 14.076	R/C/T	X				X	X	
<p>This object monitors current volume calculated by device. Value is in m³.</p> <p>Rem.: If value cannot be read out of calculator, value "0" will be used instead.</p>											
28	Current values - Volume register status	Current volume	6 bytes, 229.001	R/C/T	X				X	X	
<p>This object monitors current volume calculated by device. It is the same value as CO Nr. 27, but using different format, including additional information's (resolution, status)</p> <p>Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
29	Current values - Volume positive status	Current positive volume	4 bytes, 14.076	R/C/T				X		X	
<p>This object monitors current positive volume calculated by device. Value is in m³.</p> <p>Rem.: If value cannot be read out of calculator, value "0" will be used instead.</p>											
30	Current values - Volume positive register status	Current positive volume	6 bytes, 229.001	R/C/T				X		X	
<p>This object monitors current positive volume calculated by device. It is the same value as CO Nr. 29, but using different format, including additional information's (resolution, status)</p> <p>Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
31	Current values - Volume negative status	Current negative volume	4 bytes, 14.076	R/C/T				X		X	
<p>This object monitors current negative volume calculated by device. Value is in m³.</p> <p>Rem.: If value cannot be read out of calculator, value "0" will be used instead.</p>											
32	Current values - Volume negative register status	Current negative volume	6 bytes, 229.001	R/C/T				X		X	
<p>This object monitors current negative volume calculated by device. It is the same value as CO Nr. 31, but using different format, including additional information's (resolution, status)</p> <p>Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
33	Current values - Volume tarif 1 status	Current tarif 1 volume	4 bytes, 14.076	R/C/T							X
<p>This object monitors current tarif 1 volume calculated by device. Value is in m³.</p> <p>Rem.: If value cannot be read out of calculator, value "0" will be used instead.</p>											

Current values

Nr.	Name	Function	Length	Flags	Volume	Mass	Flow	BDE	TGR	BDV	DTF
35	Current values - Mass status	Current mass	4 bytes, 14.051	R/C/T		X					
<p>This object monitors current mass calculated by device. Value is in kg.</p> <p>Rem.: If value cannot be read out of calculator, value "0" will be used instead.</p>											
36	Current values - Mass register status	Current mass	6 bytes, 229.001	R/C/T		X					
<p>This object monitors current mass calculated by device. It is the same value as CO Nr. 35, but using different format, including additional information's (resolution, status)</p> <p>Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
37	Current values - Submeter 1 status	Current submeter 1 pulses	4 bytes, 13.001	R/C/T			X				
<p>This object monitors current submeter 1 calculated by device. Value is in counter pulses.</p> <p>Rem.: If value cannot be read out of calculator, value "0" will be used instead.</p>											
38	Current values - Submeter 1 register status	Current submeter 1 pulses	6 bytes, 229.001	R/C/T			X				
<p>This object monitors current submeter 1 calculated by device. It is the same value as CO Nr. 37, but using different format, including additional information's (resolution, status)</p> <p>Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
41	Current values - Submeter 2 status	Current submeter 2 pulses	4 bytes, 13.001	R/C/T	X	X	X	X	X	X	X
<p>This object monitors current submeter 2 calculated by device. Value is in counted pulses.</p> <p>Rem.: If value cannot be read out of calculator, value "0" will be used instead.</p>											
42	Current values - Submeter 2 register status	Current submeter 2 pulses	6 bytes, 229.001	R/C/T	X	X	X	X	X	X	X
<p>This object monitors current submeter 2 calculated by device. It is the same value as CO Nr. 41, but using different format, including additional information's (resolution, status)</p> <p>Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
43	Current values - Submeter 3 status	Current submeter 3 pulses	4 bytes, 13.001	R/C/T	X	X	X	X	X	X	X
<p>This object monitors current submeter 3 calculated by device. Value is in counted pulses.</p> <p>Rem.: If value cannot be read out of calculator, value "0" will be used instead.</p>											
44	Current values - Submeter 3 register status	Current submeter 3 pulses	6 bytes, 229.001	R/C/T	X	X	X	X	X	X	X
<p>This object monitors current submeter 3 calculated by device. It is the same value as CO Nr. 43, but using different format, including additional information's (resolution, status)</p> <p>Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											

