
Application Note

C006 Sender Receiver Library

HA502487C006 Issue C

AC30V V1.13 onwards
AC30P/D V2.13 onwards

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Requirements

Intended Users

This Application Note is to be made available to all persons who are required to install, configure or service equipment described herein, or any other associated operation.

The information given is intended to enable the user to obtain maximum benefit from the equipment.

Application Area

The equipment described is intended for industrial motor speed control utilising AC induction or AC synchronous machines.

Personnel

Installation, operation and maintenance of the equipment should be carried out by qualified personnel. A qualified person is someone who is technically competent and familiar with all safety information and established safety practices; with the installation process, operation and maintenance of this equipment; and with all the hazards involved.

Hazards

Refer to the Safety Information given at the front of the Product Manual supplied with every Parker SSD Drives product.

C006 SENDER RECEIVER LIBRARY

Abstract

This application note explains how to use the **AC30 Sender Receiver** CoDeSys library on an AC30 drive.

Pre-Requisite

The pre-requisites are one or more AC30 drives and the PC tool PDQ or PDD.

Introduction

The CoDeSys **AC30 Sender Receiver** library provides a simple method of providing peer-to-peer communications between AC30 Ethernet connected drives.

Two main types of function blocks are available: **sender_** and **receiver_**. These blocks allow data to be sent and received between applications. Data may be sent to an individual drive as a **unicast**, to a group of participating drives as a **multicast** or to all drives as a **broadcast**

Each sender or receiver block allows for the transfer of 8 variables: 2 of data type UDINT and 6 of data type REAL.

The function block **receiver_r_** has the same functionality as **receiver_** but retains the output data.

The function block **trigger_** allows for the rate to be set at which data is sent from the **sender_** function block.

The function block **watchdog_** allows receives to be monitored, typically to generate a loss of communications trip.

Communications

Data may be sent from a drive using a sender function block to another drive using a receiver function block. To make sure the data is sent to the correct receiver(s) a channel number is used on both sender and receiver to link the two together.

If the sent data is to go to **one drive only**, then the sender uses the IP address of the receiving drive. In this case, no other drives will receive the data.

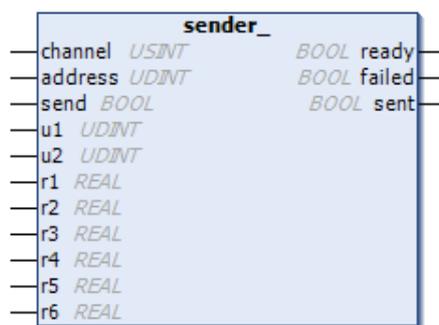
If the sent data is to go to **a group of drives**, then the sender uses a 'group send' (multicast) to all receiving drives on the same channel number that have joined the group.

If the sent data is to go to **all drives**, then the sender uses a 'broadcast send' to all receiving drives on the same channel number.

Notes

- Due to drive resources, the total number of sender and receive function blocks per drive application should be limited to no more than 6.
- Send rates should be set to no less than 5ms.
- All communications use a base UDP port of 1270
- Multicast communications use a base address of 239.255.10.0

Sender Function Block Description



Inputs	Default	Description
channel	0	Communications channel number (0-255) on which to send data. Receiver blocks with the same channel number will receive the data. If the function block is used for unicasts or broadcasts <i>only</i> then the input channel may be modified by the application.
address	BROADCAST_SEND	If sending to one drive only address is the unicast IP address of the receiving drive. If sending to a group of drives then set address to the constant GROUP_SEND . If sending to all drives then set address to the constant BROADCAST_SEND .
send	FALSE	When TRUE the data will be sent on the current task tick. This may be used with the trigger_ function block to set the send rate to the required period.
u1, u2	0	Data to send of UDINT data type.
r1, r2, r3, r4, r5, r6	0	Data to send of REAL data type.
Outputs		Description
ready		TRUE when the function block has initialised and is ready to send data.
failedInit		TRUE if the function block failed to initialise. This may be the case if there are not enough resources (too many receiver or sender function blocks) or the input address is set to zero.
sent		TRUE if data has been sent. This will remain TRUE only on the task tick on which data was sent.

