

Protocol identification (normative)

5.1 General

The protocol identification scheme enables many different protocols to operate concurrently over a SpaceWire network without them interfering with each other. To achieve this an identifier is given to each protocol. Units receiving packets process and respond to them according to the protocol specified by the protocol identifier on the packet. If a packet arrives with a particular protocol identifier that is not supported by a node, then it is ignored and a count of this type of error recorded.

5.2 Protocol Identification

5.2.1 Addressing

- a) A SpaceWire packet containing a protocol identifier shall start with a single byte logical address when it arrives at the final destination, see Figure 1.
- b) When sent by the source the SpaceWire packet may have one or more leading physical or logical address bytes which are stripped off on the way through the SpaceWire network leaving the single logical address byte when it arrives at the destination.
- c) The logical address 254 (0FEh) may be used as a default value when the destination does not have a logical address or when the source does not know the logical address of the destination.

NOTE The logical address 254 ought not be used to route a packet to its destination since many destinations could all be using the default logical address. If logical address 254 is being used as a default logical address then it must be used in conjunction with path addressing to route the packet to its intended destination. Logical address 254 is intended to be used to support the protocol ID when path addressing is being used.

- d) A destination may chose to ignore packets with logical address 254 (0FEh).
- e) If packet with logical address is ignored then the destination should record and make available a count of the number of packets it received and ignored with logical address 254 (0FEh).

5.2.2 Protocol identifier

- a) A protocol identifier shall comprise a single byte immediately following the logical address, see Figure 1.
- b) The protocol identifier with a value of zero shall be reserved for extension of the protocol identifier, see subclause 5.2.3.
- c) The protocol identifier with a value of 255 (0FFh) shall be reserved.

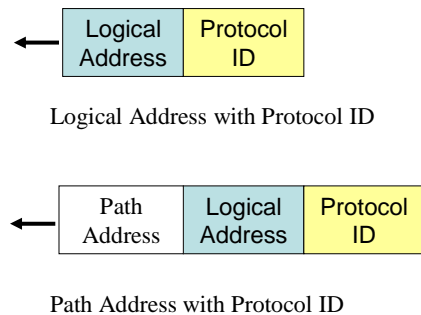


Figure 1 Logical address and protocol identifier

5.2.3 Extended protocol identifier

- a) The reserved protocol identifier, with the value zero (00h), may be used to extend the number of available protocol identifiers, see Figure 2.
- b) Two more bytes shall follow the reserved protocol identifier (zero) to form a 16-bit extended protocol identifier allowing up to 65535 protocols to be carried over a SpaceWire network
- c) Implementation of the extended protocol identifier is not mandatory
- d) If a unit does not implement the extended protocol identifier then reception of a protocol identifier with the value zero (reserved protocol identifier) shall be ignored.
- e) If a unit ignores the extended protocol identifier then it should record and make available a count of the number of packets it received with an extended protocol identifier.
- f) Extended protocol identifiers with values in the range 000001h to 0000FFh shall not be used since they would represent the same protocols as non-extended protocol identifiers with values 01h to 0FFh respectively e.g. protocol 02h would be the same as protocol 000002h. If one of these protocols (01h to 0FFh) is to be used then it must be referenced using the short form of the protocol identifier.
- g) The extended protocol identifier with the value 000000h is reserved and shall be ignored when received.

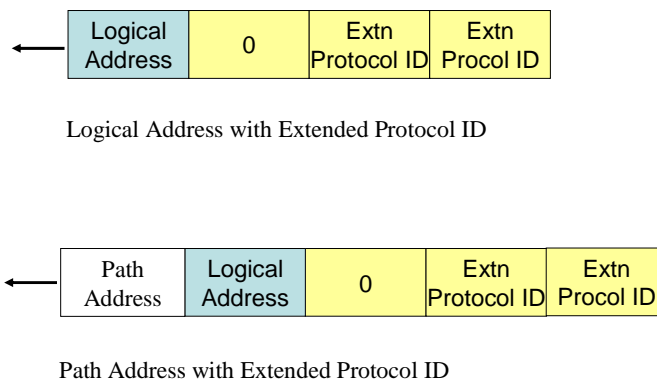


Figure 2 Extended protocol identifier

5.2.4 Ignoring unknown protocols

- a) If a packet arrives at a destination with a protocol that is not supported (unknown) by that destination then the destination shall ignore the packet
- b) If a packet arrives at a destination with a protocol that is not supported (unknown) by that destination then the packet shall be removed from the SpaceWire link on which it arrived.
- c) A count of the number of packets that arrive at a destination with unknown protocol identifiers should be kept and made available by the destination.

5.2.5 Protocol Identifier Allocation

- a) Protocol identifiers in the range 1 to 239 (01h to 0EFh) shall be assigned by the SpaceWire working group. The protocols defined in this standard document define the current set of approved SpaceWire protocols and their protocol identifiers.
- b) Protocol identifiers in the range 240 to 254 (0F0h to 0FEh) shall be available for general use.
- c) Developers may use the general use protocol identifiers but ought to be aware that they might clash with protocols being developed by other users. Concurrent operation of different protocols is only assured for protocols in the range 1 to 239 (01h to 0EFh).
- d) Proven protocols (as decided by the SpaceWire Working Group) may be recommended for adoption by the SpaceWire working group and then be included in future revisions or extensions to this SpaceWire standard. Once adopted they will be given a unique protocol identifier in the range 1 to 239.