Instant values

Nr.	Name	Function	Length	Flags	Volume	Mass	Flow	BDE	TGR	BDV	DTF
45	Instant values - Power status	Instant power	4 bytes, 14.036	R/C/T	X	X	X	X	X	X	X
<p>This object monitors instant power calculated by device. Value is in W heat flow rate.</p> <p>Rem.: If value cannot be read out of calculator, value "0" will be used instead.</p>											
46	Instant values - Volume flowrate status	Instant volume flowrate	2 bytes, 9.025	R/C/T	X		X	X	X	X	X
<p>This object monitors instant volume flowrate calculated by device. Value is in l/h.</p> <p>Rem.: If value cannot be read out of calculator, value "0" will be used instead.</p>											
47	Instant values - Mass flowrate status	Instant mass flowrate	4 bytes, 14.052	R/C/T		X					
<p>This object monitors instant mass flowrate calculated by device. Value is in kg/s.</p> <p>Rem.: If value cannot be read out of calculator, value "0" will be used instead.</p>											
48	Instant values - Flow temperature status	Instant flow temperature	2 bytes, 9.001	R/C/T	X	X		X	X	X	X
<p>This object monitors instant flow temperature measured by device. Value is in °C.</p> <p>Rem.: Value 0x7FFF (670760.96°C) denotes invalid value.</p> <p>Rem.: During data conversion there may be rounding errors or truncations, depending on data encoding Size and resolution. So, this value may differ slightly from value visible on calculator display.</p>											
49	Instant values - Return temperature status	Instant return temperature	2 bytes, 9.001	R/C/T	X	X		X	X	X	X
<p>This object monitors instant flow temperature measured by device. Value is in °C.</p> <p>Rem.: Value 0x7FFF (670760.96°C) denotes invalid value.</p> <p>Rem.: During data conversion there may be rounding errors or truncations, depending on data encoding Size and resolution. So, this value may differ slightly from value visible on calculator display.</p>											
50	Instant values - Temperature difference status	Instant temperature difference	2 bytes, 9.002	R/C/T	X	X		X	X	X	X
<p>This object monitors instant temperature difference between flow and return, calculated by device. Value is in °K.</p> <p>Rem.: Value 0x7FFF (670760.96°C) denotes invalid value.</p> <p>Rem.: During data conversion there may be rounding errors or truncations, depending on data encoding Size and resolution. So, this value may differ slightly from value visible on calculator display or calculated by difference of CO's Nr. 48 and 49.</p>											
51	Instant values - Density status	Instant density	4 bytes, 14.017	R/C/T	X	X		X	X	X	X
<p>This object monitors instant liquid density, calculated by device. Value is in Kg/m³.</p> <p>Rem.: If value cannot be read out of calculator, value "0" will be used instead.</p>											

Logger values

Nr.	Name	Function	Length	Flags	Volume	Mass	Flow	BDE	TGR	BDV	DTF
52	Logger - Date/Time status	Date/Time of Queried Datas	8 bytes, 19.001	C/T	X	X	X	X	X	X	X
<p>During normal operation, calculator can store plenty of values inside internal memory. These logger values can be read out by use of CO Nr. 135, Query Datas.</p> <p>This object indicates date and time associated to logged data's on CO's Nr. 53...92 that will be sent after same query.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
53	Logger - Energy status	Energy value at storage	4 bytes, 13.013	C/T	X	X		X	X	X	X
<p>This object monitors logged energy value calculated by device. Value is in kWh.</p> <p>Rem.: Date and time of storing is available on CO Nr. 52.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
54	Logger - Energy register status	Energy value at storage	6 bytes, 229.001	C/T	X	X		X	X	X	X
<p>This object monitors logged energy value calculated by device. It is the same value as CO Nr. 53, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 52.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p> <p>Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
55	Logger - Energy positive status	Positive energy value at storage	4 bytes, 13.013	C/T				X		X	
<p>This object monitors logged positive energy value calculated by device. Value is in kWh.</p> <p>Rem.: Date and time of storing is available on CO Nr. 52.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
56	Logger - Energy positive register status	Positive energy value at storage	6 bytes, 229.001	C/T	X	X	X	X	X	X	X
<p>This object monitors logged positive energy value calculated by device. It is the same value as CO Nr. 55, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 52.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p> <p>Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
57	Logger - Energy negative status	Negative energy value at storage	4 bytes, 13.013	C/T				X		X	
<p>This object monitors logged negative energy value calculated by device. Value is in kWh.</p> <p>Rem.: Date and time of storing is available on CO Nr. 52.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
58	Logger - Energy negative register status	Negative energy value at storage	6 bytes, 229.001	C/T				X		X	
<p>This object monitors logged negative energy value calculated by device. It is the same value as CO Nr. 57, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 52.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p> <p>Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											