Trigger Function Block Description



Inputs	Default	Description
period	0	Period on which the output will be set to TRUE. This should be at least twice the task time.
Outputs		Description
out		TRUE for one task tick for each period. This would be connected to the send input of a sender function block.

Receiver Function Block Description

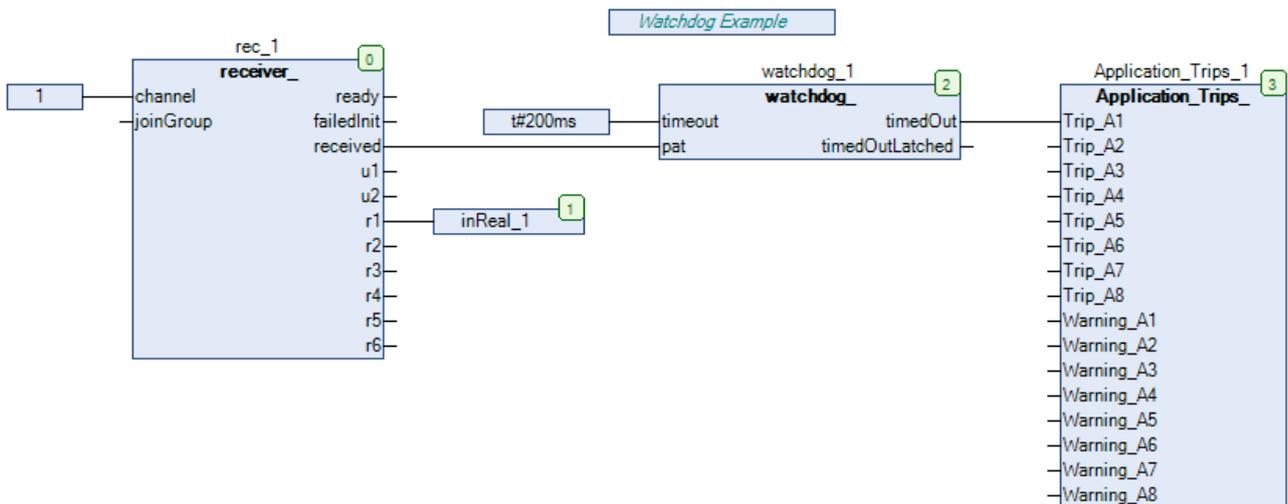


Inputs	Default	Description
channel	0	Communications channel number (0-255) on which to receive data. The receiver function block will receive data from a sender block with the same channel number. The input channel must be a constant value.
joinGroup	FALSE	If TRUE, joins a group of drives that have the same channel number receiving data from a sender function block that has its input address set to GROUP_SEND . If receiving unicast or broadcast data then this input should be set to FALSE. The input joinGroup must be a constant value.
Outputs		Description
ready		TRUE when the function block has initialised and is ready to receive data
failedInit		TRUE if the function block failed to initialise. This may be the case if there are not enough resources (too many receiver or sender function blocks) or more than one receiver block with the same channel number in the same application.
received		TRUE if data has been received. This will remain TRUE only on the task tick on which data was received.
u1, u2		Received data of UDINT data type.
r1, r2, r3, r4, r5, r6		Received data of REAL data type.

Watchdog Function Block Description



Inputs	Default	Description
timeout	0	Timeout period for the watchdog. Typically, this would be set at least twice the period of the sender.
pat	FALSE	When set TRUE the watchdog is 'patted'. This would be connected to the output received on the receiver function block being monitored.
Outputs		Description
timedOut		If TRUE then the watchdog has timed out. The time out will only occur if the watchdog has been patted at least once previously. The output will stay TRUE for one task tick. This could be used to generate a drive trip.
timedOutLatched		The same as timedOut above, but will remain latched until the watchdog is patted again.

