



Clause 169 Discovery Parameters

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Updated Discover Parameters

Updated discovery parameters were presented at the January and March 2024 802.3da TF meetings

Referenced presentations: [Paul_da_01_20240124.pdf](#), [Paul_da_03_20240313_v0.pdf](#)

Updates to Draft 1.0 were not possible, comment cycle was closed.

Move to adopt tables on the following slides...

Update “Table 169-3–MPSE Discovery Parameters” Comment 155

| Item | Parameter | Symbol | Min | Max | Units | Additional Information |
|------|---------------------------------|-------------------|------|------|-------|---|
| 1 | Discovery high mark voltage | VMark | 16.1 | 19.1 | V | |
| 2 | Discovery low mark voltage | VDiscovery | 7.4 | 11.9 | V | |
| 3 | Discovery current limit | IDiscovery_LIM | 50 | 100 | mA | |
| 4 | Discovery high event time | TDiscovery_high | 7 | - | ms | |
| 5 | Discovery low event time | TDiscovery_low | 20 | TBD | ms | |
| 6 | Discovery time | TDiscovery | - | TBD | ms | |
| 7 | Discovery backoff time | TBackoff | 150 | - | ms | |
| 8 | Mark short circuit threshold | IMark_short | 3 | 4 | mA | |
| 9 | Discovery all MPD present range | IMPD_present | 0.8 | 40 | mA | IDiscovery-IMark |
| 10 | MPD type present | IType_present | 0.8 | 40 | mA | IDiscovery-ITare |
| 11 | Mark measurement delay | TMark_measure | 5 | - | ms | |
| 12 | Discovery measurement delay | TDiscover_measure | 6.5 | - | ms | Based on Mark-Discover Fall time (10nF Cpd) |
| 13 | Discovery reset | VMPSE_reset | 0 | 2.8 | V | |

- ▶ Green values are changes in the table
- ▶ Red text should be subscripted

Add descriptive text to section 169.4.6

Comment 155

Discovery consists of a series of discover high and discover low events as defined in the state diagram in Figure 169-4.

When the MPSE is presenting a mark event voltage in a DISCOVERY_HIGH_MARKx state, as shown in the state diagram of Figure 169-4, the MPSE it shall supply V_{Mark} voltage to the TCI subject to the T_{Discovery_high} timing specification. The MPSE shall wait T_{Mark_measure} between the entrance of a DISCOVERY_HIGH_MARKx state and measurement of mark event current I_{Discovery}. T_{Mark_measure} and T_{Discovery_high} are referenced from the application of V_{Mark} min to ignore initial transients. If the current I_{Discovery} measured in a DISCOVERY_HIGH_MARKx state exceeds I_{Mark_short} the MPSE shall return to the BACKOFF state.

When the MPSE is presenting a discover low event voltage in a DISCOVERY_LOW state, as shown in the state diagram of Figure 169-4, the MPSE it shall supply V_{Discovery} voltage to the TCI subject to the T_{Discovery_low} timing specification. The MPSE shall wait T_{Discover_measure} between the entrance of a DISCOVERY_LOW state and measurement of discovery event current I_{Discovery}. T_{Discover_measure} is referenced from the application of V_{Discovery} max to ignore initial transients.

The MPSE shall limit current to I_{Discovery_LIM} during all discovery events, DISCOVERY_LOWx and DISCOVER_HIGH_MARKx.

If the MPSE returns to BACKOFF, it shall maintain the TCI voltage at V_{MPSE_reset} for T_{Discovery_backoff} before starting a new discovery cycle.

(MP_NOTE: discovery_backoff_timer is missing from the MPSE Discovery Parameters Table)

► Red text should be subscripted

New Table in Subsection "169.4.5 MPD Discovery" Comment 145 and Comment 148

Table 169-Z – MPD Discovery Parameters

| Item | Parameter | Symbol | Min | Max | Units | Additional Information |
|------|--|---------------|------|------|-------|------------------------|
| 1 | Mark event voltage | VMPD_mark | 16 | 19.1 | V | |
| 2 | Mark discovery threshold | VDiscover_th | 11.9 | 16 | V | |
| 3 | Discovery event voltage | VMPD_discover | 6.9 | 11.9 | V | |
| 4 | Mark event current | IMPD_mark | 100 | 200 | uA | |
| 5 | Discovery event current | IMPD_discover | 1 | 2 | mA | |
| 6 | Discovery reset threshold | VMPD_reset | 2.8 | 6.9 | V | |
| 7 | MPD discovery stability time | TMPD_discover | - | 6 | ms | |
| 8 | MPD mark stability time | TMPD_mark | - | 3 | ms | |
| 9 | Input Capacitance outside of PON_LOAD_ON state | CMPD_discover | 5 | 12 | nF | 2.7V to 19.1V |

► Red text should be subscripted

Add Text to Subsection 169.5.4

Comment 145

When the MPD is presenting a mark event signature in a DO_MARKx state, as shown in the state diagram of Figure 169-6, the MPD shall draw **IMPD_mark** as defined in Table **TBD** within **TMPD_mark** after entering the state.

The MPD shall not exceed the **IMPD_mark** current limits when voltage at the TCI enters the **VMPD_mark** specification as defined in Table **TBD**.

The MPD enters a DO_DISCOVERYx state, as shown in the state diagram of Figure 169-6, when the TCI voltage transitions from **VMPD_mark** to **VMPD_discover**, crossing the threshold **VDiscover_th**.

When the MPD enters a DO_DISCOVERYx state and `present_discovery_sig` is TRUE the MPD shall draw **IMPD_discover** within **TMPD_discover** after entering the state.

When the MPD enters a DO_DISCOVERYx state and `present_discovery_sig` is FALSE the MPD shall draw **IMPD_mark** within **TMPD_discover** after entering the state.

► Note to editor

- “Table **TBD**” is the new “MPD Discovery Parameters” Table
- **Red** text should be subscripted

Fix TBDs in Table 169-7

Comments 146 and 147

| Item | Parameter | Symbol | Min | Max | Units | Additional Information |
|------|---------------------------------|-----------|------|-----|-------|------------------------|
| 6 | MPD Type 0 Voltage Threshold | VTYPE0_TH | 11.9 | 16 | V | |
| 9 | Inrush to operating state delay | TDelay | 10 | 20 | ms | |

- ▶ Red text should be subscripted

TBDs to link to MPD Discovery Parameters Table

Comment 162

- ▶ Link these TBDs to the new “MPD Discovery Parameters” Table
- ▶ VReset_MPD_max
 - The maximum MPD reset voltage VReset_MPD max (see Table TBD)
- ▶ VMark_th
 - Mark event voltage threshold (see Table TBD)
- ▶ VReset_th
 - Reset voltage threshold (see Table TBD)

- ▶ Red text should be subscripted

Power Supply TBDs in Constants Section

Comment 161

- ▶ Link following TBDs to Table 169-7 (MPD Power Supply Limits):
 - ▶ V_{Off_MPD}
 - MPD power supply turn off voltage (see Table TBD)
 - ▶ V_{On_MPD}
 - MPD power supply turn on voltage (see Table TBD).
 - ▶ V_{MPD}
 - Voltage at the MPD TCI (see Table TBD).
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- ▶ Red text should be subscripted

Thank You