Logger values

Nr.	Name	Function	Length	Flags	Volume	Mass	Flow	BDE	TGR	BDV	DTF
59	Logger - Energy tarif 1 status	Tarif 1 energy value at storage	4 bytes, 13.013	C/T					X		X
<p>This object monitors logged tarif 1 energy value calculated by device. Value is in kWh.</p> <p>Rem.: Date and time of storing is available on CO Nr. 52. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
60	Logger - Energy tarif 1 register status	Tarif 1 energy value at storage	6 bytes, 229.001	C/T					X		X
<p>This object monitors logged tarif 1 energy value calculated by device. It is the same value as CO Nr. 59, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 52. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135. Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
61	Logger - Energy tarif 2 status	Tarif 2 energy value at storage	4 bytes, 13.013	C/T					X		
<p>This object monitors logged tarif 2 energy value calculated by device. Value is in kWh.</p> <p>Rem.: Date and time of storing is available on CO Nr. 52. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
62	Logger - Energy tarif 2 register status	Tarif 2 energy value at storage	6 bytes, 229.001	C/T					X		
<p>This object monitors logged tarif 2 energy value calculated by device. It is the same value as CO Nr. 61, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 52. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135. Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
63	Logger - Volume status	Volume at storage	4 bytes, 14.076	C/T	X				X		X
<p>This object monitors logged volume value calculated by device. Value is in m³.</p> <p>Rem.: Date and time of storing is available on CO Nr. 52. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
64	Logger - Volume register status	Volume at storage	6 bytes, 229.001	C/T	X				X		X
<p>This object monitors logged volume value calculated by device. It is the same value as CO Nr. 63, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 52. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135. Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
65	Logger - Volume positive status	Positive volume at storage	4 bytes, 14.076	C/T				X		X	
<p>This object monitors logged positive volume value calculated by device. Value is in m³.</p> <p>Rem.: Date and time of storing is available on CO Nr. 52. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											

Logger values

Nr.	Name	Function	Length	Flags	Volume	Mass	Flow	BDE	TGR	BDV	DTF
66	Logger - Volume positive register status	Positive volume at storage	6 bytes, 229.001	C/T				X		X	
<p>This object monitors logged positive volume value calculated by device. It is the same value as CO Nr. 65, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 52. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135. Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
67	Logger - Volume negative status	Negative volume at storage	4 bytes, 14.076	C/T				X		X	
<p>This object monitors logged negative volume value calculated by device. Value is in m³.</p> <p>Rem.: Date and time of storing is available on CO Nr. 52. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
68	Logger - Volume negative register status	Negative volume at storage	6 bytes, 229.001	C/T				X		X	
<p>This object monitors logged negative volume value calculated by device. It is the same value as CO Nr. 67, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 52. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135. Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
69	Logger - Volume tarif 1 status	Tarif 1 volume at storage	4 bytes, 14.076	69							X
<p>This object monitors logged tarif 1 volume value calculated by device. Value is in m³.</p> <p>Rem.: Date and time of storing is available on CO Nr. 52. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
70	Logger - Volume tarif 1 register status	Tarif 1 volume at storage	6 bytes, 229.001	C/T							X
<p>This object monitors logged tarif 1 volume value calculated by device. It is the same value as CO Nr. 69, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 52. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135. Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
71	Logger - Mass status	Mass at storage	4 bytes, 14.051	C/T		X					
<p>This object monitors logged mass value calculated by device. Value is in kg.</p> <p>Rem.: Date and time of storing is available on CO Nr. 52. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
72	Logger - Mass register status	Mass at storage	6 bytes, 229.001	C/T		X					
<p>This object monitors logged mass value calculated by device. It is the same value as CO Nr. 71, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 52. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135. Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											