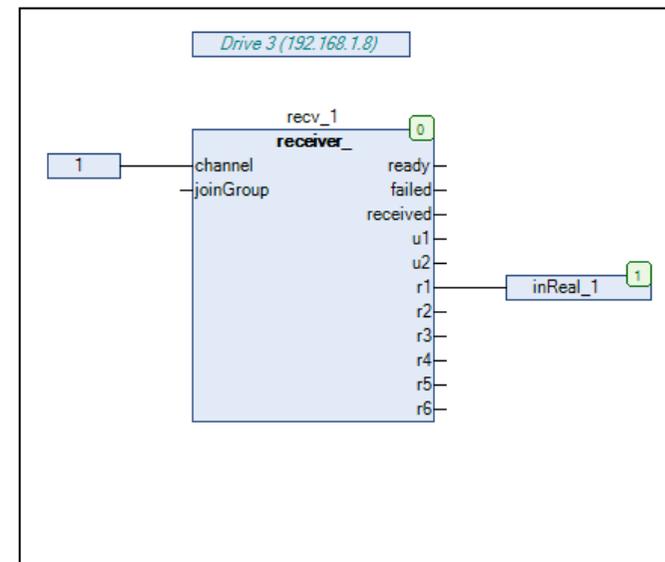
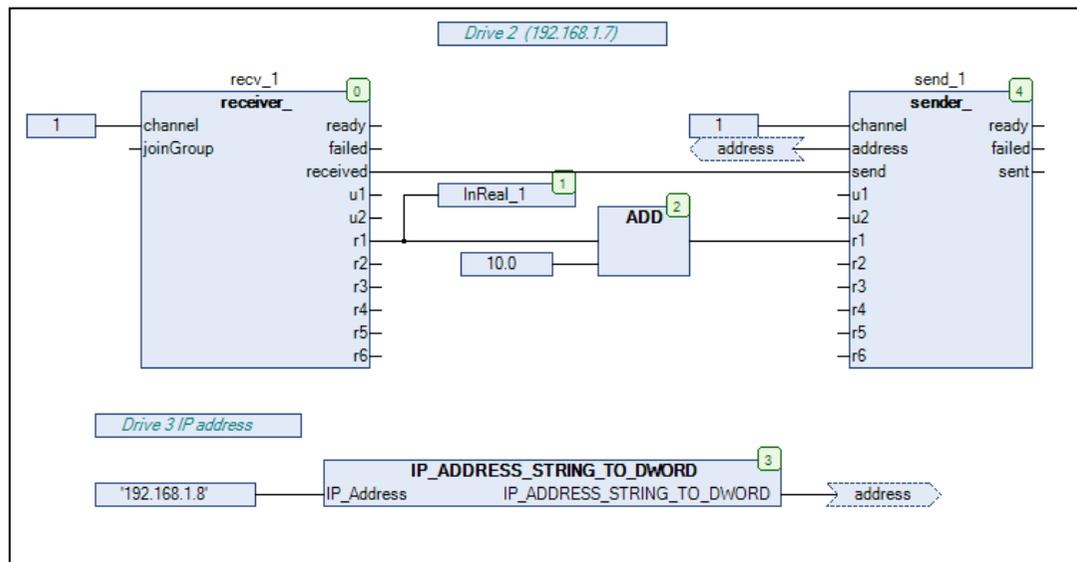
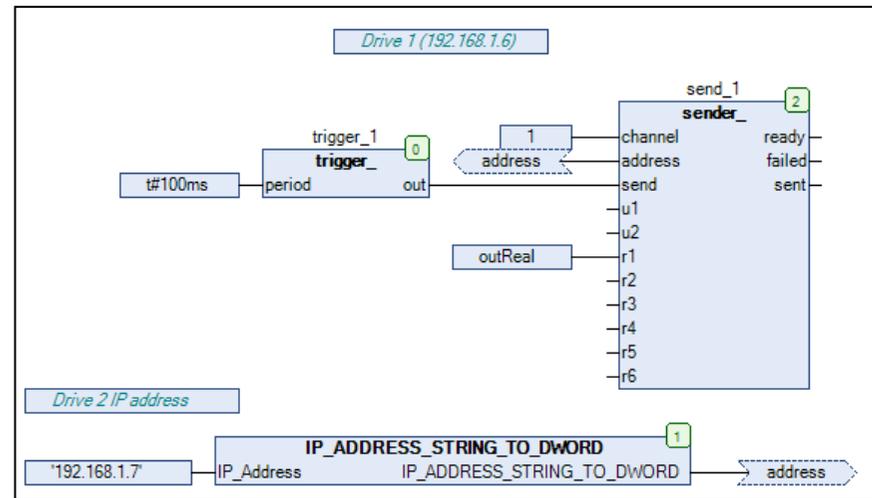


Example 1: Unicast

Drive 1 sends REAL data to Drive 2 via a unicast at a rate of 100ms.

