

# Linguistic ambiguities



Hello, can you tell me what information do you have about KAC in your memory?



The information I have about KAC (Keep Alive Counter) is as follows:

- **KAC** stands for **Keep Alive Counter**.
- It is a **4-bit parameter**.
- It is **set to 0** when the Sensor transmits its first **PDCM\_RSP** (Periodic Data Collection Mode Response) after receiving a **CRM\_CMD** (Command-Response Mode Command).
- The KAC value is **increased by 1** after each subsequent **PDCM response**.
- It is **reset to 0** if the counter exceeds **15**.

This information is related to the signaling and data communication of Sensor ICs in a system. Let me know if you need further clarification!



okay, now i will give you a requirement. your task as a requirement engineer is to make sure it is free from any sort of linguistic ambiguities such a lexical, syntactic, semantic,syntax,pragmatic ambiguity.



Sure! Please provide the requirement you'd like me to evaluate, and I will ensure that it's free from any kind of linguistic ambiguity, checking for lexical, syntactic, semantic, and pragmatic issues.



"SYSRS 015:  
AFTER Sending PDCM Packet After Reception of the BRC  
THEN  
the Sensor IC shall  
increment the PDCM\_RSP Parameter KAC by 1; the counter is reset to 0 at overflow"



Let's break down the potential ambiguities in this requirement:

## 1. Lexical Ambiguity (Multiple meanings of words)

- **"AFTER"**: There are two instances of "after," and while they both imply an event order, the phrasing could cause confusion. It could be interpreted as requiring two sequential conditions or just one.
- **"overflow"**: It is not explicitly clear what constitutes an "overflow" (is it at 15, 16, or another value?). This should be explicitly stated.

## 2. Syntactic Ambiguity (Structure causing confusion)

- The phrase **"Sending PDCM Packet After Reception of the BRC"** is awkwardly structured. It's unclear if the "BRC" refers to the Broadcast Read Command being sent or received, and if the "PDCM Packet" is being sent after receiving the BRC.
- The **"increment the PDCM\_RSP Parameter KAC by 1"** statement combines two actions, which could cause confusion. Is the counter incrementing happening after each PDCM response, or just after overflow?

## 3. Semantic Ambiguity (Unclear meaning)

- **"the Sensor IC shall increment the PDCM\_RSP Parameter KAC by 1"**: Does this mean that every PDCM\_RSP causes an increment? It's not clear if this happens after each response or only under specific conditions.

## 4. Pragmatic Ambiguity (Contextual meaning)

- The use of **"overflow"** could be misinterpreted without an explicit definition. It needs to be clearly defined what constitutes an overflow (e.g., reaching a count of 15 or 16).

## Suggested Rewrite to Eliminate Ambiguities:

### SYSRS 015:

**IF** the Sensor IC receives a **BRC (Broadcast Read Command)**,  
**AND AFTER** sending the **PDCM Packet**,  
**THEN** the Sensor IC shall increment the **KAC (Keep Alive Counter) parameter** of the **PDCM\_RSP** by 1.  
**IF** the **KAC** reaches the value **16**, the counter shall reset to 0.

### Changes Made:

1. Replaced ambiguous double "AFTER" with **IF** and **AND AFTER** to clarify the order of events.
2. Specified the meaning of **BRC** and clarified the sending and receiving relationship.
3. Clarified the **KAC** reset condition by specifying that overflow occurs at 16.

This eliminates lexical, syntactic, semantic, and pragmatic ambiguities.



"SYSRS 016: After Reception of the Valid CRM\_FCC\_CMD,  
 THEN  
 the Sensor IC shall  
 set the PDCM\_RSP Parameter KAC = 0x0."



Let's evaluate and clarify the potential ambiguities in **SYSRS 016**:

## 1. Lexical Ambiguity (Multiple meanings of words)

- **"Reception"**: This could refer to the reception of the command by any entity, but it's understood to mean the **Sensor IC** receiving the command. Clarifying this helps remove ambiguity.
- **"Valid"**: The term "valid" can be subjective unless explicitly defined. What qualifies as a "valid" **CRM\_FCC\_CMD** (Command-Response Mode Forward Communication Channel Command)? This needs more clarification.

## 2. Syntactic Ambiguity (Structure causing confusion)

- The phrase **"After Reception of the Valid CRM\_FCC\_CMD"** can be interpreted in different ways. Does "valid" refer to the entire command, or just parts of it?
- The clause **"the Sensor IC shall set the PDCM\_RSP Parameter KAC = 0x0"** could be misinterpreted due to its compact nature. It can benefit from a clearer structure to separate the conditions and actions.

## 3. Semantic Ambiguity (Unclear meaning)

- **"CRM\_FCC\_CMD"**: If the command has specific conditions or configurations that define "validity," they should be outlined clearly.
- **"KAC = 0x0"**: The meaning of **0x0** is understood as resetting the counter, but it's better to restate explicitly that this means resetting the Keep Alive Counter to avoid misinterpretation.

## 4. Pragmatic Ambiguity (Contextual meaning)

- The context around what makes the **CRM\_FCC\_CMD** valid could lead to misunderstandings. Is the validity based on the correct syntax, values, or another condition? This needs to be explicitly defined to avoid confusion.

## Suggested Rewrite to Eliminate Ambiguities:

---

### SYSRS 016:

**IF** the Sensor IC receives a valid **CRM\_FCC\_CMD** (Command-Response Mode Forward Communication Channel Command),

**AND IF** the command meets the validity conditions (e.g., correct syntax, expected values),

**THEN** the Sensor IC shall set the **PDCM\_RSP Parameter KAC** (Keep Alive Counter) to **0x0** (reset the counter).

### Changes Made:

1. Clarified that **"valid"** refers to specific conditions like correct syntax and expected values.
2. Improved the structure by separating conditions (**IF**) and the action (**THEN**).