Logger values

Nr.	Name	Function	Length	Flags	Volume	Mass	Flow	BDE	TGR	BDV	DTF
73	Logger - Submeter 1 status	Submeter 1 at storage	4 bytes, 13.001	C/T			X				
<p>This object monitors logged submeter 1 value calculated by device. Value is in counted pulses.</p> <p>Rem.: Date and time of storing is available on CO Nr. 52. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
74	Logger - Submeter 1 register status	Submeter 1 at storage	6 bytes, 229.001	C/T			X				
<p>This object monitors logged submeter 1 value calculated by device. It is the same value as CO Nr. 73, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 52. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135. Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
77	Logger - Submeter 2 status	Submeter 2 at storage	4 bytes, 13.001	C/T	X	X	X	X	X	X	X
<p>This object monitors logged submeter 2 value calculated by device. Value is in counted pulses.</p> <p>Rem.: Date and time of storing is available on CO Nr. 52. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
78	Logger - Submeter 2 register status	Submeter 2 at storage	6 bytes, 229.001	C/T	X	X	X	X	X	X	X
<p>This object monitors logged submeter 2 value calculated by device. It is the same value as CO Nr. 77, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 52. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135. Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
79	Logger - Submeter 3 status	Submeter 3 at storage	4 bytes, 13.001	C/T	X	X	X	X	X	X	X
<p>This object monitors logged submeter 3 value calculated by device. Value is in counted pulses.</p> <p>Rem.: Date and time of storing is available on CO Nr. 52. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
80	Logger - Submeter 3 register status	Submeter 3 at storage	6 bytes, 229.001	C/T	X	X	X	X	X	X	X
<p>This object monitors logged submeter 3 value calculated by device. It is the same value as CO Nr. 77, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 52. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135. Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
81	Logger - Time off counter status	Calculator time-off counter at storage	4 bytes, 13.100	C/T	X	X	X	X	X	X	X
<p>This object monitors logged calculator off-time value.</p> <p>Rem.: The calculator's off time counter has 1 hour resolution. So, only values of complete hours (3600 sec., 7200 sec.) will be sent on KNX bus. Rem.: Date and time of storing is available on CO Nr. 52. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											

Logger values

Nr.	Name	Function	Length	Flags	Volume	Mass	Flow	BDE	TGR	BDV	DTF
82	Logger - Alarm counter status	Calculator alarm time at storage	4 bytes, 13.100	C/T	X	X	X	X	X	X	X
<p>This object monitors logged calculator alarm time value.</p> <p>Rem.: The calculator's alarm time counter has 1 hour resolution. So, only value of complete hours (3600 sec., 7200 sec.) will be sent on KNX bus.</p> <p>Rem.: Date and time of storing is available on CO Nr. 52.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
83	Logger - Maximum power status	Maximum instant power at storage	4 bytes, 14.036	C/T	X	X	X	X	X	X	X
<p>This object monitors logged maximum instant power calculated by device. Value is in W heat flow rate.</p> <p>Rem.: Date and time of storing is available on CO Nr. 52.</p> <p>Rem.: Date and time of maximum power event is available on CO Nr. 84.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
84	Logger - Timestamp power max. status	Timestamp for maximum power at storage	8 bytes, 19.001	C/T	X	X	X	X	X	X	X
<p>This object indicates date and time associated to logged maximum instant power.</p> <p>Rem.: Date and time of storing is available on CO Nr. 52.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
85	Logger - Maximum volume flowrate status	Maximum instant volume flowrate at storage	2 bytes, 9.025	C/T	X	X	X	X	X	X	X
<p>This object monitors logged maximum instant volume flowrate calculated by device. Value is in l/h.</p> <p>Rem.: Date and time of storing is available on CO Nr. 52.</p> <p>Rem.: Date and time of maximum volume flowrate event is available on CO Nr. 86.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
86	Logger - Timestamp max. volume flowrate status	Timestamp for maximum volume flowrate at storage	8 bytes, 19.001	C/T	X	X	X	X	X	X	X
<p>This object indicates date and time associated to logged maximum instant volume flowrate.</p> <p>Rem.: Date and time of storing is available on CO Nr. 52.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
87	Logger - Maximum mass flowrate status	Maximum instant mass flowrate at storage	4 bytes, 14.052	C/T		X					
<p>This object monitors logged maximum instant mass flowrate calculated by device. Value is in kg/s.</p> <p>Rem.: Date and time of storing is available on CO Nr. 52.</p> <p>Rem.: Date and time of maximum mass flowrate event is available on CO Nr. 88.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
88	Logger - Timestamp max. mass flowrate status	Timestamp for maximum mass flowrate at storage	8 bytes, 19.001	C/T		X					
<p>This object indicates date and time associated to logged maximum instant mass flowrate.</p> <p>Rem.: Date and time of storing is available on CO Nr. 52.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											