Drive 2 receives the data from Drive 1, adds a value of 10.0 and sends the data to Drive 3 via a unicast. The **received** output on the receiver block is used to trigger a send.

Drive 3 receives the data from Drive 2.

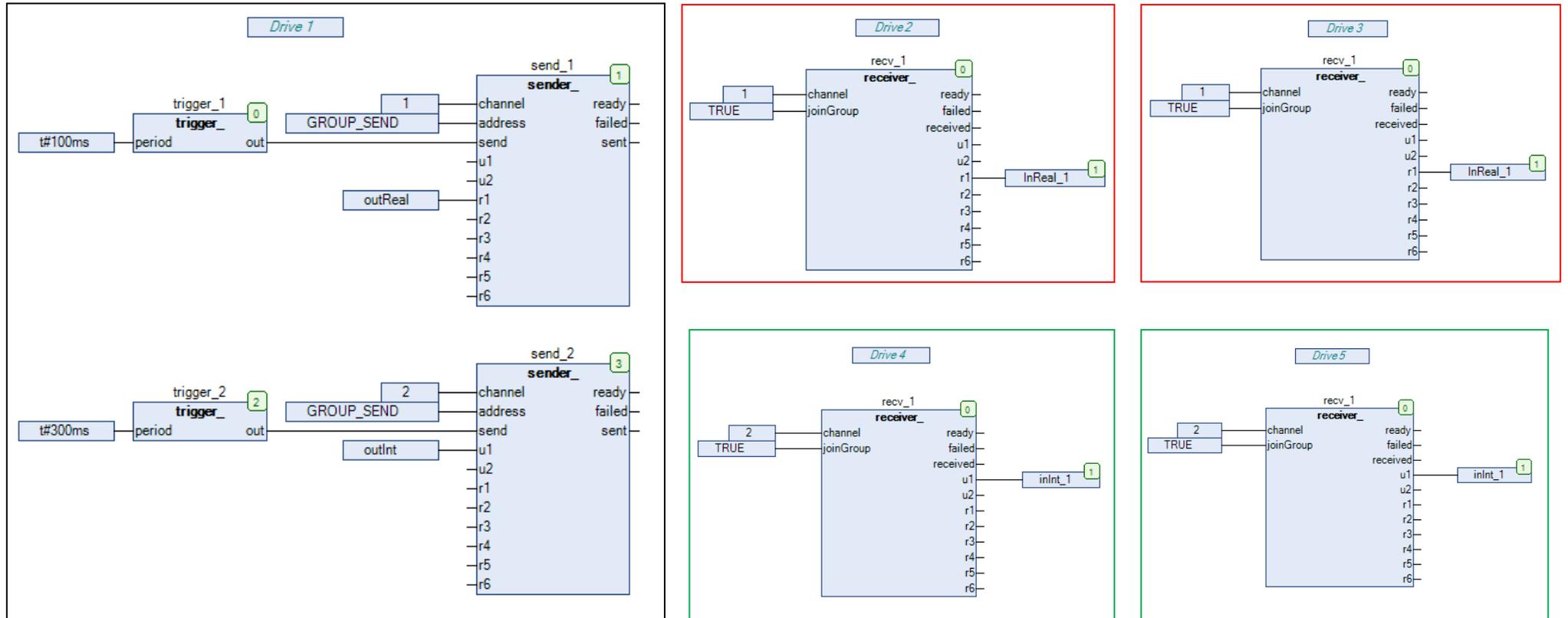


Example 2: Multicast

Drive 1 sends REAL data to the group on channel 1 at a rate of 100ms and sends UDINT data to the group on channel 2 at a rate of 300ms.

Drives 2 & 3 are in the same group and receive the REAL data.

Drive 4 & 5 are in the same group and receive the UDINT data.



Example 3: Broadcast

Drive 1 broadcasts data (one UDINT and one REAL) at a rate of 100ms.

Drives 2, 3 & 4 receive the data.