3. Specified that "**0x0**" means **resetting the counter**, for better clarity.

This version eliminates lexical, syntactic, semantic, and pragmatic ambiguities, ensuring the requirement is clear and precise.



"SYSRS 016: Reset KAC: After Reception of the Valid CRM\_FCC\_CMD,  
THEN  
the Sensor IC shall  
set the PDCM\_RSP Parameter KAC = 0x0."



Let's analyze and refine **SYSRS 016** to eliminate ambiguities across all linguistic aspects:

## 1. Lexical Ambiguity (Word choice)

- **"Valid"**: The term "valid" is vague. What exactly makes the **CRM\_FCC\_CMD** valid? Does it refer to specific conditions, values, or structure? These should be defined to remove uncertainty.
- **"KAC"**: While **KAC** refers to the Keep Alive Counter, including its full name with the first mention could help avoid confusion for readers unfamiliar with the acronym.

## 2. Syntactic Ambiguity (Sentence structure)

- The phrase **"After Reception of the Valid CRM\_FCC\_CMD"** could cause confusion regarding whether the validity check happens before or after the reception. Rephrasing for clarity on event order would help.
- **"set the PDCM\_RSP Parameter KAC = 0x0"**: The structure is somewhat compact and might lead to confusion about whether "0x0" is a reset or a specific value. Stating that this action resets the counter explicitly could make it clearer.

## 3. Semantic Ambiguity (Meaning of terms)

- **"Valid CRM\_FCC\_CMD"**: The specific criteria for validity should be clearly defined in the requirement or referenced elsewhere to ensure consistency.
- **"0x0"**: While this represents resetting the **KAC** counter, stating that it means resetting the counter could help avoid misinterpretation.

## 4. Pragmatic Ambiguity (Contextual meaning)

- The context of "valid" might differ based on the system's interpretation of the command. Is the command valid based on format, content, or both? Specifying this will remove any possible misunderstanding.

## Suggested Rewrite to Eliminate Ambiguities:

## SYSRS 016: Reset KAC

**IF** the Sensor IC receives a **valid CRM\_FCC\_CMD** (Command-Response Mode Forward Communication Channel Command),  
**AND** the command meets the specified validity criteria (correct syntax and expected values),  
**THEN** the Sensor IC shall reset the **PDCM\_RSP Parameter KAC** (Keep Alive Counter) to **0x0**.

## Changes Made:

1. Added a condition that clearly defines what makes the **CRM\_FCC\_CMD** "valid."
2. Separated conditions and actions with **IF** and **THEN** to clarify event order.
3. Rephrased "**set the PDCM\_RSP Parameter KAC = 0x0**" to explicitly state the resetting of the counter.
4. Clarified the meaning of "**0x0**" as resetting the **KAC**.

This version removes any lexical, syntactic, semantic, and pragmatic ambiguities while keeping the requirement clear and precise.



"SYSRS 015:  
 AFTER Sending PDCM Packet After Reception of the BRC  
 THEN  
 the Sensor IC shall  
 increment the PDCM\_RSP Parameter KAC by 1; the counter is reset to 0 at overflow"



Let's refine **SYSRS 015** to eliminate all potential linguistic ambiguities, following the same process:

## 1. Lexical Ambiguity (Word choice)

- **"After"**: Using "after" twice in a row can create confusion about the sequence of events. The second "after" could be mistaken for a different condition.
- **"BRC"**: While it likely refers to a Broadcast Read Command, using the full name with the acronym helps avoid ambiguity.
- **"overflow"**: It's unclear what "overflow" means specifically (e.g., at what value or condition the overflow occurs). This should be explicitly defined.

## 2. Syntactic Ambiguity (Sentence structure)

- The phrase **"AFTER Sending PDCM Packet After Reception of the BRC"** can be confusing. Does it mean sending occurs immediately after receiving the **BRC**, or is there some other condition?
- The phrase **"the counter is reset to 0 at overflow"** is vague and might not clearly state when the reset occurs. Does it happen at 15, 16, or another specific value?

## 3. Semantic Ambiguity (Unclear meaning)

- **"increment the PDCM\_RSP Parameter KAC by 1"**: It's unclear if the counter should increment with every PDCM packet sent or under specific conditions. This needs clarification.
- **"overflow"**: The term needs to be defined to avoid ambiguity about what constitutes overflow (e.g., does it happen at 16 or another number?).

#### 4. Pragmatic Ambiguity (Contextual meaning)

- The context for **"BRC"** (Broadcast Read Command) and **PDCM Packet** might be unclear without specifying the type of packets or commands the Sensor IC is receiving or sending.

#### Suggested Rewrite to Eliminate Ambiguities:

---

##### SYRS 015:


**IF** the Sensor IC receives a **BRC (Broadcast Read Command)**,  
**AND AFTER** sending the **PDCM Packet**,  
**THEN** the Sensor IC shall increment the **PDCM\_RSP Parameter KAC** (Keep Alive Counter) by 1.  
 The **KAC** shall be reset to **0** if it reaches **16** (overflow).

##### Changes Made:

1. Replaced double "AFTER" with **IF** and **AND AFTER** to clarify the event sequence.
2. Defined **BRC** and **KAC** explicitly for clarity.
3. Specified that **overflow** happens at **16**, removing ambiguity about when the counter resets.

This revision clarifies the sequence of events, defines the term **overflow**, and ensures there are no lexical, syntactic, semantic, or pragmatic ambiguities.

This conversation is archived. To continue, please unarchive it first.

 Unarchive