Logger values

Nr.	Name	Function	Length	Flags	Volume	Mass	Flow	BDE	TGR	BDV	DTF
89	Logger - Maximum flow temperature status	Maximum instant flow temperature at storage	2 bytes, 9.001	C/T	X	X		X	X	X	X
<p>This object monitors logged maximum instant flow temperature measured by device. Value is in °C.</p> <p>Rem.: Date and time of storing is available on CO Nr. 52. Rem.: Date and time of maximum mass flowrate event is available on CO Nr. 90. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
90	Logger - Timestamp max. flow temperature status	Timestamp for maximum flow temperature at storage	8 bytes, 19.001	C/T	X	X		X	X	X	X
<p>This object indicates date and time associated to logged maximum instant flow temperature.</p> <p>Rem.: Date and time of storing is available on CO Nr. 52. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
91	Logger - Maximum return temperature status	Maximum instant return temperature at storage	2 bytes, 9.001	C/T	X	X		X	X	X	X
<p>This object monitors logged maximum instant return temperature measured by device. Value is in °C.</p> <p>Rem.: Date and time of storing is available on CO Nr. 52. Rem.: Date and time of maximum mass flowrate event is available on CO Nr. 92. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
92	Logger - Timestamp max. return temperature status	Timestamp for maximum return temperature at storage	8 bytes, 19.001	C/T	X	X		X	X	X	X
<p>This object indicates date and time associated to logged maximum instant return temperature.</p> <p>Rem.: Date and time of storing is available on CO Nr. 52. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											

Freeze values

Nr.	Name	Function	Length	Flags	Volume	Mass	Flow	BDE	TGR	BDV	DTF
93	Freeze - Date/Time status	Date/Time of frozen Datas	8 bytes, 19.001	C/T	X	X	X	X	X	X	X
<p>At any time, actual values of calculator can be frozen. These frozen values can be read out by use of CO Nr. 135, Query Datas.</p> <p>This object indicates date and time associated to frozen data's on CO's Nr. 93...134 that will be sent after same query.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
94	Freeze - Energy status	Energy value at freezing	4 bytes, 13.013	C/T	X	X		X	X		X
<p>This object monitors frozen energy value calculated by device. Value is in kWh.</p> <p>Rem.: Date and time of storing is available on CO Nr. 93.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
95	Freeze - Energy register status	Energy value at freezing	6 bytes, 229.001	C/T	X	X		X	X		X
<p>This object monitors frozen energy value calculated by device. It is the same value as CO Nr. 84, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 93.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p> <p>Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
96	Freeze - Energy positive status	Positive energy value at freezing	4 bytes, 13.013	C/T				X		X	
<p>This object monitors frozen positive energy value calculated by device. Value is in kWh.</p> <p>Rem.: Date and time of storing is available on CO Nr. 93.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
97	Freeze - Energy positive register status	Positive energy value at freezing	6 bytes, 229.001	C/T				X		X	
<p>This object monitors logged positive energy value calculated by device. It is the same value as CO Nr. 96, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 93.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p> <p>Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
98	Freeze - Energy negative status	Negative energy value at freezing	4 bytes, 13.013	C/T				X		X	
<p>This object monitors frozen negative energy value calculated by device. Value is in kWh.</p> <p>Rem.: Date and time of storing is available on CO Nr. 93.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
99	Freeze - Energy negative register status	Negative energy value at freezing	6 bytes, 229.001	C/T				X		X	
<p>This object monitors frozen negative energy value calculated by device. It is the same value as CO Nr. 98, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 93.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p> <p>Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											

Freeze values

Nr.	Name	Function	Length	Flags	Volume	Mass	Flow	BDE	TGR	BDV	DTF
100	Freeze - Energy tarif 1 status	Tarif 1 energy value at freezing	4 bytes, 13.013	C/T					X		X
<p>This object monitors frozen tarif 1 energy value calculated by device. Value is in kWh.</p> <p>Rem.: Date and time of storing is available on CO Nr. 93. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
101	Freeze - Energy tarif 1 register status	Tarif 1 energy value at freezing	6 bytes, 229.001	C/T					X		X
<p>This object monitors frozen tarif 1 energy value calculated by device. It is the same value as CO Nr. 100, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 93. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135. Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
102	Freeze - Energy tarif 2 status	Tarif 2 energy value at freezing	4 bytes, 13.013	C/T					X		
<p>This object monitors frozen tarif 2 energy value calculated by device. Value is in kWh.</p> <p>Rem.: Date and time of storing is available on CO Nr. 93. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
103	Freeze - Energy tarif 2 register status	Tarif 2 energy value at freezing	6 bytes, 229.001	C/T					X		
<p>This object monitors frozen tarif 2 energy value calculated by device. It is the same value as CO Nr. 102, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 93. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135. Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
104	Freeze - Volume status	Volume at freezing	4 bytes, 14.076	C/T	X				X		X
<p>This object monitors frozen volume value calculated by device. Value is in m³.</p> <p>Rem.: Date and time of storing is available on CO Nr. 93. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
105	Freeze - Volume register status	Volume at freezing	6 bytes, 229.001	C/T	X				X		X
<p>This object monitors frozen volume value calculated by device. It is the same value as CO Nr. 104, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 93. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135. Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
106	Freeze - Volume positive status	Positive volume at freezing	4 bytes, 14.076	C/T				X		X	
<p>This object monitors frozen positive volume value calculated by device. Value is in m³.</p> <p>Rem.: Date and time of storing is available on CO Nr. 93. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											

Freeze values

Nr.	Name	Function	Length	Flags	Volume	Mass	Flow	BDE	TGR	BDV	DTF
107	Freeze - Volume positive register status	Positive volume at freezing	6 bytes, 229.001	C/T				X		X	
<p>This object monitors frozen positive volume value calculated by device. It is the same value as CO Nr./ 106, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 93. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135. Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
108	Freeze - Volume negative status	Negative volume at freezing	4 bytes, 14.076	C/T				X		X	
<p>This object monitors frozen negative volume value calculated by device. Value is in m3.</p> <p>Rem.: Date and time of storing is available on CO Nr. 93. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
109	Freeze - Volume negative register status	Negative volume at freezing	6 bytes, 229.001	C/T				X		X	
<p>This object monitors frozen negative volume value calculated by device. It is the same value as CO Nr. 108, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 93. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135. Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
110	Freeze - Volume tarif 1 status	Tarif 1 volume at freezing	4 bytes, 14.076	C/T							X
<p>This object monitors frozen tarif 1 volume value calculated by device. Value is in m³.</p> <p>Rem.: Date and time of storing is available on CO Nr. 93. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
111	Freeze - Volume tarif 1 register status	Tarif 1 volume at freezing	6 bytes, 229.001	C/T							X
<p>This object monitors frozen tarif 1 volume value calculated by device. It is the same value as CO Nr. 110, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 93. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135. Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
112	Freeze - Mass status	Mass at freezing	4 bytes, 14.051	C/T		X					
<p>This object monitors frozen mass value calculated by device. Value is in kg.</p> <p>Rem.: Date and time of storing is available on CO Nr. 93. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
113	Freeze - Mass register status	Mass at freezing	6 bytes, 229.001	C/T		X					
<p>This object monitors frozen mass value calculated by device. It is the same value as CO Nr. 112, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 93. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135. Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											

Freeze values

Nr.	Name	Function	Length	Flags	Volume	Mass	Flow	BDE	TGR	BDV	DTF
114	Freeze - Submeter 1 status	Submeter 1 at freezing	4 bytes, 13.001	C/T			X				
<p>This object monitors frozen submeter 1 value calculated by device. Value is in counted pulses.</p> <p>Rem.: Date and time of storing is available on CO Nr. 93. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
115	Freeze - Submeter 1 register status	Submeter 1 at freezing	6 bytes, 229.001	C/T			X				
<p>This object monitors frozen submeter 1 value calculated by device. It is the same value as CO Nr. 114, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 93. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135. Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
118	Freeze - Submeter 2 status	Submeter 2 at freezing	4 bytes, 13.001	C/T	X	X	X	X	X	X	X
<p>This object monitors frozen submeter 2 value calculated by device. Value is in counted pulses.</p> <p>Rem.: Date and time of storing is available on CO Nr. 93. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
119	Freeze - Submeter 2 register status	Submeter 2 at freezing	6 bytes, 229.001	C/T	X	X	X	X	X	X	X
<p>This object monitors frozen submeter 2 value calculated by device. It is the same value as CO Nr. 118, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 93. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135. Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
120	Freeze - Submeter 3 status	Submeter 3 at freezing	4 bytes, 13.001	C/T	X	X	X	X	X	X	X
<p>This object monitors frozen submeter 3 value calculated by device. Value is in counted pulses.</p> <p>Rem.: Date and time of storing is available on CO Nr. 93. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
121	Freeze - Submeter 3 register status	Submeter 3 at freezing	6 bytes, 229.001	C/T	X	X	X	X	X	X	X
<p>This object monitors frozen submeter 3 value calculated by device. It is the same value as CO Nr. 120, but using different format, including additional information's (resolution, status)</p> <p>Rem.: Date and time of storing is available on CO Nr. 93. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135. Rem.: During data conversion there may be rounding errors or truncations, depending of the original M-Bus data encoding size and resolution.</p>											
122	Freeze - Time off counter status	Calculator time-off counter at freezing	4 bytes, 13.100	C/T	X	X	X	X	X	X	X
<p>This object monitors frozen calculator off-time value.</p> <p>Rem.: The calculator's off time counter has 1 hour resolution. So, only values of complete hours (3600 sec., 7200 sec.) will be sent on KNX bus. Rem.: Date and time of storing is available on CO Nr. 93. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											

Freeze values

Nr.	Name	Function	Length	Flags	Volume	Mass	Flow	BDE	TGR	BDV	DTF
123	Freeze - Alarm counter status	Calculator alarm time at freezing	4 bytes, 13.100	C/T	X	X	X	X	X	X	X
<p>This object monitors frozen calculator alarm time value.</p> <p>Rem.: The calculator's alarm time counter has 1 hour resolution. So, only value of complete hours (3600 sec., 7200 sec.) will be sent on KNX bus.</p> <p>Rem.: Date and time of storing is available on CO Nr. 93.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
124	Freeze - Maximum power status	Maximum instant power at freezing	4 bytes, 14.036	C/T	X	X	X	X	X	X	X
<p>This object monitors frozen maximum instant power calculated by device. Value is in W heat flow rate.</p> <p>Rem.: Date and time of freezing is available on CO Nr. 93.</p> <p>Rem.: Date and time of maximum power event is available on CO Nr. 125.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
125	Freeze - Timestamp power max. status	Timestamp for maximum power at freezing	8 bytes, 19.001	C/T	X	X	X	X	X	X	X
<p>This object indicates date and time associated to frozen maximum instant power.</p> <p>Rem.: Date and time of freezing is available on CO Nr. 93.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135</p>											
126	Freeze - Maximum volume flowrate status	Maximum instant volume flowrate at freezing	2 bytes, 9.025	C/T	X		X	X	X	X	X
<p>This object monitors frozen maximum instant volume flowrate calculated by device. Value is in l/h.</p> <p>Rem.: Date and time of storing is available on CO Nr. 93.</p> <p>Rem.: Date and time of maximum volume flowrate event is available on CO Nr. 127.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
127	Freeze - Timestamp max. volume flowrate status	Timestamp for maximum volume flowrate at freezing	8 bytes, 19.001	C/T	X		X	X	X	X	X
<p>This object indicates date and time associated to frozen maximum instant volume flowrate.</p> <p>Rem.: Date and time of storing is available on CO Nr. 93.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
128	Freeze - Maximum mass flowrate status	Maximum instant mass flowrate at freezing	4 bytes, 14.052	C/T		X					
<p>This object monitors frozen maximum instant mass flowrate calculated by device. Value is in kg/s.</p> <p>Rem.: Date and time of storing is available on CO Nr. 93.</p> <p>Rem.: Date and time of maximum mass flowrate event is available on CO Nr. 129.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
129	Freeze - Timestamp max. mass flowrate status	Timestamp for maximum mass flowrate at freezing	8 bytes, 19.001	C/T		X					
<p>This object indicates date and time associated to frozen maximum instant mass flowrate.</p> <p>Rem.: Date and time of storing is available on CO Nr. 93.</p> <p>Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											

Freeze values

Nr.	Name	Function	Length	Flags	Volume	Mass	Flow	BDE	TGR	BDV	DTF
130	Freeze - Maximum flow temperature status	Maximum instant flow temperature at freezing	2 bytes, 9.001	C/T	X	X		X	X	X	X
<p>This object monitors frozen maximum instant flow temperature measured by device. Value is in °C.</p> <p>Rem.: Date and time of storing is available on CO Nr. 93. Rem.: Date and time of maximum mass flowrate event is available on CO Nr. 131. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
131	Freeze - Timestamp max. flow temperature status	Timestamp for maximum flow temperature at freezing	8 bytes, 19.001	C/T	X	X		X	X	X	X
<p>This object indicates date and time associated to frozen maximum instant flow temperature.</p> <p>Rem.: Date and time of storing is available on CO Nr. 93. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
132	Freeze - Maximum return temperature status	Maximum instant return temperature at freezing	2 bytes, 9.001	C/T	X	X		X	X	X	X
<p>This object monitors frozen maximum instant return temperature measured by device. Value is in °C.</p> <p>Rem.: Date and time of storing is available on CO Nr. 93. Rem.: Date and time of maximum mass flowrate event is available on CO Nr. 133. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
133	Freeze - Timestamp max. return temperature status	Timestamp for maximum return temperature at freezing	8 bytes, 19.001	C/T	X	X		X	X	X	X
<p>This object indicates date and time associated to frozen maximum instant return temperature.</p> <p>Rem.: Date and time of storing is available on CO Nr. 93. Rem.: Transmission of this data must be initiated by sending according value on CO Nr. 135.</p>											
134	Freeze - Freeze CO	Freeze	1 bit, 1.017	C/T	X	X	X	X	X	X	X
<p>0: Triggers freezing of data's 1: Triggers freezing of data's</p> <p>At any time, actual values of calculator can be frozen by sending telegram (either "0" or "1") on CO Nr. 134. These frozen values can be read out by use of CO Nr. 135, Query Datas. This object is used to indicate the calculator to freeze actual data's. Transmission of frozen data's must be initiated by sending according value on CO Nr. 135.</p> <p>Rem.: by freezing data's, previously frozen data's will be overwritten.</p>											
135	Query - Query datas CO	Query frozen or logger data's	2 bytes, 7.001	C/T	X	X	X	X	X	X	X
<p>Sending of frozen or logged data's must be initiated by sending according data on CO Nr. 135.</p> <p>0: Queries sending of frozen data's stored in calculator. Data's will be sent on CO's Nr. 93...133. 1...500: Queries sending of logged data's stored in calculator . Data's will be sent on CO's Nr. 52...92. >500: Query is ignored</p> <p>Logger memory is made of up to 500 logger events. At each logging, new data's are stored in logger space 1, and already existing logger data's are shifted to next logger space (1->2, 2->3, ...).</p> <p>Rem.: If queried frozen or logged data's are not available (no answer or no communication with calculator), no answer will be sent.</p>											

Relay 1

Nr.	Name	Function	Length	Flags	Volume	Mass	Flow	BDE	TGR	BDV	DTF
137	Relay 1 - Switch On/Off	Switch relay 1 On/Off	1 bit, 1.001	C/T	X	X	X	X	X	X	X

0: Switch relay 1 Off
1: Switch relay 1 On

CO Nr. 137 can be used to switch relay Nr. 1 of Calec ST II device.

Rem.: In order relay to be switchable by CO, function must be set accordingly within calculator.

Rem.: In order relay to have incidence on Calec terminals, function must be set to output (Switch S1 within CALEC® ST III)

Relay 2

Nr.	Name	Function	Length	Flags	Volume	Mass	Flow	BDE	TGR	BDV	DTF
139	Relay 2 - Switch On/Off	Switch relais 2 On/Off	1 bit, 1.001	C/T	X	X	X	X	X	X	X

0: Switch relay 2 Off
1: Switch relay 2 On

CO Nr. 139 can be used to switch relay Nr. 2 of Calec ST II device.

Rem.: In order relay to be switchable by CO, function must be set accordingly within calculator.

Rem.: In order relay to have incidence on Calec terminals, function must be set to output (Switch S2 within CALEC® ST III)

5 Connexions KNX®, p.ex. aux compteurs d'eau et de fuel

Deux entrées auxiliaires sont disponibles afin de mesurer des impulsions d'autres compteurs, tels des compteurs d'eau et de fuel dotés de signaux d'impulsions et de transmettre le résultat directement au réseau KNX® TP1.

6 Alarme

Les messages d'état du CALEC® ST III sont liés aux objets KNX®. INTEGRA METERING AG distingue les types de messages d'état suivants:

État de l'appareil "erreur"

Toutes les erreurs importantes de l'appareil, telles "erreur système" doivent être vérifiées, y compris le code erreur.

État de valeur de mesure "alarme":

Il faut vérifier des messages spécifiques, telles „dt Alarm“ avec le code alarme (vous trouverez des informations plus détaillées au chapitre "messages d'erreur, alarmes" du manuel d'utilisation du CALEC® ST III).

7 Traitement de problèmes

Erreurs de communication			
N°	Erreur / défaut	Cause possible	Solution
1	CALEC® ST III ne communique pas dans le réseau KNX® TP1	Câblage du réseau Configuration du CALEC® ST III Configuration ETS5®	Vérifiez si les appareils KNX® TP1 sont correctement raccordés. Vérifiez si la topologie du bus est correcte. Vérifiez si l'adresse physique est correctement configurée et a été attribuée de manière univoque dans le réseau.

